DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Northwood Hills Library

Produced by XCO2 for Hillingdon First Ltd

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EXECUTIVE SUMMARY

The daylight, sunlight and overshadowing analysis indicates that there will not be a significant impact on surrounding properties arising from the proposed development at Northwood Hills Library. The onsite assessment indicates that the vast majority of habitable rooms within the proposed development will achieve good levels of daylight and sunlight.

Daylight and Sunlight analysis was carried out for the proposed development at Northwood Hills Library, located within the London Borough of Hillingdon. This report outlines the results of the analysis for the planning application, assessing the daylight and sunlight impacts on surrounding developments, as well as evaluating daylight and sunlight levels within residential units of the proposed scheme.

The methodology set out in this report is in accordance with BRE's "Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice" by PJ Littlefair et al. (2022) which is accepted as good practice by Planning Authorities.

ASSESSMENT OF NEIGHBOURING BUILDINGS

The following assessments were carried out:

- Daylight: 25 Degree Line
- Daylight: Vertical Sky Component
- Sunlight: Sunlight Access
- Sunlight: Sunlight Overshadowing

Computer modelling software was used to carry out the assessments. The model used was based on drawings and a 3D model provided by the architects together with desktop research on neighbouring properties.

DAYLIGHT ASSESSMENT

A total of 90 windows from buildings surrounding the site were highlighted as being in close proximity to and facing the proposed development.

Daylighting levels for potentially affected windows of surrounding developments by the proposed development at Northwood Hills Library were found to be acceptable.

In addition to all windows passing the initial 25-degree line test, 81 windows achieved a VSC of at least 27% with the remaining 9 windows achieving a VSC that is at least 0.8 of the existing value as recommended by the BRE.

Overall, the development is not anticipated to have any notable impact on the daylight received by neighbouring properties.

SUNLIGHT ASSESSMENT

A total of 39 windows from buildings surrounding the site were assessed for sunlight access. In summary:

- 39 windows passed the 25-degree line test.
- In addition to passing the 25-degree line test:
    - 38 windows satisfied the BRE criteria for annual probable sunlight hours (APSH) and winter probable sunlight hours (WPSH).
    - 1 remaining window has a reduction of less than 4% in sunlight access.

Overall, the proposed development at Northwood Hills Library is not considered to have any notable impact on sunlight access to windows of surrounding developments.

OVERSHADOWING ASSESSMENT

One amenity space belonging to Roundabout House was assessed for overshadowing and was found to receive at least 2 hours of sunlight on 21 March for over 50% of its area, therefore meeting the BRE recommendations.

Table 1: Daylight results summary for neighbouring buildings

Number of windows tested	90
Number of windows passing the 25°initial test	90
Number of windows with a VSC higher than 27%	81
Number of windows with a VSC of at least 0.8 of existing value	9
Number of windows that do not meet any of the above criteria	0

Table 2: Sunlight results summary for neighbouring buildings

Total number of windows facing within 90° of south	39
Number of south facing windows passing the 25° initial test	39
Number of south facing windows with APSH greater than 25% and WPSH greater than 5%, or of at least 0.8 of their former existing value	38
Number of south facing windows with less than 4% reduction in annual sunlight	1
Number of windows that do not meet any of the above criteria	0

ASSESSMENT OF THE PROPOSED SCHEME

The following assessments were carried out for a sample of residential units within the proposed scheme:

- Daylight: Spatial Daylight Autonomy
- Sunlight: Sunlight Exposure
- Sunlight: Sunlight Access for Overshadowing

DAYLIGHT ASSESSMENT

The rooms evaluated in the internal daylight assessment include open plan kitchen, living room, dining spaces, and bedrooms within the proposed development.

The assessment was carried out for all 9 dwellings within the development. All habitable rooms within these dwellings have been included in the assessment.

The assessment is based on the recommendations set out by the BRE's "Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice" by PJ Littlefair et al. (2022), which is accepted as good practice by Planning Authorities. The results indicated that all 9 LKDs (Living, Kitchen, Dining) assessed meet the BRE recommendations. From the 18 bedrooms assessed, 16 bedrooms are within the BRE recommendations. One bedroom is within 90% of the BRE recommendations, achieving an sDA of at least 45%. The remaining bedroom belongs to a dwelling with at least one habitable room that does meet the BRE recommendations. These results correspond to approximately a 93% compliance rate for the development as a whole.

Overall, the proposed development as a whole is anticipated to achieve good levels of daylighting to all dwellings and habitable spaces and is therefore considered to provide good quality of accommodation to the future occupants in terms of daylight.

SUNLIGHT ASSESSMENT

The assessment was carried out for all 27 habitable rooms within the dwelling.

From the 27 habitable rooms assessed, 24 rooms meet the BRE recommended criteria for sunlight levels. The remaining 3 rooms were north-facing bedrooms and belong to residential units that have other rooms satisfying the BRE recommendations for sunlight and hence satisfying the BRE recommendations overall. It is worth noting that all LKDs were found to meet the BRE recommended sunlight levels.

Overall, it can be concluded that the proposed design offers optimum accessibility to sunlight in all living spaces within the Northwood Hills Library proposed development.

OVERSHADOWING ASSESSMENT

Four amenity spaces belonging to the proposed site were assessed for overshadowing and was found to receive at least 2 hours of sunlight on 21 March for over 50% of their areas, therefore meeting the BRE recommendations

Table 3: Summary of daylight results for the proposed development.

Number of habitable rooms tested	27
Number of kitchen/living/dining rooms	9
Number of kitchen/living/dining rooms meeting the BRE recommendations	9
Number of kitchen/living/dining not meeting any of the above criteria	0
Number of bedrooms	18
Number of bedrooms meeting the BRE recommendations	16
Number of bedrooms meeting within 90% or above of the BRE recommendations (sDA of at least 45%)	1
Number of bedrooms belonging to dwellings with at least one habitable room meeting the daylight recommendations	1
Number of bedrooms not meeting any of the above criteria	0

Table 4: Summary of sunlight results for the proposed development.

Number of habitable rooms tested	27
Number of habitable rooms with more than 4 hours of sunlight access	15
Number of habitable rooms with more than 3 hours of sunlight access	0
Number of habitable rooms with more than 1.5 hours of sunlight access	9
Number of habitable rooms that do not meet the meet the above criteria but are not living rooms	3
Number of living rooms not meeting any of the above criteria	0

INTRODUCTION

The site is located in an urban environment and the interpretation of the results requires careful consideration of the BRE guidance.

This report assesses the daylight, sunlight and overshadowing impacts the proposed new build residential development may have on the existing properties and open spaces surrounding the site, as well as evaluating daylight and sunlight levels within residential units of the proposed scheme.

The approach is based on the BRE's "*Site Layout Planning for daylight and sunlight, a Guide to good practice"* PJ Littlefair et al. (2022), which is generally accepted as good practice by Town and Country Planning authorities.

It should be noted that although the numerical values stated by the BRE provide useful guidance to designers, consultants and planning officials, these are purely advisory and may vary depending on context. Dense urban areas, for example, may often experience greater site constraints when compared to low-rise suburban areas, and thus a high degree of obstruction is often unavoidable. Appendix F of the BRE document is dedicated to the use of alternative values and it also demonstrates the manner in which the criteria for skylight were determined for the summary given above, i.e. the need for 27% vertical sky component for adequate daylighting.

This figure of 27% was achieved using the following methodology: a theoretical road was created with two storey terraced houses upon either side, approximately twelve metres apart. The houses have windows at ground and first floor level, and a pitched roof with a central ridge. Thereafter, a reference point was taken at the centre of a ground floor window of one of the properties and a line was drawn from this point to the central ridge of the property on the other side of the road.

The angle of this line equated to 25 degrees (the 25 degrees referred to in the summaries given with reference to the criteria for skylight). This 25-degree line obstructs 13% of the totally unobstructed sky available, leaving a resultant figure of 27% which is deemed to give adequate daylighting. This figure of 27% is the recommended criteria referred to in this report. It will be readily appreciated that in an urban area, this kind of urban form and setting is unlikely and impractical.

Furthermore, the BRE guidance also focuses on 'relative change' which is likely to be exaggerated given the low rise nature of the existing structures on site. Where there is more than a 20% reduction in VSC, this does not mean that the level of daylight will be unacceptable but, rather, that there may be a noticeable change in daylight levels to the occupants.

SITE

The proposal includes demolition of existing library and construction of a new mixed-use building comprising a replacement library and 9 x residential dwellings with car parking, cycle parking, waste storage and associated infrastructure.

Site analysis was carried out to identify any potential daylight and sunlight impacts on the surrounding development. Relevant properties tested in this report and near the proposed development are annotated in the figure below. The following neighbouring buildings were tested in detail for the impact assessment:

- Northwood School
- 105-109 Pinner Street
- Roundabout House
- 3 Potter Street
- 5 Potter Street

Figure 1: Site location and neighbouring buildings assessed.

SECTION 1: ASSESSMENT OF NEIGHBOURING BUILDINGS

METHODOLOGY

The impact assessment is based on guidelines set out in the BRE "Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice" (2022).

DAYLIGHT

DAYLIGHT TO SURROUNDING WINDOWS

A plane is drawn at 25 degrees from the horizontal, at the centre of an existing window. If the new development intersects with this plane, the internal daylight levels of the surrounding windows may be reduced. When an obstruction of the 25-degree plane occurs, a more detailed assessment involving the Vertical Sky Component of the affected window would need to be carried out.

ABSOLUTE VERTICAL SKY COMPONENT (VSC)

The Vertical Sky Component is the ratio of the direct sky illuminance falling on the vertical wall at a reference point, to the simultaneous horizontal illuminance under an unobstructed sky. To maintain good levels of daylight, the Vertical Sky Component of a window needs to be 27% or greater. If the VSC is less than 27%, then a comparison of existing and proposed levels of VSC level would need to be calculated.

RELATIVE VERTICAL SKY COMPONENT

Good levels of daylighting can still be achieved if VSC levels are within 0.8 of their former value.

SUNLIGHT

ACCESS TO SUNLIGHT (APSH)

The BRE test relates mainly to existing living room windows, although care should be taken to ensure that kitchens and bedrooms receive reasonable amounts of sunlight. Annual Probable Sunlight Hour (APSH) assessment is carried out when there is an obstruction within the 25-degree line and the window is facing within 90 degrees due south. The APSH assessment states that the existing living room window should receive at least:

- 25% of annual probable sunlight hours (APSH) throughout the year;
- 5% of annual probable sunlight hours during the winter months;
- not less than 80% of its former sunlight hours during either period;
- not more than a 4% reduction in sunlight received over the whole year (APSH).

The term 'annual probable sunlight hours' refers to the long-term average of the total of hours during a year in which direct sunlight reaches the unobstructed ground (when clouds are taken into account). The 'winter probable sunlight hours' is used to mean the same but only for the winter period (21 September – 21 March).

OVERSHADOWING

SUNLIGHT TO AMENITY SPACES

Open spaces should retain a reasonable amount of sunlight throughout the year. The BRE states that for an amenity space to "appear adequately sunlit throughout the year, at least half of the area should receive at least 2 hours of sunlight on 21 March". Where this is not achieved, the difference between the area achieving 2 hours of sun on 21 March should be no less than 0.8 times its former value.

DAYLIGHT ASSESSMENT

The analysis indicates that the proposed development is unlikely to have a significant impact on neighbouring windows in terms of daylight. The following subsections detail the findings for each neighbouring building individually.

NORTHWOOD SCHOOL

This building is located to the east of the proposed development. Figure 2 shows the assessed windows.

As shown in Figure 3, the windows pass the initial 25-degree line test. In addition to this, from a total 12 windows assessed, 11 windows achieve a VSC of at least 27% and the remaining window achieves a VSC that is at least 0.8 of the existing value. Therefore, meeting the BRE recommendations.

Table 5 below summarises the findings. Detailed results are presented in Appendix B - Detailed Daylight Results for Neighbouring Buildings.

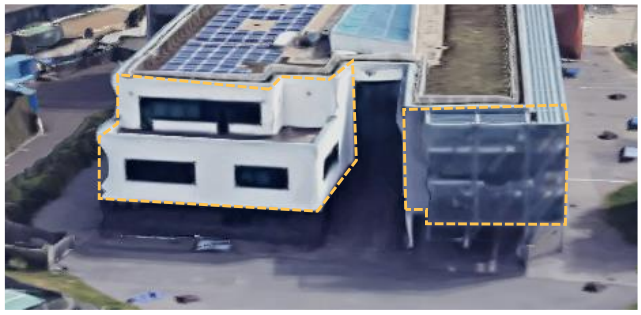


Figure 2: Northwood School windows.

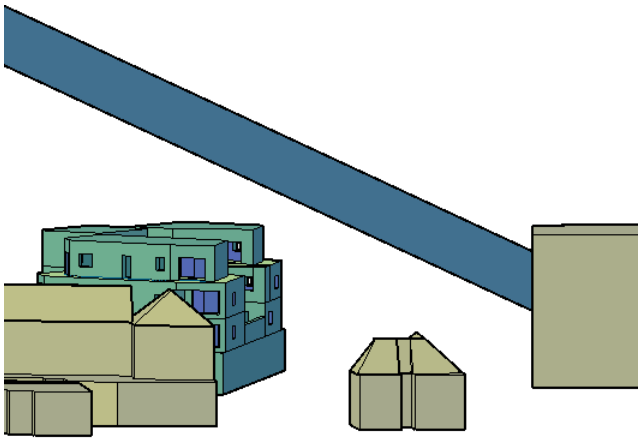


Figure 3: 25-degree line test for Northwood School.

Table 5: Daylight results summary for Northwood School.

Number of windows tested	12
Number of windows passing the 25° initial test	12
Number of windows with a VSC higher than 27%	11
Number of windows with a VSC of at least 0.8 of existing value	1
Number of windows that do not meet any of the above criteria	0

105-109 PINNER STREET

This building is located to the south of the proposed development. Figure 4 shows the assessed windows.

The results show that all 38 windows assessed pass the initial 25-degree line test and additionally achieve a VSC of at least 27%. Thus, meeting the BRE recommendations.

The table below summarises the findings. Detailed results are presented in Appendix B - Detailed Daylight Results for Neighbouring Buildings.

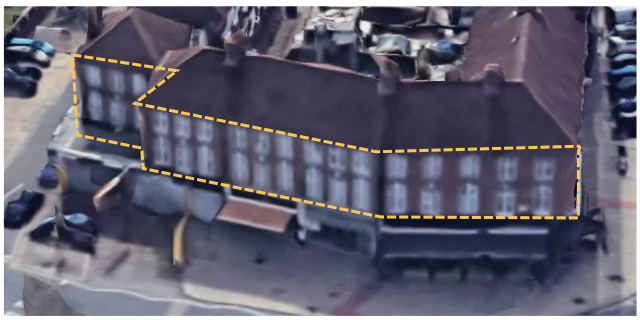


Figure 4: 105-109 Pinner Street windows.

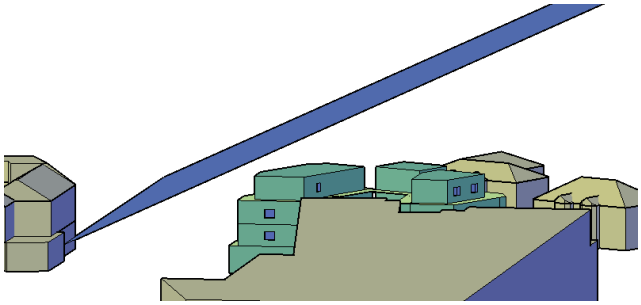


Figure 5: 25-degree line test for 105-109 Pinner Street.

Table 6: Daylight results summary for 105-109 Pinner Street.

Number of windows tested	38
Number of windows passing the 25° initial test	38
Number of windows with a VSC higher than 27%	38
Number of windows with a VSC of at least 0.8 of existing value	0
Number of windows that do not meet any of the above criteria	0

ROUNDABOUT HOUSE

This building is located to the west of the proposed building. Figure 6 shows the assessed windows.

The results show that all 18 windows assessed from this development pass the 25-degree line test and also achieve VSCs over 27%.

The table below summarises the findings. Detailed results are presented in the Appendix B - Detailed Daylight Results for Neighbouring Buildings.

Figure 6: Roundabout House windows.

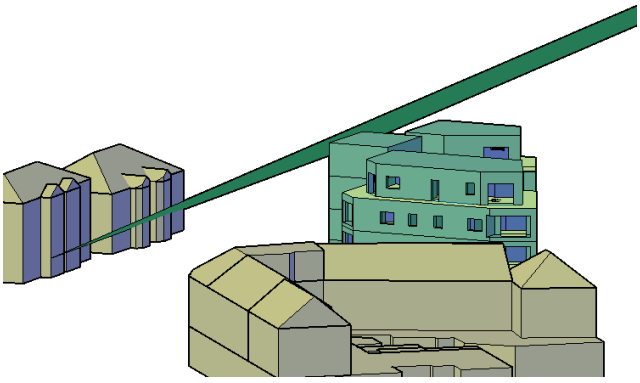


Figure 7: 25-degree line test for Roundabout House .

Table 7: Daylight results summary for Roundabout House.

Number of windows tested	18
Number of windows passing the 25° initial test	18
Number of windows with a VSC higher than 27%	18
Number of windows with a VSC of at least 0.8 of existing value	0
Number of windows that do not meet any of the above criteria	0

3 POTTER STREET

This building is located to the west of the proposal. Figure 8 shows the assessed windows.

The results show that all windows meet the BRE recommendations. In addition to passing the initial 25-degree line test, 7 windows have VSCs over 27% and the remaining 4 windows have VSCs of at least 0.8 of the existing value.

The table below summarises the findings. Detailed results are presented in the Appendix B - Detailed Daylight Results for Neighbouring Buildings.

Figure 8: 3 Potter Street windows.

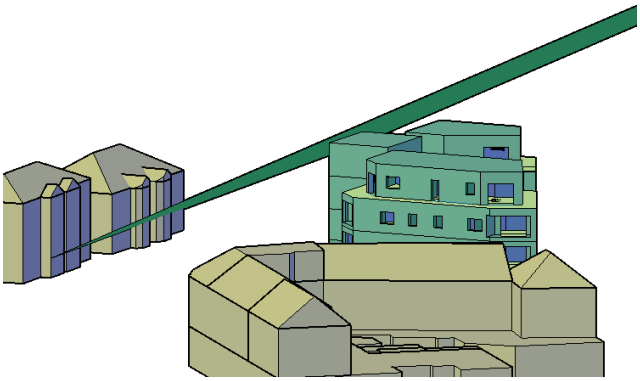


Figure 9: 25-degree line test for 3 Potter Street.

Table 8: Daylight results summary for 3 Potter Street.

Number of windows tested	11
Number of windows passing the 25° initial test	11
Number of windows with a VSC higher than 27%	7
Number of windows with a VSC of at least 0.8 of existing value	4
Number of windows that do not meet any of the above criteria	0

5 POTTER STREET

This building is located to the west of the proposal. Figure 10 shows the assessed windows.

The results show that in addition to passing the 25-degree line test, 7 windows achieve VSCs higher than 27% and the remaining 4 windows achieve VSCs of at least 0.8 of the existing value.

The table below summarises the findings. Detailed results are presented in the Appendix B - Detailed Daylight Results for Neighbouring Buildings.

Figure 10: 5 Potter Street windows.

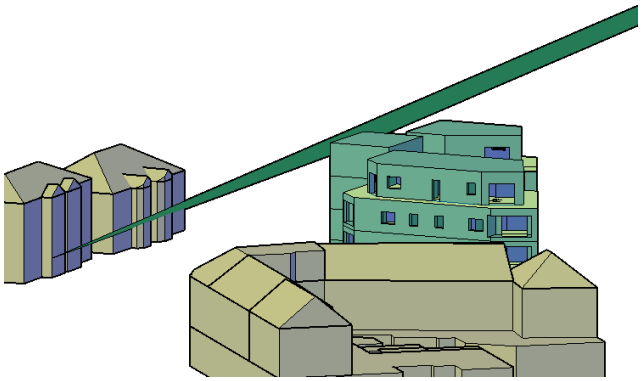


Figure 11: 25-degree line test for 5 Potter Street .

Table 9: Daylight results summary for 5 Potter Street.

Number of windows tested	11
Number of windows passing the 25° initial test	11
Number of windows with a VSC higher than 27%	7
Number of windows with a VSC of at least 0.8 of existing value	4
Number of windows that do not meet any of the above criteria	0

SUNLIGHT ASSESSMENT

The analysis indicates that the proposed development is unlikely to have a significant impact on neighbouring south facing windows in terms of sunlight.

The BRE guide states that:

"if a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected"

A total of 39 windows from buildings surrounding the site were highlighted as facing the development and within 90° of due south.

The analysis indicated that all 39 windows meet the BRE recommended targets for sunlight.

The table below shows the results summary. The detailed results can be found in the Appendix C - Detailed Sunlight Results for Neighbouring Buildings.

Overall, the proposed development is not considered to have any notable impact on sunlight access to windows of surrounding developments.

Table 10: Summary of sunlight results for neighbouring buildings.

Total number of windows facing within 90° of south	**39**
Number of south facing windows passing the 25° initial test	39
Number of south facing windows with APSH greater than 25% and WPSH greater than 5%, or of at least 0.8 of their former existing value	38
Number of south facing windows with less than 4% reduction in annual sunlight	1
Number of windows not consisting of a main living room	0
Number of windows that do not meet any of the above criteria	0

OVERSHADOWING ASSESSMENT

The analysis indicates that the proposed development will not have any impact on the sunlight received by neighbouring amenity spaces.

A review of the site plan showed that there is one amenity space in close proximity to the proposed development, belonging to Roundabout House as shown in the figure below. A Solar Access Analysis was undertaken on these amenity areas for the full 24 hours on 21 March as set out by the BRE.

The images show that at least 50% of the analysed space will receive more than 2 hours of sunlight on 21 March under proposed conditions, meeting the BRE requirements for overshadowing.

The proposed development is not considered to have any significant impact on sunlight access to neighbouring amenity and open spaces.

Figure 12: Open space located to the south of the development site

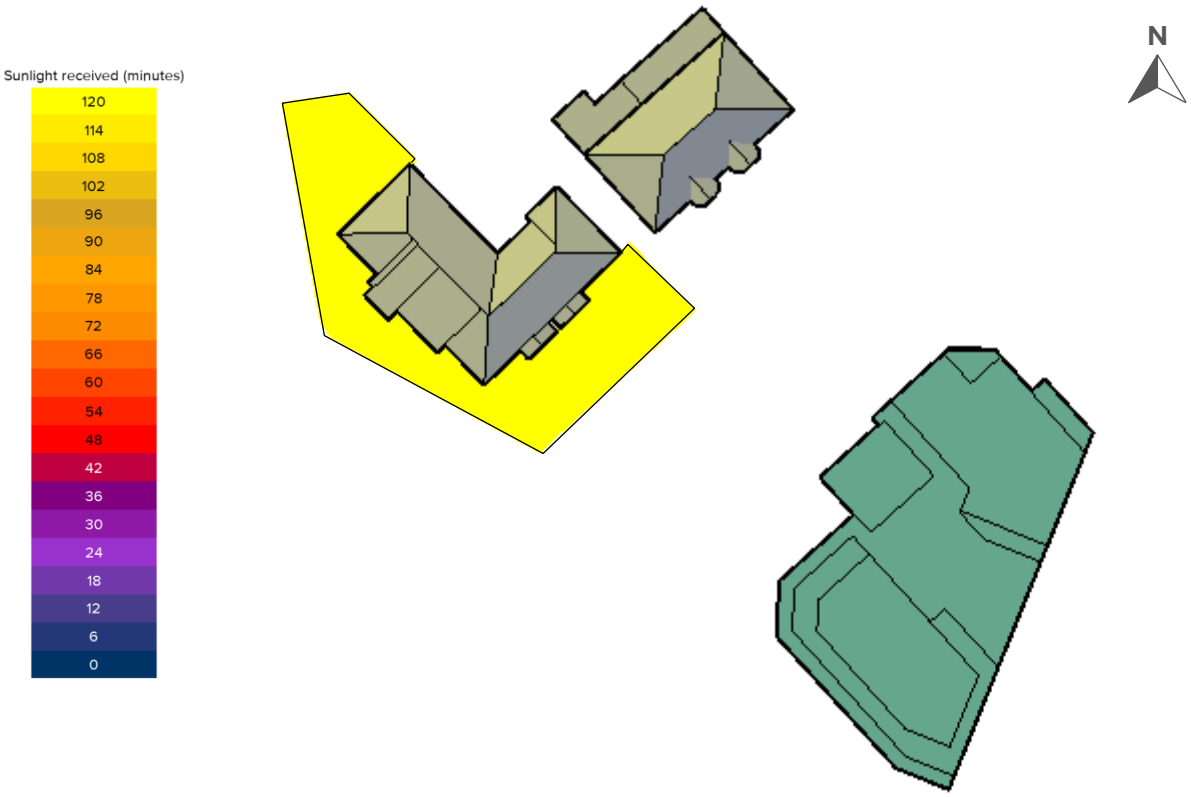


Figure 13: Overshadowing results for the amenity space at Roundabout House.

Table 11: Summary of overshadowing results for the amenity space at Roundabout House.

Amenity Space	Total Area (m^2)	Existing Area Lit (m^2).	Proposed Area Lit (m^2)	Proposed Area Lit Percentage	Comment
A1	320.5	320.5	320.5	100%	Meets BRE Criteria

SECTION 2: ASSESSMENT OF PROPOSED SCHEME

METHODOLOGY

The assessment is based on guidelines set out in the BRE "Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice" (2022).

The methodology is based on the British Research Establishment's (BRE) publication "Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice," by PJ Littlefair et al. (2022).

The BRE publication Site Layout Planning for Daylight and Sunlight gives advice on site layout planning to achieve good daylighting in buildings. It is important to note that the advice given in the BRE guide is *"not mandatory"* and *"its aim is to help rather than constrain the designer".*

The guide also clearly states that "this document should not be seen as an instrument of planning policy" and that "in special circumstances the developer or planning authority may wish to use different target values."

DAYLIGHT

The BRE guidelines refer to the British Standard BS EN 17037 *Daylight in Buildings* recommendations. This stipulates the calculation of the amount of daylight in a space using one of two methods: prediction of illuminance levels using hourly data, or the use of the daylight factor. For this assessment, the method predicting illuminance levels using hourly data is used. For daylight levels in dwellings, BS EN 17037 refers to the UK National Annex which outlines the illuminance level needed in a room according to its occupancy. These are as follows:

- 100 lux for bedrooms
- 150 lux for living rooms and
- 200 lux for kitchens, or rooms with kitchens

The calculation is carried out taking into consideration the relative illuminance values, the amount of daylight hours, and the area of the room. For a room to be compliant with the BRE guidance it must reach the required illuminance levels for at least 50% of the daylight hours across 50% of the room area.

This is measured by the Spatial Daylight Autonomy (sDA) metric. sDA is defined as the percentage area of the analysed space that is above a certain lux level for a certain percentage of time.

In addition to the amount of light hitting the working plane, this assessment takes into consideration surface materials and in particular their reflectance.

These calculations are carried out using Radiance based software approved by the BRE.

SUNLIGHT

Sunlight is valued within a space, and according to the BRE guidance access to sunlight can be quantified. BS EN 17037 recommends that a space should receive a minimum of 1.5 hours of direct sunlight on the 21st of March – the equinox. The guidance rates the amount of access to daylight as below:

- 1.5 hours as the minimum
- 3 hours as a medium level
- 4 hours as a high level

The BRE guidance states that *"in housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day but especially in the afternoon. Sunlight is also required in conservatories. It is viewed as less important in bedrooms and in kitchens, where people prefer it in the morning rather than the afternoon."*

The guidance states at least one habitable room is required to meet the criteria per dwelling.

OVERSHADOWING

Open spaces should retain a reasonable amount of sunlight throughout the year. The BRE states that for an amenity space to *"appear adequately sunlit throughout the year, at least half of the area should receive at least two hours of sunlight on 21 March".*

DAYLIGHT ASSESSMENT

The analysis indicates that the habitable spaces of the proposed development will receive good levels of daylighting.

All 27 habitable rooms across the three floors of the proposed development were included in the assessment. This included 9 LKDs and 18 bedrooms.

The references of the evaluated dwellings and the corresponding habitable rooms can be found in the Appendix E - Proposed Daylight Results. The tables below show a summary of results for the habitable rooms across the proposed development.

For the calculations, the following assumptions have been made:

- 60% interior wall reflectance
- 80% interior ceiling reflectance
- 30% interior floor reflectance
- 20% exterior surface reflectance
- 68% light transmission for vertical glazing

The results show that all 9 LKDs meet the BRE recommendations.

As for the bedrooms, 16 out of 18 bedrooms meet the BRE recommendations. From the remaining 2 rooms, 1 room was found to only be marginally short of the criteria meeting within 90% or above of the BRE recommendations (with sDA greater than 45%). There is only one remaining room below the stated criteria, and this is a first-floor bedroom which has its window adjacent to the privacy screen located on the communal amenity space. It is worth noting that this privacy screen is a necessity to offer privacy between the residential amenity space and the neighbouring school. It is also worth noting that the bedroom belongs to a dwelling that has a LKD and another bedroom that meets the BRE recommendations for daylight.

The design team have also made amendments to the design such as increasing the window sizes and adjusting the window locations in order to maximise the level of daylight received in the space as far as is considered feasible.

Detailed results can be found within Appendix D - Proposed Scheme SDA Contours & Room Reference and Appendix E - Proposed Daylight Results.

Table 12: Daylight results summary for sample dwellings

Number of habitable rooms tested	27
Number of kitchen/living/dining rooms	9
Number of kitchen/living/dining rooms meeting the BRE recommendations	9
Number of kitchen/living/dining not meeting any of the above criteria	0
Number of bedrooms	18
Number of bedrooms meeting the BRE recommendations	16
Number of bedrooms meeting within 90% or above of the BRE recommendations (sDA of at least 45%)	1
Number of bedrooms belonging to dwellings with at least one habitable room meeting the daylight recommendations	1
Number of bedrooms not meeting any of the above criteria	0

SUNLIGHT ASSESSMENT

The analysis indicates that all habitable spaces of the proposed development will receive good levels of sunlight.

All 27 habitable rooms within the development have been included in the assessment.

The references of the evaluated rooms can be found in the Appendix D - Proposed Scheme SDA Contours & Room Reference.

The results show that 24 rooms meet the BRE recommendations for sunlight. There are 3 remaining habitable rooms are bedrooms and belong to residential units that have other rooms satisfying the BRE recommendations for sunlight and hence satisfying the BRE recommendations overall.

Detailed results can be found within Appendix F - Proposed Scheme Sunlight Results.

Table 13: Sunlight Results for Northwood Hills Library

Number of habitable rooms tested	27
Number of habitable rooms with more than 4 hours of sunlight access	15
Number of habitable rooms with more than 3 hours of sunlight access	0
Number of habitable rooms with more than 1.5 hours of sunlight access	9
Number of habitable rooms that do not meet the meet the above criteria but are not living rooms	3
Number of living rooms not meeting any of the above criteria	0

OVERSHADOWING ASSESSMENT

The analysis indicates that the open space(s) of the proposed development will receive adequate sunlight.

A review of the site plan showed that there are 4 amenity spaces which are part of the proposed development. A Solar Access Analysis was undertaken on these amenity areas for the full 24 hours on 21 March as set out by the BRE.

The amenity spaces assessed included two garden spaces on the ground floor, a communal terrace space on the first floor and a private terrace on the third floor.

The results showed that all four spaces will meet the BRE recommendations by receiving at least 2 hours of sunlight on 21 March for over 50% of their areas.

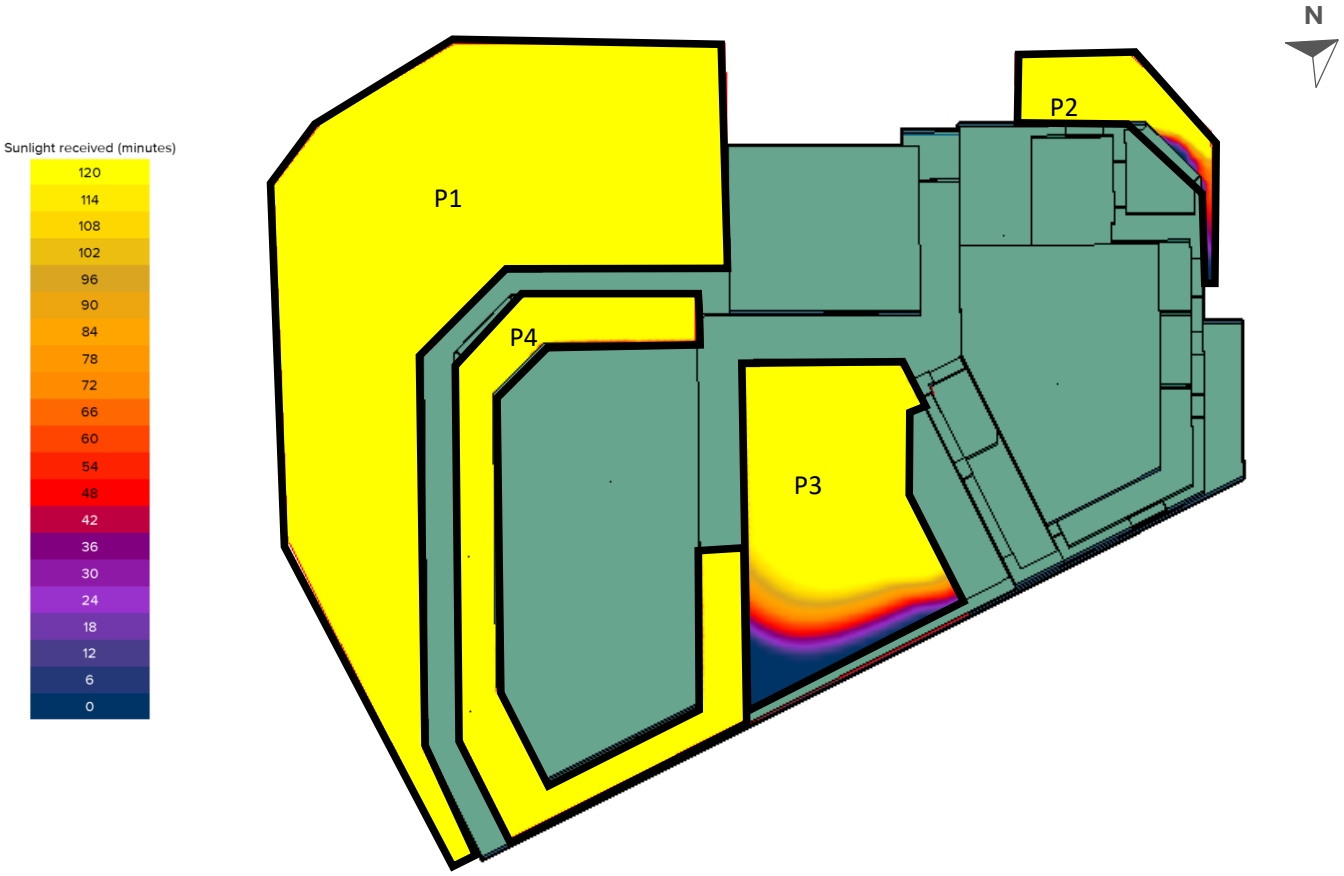


Figure 14: Overshadowing results for the amenity spaces within the proposal.

Table 14: Overshadowing results summary for the proposed amenity spaces.

Amenity Reference	Location	Amenity Area (m^2)	Lit Area Proposed (m^2)	Proposed Lit Area (%)	Comment
P1	Ground	238.2	238.2	100%	Meets BRE Criteria
P2	Ground	25.3	28.9	75%	Meets BRE Criteria
P3	First	104.3	54.86	53%	Meets BRE Criteria
P4	Third	73.0	70.7	97%	Meets BRE Criteria

CONCLUSION

The daylight, sunlight and overshadowing analysis indicates that there will not be a significant impact on surrounding properties arising from the proposed development at Northwood Hills Library. The onsite assessment indicates that the habitable rooms of the proposed development will achieve good levels of daylight and sunlight.

ASSESSMENT OF NEIGHBOURING BUILDINGS

DAYLIGHT ASSESSMENT

A total of 90 windows from buildings surrounding the site were highlighted as being in close proximity to and facing the proposed development.

Daylighting levels for potentially affected windows of surrounding developments by the proposed development were found to be acceptable.

In summary,

- All 90 windows passed the 25-degree line test.
- In addition to passing the 25-degree line test:
    - 81 windows achieved VSCs greater than 27%.
    - The remaining 9 windows achieved relative VSCs over 0.8 of their former values.

Overall, the development is not anticipated to have any notable impact on the daylight received by neighbouring properties.

SUNLIGHT ASSESSMENT

A total of 39 windows from buildings surrounding the site were assessed for sunlight access. The analysis indicated that all 39 windows passed the 25-degree line test. From the 39 windows assessed, 38 windows also satisfied the BRE criteria for annual probable sunlight hours (APSH) and winter probable sunlight hours (WPSH) and the remaining window has a reduction of less than 4% in sunlight access.

Therefore, the proposed development at Northwood Hills Library is not considered to have any notable impact on sunlight access to windows of surrounding developments.

OVERSHADOWING ASSESSMENT

A solar access analysis was undertaken for one amenity space for the full 24 hours on 21st of March. The amenity space is predicted to have a minimum of 2 hours of sunlight on 21 March over at least 50% of each assessed amenity space.

The proposed development is therefore not considered to have any significant impact on sunlight access to the amenity spaces surrounding the site.

ASSESSMENT OF PROPOSED SCHEME

DAYLIGHT ASSESSMENT

The rooms evaluated in the internal daylight assessment include open plan kitchen, living room, dining spaces, and bedrooms within the proposed development.

The assessment was carried out for all the dwellings across the scheme. All habitable rooms within these dwellings have been included in the assessment. This included 27 habitable rooms: 9 LKDs and 18 bedrooms.

The analysis results indicated that 25 of the 27 habitable rooms satisfy the recommendations set out by the BRE's "Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice" by PJ Littlefair et al. (2022), which is accepted as good practice by Planning Authorities. This corresponds to approximately a pass rate of 93% within the development.

Overall, the proposed development as a whole is anticipated to achieve very good levels of daylighting to all dwellings and habitable spaces and is therefore considered to provide good quality of accommodation to the future occupants in terms of daylight.

SUNLIGHT ASSESSMENT

A total of 27 habitable rooms were assessed for solar access.

The analysis has shown that 24 rooms will achieve adequate annual and winter sunlight based on the BRE Guide. The remaining 3 rooms were bedrooms and belong to residential units that have other rooms satisfying the BRE recommendations for sunlight and hence satisfying the BRE recommendations overall.

Overall, it can be concluded that the proposed design offers optimum accessibility to sunlight in living spaces considering the context and limitations of the site.

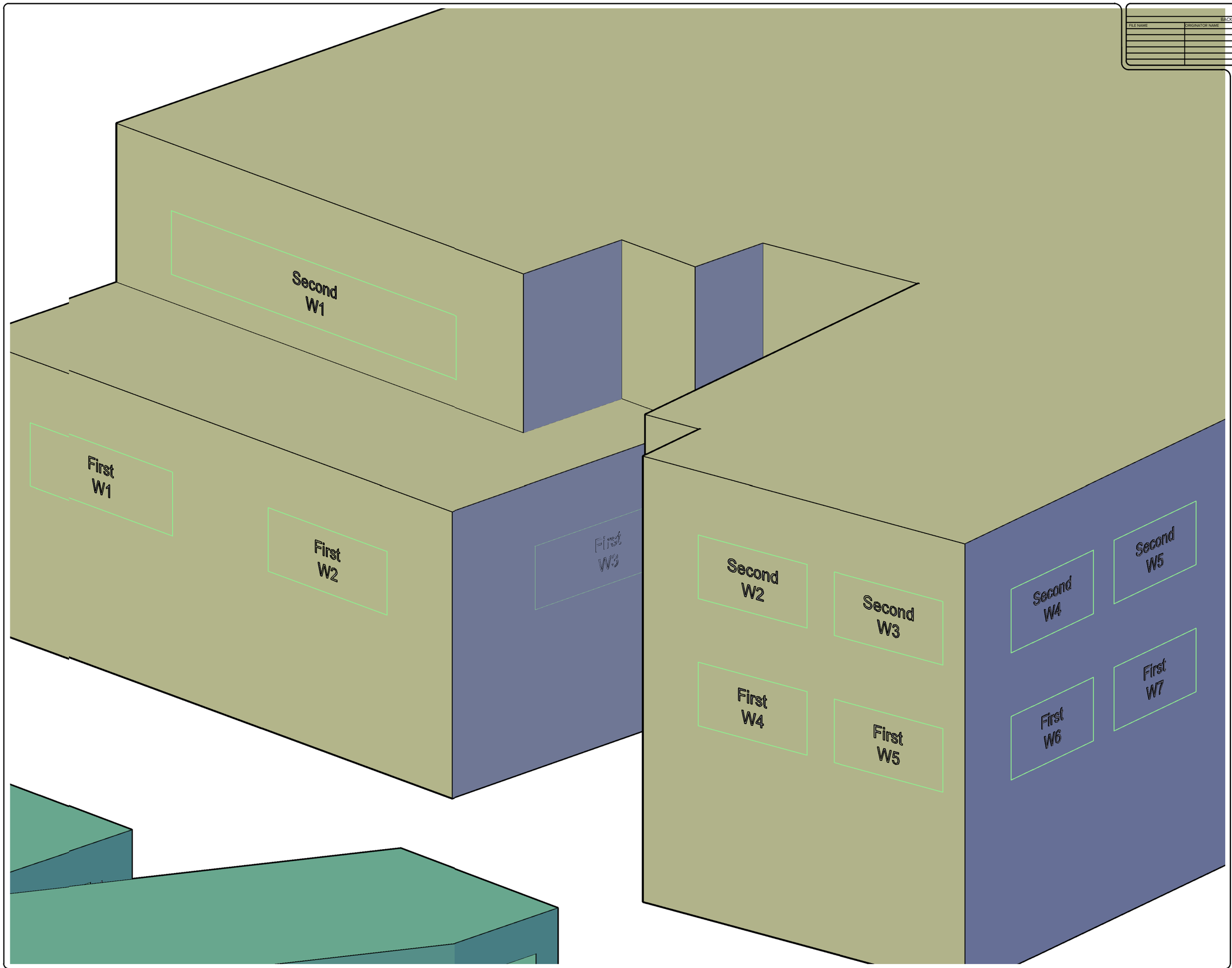
OVERSHADOWING ASSESSMENT

A solar access analysis was undertaken for a total of 4 amenity spaces for the full 24 hours on 21st of March in line with the BRE guidance.

All the amenity spaces are predicted to achieve a minimum of 2 hours of sunlight on 21 March over at least 50% of their area.

The open spaces of the proposed development are therefore considered to be adequately sunlit.

APPENDIX A - WINDOW REFERENCE FOR NEIGHBOURING BUILDINGS



DO NOT SCALE

BACKGROUND DRAWING INFORMATION

FILE NAME	ORIGINATOR NAME	DESCRIPTION NAME	REV	DATE REC'D

Notes

Rev	Date	Description	Chk'd	Appr

ISSUE TYPE

XCO2
The Gymnasium,
56 Kingsway Place,
Sans Walk, London
EC1R 0LU
+44 (0) 20 7700 1000
mail@xco2.com
www.xco2.com

Client: Hillingdon First Ltd

Architect: Hunters

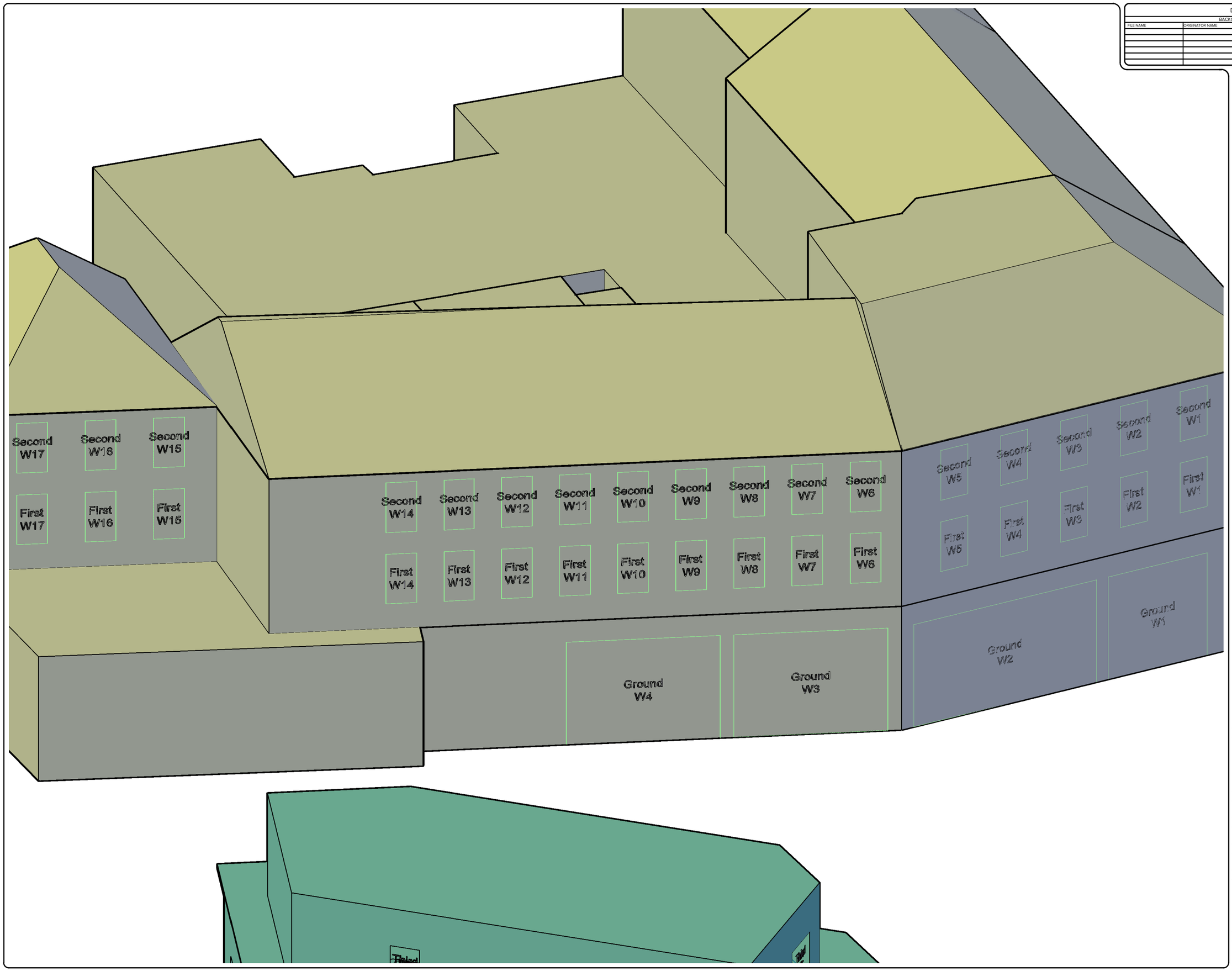
Project: Northwood Hills Library

Title: Northwood Hills Library
Daylight & Sunlight Impact on:
Northwood School

Scale@A3	Drawn	Checked	Date
N.T.S	LT	FH	14.08.23

Drawing Number: 9967_S00_01

Revision: 01



DO NOT SCALE

BACKGROUND DRAWING INFORMATION

FILE NAME	ORIGINATOR NAME	DESCRIPTION NAME	REV	DATE REC'D

Notes

Rev	Date	Description	Chk'd	Appr

ISSUE TYPE

XCO2

The Gymnasium,
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Sans Walk, London
EC1R 0LU
+44 (0) 20 7700 1000
mail@xco2.com
www.xco2.com

Client
Hillingdon First Ltd

Architect
Hunters

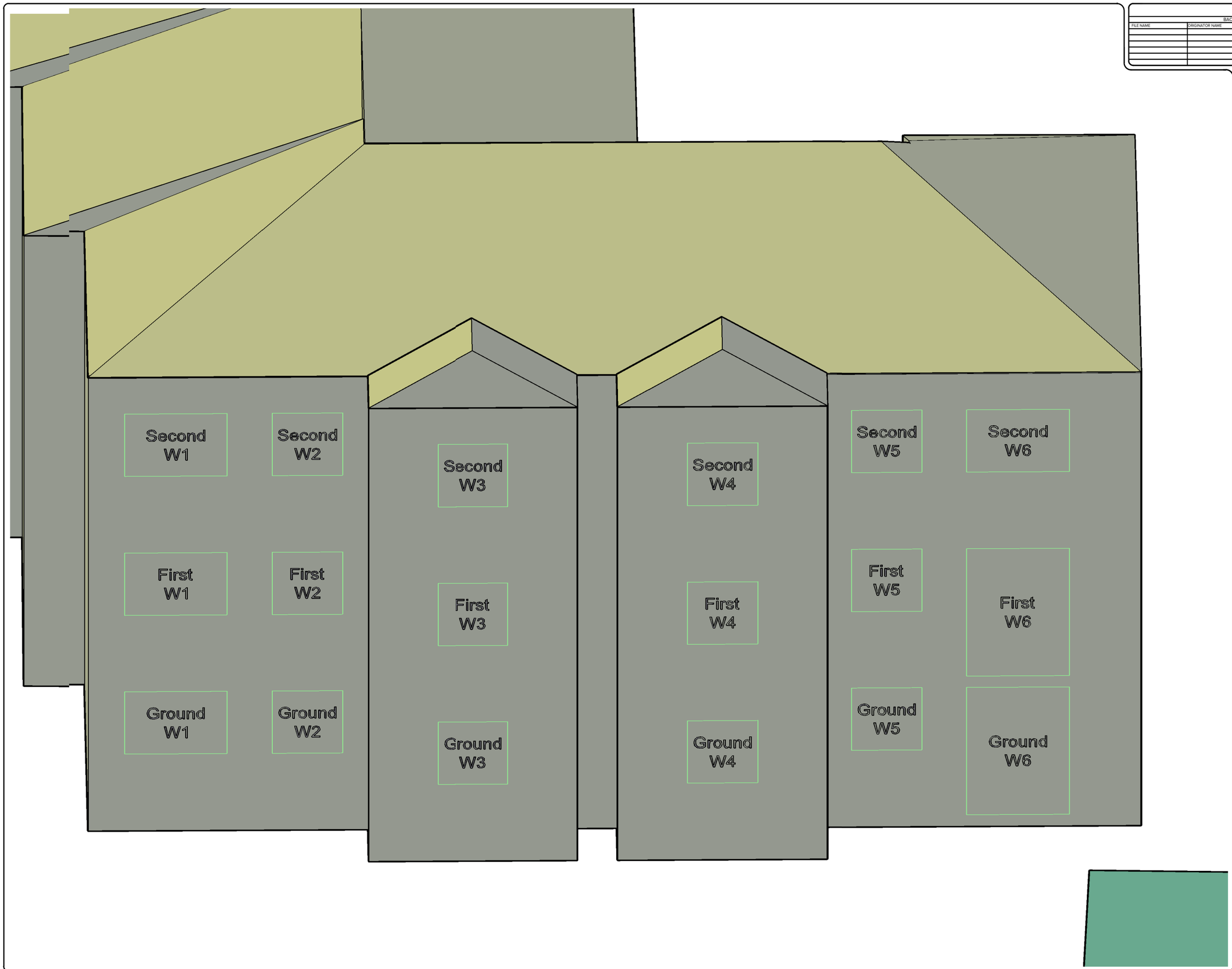
Project
Northwood Hills Library

Title
Northwood Hills Library
Daylight & Sunlight Impact on:
105-109 Pinner Street

Scale@A3	Drawn	Checked	Date
N.T.S	LT	FH	14.08.23

Drawing Number
9967_S00_02

Revision
01



DO NOT SCALE

BACKGROUND DRAWING INFORMATION

FILE NAME	ORIGINATOR NAME	DESCRIPTION NAME	REV	DATE REC'D

Notes

Rev	Date	Description	Chk'd	Appr

ISSUE TYPE

XCO2
The Gymnasium,
56 Kingsway Place,
Sans Walk, London
EC1R 0LU
+44 (0) 20 7700 1000
mail@xco2.com
www.xco2.com

Client: Hillingdon First Ltd

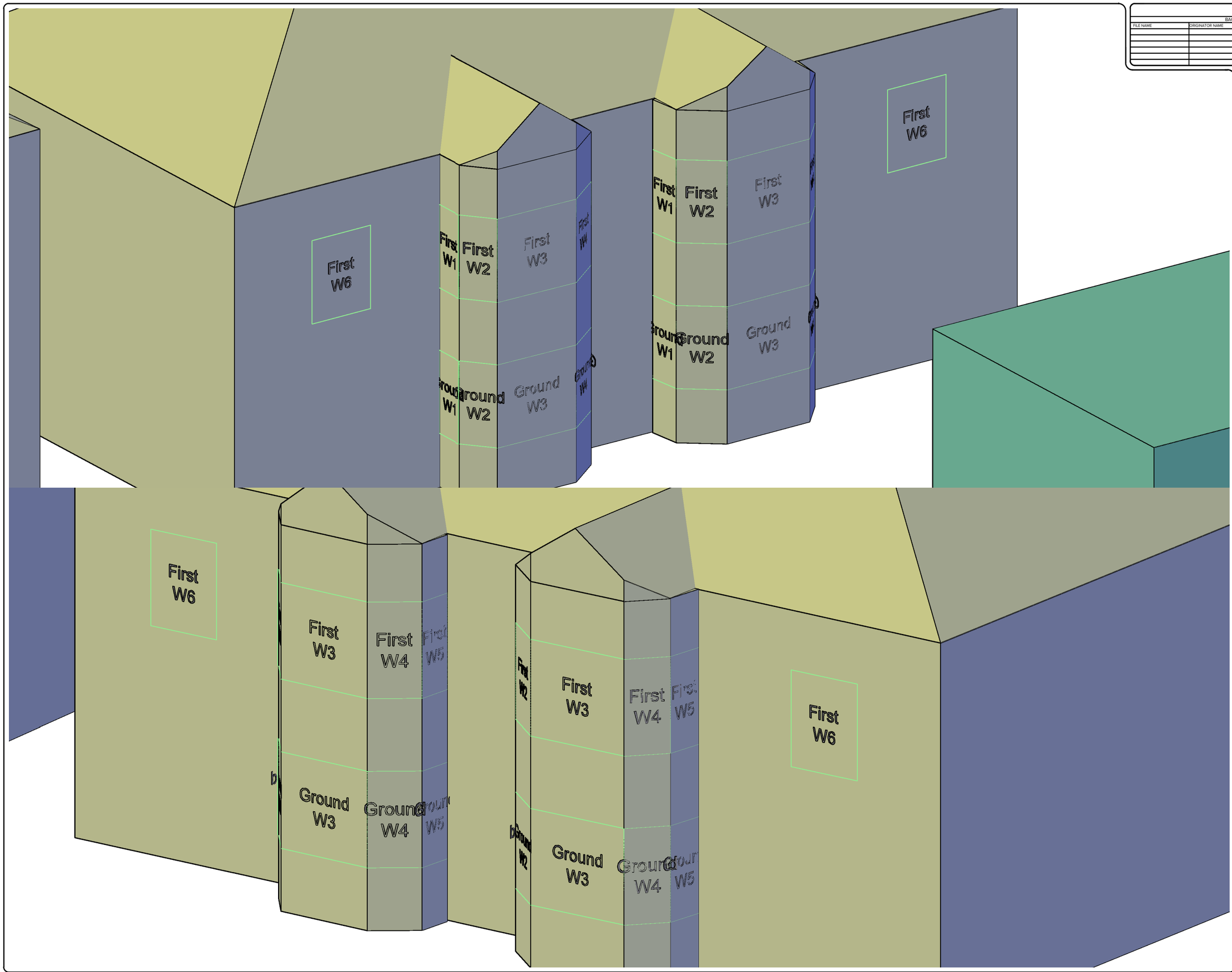
Architect: Hunters

Project: Northwood Hills Library

Title: Northwood Hills Library
Daylight & Sunlight Impact on:
Roundabout House

Scales@A3	Drawn	Checked	Date
N.T.S	LT	FH	14.08.23

Drawing Number	Revision
9967_S00_03	01



DO NOT SCALE

BACKGROUND DRAWING INFORMATION

FILE NAME	ORIGINATOR NAME	DESCRIPTION NAME	REV	DATE REC'D

Notes

Rev	Date	Description	Chk'd	Appr

ISSUE TYPE

XCO2
The Gymnasium,
56 Kingsway Place,
Sans Walk, London
EC1R 0LU
+44 (0) 20 7700 1000
mail@xco2.com
www.xco2.com

Client: Hillingdon First Ltd

Architect: Hunters

Project: Northwood Hills Library

Title: Northwood Hills Library
Daylight & Sunlight Impact on:
3-5 Potter Street

Scale@A3	Drawn	Checked	Date
N.T.S	LT	FH	14.08.23

Drawing Number: 9967_S00_04

Revision: 01

APPENDIX B - DETAILED DAYLIGHT RESULTS FOR NEIGHBOURING BUILDINGS

Building	Floor	Window no.	25-degree Line Test	VSC tests			Comments
				Proposed VSC 27%?	Existing VSC (%)	Relative VSC >0.8?	
5 Potter Street	Ground	W1	Pass	14.0%	15.2%	0.92	Meets BRE Criteria
5 Potter Street	Ground	W2	Pass	28.4%	-	-	Meets BRE Criteria
5 Potter Street	Ground	W3	Pass	32.7%	-	-	Meets BRE Criteria
5 Potter Street	Ground	W4	Pass	32.3%	-	-	Meets BRE Criteria
5 Potter Street	Ground	W5	Pass	22.9%	23.1%	0.99	Meets BRE Criteria
5 Potter Street	First	W1	Pass	17.7%	18.8%	0.94	Meets BRE Criteria
5 Potter Street	First	W2	Pass	31.6%	-	-	Meets BRE Criteria
5 Potter Street	First	W3	Pass	34.4%	-	-	Meets BRE Criteria
5 Potter Street	First	W4	Pass	34.5%	-	-	Meets BRE Criteria
5 Potter Street	First	W5	Pass	24.5%	24.6%	1.00	Meets BRE Criteria
5 Potter Street	First	W6	Pass	34.3%	-	-	Meets BRE Criteria

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Building	Floor	Window no.	25-degree Line Test	VSC tests			Comments
				Proposed VSC 27%?	Existing VSC (%)	Relative VSC >0.8?	
3 Potter Street	Ground	W1	Pass	19.2%	19.8%	0.97	Meets BRE Criteria
3 Potter Street	Ground	W2	Pass	29.2%	-	-	Meets BRE Criteria
3 Potter Street	Ground	W3	Pass	32.3%	-	-	Meets BRE Criteria
3 Potter Street	Ground	W4	Pass	29.4%	-	-	Meets BRE Criteria
3 Potter Street	Ground	W5	Pass	14.2%	14.5%	0.98	Meets BRE Criteria
3 Potter Street	First	W1	Pass	21.3%	21.8%	0.98	Meets BRE Criteria
3 Potter Street	First	W2	Pass	32.4%	-	-	Meets BRE Criteria
3 Potter Street	First	W3	Pass	34.2%	-	-	Meets BRE Criteria
3 Potter Street	First	W4	Pass	32.3%	-	-	Meets BRE Criteria
3 Potter Street	First	W5	Pass	17.7%	17.9%	0.99	Meets BRE Criteria
3 Potter Street	First	W6	Pass	33.5%	-	-	Meets BRE Criteria
34 Pinner Road	Ground	W1	Pass	33.6%	-	-	Meets BRE Criteria
34 Pinner Road	Ground	W2	Pass	28.3%	-	-	Meets BRE Criteria

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Building	Floor	Window no.	25-degree Line Test	VSC tests			Comments
				Proposed VSC 27%?	Existing VSC (%)	Relative VSC >0.8?	
34 Pinner Road	Ground	W3	Pass	34.0%	-	-	Meets BRE Criteria
34 Pinner Road	Ground	W4	Pass	33.5%	-	-	Meets BRE Criteria
34 Pinner Road	Ground	W5	Pass	27.2%	-	-	Meets BRE Criteria
34 Pinner Road	Ground	W6	Pass	31.6%	-	-	Meets BRE Criteria
34 Pinner Road	First	W1	Pass	35.0%	-	-	Meets BRE Criteria
34 Pinner Road	First	W2	Pass	29.6%	-	-	Meets BRE Criteria
34 Pinner Road	First	W3	Pass	35.5%	-	-	Meets BRE Criteria
34 Pinner Road	First	W4	Pass	35.1%	-	-	Meets BRE Criteria
34 Pinner Road	First	W5	Pass	28.8%	-	-	Meets BRE Criteria
34 Pinner Road	First	W6	Pass	33.4%	-	-	Meets BRE Criteria
34 Pinner Road	Second	W1	Pass	36.7%	-	-	Meets BRE Criteria
34 Pinner Road	Second	W2	Pass	32.2%	-	-	Meets BRE Criteria
34 Pinner Road	Second	W3	Pass	36.8%	-	-	Meets BRE Criteria

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Building	Floor	Window no.	25-degree Line Test	VSC tests			Comments
				Proposed VSC 27%?	Existing VSC (%)	Relative VSC >0.8?	
34 Pinner Road	Second	W4	Pass	36.5%	-	-	Meets BRE Criteria
34 Pinner Road	Second	W5	Pass	31.7%	-	-	Meets BRE Criteria
34 Pinner Road	Second	W6	Pass	36.0%	-	-	Meets BRE Criteria
Northwood School	First	W1	Pass	37.9%	-	-	Meets BRE Criteria
Northwood School	First	W2	Pass	37.2%	-	-	Meets BRE Criteria
Northwood School	First	W3	Pass	14.0%	14.7%	0.95	Meets BRE Criteria
Northwood School	First	W4	Pass	36.2%	-	-	Meets BRE Criteria
Northwood School	First	W5	Pass	36.3%	-	-	Meets BRE Criteria
Northwood School	First	W6	Pass	39.1%	-	-	Meets BRE Criteria
Northwood School	First	W7	Pass	39.2%	-	-	Meets BRE Criteria
Northwood School	Second	W1	Pass	39.1%	-	-	Meets BRE Criteria
Northwood School	Second	W2	Pass	38.6%	-	-	Meets BRE Criteria
Northwood School	Second	W3	Pass	38.6%	-	-	Meets BRE Criteria

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Building	Floor	Window no.	25-degree Line Test	VSC tests			Comments
				Proposed VSC 27%?	Existing VSC (%)	Relative VSC >0.8?	
Northwood School	Second	W4	Pass	39.5%	-	-	Meets BRE Criteria
Northwood School	Second	W5	Pass	39.6%	-	-	Meets BRE Criteria
105-109 Pinner Street	Ground	W1	Pass	37.0%	-	-	Meets BRE Criteria
105-109 Pinner Street	Ground	W2	Pass	36.5%	-	-	Meets BRE Criteria
105-109 Pinner Street	Ground	W3	Pass	34.7%	-	-	Meets BRE Criteria
105-109 Pinner Street	Ground	W4	Pass	34.2%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W1	Pass	38.2%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W2	Pass	38.1%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W3	Pass	37.9%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W4	Pass	37.8%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W5	Pass	37.7%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W6	Pass	36.7%	-	-	Meets BRE Criteria

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Building	Floor	Window no.	25-degree Line Test	VSC tests			Comments
				Proposed VSC 27%?	Existing VSC (%)	Relative VSC >0.8?	
105-109 Pinner Street	First	W7	Pass	36.6%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W8	Pass	36.5%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W9	Pass	36.4%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W10	Pass	36.4%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W11	Pass	36.3%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W12	Pass	36.3%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W13	Pass	36.3%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W14	Pass	36.3%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W15	Pass	27.3%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W16	Pass	32.3%	-	-	Meets BRE Criteria
105-109 Pinner Street	First	W17	Pass	34.6%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W1	Pass	38.8%	-	-	Meets BRE Criteria

Building	Floor	Window no.	25-degree Line Test	VSC tests			Comments
				Proposed VSC 27%?	Existing VSC (%)	Relative VSC >0.8?	
105-109 Pinner Street	Second	W2	Pass	38.7%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W3	Pass	38.6%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W4	Pass	38.5%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W5	Pass	38.4%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W6	Pass	37.8%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W7	Pass	37.7%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W8	Pass	37.6%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W9	Pass	37.6%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W10	Pass	37.5%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W11	Pass	37.5%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W12	Pass	37.5%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W13	Pass	37.5%	-	-	Meets BRE Criteria

Building	Floor	Window no.	25-degree Line Test	VSC tests			Comments
				Proposed VSC 27%?	Existing VSC (%)	Relative VSC >0.8?	
105-109 Pinner Street	Second	W14	Pass	37.5%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W15	Pass	29.8%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W16	Pass	34.9%	-	-	Meets BRE Criteria
105-109 Pinner Street	Second	W17	Pass	36.6%	-	-	Meets BRE Criteria

APPENDIX C - DETAILED SUNLIGHT RESULTS FOR NEIGHBOURING BUILDINGS

Building	Floor	Window no.	25-degree Line Test	APSH test			WPSH test			Total reduction <4%?	Comments
				Proposed APSH >25%?	Existing APSH (%)	Relative APSH >0.8?	Proposed WPSH >5%?	Existing WPSH (%)	Relative WPSH >0.8?		
5 Potter Street	Ground	W1	Pass	South	39.0%	-	-	15.0%	-	-	Meets BRE Criteria
5 Potter Street	Ground	W2	Pass	South	62.0%	-	-	18.0%	-	-	Meets BRE Criteria
5 Potter Street	Ground	W3	Pass	South	69.0%	-	-	19.0%	-	-	Meets BRE Criteria
5 Potter Street	First	W1	Pass	South	46.0%	-	-	18.0%	-	-	Meets BRE Criteria
5 Potter Street	First	W2	Pass	South	71.0%	-	-	21.0%	-	-	Meets BRE Criteria
5 Potter Street	First	W3	Pass	South	72.0%	-	-	22.0%	-	-	Meets BRE Criteria
5 Potter Street	First	W6	Pass	South	69.0%	-	-	20.0%	-	-	Meets BRE Criteria
3 Potter Street	Ground	W1	Pass	South	44.0%	-	-	18.0%	-	-	Meets BRE Criteria
3 Potter Street	Ground	W2	Pass	South	68.0%	-	-	23.0%	-	-	Meets BRE Criteria

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Building	Floor	Window no.	25-degree Line Test	APSH test			WPSH test			Total reduction <4%?	Comments
				Proposed APSH >25%?	Existing APSH (%)	Relative APSH >0.8?	Proposed WPSH >5%?	Existing WPSH (%)	Relative WPSH >0.8?		
3 Potter Street	Ground	W3	Pass	South	71.0%	-	-	21.0%	-	-	Meets BRE Criteria
3 Potter Street	Ground	W4	Pass	South	52.0%	-	-	12.0%	-	-	Meets BRE Criteria
3 Potter Street	First	W1	Pass	South	50.0%	-	-	21.0%	-	-	Meets BRE Criteria
3 Potter Street	First	W2	Pass	South	72.0%	-	-	24.0%	-	-	Meets BRE Criteria
3 Potter Street	First	W3	Pass	South	74.0%	-	-	24.0%	-	-	Meets BRE Criteria
3 Potter Street	First	W4	Pass	South	56.0%	-	-	16.0%	-	-	Meets BRE Criteria
3 Potter Street	First	W6	Pass	South	72.0%	-	-	23.0%	-	-	Meets BRE Criteria
34 Pinner Road	Ground	W1	Pass	South	71.0%	-	-	24.0%	-	-	Meets BRE Criteria
34 Pinner Road	Ground	W2	Pass	South	65.0%	-	-	23.0%	-	-	Meets BRE Criteria
34 Pinner Road	Ground	W3	Pass	South	72.0%	-	-	23.0%	-	-	Meets BRE Criteria
34 Pinner Road	Ground	W4	Pass	South	71.0%	-	-	22.0%	-	-	Meets BRE Criteria

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Building	Floor	Window no.	25-degree Line Test	APSH test			WPSH test			Total reduction <4%?	Comments
				Proposed APSH >25%?	Existing APSH (%)	Relative APSH >0.8?	Proposed WPSH >5%?	Existing WPSH (%)	Relative WPSH >0.8?		
34 Pinner Road	Ground	W5	Pass	South	45.0%	-	-	11.0%	-	-	Meets BRE Criteria
34 Pinner Road	Ground	W6	Pass	South	59.0%	-	-	17.0%	-	-	Meets BRE Criteria
34 Pinner Road	First	W1	Pass	South	72.0%	-	-	24.0%	-	-	Meets BRE Criteria
34 Pinner Road	First	W2	Pass	South	66.0%	-	-	23.0%	-	-	Meets BRE Criteria
34 Pinner Road	First	W3	Pass	South	72.0%	-	-	23.0%	-	-	Meets BRE Criteria
34 Pinner Road	First	W4	Pass	South	73.0%	-	-	23.0%	-	-	Meets BRE Criteria
34 Pinner Road	First	W5	Pass	South	47.0%	-	-	12.0%	-	-	Meets BRE Criteria
34 Pinner Road	First	W6	Pass	South	62.0%	-	-	19.0%	-	-	Meets BRE Criteria
34 Pinner Road	Second	W1	Pass	South	74.0%	-	-	25.0%	-	-	Meets BRE Criteria
34 Pinner Road	Second	W2	Pass	South	68.0%	-	-	24.0%	-	-	Meets BRE Criteria
34 Pinner Road	Second	W3	Pass	South	74.0%	-	-	24.0%	-	-	Meets BRE Criteria

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Building	Floor	Window no.	25-degree Line Test	APSH test			WPSH test			Total reduction <4%?	Comments
				Proposed APSH >25%?	Existing APSH (%)	Relative APSH >0.8?	Proposed WPSH >5%?	Existing WPSH (%)	Relative WPSH >0.8?		
34 Pinner Road	Second	W4	Pass	South	74.0%	-	-	24.0%	-	-	Meets BRE Criteria
34 Pinner Road	Second	W5	Pass	South	55.0%	-	-	13.0%	-	-	Meets BRE Criteria
34 Pinner Road	Second	W6	Pass	South	71.0%	-	-	21.0%	-	-	Meets BRE Criteria
Northwood School	First	W3	Pass	South	30.0%	-	-	1.0%	2.0%	0.50	Meets BRE Criteria
Northwood School	First	W6	Pass	South	86.0%	-	-	30.0%	-	-	Meets BRE Criteria
Northwood School	First	W7	Pass	South	86.0%	-	-	30.0%	-	-	Meets BRE Criteria
Northwood School	Second	W4	Pass	South	87.0%	-	-	30.0%	-	-	Meets BRE Criteria
Northwood School	Second	W5	Pass	South	87.0%	-	-	30.0%	-	-	Meets BRE Criteria

APPENDIX D - PROPOSED SCHEME SDA CONTOURS & ROOM REFERENCE

DO NOT SCALE

BACKGROUND DRAWING INFORMATION

FILE NAME	ORIGINATOR NAME	DESCRIPTION NAME	REV	DATE REC'D

Notes

SDA % of Hours > req. lux

	50.00
	45.00
	40.00
	35.00
	30.00
	25.00
	20.00
	15.00
	10.00
	5.00
	0.00

Bedroom	100 lux
Living Room	150 lux
LKD	200 lux

50% required to pass the BRE guidance

Rev	Date	Description	Chk'd	Appr
XX	00.00.16	XX	XX	XX

ISSUE TYPE

XCO2
The Gymnasium,
56 Kingsway Place,
Sans Walk, London
EC1R 0LU
+44 (0) 20 7700 1000
mail@xco2.com
www.xco2.com

Client: Hillingdon First Ltd

Architect: Hunters

Project: Northwood Hills Library

Title: Northwood Hills Library
Internal Daylight
First Floor

Scale@A3	Drawn	Checked	Date
N.T.S	LT	FH	23.08.23

Drawing Number: 9967_L01_02

Revision: 01

DO NOT SCALE

BACKGROUND DRAWING INFORMATION

FILE NAME	ORIGINATOR NAME	DESCRIPTION NAME	REV	DATE RECD

N

Notes

SDA % of Hours > req. lux

50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00

Bedroom	100 lux
Living Room	150 lux
LKD	200 lux

50% required to pass the BRE guidance

Rev	Date	Description	Chk'd	Appr
XX	00.00.16	XX	XX	XX

ISSUE TYPE

XCO2
The Gymnasium,
56 Kingsway Place,
Sans Walk, London
EC1R 0LU
+44 (0) 20 7700 1000
mail@xco2.com
www.xco2.com

Client: Hillingdon First Ltd

Architect: Hunters

Project: Northwood Hills Library

Title: Northwood Hills Library
Internal Daylight
Second Floor

Scale@A3	Drawn	Checked	Date
N.T.S	LT	FH	23.08.23

Drawing Number	Revision
9967_L02_02	01

DO NOT SCALE

BACKGROUND DRAWING INFORMATION

FILE NAME	ORIGINATOR NAME	DESCRIPTION NAME	REV	DATE REC'D

N

Notes

SDA % of Hours > req. lux

	50.00
	45.00
	40.00
	35.00
	30.00
	25.00
	20.00
	15.00
	10.00
	5.00
	0.00

Bedroom	100 lux
Living Room	150 lux
LKD	200 lux

50% required to pass the BRE guidance

Rev	Date	Description	Chk'd	Appr
XX	00.00.16	XX	XX	XX

ISSUE TYPE

XCO2
The Gymnasium,
56 Kingsway Place,
Sans Walk, London
EC1R 0LU
+44 (0) 20 7700 1000
mail@xco2.com
www.xco2.com

Client: Hillingdon First Ltd

Architect: Hunters

Project: Northwood Hills Library

Title: Northwood Hills Library
Internal Daylight
Third Floor

Scale@A3	Drawn	Checked	Date
N.T.S	LT	FH	23.08.23

Drawing Number	Revision
9967_L03_02	01

APPENDIX E - PROPOSED DAYLIGHT RESULTS

Floor	Room Ref	Room Use	Req Lux	Room Area (m^2)	Area Meeting Required Lux (m^2)	Percentage of Area Meeting Required Lux	Comment
First	R1	LKD	200	25.74	19.21	100%	Meets BRE Criteria
First	R2	Bedroom	100	11.26	6.24	85%	Meets BRE Criteria
First	R3	Bedroom	100	10.46	6.29	94%	Meets BRE Criteria
First	R4	LKD	200	25.72	17.93	97%	Meets BRE Criteria
First	R5	Bedroom	100	12.90	4.08	46%	Achieves within 90% of the BRE Criteria
First	R6	Bedroom	100	11.32	4.83	66%	Meets BRE Criteria
First	R7	LKD	200	25.66	16.19	88%	Meets BRE Criteria
First	R8	Bedroom	100	10.52	5.19	77%	Meets BRE Criteria
First	R9	Bedroom	100	12.11	6.44	78%	Meets BRE Criteria
First	R10	LKD	200	20.20	12.78	88%	Meets BRE Criteria
First	R11	Bedroom	100	12.44	0.72	9%	Belongs to a dwelling with at least one habitable room meeting the BRE Criteria
Second	R1	LKD	200	25.74	19.21	100%	Meets BRE Criteria
Second	R2	Bedroom	100	11.26	6.47	88%	Meets BRE Criteria

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Floor	Room Ref	Room Use	Req Lux	Room Area (m^2)	Area Meeting Required Lux (m^2)	Percentage of Area Meeting Required Lux	Comment
Second	R3	Bedroom	100	10.46	6.61	99%	Meets BRE Criteria
Second	R4	LKD	200	25.72	18.52	100%	Meets BRE Criteria
Second	R5	Bedroom	100	12.90	4.48	51%	Meets BRE Criteria
Second	R6	Bedroom	100	14.33	10.07	100%	Meets BRE Criteria
Second	R7	Bedroom	100	11.62	7.68	100%	Meets BRE Criteria
Second	R8	Bedroom	100	11.41	5.00	67%	Meets BRE Criteria
Second	R9	LKD	200	36.22	24.58	85%	Meets BRE Criteria
Second	R10	Bedroom	100	12.44	4.17	50%	Meets BRE Criteria
Third	R1	Bedroom	100	18.49	13.51	100%	Meets BRE Criteria
Third	R2	Bedroom	100	11.28	6.94	94%	Meets BRE Criteria
Third	R3	LKD	200	35.59	27.93	99%	Meets BRE Criteria
Third	R4	Bedroom	100	14.10	9.66	99%	Meets BRE Criteria
Third	R5	LKD	200	25.73	19.78	100%	Meets BRE Criteria
Third	R6	Bedroom	100	7.30	4.18	98%	Meets BRE Criteria

APPENDIX F - PROPOSED SCHEME SUNLIGHT RESULTS

Floor Ref	Room Ref	Room Use	Window Ref	Window Orientation	Proposed Sunlight Exposure (Hours)	Rating
First	R1	LKD	W1	228°	6.7	
			W19	112°	5.9	
			W20	202°	2.8	
					9.5	High
First	R2	Bedroom	W2	228°	7.1	
					7.1	High
First	R3	Bedroom	W3	228°	7.1	
					7.1	High
First	R4	LKD	W4	228°	6.7	
			W5	318°N	0	
			W6	228°	1.2	
			W7	318°N	1.8	
					6.7	High

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Floor Ref	Room Ref	Room Use	Window Ref	Window Orientation	Proposed Sunlight Exposure (Hours)	Rating
First	R5	Bedroom	W8	318°N	1.8	
					1.8	Minimum
First	R6	Bedroom	W9	318°N	2.1	
					2.1	Minimum
First	R7	LKD	W10	318°N	2.1	
			W11	48°N	0	
			W12	318°N	0	
			W13	48°N	2.4	
					4.5	High
First	R8	Bedroom	W14	48°N	2.5	
					2.5	Minimum
First	R9	Bedroom	W15	48°N	2.4	
					2.4	Minimum
First	R10	LKD	W16	112°	5	
			W17	202°	3.8	
					5.4	High

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Floor Ref	Room Ref	Room Use	Window Ref	Window Orientation	Proposed Sunlight Exposure (Hours)	Rating
First	R11	Bedroom	W18	48°N	0	
					0	Belongs to a dwelling that includes habitable rooms meeting the BRE recommendations
Second	R1	LKD	W1	228°	6.7	
			W18	112°	5.9	
					9.5	High
Second	R2	Bedroom	W2	228°	7.1	
					7.1	High
Second	R3	Bedroom	W3	228°	7.1	
					7.1	High
Second	R4	LKD	W4	228°	6.7	
			W5	318°N	0	
			W6	228°	1.3	
			W7	318°N	1.8	
					6.7	High

DAYLIGHT, SUNLIGHT & OVERSHADOWING ASSESSMENT

Floor Ref	Room Ref	Room Use	Window Ref	Window Orientation	Proposed Sunlight Exposure (Hours)	Rating
Second	R5	Bedroom	W8	318°N	1.8	
					1.8	Minimum
Second	R6	Bedroom	W9	318°N	1.3	
			W10	48°N	0	
					1.3	Belongs to a dwelling that includes habitable rooms meeting the BRE recommendations
Second	R7	Bedroom	W11	48°N	2.5	
					2.5	Minimum
Second	R8	Bedroom	W12	48°N	2.5	
					2.5	Minimum
Second	R9	LKD	W13	48°N	2.5	
			W14	112°	5.9	
			W15	202°	4	
			W16	202°	3.7	
					8.7	High

Floor Ref	Room Ref	Room Use	Window Ref	Window Orientation	Proposed Sunlight Exposure (Hours)	Rating
Second	R10	Bedroom	W17	48°N	2.4	
					2.4	Minimum
Third	R1	Bedroom	W1	202°	8.9	
			W2	228°	6.8	
					8.9	High
Third	R2	Bedroom	W3	228°	6.8	
					6.8	High
Third	R3	LKD	W4	228°	6.8	
			W5	273°N	4.4	
			W6	318°N	1.8	
			W7	318°N	1.8	
					6.8	High
Third	R4	Bedroom	W8	48°N	2.4	
					2.4	Minimum

Floor Ref	Room Ref	Room Use	Window Ref	Window Orientation	Proposed Sunlight Exposure (Hours)	Rating
Third	R5	LKD	W9	48°N	2.4	
			W10	202°	8.1	
					8.7	High
Third	R6	Bedroom	W11	48°N	1	
					1	Belongs to a dwelling that includes habitable rooms meeting the BRE recommendations

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