Greggs Bakery / Twickenham

Daylight, Sunlight & Overshadowing Report

Prepared by Point 2 Surveyors

05 August 2022

GREGGS BAKERY, TWICKENHAM, RICHMOND UPON THAMES, LONDON

DAYLIGHT, SUNLIGHT AND OVERSHADOWING REPORT – RESIDENTIAL LED SCHEME

CLIENT: LONDON SQUARE DEVELOPMENTS LTD
DATE: JULY 2022
VERSION: V3
PROJECT: P1886

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POINT 2

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1 Introduction

1.1 Point 2 have been appointed by London Square Developments Ltd to undertake a daylight, sunlight and overshadowing assessment in relation to the proposed development located at the Greggs Bakery site and No. 2 Gould Road, Twickenham TW2 6RT (the 'Site').

1.2 The proposed development seeks full planning permission for the demolition of existing buildings (with retention of a single dwelling) and redevelopment of the site to provide up to 116 residential units and 175 sqm commercial floorspace (Use Class E) with associated hard and soft landscaping, car parking and highways works and other associated works (The 'Proposed Development').

1.3 This report assesses the daylight, sunlight and overshadowing effects of the Proposed Development on the surrounding residential properties as well as the daylight levels within the scheme. The analysis has been undertaken in accordance with the advice and recommendation set out in the BRE Guidelines 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice' (2022).

1.4 The calculations within this report have been based upon a 3D contextual model created from point cloud survey data, alongside the submitted 3D model, plans, elevations and sections that have been prepared by Assael Architecture Ltd.

Sources of Information

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

Point 2 Surveyors
3D Laser Scan Survey
3D Contextual Model

Assael Architecture
CAD 3D Model of the Proposed Development - received 13th July 2022

Valuation Office Agency
Property uses

Richmond Upon Thames
Neighbouring internal layouts

Estate Agent Details
Neighbouring internal layouts

2 Methodology

2.1 It is usual to assess any change in daylight and sunlight to neighbouring residential properties by reference to the guidelines set out in the 2022 Building Research Establishment (BRE) Report 'Site layout planning for daylight and sunlight - A guide to good practice' by Paul Littlefair. This document is widely used by planning authorities as the means by which to judge the effects of a scheme on neighbouring amenity as well as within the scheme itself.

2.2 The new version of the report, published in June 2022 has replaced the previous version which was published in 2011. Whilst the scheme design was developed and optimised in accordance with the 2011 guidelines, we have been asked to provide an updated report to reflect the new 2022 version. Although the methodology for the assessment of the impact on neighbouring properties has not materially altered, the assessment of the light within new developments is fundamentally different. A new Climate Based Daylight Modelling (CBDM) methodology replaces the old Average Daylight Factor (ADF) methodology. The new methodology is more complex, is arguably a more accurate simulation of actual daylight levels but has targets that are generally more difficult to achieve in an urban context.

2.3 The BRE Guidelines are not mandatory, and they explicitly state that the numerical target values should be interpreted flexibly. While local planning authorities will consider a proposed scheme in relation to the BRE guidance, consideration will be given to the context within which a scheme is located, and daylight and sunlight will be one of a number of planning considerations.

2.4 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.

2.5 Non-habitable rooms such as bathrooms and hallways as well as commercial buildings have not been considered within this report.

2.6 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 used for assessing amenity within proposed or consented neighbouring residential accommodation, namely Climate Based Daylight Modelling (CBDM).

2.7 In terms of sunlight, we examine the Annual Probable Sunlight Hours (APSH) and in relation to sunlight amenity to gardens and amenity spaces, we apply the quantitative BRE overshadowing guidance.

2.8 These measures of daylight and sunlight are discussed in the following paragraphs –

Diffuse Daylight

2.9 **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.

2.10 For existing buildings, the BRE Guidelines are based on the loss of VSC at a point at the centre of a window, on the outer plane of the wall.

2.11 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.

2.12 **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.

2.13 The BRE 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%).

2.14 **Climate Based Daylight Modelling (CBDM) for External Properties**– As outlined within the BRE Guidelines (Appendix F, F9, ii, p87) this assessment can be used where the existing building is proposed but not built. A typical situation might be where the neighbouring building has received planning permission but not yet been constructed.

2.15 In consideration of this we have assessed the consented rooms within Lock House, 75 Norcutt Road using CBDM.

2.16 The CBDM assessment is discussed further within the Daylight Within Proposed Developments section (2.25-2.31) of this report.

Sunlight

2.17 **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.

2.18 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%).

2.19 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. Normally loss of sunlight need not be analysed to kitchens and bedrooms….*'.

2.20 On the basis of the above we have not considered APSH to bedrooms or kitchens unless they also comprise a living space.

2.21 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.

Overshadowing (Sun on Ground)

2.22 Section 3.3 of the BRE guidelines describes the method of assessment of the availability of sunlight within garden/amenity spaces. This relates to the proportion of shading on March 21st.

2.23 The following types of open spaces to be assessed would normally include:

- Gardens, such as the main back garden of a house or communal garden including courtyard and roof terraces.
- Parks and playing fields
- Children's playgrounds
- Outdoor pools, marinas, and lakes
- Sitting out areas and public squares
- Nature reserves

2.24 The BRE criteria for gardens or amenity areas are as follows, '*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 21 March. If as a result of a new development an existing garden or amenity space does not meet the above, and the area which can receive two hours of sunlight on 21 march is less than 0.8 times its former value, then the loss of amenity is likely to be noticeable*.' The results are analysed against these criteria.

Daylight within Proposed Developments

2.25 In the new 2022 revision of the BRE guidelines, a Climate Based Daylight Modelling (CBDM) methodology replaces the old Average Daylight Factor (ADF) methodology. The new methodology is more complex, is arguably a more accurate simulation of actual daylight levels but has targets that are generally more difficult to achieve in an urban context.

Climate Based Daylight Modelling (CBDM)

2.26 The new CBDM methodology is based on the British Standard 'Daylight in Buildings' (BS EN17037). This contains advice and guidance on interior daylighting for all buildings across Europe but also has a UK National Annex which provides suggested targets for dwellings in the UK.

2.27 BS EN17037 supersedes BS 8206 Part 2 which was based on Average Daylight Factor (ADF) and is no longer recommended.

2.28 The CBDM methodology is based on target illuminances from daylight. This is the Daylight Illuminance (DI) to be achieved over half the area of the room (measured on a reference plane at tabletop level) for at least half of the daylight hours in a typical year. The calculations are based on weather data files which cover different regions of the UK. The calculations are done for each hour of the day for every day of the year. There are 8760 hours in the year, of which 4380 are daylight hours, and therefore the targets should be achieved for 2190 hours in the year. The methodology uses a more accurate sky model which simulates the movement of the sun throughout the day and accounts for the weather conditions at the time. As a result, CBDM accounts for the presence of sunlight and therefore the orientation of the rooms/windows is accounted for. A south facing room is likely to have access to higher levels of natural light than a north facing room and as a result, in order to comply a north facing room would typically need larger windows.

2.29 The UK National Annex gives illuminance recommendations of 100 Lux in bedrooms, 150 Lux in living rooms and 200 Lux in kitchens. These are median illuminances to be achieved over 50% of the assessment grid for at least half of the daylight hours.

2.30 Where a room has a shared use, the highest target should apply. However, it also says that Local Authorities could use discretion here and that a living room target of 150 Lux could be used for combined living/kitchen/dining room if the kitchens are not treated as habitable spaces, as it may avoid small separate kitchens in the design.

2.31 There is a further simplistic methodology based on daylight factors (not the same as the old ADF methodology), which does not use climate-based data but uses a simple fixed sky model. However, since this alternative methodology is simplistic and does not account for the effect of sunlight, or the orientation of the room, it has not been used in our assessment.

Average Daylight Factor (ADF)

2.32 Whilst ADF has been superseded by the new CBDM methodology, the internal layouts of the Proposed Scheme have been developed and refined by reference to the ADF methodology and therefore we have also provided the ADF results for comparison and to serve as a benchmark. The ADF method was described in the previous 2011 BRE guidelines and British Standard BS8206 Part 2, “Lighting for Buildings”, although both documents are now obsolete.

2.33 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. The acceptable minimum depends on the room use and the presence of supplementary lighting.

2.34 The 2011 BRE provides guidance for acceptable values. These are 1.0% for a bedroom, 1.5% for a living room and 2.0% for a kitchen. In cases where the one room serves more than one purpose, the minimum ADF should be that for the room type with the higher value, although flexibility should be applied in an urban context.

3 Parameters and Assumptions

3.1 In order to calculate the various measures of daylight and sunlight, it is necessary to construct a 3D computer model. The model is then analysed using proprietary software to calculate the various measures of daylight and sunlight.

3.2 The 3D model was created to reproduce the massing of the buildings both on and surrounding the site at a level of detail appropriate to the calculations performed. All heights in the model are in mm Above Ordnance Datum (AOD).

3.3 In assessing the impact of a new development on neighbouring properties, it is usual to only consider main habitable spaces (i.e. living rooms, bedrooms and kitchens) within residential properties. In accordance with the BRE and British Standard guidance, VSC and APSH values have been calculated at the window centre, on the outside wall face. For windows with a cill below working plane level, the window area above and below the working plane has been considered separately and weighted in accordance with the latest BRE guidance.

3.4 Best estimates were made in establishing building use (residential or commercial) and room uses; generally, these were made from external observation, VOA searches and recourse to planning records where available. Where floor plan information could not be obtained, reasonable assumptions have been made as to the internal configuration of the rooms behind the fenestration.

3.5 In relation to the CBDM assessment of the daylight and sunlight within the proposed scheme, the following assumptions and parameters have been used. The design team have specified light-coloured internal finishes and therefore, in accordance with paragraph C24 of Appendix C of the new BRE guidelines, the following reflectance values have been used: light pastel walls with a reflectance of 0.7, light wood veneer floors/ cream carpets with a reflectance of 0.4, and white ceilings with a reflectance of 0.8. All external reflectance levels have been assumed to be 0.2 as per the guidelines.

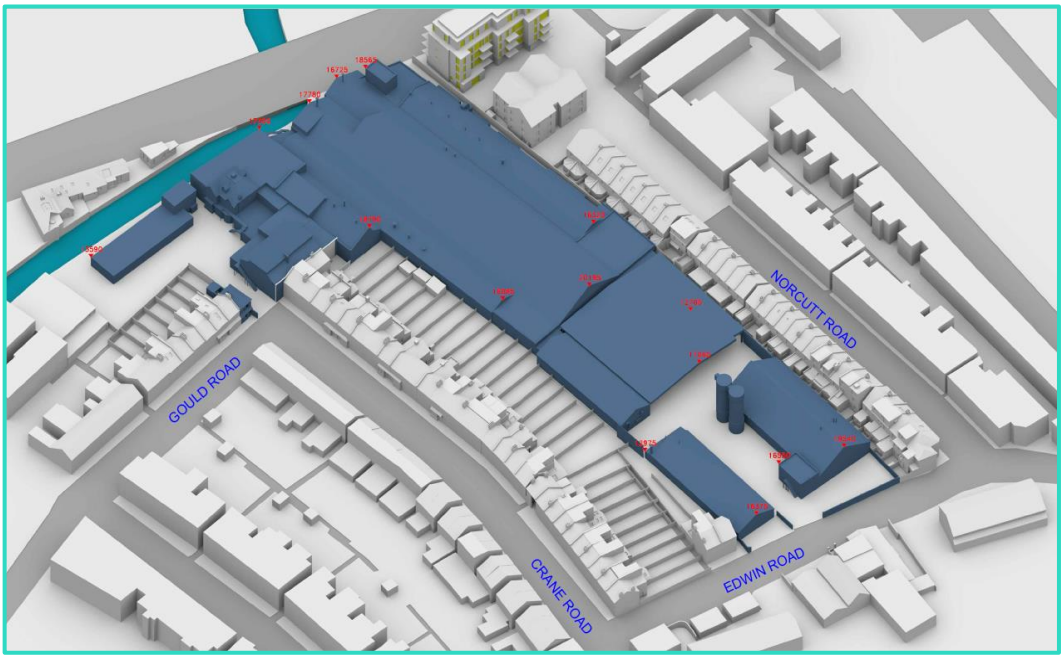
3.6 As per the guidelines, for most windows a transmittance factor of 0.68 has been used, except where there is obscured glazing, a lower transmittance factor of 0.56 has been assumed. A window framing factor of 0.85 was derived from the framing dimensions for a typical window shown on the architects' drawings. A maintenance factor of 8% has been allowed to account for the effect of dirt on the glass in an urban environment. The room assessment grid area excludes a 300mm band around the perimeter of the room, as per the paragraph C28 of the guidelines.

3.7 The ADF calculations were based on the previous BRE and British Standards and the following reflectance values were taken from BS 8206 Part 2: pale cream walls with a reflectance of 0.81, light wood veneer floors/ cream carpets with a reflectance of 0.4, and white ceilings with a reflectance of 0.85. Note these values are slightly more favourable than those suggested in the new guidance. The window parameters were the same as those used for the CBDM assessment.

4 The Site and the Proposed Development

4.1 The Site is bound by Norcutt Road to the east, Edwin Road to the south and Crane and Gould Road to the west. The existing site consists of various industrial buildings ranging in height from one to three storeys which cover the majority of the Site.

4.2 Our understanding of the existing site is illustrated below but also within drawings P1886/31,32 & 33 which can be found within Appendix 1 of this report.

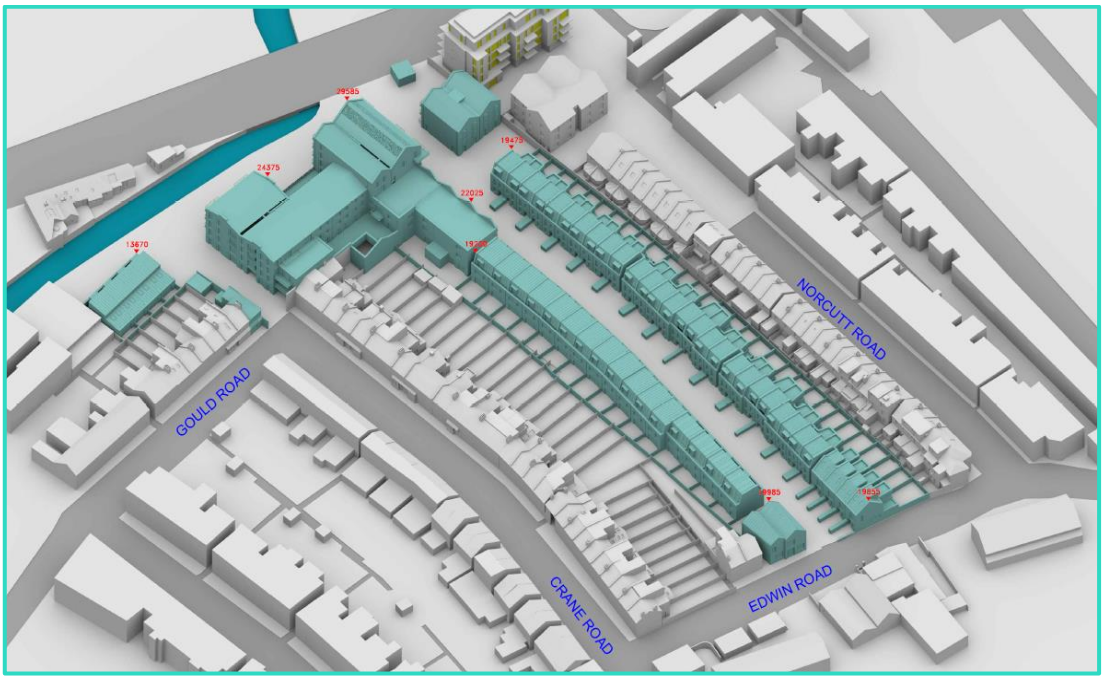


Existing Site

4.3 The Proposed Development involves the demolition of existing buildings (with retention of a single dwelling) and redevelopment of the site to provide up to 116 residential units and 175 sqm commercial floorspace (Use Class E) with associated hard and soft landscaping, car parking and highways works and other associated works.

4.4 The massing of the scheme has evolved over an extended period of time in order to produce a high-quality architectural response to the site which seeks to limit the impacts to neighbouring properties whilst delivering a quantum of massing that is required for the development to be a viable proposition.

4.5 The Proposed Development is illustrated below as well as in drawing numbers P1886/25-27 located within Appendix 1.



Proposed Development

5 Planning Overview

The BRE Guidelines

5.1 This assessment has been undertaken in accordance with the BRE document entitled *'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice'* 2022 (the BRE Guidelines), which is the principal guidance on daylight and sunlight.

5.2 The BRE Guidelines is a national document that offers advice on safeguarding of daylight and sunlight within existing buildings. Due to its national application, the framework for designers, practitioners and planning officials to refer is very much a 'one size fits all' approach and is applicable to a variety of built environments, which range from low-rise market towns in the home counties, to urban locations, to areas where significant urban regeneration is taking place.

5.3 The BRE Guidelines repeatedly acknowledges the shortcoming of the 'one size fits all approach' and encourages the user, whether that be designers, consultants or planning officials to apply the guidelines in a manner that is appropriate for a particular situation. For example, in the summary on page 4 it states:

> *"This report as a comprehensive revision of the 2011 edition of site layout planning for daylight and sunlight.* ***It is purely advisory and a numerical target value may be varied to meet the needs of the development and its location****. Appendix F explains how this can be done in a logical way while retaining consistency with the British Standard recommendations on interior lighting."*

5.4 In Section 1: Introduction, at paragraph 1.6 it states:

"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 the many factors in site layout design****. In special circumstances the developer or planning authority may wish to use different target values.*** *For example, in historic city centres 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."*

5.5 Finally, in Appendix F it states at section F1:

5.6 *"Sections 2.1 and 2.2 and 2.3 give numerical target values in assessing how much light from the sky is blocked by obstructing buildings.* ***These values are purely advisory and different targets may be used on special requirements of the proposed development or its location.***

6 Daylight and Sunlight to Existing Neighbouring Properties

6.1 The BRE Guidelines recommend that daylight and sunlight assessments should be undertaken in relation to any properties which might be considered to have a reasonable expectation for natural light. This would ordinarily include any residential buildings within the vicinity of the site.

6.2 The site is surrounded by residential properties to the east, south and west. The following 75 surrounding properties have been assessed in terms of the effect of the Proposed Development upon their daylight and sunlight amenity:

- Lockcorp House, 75 Norcutt Road
- Alcott House, 73 Norcutt Road
- 65-71 Norcutt Road
- 1-63 Norcutt Road (odd)
- 2-58 Crane Road (even)
- 4 -14 Gould Road (even)
- 71 Edwin Road
- 50 Edwin Road
- 52 Edwin Road
- 3 Mereway Cottages
- 32 Gould Road, Crane Mews

6.3 The location of each of these properties has been identified in the drawings located in Appendix 1. Tables of results for the assessed properties are contained within Appendix 2.

6.4 Where possible, we have incorporated layout information for the surrounding properties into our analysis. This information has been sourced from online research of publicly available records. In accordance with normal working practice, we have not obtained access to any of these properties in order to confirm that the floorplans obtained accurately reflect the layout of the properties. Where applicable, the use of a room has been specified in the tables of results in Appendix 2.

6.5 We have managed to obtain full or partial floorplans for the following properties:

- 8, 10, 14, 16, 22, 28, 30, 32, 36, 44, 50, 58 Crane Road
- 4, 6, 8, 14 Gould Road
- Mereway Cottages (partial)
- 1, 3, 7, 15, 19, 23, 33, 49, 53, 57, 59, 63, 65-71, 73 Norcutt Road
- Lockcorp House, 75 Norcutt Road
- 52 Edwin Road

6.6 For those properties where layout information was not available, reasonable assumptions have been made as to the internal configurations and uses of the rooms behind the site facing windows. The majority of properties surrounding the site are terraced and where we have been unable to obtain floorplans, we have replicated the layouts from the properties where floorplans have been obtained, if appropriate to do so.

6.7 Rooms which can clearly be identified as non-habitable space (i.e. corridors, bathrooms or stairs) have not been included within the assessment. Any rooms where the uses are not clear from external inspection have been included within the assessment.

6.8 Please note that where properties are set back from the site such as those on the southern end of Crane Road (2-36 even), we have only modelled and assessed the effects to the ground floor rooms/windows.

7 Results of the Technical Analysis

7.1 Of the 76 residential properties included within our technical analysis, 71 will fully adhere to the BRE Guidelines for daylight (VSC and NSL) and sunlight (APSH).

7.2 The majority of properties along Norcutt Road (3-59 odd) as well as Mereway Cottages will benefit from large gains in daylight and sunlight amenity as a result of the implementation of the Proposed Development. These properties will experience the following gains:

- A gain in VSC of between 1% and 765%
- A gain in NSL of between 1% and 150%
- A gain in Winter APSH of between 4% and 100%
- A gain in Annual APSH of between 1.2% and 62%.

7.3 Large percentage gains of this nature are very unusual for a development site in a London borough, where residential properties are situated in close proximity to each other. This development is exemplary in that regard.

7.4 Overall, 33 properties surround the site contain rooms/windows that will experience some form of daylight or sunlight benefit as a result of the implementation of the Proposed Development.

7.5 The five properties that experience breaches in the BRE Guidelines for either daylight or sunlight are discussed in further detail below:

58 Crane Road

7.6 It was possible to obtain floorplans for the ground floor of this property. The room uses on the 1st and 2nd floor have been assumed based on the floorplans obtained for neighbouring properties.

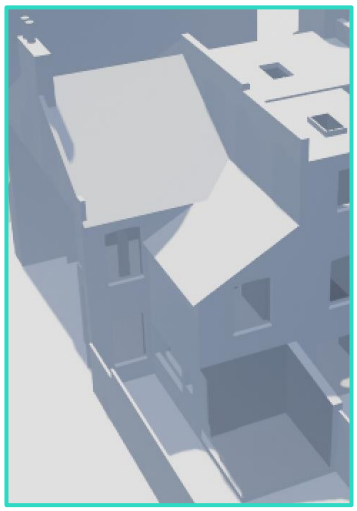
7.7 We understand this property contains five rooms that are served by a total of seven windows.

7.8 Four of these rooms served by six windows will adhere to the BRE Guidelines for daylight (VSC and NSL).

7.9 The remaining room (R1/642) is served by one window which experiences an alteration in VSC of 27%, which is in excess of the 20% outlined within the BRE Guidelines. However, this window will retain a VSC of 25%, which is just below the 27% recommended by the BRE Guidelines. Furthermore, the room this window serves will adhere to the BRE Guidelines for daylight distribution (NSL), retaining direct skylight to 96% of the room area.

7.10 In terms of APSH, the rooms within this property that face within 90° of due south will all adhere to the BRE Guidelines, thus there will be a negligible change in sunlight to this property.

4 Gould Road



7.11 It was possible to obtain floorplans for this property, which we have incorporated into our 3D model.

7.12 On the basis of the obtained floorplans this property contains three habitable rooms on the ground floor (conservatory, dining room and kitchen) with a bedroom and a bathroom on the 1st floor that face the site.

7.13 The bedroom on the 1st floor, which is served by one window, will adhere to the BRE Guidelines for daylight (VSC and NSL).

7.14 The three rooms on the ground floor are discussed in greater detail below.

7.15 The ground floor conservatory is served by two windows and a roof light. One of the windows (W1) will experience an alteration in VSC of 28%, which is beyond the 20% allowed for within the BRE. The remaining windows will however adhere to guidance meaning that the room will remain BRE compliant for NSL and retain direct skylight to 100% of the room.

7.16 The dining room on the ground floor is served by one window which adheres to guidance for VSC. The room will experience an alteration in NSL of 27% however, the room will retain direct skylight to 63% of the room area, which in our opinion is reasonable for a London borough.

7.17 The remaining ground floor kitchen served by two windows. Both windows will experience alterations in VSC of 33% and 37% while the room will experience an alteration in daylight distribution of 33%. The room will however retain direct skylight to 59% of the room area, which we believe is a reasonable level for a London borough.

7.18 In terms of APSH, none of the rooms assessed within this property face within 90° of due south, thus they have not been included within our analysis.

73 Norcutt Road (Alcott House)

VSC SUMMARY					NSL SUMMARY				
		Below BRE Guidelines					Below BRE Guidelines		
Total Windows Assessed	Total That Meet BRE	20-29% Loss	30-39.9% Loss	>=40% Loss	Total Rooms Assessed	Total That Meet BRE	20-29% Loss	30-39.9% Loss	>=40% Loss
41	37	2	2	0	29	28	0	1	0

7.19 It was possible to obtain partial floorplans for this property which have been incorporated into our model.

7.20 A summary table has been included above and illustrates that 37 of the 41 windows assessed (90%) will adhere to the BRE Guidelines for VSC, while 28 of the 29 rooms assessed (97%) will adhere to the BRE Guidelines for daylight distribution.

7.21 The remaining four windows serve three single aspect bedrooms and a living room.

7.22 Two of these bedrooms are located on the ground floor in Flat 1 and the windows serving these rooms experience alterations in VSC of 28% and 35%, which breach guidance. Of the two bedrooms they serve, one room (R4/10) will adhere to guidance for NSL while the second (R3/10) will experience an alteration of 38%, which is beyond the 20% allowed for. This room will however retain a view of the sky dome to 60% of the room area, which in our opinion is reasonable for a London borough. It is also worth noting that the living room within Flat 1 will adhere to guidance for VSC and NSL.

7.23 The remaining bedroom (serving Flat 5) experiences an alteration in VSC of 24%, which is just beyond guidance. The room this window serves will however adhere to the BRE Guidelines for NSL.

7.24 The remaining room is a living room (R4/11) located on the 1st floor. This room is dual aspect and served by two windows, one of which will adhere to the BRE Guidelines for VSC, while the other will experience a percentage alteration in VSC of 32%. This window will however retain a VSC of 24%, which in our opinion is a good retained VSC in a London borough, albeit a departure from the nationally applicable standards offered by the BRE. The room in question will adhere to the BRE Guidelines for daylight distribution retaining direct skylight to 83% of the room area.

7.25 In terms of APSH, the rooms within this property that face within 90° of due south will all adhere to the BRE Guidelines, thus there will be a negligible change in sunlight to this property.

7.26 It is worth noting that the vast majority of the rooms within this property will retain exceptional levels of APSH. The average retained Annual APSH being 63% (BRE recommends 25%) and the average retained winter APSH being 17% (BRE recommends 5%).

75 Norcutt Road (Lockcorp House)

7.27 This property was granted planning permission on the 19th of June 2020 (planning ref: 19/2728/FUL). At the time of writing construction hasn't started on this building and therefore there are no residents to experience any change in amenity. It was possible to obtain floorplans for this property from the planning application and therefore our model was updated prior to technical analysis being undertaken.

7.28 Where buildings have been consented but not yet constructed, the BRE Guidelines suggest that Climate Based Daylight Modelling (CBDM) is an appropriate form of assessment (BRE Guideline Appendix F, F9). We have therefore commented on the CBDM results below.

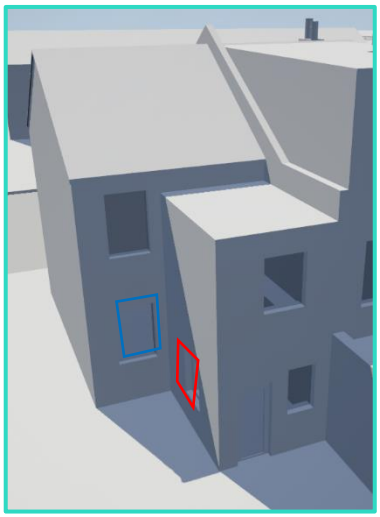
7.29 We have included 42 habitable rooms within our analysis. Of those 42 rooms, 41 (98%) will achieve the suggested minimum CBDM values with the Proposed Development in place (these target values are outlined in Section 2.29 of this report).

7.30 The remaining room, an LKD (R1/1100), achieves a median illuminance lux of 198 which is fractionally below the 200 lux suggested in the BRE for a multiuse room. However, it is above the 150 lux suggested for a living room, which we would consider to be a good level of amenity for an urban setting.

7.31 In terms of APSH, 16 rooms have been included within our technical analysis. 15 of these rooms meet the suggested minimum winter and annual APSH values without the Proposed Development in place. All of these 15 rooms continue to meet these suggested minimum values following the implementation of the Proposed Development.

7.32 The remaining room is an LKD (R1/1102) which achieves a winter APSH of 9% and an annual APSH of 22% in the existing condition. With the Proposed Development in place this reduces to 4% in winter, which is just below the 5% suggested, and an annual APSH of 17%, which is a 5% absolute change and only 1% beyond guidance in relative terms.

50 Edwin Road



7.33 It was not possible to obtain floorplans for this property and therefore reasonable assumptions have been made with regards to the internal layouts within the building.

7.34 The property contains four rooms that are served by a total of six windows.

7.35 One of the 1st floor rooms (R1/1041), which is served by one window, will adhere to the BRE Guidelines for daylight (VSC and NSL).

7.36 The second room on the 1st floor is also served by one window. This window experiences a percentage alteration in VSC of 21%, which is just beyond guidance and the window will retain a VSC of 24% (just below the 27% suggested by the BRE). The room will adhere to guidance for NSL with 97% of the room retaining direct daylight.

7.37 One room on the ground floor (R1/1040) is served by three windows. Two of the three windows adhere to the BRE Guidelines while the third window (W2/1040), which directly faces the site (outlined in red above), will experience a percentage alteration in VSC of 60%. The mitigating windows do however mean that the room these windows serve will adhere to the BRE Guidelines for NSL with the room retaining direct skylight to 98% of the room area, which is a very good level of daylight distribution.

7.38 The final room on the ground floor (R1/1060) is served by a single window (outlined in blue in the image above). This window is flanked by the existing warehouse on the site and experiences a percentage alteration in VSC of 34%.

7.39 In situations such as this the BRE recognises that '*a larger relative reduction in VSC may also be unavoidable if the existing window has projecting windows on one or both sides of it.*' (2.2.12)

7.40 The room will adhere to guidance for NSL with 86% of the room retaining direct skylight.

7.41 In terms of APSH, none of the rooms assessed within this property face within 90° of due south, thus they have not been included within our analysis.

8 Overshadowing of External Amenity Spaces

8.1 We have undertaken a Sun on Ground assessment for the rear gardens serving the Gould Road, Crane Road, Edwin Road and Norcutt Road properties.

8.2 The drawing, which is located in Appendix 3, compares the area of the gardens receiving at least 2 hours of direct sunlight on the March 21st in both the existing and proposed condition.

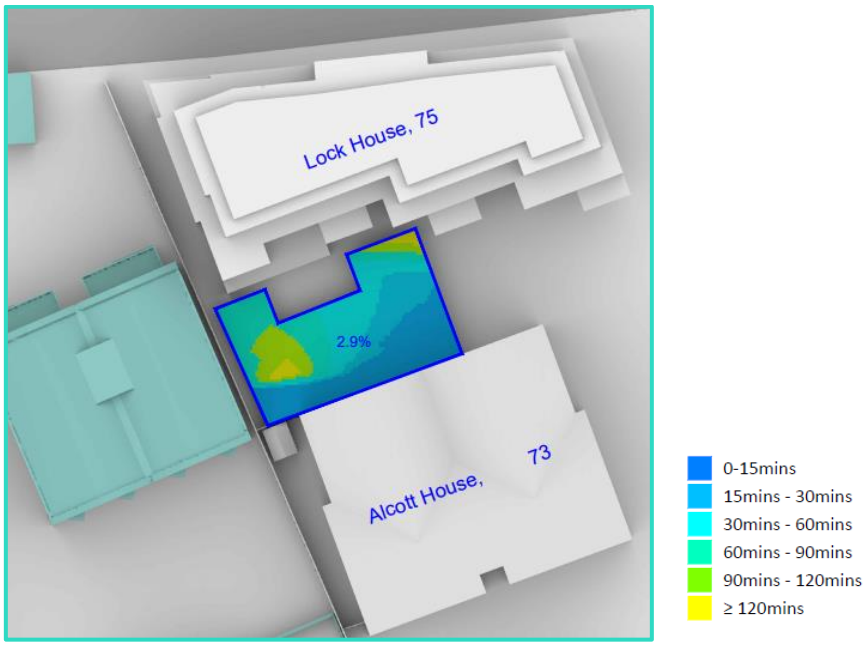
8.3 The results for the assessment undertaken on the 21st of March demonstrate that all of the amenity spaces included within the technical analysis, with the exception of one, will meet the BRE Guidelines.

8.4 14 gardens located along Norcutt Road to the east of the site and four properties along Gould Road to the west will experience gains in the area that receives at least two hours of direct sunlight in the proposed scenario. An example of this is 9 Norcutt Road which does not currently experience 2 hours of direct sunlight to any of the garden. This improves to 36% of the garden with the implementation of the Proposed Development. This is a unique situation as one would ordinarily expect development within a London Borough to reduce the availability of sunlight as opposed to increase it and therefore the scheme has a material beneficial effect to these properties.

8.5 The area to the south of Lockcorp House (75 Norcutt Road), will experience a reduction in the area that receives 2 hours of sunlight from 46% to 3%, which is beyond guidance.

8.6 The sun on ground test is fairly simplistic as it only identifies the areas that achieve 2 hours of direct sunlight and does not consider how much direct sunlight the other areas would receive. We have therefore undertaken an additional time in sun gradient study. This allows us to understand the duration of sun on those areas that receive less than 2 hours.

8.7 The image below illustrates the position using a false colour render scale, whereby the duration of time in sun is denoted in 15-minute intervals. This has also been included within Appendix 3.



8.8 As can be seen in the image above, while only 3% of the area achieves 2 hours of direct sunlight there is a much larger area which will receive direct sunlight for between 30-120 minutes demonstrating that a large proportion of the area will receive some direct sunlight, albeit below the 2 hour target.

8.9 In addition to the March assessment, we have also considered the sun on ground assessment for the 21st of June (drawing P1886/SHA/11 also located in Appendix 3). This assessment demonstrates that 89% of this area will achieve at least 2 hours of direct sunlight. It is acknowledged that the 21st of June represents the maximum availability of sunlight and that the months either side would achieve lower levels of sunlight. However, this assessment indicates that the space is likely to receive reasonable levels of sunlight during the summer months

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9 Internal Daylight Amenity to the Proposed Development

9.1 Point 2 have undertaken Climate Based Daylight Modelling (CBDM) of the habitable rooms within the Proposed Development. As the internal layouts of the Proposed Development have been developed and refined by reference to the Average Daylight Factor (ADF) methodology prior to the publication of the latest BRE Guidelines in June 2022, and given the infancy of the CBDM methodology, we have also provided the ADF results for comparison and to serve as a benchmark.

9.2 In total, we have tested 395 habitable rooms across the scheme, comprising 261 bedrooms, 104 LKD's/kitchen/kitchen dining rooms and 30 living rooms/living-dining rooms. The location and presence of private amenity space (balconies) have been taken into consideration within our calculations. Whilst it is recognised that balconies will limit the available daylight reaching the fenestration, these areas will provide valuable private amenity space for the future occupiers of the building.

9.3 Drawings P1886_CBDM_B_10-18 located in Appendix 4 show the internal arrangements within the proposal, together with daylight illuminance (Lux level) contours that are achieved for 50% of daylight hours. The drawings also show the median daylight illuminance figure for each room. A full set of detailed ADF results are also included within Appendix 4 of this report. The individual ADF values are presented on the internal layout plan drawings numbered P1886_I_25-32 inclusive.

9.4 Of the 395 rooms assessed, 318 (81%) will achieve the suggested CBDM values for their relevant room uses as outlined within the BRE Guidelines. This includes all of the habitable rooms within Blocks D1-D4 and G1-G4. When considering the ADF results, 376 of the 395 habitable rooms tested (95%) will achieve the suggested ADF values for their relevant room uses, which would historically have been considered an excellent rate of compliance, particularly for a development situated in an urban setting.

9.5 The remaining 77 rooms consist of 45 LKD's, 30 bedrooms, 1 dining room and 1 kitchen. It is worth noting that of these 77 rooms, 58 would meet the ADF target values for their relevant room use. Further explanation of these 77 rooms is provided below.

9.6 Firstly, both the kitchen and dining room referred to above form part of 2 Gould Road which is an already established terraced house adjacent to the site. The kitchen (R3/650) and the dining room (R2/650) are located to the rear of the building and are both served by small windows which are characteristic of terraced houses in the area. As such, both rooms fall below the suggested values with the kitchen achieving a medium illuminance level of 91 lux compared to the 200 lux suggested within the BRE.

9.7 The dining room achieves a medium illuminance of 58 lux compared to the 150 lux suggested within the BRE. This house will, however, benefit from a well daylit living room which achieves a medium illuminance level of 534 lux which is far in excess of the 150 lux suggested.

9.8 With regards to the 45 LKD's, it is worth noting that the vast majority of these rooms are located on the ground floor and are north facing meaning these rooms have restricted access to daylight. CBDM accounts for the presence of sunlight and therefore the orientation of the rooms/windows is accounted for. A south facing room is likely to have access to higher levels of natural light than a north facing room and as a result it is harder for north facing rooms to meet the suggested values.

9.9 The location and presence of private amenity space (balconies) has also been taken into consideration in our calculations. Whilst it is recognised that balconies will limit the available daylight, these areas will provide valuable private amenity space for the future occupiers of the building.

9.10 Of the 45 LKD's, 3 will achieve median illuminance levels of between 157 – 177 lux to 50% of the room area, which is above the suggested value for a living room. A further 22 LKD's will achieve medium illuminance levels of between 104-142 lux to 50% of the room.

9.11 19 of the remaining 20 LKD's will achieve medium illuminance levels of between 55-100 lux. As previously mentioned, this is primarily driven by the fact that all but one of these rooms is north facing. The final LKD which is south facing, achieves a medium illuminance of 25 lux (R3/1500). This is because one of the windows serving it is located beneath a balcony naturally limiting the view of available sky, whilst the main window facing directly onto the neighbouring 2 Gould Road restricting its outlook.

9.12 When considering the ADF levels for these 14 rooms, 11 will achieve an ADF of 1.5%-2.4% or above which is in line with or better than the ADF requirement for a living room. When considering all 35 LKD's, 20 will achieve an ADF of 2% or more. A further 11 rooms will achieve an ADF of between 1.5%-1.9%, which is in line with or above the suggested value for a living room. Only 4 LKD's fall below this achieving ADF values of between 0.9%-1.4%.

9.13 Of the 30 bedrooms that do not achieve the suggested median illuminance levels, 21 will achieve levels of between 71 to 98 lux, which is just below the 100 lux suggested. The remaining 9 rooms are either north facing or are located on the corner of the building and are flanked on one side. As a result of these limiting factors, these rooms will achieve lower median illuminance levels of between 33-68 lux.

9.14 When considering ADF levels for these 30 bedrooms, all but 2 will achieve an ADF of 1% or above. The remaining 2 bedrooms will achieve an ADF of 0.9% which is just below the 1% suggested.

9.15 Overall, there is a good rate of compliance to the new median illuminance targets set out in the updated BRE Guidance, with 81% of habitable rooms across the development exceeding the levels recommended for their room use. Whilst the previous ADF methodology has now been superseded, it is informative to note that based upon the historic assessment methodology upon which the scheme was developed, the overall compliance rate would have been 95%, representing an excellent level of internal daylight.

10 Summary and Conclusions

10.1 Point 2 have assessed the Assael Architecture scheme for the Greggs Bakery site in order to determine how the Proposed Development affects the daylight and sunlight amenity to the surrounding residential properties as well as the levels of daylight within the scheme. An assessment of the Sun Hours on Ground has also been undertaken for the relevant external amenity spaces.

10.2 This site is fairly unique in that there are significant daylight, sunlight and overshadowing benefits to a considerable number of properties along Norcutt Road. These benefits include an increase in VSC between 1% and 765%, an increase in NSL of between 1% and 150%, an increase in Winter APSH of between 4% and 100% and an increase in Annual APSH of between 1.2% and 62%.

10.3 The daylight and sunlight analysis demonstrates that 470/481 (98%) of the windows assessed for VSC will adhere to the BRE Guidelines. In terms of NSL, 244/247 rooms (99%) will adhere to the BRE criteria. Finally, 126/127 (99%) of the rooms relevant for sunlight will adhere to the BRE Guidelines for APSH. This is an exceptional level of compliance with the BRE Guidelines, particularly for a site in a London borough.

10.4 Lockcorp House (75 Norcutt Road) was consented in June 2020. Where developments are consented but yet to be constructed the BRE suggests that Climate Based Daylight Modelling (CBDM) analysis is the more appropriate form of assessment. The results demonstrate that 41 of the 42 habitable rooms assessed will achieve the suggested minimum CBDM values with the Proposed Development in place, with the one remaining LKD falling just fractionally below the BRE median illuminance target but still well in excess of the living room target.

10.5 When considering the Sun on Ground analysis on the 21st of March, all of the surrounding amenity areas with the exception of one (Lock House, 75 Norcutt Road), will meet the BRE Guidelines. Meaning that they will either retain 2 hours of sunlight to at least 50% of their area or, experience less than a 20% reduction from their existing values with regards to sunlight.

10.6 14 gardens located along Norcutt Road to the east of the site and four properties along Gould Road to the west will experience material gains to their amenity areas as a result of the implementation of the Proposed Development.

10.7 The area to the south of Lock House (73 Norcutt Road) will experience a reduction in the area that sees at least two hours of direct sunlight from 46% to 3%. However, there is a much larger area which will receive direct sunlight for between 30-120 minutes demonstrating that a large proportion of the area will receive some direct sunlight, albeit below the 2-hour target. This area will also experience good levels of direct sunlight during the summer months.

10.8 Overall, the daylight and sunlight results for neighbouring properties demonstrate a very high level of compliance for a development in a London borough. In fact, the development benefits a number of the surrounding properties when considering daylight, sunlight and sun on ground amenity.

10.9 The CBDM results demonstrate that 318 of the 395 rooms assessed (81%) will achieve the suggested median illuminance levels for their relevant room uses as outlined within the BRE Guidelines. When considering the ADF results, 376 of the 395 habitable rooms tested (95%) will achieve the suggested ADF values for their relevant room uses, which would historically have been considered an excellent rate of compliance.

10.10 With regards to the rooms that fall below the suggested CBDM values, the vast majority are north facing meaning these rooms have restricted access to sunlight. CBDM accounts for the presence of sunlight as part of the illuminance calculation and therefore the orientation of the rooms/windows is taken into account. A south facing room is likely to have access to higher levels of natural light than a north facing room and as a result it is harder for north facing rooms to meet the suggested CBDM values.

10.11 The scheme has been designed to harness good access to natural light amenity within the new dwellings, as demonstrated by the compliance levels to the new, more stringent CBDM daylighting assessments. This is further supported by the excellent rate of compliance to the previously well-established ADF criteria. Therefore, it is our view that the quality of internal amenity for future residents should be considered acceptable.

Appendix 1: Existing and Proposed 3D Drawings