

FAO: Sian Hickey
Reading Borough Council
Civic Offices, Bridge Street
Reading, RG1 2LU

Re: Archway House, Gosbrook Road (Ref 240402)

24/05/2024

To the Planning Officer,

With regards to the proposed conversion to 3no flats to ground floor areas of 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 units, 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 comprise a mix of studio flats and 1-bedroom flats with separate 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 flats are 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 ground floor flats is shown below:

Room	Target DF (%)	Min. Area > DF	Area > DF
00 Flat1 Studio	1.1	50%	91.9%
00 Flat2 Living/Kitchen/Dining Room	1.1	50%	64.3%
00 Flat2 Bedroom	0.7	50%	100.0%
00 Flat3 Living/Kitchen/Dining Room	1.1	50%	81.9%
00 Flat3 Bedroom	0.7	50%	100.0%

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

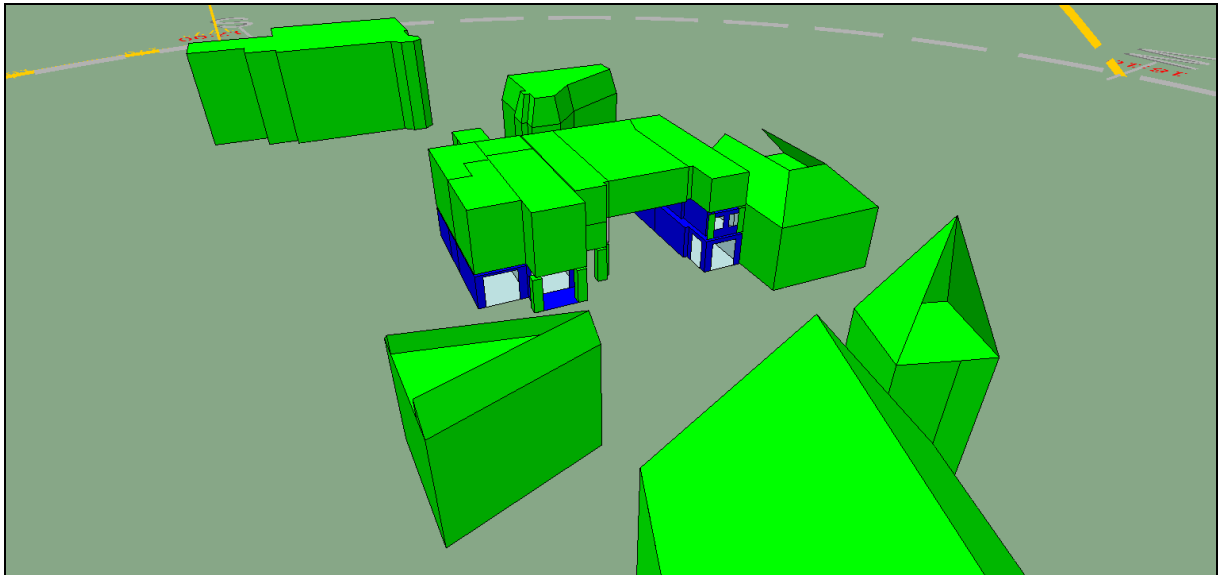


Figure 1: 3D Daylight Model (proposed dwellings: blue)

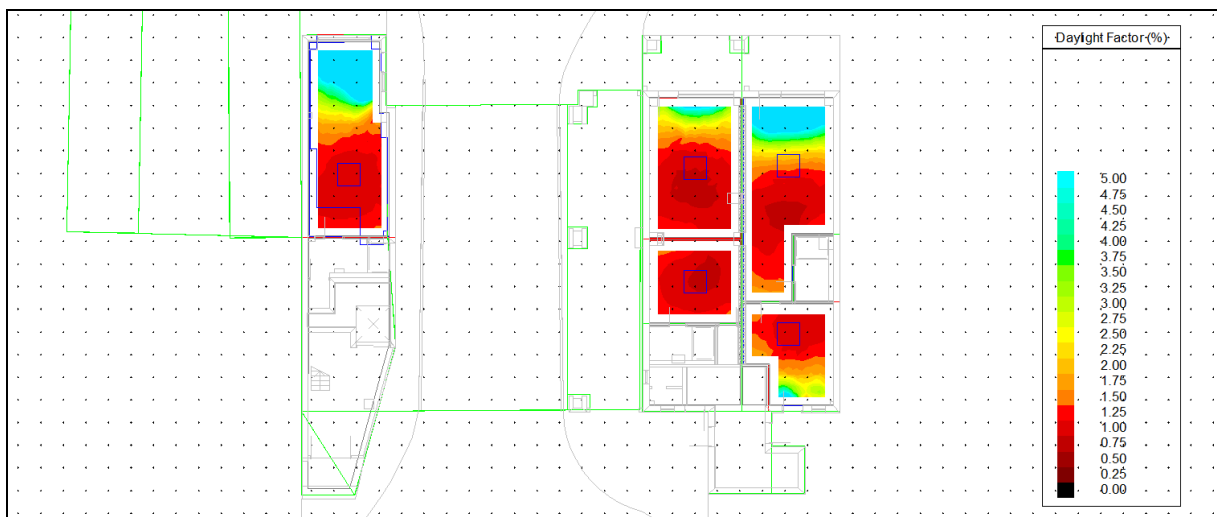


Figure 2: Daylight Distribution on working plane – ground floor flats

Analysis Overview

Analysis Comparison (against previous assessment)

	Total	Comparison (with previous)
Daylight levels (lux)	319.838	Increased
Percentage area above threshold (%)	80.1	Increased

Analysis History

Date / Time	Area-weighted average daylight factor (%)	Area-weighted average illumination (lux)
22 Sep 2023 at 10:40	1.9	235.835
24 May 2024 at 13:41	1.2	147.256
24 May 2024 at 16:41	1.3	164.833

Threshold Calculation

Building Results

Total floor area (m ²)	Total floor area above threshold (m ²)	Percentage floor area above threshold (%)	Area-weighted average daylight factor (%)	Area-weighted average illumination (lux)
64.491	51.636	80.1	2.6	319.838

Rooms included in the analysis

Room ID	Room name	Working plane	Floor area (m ²)	Floor area > threshold (m ²)	Percentage floor area > threshold (%)	Average illumination (%)
00000000	00 FLAT3 LKD	0	23.050	18.870	81.9	2.87
00000006	00 FLAT1 STUDIO	0	22.181	20.385	91.9	3.21
00000001	00 FLAT2 LKD	0	19.259	12.381	64.3	1.64

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**

Rooms not included in the analysis

Room ID	Room name	Reason
ST0000000	01 Studio Flat	Not selected for inclusion in report
000000003	00	Not selected for inclusion in report
000000005	00	Not selected for inclusion in report
000000010	00	Not selected for inclusion in report
000000004	00	Not selected for inclusion in report
000000011	00 FLAT3 BED	Not selected for inclusion in report
PT0000000	PATIO	Not selected for inclusion in report
000000012	00 FLAT2 BED	Not selected for inclusion in report

Calculation Data

LocationLondon Heathrow, United Kingdom(51.48 N, 0.45 W)

Calculated:24 May 2024 at 17:20

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

Analysis Overview

Analysis Comparison (against previous assessment)

	Total	Comparison (with previous)
Daylight levels (lux)	177.714	Same
Percentage area above threshold (%)	100.0	Same

Analysis History

Date / Time	Area-weighted average daylight factor (%)	Area-weighted average illumination (lux)
22 Sep 2023 at 10:40	1.9	235.835
24 May 2024 at 13:41	1.2	147.256
24 May 2024 at 16:41	1.3	164.833
24 May 2024 at 17:20	2.6	319.838
24 May 2024 at 17:20	1.5	177.714

Threshold Calculation

Building Results

Total floor area (m ²)	Total floor area above threshold (m ²)	Percentage floor area above threshold (%)	Area-weighted average daylight factor (%)	Area-weighted average illumination (lux)
21.649	21.649	100.0	1.5	177.714

Rooms included in the analysis

Room ID	Room name	Working plane	Floor area (m ²)	Floor area > threshold (m ²)	Percentage floor area > threshold (%)	Average illumination (%)
00000011	00 FLAT3 BED	0	11.111	11.111	100.0	1.75
00000012	00 FLAT2 BED	0	10.538	10.538	100.0	1.14

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**

Rooms not included in the analysis

Room ID	Room name	Reason
ST0000000	01 Studio Flat	Not selected for inclusion in report
000000003	00	Not selected for inclusion in report
000000000	00 FLAT3 LKD	Not selected for inclusion in report
000000005	00	Not selected for inclusion in report
000000006	00 FLAT1 STUDIO	Not selected for inclusion in report
000000010	00	Not selected for inclusion in report
000000004	00	Not selected for inclusion in report
PT0000000	PATIO	Not selected for inclusion in report
000000001	00 FLAT2 LKD	Not selected for inclusion in report

Calculation Data

LocationLondon Heathrow, United Kingdom(51.48 N, 0.45 W)

Calculated:24 May 2024 at 17:21

Sky Model:CIE Standard Overcast Sky

Working plane height:0.850m

Grid Size:0.200m

Illuminance Threshold (%):0.70

Light Penetration:
With light penetration through internal windows