65-69 Holmes Road

London, UK

Daylight and Sunlight Availability Study

28th August 2018

For
Contemporary Design Solutions

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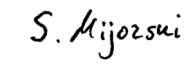
Author:	**Dr. S. Mijorski**		28th August 2018
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432364_Report_01v1	8th June 2018	First Issue
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432364_Report_01v3	28th August 2018	Third Issue

65-69 Holmes Road
London, UK

Contents

EXECUTIVE SUMMARY

Background

A daylight and sunlight availability study has been carried out by BMT to assess the natural light availability in the following analyses associated with the 65-69 Holmes Road development:

- The natural light availability for the existing surrounding residential buildings and the impact experienced as a result of the proposed development
- The natural light availability for the additional seventh level of the proposed development

The study provides an assessment of the main daylight and sunlight indices, Vertical Sky Component and Annual Probable Sunlight Hours for the site configuration of the proposed 65-69 Holmes Road development in the context of the existing surrounds.

Conclusions

The following conclusions were drawn from the daylight and sunlight assessment for the proposed seven storey development on 65-69 Holmes Road, North London. The conclusions are based on industry standard guidelines for site layout planning in relation to natural light:

Daylight

- Best practice guidelines for daylight availability were achieved at 32 of the 45 window locations associated with the surrounding buildings assessed.
- Impact of the proposed 65-69 Holmes Road development over the surrounding buildings varies from "Strong Adverse" to "Strong Beneficial". A "Strong Adverse" impact was observed at 7 window locations, while a "Strong Beneficial" impact was observed at 8 windows. Thus, the proposed development has both an adverse and beneficial impact on the surrounding buildings
- Best practice guidelines for daylight availability were achieved at all 42 window locations for the proposed development which are situated on the seventh floor of the proposed building

Sunlight

- Best practice recommendations for sunlight availability both annually and during winter months were met at all window locations associated with the surrounding buildings assessed. Therefore, the impact of the

proposed development with respect to sunlight availability in these areas is within the recommended levels

- Best practice recommendations for sunlight availability both annually and during winter months were met at all window locations situated on the seventh floor of the proposed building

65-69 Holmes Road London, UK

1. Introduction

A daylight and sunlight availability study has been carried out by BMT to assess the natural light availability in the following analyses associated with the 65-69 Holmes Road development:

- The natural light availability for the existing surrounding residential buildings and the impact experienced as a result of the proposed development
- The natural light availability for the additional seventh level of the proposed development

The study provides an assessment of the main daylight and sunlight indices, Vertical Sky Component and Annual Probable Sunlight Hours for the site configuration of the proposed 65-69 Holmes Road development in the context of the existing surrounds.

The study was carried out by BMT for Contemporary Design Solutions. The scope of work was based on discussions with Contemporary Design Solutions and outlined in proposals prepared by BMT, dated 21st May 2018 [1] and 10th July 2018 [2].

2. Daylight and Sunlight Availability

Guidelines for assessing the quality of natural light for buildings are outlined in the BS 8206-2:2008, "Lighting for Buildings – Part 2: Code of Practice for Daylighting" [3] and the BR209, "Site Layout Planning for Daylight and Sunlight" [4]. Daylight and sunlight availability for buildings are principally assessed in terms of the Vertical Sky Component (VSC) and Annual Probable Sunlight Hours (APSH) as described below respectively:

- Vertical Sky Component (VSC) – is the ratio of direct sky illuminance at a vertical wall to the simultaneous horizontal illuminance under an unobstructed sky. VSC provides a measure of daylight availability. The "Standard Overcast Sky" defined by the CIE (Commission Internationale de l'Eclairage) is used and the ratio is expressed as a percentage which can reach a maximum of 40% for a totally unobstructed facade. Industry best practice guidelines [4] recommend the VSC for vertical facades should be 27% or above. If the VSC falls below 27%, then the proposed development should not cause a reduction to less than 0.8 times the existing value (i.e. a reduction of no more than 20%)

- Annual Probable Sunlight Hours (APSH) – is defined as the duration for which a location receives direct sunlight. Assessment of APSH takes into account the cloudiness at the site. Industry best practice guidelines [4] recommend the APSH be at least 25% on an annual basis and at least 5% during the winter months (September to March). For the Northern hemisphere, the sun travels along a Southerly path relative to the ground. Therefore, planning guidelines for APSH only apply to facades facing within 90° of South

If a window does not meet the recommended guidelines from the VSC assessment, another daylighting index, the Average Daylight Factor (ADF), may be performed in conjunction with the guidelines for interior daylighting as described in BR 209 [4].

The criteria for good ADF states if a predominantly daylight appearance is required, the ADF should be:

- 5% or more if there is no supplementary electric lighting; or

- 2% or more if supplementary electric lighting is provided.

Table 1 states the minimum ADF values recommended for different types of dwelling spaces.

Table 1 - Minimum ADF Recommended for Dwellings

Room Use	ADF Values
Kitchen	>2%
Living Room	>1.5%
Bedroom	>1%

If the impact of a proposed development meets the above design guidance, it is likely adequate daylight and sunlight will be available in the relevant areas and no further measures will be necessary for improvement. If the proposed development causes a degradation of conditions where the above guidance is not achieved particularly in areas where previously it had been achieved under existing site conditions, it is likely occupants of those areas may notice the impact and may give cause for complaint. A similar perception may arise in areas where the existing site conditions do not achieve the above guidance and the impact of the proposed development reduces the daylight and sunlight availability to less than 80% of the existing conditions.

It is possible for a proposed development to result in an adverse effect relative to existing conditions, yet still comply with best practice guidelines if the recommended minimum quantities of direct daylight and sunlight are achieved.

Where possible, areas sensitive to sunlight / daylight requirements should be located on the south side of a development but not adjacent to a neighbouring structure. In some cases, it may be possible to improve the availability of natural light through design changes, e.g. layout changes, building orientation etc. In areas where it is not possible to meet the design guidance, consideration should be given to practical measures to provide a perception of better natural lighting, e.g. avoiding the use of dark coloured material on external walls and minimising dense landscaping which could exacerbate overshadowing.

The design guidance describes best practice for site layout planning and should not be interpreted as a mandatory requirement. The guidance is flexible and should be applied with due consideration to the general site location and the intended use of local areas around the site. For example, long periods of overshadowing and reduced daylight availability are likely to be more acceptable in a city centre environment compared to residential developments in suburban or rural areas. Similarly, in the close proximity of a development, a car park is likely to be less sensitive to good quality natural lighting compared to a café area with outdoor seating. The guidelines apply to areas / buildings where the occupants have a reasonable expectation of daylight; this would include schools, hospitals, hotels and hostels, and small workshops.

3. Site Location and Surrounding Area

3.1. Site Location and Surrounding Area

The proposed development is located on Holmes Road, in the London Borough of Camden. Figure 1 shows an aerial view of the development site. Cathcart Street and the residential housing on Azania Mews bound the southwest. Low-rise residential and commercial buildings surround the development site to the south and west. A six-storey residential building is located to the immediate northeast of the development site.

3.2. Existing site

The existing site consists of a low-rise commercial building. Figure 2 shows a perspective view of the 3D model used to represent the existing site and the surrounding buildings.

3.3. Proposed Site

The proposed development is nominally an `L'-shaped block with two basement floors. The building is to be a mixed-use development with seven upper floors dedicated to student residences. Figure 3 shows a perspective view of the 3D model used for the analysis of the proposed development. There is also a two-storey block, nominally square in shape, located at the southeast of the development.

4. Assessment Methodology

4.1. Model Detail

Two computational models were constructed to represent the existing site configuration in the context of the existing surrounds and the proposed 65-69 Holmes Road development in the context of the existing surrounds. The models include a simplified representation of the adjacent buildings within a distance judged to have an influence on the availability of natural light.

The model of the proposed development was constructed based on drawing information supplied by Contemporary Design Solutions on 10th August 2018 [5]. A full list of drawings supplied to BMT is provided in APPENDIX A.

4.2. Daylight and Sunlight Analysis

MBS Waldram Tools v2.0 [6] was the daylight and sunlight software used to undertake the assessment of the proposed 65-69 Holmes Road development. It is an application which runs within an AutoCAD environment designed to process calculations associated with daylight and sunlight.

Daylight is calculated by constructing a Waldram diagram at each location of interest. Waldram diagrams plot surrounding obstructions viewed from that location on a vertical plane. Daylight availability is a function of the view of the sky on this vertical plane.

Sunlight hours were calculated by simulating the movement of the sun for each hour of the day, for the full year using accurate sun paths for the geographical coordinates of the site. Annual and winter sunlight hours were obtained from the appropriate hours representing these periods for the city of London.

The proposed 65-69 Holmes Road development was assessed in accordance with guidelines for site layout planning for daylight and sunlight, a brief synopsis of which is given in Section 2.

4.3. Impact Rating

BMT classifies the impact of the development of daylight and sunlight availability at each assessment location according to the severity ratings given in Table 2. The impact ratings are categorised according to an 11-point scale based on the percentage deviation of APSH and VSC from the existing conditions at the site.

Table 2 - Impact rating for sunlight / daylight indices

Impact Rating	Deviation of APSH or VSC from Existing Site Conditions
Strong Adverse	Reduction of more than 40%
Moderate Adverse	Reduction of between 30% - 40%
Marginal Adverse	Reduction of between 20% - 30%
Slight Adverse	Reduction of between 10% - 20%
Negligible Adverse	Reduction of between 0.1% - 10%
None	Deviation less than 0.1%
Negligible Beneficial	Improvement of between 0.1% - 10%
Slight Beneficial	Improvement of between 10% - 20%
Marginal Beneficial	Improvement of between 20% - 30%
Moderate Beneficial	Improvement of between 30% - 40%
Strong Beneficial	Improvement of more 40%

Best practice guidelines are adhered to

4.4. Assessment Location Schemes

The natural light availability for the existing surrounding residential buildings and the impact experienced as a result of the proposed 65-69 Holmes Road development was carried out for a total of 45 representative window locations as shown in Figure 4.

The natural light availability for the additional seventh level of the proposed 65-69 Holmes Road development was carried out for a total of 42 window locations as shown in Figure 5.

5. Results

A full list of impact assessment results including VSC and APSH indices calculated for the surrounding residential buildings and the natural light availability for the additional seventh level of the proposed 65-69 Holmes Road development are provided in APPENDIX B.

5.1. Surrounds Impact Assessment

As shown in Figure 4, six surrounding residential buildings were assessed in order to evaluate the impact of the proposed 65-69 Holmes Road development.

Best practice guidelines for daylight availability were achieved at 32 of the 45 window locations associated with the surrounding buildings assessed. The locations which did not meet the requirements were as follows:

- 74 Holmes Road building - locations W1 to W6 (six locations). These representative window locations are associated with living rooms and kitchens at these residential building
- 55 Holmes Road building - locations W5, W11, and W13 (three locations). The representative window location W5 is associated with an office space, while W11 and W13 are associated with bedrooms
- The Azania Mews buildings - locations W5, W6, W11, and W17 (four locations). The representative window locations W5, W11, and W17 are associated with bathrooms, while W11 is associated with a bedroom at the residential buildings

The impact assessment showed recommendations of best practice guidelines for sunlight availability on an annual basis and during winter months were met at all surrounding window locations.

In terms of daylight availability, the impact of the proposed development on the southeast façade of 74 Holmes Road (locations W1 to W6, see Figure 4) varies from "Moderate Adverse" to "Strong Adverse". An example of the impact on the window location W4 is given in Figure 6.

Locations W5, W11, and W13 (see Figure 4) of the 55 Holmes Road building are on the northwest façade of the residential building immediately situated northeast of the proposed development. In terms of daylight availability, the proposed development has a "Strong Adverse" to a "Marginal Adverse" impact on these window locations. An example of the impact on the window location W11 is given in Figure 7.

The locations on the northwest façade of the residential buildings at Azania Mews (locations W5, W11, and W17) are shown in Figure 4. For these locations, in terms of daylight availability, the proposed development represents a "Strong Adverse" impact. Location W6 is located on the northeast façade of the second residential building in Azania Mews (see Figure 4) and has a "Marginal Adverse" impact caused by the proposed 65-69 Holmes Road development. An example of the impact on the window location W11 is given in Figure 8.

In summary, a "Strong Adverse" impact was observed at 7 window locations, while a "Strong Beneficial" impact was observed at 8 windows.

5.2. Proposed Development Assessment

Best practice guidelines for daylight availability were achieved at all 42 window locations assessed for the proposed development.

The sunlight availability assessment for the proposed 65-69 Holmes Road development also showed the recommendations of best practice guidelines for sunlight availability on an annual basis and during winter months were met at all 42 window locations.

An example of the calculated VSC and APSH indices on these windows is given in Figure 9 and Figure 10 respectively.

6. Conclusions

The following conclusions were drawn from the daylight and sunlight assessment for the proposed seven storey development on 65-69 Holmes Road, North London. The conclusions are based on industry standard guidelines for site layout planning in relation to natural light:

Daylight

- Best practice guidelines for daylight availability were achieved at 32 of the 45 window locations associated with the surrounding buildings assessed
- Impact of the proposed 65-69 Holmes Road development over the surrounding buildings varies from "Strong Adverse" to "Strong Beneficial". A "Strong Adverse" impact was observed at 7 window locations, while a "Strong Beneficial" impact was observed at 8 windows. Thus, the proposed development has both an adverse and beneficial impact on the surrounding buildings
- Best practice guidelines for daylight availability were achieved at all 42 window locations for the proposed development which are situated on the seventh floor of the proposed building

Sunlight

- Best practice recommendations for sunlight availability both annually and during winter months were met at all window locations associated with the surrounding buildings assessed. Therefore, the impact of the proposed development with respect to sunlight availability in these areas is within the recommended levels
- Best practice recommendations for sunlight availability both annually and during winter months were met at all window locations situated on the seventh floor of the proposed building

7. References

[1] BMT Fluid Mechanics Limited, "Daylight Sunlight Studies", 65-69 Holmes Road London, UK, Proposal: Q533533pro1v2, 21st May 2018.

[2] BMT, E-mail - Sergey Mijorski - "RE: [External] RE: 65 Holmes Road - Comments on draft reports", 10th July 2018

[3] BS 8206-2:2008, "Lighting for buildings – Part 2: Code of practice for daylighting.", 2008.

[4] Building Research Establishment Report, "Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice", P. Littlefair, Second Edition, 2011.

[5] Contemporary Design Solution LLP, E-mail - Michele Angelo Aliberti - "RE: [External] RE: 65 Holmes Road - Comments on draft reports", SOL2_1700mm_A(GA)P170_Seventh Floor.dwg, 10th August 2018

[6] MBS Waldram Tools, Daylight / Sunlight Studies & Rights of Light Assessment within AutoCAD, http://surveymbs.com/our-software/mbs-waldram-tools, 2016.

8. Figures

Figure 1 - Site location of the proposed 65-69 Holmes Road development

Figure 2 - Existing building in the context of the existing surrounding buildings for the Impact Assessment

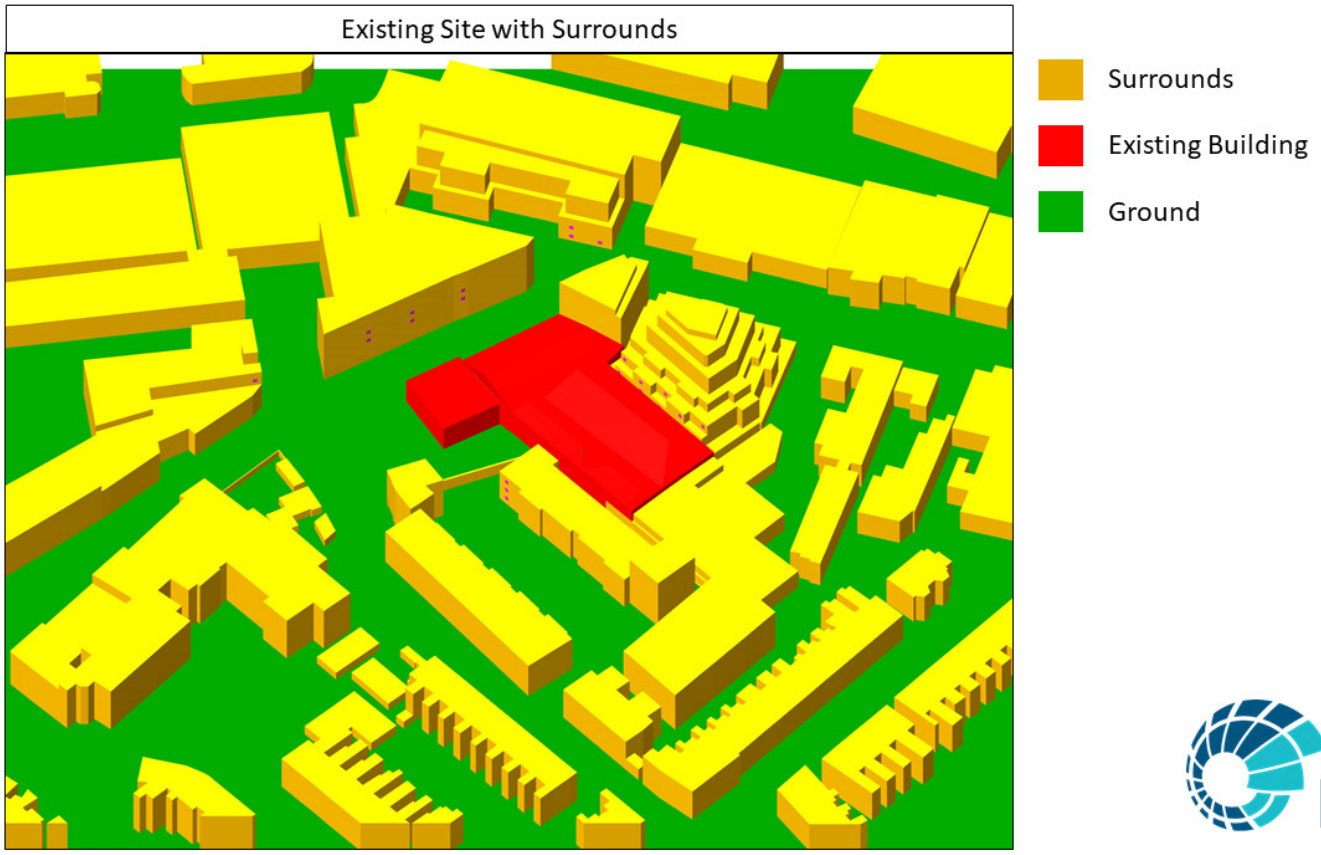


Figure 3 - Proposed 65-69 Holmes Road development in the context of the existing surrounding buildings for the Impact Assessment

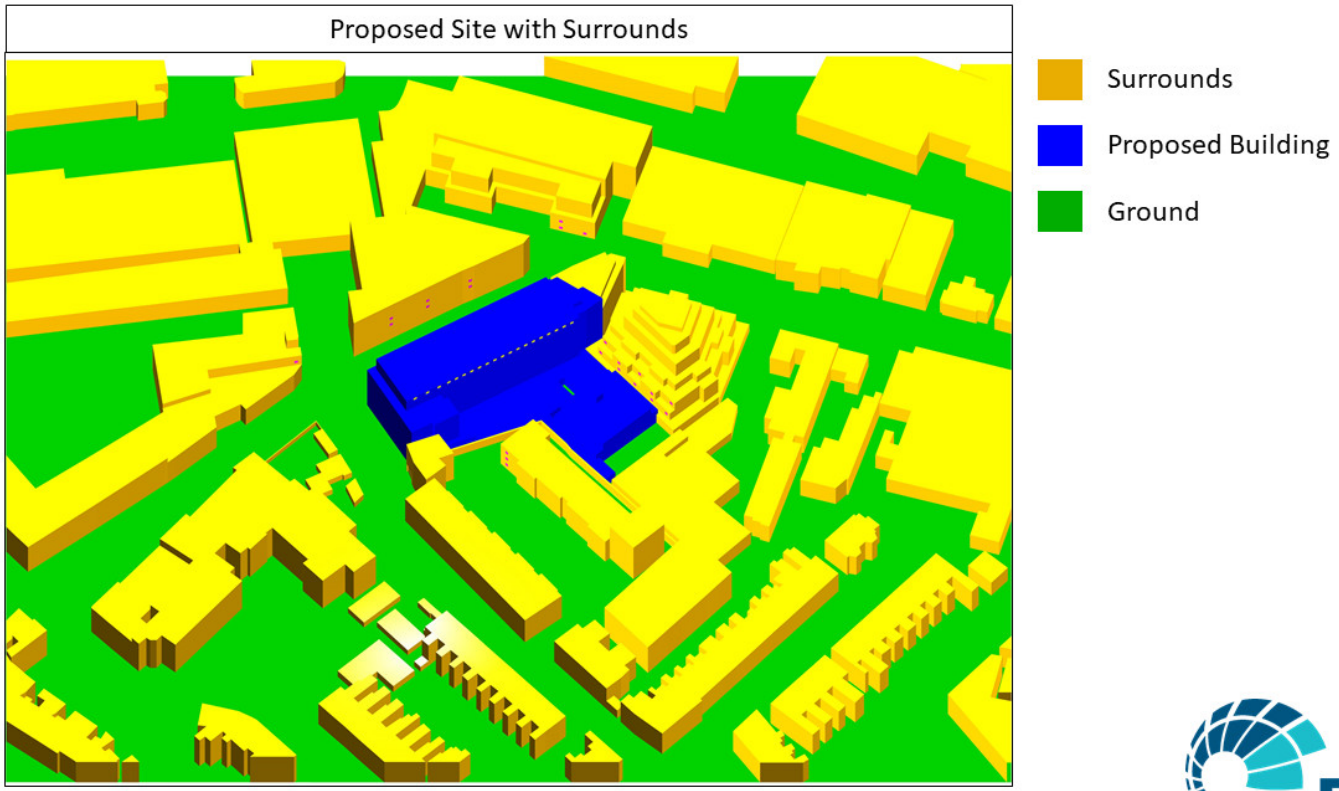


Figure 4 - Assessment window locations, surrounding buildings

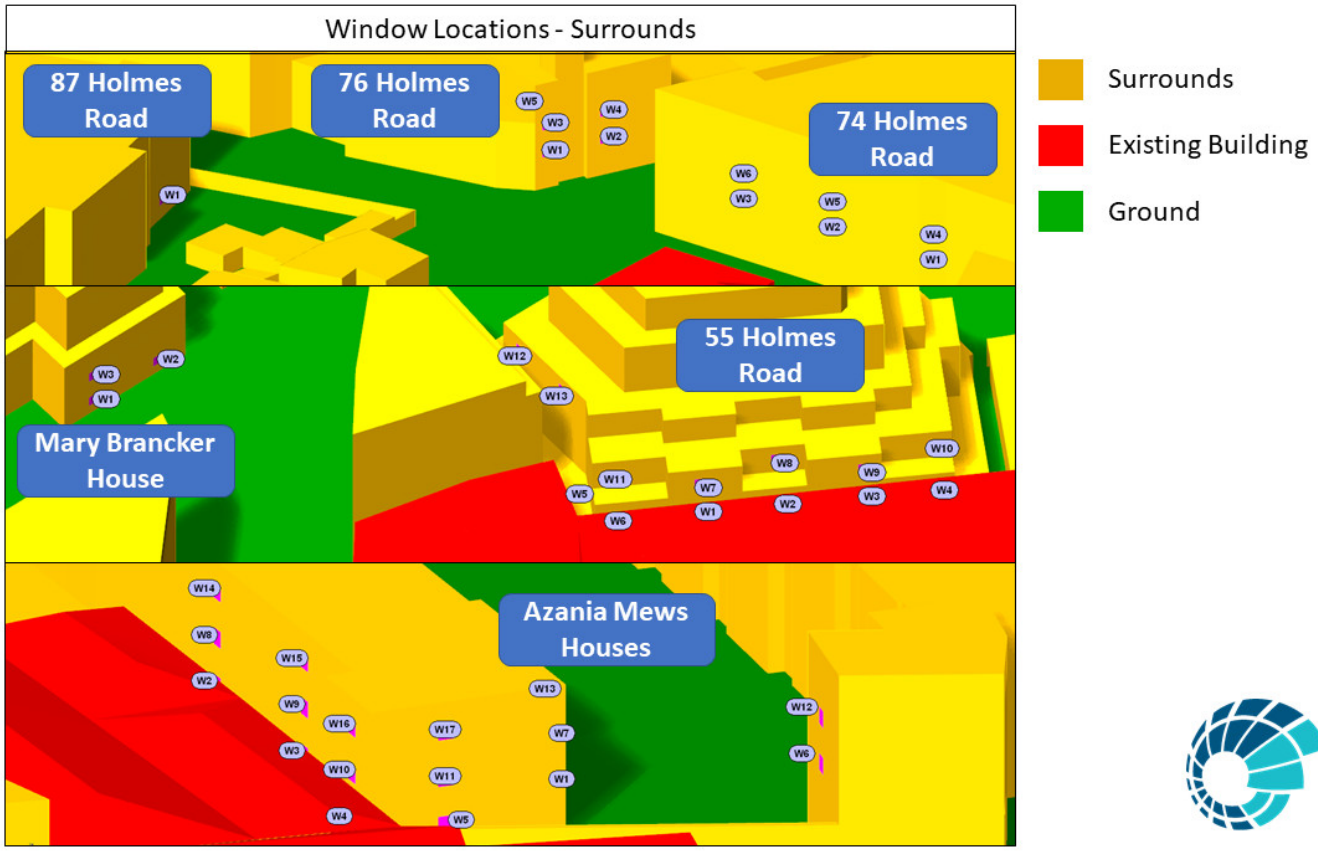


Figure 5 - Assessment window locations, proposed 65-69 Holmes Road development

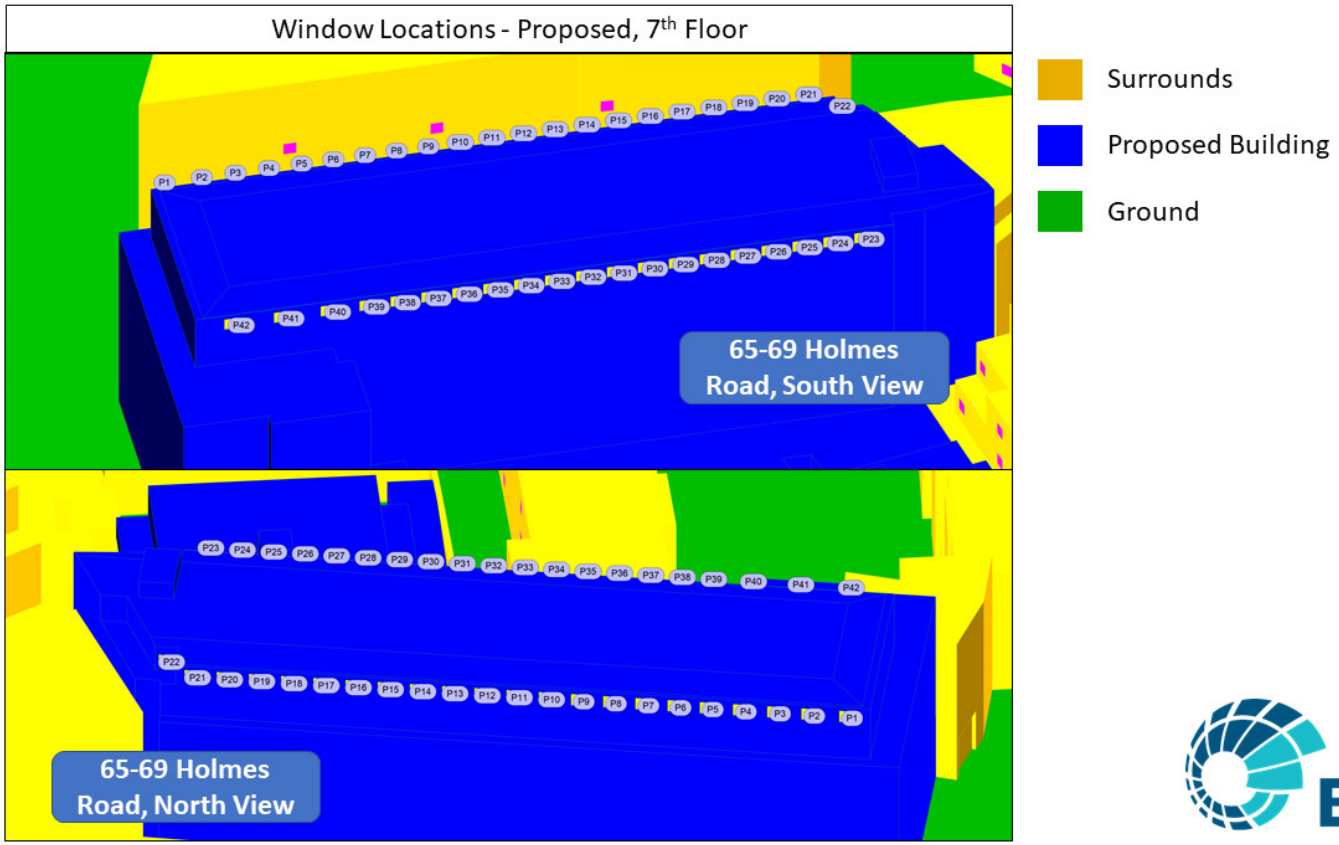


Figure 6 - VSC results for the 74 Holmes Road building from the perspective of the window, illustrating the effect of the proposed 65-69 Holmes Road development

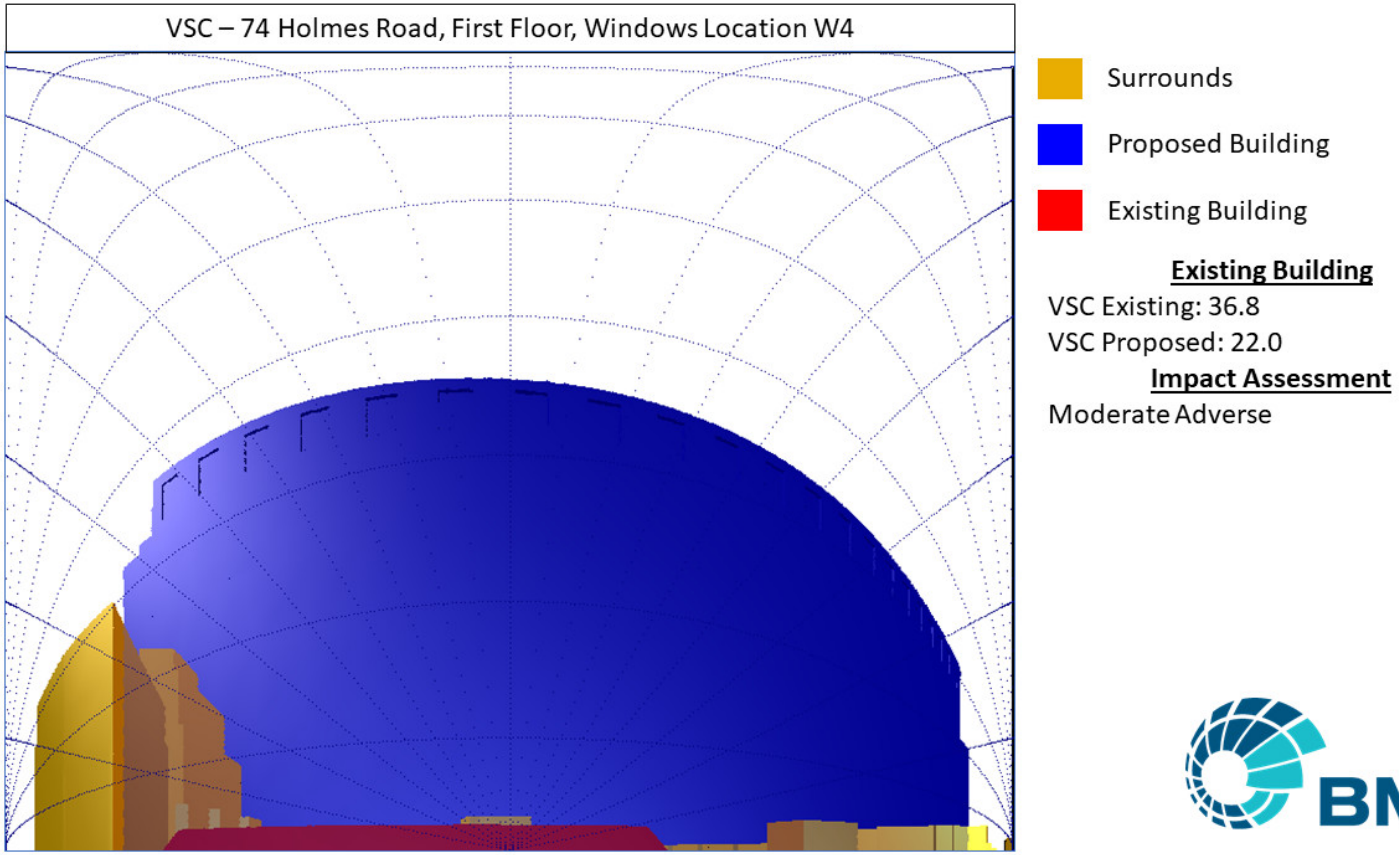


Figure 7 - VSC results for the 55 Holmes Road building from the perspective of the window, illustrating the effect of the proposed 65-69 Holmes Road development

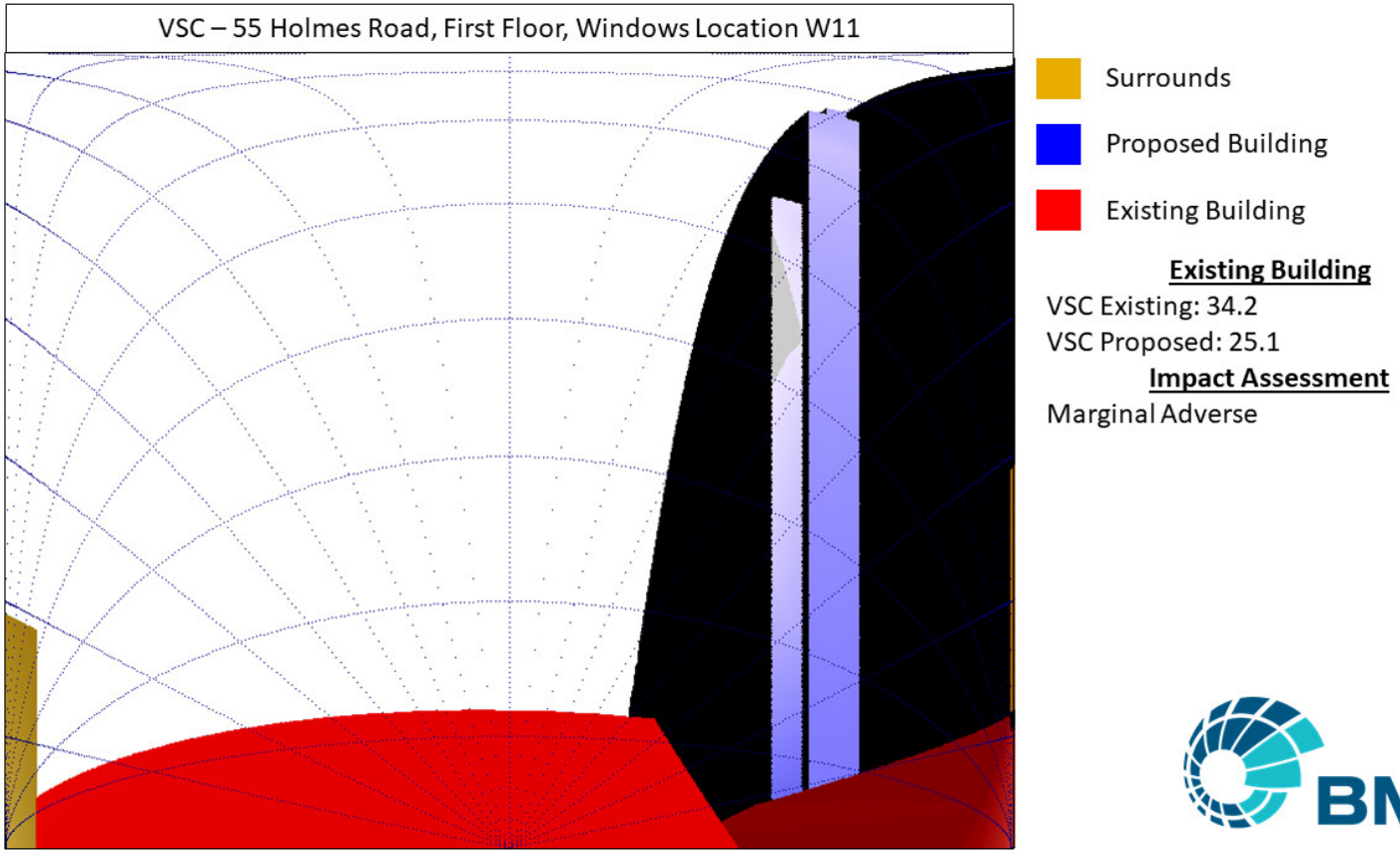


Figure 8 - VSC results for the Azania Mews building from the perspective of the window, illustrating the effect of the proposed 65-69 Holmes Road development

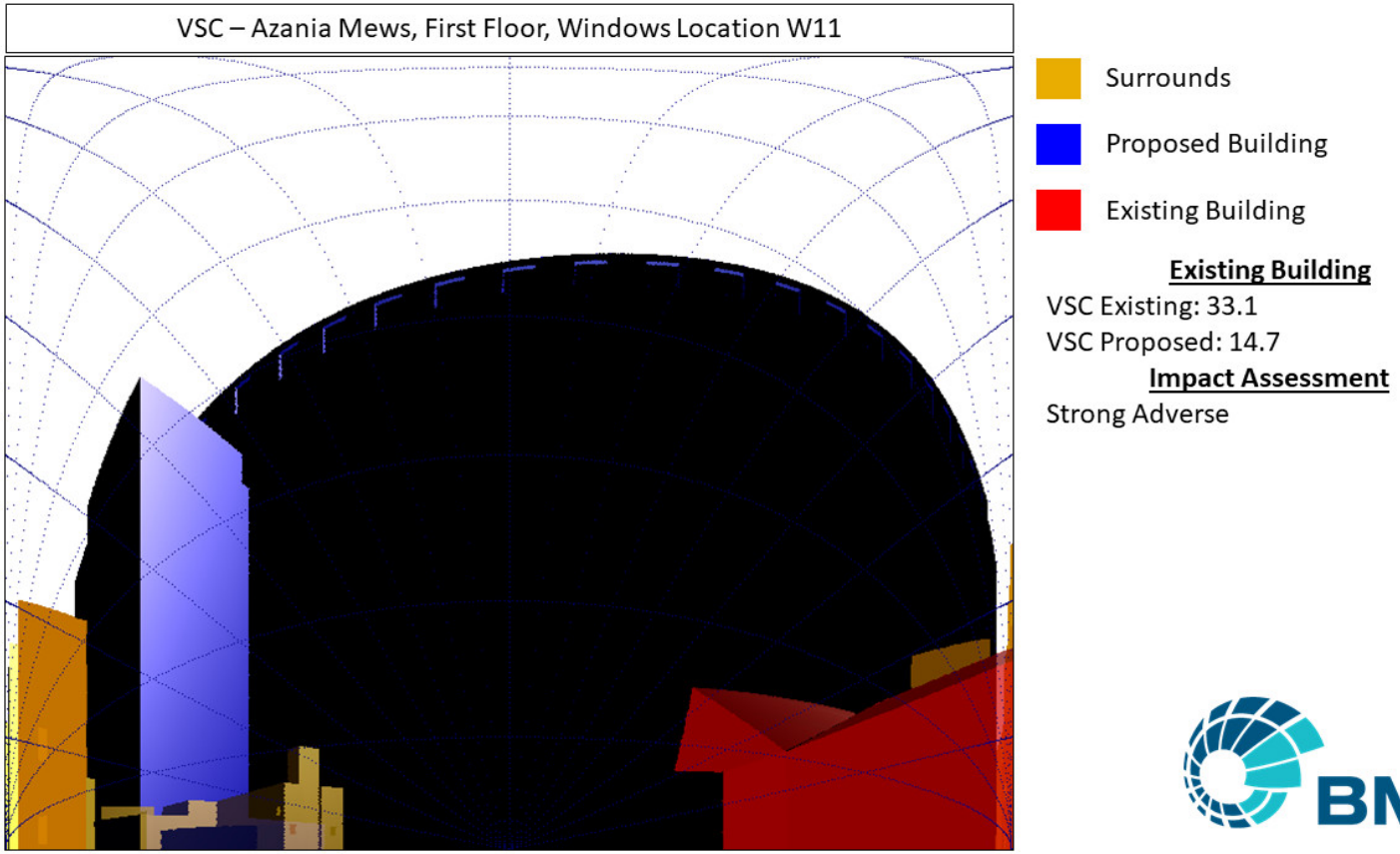


Figure 9 - VSC results for the 65-69 Holmes Road development from the perspective of the window

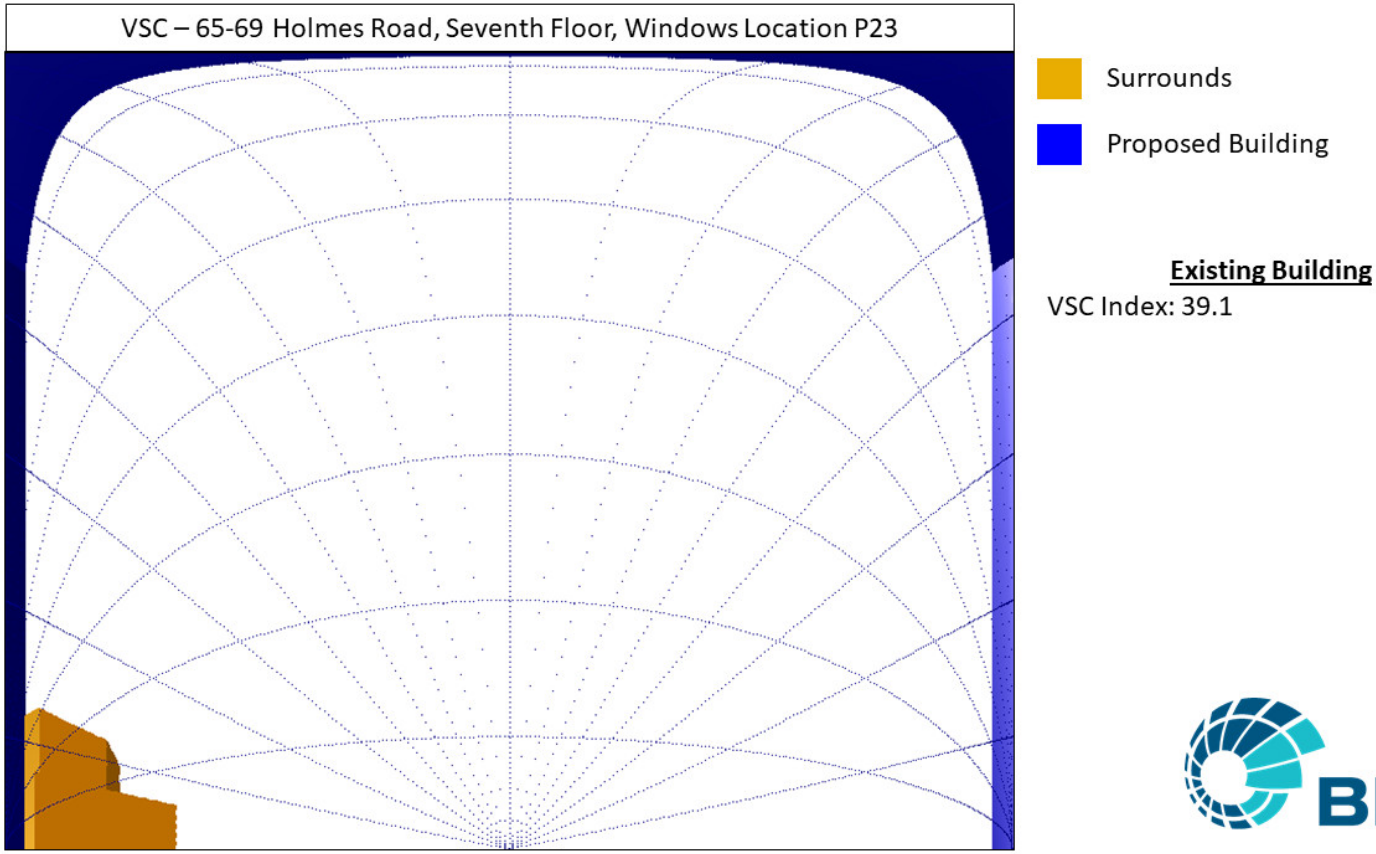
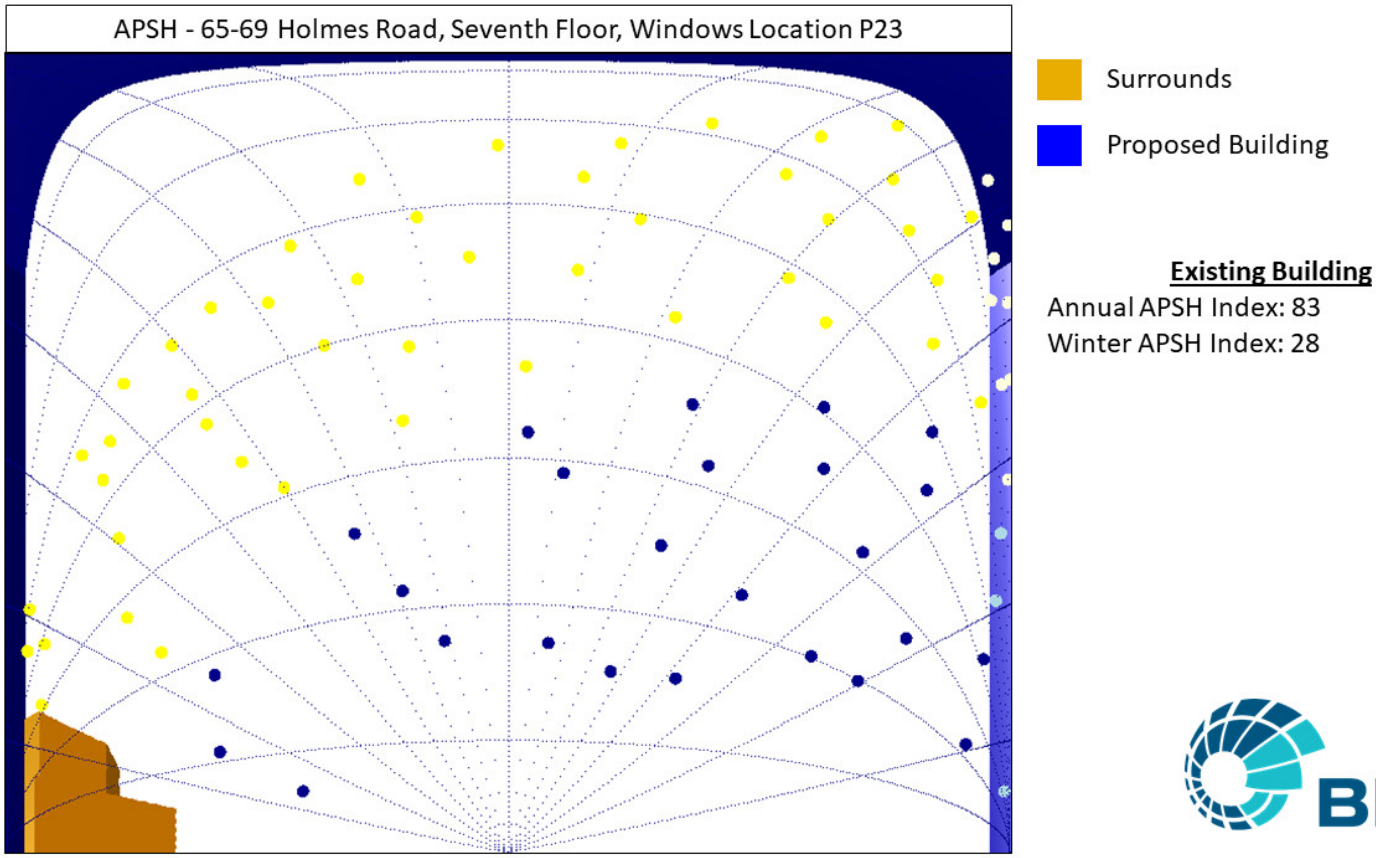


Figure 10 - APSH results for the 65-69 Holmes Road development from the perspective of the window



APPENDIX A. DRAWING INFORMATION

The model of the proposed and surrounding developments used the approved 3D model from the previous BMT Daylight and Sunlight study "431398 Holmes Road – 6 Storey Scheme" completed 16th May 2013.

The model was updated in conjunction with the above scheme and drawings listed below in Table 3. Following modification were added:

- Additional seventh Floor of the proposed 65-69 Holmes Road development
- New massing of the 55 and 63 Holmes Road developments

Table 3 - List of drawings received for the daylight and sunlight study

65-69 and 55 Holmes Road	Date Received
SOL2_1700mm_A(GA)P170_Seventh Floor.dwg	10th August 2018

APPENDIX B. TABULATED DATA

The results of the daylight and sunlight studies are provided in the following electronic appendixes:

APSH:

"432364_65 - 69 Holmes Road_VSC_Results_28th_Aug_2018.xlsx"

VSC:

"432364_65 - 69 Holmes Road_APSH_Results_28th_Aug_2018.xlsx"