



Sunlight and Daylight Report

40-44 High Street, Northwood, HA6
1BN

ES Architecture Ltd

Report No: PA-DAY-44HS-26-01

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About Abbey Consultants (Southern) Ltd

Abbey Consultants (Southern) Ltd is an established consultancy practice specialising in providing building solutions throughout the UK.

We offer a full range of independent energy and sustainability services from pre-planning through to completion for both residential and commercial buildings from small individual properties through to highly complex mixed-use developments.

We are an industry leader in delivering a professional, accredited and certified service to a wide range of clients including architects, developers, builders, housing associations, the public sector and private householders.

Employing highly qualified staff, our team comes from a variety of backgrounds within the construction industry with combined knowledge of building design, engineering, assessment, construction, development, research and surveying.

Abbey Consultants maintains its position at the forefront of changes in building regulations as well as technological advances. Our clients, large or small are therefore assured of a cost effective, cohesive and fully integrated professional service.

About the Authors

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Assessment Information

Nature of Assessment:	Sunlight and Daylight Report-40-44 High Street, Northwood
Project Name:	40-44 High Street, Northwood
Project Address:	40-44 High Street, Northwood, HA6 1BN
Architect:	ES Architecture Ltd

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2. GLOSSARY

Average daylight factors (ADF) - Ratio of total daylight flux incident on the working plane to the area of the working plane, expressed as a percentage of the outdoor illuminance on a horizontal plane due to an unobstructed CIE standard overcast sky. Thus a 1% ADF would mean that the average indoor illuminance would be one hundredth the outdoor unobstructed illuminance.

Daylight, natural light - Combined skylight and sunlight

Probable sunlight hours - The long-term average of the total number of hours during a year in which direct sunlight reaches the unobstructed ground (when clouds are taken into account)

CIE standard overcast sky - A completely overcast sky for which the ratio of its luminance L_y at an angle of elevation y above the horizontal to the luminance L_z at the zenith is given by:

$$L_y = L_z (1 + 2 \sin y) / 3$$

A CIE standard overcast sky is darkest at the horizon and brightest at the zenith (vertically overhead)

Vertical sky component (VSC) - Ratio of that part of illuminance, at a point on a given vertical plane, that is received directly from a CIE standard overcast sky, to illuminance on a horizontal plane due to an unobstructed hemisphere of the sky. Usually the 'given vertical plane' is the outside of a window wall. The VSC does not include reflected light, either from the ground or from other buildings

Annual probable sunlight hours (APSH) - The number of annual sunlight hours an unobstructed area would receive.

Winter probable sunlight hours (APSH) - The number of winter sunlight hours an unobstructed area would receive.

No sky line - The outline on the working plane of the area from which no sky can be seen

Obstruction angle - The angular altitude of the top of an obstruction above the horizontal, measured from a reference point in a vertical plane in a section perpendicular to the vertical plane.

Sky Factor - Ratio of the parts of illuminance at a point on a given plane that would be received directly through unglazed openings from a sky of uniform luminance, to illuminance on a horizontal plane due to the unobstructed hemisphere of this sky. The sky factor does not include reflected light, either from outdoor or indoor surfaces.

Working Plane - Horizontal, vertical or inclined plane in which a visual task lies. Normally the working plane may be taken to be horizontal, 0.85m above the floor in houses and factories, 0.7m above the floor in offices.

[illegible]

4. EXECUTIVE SUMMARY

Abbey Consultants (Southern) Ltd have been instructed to review the impact on the Sunlight and Daylight available to the surrounding dwellings as a result of the proposed redevelopment at 40-44 High Street, Northwood to determine if the proposed development complies with good practice guidelines.

The aim of the study is to assess the levels of light available to the windows of the existing dwellings at 38-46 High Street. The study compares the levels of light that is currently available to that of the proposed development. The report is based on the various numerical tests laid down in the Building Research Establishments (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a guide to good practice' by P J Littlefair 2022.

The VSC analysis of the existing dwellings at 38-46 High Street concluded that all of the adjacent window casements servicing habitable zones achieved in excess of the good practice figure of 0.8x averaging 0.96x the pre-development values and are therefore in full compliance with the BRE's daylight requirements.

All of the applicable windows facing within 90° of due south were assessed and returned figures in excess of the 0.8x good practice figure with the majority showing either no or minimal losses in either annual or winter sunlight hours with the window immediately adjacent achieving 0.97x and 0.93x pre-development values and as such the proposed development fully satisfies the BRE direct sunlight to windows requirements.

The above numerical results confirm the impact of the proposed development on the existing dwellings at 38-46 High Street are within good practice thresholds as such the proposed development is in full compliance with good practice with regard to the impact on surrounding properties and therefore sunlight and daylight should not be considered a constraint to the planning application.

5. INFORMATION SOURCES

5.1 DOCUMENTS CONSIDERED

This report has been produced based on the following drawings:

Table 1: Documents Considered

Drawing Title	Issue Date	Drawing Number
Site/Location Plan	Jun 2025	25/0204_S0.1
Existing Plans	Jun 2025	25/0204_S1
Existing Plans	Jun 2025	25/0204_S0
Existing Elevations	Jun 2025	25/0204_S3
Existing Elevations	Jun 2025	25/0204_S4
Proposed Plans	Jun 2025	25/0204_P1
Proposed Plans	Jun 2025	25/0204_P2
Proposed Plans	Jun 2025	25/0204_P3
Proposed Elevations	Jun 2025	25/0204_P4
Proposed Elevations & Sections	Jun 2025	25/0204_P5
Proposed Sections	Jun 2025	25/0204_P6
Proposed Sections	Jun 2025	25/0204_P7
Proposed Plans	Jun 2025	25/0204_P8
Proposed Plans	Jun 2025	25/0204_P9
Proposed Plans	Jun 2025	25/0204_P10

6. NATIONAL PLANNING POLICY FRAMEWORK

The BRE numerical guidelines should be considered in the context of the National Planning Policy Framework (NPPF) 2019, which stipulates that local planning authorities should take a flexible approach to daylight and sunlight to ensure the efficient use of land. The NPPF states:

"Local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards)."

7. METHODOLOGY OF THE STUDY

7.1 BRE GUIDE: SITE LAYOUT PLANNING FOR DAYLIGHT AND SUNLIGHT

The study is based on the various numerical tests laid down in the Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a guide to good practice' 2022 Edition. In general, the BRE tests are based on the requirements of the British Standard, BS EN 17037.

The standards set out in the BRE guide are intended to be used flexibly. The following sentiments are taken from the BRE guide:

(Its) "main aim is... to help to ensure good conditions in the local environment, considered broadly, with enough sunlight and daylight on or between buildings for good interior and exterior conditions." (Para 1.1)

"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." (Para 1.6)

"Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design." (Para 1.6)

The BRE guide is an advisory document, not a rigid set of rules. Care must therefore be taken to apply its recommendations in a manner fitting to the location of the proposed development.

In theory the BRE report's numerical guidelines may be applied to any setting, whether that is a city centre, suburban area or rural village. However, it notes, "In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high-rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings... The calculation methods...are entirely flexible in this respect." (Para 1.6)

At paragraph 2.2.3 it states "Note that numerical values given here are purely advisory. Different criteria may be used, based upon the requirements for daylighting in an area viewed against other site layout constraints." Appendix F of the BRE Guide gives advice on setting alternative target values for skylight access. At page 62 it states "different targets may be used, based on the special requirements of the proposed development or its location".

Rigid application of the numerical guidelines could well give rise to an inappropriate answer and form of development for city centre sites, in which case it may be appropriate to adopt lower target values that are more appropriate to the location concerned.

7.2 DAYLIGHT TO WINDOWS

Diffuse daylight is the light received from the sun which has been diffused through the sky. Even on a cloudy day when the sun is not visible, a room will continue to be lit with light from the sky. This is diffuse daylight.

Diffuse daylight calculations should be undertaken to all rooms where daylight is required, including living rooms, kitchens and bedrooms. Usually, if a kitchen is less than 13m² it is considered to be a non-habitable room and the daylight tests need not be applied. The BRE guide states that windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed.

The BRE guide contains two tests which measure diffuse daylight:

7.2.1 Test 1 Vertical Sky Component

The percentage of the sky visible from the centre of a window is known as the Vertical Sky Component. Diffuse daylight may be adversely affected if after a development the Vertical Sky Component is both less than 27% and less than 0.8 times its former value.

7.2.2 Test 2 Daylight Distribution

The BRE guide states that where room layouts are known, the impact on the daylighting distribution can be found by plotting the 'no sky line' in each of the main rooms. The no-sky line is a line which separates areas of the working plane that can and cannot have a direct view of the sky. Daylight may be adversely affected if after the development the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value.

7.3 SUNLIGHT AVAILABILITY TO WINDOWS

The BRE sunlight tests should be applied to all main living rooms and conservatories which have a window which faces within 90 degrees of due south. The guide states that kitchens and bedrooms are less important, although care should be taken not to block too much sunlight.

The BRE guide states that sunlight availability may be adversely affected if the centre of the window:

receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September and 21 March and receives less than 0.8 times its former sunlight hours during either period and has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours

8. RESULTS

8.1 DAYLIGHT TO WINDOWS

Vertical Sky Component is a measure of the amount of sky visible from a centre point of a window. A window that achieves 27% or more is considered to provide good levels of light, but if with the proposed development in place the figure is both less than 27% and would be reduced by 20% or more than pre-development values, the loss would be noticeable.

VSC calculations have been undertaken for the existing dwellings at 38-46 High Street to determine to what extent the existing dwellings/buildings would be affected by the proposed works.

In the paper by Paul Littlefair "Site Layout Planning for Daylight and Sunlight: A guide to good practice" Third Edition (2022), good practice in relation to VSC calculations to existing dwellings is defined as the post-development VSC achieving a minimum of 0.8x the pre-development value, which would be unnoticeable to the human eye and therefore not have a significant effect on the existing dwellings.

The VSC analysis of the existing dwellings at 38-46 High Street concluded that all of the adjacent window casements servicing habitable zones achieved in excess of the good practice figure of 0.8x averaging 0.96x the pre-development values and are therefore in full compliance with the BRE's daylight requirements.

8.2 SUNLIGHT TO WINDOWS

Probable sunlight hours refers to the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloud cover for the location in question and has been assessed for each of the windows that face within 90° of due south.

BS8206-2 recommends that windows servicing rooms with a expectation for good sunlight should receive at least 25% of annual probable sunlight hours (APSH); in addition to, in the winter months between 21st September and 21st March at least 5% of APSH, otherwise known as Winter Probable Sunlight Hours (WPSH).

All of the applicable windows facing within 90° of due south were assessed and returned figures in excess of the 0.8x good practice figure with the majority showing either no or minimal losses in either annual or winter sunlight hours with the window immediately adjacent achieving 0.97x and 0.93x pre-development values and as such the proposed development fully satisfies the BRE direct sunlight to windows requirements.

9. CONCLUSION

Abbey Consultants (Southern) Ltd have been instructed by ES Architecture Ltd to review the Sunlight and Daylight impacts on the proposed 40-44 High Street, Northwood development to determine if the proposed scheme complies with good practice guidelines.

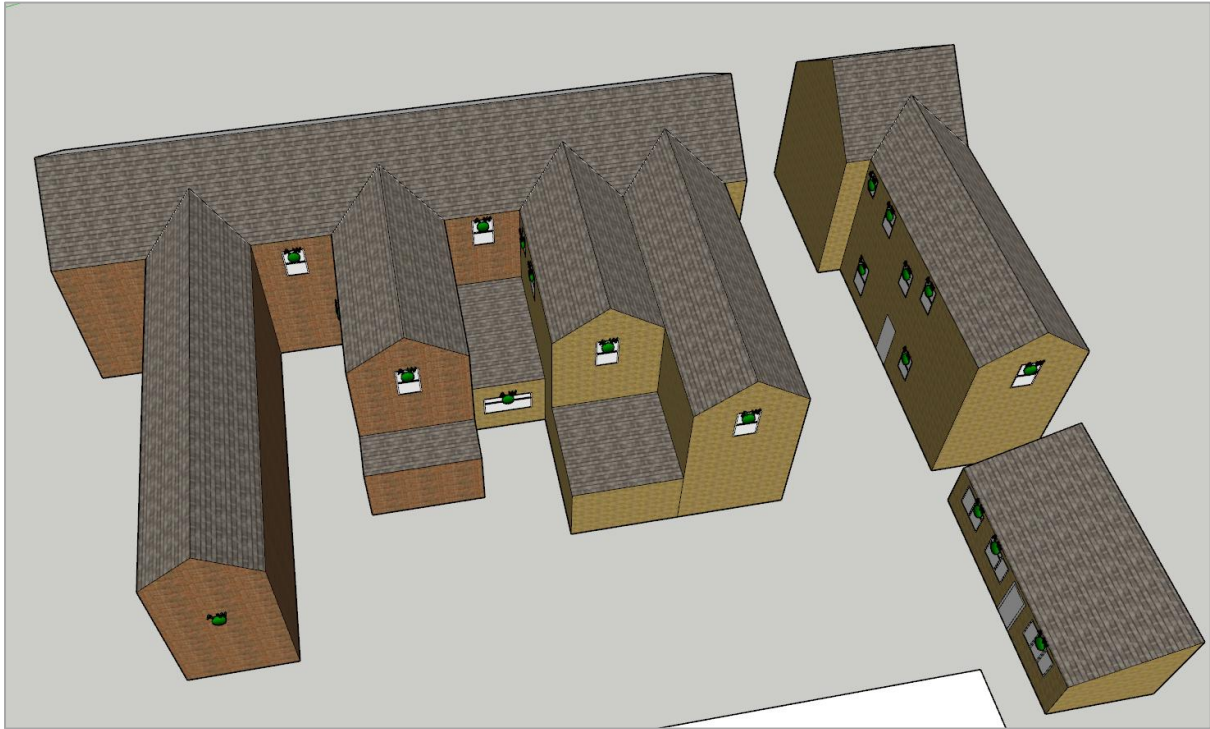
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APPENDIX 1: VERTICAL SKY COMPONENT ANALYSIS FOR THE PROPOSED DEVELOPMENT



APPENDIX 2: VERTICAL SKY COMPONENT RESULTS FOR THE EXISTING PROPERTIES AT 38-44 HIGH STREET

Floor Ref.	Window Ref.	TrafficLight Id		VSC	Pr/Ex	Meets BRE Criteria	Window Orientation
38-44 High Street							
Ground	W1	 1	Existing	23.93	0.89	YES	110°
			Proposed	21.25			
First	W1	 2	Existing	28.91	0.99	YES	110°
			Proposed	28.65			
First	W2	 3	Existing	27.08	1.00	YES	200°
			Proposed	27.07			
First	W3	 4	Existing	37.93	0.97	YES	110°
			Proposed	36.77			
First	W4	 5	Existing	30.62	0.99	YES	110°
			Proposed	30.24			
First	W5	 6	Existing	24.31	1.00	YES	200°
			Proposed	24.23			
First	W6	 7	Existing	28.22	1.00	YES	200°
			Proposed	28.13			
First	W7	 8	Existing	36.25	0.96	YES	110°
			Proposed	34.96			
First	W8	 9	Existing	39.62	0.92	YES	110°
			Proposed	36.41			
First	W9	 10	Existing	39.59	0.96	YES	110°
			Proposed	37.87			
46 High Street							
Ground	W1	 11	Existing	17.48	0.97	YES	200°
			Proposed	17.04			
Ground	W2	 12	Existing	23.18	0.95	YES	200°
			Proposed	21.93			
Ground	W3	 13	Existing	31.07	0.91	YES	200°
			Proposed	28.36			
Ground	W4	 14	Existing	31.99	0.90	YES	200°
			Proposed	28.81			
Ground	W5	 15	Existing	32.56	0.82	YES	200°
			Proposed	26.62			
First	W1	 16	Existing	27.66	1.00	YES	200°
			Proposed	27.53			
First	W2	 17	Existing	32.56	1.00	YES	200°
			Proposed	32.40			
First	W3	 18	Existing	30.68	0.99	YES	200°
			Proposed	30.23			
First	W4	 19	Existing	34.16	0.99	YES	200°
			Proposed	33.78			
First	W5	 20	Existing	39.60	0.98	YES	110°
			Proposed	38.93			

APPENDIX 3: ANNUAL AND WINTER PROBABLE SUNLIGHT HOURS RESULTS FOR THE EXISTING PROPERTIES AT 38-46 HIGH

Floor Ref.	Window Ref.		Window Orientation	Annual	Pr/Ex	Meets BRE Criteria	Winter	Pr/Ex	Meets BRE Criteria
38-44 High Street									
Ground	W1	Existing	110°	33.00	0.88	YES	7.00	0.86	YES
		Proposed		29.00			6.00		
First	W1	Existing	110°	45.00	1.00	YES	7.00	1.00	YES
		Proposed		45.00			7.00		
First	W2	Existing	200°	67.00	1.00	YES	17.00	1.00	YES
		Proposed		67.00			17.00		
First	W3	Existing	110°	60.00	1.00	YES	19.00	1.00	YES
		Proposed		60.00			19.00		
First	W4	Existing	110°	49.00	1.00	YES	11.00	1.00	YES
		Proposed		49.00			11.00		
First	W5	Existing	200°	61.00	1.00	YES	16.00	1.00	YES
		Proposed		61.00			16.00		
First	W6	Existing	200°	68.00	1.00	YES	18.00	1.00	YES
		Proposed		68.00			18.00		
First	W7	Existing	110°	60.00	1.00	YES	20.00	1.00	YES
		Proposed		60.00			20.00		
First	W8	Existing	110°	61.00	0.93	YES	20.00	1.00	YES
		Proposed		57.00			20.00		
First	W9	Existing	110°	61.00	0.98	YES	20.00	0.95	YES
		Proposed		60.00			19.00		
46 High Street									
Ground	W1	Existing	200°	49.00	0.98	YES	9.00	0.89	YES
		Proposed		48.00			8.00		
Ground	W2	Existing	200°	60.00	0.98	YES	11.00	0.91	YES
		Proposed		59.00			10.00		
Ground	W3	Existing	200°	73.00	0.90	YES	23.00	0.70	YES
		Proposed		66.00			16.00		
Ground	W4	Existing	200°	75.00	0.91	YES	24.00	0.71	YES
		Proposed		68.00			17.00		
Ground	W5	Existing	200°	76.00	0.84	YES	25.00	0.56	YES
		Proposed		64.00			14.00		
First	W1	Existing	200°	66.00	1.00	YES	23.00	1.00	YES
		Proposed		66.00			23.00		
First	W2	Existing	200°	77.00	1.00	YES	26.00	1.00	YES
		Proposed		77.00			26.00		
First	W3	Existing	200°	74.00	0.99	YES	21.00	0.95	YES
		Proposed		73.00			20.00		
First	W4	Existing	200°	81.00	1.00	YES	26.00	1.00	YES
		Proposed		81.00			26.00		
First	W5	Existing	110°	61.00	1.00	YES	20.00	1.00	YES
		Proposed		61.00			20.00		

APPENDIX 4: SHADOW ANALYSIS FOR THE EXISTING PROPERTIES AT 38-46 HIGH STREET

Figure 1: Shadow Analysis for the proposed development on March 21st at 10am



Figure 2: Shadow Analysis for the existing development on March 21st at 10am



Figure 3: Shadow Analysis for the proposed development on March 21st at 2pm

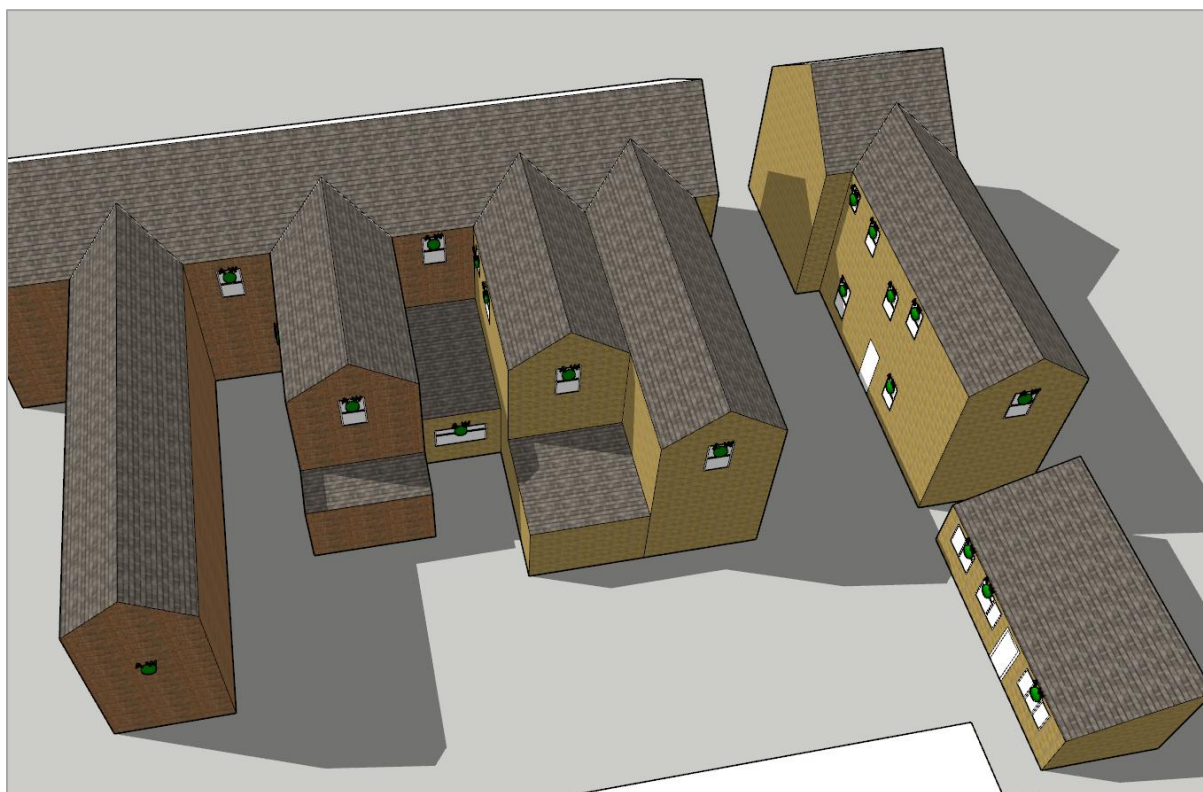


Figure 4: Shadow Analysis for the existing development on March 21st at 2pm

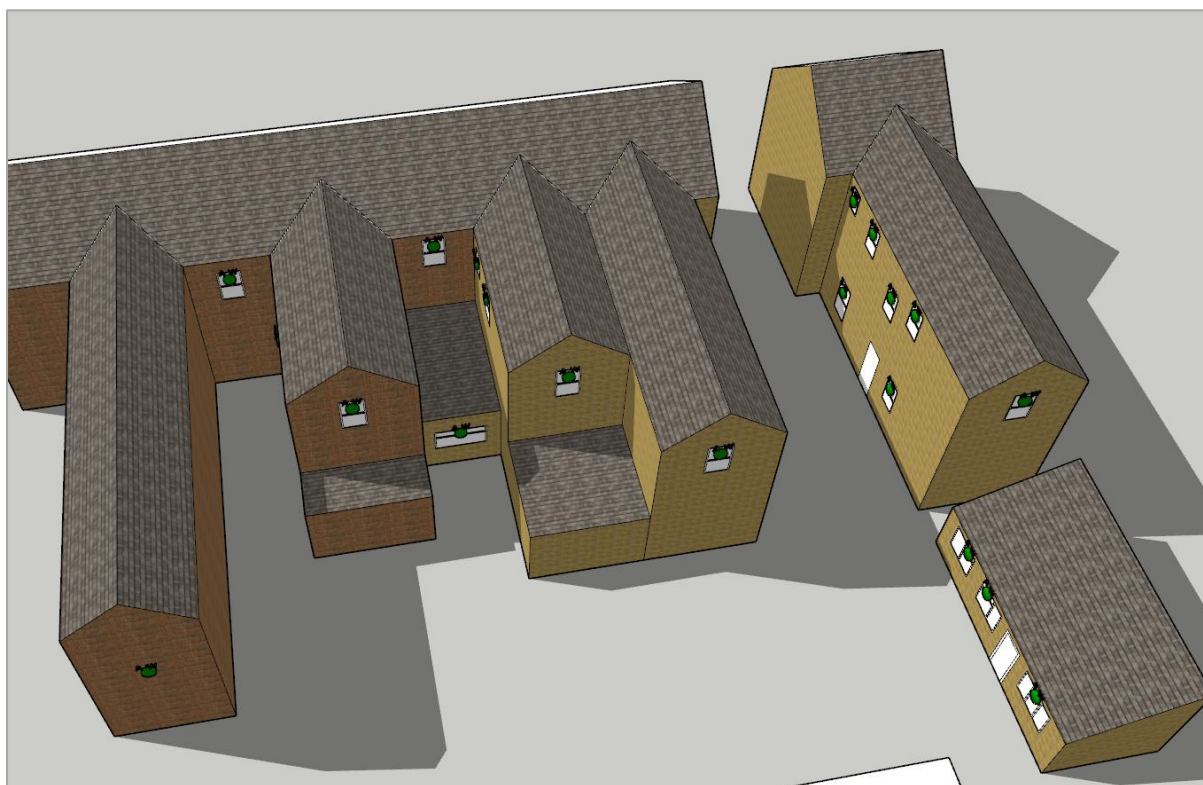


Figure 5: Shadow Analysis for the proposed development on June 21st at 10am



Figure 6: Shadow Analysis for the proposed development on June 21st at 10am



Figure 7: Shadow Analysis for the proposed development on June 21st at 2pm

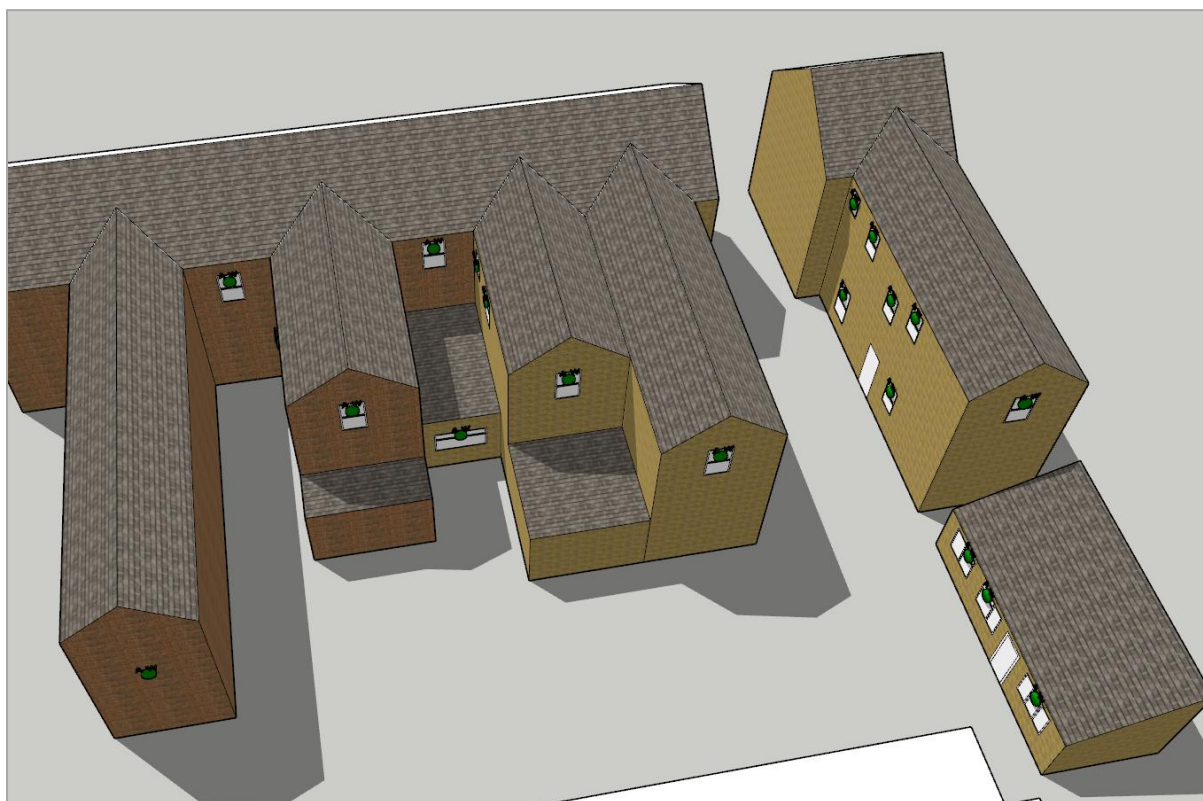


Figure 8: Shadow Analysis for the existing development on June 21st at 2pm

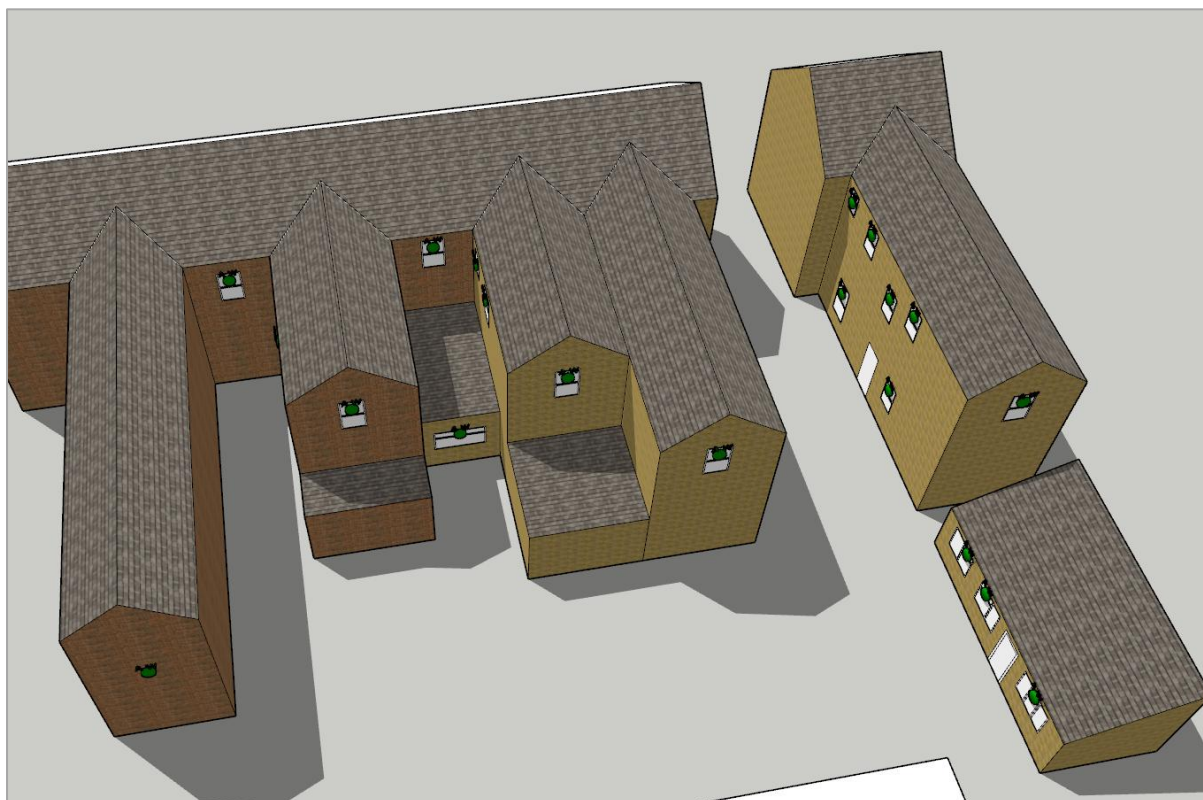


Figure 9: Shadow Analysis for the proposed development on September 21st at 10am



Figure 10: Shadow Analysis for the existing development on September 21st at 10am



Figure 11: Shadow Analysis for the proposed development on September 21st at 2pm

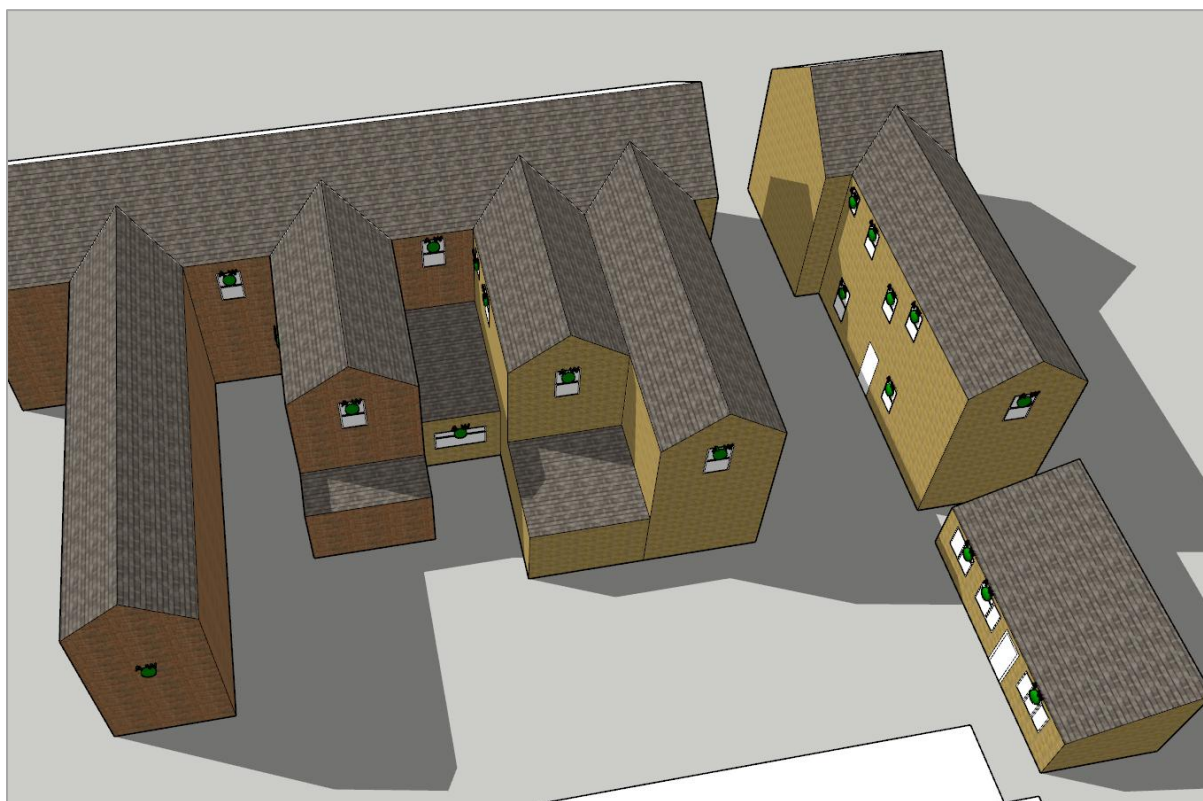


Figure 12: Shadow Analysis for the proposed development on September 21st at 2pm

