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Daylight and Sunlight Report for the Proposed Development at 46 Inverness Street, London NW1 7HB

Prepared for	**Tony Robinson and Christine Hancock**
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Date	**15 April 2014**
Reference	**37193/IM/SK**

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1. Executive Summary

1.1 Scope

1.1.1 We have been instructed by Tony Robinson and Christine Hancock to determine the impact upon the daylight and sunlight amenity of the existing surrounding buildings which may arise from the proposed development(s) at 46 Inverness Street, London NW1. We have also undertaken a sample of internal daylight and sunlight tests to determine whether the proposed building itself will receive sufficient daylight and sunlight.

1.2 Assessment Criteria

1.2.1 The London Borough of Camden's UDP discusses the need to protect the amenity of neighbouring buildings when undertaking development. In particular Policy SD6 states:

> *"The council will not grant planning permission for development that it considers causes harm to the amenity of occupiers and neighbours. The factors the council will consider include:*
>
> *b) sunlight and daylight levels"*

The policy also states :

> *"The design of development should give consideration to overlooking and the potential effects on privacy, and allow sufficient daylight and sunlight into buildings and land"*

1.2.2 The standards and tests applied within this assessment are briefly described in Appendix A.

1.2.3 The Site is located in a densely developed urban location. In these locations the BRE targets for daylight and sunlight are often difficult to achieve.

1.2.4 In these circumstances, local planning authorities may apply the Building Research Establishment (BRE) target criteria flexibly and pragmatically. This approach is endorsed in the BRE report which states in the introduction that:

> *'The Guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not been 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 because natural lighting is only one of many factors in site layout design…… In special circumstances the developer or Planning Authority may wish to use different target values. For example, in a historic city centre a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings…..'*

1.3 Summary of Effect of Proposed Development on Existing Surrounding Buildings

Daylight

1.3.1 With regard to Vertical Sky Component (VSC), all windows tested to 24 Gloucester Crescent will continue to meet the target VSC values as recommended by the BRE guide.

1.3.2 With regards to Daylight Distribution, all windows tested to 24 Gloucester Crescent will continue to meet the target values as recommended by the BRE guide.

Sunlight

1.3.3 None of the windows to 24 Gloucester Crescent which face the proposed development face within 90° of due south and, therefore, pursuant to the BRE guide, do not require testing.

Overshadowing

1.3.4 The garden of the surrounding property meet the BRE guide's target value for permanent overshadowing, or target value for permissible reduction, throughout the summer months when the garden will be most frequently used. The main report looks more closely at the situation on 21 March and the winter months and considers the specific constraints that the garden is subject to.

1.4 Summary of Analysis of Daylight, Sunlight and Overshadowing for the New Development

Internal Daylight

1.4.1 All of the rooms assessed to the proposed development will meet the target Average Daylight Factor (ADF) values as recommended by the BRE guide.

1.4.2 We have assessed the proposed development for Daylight Distribution and the results show that all rooms achieve the recommended DD values (80% of the area being directly lighted).

Internal Sunlight

1.4.3 We have assessed the proposed development for sunlight and the results show that the basement rooms do not pass the test for sunlight. However the BRE guide states that sunlight is more important in living rooms than in other rooms such as bedrooms and kitchens. As these basement rooms are bedrooms then they have a lower expectation of sunlight and are not required to meet the full BRE criteria.

1.5 Overall

1.5.1 Taking into account the material considerations cited in this report, the proposals are on balance considered to be acceptable in daylight and sunlight terms.

2. Introduction

2.1 Scope

2.1.1 We have been instructed by Tony Robinson and Christine Hancock to provide advice on the daylight and sunlight impacts of the proposed development at 46 Inverness Street, London NW1, upon the existing surrounding buildings and in relation to the proposed development's daylight and sunlight availability.

2.2 Planning Policy

2.2.1 The London Borough of Camden's UDP discusses the need to protect the amenity of neighbouring buildings when undertaking development. In particular Policy SD6 states:

"The council will not grant planning permission for development that it considers causes harm to the amenity of occupiers and neighbours. The factors the council will consider include:

b) sunlight and daylight levels"

The policy also states :

"The design of development should give consideration to overlooking and the potential effects on privacy, and allow sufficient daylight and sunlight into buildings and land"

The standards and tests applied within this assessment are briefly described in Appendix A.

2.3 Assessment Criteria

2.3.1 To ensure that this assessment can be appropriately evaluated against Camden Council's planning policy, daylight and sunlight calculations have been undertaken in accordance with the Building Research Establishment Report `Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' 1991 (the "BRE guide") and also on British Standard 8206 – 2: 2008 – `Lighting for Buildings – Part 2: Code of Practice for Daylighting', to which the BRE report refers.

2.3.2 The standards and tests applied within this assessment are briefly described in Appendix A.

2.3.3 The existing buildings adjacent to the proposed development site are shown on the Site Location Plan (see below) and comprise of:

Name/Address of Building	Assumed Use	Position in Relation to the Development
24 Gloucester Crescent	Residential	West

2.4 Limitations

2.4.1 We refer you to our daylighting and sunlighting limitations, as provided with our fee proposal.

2.4.2 Our assessment is based on the scheme drawings provided by Tony Robinson, and topographical information provided by Malby Land Surveys as listed below:

Author	Title	Date
Studio Bednarski Ltd	As Proposed Plans - P01	Jan 14
Studio Bednarski Ltd	As Proposed Sections - P02	Jan 14
Studio Bednarski Ltd	As Proposed Elevations - P03	Jan 14
Studio Bednarski Ltd	Lond Street Elevation - P04	Jan 14
Maltby Land Surveys	110120-200 – Topographical site plan	Apr 11
Maltby Land Surveys	110120-300 – Topographical site elevations	Apr 11

2.4.3 A site inspection was also undertaken to record the location of windows within the surrounding buildings. Where no elevation survey data has been provided to us, we have estimated approximate window heights and positions in the surrounding existing properties from data gathered at our site inspection.

2.4.4 Our assessment included an external inspection of the existing site and surrounding properties. Access was not available into 24 Gloucester Crescent and therefore assumptions have been made as to internal room sizes, layouts and uses.

2.4.5 The tests were undertaken using EOS daylight and sunlight software.

3. Assessment & Results – Impact of New Development on Existing, Surrounding Buildings

3.1 Daylight

3.1.1 The existing buildings adjacent to the proposed development site are shown on the Site Location Plan (see above) and comprise of:

- 24 Gloucester Crescent

3.1.2 All windows, which we considered would be most significantly affected by the proposals, within the surrounding residential properties listed above have been assessed. Locations of each assessment point can be seen on the 'Assessment Point Location Drawings' within Appendix C.

3.1.3 The results of our VSC analysis are shown in full in Appendix D. The following table is a summary of our findings:

Property Ref	Vertical Sky Component Test		
	No. of Windows Tested	No. of Windows Passed VSC Test	No. of Windows Failed VSC Test
24 Gloucester Crescent	4	4	0
Total	**4**	**4**	**0**

3.1.4 The BRE guide also states that the diffuse daylighting of existing buildings may be affected if the area of working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value. We have therefore assessed all surrounding residential properties for daylight distribution and full test results are contained in Appendix E.

3.1.5 All windows tested to 24 Gloucester Crescent will continue to meet the target VSC values as recommended by the BRE guide.

3.1.6 The Daylight Distribution (DD) test results are shown in full in Appendix D. Below is a summary of our findings:

Property Ref	Daylight Distribution (DD) Test		
	No. of Rooms	No. of Rooms Passed	No. of Rooms Failed
24 Gloucester Crescent	4	4	0
Total	**4**	**4**	**0**

3.1.7 All of the rooms tested will continue to meet the requirements as recommended in the BRE guide.

3.2 Sunlight

3.2.1 The BRE report recommends that if an existing property faces within 90° of due south and overlooks the development, an assessment for sunlight availability should be undertaken.

3.2.2 None of the windows to habitable rooms at 24 Gloucester Crescent face the proposed development and face within 90° of due south. Therefore, pursuant to the BRE guide, the windows do not require testing.

3.3 Overshadowing

3.3.1 In addition to the daylight and sunlight received by the adjoining properties it is important to ensure any open spaces or gardens are not excessively overshadowed by the proposed development.

3.3.2 Pursuant to the BRE guide, only gardens and public open spaces such as parks or playgrounds need to be assessed. We have therefore undertaken overshadowing assessments to the following areas:

- Rear gardens to 24 Gloucester Crescent

3.3.3 A reference plan and the results of the overshadowing analysis are shown in full in Appendix F. The table below summarises the results:

Area Reference	Proportion receiving at least 2hrs of sun on 21 March	BRE Compliant?
R1/1000	0%	No
R1/1001	0%	Yes
R1/1002	0%	No
R1/1003	0%	No
R1/1004	0%	Yes

3.3.4 The gardens of the surrounding property do not fully meet the BRE guide's target value for permanent overshadowing, or target value for permissible reduction, on 21 March. The original scheme passed the previous BRE guidelines but the current tests have been undertaken in accordance with the updated Building Research Establishment Report `Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' 2nd Edition, 2011(the "BRE guide").

3.3.5 Due to the specific location and orientation of the site and the relationship shared with the rear garden to 24 Gloucester Place the current BRE guidelines prove overly restrictive in allowing any meaningful re-development at 46 Inverness Street. Indeed, the architects have purposefully designed their scheme to allow as much sunlight as possible to reach the rear garden of 24 Gloucester Place.

3.3.6 The results of our analysis also highlight that on March 21st much of the rear garden at 24 Gloucester Place remains in shade. This is largely due to the high adjacent walls of both 44 Inverness Street and 24 Gloucester Place (approximately 10m and 14m high respectively). This means that on any given date there is no more than three hours per day, where there is any possibility of sunlight reaching the garden of 24 Gloucester Place, with or without the proposed development.

3.3.7 For this reason we have undertaken a much fuller analysis to show a month by month breakdown from March through to October. The full results are shown in Appendix J. In summary, these results show that for five months of the year (October, November, December, January and February), no part of the garden to 24 Gloucester Place currently receives any sunlight for the minimum two hours. So for those five months the development cannot make any difference.

3.3.8 Further, if the areas are combined to create a single 'garden' area then the results are indeed, very favourable. From April through to August the garden will continue to receive percentage proportion of former value area (which receive a minimum of 2 hours of sunlight) figures of 79.8% for April, 92.5% for May, 93.2% for June, 93.1% for July and finally 81.5% for August.

3.3.9 Viewed in this way we therefore consider that for the most important months of the year the rear garden to 24 Gloucester Place will only be marginally affected. We also consider that, when taking account of the restrictive nature of the garden in the current, existing, layout, the proposed development follows the spirit of the BRE guidance and is acceptable.

4. Assessment & Results – Daylighting, Sunlighting & Overshadowing issues in the New Development

4.1 Internal Daylight

4.1.1 ADF tests have been undertaken to a sample of the principal habitable rooms within the proposed development. The full ADF test results are shown in full in Appendix D. Below is a summary of our findings:

Property Ref	Average Daylight Factor Test		
	No. of Rooms	No. of Rooms Passed	No. of Rooms Failed
Proposal	5	5	0
Total	**5**	**5**	**0**

4.1.2 The results in the table above indicate that all of the rooms assessed will meet the target ADF values as recommended by the BRE guide.

4.1.3 We have assessed the proposed development for daylight distribution and full test results are contained in Appendix H. The results show that all rooms achieve the recommended Daylight Distribution (DD) values because at least 80% of the area is directly lit.

4.2 Internal Sunlight

4.2.1 APSH tests have been undertaken to a sample of the principal habitable rooms within the proposed development. The full APSH test results are shown in full in Appendix E. Below is a summary of our findings:

Property Ref	No. of Rooms Tested	No. of Rooms Passed APSH Test	No. of Rooms Failed APSH Test
Proposal	5	3	2
Total	**5**	**3**	**2**

4.2.2 Consideration has also been given to windows to the basement windows of the proposed development. The full results are included at Appendix I.

4.2.3 The results show that the two basement rooms do not pass the test for sunlight, however the BRE guide states that sunlight is more important in living rooms than in other rooms such as bedrooms and kitchens. As these basement rooms are bedrooms then they have a lower expectation of sunlight. Conversely the living area and study will be very well sunlit and therefore the BRE criteria are fully met.

4.2.4 We have assessed the proposed development for sunlight and the results show that the basement rooms do not pass the test for sunlight. However the BRE guide states that sunlight is more important in living rooms than in other rooms such as bedrooms and kitchens. As these basement rooms are bedrooms then they have a lower expectation of sunlight and are not required to meet the full BRE criteria.

4.3 Overshadowing

4.3.1 The new development has no gardens or amenity spaces, as defined in the BRE guide, located close enough to the proposed development to be adversely affected by overshadowing.

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Appendix A

Tests to be Applied

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Introduction

The main purpose of the guidelines in the Building Research Establishment Report "Site Layout Planning for Daylight and Sunlight – a guide to good practice 2011, 2nd Edition" ("the BRE guide") is to assist in the consideration of the relationship of new and existing buildings to ensure that each retains a potential to achieve good daylighting and sunlighting levels. That is, by following and satisfying the tests contained in the guidelines, new and existing buildings should be sufficiently spaced apart in relation to their relative heights so that both have the potential to achieve good levels of daylight and sunlight. The guidelines have been drafted primarily for use with low density suburban developments and should therefore be used flexibly when dealing with dense urban sites and extensions to existing buildings, a fact recognised by the BRE Report's author in the Introduction where Dr Paul Littlefair says:

'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 been 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 many factors in site layout design…… 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…..'

In many cases in low-rise housing, meeting the criteria for daylight and sunlight may mean that the BRE criteria for other amenity considerations such as *privacy* and *sense of enclosure* are also satisfied.

The BRE guide states that recommended minimum privacy distances (in cases where windows of habitable rooms face each other in low-rise residential property), as defined by each individual Local Authority's policies, vary widely, from 18-35m[1]. For two-storey properties a spacing within this range would almost certainly also satisfy the BRE guide's daylighting requirements as it complies with the 25^0 rule and will almost certainly satisfy the 'Three times height' test too (as discussed more fully below). However, the specific context of each development will be taken into account and Local Authorities may relax the stated minimum, for instance, in built-up areas where this would lead to an inefficient use of land. Conversely, greater distances may be required between higher buildings, in order to satisfy daylighting and sunlighting requirements. It is important to recognize also that privacy can also be achieved by other means: design, orientation and screening can all play a key role and may also contribute towards reducing the theoretical 'minimum' distance.

A sense of enclosure is also important as the perceived quality of an outdoor space may be reduced if it is too large in the context of the surrounding buildings. In urban settings the BRE guide suggests a spacing-to-height ratio of 2.5:1 would provide a comfortable environment, whilst not obstructing too much natural light: this ratio also approximates the 25^0 rule.

[1] The commonest minimum privacy distance is 21m (Householder Development Consents Review: Implementation of Recommendations – Department for Communities and Local Government – May 2007)

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Daylight

The criteria for protecting daylight to existing buildings are contained in Section 2.2 and Appendix C of the BRE guide. There are various methods of measuring and assessing daylight and the choice of test depends on the circumstances of each particular window. For example, greater protection should be afforded to windows which serve habitable dwellings and, in particular, those serving living rooms and family kitchens, with a lower requirement required for bedrooms. The BRE guide states that circulation spaces and bathrooms need not be tested as they are not considered to require good levels of daylight. In addition, for rooms with more than one window, secondary windows do not require assessment if it is established that the room is already sufficiently lit through the principal window.

The tests should also be applied to non-domestic uses such as offices and workplaces where such uses will ordinarily have a reasonable expectation of daylight and where the areas may be considered a principal workplace.

The BRE has developed a series of tests to determine whether daylighting levels within new developments and rooms within existing buildings surrounding new developments will satisfy or continue to satisfy a range of daylighting criteria

Note: Not every single window is assessed separately, only a representative sample, from which conclusions may be drawn regarding other nearby dwellings .

Daylighting Tests

'Three times height' test - If the distance of each part of the new development from the existing windows is three or more times its height above the centre of the existing window then loss of light to the existing windows need not be analysed. If the proposed development is taller or closer than this then the 25^0 test will need to be carried out.

25^0 test – a very simple test that should only be used where the proposed development is of a reasonably uniform profile and is directly opposite the existing building. Its use is most appropriate for low density well-spaced developments such as new sub-urban housing schemes and often it is not a particularly useful tool for assessing urban and in-fill sites. In brief, where the new development subtends to an angle of less than 25^0 to the centre of the lowest window of an existing neighbouring building, it is unlikely to have a substantial effect on the diffuse skylight enjoyed by the existing building. Equally, the new development itself is also likely to have the potential for good daylighting. If the angle is more than 25^0 then more detailed tests are required, as outlined below.

VSC Test - the VSC is a unit of measurement that represents the amount of available daylight from the sky, received at a particular window. It is measured on the outside face of the window. The 'unit' is expressed as a percentage as it is the ratio between the amount of sky visible at the given reference point compared to the amount of light that would be available from a totally unobstructed hemisphere of sky. To put this unit of measurement into perspective, the maximum percentage value for a window with a completely unobstructed outlook (i.e. with a totally unobstructed view through 90° in every direction) is 40%.

The target figure for VSC recommended by the BRE is 27%. A VSC of 27% is a relatively good level of daylight and the level we would expect to find for habitable rooms with windows on principal elevations. However, this level is often difficult to achieve on secondary elevations and in built-up urban environments. For comparison, a window receiving 27% VSC is approximately equivalent to a window that would have a continuous obstruction opposite it which subtends an angle of 25° (i.e. the same results as would be found utilising the 25^0 Test).

Where tests show that the new development itself meets the 27% VSC target this is a good indication that the development will enjoy good daylighting and further tests can then be carried out to corroborate this (see under).

Through research the BRE have determined that in existing buildings daylight (and sunlight levels) can be reduced by approximately 20% of their original value before the loss is materially noticeable. It is for this reason that they consider that a 20% reduction is permissible in circumstances where the existing VSC value is below the 27% threshold. For existing buildings once this has been established it is then necessary to determine whether the distribution of daylight inside each room meets the required standards (see under).

Daylight Distribution (DD) Test – This test looks at the position of the "No-Sky Line" (NSL) – that is, the line that divides the points on the working plane (0.7m from floor level in offices and 0.85m in dwellings and industrial spaces) which can and cannot see the sky. The BRE guide suggests that areas beyond the NSL may look dark and gloomy compared with the rest of the room and BS8206 states that electric lighting is likely to be needed if a significant part of the working plane (normally no more than 20%) lies beyond it.

In new developments no more than 20% of a room's area should be beyond the NSL. For existing buildings the BRE guide states that if, following the construction of a new development, the NSL moves so that the area beyond the NSL increases by more than 20%, then daylighting is likely to be seriously affected.

The guide suggests that in houses, living rooms, dining rooms and kitchens should be tested: bedrooms are deemed less important, although should nevertheless be analysed. In other buildings each main room where daylight is expected should be investigated.

ADF Test –The ADF (Average Daylight Factor) test takes account of the interior dimensions and surface reflectance within the room being tested as well as the amount of sky visible from the window. For this reason it is considered a more detailed and representative measure of the adequacy of light. The minimum ADF values recommended in BS8206 Part 2 are: 2% for family kitchens (and rooms containing kitchens); 1.5% for living rooms; and 1% for bedrooms. This is a test used in assessing new developments, although, in certain circumstances, it may be used as a supplementary test in the assessment of daylighting in existing buildings, particularly where more than one window serves a room.

Room depth ratio test - This is a test for new developments looking at the relative dimensions of each room (principally its depth) and its window(s) to ensure that the rear half of a room will receive sufficient daylight so as not to appear gloomy.

Sunlight

Sunlight is an important 'amenity' in both domestic and non-domestic settings. The way in which a building's windows are orientated and the overall position of a building on a site will have an impact on the sunlight it receives but, importantly, will also have an effect on the sunlight neighbouring buildings receive. Unlike daylight, which is non-directional and assumes that light from the sky is uniform, the availability of sunlight is dependent on direction. That is, as the United Kingdom is in the northern hemisphere, we receive virtually all of our sunlight from the south. The availability of sunlight is therefore dependent on the orientation of the window or area of ground being assessed relative to the position of due south.

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In new developments the BRE guide suggests that dwellings should aim to have at least one main living room which faces the southern or western parts of the sky so as to ensure that it receives a reasonable amount of sunlight. Where groups of dwellings are planned the Guide states that site layout design should aim to maximise the number of dwellings with a main living room that meet sunlight criteria. Where a window wall faces within 90^0 of due south and no obstruction subtends to angle of more than 25^0 to the horizontal or where the window wall faces within 20^0 of due south and the reference point has a VSC of at least 27% then sunlighting will meet the required standards: failing that the Annual Probable Sunlight Hours (APSH) need to be analysed. APSH means the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloud for the location in question. If the APSH tests reveal that the new development will receive at least one quarter of the available APSH, including at least 5% of APSH during the winter months (from 21 September to 21 March), then the requirements are satisfied. It should be noted that if a room has two windows on opposite walls, the APSH due to each can be added together.

The availability of sunlight is also an important factor when looking at the impact of a proposed development on the existing surrounding buildings. APSH tests will be required where one or more of the following are true:

- The 'Three times height' test is failed (see 'Daylight' above);
- The proposed development is situated within 90^0 of due south of an existing building's main window wall and he new building subtends to angle of more tha^n 25^0 to the horizontal;
- The window wall faces within 20^0 of due south and a point at the centre of the window on the outside face of the window wall (the reference point) has a VSC of less than 27%.

Where APSH testing is required it is similar to the test for the proposed development. That is to say that compliance will be demonstrated where a room receives:

- At least 25% of the APSH (including at least 5% in the winter months), or
- At least 0.8 times its former sunlight hours during either period, or
- A reduction of no more than 4% APSH over the year .

The Guide stresses that the target values it gives are purely advisory, especially in circumstances such as: the presence of balconies (which can overhang windows, obstructing light); when an existing building stands unusually close to the common boundary with the new development and; where the new development needs to match the height and proportion of existing nearby buildings. In circumstances like these a larger reduction in sunlight may be necessary.

The sunlight criteria in the BRE guide primarily apply to windows serving living rooms of an existing dwelling. This is in contrast to the daylight criteria which apply to kitchens and bedrooms as well as living rooms. Having said that, the guide goes on to say that care should be taken not to block too much sun from kitchens and bedrooms. Non-domestic buildings which are deemed to have a requirement for sunlight should also be checked.

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Sunlight – Gardens and Open Spaces

As well as ensuring buildings receive a good level of sunlight to their interior spaces, it is also important to ensure that the open spaces between buildings are suitably lit. The recommendations as set out in the BRE guide are meant to ensure that spaces between buildings are not permanently in shade for a large part of the year. Trees and fences over 1.5m tall are also factored into the calculations.

The BRE guidelines state that:

- For a garden or amenity area to appear adequately sunlit throughout the year, at least 50% of the area should receive at least two hours of sunlight on 21 March;

- In addition, if, as result of new development, an existing garden or amenity area does not reach the area target above and the area which can receive two hours of direct sunlight on 21 March is reduced by more than 20% this loss is likely to be noticeable.

Appendix G of the BRE guidelines describes a methodology for calculating sunlight availability for amenity spaces.

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Appendix B

Context Drawings

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Appendix C

Window/Room Reference Drawings

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Appendix D

Daylight Study

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Appendix E

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Appendix F

Overshadowing Study