



**Rear of the Lord Hill Pub, 40 Watling Street  
Bexleyheath**

**Daylight, Sunlight, and Overshadowing Assessment  
for Adjacent Properties and  
Proposed Development**

## Document Issue Record

This document has been revised and issued as below:

Issue	Date	Comments	Prepared By	Checked By
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### Disclaimer

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Calculations are based on the drawings and information provided to us, which have been accepted in good faith as being accurate and valid. The accuracy of this information may have an impact on the daylight, sunlight, and overshadowing assessments.

We have used our best endeavours to ensure that all relevant windows within the neighbouring properties and that all external amenity spaces have been identified.

We can make no guarantee as to the status (successful/unsuccessful) of the planning application following the submission of our report.

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## 1.0 Executive Summary

A daylight, sunlight, and overshadowing assessment has been carried out for the surrounding properties that are close to the proposed development at the Rear of the Lord Hill Pub, Watling Street, Bexleyheath.

An internal daylight assessment has also been carried out to determine the amount of daylight received by the proposed developments habitable rooms. This report outlines the results of the assessments in order to assist with the developments planning application.

Calculations have been based on the drawings and information provided to us by the client / architect, which have been accepted in good faith as being accurate and valid, internet and OS mapping sources, and publicly available planning records where available. The accuracy of this information may have an impact on the assessments carried out.

The methodology used for this assessment follows the most recognised guidance document for daylight and sunlight within dwellings and is titled 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice' *Second Edition 2011*; by Paul Littlefair and is published by the BRE.

### 1.1 Assessment for Surrounding Properties

This assessment investigated the changes in natural light received by surrounding properties under the existing and proposed schemes. The following daylight, sunlight, and overshadowing assessments were carried out with the use of computer modelling software in order to provide the most accurate results possible.

- Vertical Sky Component (VSC)
- Annual and Winter Probable Sunlight Hours
- Overshadowing Assessment

The VSC results for the surrounding windows show that they would all only receive a negligible impact. This is because their VSC values under the proposed scheme are comfortably within 0.8 times of their former values. Therefore, all of the neighbouring windows would meet the daylight requirements of the BRE Guide.

The sunlight results for the southerly facing windows assessed show that they would receive no impact under the proposed scheme. Therefore, the BRE Guidelines would be satisfied in regard to sunlight.

The overshadowing results show that the proposed development would have no impact on the amount of overshadowing experienced by the surrounding garden amenity spaces, therefore satisfying the overshadowing requirements of the BRE Guidelines.

For the reasons stated above, we feel that the proposed development should be considered as acceptable overall in regard to its neighbourly impact on daylight, sunlight, and overshadowing.

## 1.2 Assessment for Proposed Development

This assessment investigated the amount of natural daylight received by the habitable rooms (Kitchen/Living/Dining Areas and Bedrooms) within the proposed development itself.

The following assessments were carried out with the use of computer modelling software in order to provide the most accurate results possible.

- Average Daylight Factors

The ADF results show that the newly proposed habitable rooms would receive average daylight factors greater than the minimum recommend by British Standard BS 8206-2:2008 and therefore the requirements of the BRE Guide would be satisfied.

The proposed development should therefore also be considered as acceptable overall in regard to its own amount of natural daylight received.

## 2.0 Introduction

EEABS (Elmstead Energy Assessments & Building Services) has been instructed to undertake a daylight, sunlight, and overshadowing assessment for the nearby properties of the proposed development located at the Rear of the Lord Hill Pub, Watling Street, Bexleyheath.

We were also asked to determine the amount of daylight that is to be received by the habitable rooms within the proposed development itself.

This report will therefore investigate the changes in natural daylight and sunlight received between the existing and proposed plans for surrounding properties. It will also determine the average daylight factors achieved within each of the proposed developments habitable rooms.

The key elements of this report are:

- To review the relevant guidance and methodology with respect to daylight, sunlight, and overshadowing that relate to the development.
- Calculate the surrounding properties levels of daylight, sunlight and overshadowing for the existing scheme in accordance with standard methodology.
- Calculate the surrounding properties levels of daylight, sunlight and overshadowing for the proposed scheme in accordance with standard methodology.
- Calculate the internal average daylight factors received by the proposed developments habitable rooms.
- To summarise and compare the findings against regulation guidelines for daylight and sunlight of neighbouring buildings, the overshadowing of amenity spaces, and the daylight received by new rooms.

## 2.1 The Site and Development Proposal

The site is located at the Rear of the Lord Hill Pub, Watling Street, Bexleyheath and can be seen outlined in red on the Site Plan below. The surrounding properties that have been investigated under this assessment are.

- Florin Court
- Guinea Court
- Lord Hill Pub (Upper Floors)
- 33 Sterling Road
- 34 Sterling Road

This is because these properties are domestic dwellings that are closest to the proposed development and either have windows that face it or have garden amenity areas that may be affected. The Bexley Civic Offices, 34-36 Car Service, and ground floor of the Lord Hill Pub are also close to the proposed new development but as these buildings are believed to be commercial in nature, they do not have a reasonable expectation to daylight.

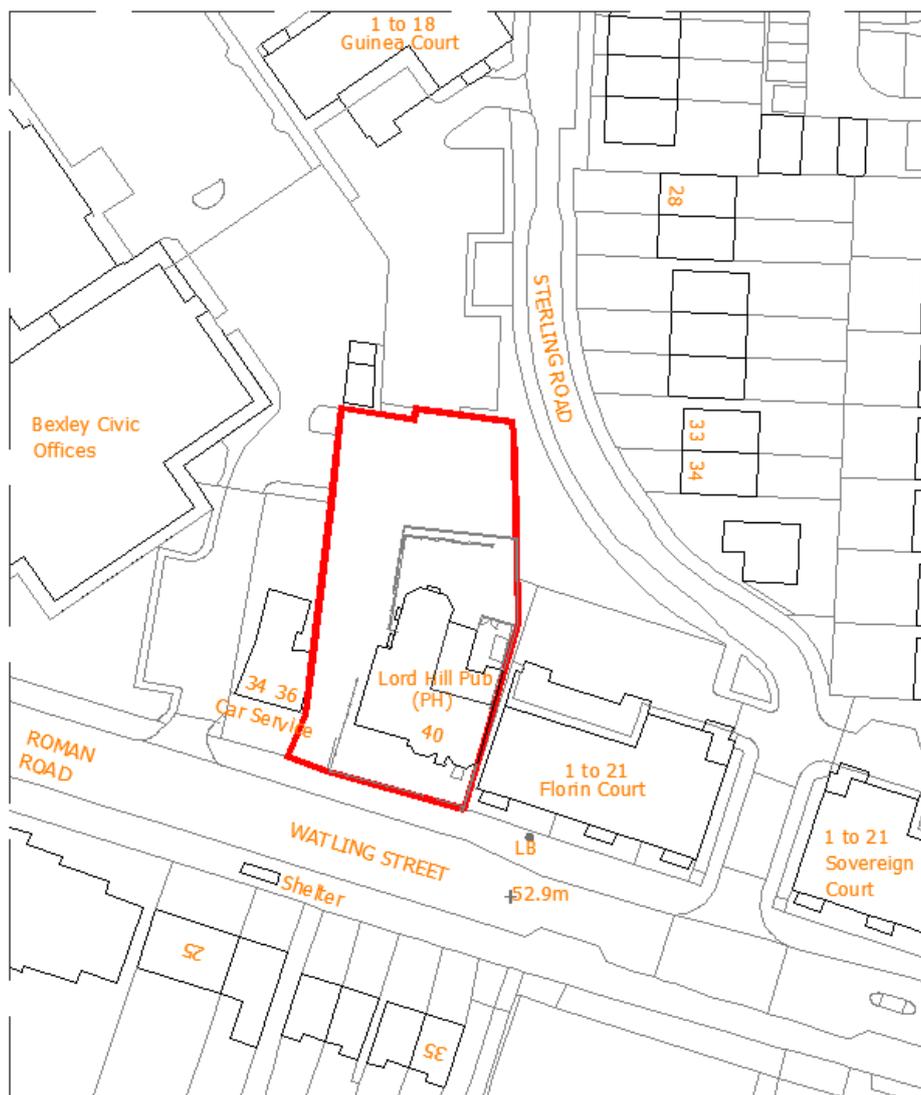


Figure 1 - Site Plan of The Rear of the Lord Hill Pub, Bexleyheath

The proposal is for a new 3 Storey Apartment Block Building housing 5No. self-contained flats with car parking spaces, bicycle storage, and bin storage on the ground floor. Figure 2 below shows proposed Architectural elevations and a site plan of the development.

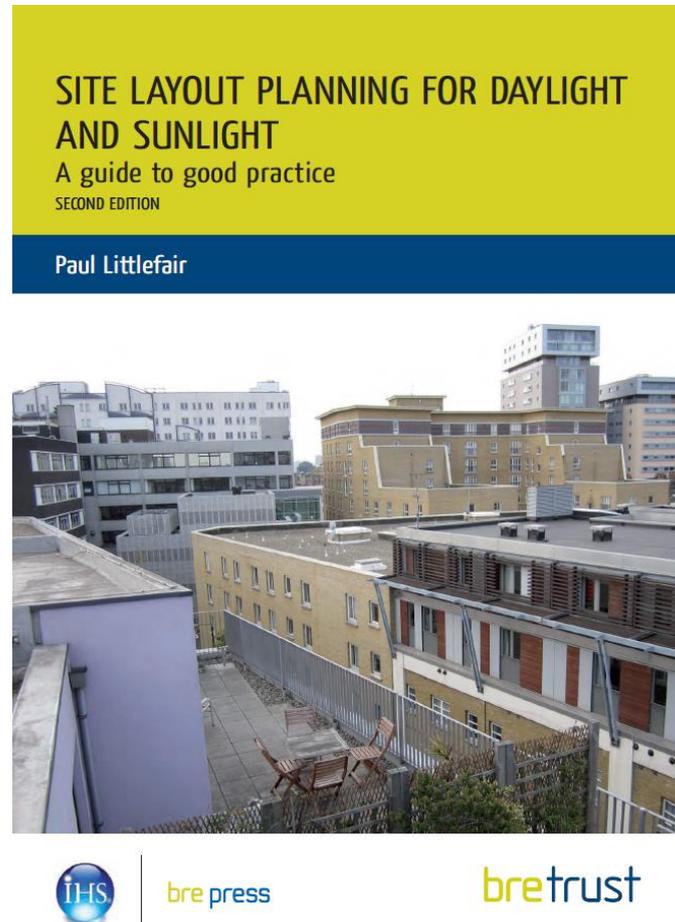


**Figure 2 - Proposed Architectural Elevations and Site Plan**

This assessment has been based on the drawings and information provided to us by the client / architect, which have been accepted in good faith as being accurate and valid, internet and OS mapping sources, and publicly available planning records where available. A drawing register can be found within Appendix A.

## 2.2 Planning Policy and Guidance

The most recognised guidance document for natural light within dwellings is titled 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice' *Second Edition 2011*; by Paul Littlefair and is published by the Building Research Establishment.



**Figure 3 - BRE: Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice**

Although the BRE guide clearly states that its recommendations are not mandatory and the document should not be considered as an instrument of planning policy, it can be used in conjunction with the British Standard BS 8206-2:2008, Lighting for Buildings - Part 2: Code of Practice for Daylighting.

While the BRE Guidelines are the most recognised document for natural light within dwellings they also do state that:

*"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design. In special circumstances the developer or planning authority may wish to use different target values."*

As the numerical values within the BRE guide are purely advisable, Appendix I of the guide provides further assistance on how to assess the impact to daylight and sunlight of the surrounding properties.

Criteria	Impact
Where the loss of skylight or sunlight fully meets the guidelines and only a small number of windows or limited area of open space lose light.	None / Negligible
<p>Where the loss of skylight or sunlight is only just within the guidelines and a large number of windows or open spaces are affected.</p> <p>Where the loss of skylight or sunlight does not meet the guidelines but one or more of the following applies:</p> <ul style="list-style-type: none"> <li>• Only a small number of windows or limited area of open spaces are affected.</li> <li>• The loss of light is only just outside the guidelines.</li> <li>• The affected room has other sources of light.</li> <li>• The affected building/room or open space has a low requirement for light.</li> </ul>	Minor Adverse
<p>Where the loss of skylight or sunlight does not meet the guidelines and one or more of the following applies:</p> <ul style="list-style-type: none"> <li>• A large number of windows or large area of open space are affected.</li> <li>• The loss of light is substantially outside the guidelines.</li> <li>• All windows within a particular property are affected.</li> <li>• The affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight.</li> </ul>	Major Adverse

The methodology and target benchmarks set out within the BRE guide have been used to assess the surrounding properties under the existing and proposed schemes.

We generally consider a value greater than 0.8 times its former value to have a Negligible impact, between 0.5 and 0.8 to have a minor impact, and a value less than 0.5 to have a major impact.

The BRE Guide states that these guidelines “are intended for rooms in adjoining properties where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed.

Any trees located close to proposed development have been excluded from the model as recommended by the BRE Guide, which states “Where the effect of a new building on existing buildings nearby is being analysed, it is usual to ignore the effect of existing trees.”

## 2.3 Methodology

The following methodology and calculations set out within the BRE Guide 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice' *Second Edition 2011* were used to carry out the daylight, sunlight, and overshadowing assessment for the surrounding properties of the proposed development located at the Rear of the Lord Hill Pub, Watling Street, Bexleyheath.

### 2.3.1 Daylight

#### Vertical Sky Component (VSC)

The Vertical Sky Component (VSC) is a ratio (expressed as a percentage) of the direct sky illuminance falling on the outside mid-point of a window, to the horizontal illuminance under a standard CIE overcast sky. For example, a window looking across an unobstructed field would achieve the highest possible value of just under 40% (39.6%).

For a window to be considered as receiving a good level of daylight, a VSC value of 27% should be achieved. However, for existing windows if the VSC value is less than 27%, then a window is still said to achieve a good level of daylight provided its VSC is within 0.8 times its former value.

#### Average Daylight Factor (ADF)

The average daylight factor is the ratio of the average illuminance on the working plane in a room, divided by the outside illuminance on a horizontal surface under a CIE overcast sky. The ratio is usually expressed as a percentage and guidance for adequate levels of daylight are laid out within the British Standard BS 8206-2:2008, Lighting for Buildings - Part 2: Code of Practice for Daylighting and referenced within the BRE guide. For combined Living/Kitchen and studio areas a value of 1.5% should be achieved.

Room type	Minimum average daylight factor %
Bedrooms	1
Living rooms	1.5
Kitchens	2

Figure 4 - BS 8206-2:2008 Minimum Average Daylight Factors

As detailed plans have been provided for the proposed new development, the daylight factor calculation will be carried out on the habitable rooms as recommended by the BRE Guide.

*“To Check that adequate daylight is provided in new rooms, the ADF may be calculated and compared with the recommendations in BS 8206-2:2008, Lighting for Buildings - Part 2: Code of Practice for Daylighting”.*

### **2.3.2 Sunlight**

#### **Annual and Winter Probable Sunlight Hours**

To determine if an adequate amount of sunlight is achieved within a room the following criteria needs to be met. At least one main window wall should face within 90° of due south and at least one window should receive at least 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months between 21<sup>st</sup> September and 21<sup>st</sup> March.

The term Annual probable sunlight hours means the total amount of hours during a year in which direct sunlight will reach the ground. The winter annual probable sunlight hours are the same thing but only during 21<sup>st</sup> September to 21<sup>st</sup> March.

If any of the surrounding windows that face within 90° of due south fail to meet the 25% of annual probable sunlight hours and 5% of winter sunlight hours, then they can still be said to receive a good amount of sunlight providing they are within 0.8 times their former value or the reduction in sunlight received over the whole year is not greater than 4%.

The BRE guide states that the above guidance is to be applied for living room windows only.

### **2.3.3 Overshadowing**

To be determined as adequately sunlit throughout the year, at least half of a garden and other similar amenity spaces should receive at least two hours of sunlight on 21<sup>st</sup> March.

For the existing garden or amenity spaces being calculated due to the proposed development, the results should be no less than 0.8 times their former values in order for a loss of light to not be noticeable.

### 3.0 Dynamic Simulation Modelling

EDSL TAS Dynamic Simulation Modelling software was used to carry out the daylight, sunlight, and overshadowing calculations, as this can provide a more accurate means of assessment over the 'by hand' indicator method outlined within the BRE guide.

The daylight calculations are carried out under a standard CIE overcast sky. For the sunlight and overshadowing calculations, the computer model uses actual hourly weather data for the proposed location, in this instance CIBSE London TRY weather data was used.

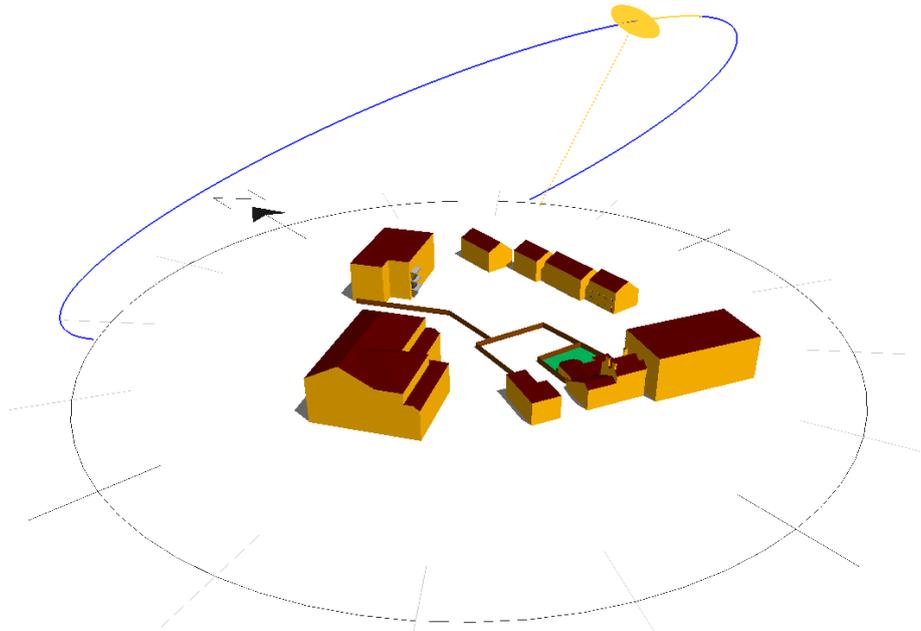


Figure 5 - EDSL TAS Computer Model of the Existing Site

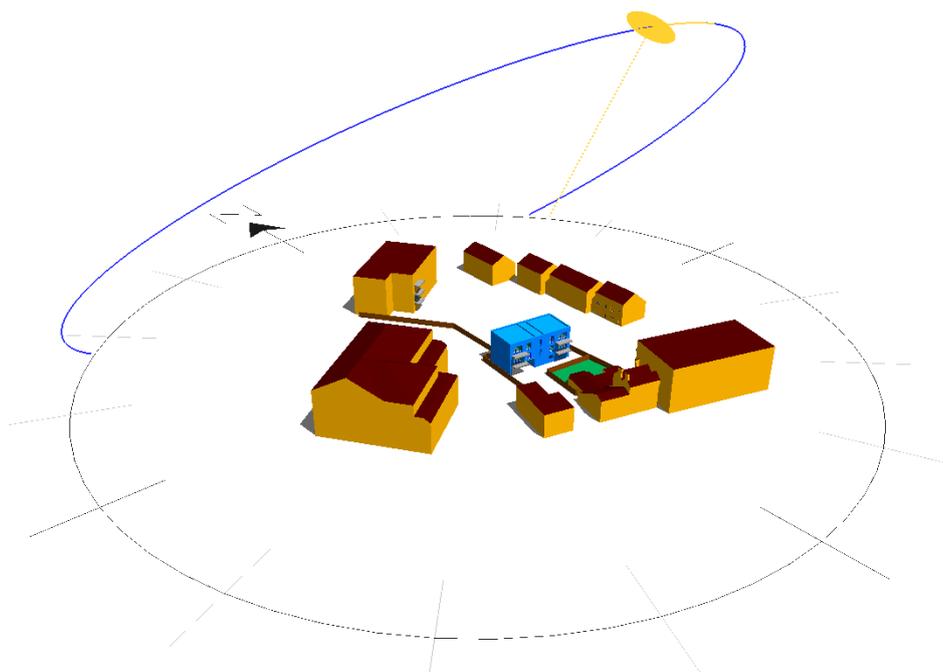


Figure 6 - EDSL TAS Computer Model of the Proposed Site

## 4.0 Surrounding Properties

The Bexley Civic Offices, 34-36 Car Service, and ground floor of the Lord Hill Pub that are close to the proposed development are industrial/commercial type buildings which are expected to use artificial lighting throughout the day. As a result, they do not have a reasonable expectation to daylight and any windows within these properties are not expected to be significantly impacted by the proposed development.

The windows within surrounding domestic properties that were most likely to be affected by the proposed development have undergone the following calculations and can be found in Appendix B - Window Reference Diagrams.

### 4.1 Daylight Assessments

#### 4.1.1 Vertical Sky Component

The VSC calculated for the surrounding windows can be found in the tables below.

Property	Win Ref	Orientation (°)	VSC Existing (%)	VSC Proposed (%)	VSC Ratio	Impact
Florin Court	W1	18	32.58	31.78	0.98	Negligible
	W2	18	19.76	18.64	0.94	Negligible
Lord Hill Pub (Upper Floors)	W1	16	22.35	21.54	0.96	Negligible
	W2	16	34.52	33.40	0.97	Negligible
	W3	16	35.43	34.16	0.96	Negligible
	W4	16	23.31	23.17	0.99	Negligible
	W5	16	36.32	36.02	0.99	Negligible
Guinea Court	W1	146	19.06	18.59	0.98	Negligible
	W2	146	32.63	32.19	0.99	Negligible
33-34 Sterling Road	W1	273	32.56	31.35	0.96	Negligible
	W2	273	34.35	32.73	0.95	Negligible
	W3	273	35.04	33.79	0.96	Negligible
	W4	273	34.62	33.33	0.96	Negligible
	W5	273	33.93	33.16	0.98	Negligible
	W6	273	35.80	35.16	0.98	Negligible
	W7	273	35.99	35.40	0.98	Negligible
	W8	273	35.91	35.41	0.99	Negligible

The VSC results for the surrounding windows show that they would all only receive a negligible impact. This is because their VSC values under the proposed scheme are comfortably within 0.8 times their former values. Therefore, all of the neighbouring windows would meet the daylight requirements of the BRE Guide.

## 4.2 Sunlight Assessment

### 4.2.1 Annual and Winter Probable Sunlight Hours

Only living room windows within 90° of due south need to have the amount of sunlight they can receive assessed (Due south is taken as 180°, therefore a windows orientation should be between 90° and 270°). The orientation of each of the windows can be seen within the VSC results.

As the exact room type behind the windows is unknown, to provide a comprehensive assessment any window within 90° of due south has been assessed.

Property	Win Ref	APSH Ext (%)	APSH Pro (%)	Ratio	Impact	WPSH Ext (%)	WPSH Pro (%)	Ratio	Impact
Guinea Court	W1	41	41	1.00	None	25	25	1.00	None
	W2	59	59	1.00	None	22	22	1.00	None

The sunlight results for the southerly facing windows assessed show that they would receive no impact under the proposed scheme. Therefore, the BRE Guidelines would be satisfied in regard to sunlight.

### 4.3 Overshadowing Assessment

The external garden amenity spaces located close to the proposed development have been assessed for their overshadowing. The only amenity area close to the proposed development is believed to be the garden of the Lord Hill Pub.

Overshadowing assessment results can be seen in the table below, the lit area is the area of the zone that receives at least 2 hours of sunlight on the 21st of March.

Outside Space	Area (m <sup>2</sup> )	Existing Scheme Lit Area (m <sup>2</sup> )	Proposed Scheme Lit Area (m <sup>2</sup> )	Ratio	Impact
Lord Hill Pub - Garden Amenity Area	147.64	107.21	107.21	1.00	None

The overshadowing results show that the proposed development would have no impact on the amount of overshadowing experienced by the surrounding garden amenity spaces, therefore satisfying the overshadowing requirements of the BRE Guidelines.

Shadow cast images showing the path of the sun and shadows produced for March 21<sup>st</sup>, under the existing and proposed schemes, can be found within Appendix C.

## 5.0 Proposed Development

An average daylight factor calculation has been carried out on the habitable rooms within the proposed development located at the Rear of the Lord Hill Pub, Watling Street, Bexleyheath as recommended by the BRE Guide.

### 5.1 Average Daylight Factor (ADF)

For the average daylight factor calculation, the windows were assumed to be clear double glazing with a light transmittance value of 0.80. The working plane height was assumed to be 0.85m.

The internal light reflectance's of the floors, walls and roofs were assumed to be typical values of 0.30, 0.60 and 0.80, respectively. (Each surface/paint colour has its own light reflectance value ranging from 0 - 1, with black being on the low end of the scale around 0.05 and white being on the high end around 0.90). A higher value helps to reflect more daylight entering through the windows to the rear of each space, improving the overall average daylight factor.

Building	Room	Target ADF (%)	Calculated ADF (%)	Result
Proposed Development	Flat 1 - KLD	1.50	1.55	Above Target
	Flat 1 - Bed 1	1.00	1.80	Above Target
	Flat 1 - Bed 2	1.00	1.67	Above Target
	Flat 2 - KLD	1.50	1.64	Above Target
	Flat 2 - Bed 1	1.00	1.96	Above Target
	Flat 2 - Bed 2	1.00	2.25	Above Target
	Flat 3 - KLD	1.50	1.53	Above Target
	Flat 3 - Bed 1	1.00	1.96	Above Target
	Flat 3 - Bed 2	1.00	2.14	Above Target
	Flat 4 - KLD	1.50	2.17	Above Target
	Flat 4 - Bed 1	1.00	2.09	Above Target
	Flat 4 - Bed 2	1.00	1.83	Above Target
	Flat 4 - Bed 3	1.00	2.53	Above Target
	Flat 5 - KLD	1.50	2.15	Above Target
	Flat 5 - Bed 1	1.00	1.84	Above Target

The ADF results show that the newly proposed habitable rooms would receive average daylight factors greater than the minimum recommend by British Standard BS 8206-2:2008 and therefore the requirements of the BRE Guide would be satisfied.

Daylight Factor plots can be found within Appendix D.

## Appendix A - Drawing Register

Drawing Number	Drawing Title
01	Location and Site Plans
02	Existing Ground Floor Plan
03	Existing Elevations
04	Proposed Ground Floor Plan
05	Proposed First Floor Plan
06	Proposed Second Floor Plan
07	Proposed Roof Plan
08	Proposed Elevations
09	Proposed Front Elevations - Street View

**Appendix B - Window Reference Diagrams**

**Florin Court – Window References**



**Lord Hill Pub (Upper Floors) – Window References**



**Guinea Court – Window References**

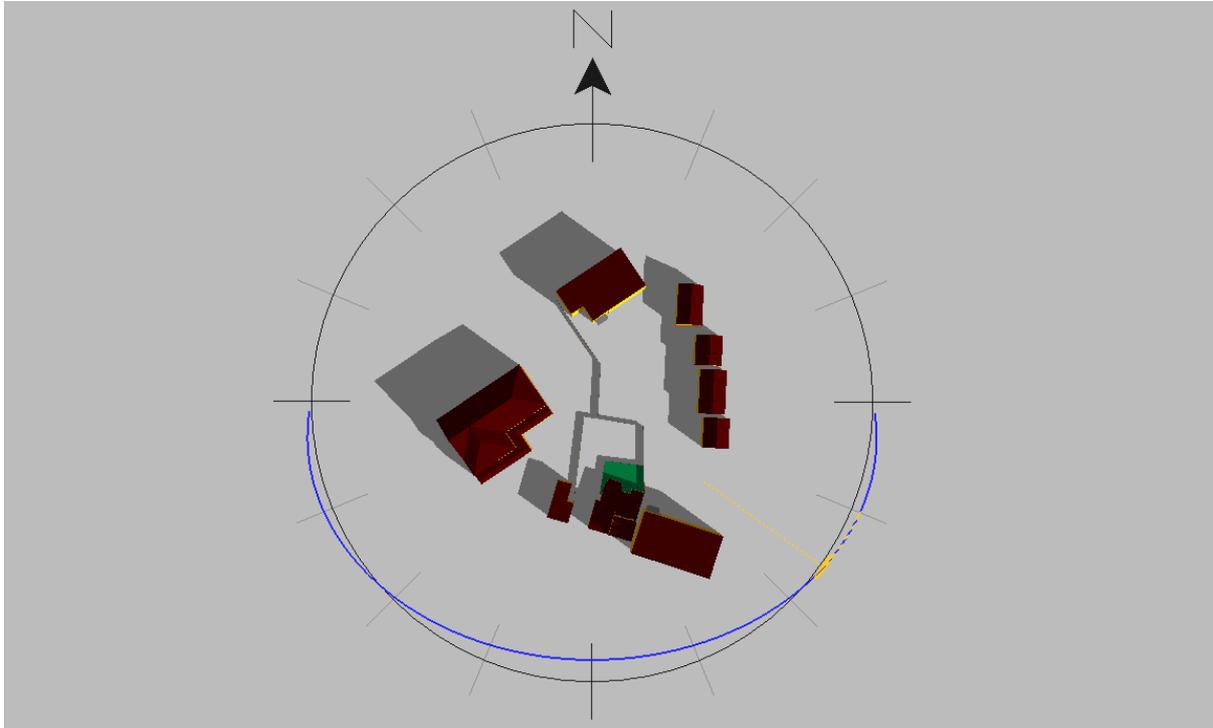


**33 and 34 Sterling Road – Window References**

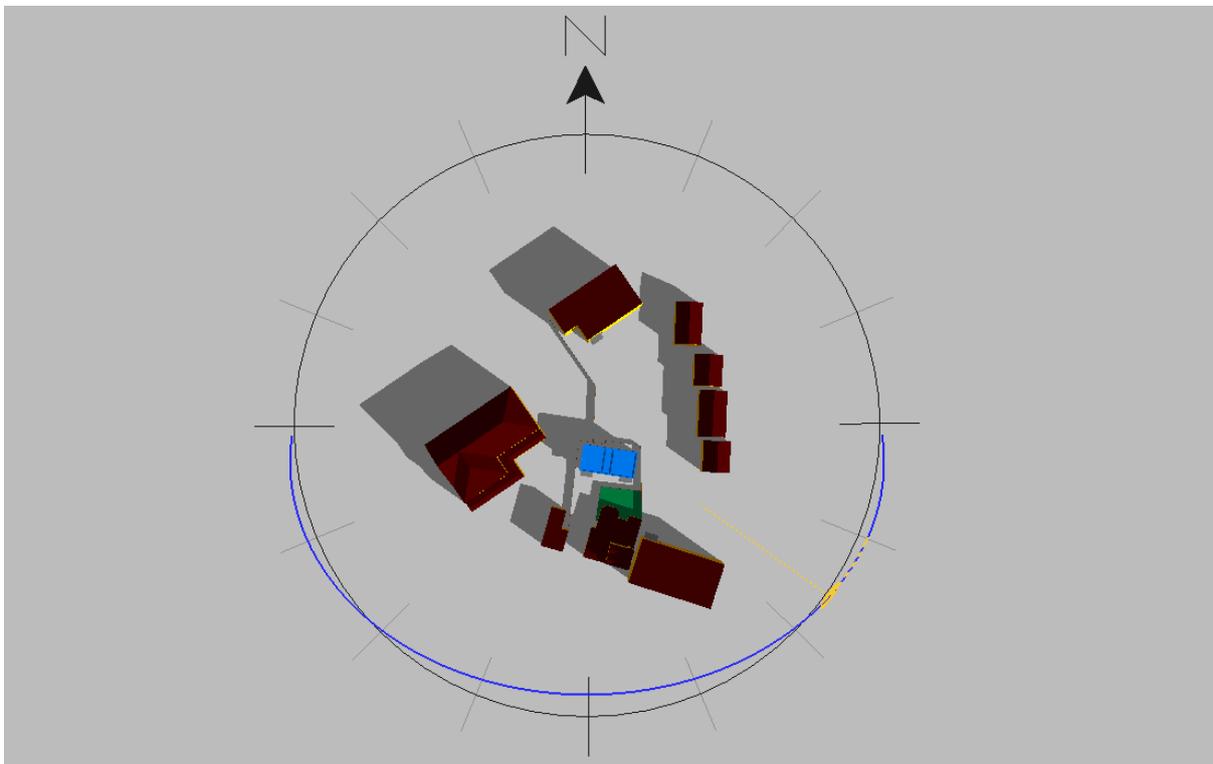


**Appendix C - Overshadowing Assessment Shadow Castings**

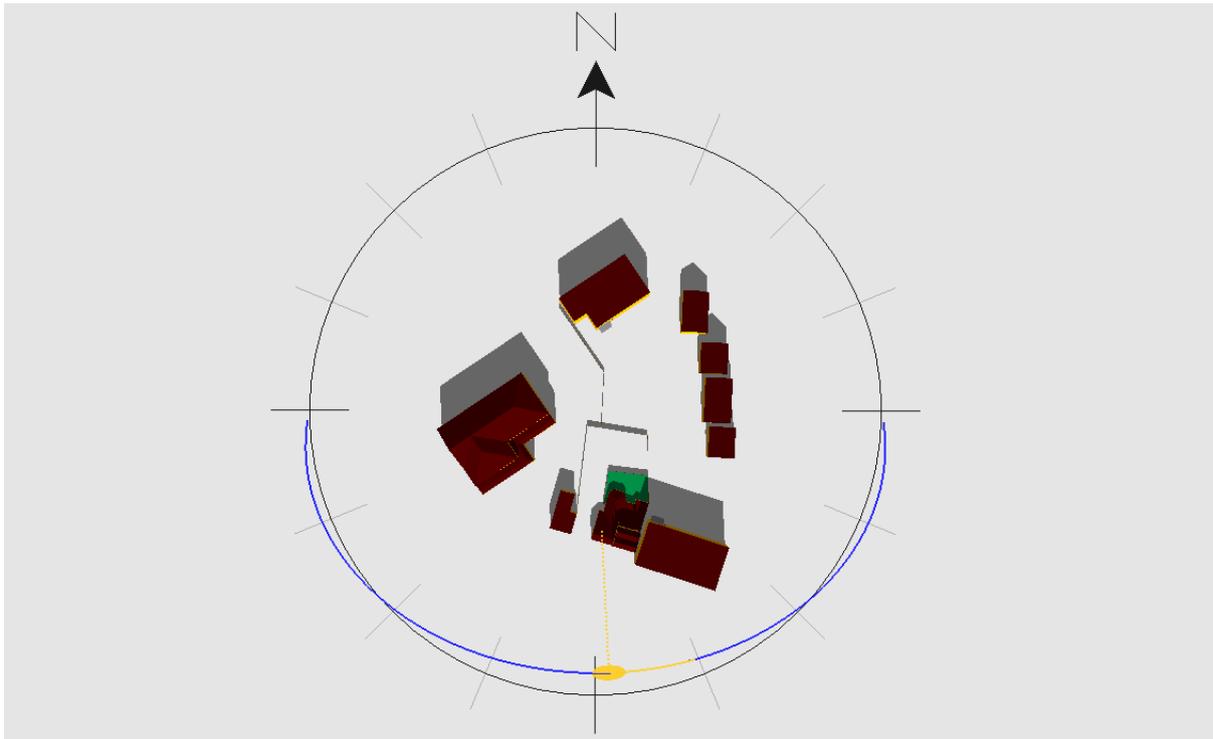
Existing Site - 09:00 March 21st



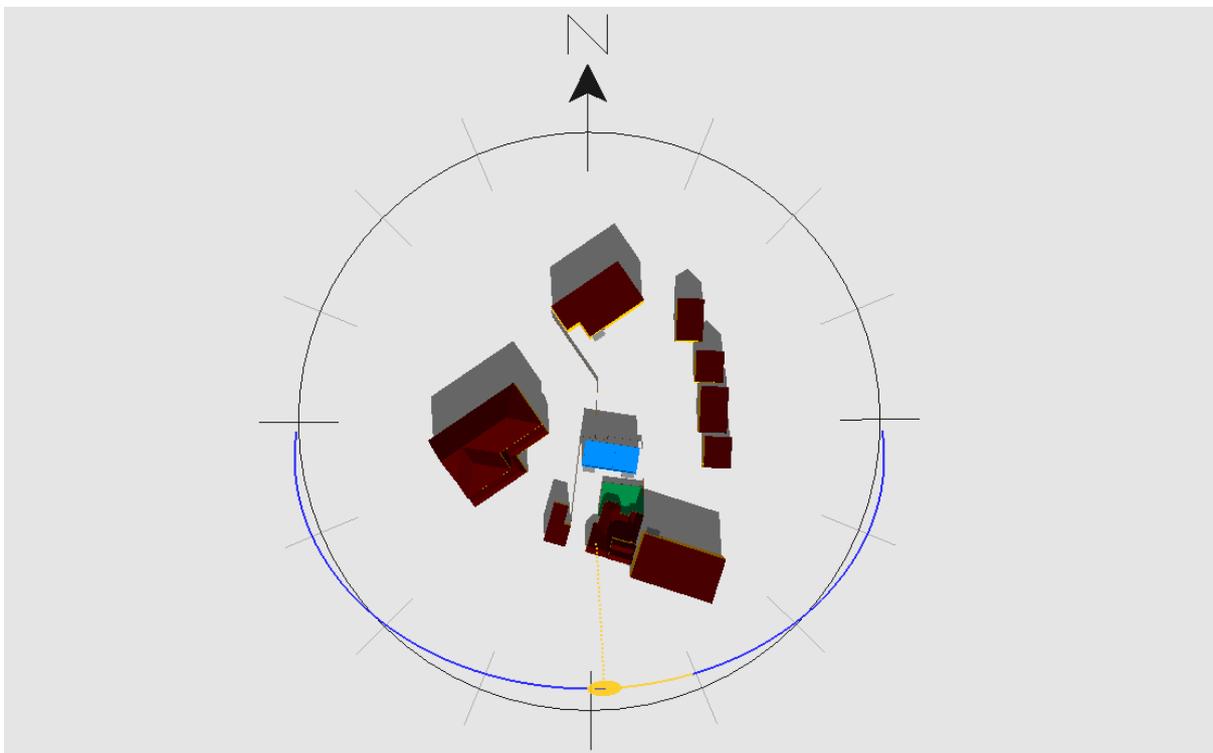
Proposed Site - 09:00 March 21st



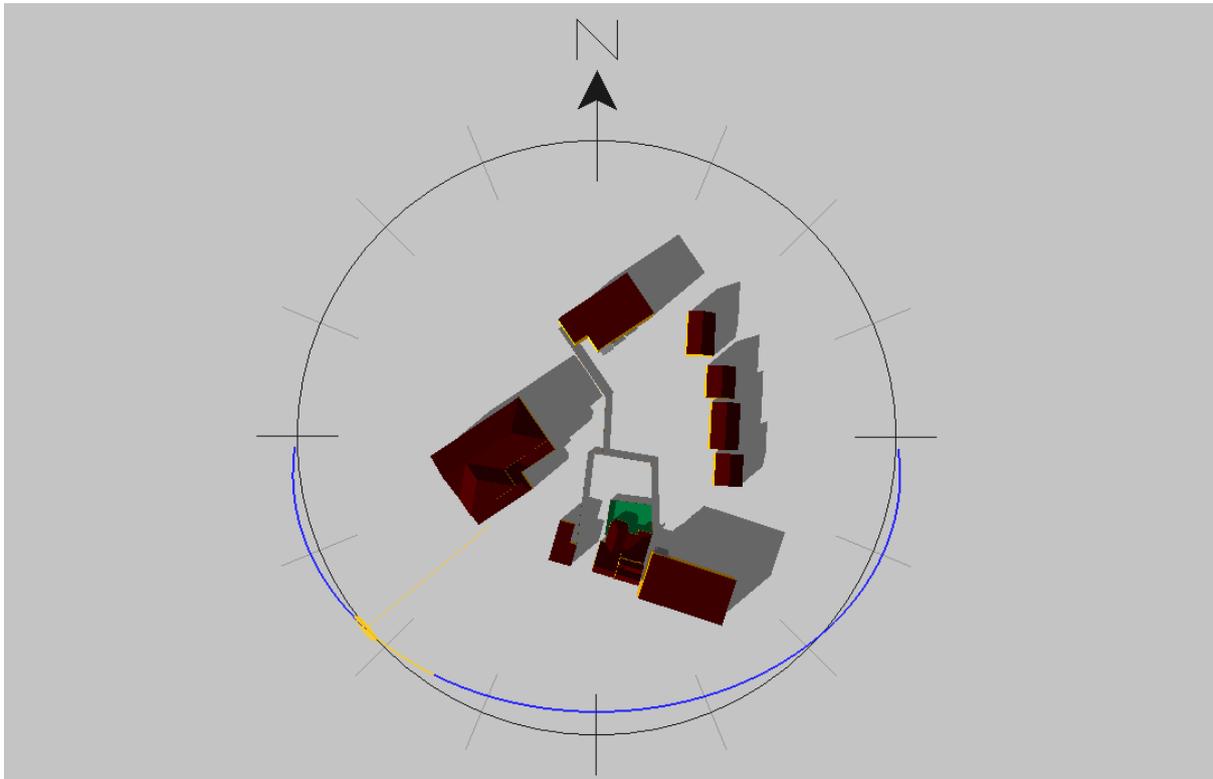
Existing Site - 12:00 March 21<sup>st</sup>



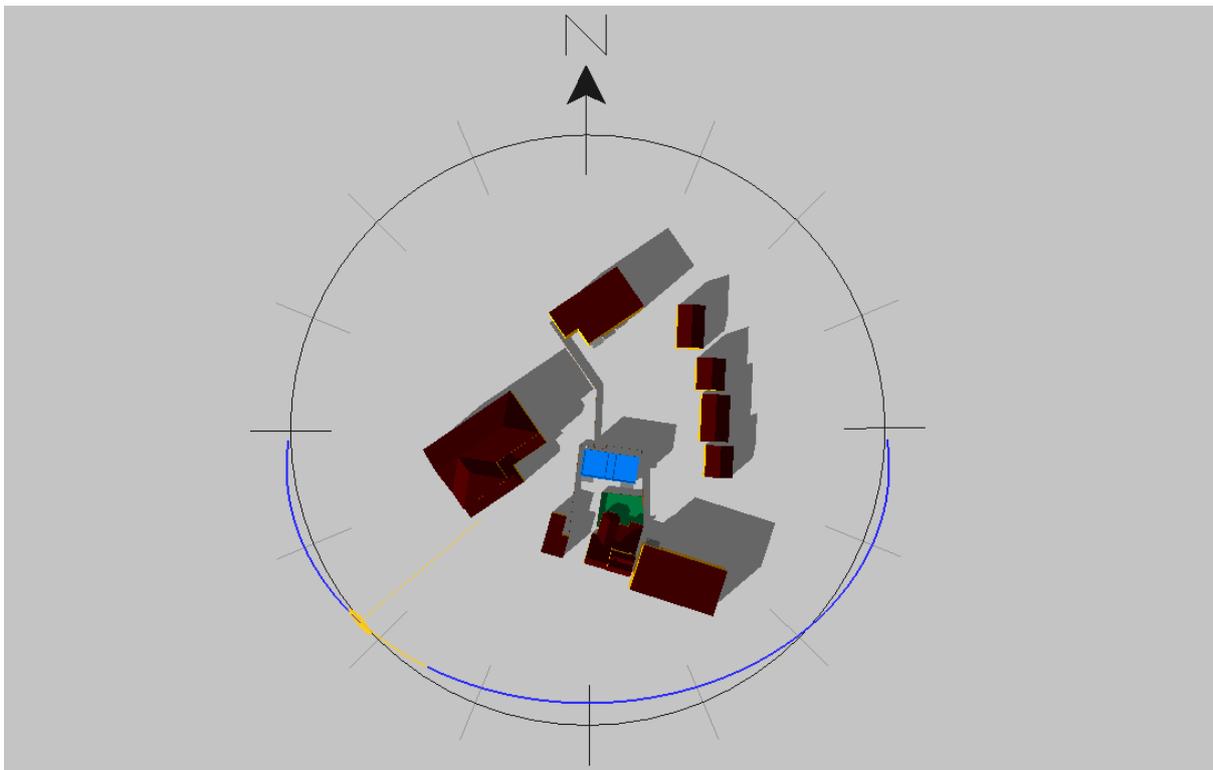
Proposed Site - 12:00 March 21<sup>st</sup>



Existing Site - 15:00 March 21<sup>st</sup>



Proposed Site - 15:00 March 21<sup>st</sup>



## Appendix D - Average Daylight Factor Plots

### Ground Floor



### First Floor

