create
CONSULTING
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51 CALTHORPE STREET, LONDON
Daylight/Sunlight Report

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Daylight/Sunlight Report

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Contents

Registration of Amendments

Revision	Amendment Details	Revision Prepared By	Revision Approved By

1.0 INTRODUCTION

1.1 Create Consulting Engineers Ltd (Create) has been commissioned by Brooks/Murray Architects, on behalf of Mr Simon Firth, to prepare a Daylight/Sunlight Report in support of their application for planning permission in respect of the proposed residential development at 51 Calthorpe Street in the London Borough of Camden (the Site).

1.2 This report assesses both the impact of the proposed development on the amenity of the neighbouring buildings for daylight access and the provision of daylight access for the occupants of the proposed development at the Site. The initial daylight availability assessment is based on guidance contained within Section 6 of Camden Borough Council's document CPG 6 - *Amenity*. This report presents the results of the daylight calculation methods carried out in accordance with the CPG 6 guidance.

Current Site Use

1.3 The Site is located at 51 Calthorpe Street, London, WC1 0HH, and comprises an existing three storey Victorian-era building that is currently used as offices, storage and light industrial space. The building's eastern side is located adjacent to the Holiday Inn Hotel and the western side abuts other residential buildings on Calthorpe Street while also facing the rear elevations and gardens of dwellings on Packenham Street. The front of the existing development faces south-east over Calthorpe Street and is opposite the Mount Pleasant Royal Mail sorting centre. The rear north-west facing of the development faces the Cubitt Street play centre. The Site is accessed via Calthorpe Street.

Proposed Development

1.4 The proposal includes the partial demolition of the existing development with the retention of the external walls and some floors. The new development will consist of 16 flats on six floors (including a basement floor). The proposed development will face south-east/north-west, with the main access to the building on the south-east side. The proposed new development will be approximately 4.3m taller at its highest point than the existing structure.

Surrounding Buildings

1.5 The north of the Site faces the outside areas of the Cubitt Street Play Centre. This comprises primarily hard standing with several trees located in the centre of the open area. The play centre itself is a single storey structure approximately 40m from the Site. The Kings Cross/ Bloomsbury Holiday Inn Hotel is located to the east of the Site and extends back past the Cubitt Street Play Centre.

1.6 The Holiday Inn is a large nine storey building that provides considerable over-shading for the eastern elevation. Number 49 Calthorpe Street adjoins the south-west side of the existing development. Number 49 is a three storey property of similar age and style to the existing site building.

1.7 Packenham Street, located to the south-west of the Site, comprises three storey residential buildings of similar style and construction to those on Calthorpe Street. The rear elevations of Packenham Street face the proposed Site, with number 4 Packenham Street being approximately in line with the Site.

1.8 The Mount Pleasant Royal Mail sorting office is a large four storey building located approximately 100m to the South East of the site. The space in-between the Site and the sorting office is predominantly hard standing for loading and parking of freight vehicles. The only notable obstruction between the sorting office and the Site is an (approximately) eight foot high perimeter wall around the freight vehicle parking area. This wall is, at its closest point, approximately 30m from the Calthorpe Site. Figure 1 shows the location of the Calthorpe Site in relation to the surrounding buildings.

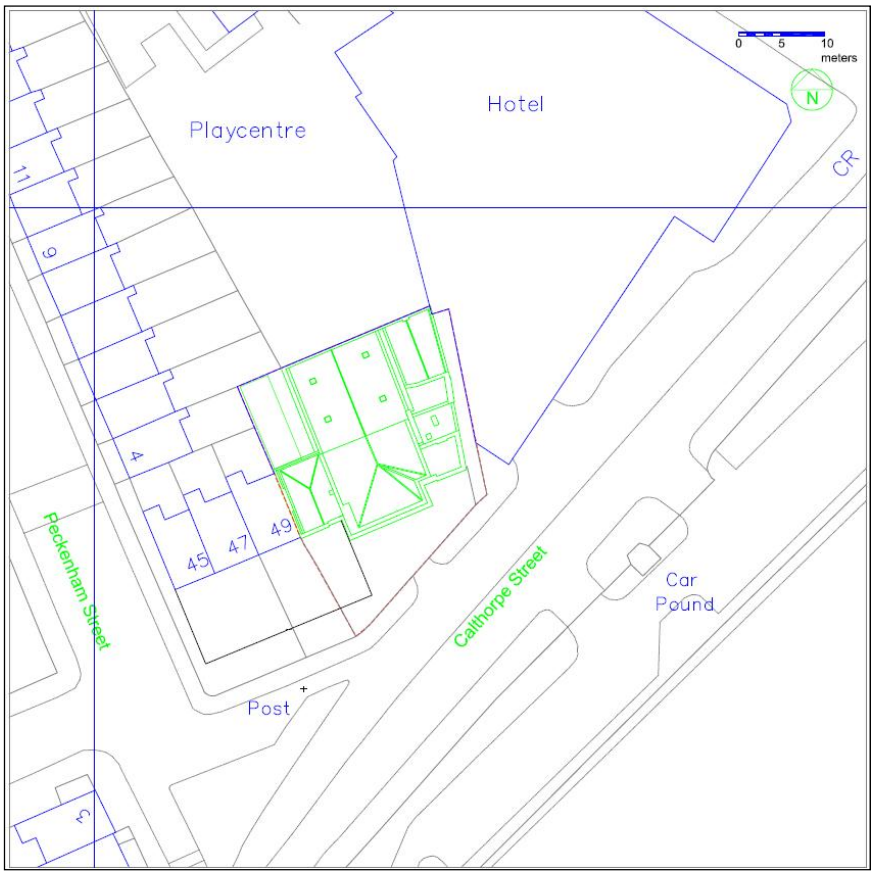

Figure 1: Site Location Plan, 51 Calthorpe Street, Camden

2.0 CALCULATION METHODOLOGY

2.1 The existing development at 51 Calthorpe Street already impacts on the availability of daylight to the surrounding buildings to some degree. Only the additional obstruction presented by the proposed new development is assessed in this report. The proposed new development will retain the external walls of the existing building.

2.2 The assessment and all methods used to determine daylight access have been based upon drawings provided by Brooks/Murray Architects and upon a site visit undertaken by Create.

2.3 This daylight availability assessment is based upon the guidance given in Section 6 of Camden Borough Council's document 'CPG 6 Amenity', specifically the two quick daylight access methods involving the projection of a 25-degree line from the existing building's window, or from the wall, of the proposed development.

2.4 For areas identified as failing the 25-degree line test, Camden Guidance CPG 6 presents two additional methods for more in-depth daylight analysis. These are the Vertical Sky Component (VSC) and Average Daylight Factors (ADF).

2.5 The VSC method uses the procedures detailed in the BRE publication 'Site Layout Planning for Daylight and Sunlight'. This document offers two alternative processes for calculating Vertical Sky Component; this report uses the skylight indicator method detailed in Appendix A of the BRE document.

2.6 The ADF method uses the IES VE building simulation software. The IES VE system is an industry-recognised building simulation package commonly used to undertake thermal, air flow and daylight modelling. The Radiance module has been used to determine the ADF results.

2.7 Geometric information on the existing and proposed development, along with the surrounding buildings, has been supplied by Brooks/Murray Architects. This information has been supplied in AutoCAD DWG format and has been used to determine all geometric information. Create has undertaken a site visit of the existing development and surrounding buildings. The photographic evidence obtained has been used in conjunction with the geometric information provided by Brooks/Murray Architects.

3.0 25 DEGREE LINE TEST: IMPACT ON EXISTING BUILDINGS

3.1 Only those surrounding buildings likely to be affected by the proposed new development have been examined.

3.2 Number 45 Calthorpe Street has not been examined. This building adjoins the existing and hence also the proposed development at the Site. Therefore, there is no window area overlooking the Site that could be affected by any changes.

3.3 The impact on the Mount Pleasant depot has also not been included within this report. The distances involved between the depot and the proposed development (in excess of 100m) demonstrate that the proposed new development will have minimal impact and likewise be minimally affected by the depot. Photograph 1 shows the depot as viewed from the Site.

Photograph 1: Royal Mail Sorting Depot as seen from site

3.4 The surrounding buildings likely to be affected by the new development are detailed below.

4 Packenham Street

3.5 Figure 2 shows Number 4 Packenham Street in relation to the existing development (in blue) and proposed development (in red). The surrounding buildings are shown in blue. The projected line angles are in green.

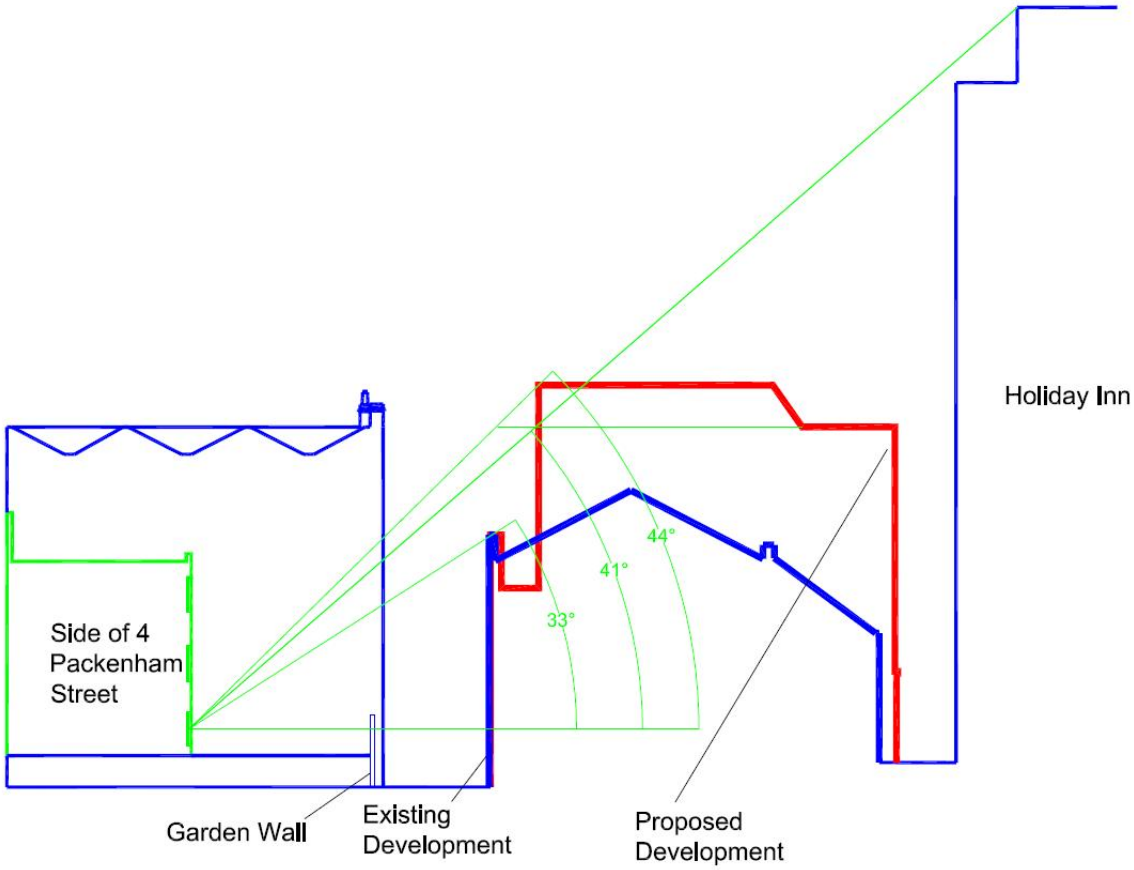

Figure 2: Number 4 Packenham Street

3.6 The available data on window positions and geometry for the existing and proposed sites indicate that the current Calthorpe Street site will give a projected line angle of 33° for the worst case (lowest) window of Number 4 Packenham Street. The increased height of the proposed new development will increase this angle to 44°.

3.7 The impact of the proposed new development will be greater than that of the existing Holiday Inn hotel which gives a projected line angle of 41°. As this is the case, the impact of the new development upon Number 4 Packenham Street will be assessed further using the VSC method.

Cubitt Street Play Centre

3.8 Figure 3 below shows the proposed new Calthorpe Street development in geometric relation to the Cubitt Street Play Centre. It should be noted that the proposed development is higher than the existing building. Therefore the existing building has not been included in Figure 3 below as it would not be worse than the proposed development.

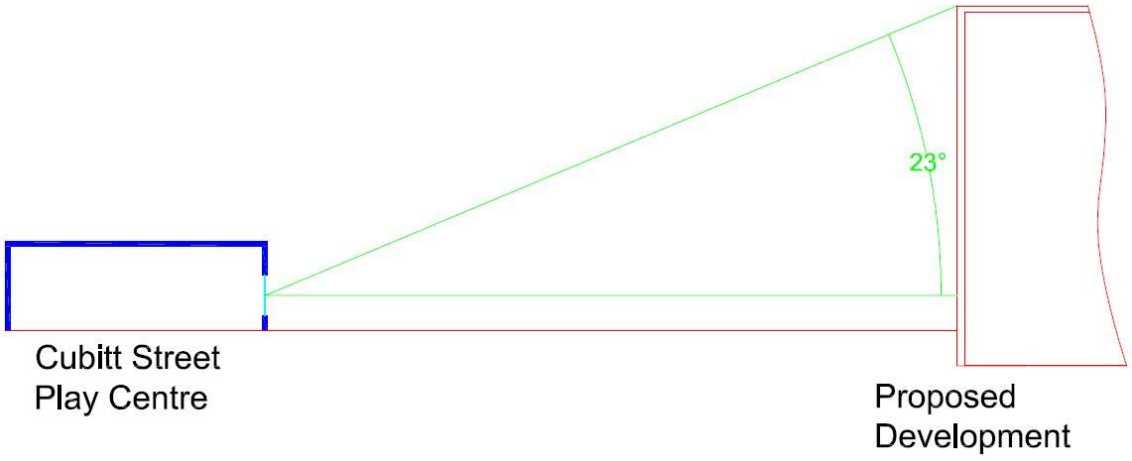

Figure 3: Cubitt Street Play Centre

3.9 The available window and geometric information indicates that the lowest windows on the Cubitt Street Play Centre will have a projected line angle of 23° and would therefore comply with the 25° line angle specified by Camden Planning Guidance 6.

Holiday Inn

3.10 The impact of the proposed new development on the adjacent Holiday Inn is shown in Figure 4 below. Figure 5 shows a plan view of the windows affected in the Holiday Inn by the proposed new development. The geometric information available indicates that only the third and fourth floors of the Holiday Inn are likely to be affected.

3.11 The projected line calculation shows the Hotel's fourth floor windows will have an angle of 16° and are unlikely to be greatly affected by the proposed new development. The third floor windows will have the projected line angle increased from 17° with the present building to 52° with the proposed new building. This indicates that further investigation will be required on the precise impact of the new development on these windows. Only the third and fourth floor hotel windows have been assessed as these are directly affected by the revised geometry of the proposed new development. Hotel windows below this level already fail the 25° projected line with the existing development and have not been assessed.

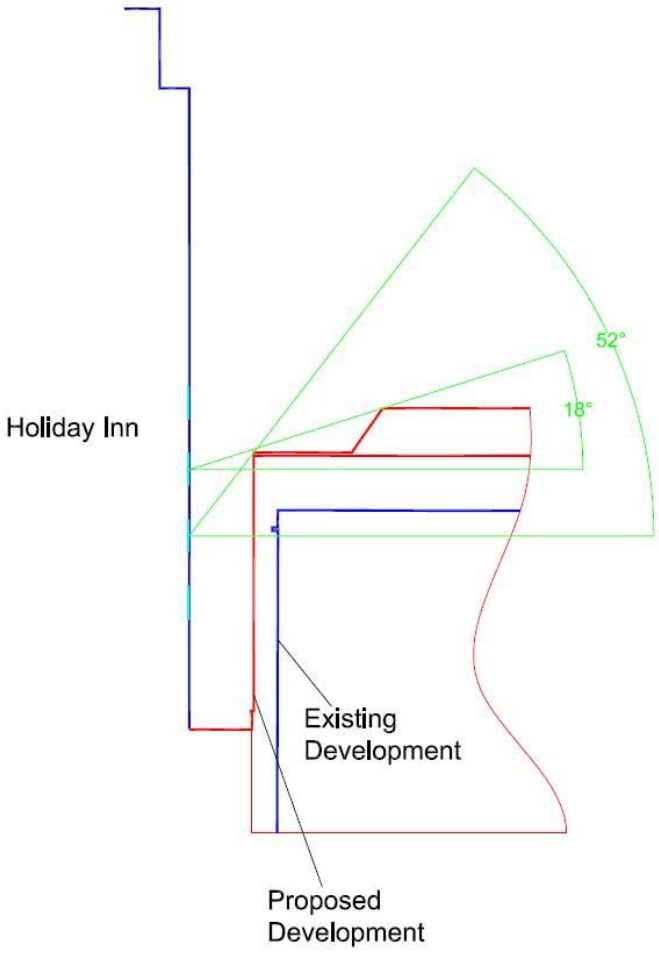

Figure 4: Holiday Inn

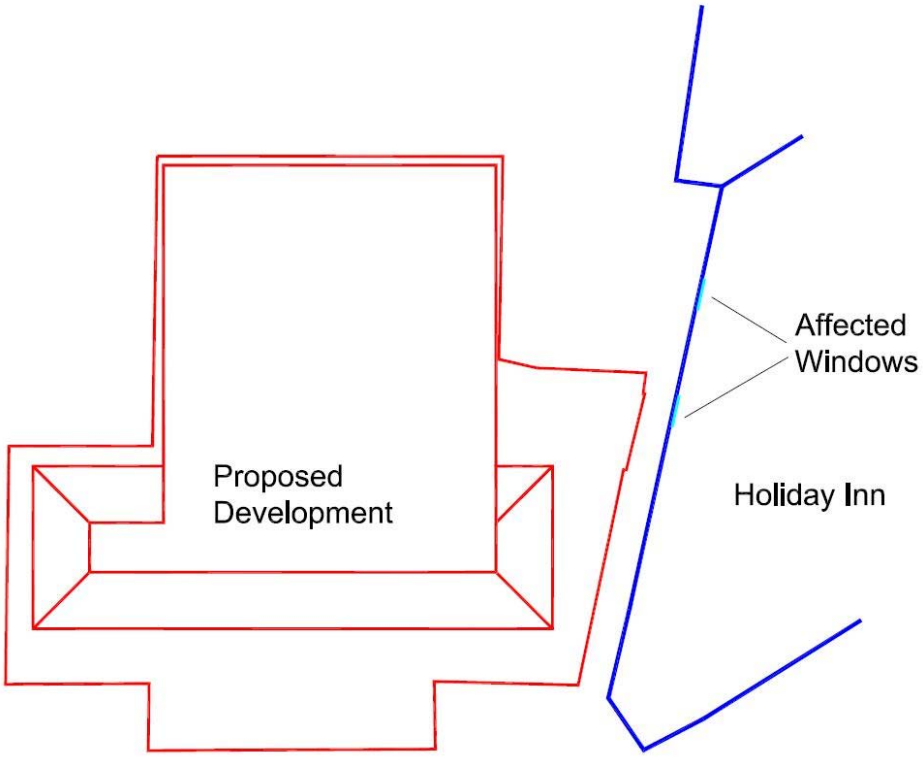

Figure 5: Plan View of Affected Windows

4.0 25 DEGREE LINE TEST: IMPACT ON PROPOSED NEW DEVELOPMENT

4.1 Figure 6 shows the projected line angle for those windows in the proposed development affected by Number 4 Packenham Street and the Holiday Inn. For clarity, only those windows that fail the 25° projected line test have been included in the diagram.

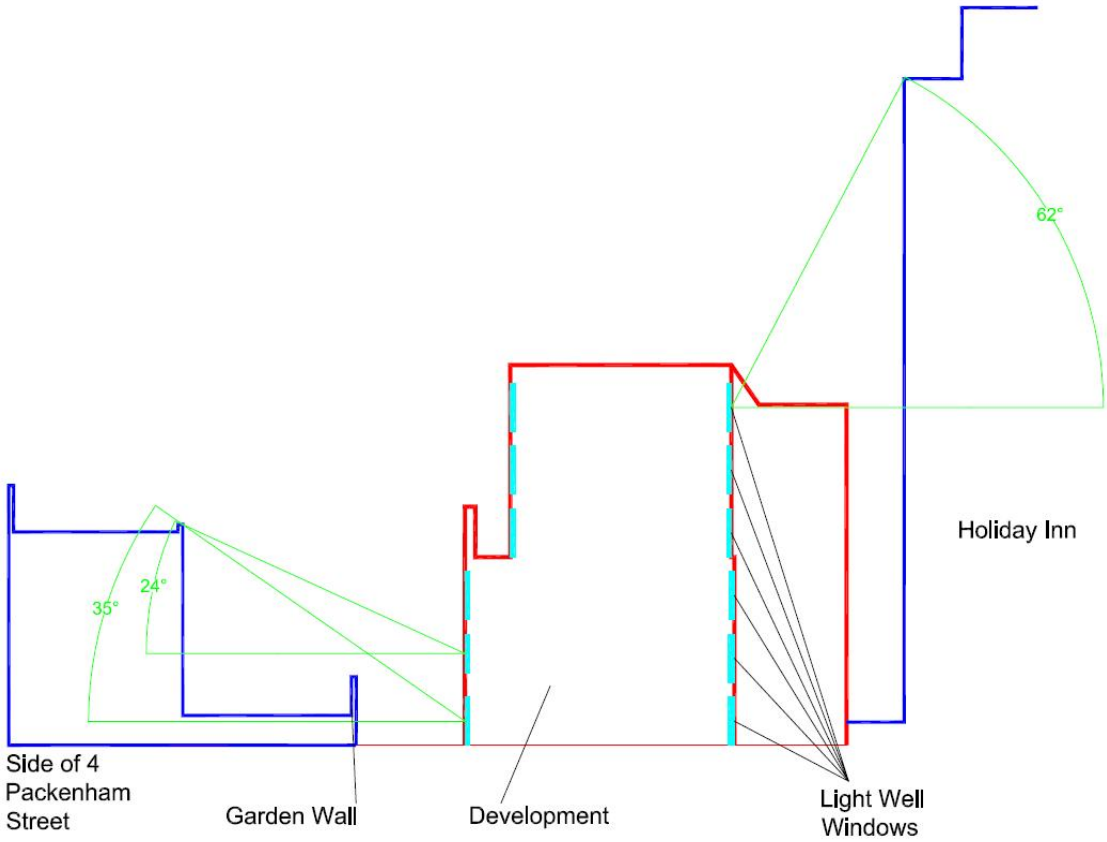

Figure 6: Impacts of Number 4 Packenham Street and Holiday Inn

4.2 Flats 5 (basement) and 7 (mezzanine level) will have the bedroom windows facing Number 4 Packenham Street. These windows will have projected line angles of 35° and 24° respectively, resulting in the basement Flat 5 bedroom failing to meet the requirements of CPG 6 although the Flat 7 bedrooms will pass. The Flat 5 window overlooks a predominantly enclosed basement level garden and is enclosed by the exterior perimeter walls of Flats 1 and 4 further restricting access to natural light.

4.3 The proposed development incorporates a light well feature on the north-east corner which features on all six floors of the development.

4.4 The light well is in close proximity to the Holiday Inn and will experience over-shading from this building. The least affected light well windows will be on the top floor (Flat 16, bedrooms). These windows will, however, have projected line angles of 62°. Light well windows on the lower floors will be worse than this. Those rooms with a projected line angle greater than 25° have been subject to further analysis using computer modelling

techniques and are shown to achieve results in *excess* of the required minima. The results are detailed in Section 7 of this report.

4.5 The Play Centre on Cubitt Street will offer no significant obstruction to daylight access for the proposed new development. Figure 7 shows the projected line angle as 5° to the Play Centre.

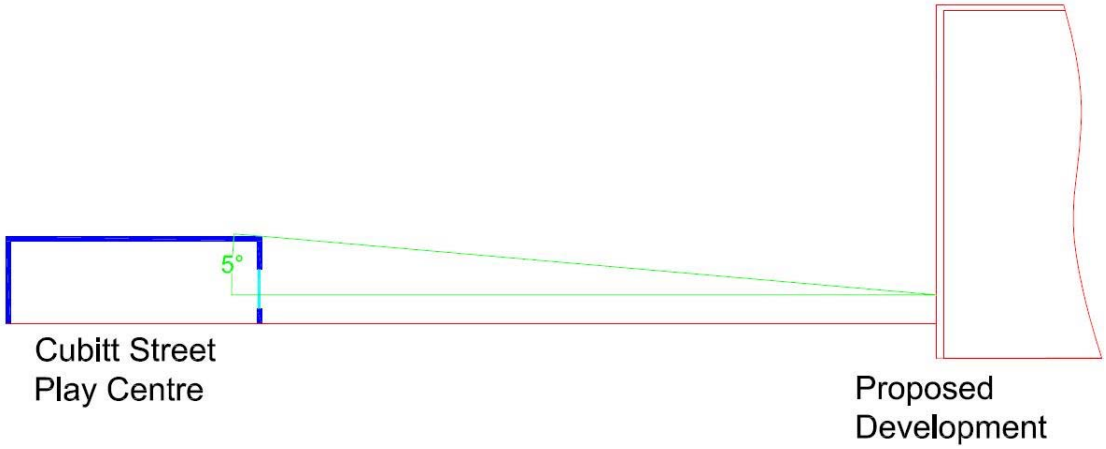

Figure 7: Cubitt Street Play Centre Impact

4.6 The front facade of the proposed development faces, as detailed previously, a relatively unobstructed view across Calthorpe Street towards the Mount Pleasant Postal Depot. The only area on the new development that could potentially be affected by reduced daylight access would be those flats with rooms located at the basement level. The specific areas affected will be the south east facing basement bedrooms of flats 1 and 2 as well as the living room and bedroom of Flat 3. Figure 8 demonstrates the projected line angle for these areas will be 46°. As these areas exceed the 25° degree line guidance further investigation has been undertaken using computer modelling.

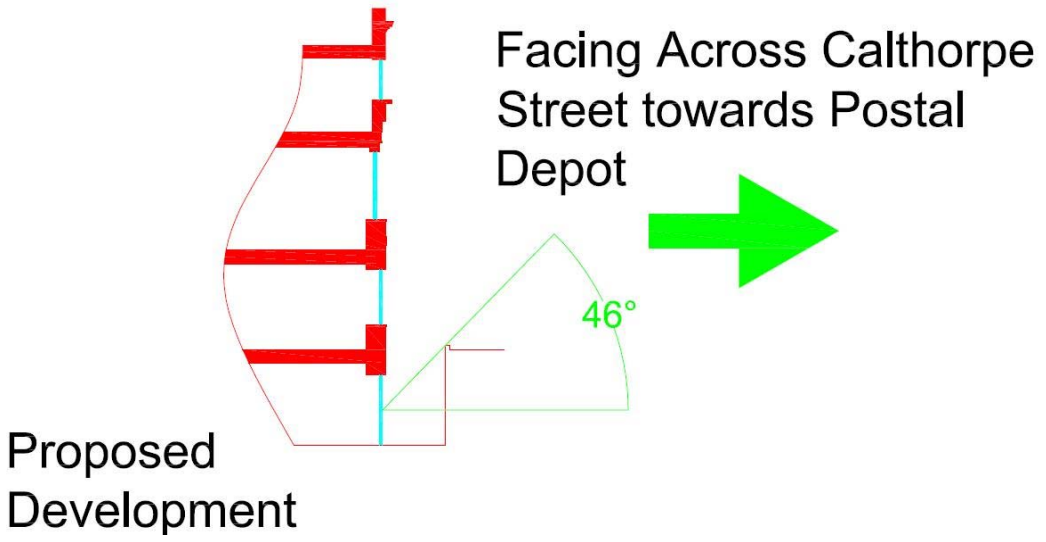

Figure 8: South East Facing Basement Light Wells

5.0 FURTHER ANALYSIS

5.1 The 25° line tests indicate that some areas in the proposed new development and the surrounding buildings may have limited access to daylight. The following lists these areas.

- West facing Third floor Holiday Inn windows (two windows affected);
- Number 4 Packenham street rear windows;
- Flat 5 (Basement) Studio flat;
- Flat 1 (Basement) Bedrooms;
- Flat 2 (Basement) Bedrooms;
- Flat 3 (Basement) Bedroom and living room;
- Flats 4, 6, 8, 12, 15 and 16 (basement to 3rd Floor) Bedrooms facing light well.

5.2 Camden Planning Guidance Document 6 offers two further methodologies for more in-depth analysis other than the 25° projected line method. These are the Vertical Sky Component (VSC) and the Average Daylight Factor (ADF).

5.3 The complexity of the influencing geometry for the flat bedroom windows would make use of the VSC method less reliable. These areas are subject to close confines with over-shading from multiple sides. Several of the bedroom flats are facing a light well which typically requires computer modelling to predict daylight access accurately. Internal layouts are also available for the proposed development, which would facilitate the use of a computer model. Given these factors, the VSC method has not been used for the flats in the proposed new development and instead they have had the ADF values calculated via a computer model.

5.4 The west-facing third floor Holiday Inn windows and the rear windows of number 4 Packenham Street have been assessed using the VSC method as no internal layouts are available to carry out a computer model.

6.0 VERTICAL SKY COMPONENT

6.1 The VSC calculation has been determined for the third floor Holiday Inn windows identified as being at risk of reduced daylight access from the proposed development. For the purpose of this report, the windows are identified as Window 1 and Window 2 (Third floor). Window 1 is the southernmost, while Window 2 is the northernmost. VSC calculations have also been carried out for the rear of number 4 Packenham Street which was also identified by the 25 degree line method of being at risk.

6.2 The VSC calculation has been undertaken using the guidance given in the BRE publication 'Site Layout Planning for Daylight and Sunlight'. The methodology requires that a Skylight Indicator is superimposed over a plan of the affected area and that the distance/height ratio to each feature affecting a given window be determined. These values are plotted on the Skylight Indicator. The areas encompassed by these plotted points serve to cover VSC component crosses on the Skylight Indicator. There are 80 crosses in total, each equating to 0.5%VSC. The uncovered crosses after all obstructing points have been plotted give the VSC for a given window (a value between 0 and 40%).

6.3 Information supplied by the client states that Window 1 is an emergency stairwell while Window 2 is a bedroom.

6.4 The Skylight Indicators for the Holiday Inn Windows and number 4 Packenham Street are shown in Figures 9, 10 and 11.

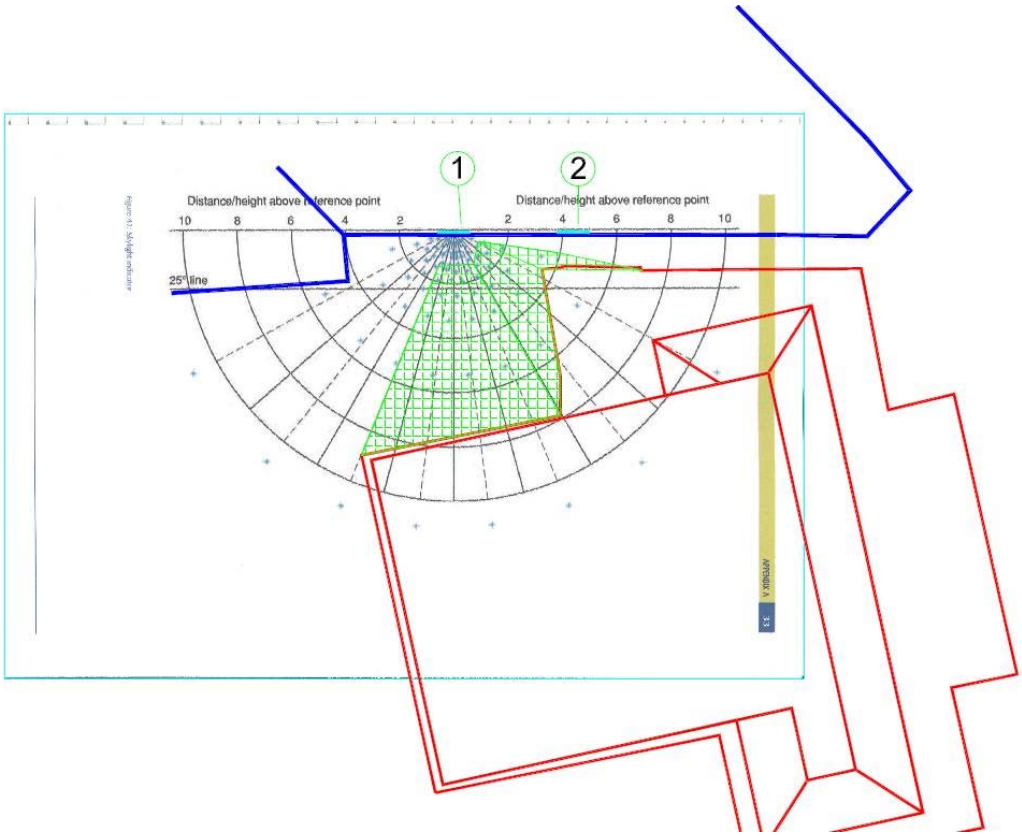

Figure 9: Window 1 Skylight Indicator

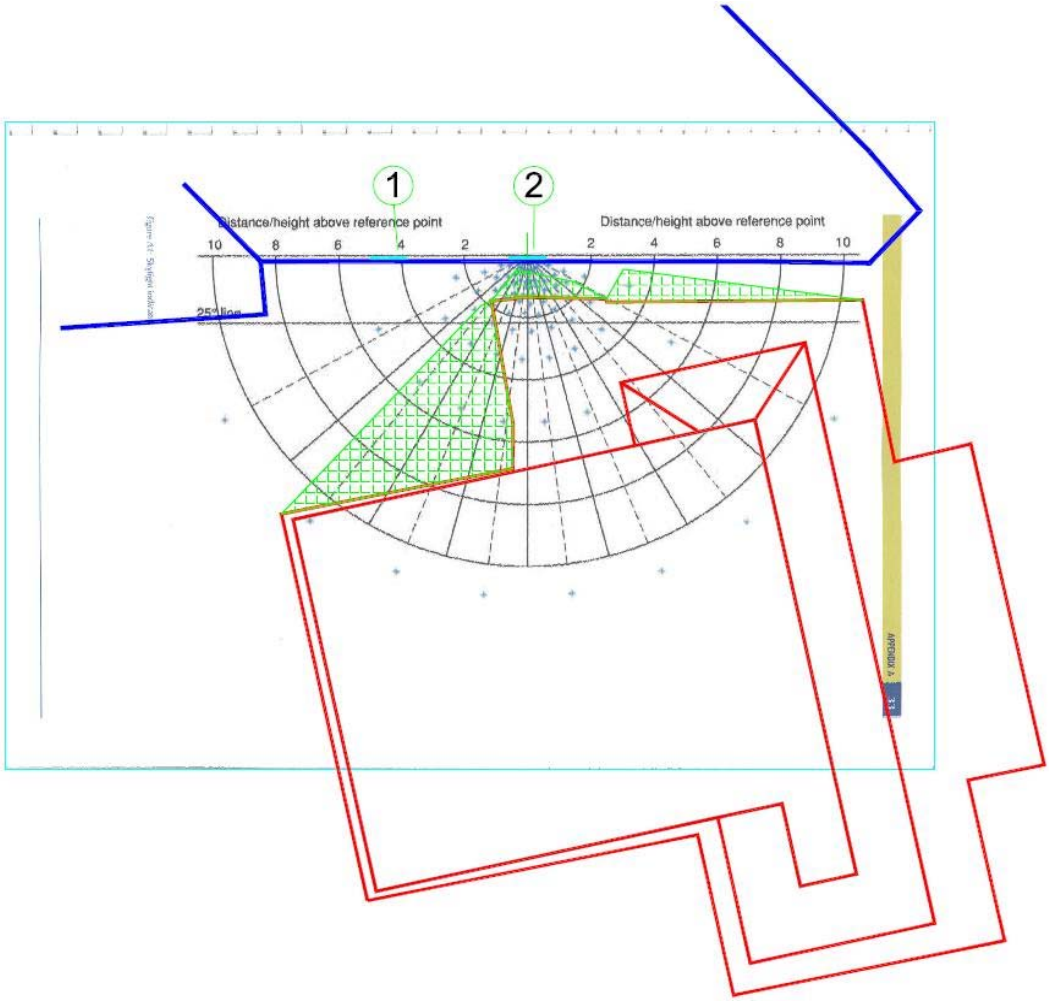

Figure 10: Window 2 Skylight Indicator

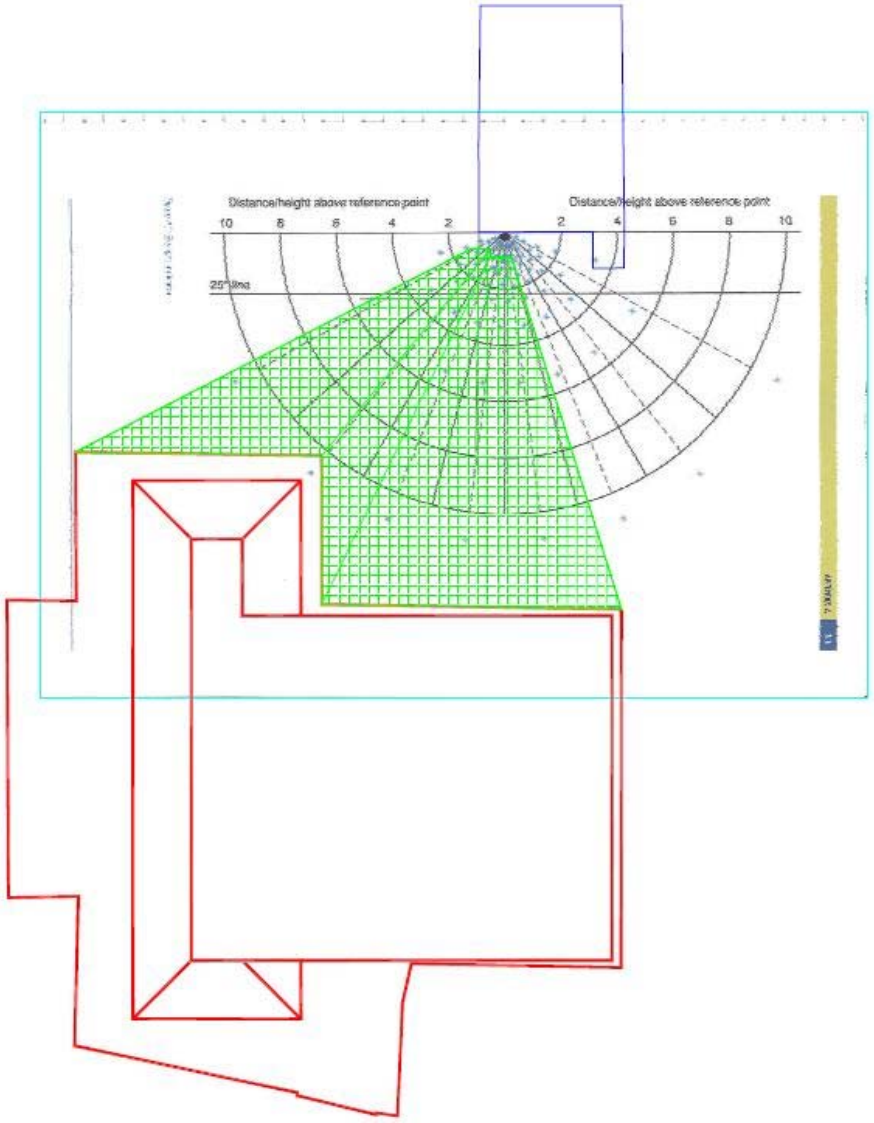

Figure 11: Number 4 Packenham Street Skylight Indicator

6.5 VSC values are determined by the number of crosses left uncovered on the skylight indicator after the shading effect of surrounding features have been accounted for. Table 1 below summarises the results of the VSC calculation for the assessed areas.

Window	Crosses uncovered	VSC
Window 1 (Figure 9)	46	23%
Window 2 (Figure 10)	26	13%
4 Packenham street (Figure 11)	43 (previously 48)	21.5% (previously 24%)

Table 1: Vertical Sky Component

6.6 The BRE 'Site layout planning for daylight and sunlight' guidance and Camden Guidance Document 6 notes an acceptable VSC as greater than 27%. This will not be achieved for either of the third floor Holiday Inn windows identified or for the Number 4 Packenham Street rear windows.

6.7 The existing VSC score for number 4 Packenham Street is 24%, indicating that, *even before development takes place*, this area will not meet the CPG 6 or BRE advised level. The BRE Site layout plans for daylight and sunlight' guidance notes that, where a VSC score is reduced by new development, a reduction of 20% or less is unlikely to be noticeable. The proposed development of 51 Calthorpe Street will reduce the overall VSC score for Number 4 Packenham street by: (48 – 43)/48 x 100 = 10.4%. As this is below the 20% advised level the overall impact of the new development of 4 Packenham Street is likely to be minimal.

6.8 While the third floor hotel values are below that required by CPG 6, the activity associated with the spaces served by these windows should be considered. Window 1 serves a fire escape, which will be subject to *transient occupancy only*. Only Window 2 serves a bedroom; the bedroom served by Window 2 is a hotel bedroom intended for *short-term occupancy* only.

6.9 Typically hotel bedrooms are only occupied at night, when issues of daylight availability are irrelevant. The overall impact on the hotel should also be assessed in context; the new development will affect one bedroom out of over 200.

6.10 Additionally, information supplied by the client indicates that, under an agreement entered into at the end of the 19th Century and which binds all future owners of the Holiday Inn site, any claim to a right to light for this site has been waived (information in relation to this is available via The Land Registry).

7.0 AVERAGE DAYLIGHT FACTOR

7.1 Several areas within the proposed new development and surrounding buildings have been noted as not meeting the 25-degree line requirement. The VSC methodology has been used to assess the surrounding buildings. However, this method is less suitable for areas where the internal layouts are known. For these areas, the Average Daylight Factor (ADF) test has been used.

7.2 Average Daylight Factors are specified by Camden's Planning Document CPG 6 – *Amenity* as an acceptable method for assessing likely daylight availability. The daylight factor is the ratio of the internal to external luminance; as a ratio it will be constant irrespective of time of day or year. The daylight factor is measured using the CIE standard overcast sky and as such only the indirect sky light component (not direct sun light) is assessed. This is essentially the worst case scenario for assessing daylight availability. As a ratio, daylight factors are expressed as percentages.

7.3 Camden's Planning Document CPG 6 stipulates the following minimum daylight factors be achieved.

Area	Daylight Factor
Kitchen	2%
Living room	1.5%
Bedroom	1%

Table 2: Daylight Factor Limits

7.4 The areas identified to be tested for average daylight factors are shown in Figure 12:

- Flat 5 (Basement) Studio flat;
- Flat 1 (Basement) Bedrooms;
- Flat 2 (Basement) Bedrooms;
- Flat 3 (Basement) Bedroom and living room;
- Flats 4, 6, 8, 12, 15 and 16 (Basement to 3rd Floor) bedrooms facing light well.

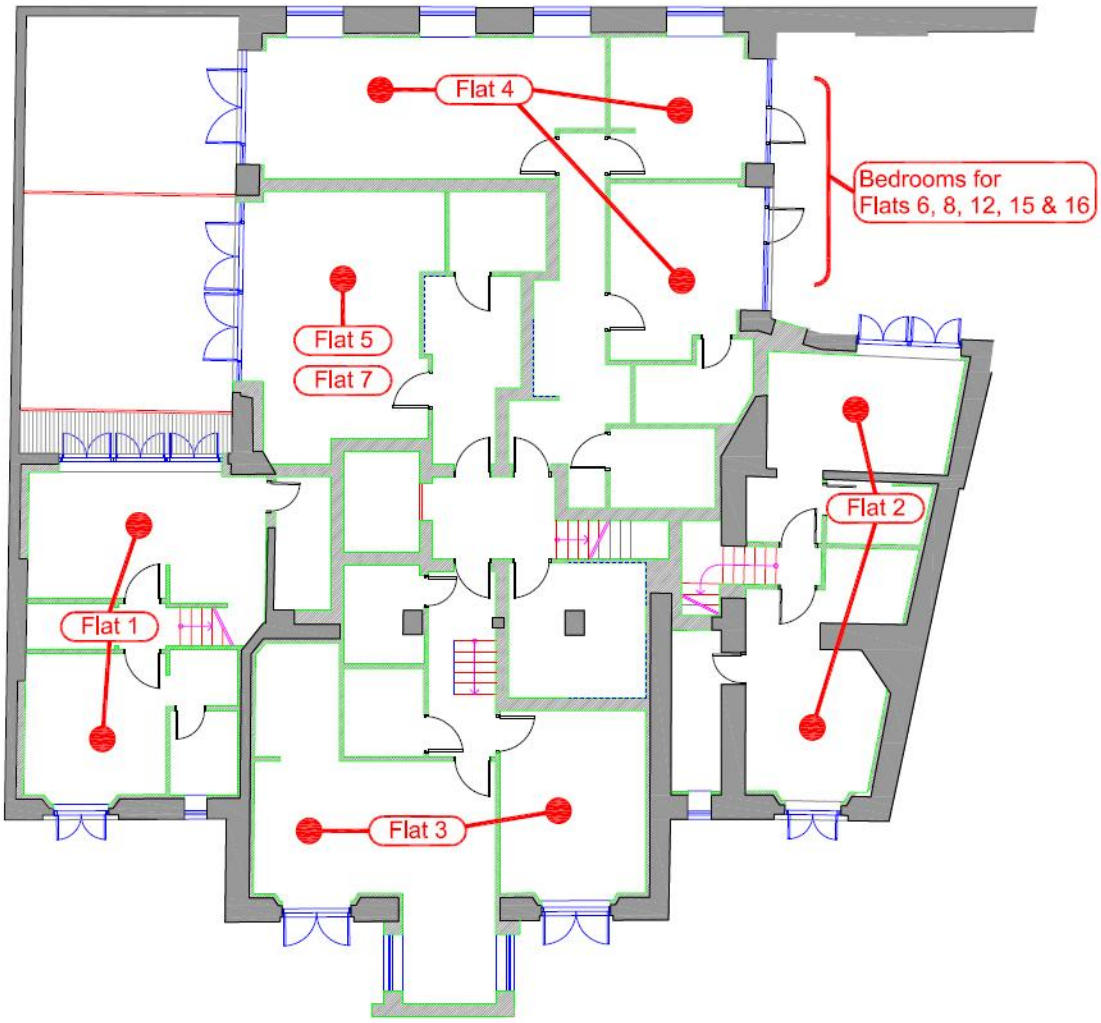

Figure 12: Areas with Limited Daylight Access (Basement)

7.5 The ADF values of these areas have been calculated using the IES VE Radiance program, a lighting simulation system widely used throughout the world. It is a backward ray-tracing system, meaning that light rays are tracked back from the object/area in question to the source of illuminance (which in this case will be an overcast sky). The system is capable of producing highly accurate lighting simulations up to and including photo realistic renders. The accuracy of the system is reliant upon the calculation parameters used, however, and a compromise must be reached between accuracy and computational time which can be very long (days) at the highest accuracy settings.

7.6 The radiance parameters and a description of their function are as follows:

Radiance Property	Value Set
Ambient bounces (ab)	3
Ambient accuracy (aa)	0.15
Ambient resolution (ar)	256
Ambient divisions (ad)	1024

Table 3: Radiance Parameters Used

ab = number of reflections – determines the number of times a sampled light ray will bounce (or reflect). Higher settings are required for accurate interpretation of recessed areas or through narrow structures (such as light wells). It is set to 3 to provide a balance between computational time and sufficient reflections to redistribute the light to provide an accurate simulation of indirect sky components.

aa = ambient accuracy – set to 0.15. Ambient accuracy is linked with ambient resolution and together with ar determines the scale over which the radiance system uses interpolation (estimated results) rather than further sampling.

ar = ambient resolution – set to 256. Linked to ambient accuracy. A value of 256 when linked with an aa of 0.15 provides the optimum sampling density.

ad = ambient divisions – set to 1024. This defines the initial number of light rays sampled. The figure for ambient divisions heavily influences computational time.

7.7 The working plane for the daylight simulation has been taken as 0.8m above floor level. The working plane is the plane at which the daylight analysis is carried out and typically represents the surface level, where tasks are assumed to be carried out.

7.8 Material reflectance values affect the distribution of reflected light. The reflectance values assigned to the radiance simulation have been determined based upon the likely material finishes of the elements in question and using reference values from published industry accepted design guides (CIBSE LG10). The ground floor flats modelled have had both the internal and external surface reflectances determined. For the adjacent shading features and upper flats only, the external surfaces reflectances have been determined. The reflectance values used are detailed in the table below and are given as a proportion of 1.

Surface	Reflectance values (range 0 to 1)	Equivalent to
External Walls (outer)	0.371	Brick walls
External Walls (inner)	0.700	Painted plaster walls
Internal Partitions	0.700	Painted plaster walls
Roof (outer)	0.250	Concrete/hard standing
Roof (inner)	0.810	White painted plaster
Ground	0.250	Concrete/hard standing
Floor/ceiling (floor)	0.250	Concrete/hard standing
Floor/ceiling (ceiling)	0.810	White painted plaster

Table 4: Reflectance Values Used

7.9 Glazed constructions typically have relatively low reflectance values. The parameters of primary concern with a window are the transmittance (Tn) and the transitivity (tn).

7.10 Transmittance can be defined as the total amount of light transmitted by a system, usually given for normal incidence.

7.11 Transmissivity is the fraction of light that passes through the interior of a glass pane at normal incidence. This does not consider light lost to reflection by the front or back surface, or multiple internal reflections. From the transmissivity and the index of refraction, total transmittance and reflectance can be computed for any incident angle.

7.12 Two separate standards of glazing are used within the simulation. These are a standard glazing and an obscured glazing fitted with a mirrored film finish. The mirrored film glazing is used to prevent direct overlooking of the development bedrooms from the adjacent hotel and is only fitted to those bedrooms that are directly opposite hotel windows. Mirrored film finished glazing is fitted to Bedroom 2 of Flats 12, 15 and 16. These values are based upon the technical data sheets for the film system assumed.

7.13 All other glazing is assumed to be standard. All window dimensions and positions have been based upon the layout and elevation drawings provided by Brooks/Murray Architects. All glazing areas are assumed to be 10% smaller than noted on the architects drawings to account for window frames.

7.14 The table below summarises the glazing systems performance.

Glazing	Transmissivity	Transmission Value	Interior/exterior reflectance
Standard	0.763	0.70	0.07
Mirrored film glazing	0.502	0.46	0.07

Table 5: Glazing Specifications Used

7.15 The proposed development and the surrounding buildings and features that would affect daylight access have been modelled using the IES VE program. Figures 13 and 14 below show front and rear views of the simulation model.

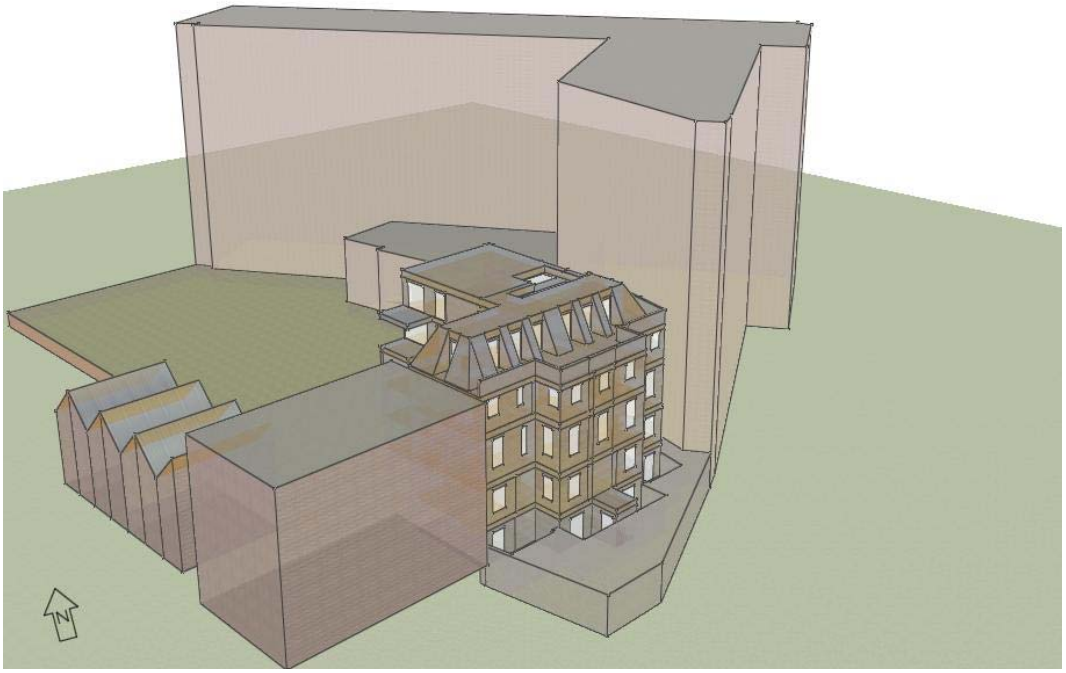

Figure 13: Front View

Figure 14: Rear View

Average Daylight Factor – Flat 1

7.16 Flat 1 is a maisonette located to the west side of the development on the basement and ground floors. Bedrooms 1 (north) and 2 (south) are located at basement levels and have been subject to daylight factor simulations. Figure 15 shows the daylight factor distributions for the basement level Flat 1 bedrooms. The results are summarised in Table 6.

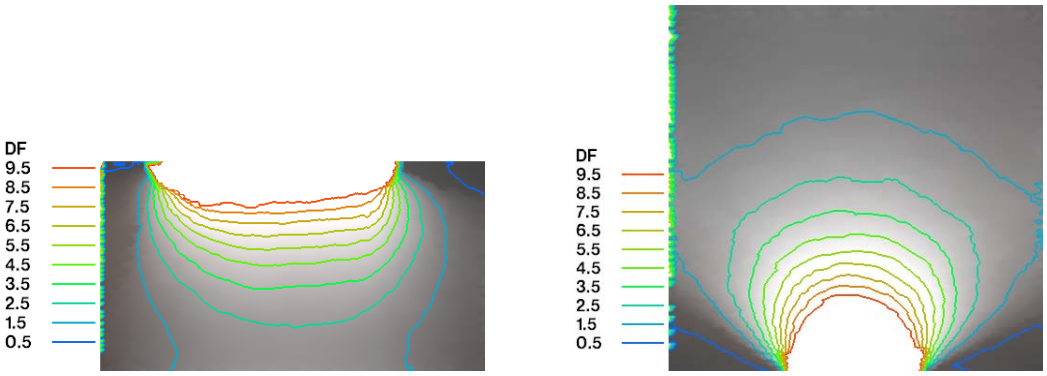

Figure 15: Flat 1 Bed 1 and 2 DF Factors

Parameter	Bed 1 (north)	Bed 2 (south)
Average Daylight Factor	3.72%	2.78%
Result	Pass	Pass

Table 6: Daylight Factor Achieved for Flat 1

Average Daylight Factor – Flat 2

7.17 Flat 2 a maisonette located to the east side of the development on the basement and ground floor levels. Bedrooms 1 (south) and 2 (north) are located at basement levels and have been subject to daylight factor simulations. Figure 16 show the daylight factor distributions for the basement level Flat 2 bedrooms. The results are summarised in Table 7.

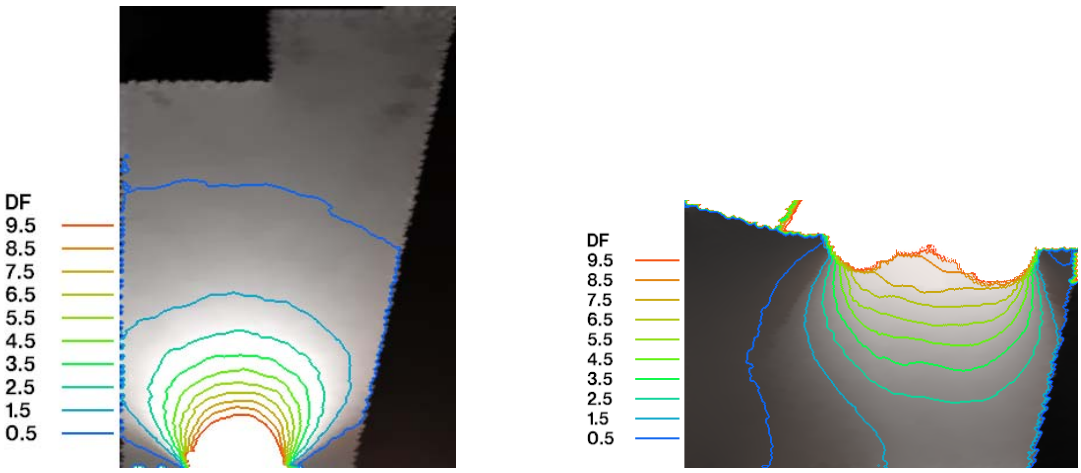

Figure 16: Flat 2 Bed 1 and Bed 2 DF Factors

Parameter	Bed 1 (south)	Bed 2 (north)
Average Daylight Factor	1.25%	3.13%
Result	Pass	Pass

Table 7: Daylight Factor Achieved for Flat 2

Average Daylight Factor – Flat 3

7.18 Flat 3 is located at the front (south) of the development at basement level. Figure 17 below shows the daylight factor distribution for the Flat 3 living room and bedroom. The architect has supplied a rendered image of the view out from the Flat 3 living room and this is shown in figure 18.

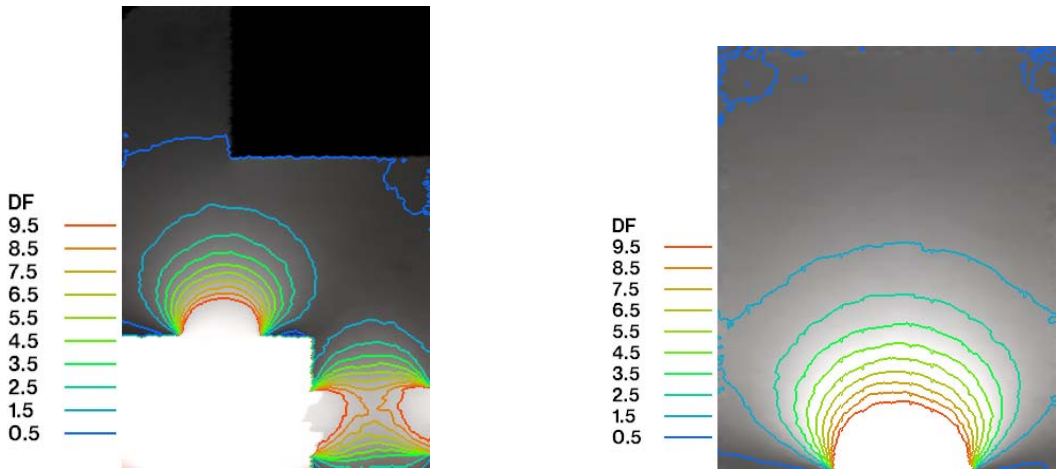

Figure 17: Flat 3 Living Room and Bedroom DF Factors

Figure 18: Flat 3 Living Room Rendered Image

Parameter	Living room	Bedroom
Average Daylight Factor	2.59%	2.38%
Result	Pass	Pass

Table 8 Daylight Factors Achieved for Flat 3

Average Daylight Factor – Flat 4

7.19 Flat 4 is located at the rear (north) of the development at basement level. The two bedrooms face the adjacent hotel. Figure 19 below shows the daylight factor distribution for Flat 4 Bedroom 1 (southern) and Bedroom 2 (northern). The Flat 4 bedrooms are located at the bottom of the light well adjacent to the nine storey hotel and bordered to the north by the site perimeter wall. As such they are the most obscured of all rooms on the development. To further clarify the daylight accessibility of these flats the architects have supplied a typical 3D rendered image of the view out of the Flat 4 bedrooms shown in Figure 20 below.

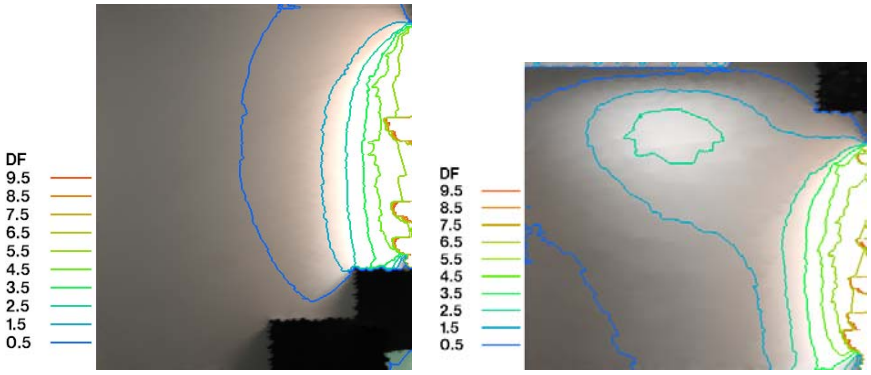

Figure 19: Flat 4 Bed1 and 2 DF Factors

Figure 20: Rendered View Out from Flat 4 Bedrooms

Parameter	Bed 1 (southern)	Bed 2 (northern)
Average Daylight Factor	1.04%	1.8%
Result	Pass	Pass

Table 9: Daylight Factors Achieved for Flat 4

Average Daylight Factor – Flat 5

7.20 Flat 5 is located at basement level facing west towards the rear of Peckenham Street. Figure 21 below shows the daylight factor distribution for studio Flat 5 while Figure 22 shows a rendered view out (produced by the architect).

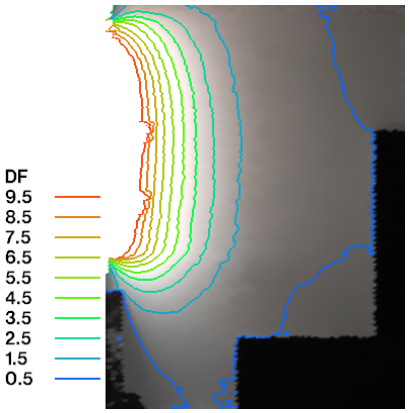

Figure 21: Studio Flat 5 DF factors

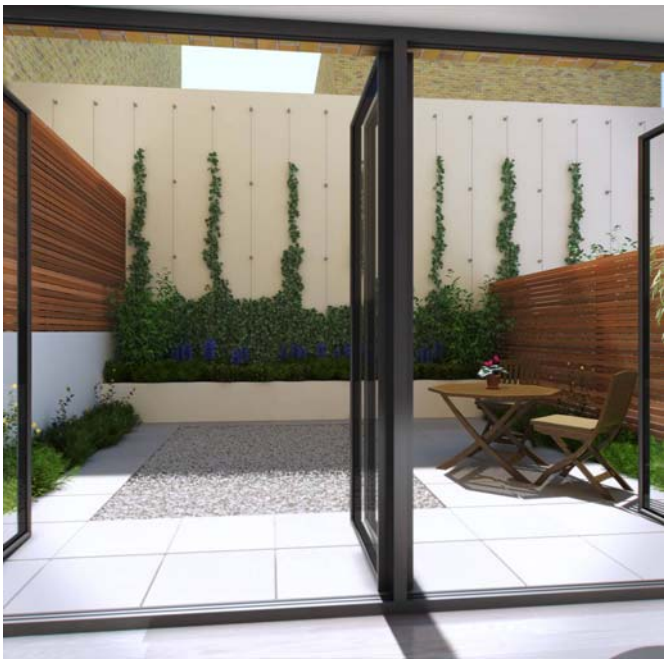

Figure 22: Studio Flat 5 Rendered View Out

Parameter	Studio Flat 5
Average Daylight Factor	2.25%
Result	Pass

Table 10 Daylight Factors Achieved for Flat 5

Average Daylight Factor – Flat 6 bedrooms

7.21 Flat 6 is located at the rear (north) of the development at mezzanine level. The two bedrooms face the adjacent hotel. Figure 23 below shows the daylight factor distribution for Flat 6 Bedroom 1 (southern) and Bedroom 2 (northern).

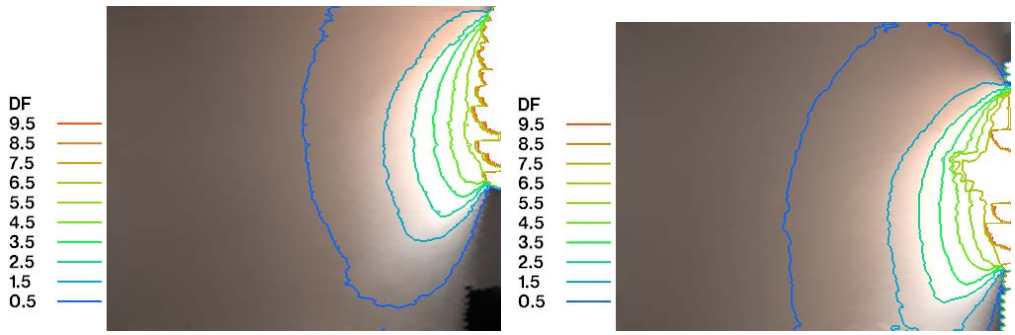

Figure 23: Flat 6 Bed 1 and Bed 2 DF factors

Parameter	Bed 1 (southern)	Bed 2 (northern)
Average Daylight Factor	1.22%	1.33%
Result	Pass	Pass

Table 11 Daylight Factors Achieved for Flat 6

Average Daylight Factor – Flat 8 bedrooms

7.22 Flat 8 is located at the rear (north) of the development at ground floor level. The two bedrooms face the adjacent hotel. Figure 24 below shows the daylight factor distribution for Flat 8 Bedroom 1 (southern) and Bedroom 2 (northern).

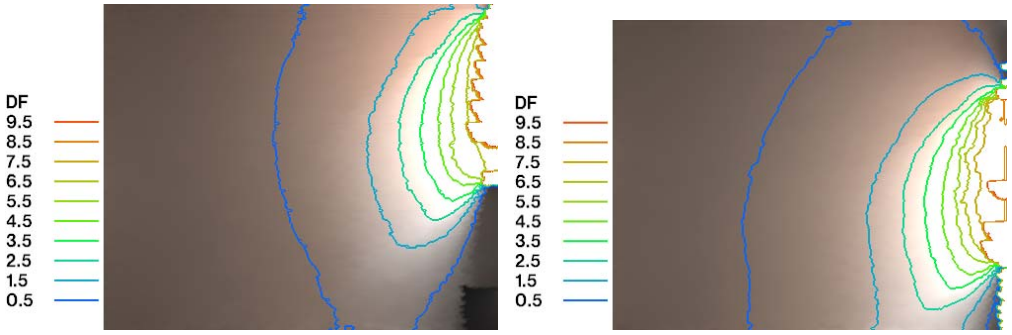

Figure 24: Flat 8 Bed 1 and Bed 2 DF Factors

Parameter	Bed 1 (southern)	Bed 2 (northern)
Average Daylight Factor	1.41%	1.59%
Result	Pass	Pass

Table 12 Daylight Factors Achieved for Flat 8 Bedrooms

Average Daylight Factor – Flat 12 bedrooms

7.23 Flat 12 is located at the rear (north) of the development at first floor level. The two bedrooms face the adjacent hotel. Figure 25 below shows the daylight factor distribution for Flat 12 Bedroom 1 (southern) and Bedroom 2 (northern). The windows for the Flat 12 bedrooms facing the hotel are fitted with the mirrored glazing to prevent overlooking from the hotel.

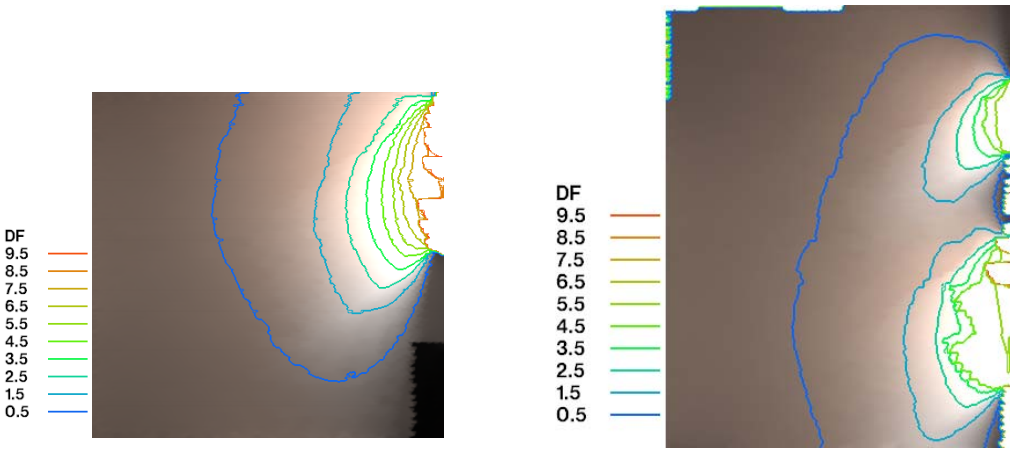

Figure 25: Flat 12 Bed 1 and Bed 2 DF Factors

Parameter	Bed 1 (southern)	Bed 2 (northern)
Average Daylight Factor	1.43%	1.35%
Result	Pass	Pass

Table 13 Daylight Factors Achieved for Flat 12 Bedrooms

Average Daylight Factor – Flat 15

7.24 Flat 15 is located at the rear (north) of the development at second floor level. The two bedrooms face the adjacent hotel. Figure 26 below shows the daylight factor distribution for the Flat 15 Bedroom 1 (southern) and Bedroom 2 (northern). The window for bedroom 2 facing the hotel is fitted with the mirrored glazing to prevent overlooking from the hotel.

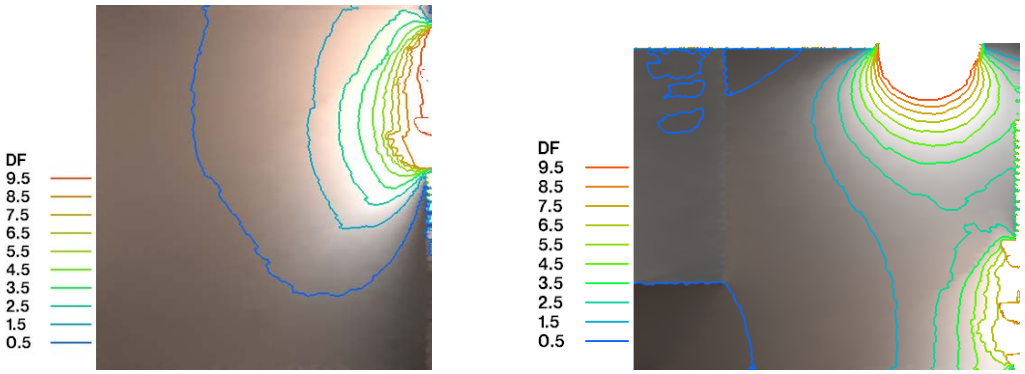

Figure 26: Flat 15 Bed 1 and Bed 2 DF Factors

Parameter	Bed 1 (southern)	Bed 2 (northern)
Average Daylight Factor	1.24%	2.95%
Result	Pass	Pass

Table 14 Daylight Factors Achieved for Flat 15 Bedrooms

Average Daylight Factor – Flat 16

7.25 Flat 16 is located at the rear (north) of the development at third floor level. The two bedrooms face the adjacent hotel. Figure 27 below shows the daylight factor distribution for the Flat 16 Bedroom 3 (southern) and Bedroom 2 (northern). The window for bedroom 2 facing the hotel is fitted with the mirrored glazing to prevent overlooking from the hotel.

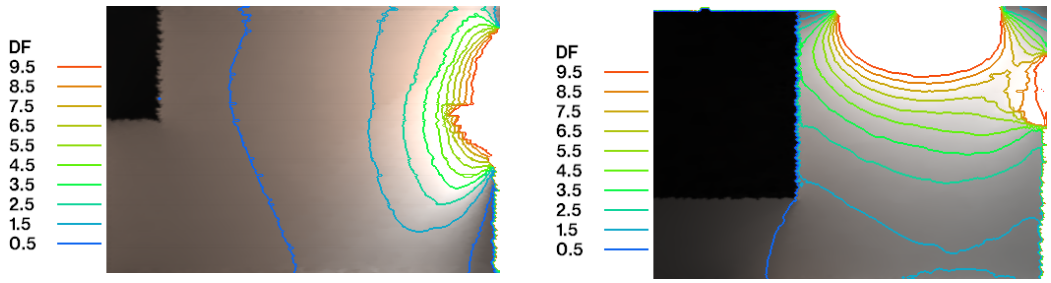

Figure 27: Flat 17 Bed 3 and Bed 2 DF Factors

Parameter	Bed 3(southern)	Bed 2 (northern)
Average daylight factor	1.7%	3.98%
Result	Pass	Pass

Table 15 Daylight Factors Achieved for Flat 16 Beds 2 and 3

7.26 For all the areas assessed under average daylight factor method, the minimum daylight factor levels are achieved. All bedroom spaces achieve a Daylight factor of at least 1% while all living rooms and studio flats achieve at least 1.5%.

8.0 CONCLUSION

8.1 Daylight modelling carried out in accordance with the guidance contained in Policy Document CPG 6 shows that the proposed new development will have a minimal impact on the surrounding area when compared to the existing structure..

8.2 The only area that fails to meet the requirements of Policy Document CPG 6 will be two windows on the third floor of the Holiday Inn hotel. Only one of these windows serves a bedroom while the other serves an emergency stair well. It should be noted that the impact on the hotel room window is relatively small and that hotel rooms are subject to only transient occupancy and are typically only occupied at night. Furthermore, the registered title for the hotel site contains a waiver of any rights to light.

8.3 The calculations show that the development will meet the requirements stipulated in CPG 6 for adequate daylight access for all occupied spaces as shown by the projected 25 degree line and average daylight factor modelling. The development will address the potential of overlooking from the adjacent hotel by the use of mirrored film on those windows likely to be affected.

9.0 DISCLAIMER

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