

## **Appendix 7: Daylighting + Sunlight Report**

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# Introduction:

## Overview:

The proposed scheme consists of the redevelopment of the site currently occupied by 'The Royal' Public House to provide A1/A3 uses on the ground floor and 6 new residential units on the 4 floors over.

The proposals are shown in detail on the planning drawings, and the existing and proposed buildings detailed in 15-035-200 Design and Access Statement, so they are, therefore, not reproduced here.

This document has been produced to assess the effects of the proposed new building on the surrounding properties, primarily 10 Trinity Place to the north of the proposal site.

## Executive Summary:

The findings detailed in this report show that the proposals will have only minor effects on the surrounding properties, which are not inconsistent with developments and living conditions within densely populated areas.

## Daylight + Sunlight:

### Background:

The site is located within the Borough of Reading, the policies of which are set out in the Core Strategy and accompanying SPDs.

The proposals are assessed in line with the 'BRE Guide on Site Layout Planning for Daylight and Sunlight – A guide to good practice, Second Edition 2011' (BRE guide). This guide allows an assessment to be made as to whether the proposals will adversely affect daylight and sunlight reaching existing habitable rooms.

Whilst the BRE guide provides requirements to follow, these are not prescriptive rules to be adhered to on a pass or fail basis. They provide a reference, to compare existing and proposed and reflect on the needs of the development and its location. The values provided in the BRE guide were developed for suburban areas, and are not necessarily obtainable in dense, high rise or city centre developments.

### Methodology:

Analysis has been carried out as per the methodology set out in the BRE Guide. This has been done both by the vertical sky component analysis (via the skylight indicator diagram) and a no-sky line calculation.

Average daylight factor has not been calculated as there is no information about the adjoining building and its internal arrangement.

Data has been extracted from three dimensional modelling software to facilitate the calculations.

## Daylight:

The first criterion assessed by the BRE Guide is the Vertical Sky Component (VSC) that looks at a ratio of illuminance received directly from a standard overcast sky to a given vertical plane, in this case the windows of the existing building.

This is assessed by taking into account the existing and proposed obstructions, and their effect on the internal environment. This is calculated from two separate indices, the obstruction angle and the VSC.

### *Obstruction Angle*

Taking obstruction angle first; the smaller the angle, the better the illuminance. The BRE guide notes that an obstruction angle less than 25° provides reasonable light, 25° - 45° adequate light with special measures (including larger windows) and greater than 45° it is difficult to provide adequate light.

There are 4 affected windows per floor on the south elevation of 10 Trinity Place, and currently the existing obstruction angles range from 0-46°, however the existing openings are relatively large so should already provide adequate to reasonable lighting in all rooms. It should be noted that the calculation itself take no account of window size.

The obstruction angles created by the new proposals keep these angles generally the same on the lower floors, with a slight improvement on the ground floor windows down to 38-44° from 46°. Whilst the upper windows are more affected in the proposed scheme, they generally are still below the 25° 'reasonable' level.

### *Vertical Sky Component (VSC)*

The VSC is calculated using a skylight indicator diagram, with a higher value (up to 40%) the most preferable.

As with the obstruction angles, the existing values for the south facing windows are in the 'adequate' range (15-27%), and the proposed values, though lower, remain within this range. In addition the guidance suggests that the new values should be 0.8 times the former values, to which the proposals broadly comply.

In some cases, the rooms also have windows on the east and west elevations which are unaffected, so the combination of figures has been shown in the calculations. The most affected openings are for kitchens which are only single aspect, but they already require supplementary artificial lighting.

The table in **Appendix 1** shows the VSC in the existing and proposed arrangements based on the design proposals. At this stage values have only been provided for the ground floor windows to 10 Trinity Place, as they are the most affected.

The adjoining building (Richer Sounds) also has a lightly coloured rear elevation and is due to be refurbished, which would in addition improve reflectance into 10 Trinity Place.

## Daylight distribution:

The second criterion identifies at the penetration of daylight into habitable rooms, which is defined as the 'no sky line', the outline on the working plane of the area from which no sky can be seen.

Whilst there is no target value for the no-sky line noted in the BRE guide, a rule-of-thumb figure is provided of around 50% of the floor area.

The table and diagrams in **Appendix 2**, using the assumed plan for each floor, show the no sky line in the existing and proposed arrangements based on the design proposals.

As can be seen from the table and diagrams, the no sky lines for the majority of the rooms remain the same or slightly reduced. Whilst the proposed lines of lit area for the living room and office spaces at the edges of the plan from the south facing windows appear somewhat reduced, as they have two or more additional windows on the east or west elevations providing full room depth daylighting, the change will be negligible.

## Sun on the ground:

The gardens to 10 Trinity Place are further north, so are unlikely to be overshadowed by the proposals but instead by 10 Trinity Place itself.

The shadow diagrams below (Figures 1-6) show the effect of the proposals and the adjoining building taken on the Equinox at two-hourly intervals, to show the likely minimal shadowing.

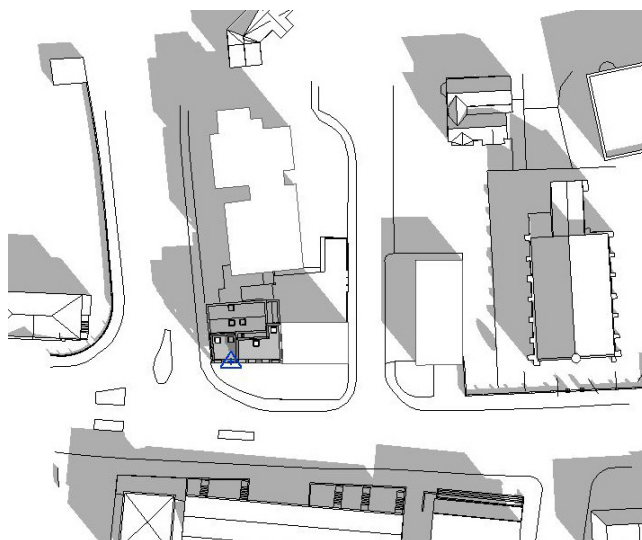


Figure 3 – 11:00 Spring Equinox



Figure 1 – 07:00 Spring Equinox

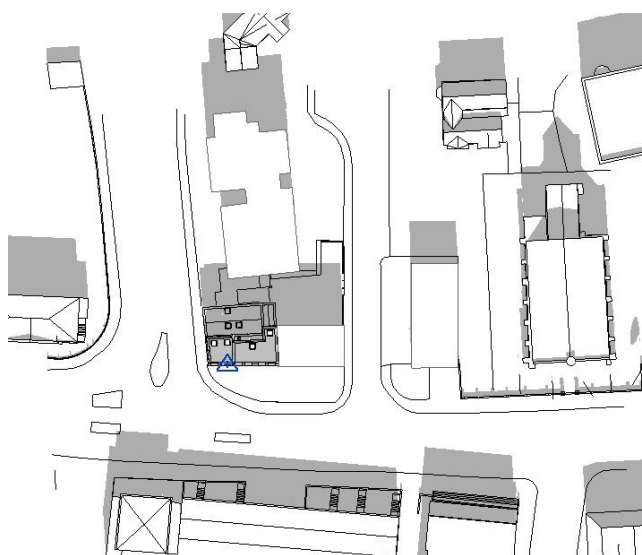


Figure 4 – 13:00 Spring Equinox



Figure 2 – 09:00 Spring Equinox

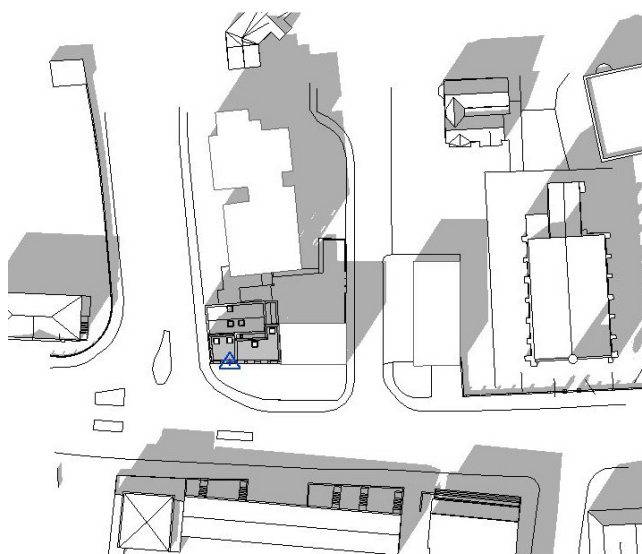
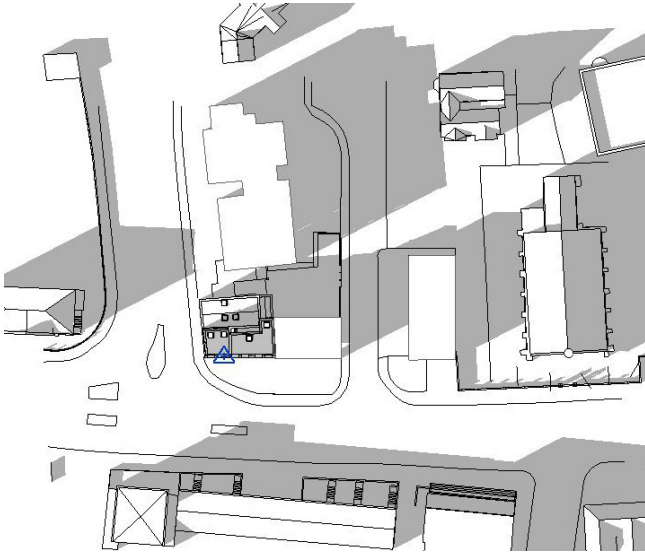


Figure 5 – 15:00 Spring Equinox



**Figure 6** – 17:00 Spring Equinox

## Conclusion:

Compliance with the BRE Guide is not a planning criterion and the foreword to the Guide is careful to make this point, as well as that the numerical values should be interpreted carefully.

The result of these calculations note, that whilst the proposals will cause some reductions in daylight and sunlight to the adjacent property, they will be minimal and within the limits expected for city centre development. Through the pre-application process the proposed scheme has been altered significantly, to reduce the volume and height of the building to the smallest volume that still remains viable for development.

We would consider that taken overall, the effects on the surrounding properties are minor, and there are no grounds relating to the daylight and sunlight over which the proposals should be refused.

# Appendices:

## Appendix 1: Vertical Sky Component (VSC) analysis

10 Trinity Place – See Figure 1 for window notation

| Floor Ref. | Room        | Window Ref. |          | VSC (%) | Proposed / Existing | Combined ratio |
|------------|-------------|-------------|----------|---------|---------------------|----------------|
| Ground     | Office      | W1          | Existing | 25.5    | 0.74                | 0.88           |
|            |             |             | Proposed | 18.75   |                     |                |
| W2         |             | Existing    | 24.5     | 0.77    |                     |                |
|            |             | Proposed    | 18.75    |         |                     |                |
| W5         |             | Existing    | 35.5     | 0.99    |                     |                |
|            |             | Proposed    | 35.25    |         |                     |                |
| W7         |             | Existing    | 37.25    | 1.00    |                     |                |
|            |             | Proposed    | 37.25    |         |                     |                |
| Ground     | Kitchen     | W3          | Existing | 24.5    | 0.77                | 0.77           |
|            |             |             | Proposed | 18.75   |                     |                |
| Ground     | Living Room | W4          | Existing | 24.5    | 0.86                | 0.95           |
|            |             |             | Proposed | 21.0    |                     |                |
| W6         |             | Existing    | 36.0     | 1.00    |                     |                |
|            |             | Proposed    | 36.0     |         |                     |                |
| W8         |             | Existing    | 37.0     | 1.00    |                     |                |
|            |             | Proposed    | 37.0     |         |                     |                |



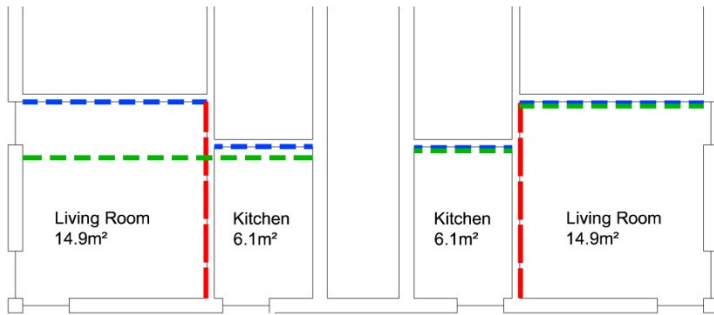
**Figure 7** – Annotation of windows at ground floor level in 10 Trinity Place.

## Appendix 2: Daylight distribution

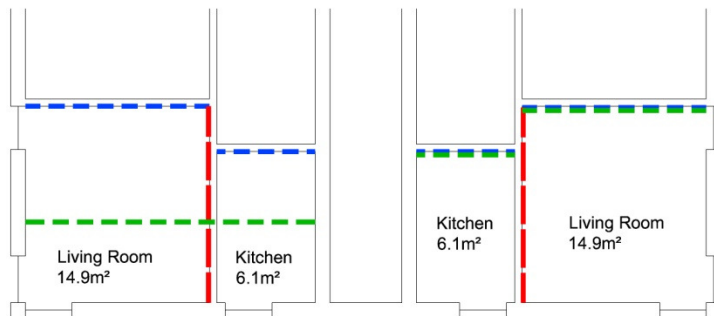
10 Trinity Place – See Figure 2 for diagrams

**NOTE:** Where rooms are noted as dual aspect, the side windows have not been included within the calculation below

| Floor Ref.      | Room        | Room area (m <sup>2</sup> ) |          | Lit area (%) from south facing windows only | Proposed / Existing | Aspect      |
|-----------------|-------------|-----------------------------|----------|---------------------------------------------|---------------------|-------------|
| Ground          | Office      | 21.8                        | Existing | 70                                          | 0.60                | Dual aspect |
|                 |             |                             | Proposed | 42                                          |                     |             |
| Ground          | Kitchen     | 6.1                         | Existing | 70                                          | 1.00                |             |
|                 |             |                             | Proposed | 70                                          |                     |             |
| Ground          | Living Room | 14.9                        | Existing | 56                                          | 1.00                | Dual aspect |
|                 |             |                             | Proposed | 56                                          |                     |             |
| 1 <sup>st</sup> | Living Room | 14.9                        | Existing | 73                                          | 0.32                | Dual aspect |
|                 |             |                             | Proposed | 28                                          |                     |             |
| 1 <sup>st</sup> | Kitchen     | 6.1                         | Existing | 100                                         | 0.37                |             |
|                 |             |                             | Proposed | 37                                          |                     |             |
| 1 <sup>st</sup> | Kitchen     | 6.1                         | Existing | 66                                          | 1.00                |             |
|                 |             |                             | Proposed | 66                                          |                     |             |
| 1 <sup>st</sup> | Living Room | 14.9                        | Existing | 53                                          | 1.00                | Dual aspect |
|                 |             |                             | Proposed | 53                                          |                     |             |
| 2 <sup>nd</sup> | Living Room | 14.9                        | Existing | 100                                         | 0.42                | Dual aspect |
|                 |             |                             | Proposed | 42                                          |                     |             |
| 2 <sup>nd</sup> | Kitchen     | 6.1                         | Existing | 100                                         | 0.53                |             |
|                 |             |                             | Proposed | 53                                          |                     |             |
| 2 <sup>nd</sup> | Kitchen     | 6.1                         | Existing | 100                                         | 1.00                |             |
|                 |             |                             | Proposed | 100                                         |                     |             |
| 2 <sup>nd</sup> | Living Room | 14.9                        | Existing | 100                                         | 1.00                |             |
|                 |             |                             | Proposed | 100                                         |                     |             |
| 3 <sup>rd</sup> | Living Room | 14.9                        | Existing | 100                                         | 0.72                | Dual aspect |
|                 |             |                             | Proposed | 72                                          |                     |             |
| 3 <sup>rd</sup> | Kitchen     | 6.1                         | Existing | 100                                         | 0.93                |             |
|                 |             |                             | Proposed | 93                                          |                     |             |
| 3 <sup>rd</sup> | Kitchen     | 6.1                         | Existing | 100                                         | 1.00                |             |
|                 |             |                             | Proposed | 100                                         |                     |             |
| 3 <sup>rd</sup> | Living Room | 14.9                        | Existing | 100                                         | 1.00                | Dual aspect |
|                 |             |                             | Proposed | 100                                         |                     |             |



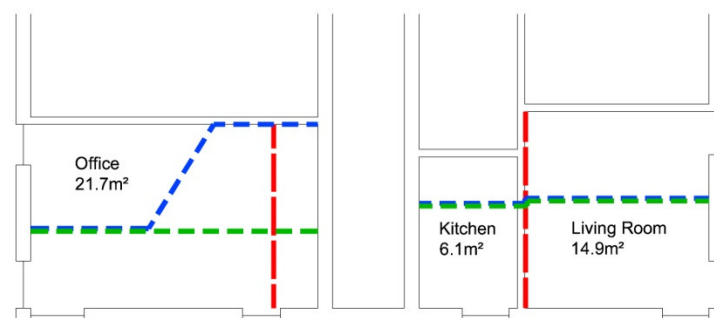
10 Trinity Place Third Floor as assumed



10 Trinity Place Second Floor as assumed



10 Trinity Place First Floor as assumed



10 Trinity Place Ground Floor as assumed

**Figure 8** – Visible sky lines as existing and proposed.  
Existing shown blue, proposed green and visible sky line from the side red.