

**FAO: David Brett**  
**Senior Planning Officer**  
**Reading Borough Council**  
**Civic Offices, Bridge Street**  
**Reading, RG1 2LU**

**Re: Archway House, Gosbrook Road (Ref 231003)**

**22/09/2023**

Dear Mr Brett,

With regards to the proposed new dwelling at Archway House, Gosbrook Road, we have undertaken daylighting analysis on the proposed habitable spaces. The purpose of the analysis is to perform a Daylight Factor (DF) Assessment for the habitable spaces within the proposed residential unit, and to compare with guidance provided by the BRE (BR209: Site Layout Planning for Daylight and Sunlight 2022) along with The British Standard 'Daylight in buildings' (BS EN 17037) and CIBSE Guide LG10 – Daylighting and Window Design.

The Daylight Factor (DF) is a measure of the percentage of horizontal diffuse illumination outdoors (daylight) received within an internal environment. The British Standard 'Daylight in buildings' (BS EN 17037) recommends a minimum DF in London/surrounds (to be achieved over at least 50% of the assessment grid) of 0.7% for bedrooms, 1.1% for living rooms and 1.4% for kitchens.

The habitable spaces consist of a first-floor studio flat, comprising bedroom area and living/kitchen/dining room. The results of this investigation indicate that the habitable spaces meet the recommended minimum area (50%) for the target DF levels, therefore the flat is considered to be adequately daylit according to the BRE guidance.

The following assumptions have been made with regards to reflectance and transmittance values of internal surfaces (light-coloured surface reflectance's have been specified in accordance with BRE guidance):

| Internal Element: | Reflectance | Transmittance |
|-------------------|-------------|---------------|
| Interior Walls    | 0.80        | N/A           |
| Ceilings          | 0.80        | N/A           |
| Floor             | 0.40        | N/A           |
| Windows           | 0.07        | 0.65          |

A summary of the DF calculation results for the habitable areas of the studio flat is shown below:

| Room                            | Target DF (%) | Min. Area > DF | Area > DF |
|---------------------------------|---------------|----------------|-----------|
| Studio (combined bedroom & LKD) | 1.1           | 50%            | 64.9%     |

An image of the 3D daylight model is shown overleaf, along with the visual representation of daylight distribution on the working plane. The full daylight results are appended to this assessment.

Kind regards,



Christopher Collier MIET BSc (Hons) Mec Eng  
Director, Keeping Blue Ltd

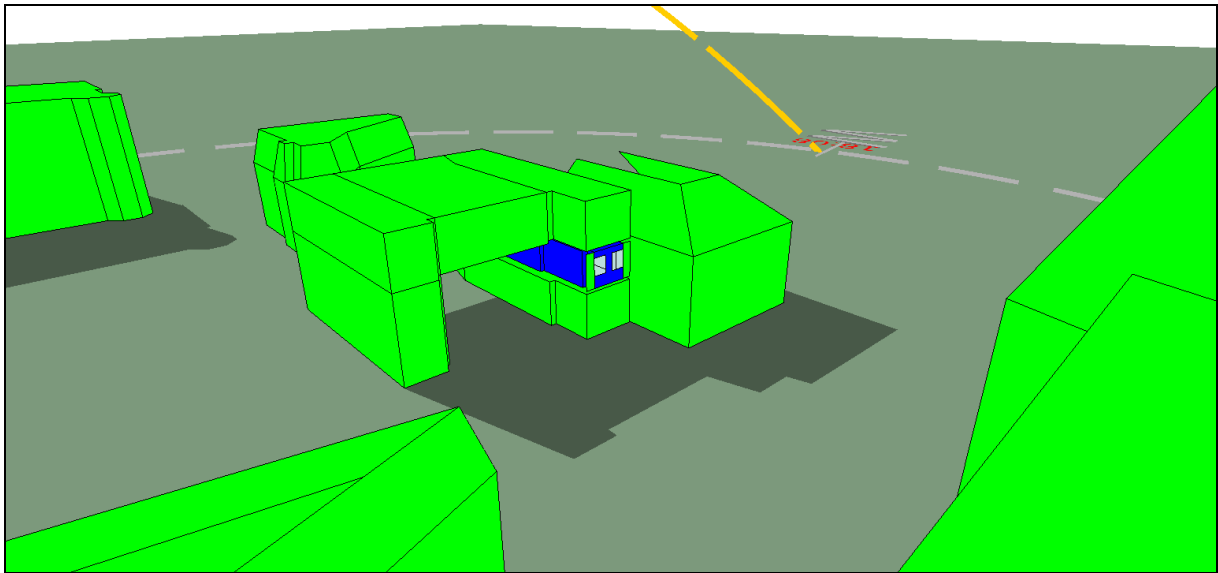


Figure 1: 3D Daylight Model (proposed dwelling: blue)

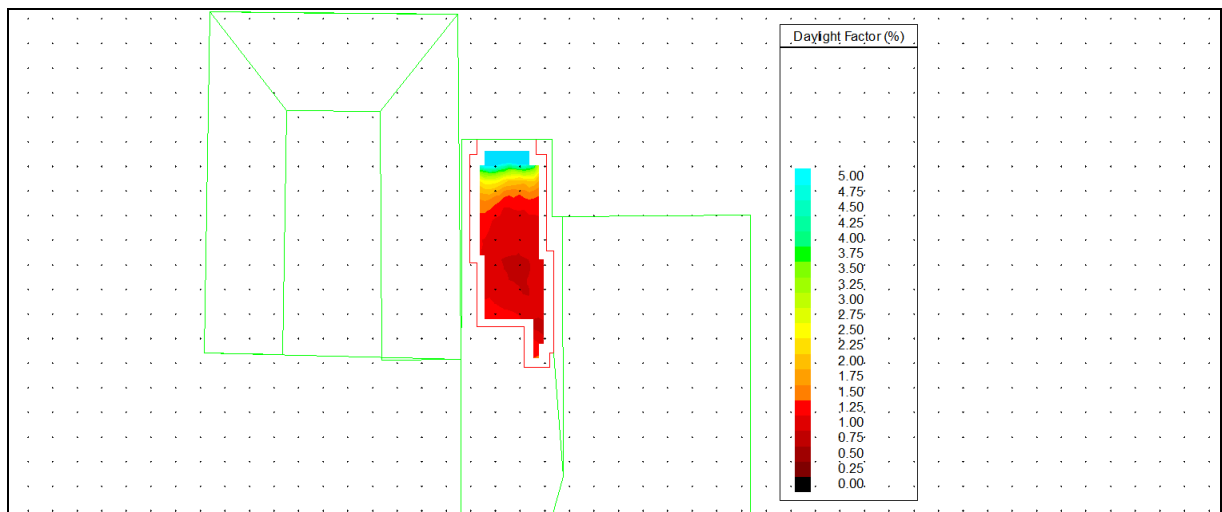


Figure 2: Daylight Distribution on working plane – studio flat

Analysis Overview

Analysis Comparison (against previous assessment)

|                                     | Total   | Comparison (with previous) |
|-------------------------------------|---------|----------------------------|
| Daylight levels (lux)               | 235.835 | No previous                |
| Percentage area above threshold (%) | 64.9    | No previous                |

Analysis History

| Date / Time | Area-weighted average daylight factor (%) | Area-weighted average illumination (lux) |
|-------------|-------------------------------------------|------------------------------------------|
|-------------|-------------------------------------------|------------------------------------------|

Threshold Calculation

Building Results

| Total floor area (m <sup>2</sup> ) | Total floor area above threshold (m <sup>2</sup> ) | Percentage floor area above threshold (%) | Area-weighted average daylight factor (%) | Area-weighted average illumination (lux) |
|------------------------------------|----------------------------------------------------|-------------------------------------------|-------------------------------------------|------------------------------------------|
| 18.133                             | 11.765                                             | 64.9                                      | 1.9                                       | 235.835                                  |

Rooms included in the analysis

| Room ID  | Room name   | Working plane | Floor area (m <sup>2</sup> ) | Floor area > threshold (m <sup>2</sup> ) | Percentage floor area > threshold (%) | Average illumination (%) |
|----------|-------------|---------------|------------------------------|------------------------------------------|---------------------------------------|--------------------------|
| ST000000 | Studio Flat | 0             | 18.133                       | 11.765                                   | 64.9                                  | 1.93                     |

Rooms not included in the analysis

| Room ID | Room name | Reason |
|---------|-----------|--------|
|---------|-----------|--------|

Things to consider:

**Increase** amount of **glazing** (assess **trade-off** with energy consumption)

Evaluate size and shape of glass (glass **above** 2.3m (7'6") has **greater impact**)

Select a **glass type** with a different **visible transmittance** (Tvis)

**Evaluate** other daylighting metrics such as **glare**

Calculation Data

**Location**London Heathrow, United Kingdom(51.48 N, 0.45 W)

**Calculated:** 22 Sep 2023 at 10:40  
**Sky Model:** CIE Standard Overcast Sky  
**Working plane height:** 0.850m  
**Grid Size:** 0.200m  
**Illuminance Threshold (%):** 1.10  
**Light Penetration:** With light penetration through internal windows