

1 GOLDEN LANE CITY OF LONDON

DAYLIGHT, SUNLIGHT AND OVERSHADOWING REPORT

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CLIENT: CASTLEFORGE PARTNERS

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Contents

1	Introduction	3
2	Sources of Information	4
3	Daylight and Sunlight Methodology	5
4	Overshadowing Methodology	7
5	Standard Survey Limitations	8
6	The Site	9
7	The Proposal	10
8	The Surrounding Properties	11
9	Daylight and Sunlight Assessment Results	12
10	Overshadowing Assessment Results	17
11	Conclusion	18

Appendices

- Appendix 1:** Drawings
- Appendix 2:** Overshadowing Assessment
- Appendix 3:** The Denizen
- Appendix 4:** Technical Analysis

1 Introduction

- 1.1 Point 2 Surveyors Ltd. have been instructed to assess to the daylight and sunlight implications as a result of the redevelopment of 1 Golden Lane (“the Site” / “the Proposed Development”), within the City of London.
- 1.2 The report relates to the Proposed Development and provides detailed technical support regarding the potential impact on the daylight and sunlight amenity of 7 neighbouring receptors containing residential accommodation.
- 1.3 The Proposed Development is an alteration and extension of the existing office building (Class Eg(i)) incorporating a local community/cultural space (Class Eg(i)/F2) at ground floor; to include additional floorspace through upward and infill extensions; altered and additional entrances; creation of office amenity terraces and plant enclosures; façade alterations including urban greening; new landscaping; and associated works.
- 1.4 The Local Planning Authority will be informed in this by the BRE document entitled Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice 2011 (the BRE guidelines)¹. The BRE guidelines are the principal guidance in this area. They set out the methodology for measuring light and recommend actions as to what are considered to be permitted or unobtrusive levels of change.
- 1.5 The BRE guidelines are not mandatory, though decision-takers may consider the suitability of a proposed scheme for a site using the BRE guidance. Consideration will be given to the urban context within which a scheme is located, and the daylight and sunlight will be one of several planning considerations which the local authority will weigh in the planning balance.

¹ Building Research Establishment document 209; site layout and planning for daylight and sunlight; a guide to good practice; 2011

2 Sources of Information

2.1 In the process of compiling this report, the following sources of information have been used:

Point 2 Surveyors Ltd.

3D Laser Scan Data
Site Photography

ZMapping Ltd.

Photogrammetry Model

Hawkins Brown

Proposed Scheme Information (received 14/02/22)
220214_1GLArchitecturalDesignFreeze-Amended_3DModel_Geo-Located.dwg

3 Daylight and Sunlight Methodology

- 3.1 It is usual to assess daylight and sunlight using the guidelines set out in the 2011 Building Research Establishment (BRE) Report 'Site layout planning for daylight and sunlight - A guide to good practice' by Paul Littlefair. This document is most widely accepted by planning authorities as the means by which to judge the acceptability of a scheme with regard to the daylight and sunlight impacts.
- 3.2 In relation to the properties surrounding a site, usually the local planning authority will only be concerned with the impact to main habitable accommodation (i.e. living rooms, bedrooms and kitchens) within residential properties.
- 3.3 To determine whether a neighbouring existing building may be adversely affected, the initial test provided by the BRE guidance is to establish if any part of the proposal subtends an angle of more than 25° from the lowest window serving the existing building. If this is the case then there may be an adverse effect, and more detailed calculations are required to quantify the extent of any impact.
- 3.4 The BRE guidelines provide two principal measures of daylight for assessing the impact on properties neighbouring a site, namely Vertical Sky Component (VSC) and No-Sky Line (NSL). They also detail a third measure of daylight which is primarily used for assessing amenity within proposed accommodation, namely Average Daylight Factor (ADF).
- 3.5 In terms of sunlight, we examine the BRE Annual Probable Sunlight Hours (APSH); and in relation to sunlight amenity to gardens and amenity spaces, we apply the quantitative BRE overshadowing guidance.
- 3.6 These measures of daylight and sunlight are discussed in the following paragraphs.

Diffuse Daylight

- 3.7 **Vertical Sky Component (VSC)** – VSC is a measure of the direct skylight reaching a point from an overcast sky. It is the ratio of the illuminance at a point on a given vertical plane to the illuminance at a point on a horizontal plane due to an unobstructed sky.
- 3.8 For existing buildings, the BRE guideline is based on the loss of VSC at a point at the centre of a window, on the outer plane of the wall.
- 3.9 The BRE guidelines state that if the VSC at the centre of a window is less than 27%, and it is less than 0.8 times its former value (i.e. the proportional reduction is greater than 20%), then the reduction in skylight will be noticeable, and the existing building may be adversely affected.

- 3.10 **No-Sky Line (NSL)** - NSL is a measure of the distribution of daylight within a room. It maps out the region within a room where light can penetrate directly from the sky, and therefore accounts for the size of and number of windows by simple geometry.
- 3.11 The BRE guidelines suggest that the area of the working plane within a room that can receive direct skylight should not be reduced to less than 0.8 times its former value (i.e. the proportional reduction in area should not be greater than 20%).
- 3.12 **Average Daylight Factor (ADF)** - ADF is a measure of the overall amount of diffuse daylight within a room. It is the average of the daylight factors across the working plane within a room. This equates to the ratio of the average illuminance across the working plane, to the illuminance due to an unobstructed sky.
- 3.13 In addition to accounting for external obstructions, the ADF accounts for the number of windows and their size in relation to the size of the room, the window transmittance and the reflectance of the internal walls, floor, and ceiling.
- 3.14 The ADF is detailed in Appendix C of the BRE Report. This provides guidance for acceptable ADF values in the presence of supplementary electric lighting, depending on the room use. These are 1.0% for a bedroom, 1.5% for a living room and 2.0% for a kitchen.

Sunlight

- 3.15 **Annual Probable Sunlight Hours (APSH)** - In relation to sunlight, the BRE recommends that the APSH received at a given window in the proposed case should be at least 25% of the total available, including at least 5% in winter.
- 3.16 Where the proposed values fall short of these, and the absolute loss is greater than 4%, then the proposed values should not be less than 0.8 times their previous value in each period (i.e. the proportional reductions should not be greater than 20%).
- 3.17 The BRE guidelines state that ‘...all main living rooms of dwellings, and conservatories, should be checked if they have a window facing within 90 degrees of due south. Kitchens and bedrooms are less important, although care should be taken not to block out too much sun’.
- 3.18 The APSH figures are calculated for each window, and where a room is served by more than one window the contribution of each is accounted for in the overall figures for the room. The acceptability criteria are applied to overall room-based figures.

4 Overshadowing Methodology

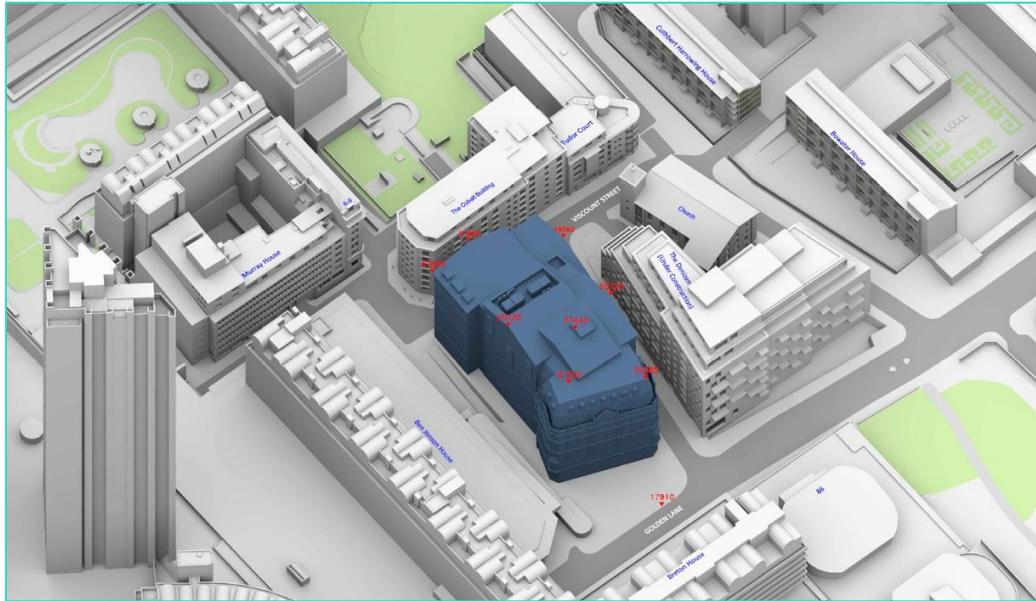
- 4.1 The BRE guidelines describe the method for assessment of the availability of sunlight within amenity spaces. If a space is used all year round, the equinox (21st March) is the best date for which to prepare shadow plots as it gives the average level of shadowing. However, if a particular space is used only at certain times of the year, it is instructive to plot shadows for those specific times.
- 4.2 The BRE guidelines criteria for amenity areas state that, 'It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity space should receive at least two hours of sunlight on 21st March.' If, as a result of new developments, an existing garden or amenity area does not meet the criteria, then the loss of sunlight is likely to be noticeable.

5 Standard Survey Limitations

- 5.1 Our understanding of the existing massing, including the surrounding context was established from the sources of information detailed within Section 2.
- 5.2 In addition to our standard limitations the following limitations and assumptions also apply.
- Best estimates were made in establishing building use (residential or commercial) and room uses; generally, these were made from external observations and recourse to planning records where available.
 - When floor plans of surrounding properties were not available, room depths have been assumed from external observations. Where no indicators of room depth were available a standard of 4m, 6m or 8m depths have been used.

6 The Site

6.1 The Site is located within the City of London.



Drawing Number: P2592/86 – 3D View – Existing Building

6.2 Our understanding of the Site location and existing building(s) that occupy the Site are illustrated in drawing numbers P2592/84-86, located within Appendix 1.

8 The Surrounding Properties

8.1 The local council tax registry (VOA) identifies that the following properties contain residential accommodation. Due to their proximity to the Site, the impact the Proposed Development has upon the daylight and sunlight amenity of their habitable rooms (bedrooms, living rooms and kitchens) has been assessed:

- | | |
|------------------------|--|
| 1. Tudor Rose Court | 5. The Denizen (<i>Recently Constructed</i>) |
| 2. The Cobalt Building | 6. Cuthbert Harrowing House |
| 3. Ben Jonson House | 7. Bowater House |
| 4. Breton House | |

8.2 The location of these properties can be seen in the drawings within Appendix 1 and on the extract below:



Identification Drawing ("the Plan")

8.3 Detailed results for each window and associated room assessed within all properties can be found in Appendix 3 and are summarised in Section 9.

9 Daylight and Sunlight Assessment Results

- 9.1 A total of 776 windows, serving 556 Site facing habitable rooms have been assessed across 7 properties containing an element of residential accommodation.
- 9.2 Out of 7 properties eligible for daylight and sunlight assessment, the following 6 will experience **fully BRE compliant** alterations in relation to **VSC**, **NSL** and **APSH**:
- Tudor Rose Court
 - The Cobalt Building
 - Ben Jonson House, Barbican
 - Breton House
 - Cuthbert Harrowing House, Golden Lane Estate (*discussed at 9.11 to 9.13*)
 - Bowater House (*discussed at 9.14 to 9.16*)
- 9.3 The following paragraphs will discuss in detail the daylight and sunlight reductions to The Denizen in addition to the individual nuances regarding Cuthbert Harrowing House and Bowater House:

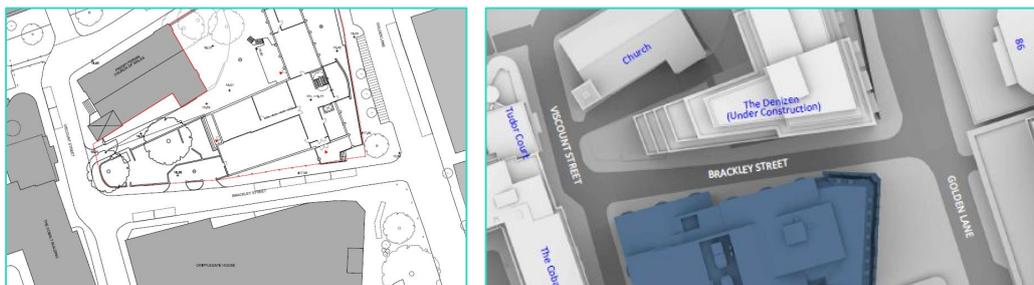
The Denizen (Recently Constructed)

- 9.4 Labelled '5' on the Plan, the property is located to the north of the Site and is a recently completed residential development. We are in receipt of the internal arrangement for the property. This has been reflected in our three-dimensional analysis model. Across 10-storeys from ground floor to 9th floor, there are a total of 145 windows serving 61 Site facing habitable rooms. It should be noted that there are a number of windows serving non-habitable spaces such as corridors that have been discounted from the analysis.

Daylight

- 9.5 The results show that 89 windows will experience fully BRE compliant alterations in VSC. Of the remaining 56 windows, 14 will derogate from BRE guidance to a borderline extent (between 20% and 29%). Therefore, the remaining 42 windows will experience moderate proportional reductions in VSC as a result of the Proposed Development.
- 9.6 At the lower storeys (first to fourth floors), there are very low existing daylight levels (as low as 4%) that disproportionately accentuate the actual reductions of between 1% and 4%. At the upper levels, the daylight levels of the windows experiencing moderate proportional reductions are abnormally low despite their unobstructed view over the existing building. This is due to internal balconies and the building form that restrict the existing daylight and thus, the daylight after the Proposed Development.

- 9.7 In relation to daylight distribution, as measured by NSL, 36 rooms will experience fully BRE compliant alterations in NSL. Of the remaining 26 rooms, 6 will derogate from BRE guidance to a borderline extent (between 20% and 29%) whilst the remaining 20 will experience moderate adverse reductions due to the relatively small windows and constrained existing baseline between the property and the Site.
- 9.8 A detailed breakdown on a room-by-room basis is contained within Appendix 3. Where rooms experience fully BRE compliant alterations in VSC and NSL, this is stated. Where rooms derogate from BRE guidance in relation to VSC and/or NSL, we have provided additional justification as to why they should be deemed acceptable in the proposed situation. These conclusions include;
- The reductions in VSC and/or NSL are considered very borderline;
 - The retained VSC levels are in the mid to late teens;
 - Dual aspect rooms served by multiple windows that mitigate light from other directions retain good daylight distribution within the room (NSL);
 - Site-facing windows with very low existing VSC values are disproportionately accentuating the reduction and the actual change is unlikely to be noticeable;
 - Several windows/rooms are obscured by the side return of The Denizen's building form and architecture; and
 - Several windows/rooms previously had a view over the existing building, thus any uplift in massing results in a proportional reduction.
- 9.9 In addition to the above, the conclusions drawn from the BRE analysis are further supported by a supplementary Radiance Report that can be read as a stand-alone document.
- 9.10 It should also be noted that The Denizen is very close to the Proposed Development and, as such, daylight amenity to the property is hindered in the existing situation, let alone after the development. The photograph below identifies the former Bernard Morgan House.



Extract 01 & 02: The Former Bernard Morgan House (left) The Denizen (right)

9.11 The BRE² states at paragraph 2.3.1 when discussing adjoining development land that,
“a well designed building will stand a reasonable distance back from the boundaries so as to enable future nearby developments to enjoy similar access to daylight. By doing so it will also keep its own natural light when the adjoining land is developed”.

9.12 A comparable can be drawn here in that the development of The Denizen involved building windows on the boundary thereby restricting access to daylight should 1 Golden Lane be redeveloped to similar propositions. This is evidenced from the low levels of daylight to many of the windows serving The Denizen in the existing situation. Indeed, the urban grain in this location is typified by many buildings having windows on the boundary. Therefore, it is reasonable to assume that there is a lower expectation of daylight than a more suburban setting. As such, we consider it appropriate that a more flexible interpretation of the BRE guidance is deployed with connection to this property and we believe it could be considered a ‘*special circumstance*’ as set out in paragraph 1.6 of the BRE:

“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”.

Sunlight

9.13 In relation to sunlight, the property is assumed to contain 62 rooms with windows orientated within 90 degrees due south. Of these 62 rooms, 43 will experience fully BRE compliant alterations in APSH. Whilst the remaining 16 rooms will derogate from default BRE compliance to varying extents (between 17.6% and 43.3%), given the constrained baseline and proximity to the Proposed Development, the retained APSH levels of between 20% and 43% (with isolated incidences in bands below) should be considered acceptable.

Overall

9.14 In summary the proposed retained levels of daylight and sunlight are what should be reasonably expected within a dense urban area where windows are located immediately upon the boundary and, in the case of the Denizen, the new footprint was stepped significantly forward from the previous building line. Hence it is appropriate to consider alternative target values as set out and discussed within the BRE guidelines.

² BRE Guidelines Site Layout Planning For Daylight And Sunlight A Guide to Good Practice.

Cuthbert Harrowing House, Golden Lane Estate

- 9.15 Labelled '6' on the Plan, this residential property is located to the north-west of the Site. The building is a reasonable distance from the Site and, as such, was not included in our initial scoping. However, in response to discussions at the public consultation event a VSC analysis has been undertaken in accordance with BRE guidance. We are unable to comment upon the NSL and/or ADF within the property since we are not in receipt of the internal arrangement. On this basis, room dimensions have been assumed from external observation, site photography and three-dimensional laser scan data. Across 5-storeys from lower ground floor to 3rd floor, there is a total of 76 windows serving 49 assumed Site facing habitable rooms.

Daylight

- 9.16 There are 6 assumed rooms across the 2nd floor that are served by 3 windows each, of which 1 is obstructed by the balcony and therefore receives no material skyline. The other 2 windows, however, provide almost all the rooms' daylight. In accordance with BRE guidance on page 7 at paragraph 2.2.6 it is stated that, "*if a room has two or more windows of equal size, the mean of their VSCs may be taken*". In this instance, the 3 windows average proportional VSC reductions of between 8.9% and 18.3% and the overall daylight impact is considered acceptable and fully compliant with the BRE guidelines.

Sunlight

- 9.17 In relation to sunlight, the property is assumed to contain 49 rooms with windows orientated just within 90 degrees due south, all of which will experience fully BRE compliant alterations in APSH and the sunlight impact is considered acceptable.

Bowater House

- 9.18 Labelled '7' on the Plan, this residential property is located to the north-west of the Site. Like Cuthbert Harrowing House, the building is a reasonable distance from the Site and, as such, was not included in our initial scoping. However, in response to discussions at the public consultation event a VSC analysis has been undertaken in accordance with BRE guidance. We are unable to comment upon the NSL and/or ADF within the property since we are not in receipt of the internal arrangement. On this basis, room dimensions have been assumed from external observation, site photography and three-dimensional laser scan data. Across 7-storeys from lower ground floor to 5th floor, there is a total of 116 windows serving 76 assumed Site facing habitable rooms.

Daylight

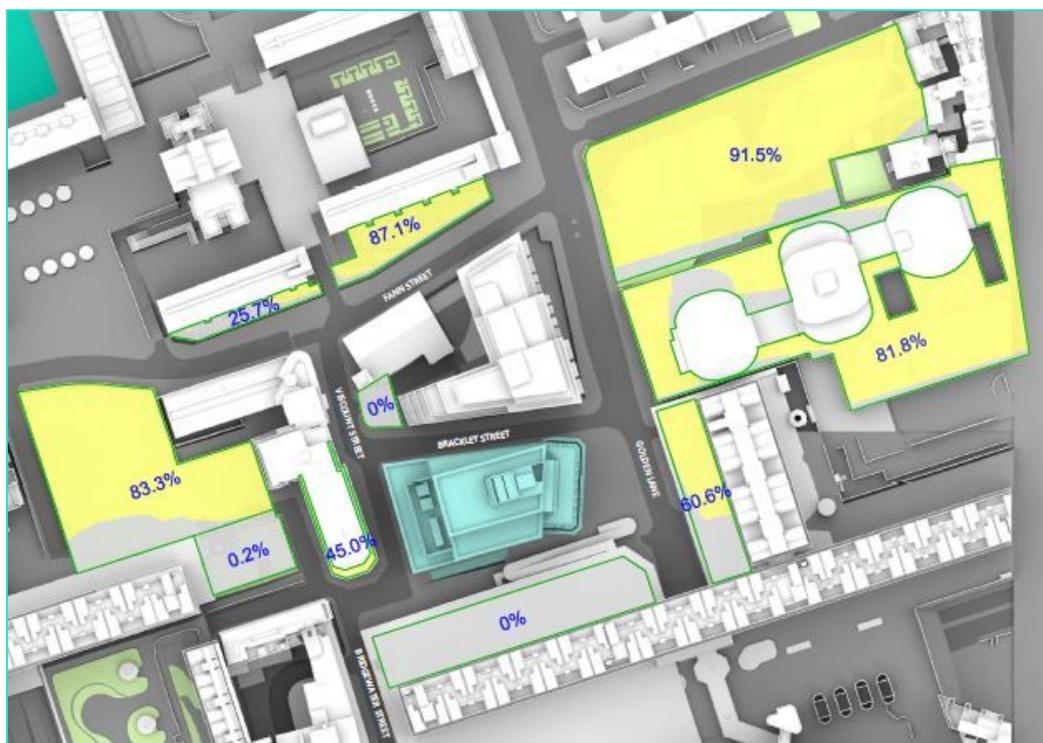
- 9.19 The situation is the same as Cuthbert Harrowing House; there are 7 assumed rooms across the 4th floor that are served by 3 windows each, of which 1 is obstructed by the balcony and therefore receives no material skyline. The other 2 windows, however, provide almost all the rooms' daylight. In accordance with BRE guidance on page 7 at paragraph 2.2.6 it is stated that, "*if a room has two or more windows of equal size, the mean of their VSCs may be taken*". In this instance, the 3 windows average proportional VSC reductions of between 11% and 17.8% and the overall daylight impact is considered acceptable and fully compliant with the BRE guidelines.

Sunlight

- 9.20 In relation to sunlight, the property is assumed to contain 76 rooms with windows orientated just within 90 degrees due south. All of which will experience fully BRE compliant alterations in Annual Probable Sunlight House (APSH) and the sunlight impact is considered acceptable.

10 Overshadowing Assessment Results

- 10.1 A total of 10 external amenity areas surrounding the Site have been assessed for overshadowing before and after the Proposed Development. The results can be seen illustrated in drawing P2592/SHA/01, contained within Appendix 1, an extract of which can be seen below (Extract 03). The drawing outlines in green the area of amenity space that has been assessed. The areas shaded in yellow represent the areas that receive at least 2 hours or more of direct sunlight on 21st March (Spring Equinox); the areas in grey receive less than 2 hours.



Extract 03: BRE 2hr Overshadowing Assessment of Amenity Areas – Proposed Scenario

- 10.2 It is assessed that the Proposed Development will not reduce the direct sunlight experienced in 6 of the surrounding areas scoped into the assessment. The remaining 4 areas will experience some reduction; however, these are to a borderline extent and within the parameters of a 20% reduction as stated by the BRE guidelines. As a result, our overshadowing assessment demonstrates that all amenity areas will experience a fully BRE compliant alteration in the level of direct sunlight received after Development.

11 Conclusion

- 11.1 The daylight and sunlight amenity to 776 windows, serving 556 Site facing, habitable rooms have been assessed across 7 neighbouring properties.
- 11.2 **Daylight and Sunlight:** The results show that, with the exception of The Denizen, all properties will experience fully BRE compliant alterations in daylight and sunlight. In respect of The Denizen, the proposed retained levels of daylight and sunlight are what should be reasonably expected within a dense urban area where windows are located immediately upon the boundary and, in the case of The Denizen, the new footprint was stepped significantly forward from the previous building line. Hence it is appropriate to consider alternative target values as set out and discussed within the BRE guidelines.
- 11.3 **Overshadowing:** The surrounding 10 amenity areas assessed will experience fully BRE compliant alterations in direct sunlight on 21st March and the overshadowing impact is considered acceptable.
- 11.4 **Overall:** We therefore conclude that the effects of the Proposed Development in relation to daylight, sunlight and overshadowing should be considered acceptable and we fully support this planning application in terms of daylight and sunlight amenity to and overshadowing on the surrounding properties.