37-41 Brighton Road, Shoreham-by-Sea

Daylight and Sunlight Assessments

February 2026

Quality Control

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Executive Summary

This report builds on WSP's November 2024 daylight assessment for the proposed redevelopment at 37–41 Brighton Road, extending the analysis to include the 1st to 6th floor rooms of Block-H within the consented Free Wharf scheme. The assessment follows the BRE and BS EN 17037-2021 guidance, which set out recognised methods for evaluating daylight and sunlight impacts on neighbouring buildings and within new schemes.

The BRE guidelines states that the document is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location. An extract of the BRE guide states that:

The guide is intended for building designers and their clients, consultants, and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design (see Section 5). In special circumstances the developer or planning authority may wish to use different target values.

It recognises that in high density urban areas with modern buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings. The recommended calculation methods are entirely flexible in this respect.

Due to the close proximity of the neighbouring Free Wharf Block-H building to the site boundary, its windows are seen to receive more than their fair share of light. Therefore, as recommended in the BRE guidance in these cases, an alternative approach for assessing the potential loss of daylight and sunlight for the Block-H building was followed.

The adopted alternative approach considered a hypothetical baseline condition consisting of the replacement of the existing buildings on the proposed site with a mirrored building of Block-H along an axis placed at the shared site perimeter.

The metrics and criteria used for the assessment comprised the Vertical Sky Component (VSC) and No-Sky Line (NSL) for assessing loss of daylight, and Probable Sunlight Hours (PSH) metrics to assess the loss of sunlight to the sensitive windows and rooms receptors located on the 1st to 6th floor, that have a view to the Kwik-Fit development.

The assessment found that all the existing windows and rooms of the Free Wharf Block H building would experience either negligible or beneficial effects from the proposed Kwik Fit development, compared to a hypothetical Mirror Baseline Scenario.

Therefore, based on the assessment presented in this report, the proposed Kwik-Fit development is expected to have a negligible daylight and sunlight impact on the existing Free Wharf Block-H building and therefore, complies with the BRE Guidelines.

Introduction

WSP issued a daylight assessment report in November 2024 presenting the impact of the proposed redevelopment of 37-41 Brighton Road on the first-floor level rooms of blocks C, C1, and D of the consented Free Wharf development. WSP has now been instructed to assess the impact on all the rooms of Block-H of the Free Wharf scheme, specifically those facing the proposed Kwik-fit development.

The assessments have been carried out in accordance with the Building Research Establishment (BRE) guidelines, which provide detailed methods and metrics to assess the impacts of new developments on neighbouring properties.

As part of the impact on the Free Wharf Block-H rooms, the existing baseline (i.e., without the proposed scheme) has been replaced with a hypothetical baseline which assumes the Block-H building to be mirrored along the east perimeter of the proposed site, and therefore, replace the existing building used in the Existing Baseline Scenario. The hypothetical scenario (Mirror Baseline) is used to determine a new benchmarks for the daylight metrics, which are then used in the Proposed Scenario to determine the potential loss of light in Block-H rooms.

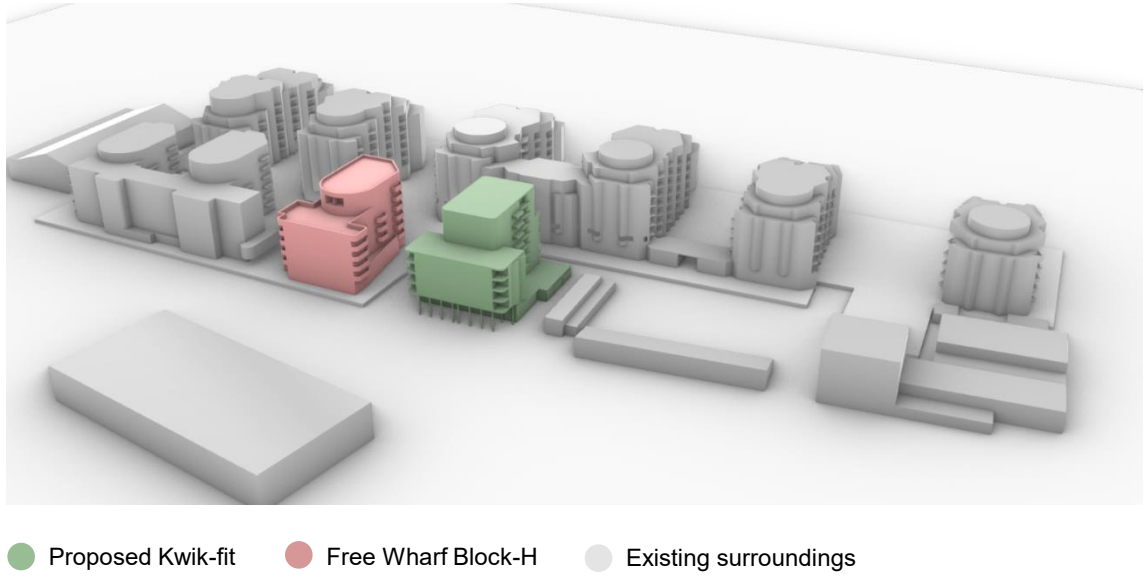
The assessment within Block-H focused on the rooms facing the proposed development, specifically bedrooms, living rooms, and kitchens, as these are considered primary living spaces. Other rooms, such as hallways or bathrooms, were not assessed in line with the BRE guidelines, as they are not considered fully occupied spaces.

The assessment therefore comprises of the following scenarios:

Scenario 1 – **Mirror Baseline**: mirrored Block-H buildings along the Site perimeter;

Scenario 2 – **Proposed**: the proposed Kwik-fit on Site.

Figure 1 – View of the proposed development, Block-H receptor and adjacent surroundings



Existing Site

The images show the existing baseline conditions. Even though some buildings in the Free Wharf development are under construction, the standard approach is to consider them as completed in the existing conditions.

This existing building on the proposed site is not used in the mirror study discussed in this report and is presented here for reference only.

Figure 2 – Existing Conditions – Site Plan

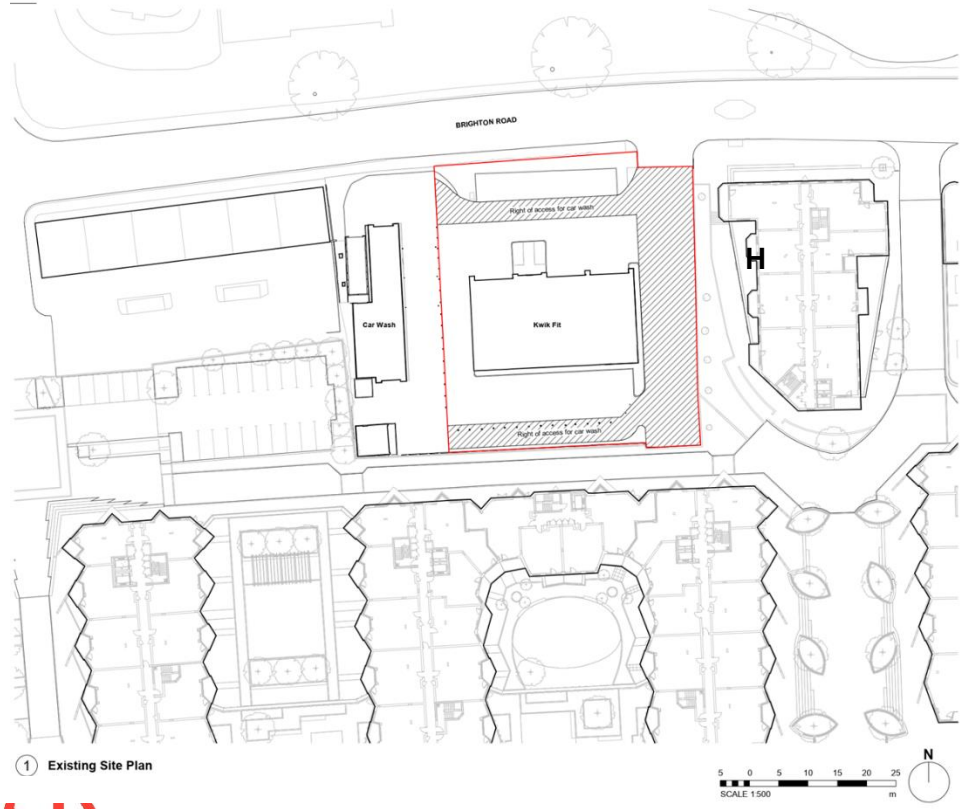


Figure 3 – Model of existing conditions – Plan view

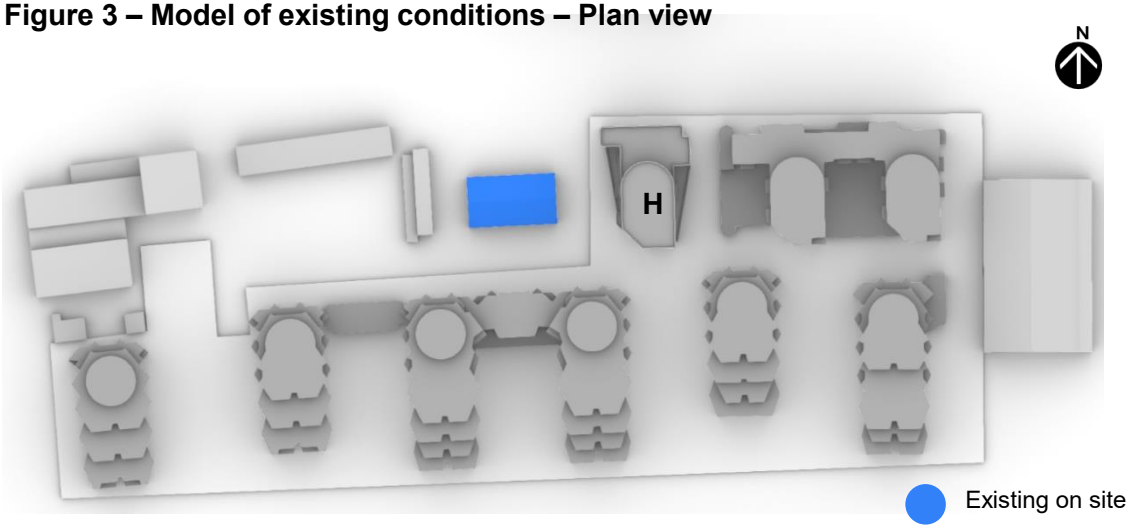
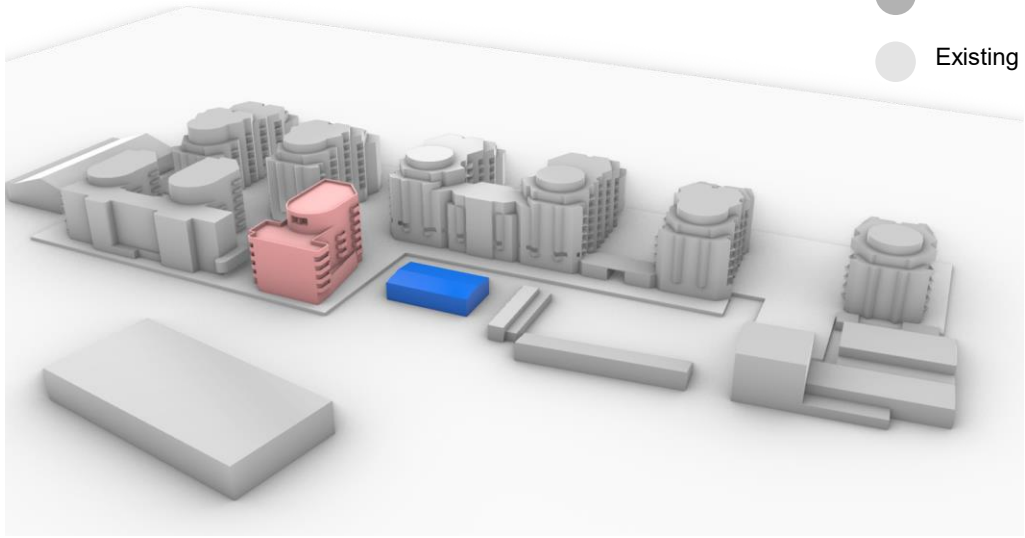


Figure 4 – Model of existing conditions – North-west view



Metrics and Criteria - Daylight

The BRE Guide uses a set of metrics to quantify the potential effect on daylight and sunlight levels including:

Obstruction Angle

This is an initial check to identify any potential impacts. If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected, and further detailed studies should be carried out.

Vertical Sky Component (VSC)

When the obstruction angle and the visible sky angle (θ) vary significantly when multiple windows are involved, then the Vertical Sky Component (VSC) should be used instead. The calculation of VSC usually requires specialist computer software. The VSC, in simple terms, measures the amount of sky that can be viewed from the centre of a window accounting for all external obstructions, (40% being the maximum value for an unobstructed window). The minimum recommended figure for VSC is 27% or greater to maintain good levels of daylight. For existing surrounding windows if the VSC is below 27%, then a comparison of existing and proposed VSC levels with the new development in place is calculated and impacts are assessed.

In the cases where multiple windows light the same area of the room, the BRE suggests that an additional calculation of the weighted average (by glazing area) of the values to be used to inform the results for the room as a whole.

Table 1: Significance Criteria - VSC

VSC Values	Ratio of Change from Baseline	Magnitude of Impact	Meet / below BRE Criteria
VSC ≥ 27%	n/a	Negligible	Meets Criteria
VSC < 27%	> 0.8	Negligible	Meets Criteria
VSC < 27%	0.7 – 0.8	Low	Below
VSC < 27%	0.6 – 0.7	Medium	Below
VSC < 27%	< 0.6	High	Below

Daylight Distribution (No-Sky Line) (NSL)

Where information of internal layouts within existing properties is available, the No-Sky Line (NSL) is used to assess the daylight distribution within rooms. The No-Sky Line divides the areas of the working plane that can receive direct skylight from those which cannot. If a significant area of the working plane (normally more than 20%) lies beyond the no sky-line (i.e., receives no direct skylight) then distribution of daylight in the room will look poor and supplementary electric lighting will be required. The BRE guidance recommends that the maximum reduction of the NSL to existing rooms should be 0.8 times their former value.

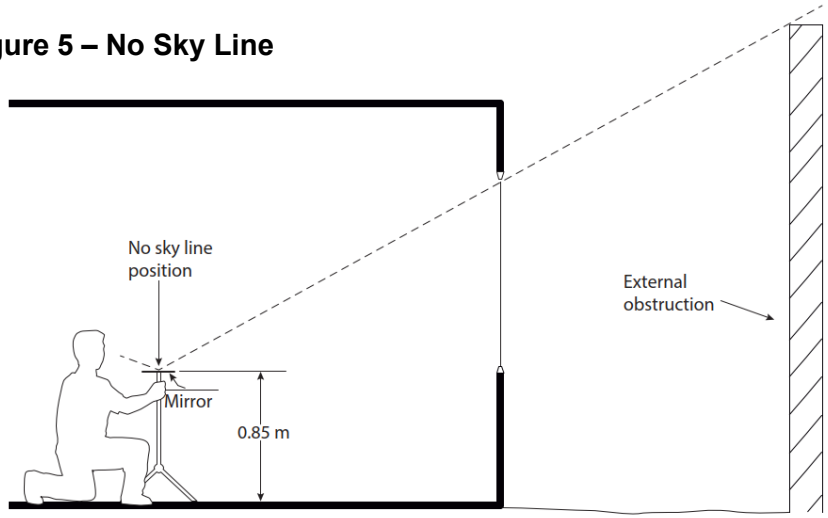
The BRE Guidance document states that when assessing daylight distribution "for houses this would include living rooms, dining rooms, and kitchens; bedrooms should also be analysed, however, they are considered to have lower sensitivity.

Accurate room layouts are essential for precise NSL calculations. Estimated layouts may lead to inaccurate results and are not recommended.

To ensure adequate daylighting, a room must meet both NSL criteria and at least one relevant primary window must meet the VSC criteria.

It is important to highlight that the metrics discussed (VSC, PSH, NSL), unlike those used in daylight illuminance studies, do not take into account the interior finishes of the spaces being evaluated. Instead, these metrics primarily focus on the visibility of the sky and sun, rather than the quantity of light and illumination levels within the spaces under assessment.

Figure 5 – No Sky Line



Source: Paul J Littlefair et al. *Site layout planning for daylight and sunlight: a guide to good practice,* BR 209 2022 ed., BRE Electronic Publications, 2022.

Metrics and Criteria - Sunlight

Sunlight: Probable Sunlight Hours (PSH)

Access to sunlight is measured from the windows of habitable rooms, facing within 90° of due south. The Probable Sunlight Hours (PSH) calculation method measures the proportion of the window assessed that is sunlit for a period of time. The BRE Guide recommends that the PSH is calculated for the annum (APSH) and for the winter months (WPSH) (21st September to 21st March). The recommended sunlight criteria for existing buildings are as follows:

The window reference point should receive more than 25% of APSH, including at least 5% of WPSH;

If the available sunlight hours are both less than the amount given above and less than 0.8 times their former value, either over the whole year or during the winter, then the occupants of the existing building will notice some loss of sunlight;

The overall loss of sunlight should be maintained below 4%; and

For the affected receptors, the level of impact has been classified depending on the ratio of impact between the ‘Baseline Scenario’ and the ‘Proposed Scenario’, The criteria used for determining the magnitude of change for the APSH and WPSH results are detailed.

Table 2: Significance Criteria – Annual Sunlight Hours (APSH)

APSH Values	Ratio of Change from Baseline	Absolute Reduction APSH	Magnitude of Impact	Meet / Below BRE Criteria
APSH ≥ 25%	>0.8	n/a	Negligible	Meets Criteria
APSH < 25%	>0.8	≤ 4%	Negligible	Meets Criteria
APSH < 25%	>0.7	>4%	Low	Below
APSH < 25%	0.6 – 0.7	>4%	Medium	Below
APSH < 25%	< 0.6	>4%	High	Below

Table 3: Significance Criteria – Winter Sunlight Hours (WPSH)

WPSH Values	Ratio of Change from Baseline	Magnitude of Impact	Meet / Below BRE Criteria
WPSH ≥ 5%	n/a	Negligible	Meets Criteria
WPSH < 5%	>0.8	Negligible	Meets Criteria
WPSH < 5%	0.7 – 0.8	Low	Below
WPSH < 5%	0.6 – 0.7	Medium	Below
WPSH < 5%	< 0.6	High	Below

Setting Alternative Daylight Targets (BRE Mirror-Image Method)

The BRE Guide acknowledges that some existing buildings have windows positioned too close to the site boundary. In such cases, the standard BRE target values—developed primarily for lower-density settings—may not provide a fair or realistic benchmark.

To address this, BRE provides an alternative method that allows more context-appropriate target values to be set.

Methodology

Section F5 of the BRE Guide sets out a method whereby daylight and sunlight targets are based on a theoretical mirror-image building of the same height and size placed on the opposite side of the boundary at an equal distance.

- This creates a symmetrical, equitable reference condition.
- The approach establishes revised baseline values for:
    - Vertical Sky Component (VSC)
    - No-Sky Line (NSL)
    - Annual Probable Sunlight Hours (APSH)

These revised targets better reflect what would be achievable if both sides of the boundary were developed in a balanced manner.

Criteria

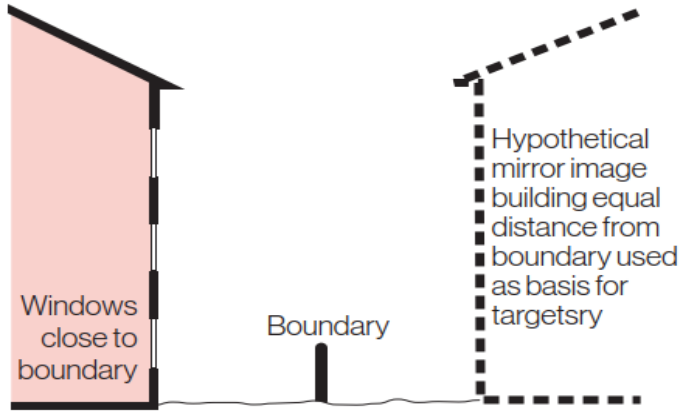
Whilst the mirror-image method adopts the values for VSC, PSH and NSL as the baseline, it does not change how impact significance is determined. The BRE's core rule remains:

- A reduction is noticeable and therefore potentially adverse if the post-development value falls to less than 0.8 times its former value.

This applies equally to:

- VSC: A change is significant if the value is less than 27% and falls below 0.8 times the former values in the Mirror Baseline Scenario.
- NSL: A change is significant if the lit area in the Proposed Scenario is less than 0.8 times the former values recorded in the Mirror Baseline Scenario.
- PSH: A change is significant if the window's APSH and WPSH values fall below the targets and are less than 0.8 times their former values.

Figure 6 – Use of a hypothetical mirror image building to set target daylight values



Defining the Baseline Scenario

The Free Wharf development consists of 10 blocks, three of which are now complete (G2, G1, and H).

This assessment focuses on Block-H as a sensitive receptor - as highlighted in yellow in Figure 7.

The receptors included in this assessment are the rooms in block-H facing the Kwik-Fit site. This includes the residential units at all Levels 1 to 6.

The total number of assessed rooms (Bedrooms and Living/Kitchen/Dinning rooms) is 46 rooms, and the total windows assessed is 99 windows.

Mirror Image of Block H

To define the targets for daylight and sunlight, the baseline values have been derived by assessing the impact of a mirror image of Block H on the site. This has been positioned at an equivalent distance from the boundary as Block H, as shown in Figures 8 and 9.

Figure 7 – Site Plan – Free Wharf development

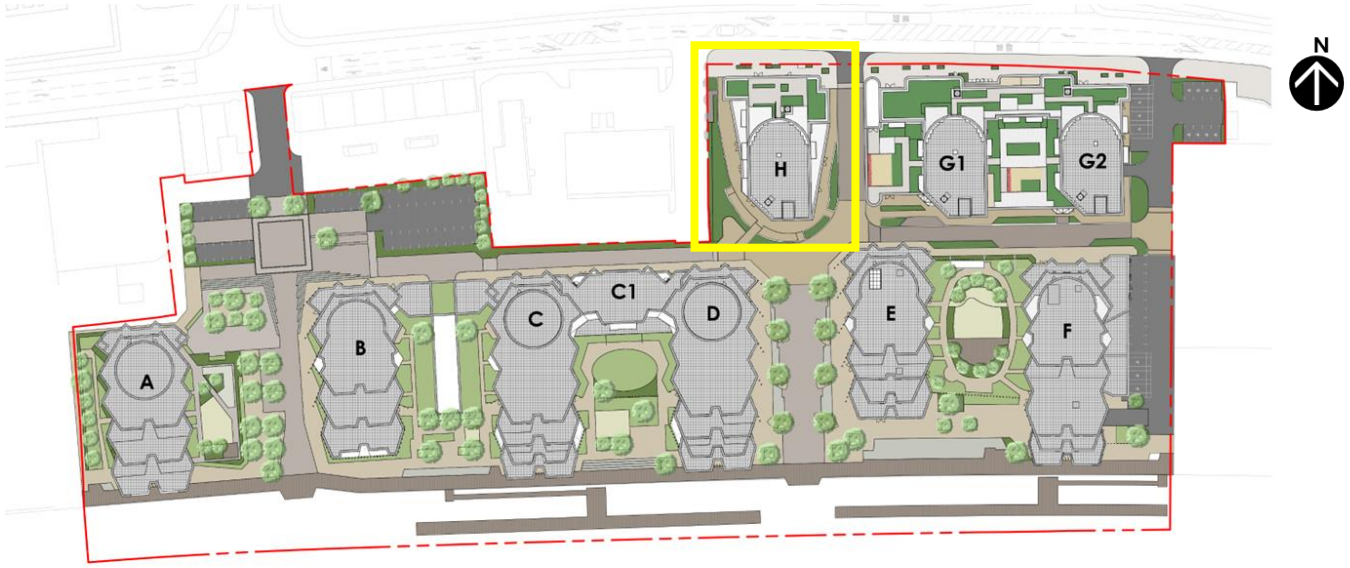
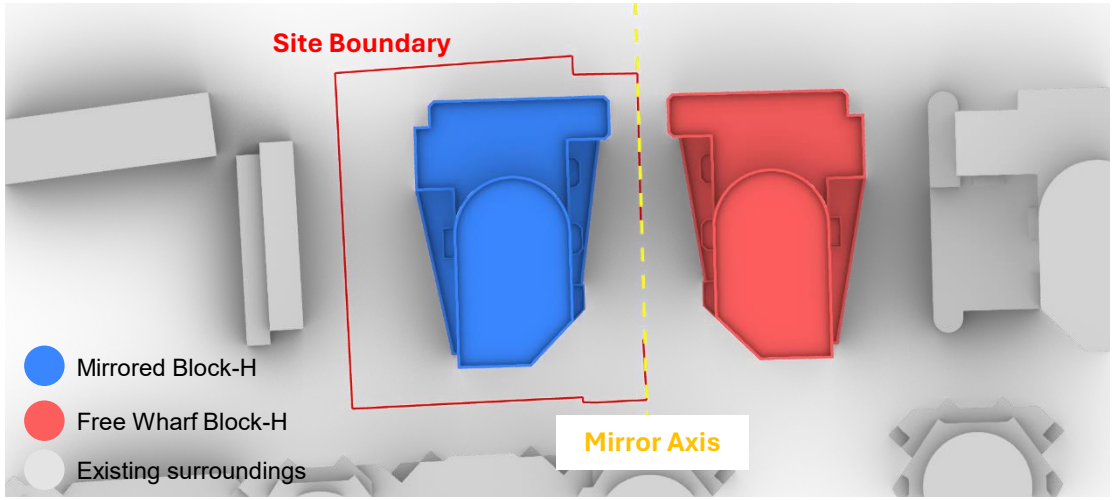


Figure 8 – Mirror Baseline Scenario



Assessment Modelling

The model of the Free Wharf development was developed based on project information within the planning portal (Ref: AWDM/1315/22).

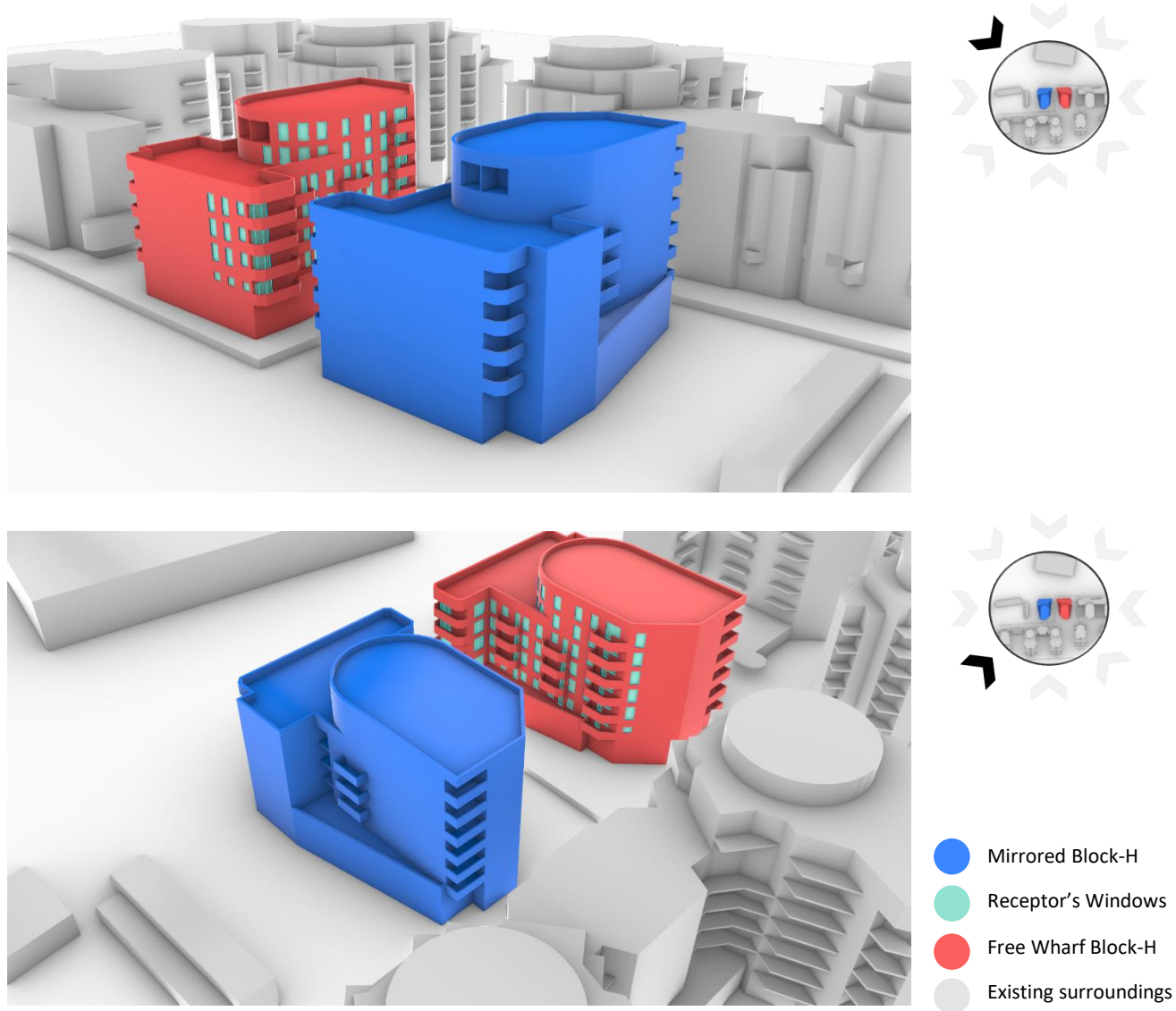
The latest addendum includes amendments to the massing, which is incorporated in this assessment model.

For internal layouts, the model was supplemented by the drawings from the original design submitted in 2017 which can be found in the planning portal (Ref: AWDM/1497/17).

The daylight and sunlight impact assessment for the Free Wharf Block-H building has been carried out for all floors and all habitable rooms facing the Kwik Fit site and the results summarised later in this report. Heat maps of internal daylight distribution within the rooms are displayed only for the 1st and 6th floors for simplification. However, the tables show the results for all the rooms assessed.

The receptors for the daylight impact assessment include the internal habitable rooms and their associated windows.

Figure 9 – Mirror Baseline Scenario – North-west and south-west views



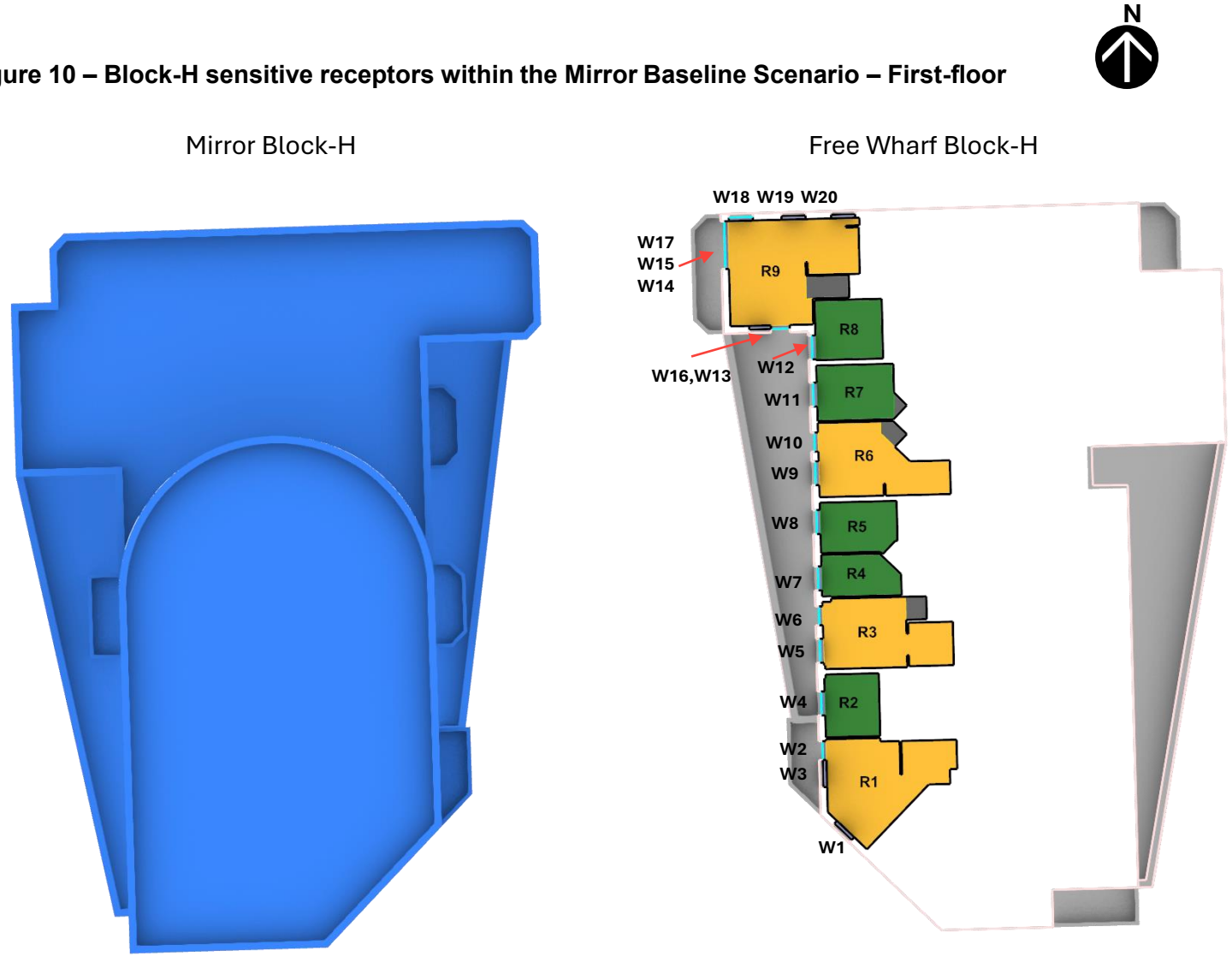
Model of Block H Rooms – First Floor

Figure 10 shows the rooms at the first floor assessed in this study.

- The spaces in green indicate bedrooms.
- The spaces in orange indicate Living/Kitchen/Dining rooms (LKD).

The receptors for daylight impact assessment include the internal habitable rooms and their associated windows.

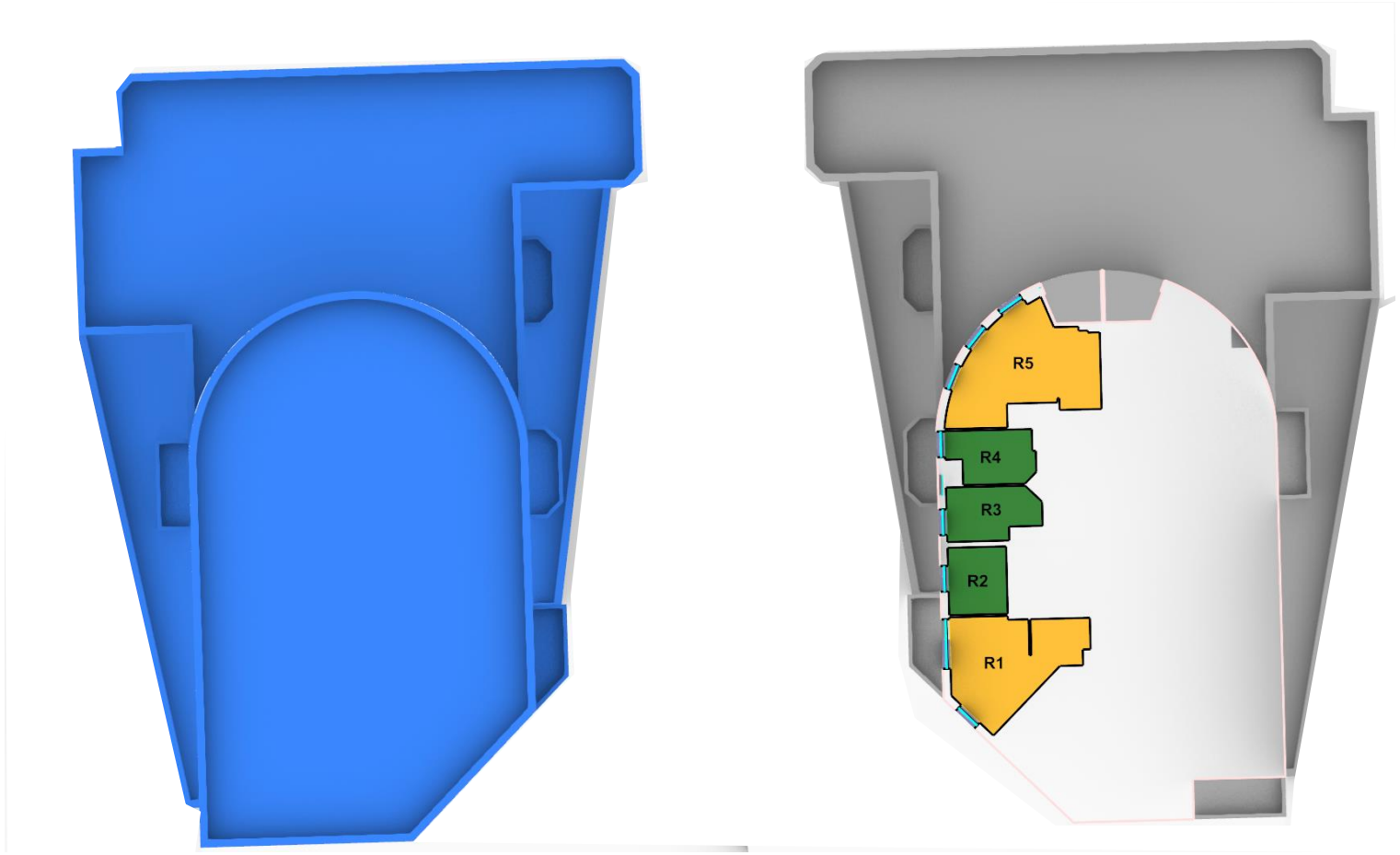
Figure 10 – Block-H sensitive receptors within the Mirror Baseline Scenario – First-floor



Model of Block-H Rooms – Sixth Floor

Figure 11 shows the rooms at the 6th floor identified by usage, as assessed in this study.

Figure 11 – Block-H sensitive receptors within the Mirror Baseline Scenario – 6th Floor



Model of Proposed Scenario

The proposed scenario introduces the proposed development at the Kwik Fit site replacing the mirror image building used as a baseline. The VSC, PSH and NSL were assessed again for comparison with the baseline results as discussed in the results section. Figure 12 shows the proposed configuration in plan view, and Figures 13 and 14 show the model in perspective views.

Figure 12 – Proposed Scenario

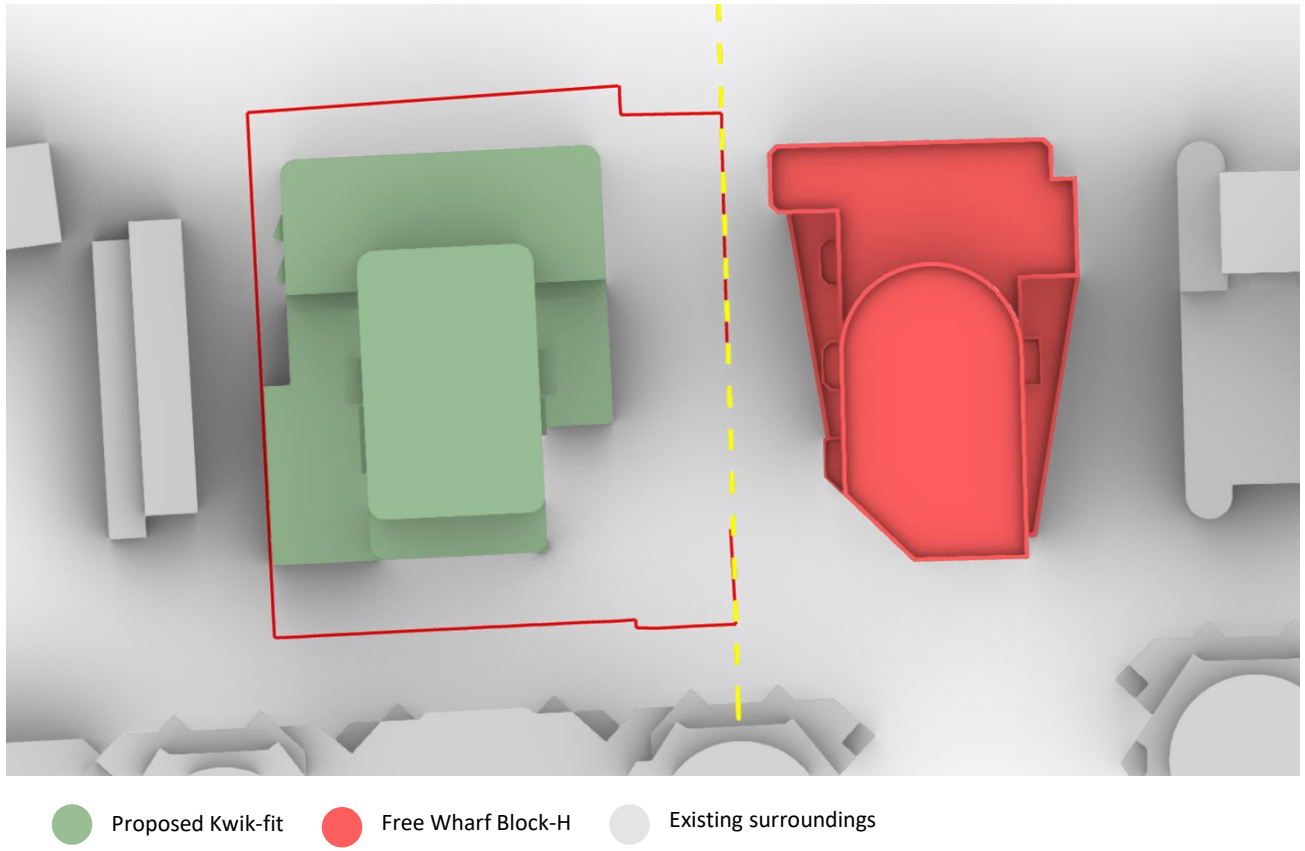
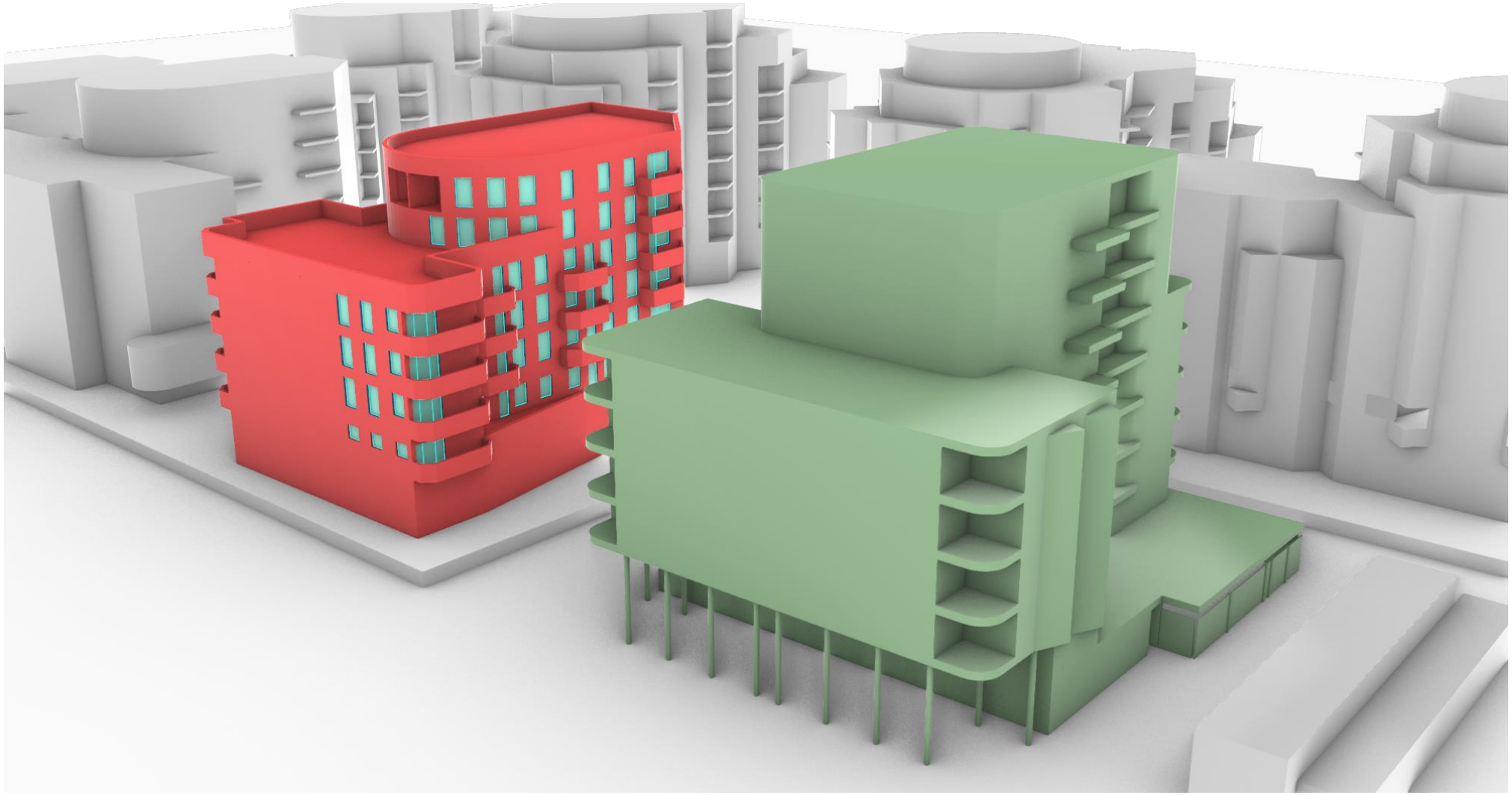
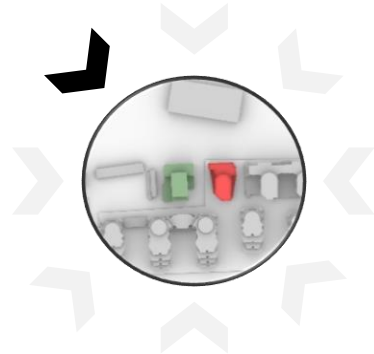


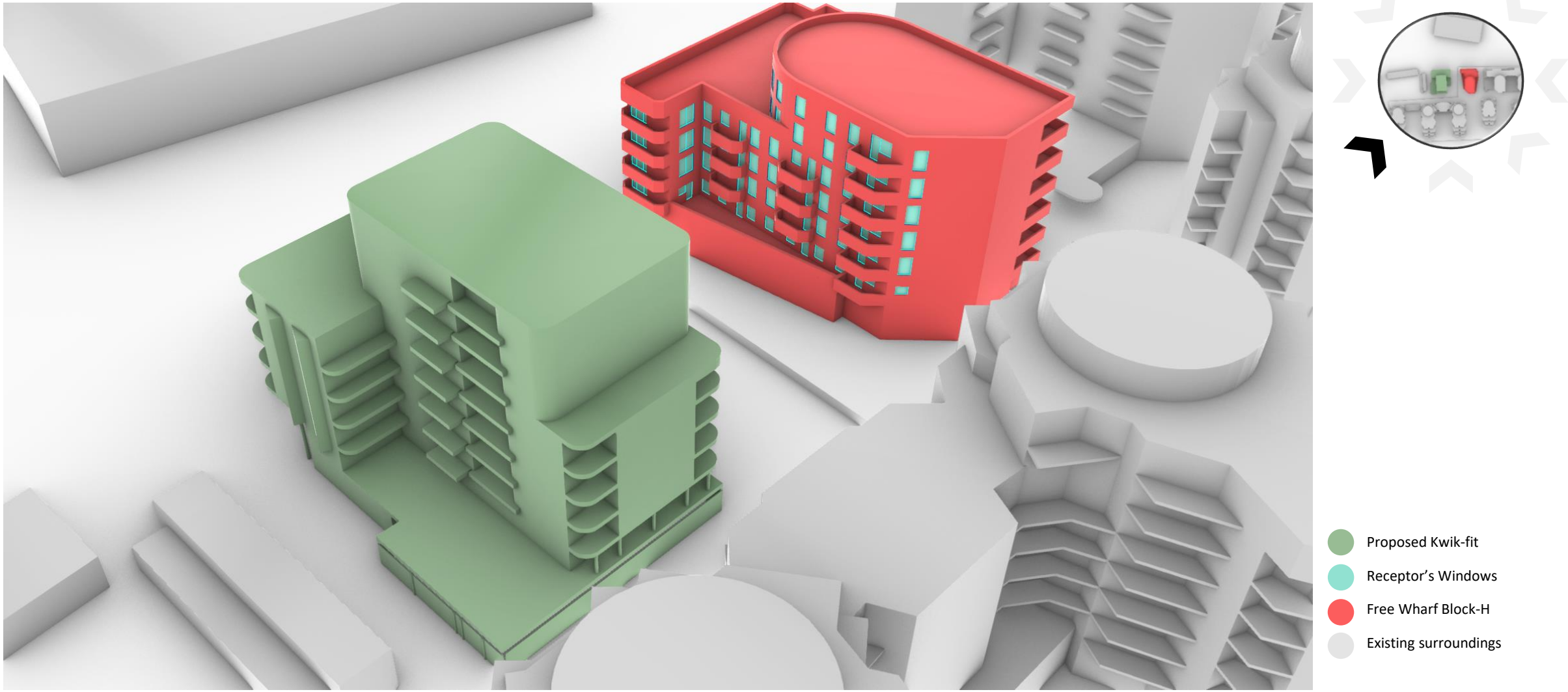
Figure 13 – Model of Proposed Scenario – North-west view





Proposed Kwik-fit
Receptor's Windows
Free Wharf Block-H
Existing surroundings

Figure 14 – Model of Proposed Scenario – South-west view



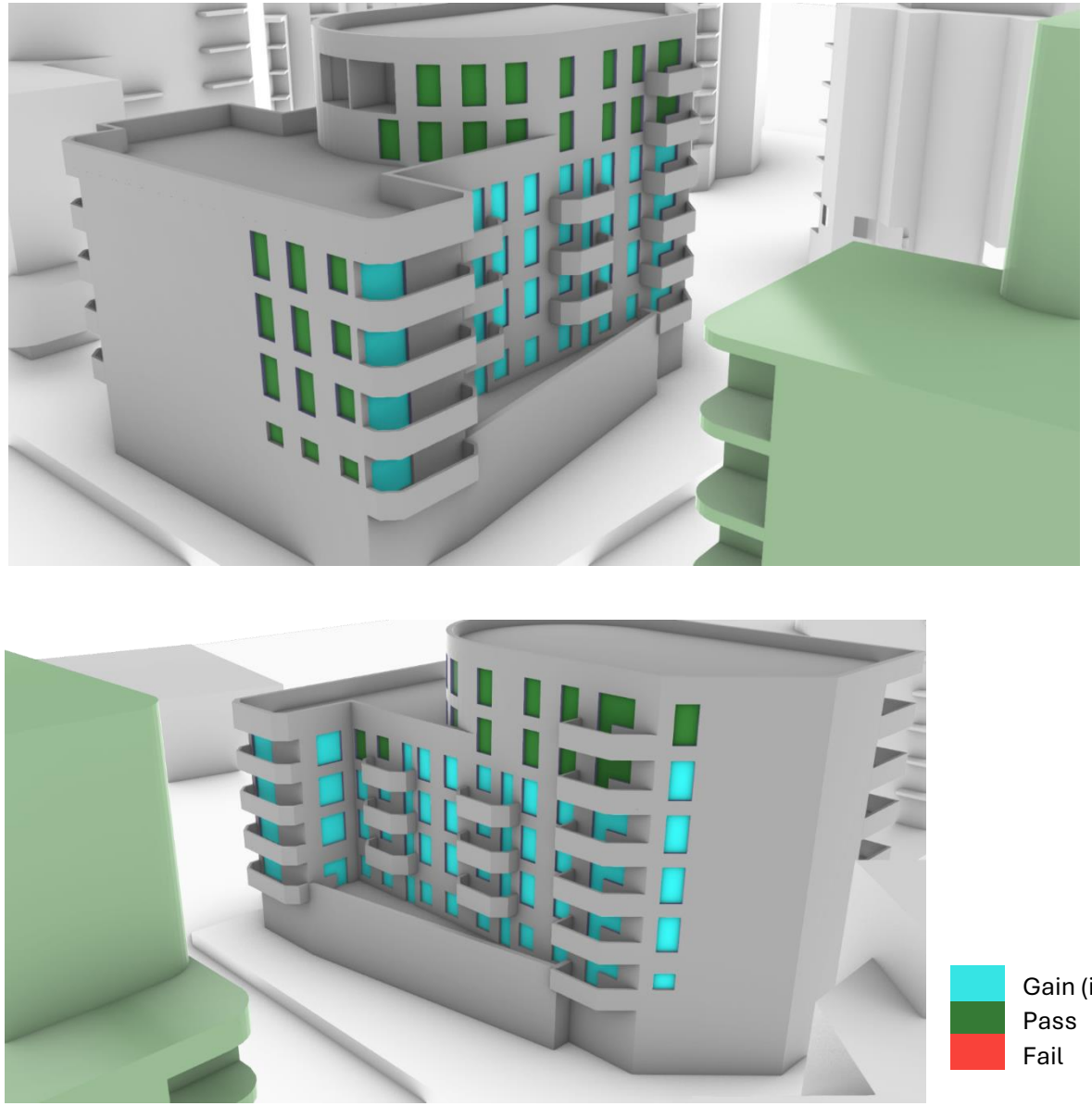
Assessment Results – Daylight (VSC)

The images in Figure 15 show the VSC results for all the 99 assessed windows, demonstrating that each window meets the VSC criteria.

Windows highlighted in green represent VSC values in the Proposed Scenario that are unchanged from those in the Mirror Baseline Scenario, indicating that there is no impact to those windows.

Windows showing improvement in the Proposed Scenario are marked in blue. These are cases when the massing, shape and position of the proposed development is such that some windows of the existing Block H development would receive a greater level of daylight than they would, had the proposed scheme been a mirror image of Block H.

Figure 15 – Vertical Sky Component – Impact results



Assessment Results – Daylight Distribution (DD)

The images in Figure 16 show the results of the Daylight Distribution for the rooms on the first and sixth floors. The results correspond to the proposed scenario showing in yellow the portions of each space that satisfy the criteria and in blue the areas below the standard.

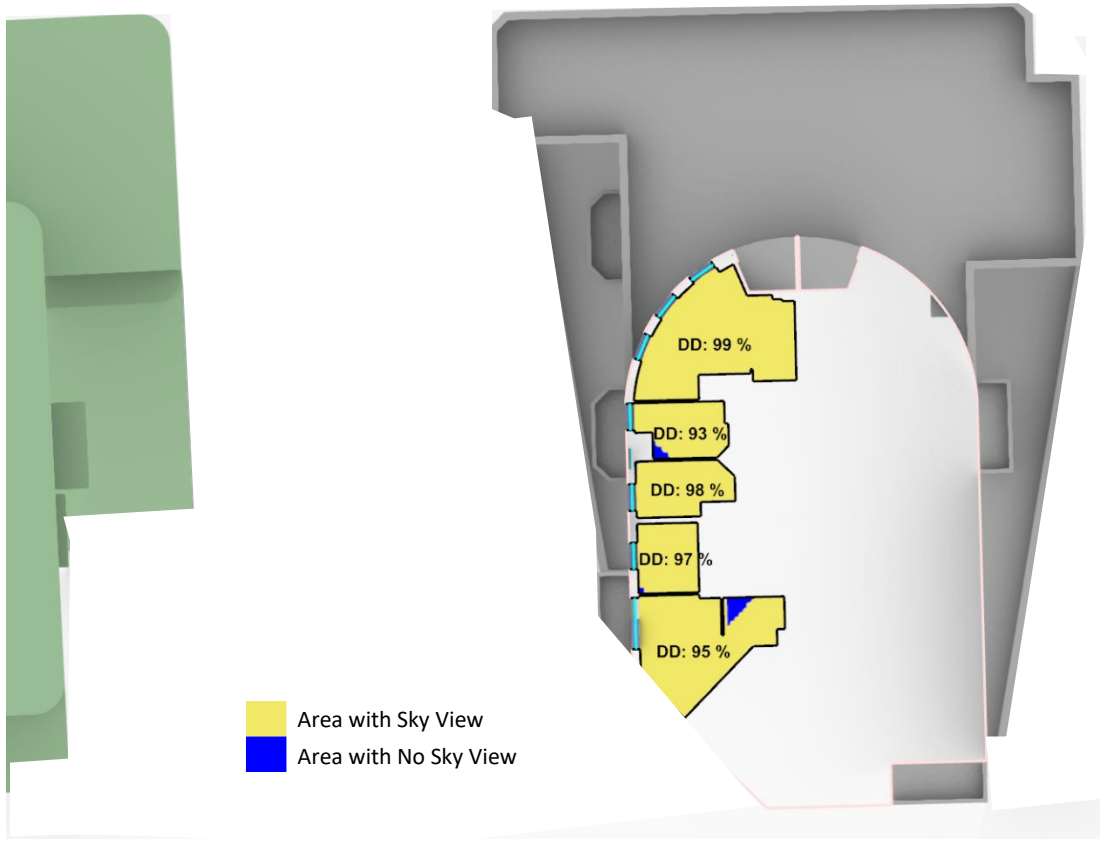
Figure 16 – Daylight Distribution results – Proposed Scenario

Proposed Kwik-Fit Scheme

Free Wharf Block-H First Floor

Proposed Kwik-Fit Scheme

Free Wharf Block-H Sixth Floor

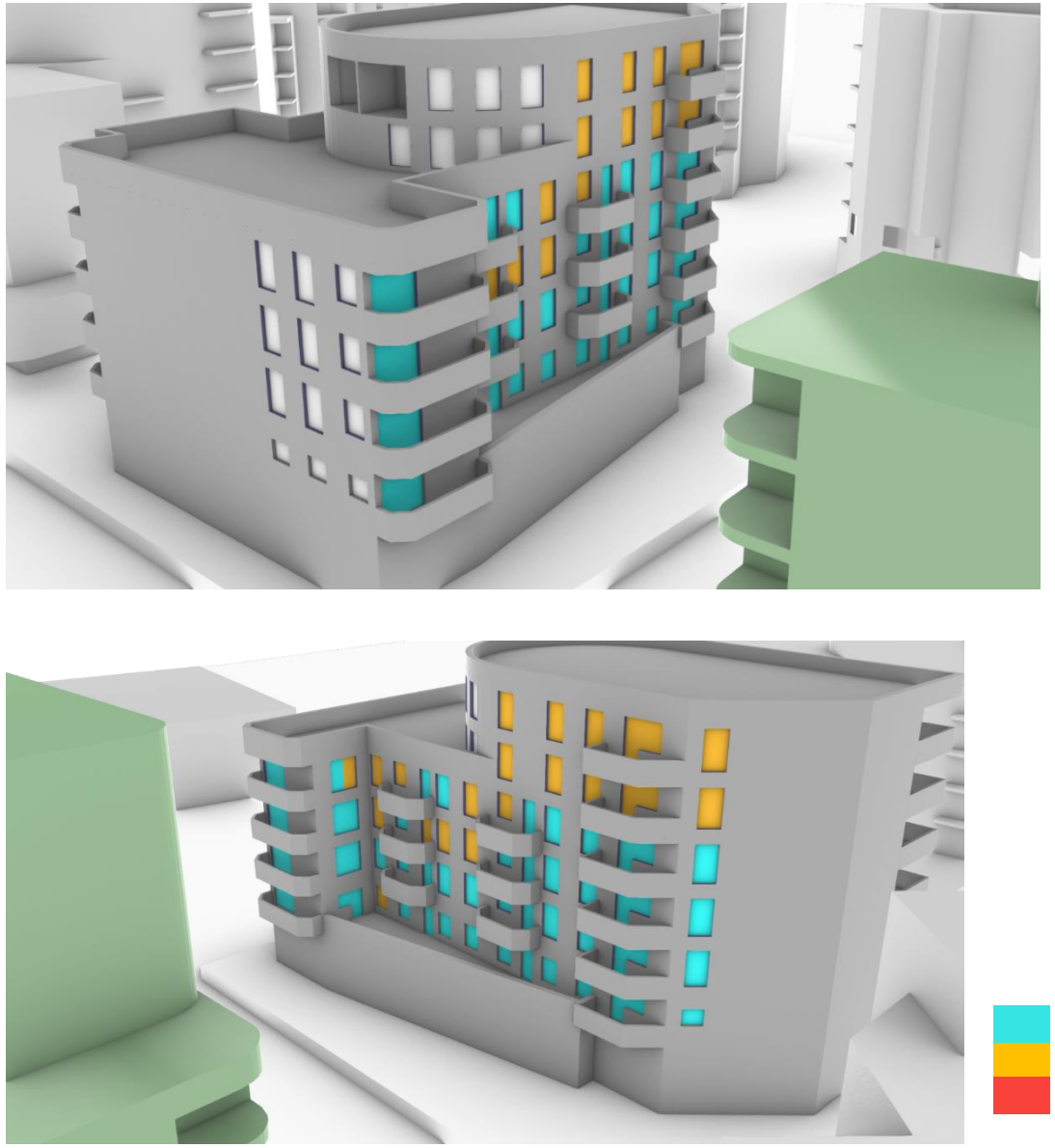


Assessment Results – Sunlight (APSH)

The sunlight assessment considered all windows orientated 90 deg. of due south, as per the guidance. Accordingly, a total of 80 windows were selected for assessment.

The image in Figure 17 shows the Annual Probable Sunlight Hours (APSH) results for all the assessed windows. The results show that all the windows comply with the APSH criteria, with some windows benefiting from a gain in the total sun hours received. These are cases when the massing, shape and position of the proposed development is such that some windows of the existing Block H development would receive a greater level of sunlight than they would, had the proposed scheme been a mirror image of Block H.

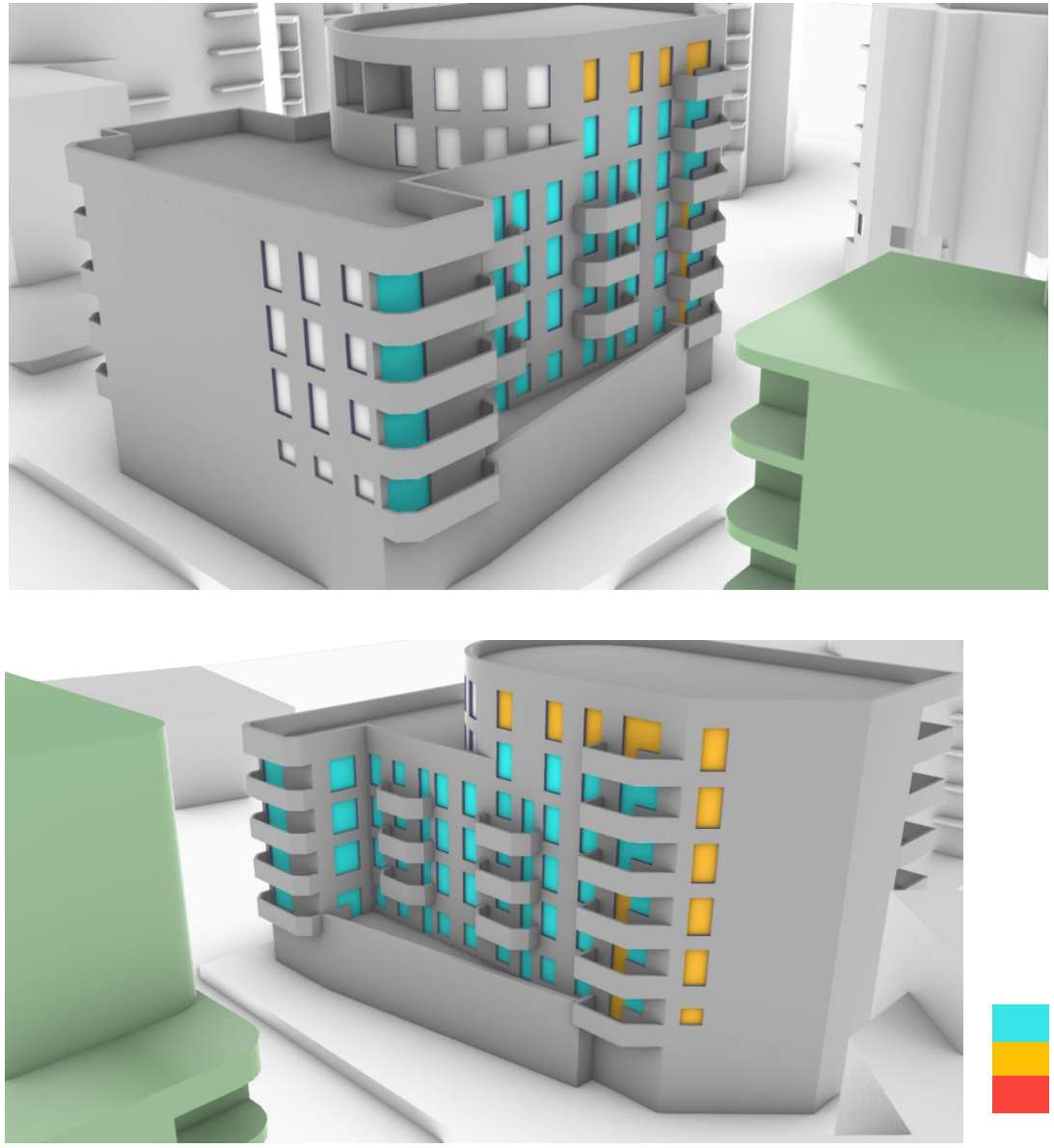
Figure 17 – Annual Probable Sunlight Hours – Impact results



Assessment Results – Sunlight (WPSH)

The images in Figure 18 show the Winter Probable Sunlight Hours (WPSH) results for the assessed windows. The results show that all the windows comply with the WPSH criteria, with some windows benefiting from a gain in the total sun hours received. These are cases when the massing, shape and position of the proposed development is such that some windows of the existing Block H development would receive a greater level of sunlight than they would, had the proposed scheme been a mirror image of Block H.

Figure 18 – Winter Probable Sunlight Hours – Impact results



Summary of Daylight Results

Vertical Sky Component (VSC)

Table 4 summarises the daylight results of all the 99 assessed windows (1st – 6th floor). The results show that all the windows comply with the VSC criteria with approximately 68% of them experiencing improvement in their VSC values.

Therefore, the impact of the proposed development on the VSC of the Free Wharf Block H building is considered to range between negligible beneficial, compared to the hypothetical Mirror Baseline Scenario.

Table 4: Results Summary – Daylight (VSC)

Property	Number of Windows Tested	Windows that meet BRE Guidelines		Windows that improved from the baseline	
		No.	%	No.	%
Free Wharf - H	99	99	100%	67	1
Total	**99**	**99**	**100%**	**67**	**68%**

Daylight Distribution (No-Sly Line) First Floor

The assessment was carried out for all floors within Block H within the rooms facing the proposed development site. The assessment was undertaken both for the baseline and the proposed scenarios and the ratio of impact derived, in accordance with the guidelines. The full set of results are summarised in Table 5. The table show the DD results for both the Mirror Baseline Scenario (Referred to as 'Existing') and the Proposed Scenario for the first-floor spaces.

Table 5: Daylight Distribution Results - First Floor – Mirror Baseline vs Proposed Scenario

Floor Ref.	Room Ref	Room Use	Room Area	Lit Area Existing	Lit Area Proposed	Ratio	Meets BRE Criteria
Free Wharf - H							
First	R1	LKD	28.10	15.9	17.8	1.12	YES
				56.8%	63.5%		
	R2	Bedroom	10.11	6.5	7.5	1.15	YES
				64.7%	74.4%		
	R3	LKD	23.15	8.2	11.6	1.42	YES
				35.4%	50.3%		
	R4	Bedroom	9.25	3.3	4.3	1.30	YES
				36.4%	47.5%		
	R5	Bedroom	11.25	4.6	5.6	1.21	YES
				41.6%	50.3%		
	R6	LKD	21.78	9.6	13.7	1.43	YES
				44.0%	62.9%		
	R7	Bedroom	12.62	4.2	6.7	1.60	YES
				33.2%	53.1%		
	R8	Bedroom	11.87	4.7	5.8	1.24	YES
				39.9%	49.3%		
	R9	LKD	33.22	32.7	32.7	1.00	YES
				98.6%	98.6%		

The DD values in the Proposed Scenario show no impact on the sky view of the rooms compared to the Mirror Baseline Scenario. Moreover, the majority of the rooms see improvement in the portion of the area with possible view to the sky.

Summary of Daylight Results (Cont…)

Daylight Distribution (No-Sly Line) Sixth Floor

Table 6 shows the DD results for both the Mirror Baseline Scenario (Referred to as 'Existing') and the Proposed Scenario, for the 6th floor.

The Daylight Distribution DD values in the Proposed Scenario show a negligible impact on the sky view of the rooms compared to the Mirror Baseline Scenario, as the ratio of impact for all the rooms is 1.

Daylight Distribution (DD) – Results Summary All Floors

Table 7 presents a summary of the daylight distribution outcomes for all assessed rooms on all floors.

It shows that all 46 spaces either maintain sky view areas unchanged from the baseline values and in several cases, they indicate improvements.

The daylight criteria also requires that at least one main window of the assessed rooms meet the VSC criteria. The VSC assessment, as discussed before, showed that all the windows comply with the criteria. Therefore, all the tested rooms comply with the BRE daylight criteria, with impacts ranging from negligible to beneficial.

This indicates that the proposed Kwik-Fit development has a lesser impact on daylight than a hypothetical mirrored Block-H building would have.

Table 6: Daylight Distribution Results - Sixth Floor – Mirror Baseline vs Proposed Scenario

Floor Ref.	Room Ref	Room Use	Room Area	Lit Area Existing	Lit Area Proposed	Ratio	Meets BRE Criteria
Free Wharf - H							
Sixth	R1	LKD	28.10	26.6	26.6	1.00	YES
				94.8%	94.8%		
	R2	Bedroom	10.12	9.8	9.8	1.00	YES
				96.1%	96.9%		
	R3	Bedroom	11.80	11.6	11.6	1.00	YES
				98.3%	98.3%		
	R4	Bedroom	11.15	10.4	10.4	1.00	YES
				93.3%	93.3%		
	R5	LKD	33.75	33.5	33.5	1.00	YES
				99.4%	99.4%		

Table 7: Daylight Distribution Summary for all the assessed rooms

Property	Number of Rooms Tested	Rooms that meet BRE Guidelines		Rooms that Improve from the baseline	
		No.	%	No.	%
Free Wharf - H	46	46	100%	17	0
Total	**46**	**46**	**100%**	**17**	**37%**

Summary of Sunlight Results

Tables 8 summarises the sunlight results of all the 99 assessed windows on all floors (1st – 6th floor). The results show that all the windows comply with the sunlight (PSH) criteria with approximately 64% of the windows with south orientation experiencing improvement in the total PSH values.

Therefore, the impact of the proposed development on the sunlight of the Free Wharf Block H building ranges from negligible to beneficial, compared to the hypothetical Mirror Baseline Scenario.

Table 8: Results Summary – Sunlight (PSH)

Property	Number of Windows Tested	APSH & WPSH				
		Windows that meet BRE Guidelines		No. of Windows Experiencing Adverse Impacts	Windows that improve from baseline	
		No.	%		No.	%
Free Wharf - H	80	80	100%	0	51	64%
Total	**80**	**80**	**100%**	**0**	**51**	**64%**

Conclusions

The assessment reviewed the daylight and sunlight impacts of the proposed Kwik-Fit development on the neighbouring Free Wharf Block-H building (1st–6th floors), using BRE and BS EN 17037:2021 guidance. Because Block-H is very close to the site boundary—and therefore receives unusually high existing light levels—a Mirror Baseline Scenario was used for comparison, as recommended by BRE.

Daylight (VSC & Daylight Distribution)

- All 99 assessed windows meet the Vertical Sky Component (VSC) criteria.
- Around 68% of windows show improved VSC values compared to the Mirror Baseline Scenario.

Daylight Distribution (DD) results for the 1st and 6th floors show:

- No adverse impact on sky visibility.
- Many rooms experience improvements in sky view areas.
- Overall, all 46 assessed rooms comply with BRE criteria, with impacts ranging from negligible to beneficial.

Sunlight (Annual & Winter Probable Sunlight Hours)

- 80 south-facing windows were assessed for sunlight.
- All windows comply with both Annual Probable Sunlight Hours (APSH) and Winter Probable Sunlight Hours (WPSH) criteria.
- Some windows benefit from increased sunlight levels, again due to the proposed development's massing being more favourable than the mirrored Block-H scenario.
- About 64% of south-facing windows show improved sunlight levels.

Overall Conclusion

Across all daylight and sunlight metrics (VSC, DD, APSH, WPSH), every assessed window and room complies with BRE criteria, and many experience slight improvements.

Therefore, the proposed Kwik-Fit development would have a negligible—or even beneficial—impact on the daylight and sunlight received by Free Wharf Block-H when compared to the hypothetical Mirror Baseline Scenario.

The scheme is therefore considered compliant with BRE guidelines.

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