



DAYLIGHT SUNLIGHT

**Crown Street Phase 3 and Plot D,
Great Jackson Street, Manchester**

Renaker Build Limited

29 January 2024

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1 EXECUTIVE SUMMARY

GIA have prepared a non-technical summary of the daylight and sunlight ES Chapter prepared in respect of Crown Street Phase 3 & Plot D, Great Jackson Street, Manchester.

- 1.1 GIA have been instructed by Renaker Build Ltd to provide daylight and sunlight advice in relation to the proposed development known as Crown Street Phase 3 and Plot D, Great Jackson Street, Manchester.
- 1.2 The technical analysis has been considered by reference to the criteria and methodology within the Building Research Establishment Guidance (BR209, 2022) which when published, recognised that it *"is advisory and the numerical target values within it may be varied to meet the needs of the development and its location"*.
- 1.3 This document aims to provide a non-technical summary of the relevant daylight and sunlight assessments and the impacts on the surrounding residential properties that have been assessed. This document should be read in conjunction with the full discussion of results set out in the daylight and sunlight ES Chapter and submitted alongside application references 137226/ FUL and 137227/ FUL.
- 1.4 The approach to be taken to daylight and sunlight issues has been considered carefully by a number of recent appeal decisions from the Inspectorate. A two-stage process is to be adopted. This was examined more recently at the appeal at Goldsworth Road, Woking, with the Inspector fully endorsing the two stage approach (PINS Ref: APP/A3655/W/21/3276474) which stems from the High Court decision on the application of Melanie Rainbird and The Council of the London Borough of Tower Hamlets.
- 1.5 It is inevitable when constructing buildings in an urban environment that alterations in daylight and sunlight to surrounding properties can occur. It is well established and accepted that the BRE Guidelines, which set out the numerical benchmark for daylight and sunlight assessments, are purely advisory and are predicated on a relatively low-rise suburban environment.
- 1.6 In areas of increased density such as Great Jackson Street, it is expected that there will be deviations from the published target criteria, but it does not mean that they are not acceptable in context to the area.
- 1.7 This is acknowledged in the Manchester Core Strategy 2012-2027, which states:

"City Centre development will generally be high-density. It is a location where land should be used to its maximum efficiency. The appropriate scale, massing and height of development in the City Centre will significantly exceed what is appropriate elsewhere in the City."
- 1.8 It would therefore be unrealistic for the surrounding residential properties to expect to maintain similar levels of daylight as those currently experienced, given that the site is underutilised with only very low structures. Furthermore, as the site has been proposed for redevelopment in the Great Jackson Street Strategic Regeneration Framework for several years, surrounding residents will have an expectation of high-density development coming forward, and an understanding that the current daylight conditions were never intended to be permanent.
- 1.9 It is also important to note that there are many other design factors considered by the project team when considering the scale, massing and design of the buildings.
- 1.10 The site will bring a range of significant benefits to the local area. As such, the alterations in daylight and sunlight should not be considered in isolation and weight should be given to the demands of planning policy/guidance at a national, regional and local level whilst considering what is contextually appropriate and acceptable for a site of this nature in Manchester city centre.
- 1.11 As such, it is our opinion that daylight and sunlight impacts to surrounding properties will be acceptable in context, when considered against the flexibility with which the BRE guide is intended to be used, aspirations for redevelopment in the area as set out in the SRF, and acknowledgement that lower levels of daylight and sunlight are to be anticipated in dense, urban areas.

1.12 The tables below show a breakdown of the Vertical Sky Component (VSC), No Sky Line (NSL) and Annual Probable Sunlight Hours (APSH) results for the surrounding properties with the proposed development in place.

1.13 VSC is a measure of visible sky from the outside face of a window, which is expressed as a percentage. In order to meet the VSC target, a window should achieve 27% VSC or not be reduced by greater than 0.8 times its former value.

1.14 NSL is a measure of where the sky is visible from within a room. In order to meet the NSL target, the sky should be visible from 80% of a room's area or not be reduced by greater than 0.8 times its former value.

1.15 APSH is a measure of the amount of sun spots (100) that are visible in the sky, expressed as a percentage. In order to meet the APSH target, 25% of sun spots should be visible annually, 5% of spots should be visible in winter, and neither should be reduced by greater than 0.8 times their former value.

1.16 The below figures are the same as those presented in the ES Chapter, and the scope of surrounding properties was agreed with Manchester City Council as part of the EIA Scoping process.

1.17 The results summarised below are discussed in more detail in Section 3 of this report.

	VERTICAL SKY COMPONENT			NO SKY LINE		
	WINDOW			ROOM		
	TOTAL	PASS	COMPLIANCE (%)	TOTAL	PASS	COMPLIANCE (%)
Hill Quays	368	237	64.4%	157	121	77.1%
Lumiere	159	159	100.0%	116	109	94.0%
Deansgate South Tower	1810	1300	71.8%	884	816	92.3%
Deansgate East Tower	1378	1061	77.0%	659	550	83.5%
Deansgate West Tower	1019	418	41.0%	549	451	82.1%
Deansgate North Tower	978	285	29.1%	463	274	59.2%
City South Block C	156	137	87.8%	128	102	79.7%
City South Block A	20	20	100.0%	20	16	80.0%
Deansgate Quay	62	33	53.2%	43	17	39.5%
Castle Wharf	455	285	62.6%	278	176	63.3%
Bridgewater House	139	58	41.7%	94	54	57.4%
Castlegate	139	43	30.9%	100	50	50.0%
Citygate A	120	120	100.0%	77	77	100.0%
Citygate B	57	57	100.0%	39	39	100.0%
Castle Quay	153	127	83.0%	78	72	92.3%
Blade C4	470	342	72.8%	282	282	100.0%
Cylinder	864	121	14.0%	384	281	73.2%
Elizabeth Tower C1	327	71	21.7%	145	145	100.0%
School House Jackson Crescent	18	6	33.3%	18	17	94.4%
Elizabeth Tower C2	707	648	91.7%	393	354	90.1%
Plot F Block 2	990	939	94.8%	690	673	97.5%
Plot F Block 1	1412	349	24.7%	1012	835	82.5%
Plot G Block 2	2229	2226	99.9%	680	661	97.2%
Plot G Block 1	2165	1635	75.5%	675	618	91.6%
Deansgate South	204	0	0.0%	186	15	8.1%
Crown Street Primary School	48	26	54.2%	16	15	93.8%

Table 01: Summary VSC & NSL Results

	ANNUAL PROBABLE SUNLIGHT HOURS		
	ROOM		
	TOTAL	PASS	COMPLIANCE (%)
Hill Quays	87	87	100.0%
Lumiere	56	56	100.0%
Deansgate South Tower	338	303	89.6%
Deansgate East Tower	206	161	78.2%
Deansgate West Tower	187	72	38.5%
Deansgate North Tower	182	5	2.7%
City South Block C	5	5	100.0%
City South Block A	10	10	100.0%
Deansgate Quay	24	17	70.8%
Castle Wharf	100	82	82.0%
Bridgewater House	25	3	12.0%
Castlegate	7	3	42.9%
Citygate A	-	-	-
Citygate B	-	-	-
Castle Quay	12	10	83.3%
Blade C4	47	47	100.0%
Cylinder	96	96	100.0%
Elizabeth Tower C1	62	62	100.0%
School House Jackson Crescent	-	-	-
Elizabeth Tower C2	133	133	100.0%
Plot F Block 2	184	184	100.0%
Plot F Block 1	184	184	100.0%
Plot G Block 2	181	181	100.0%
Plot G Block 1	4	4	100.0%
Deansgate South	21	21	100.0%
Crown Street Primary School	15	12	80.0%

Table 02: Summary APSH Results

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2 SUMMARY OF BRE GUIDELINES 2022

BUILDING RESEARCH ESTABLISHMENT: SITE LAYOUT PLANNING FOR DAYLIGHT AND SUNLIGHT: A GUIDE TO GOOD PRACTICE 3RD EDITION (2022) (BRE GUIDELINES)

- 2.1 The following section details the numerical guidelines for assessing daylight and sunlight outlined within section 2.2.2 (and figure 20) and 3.2.13 of the BRE Guidelines 2022. We have provided some observations throughout this section which we believe are important to consider when using the BRE Guidelines to calculate changes in daylight and sunlight condition. In doing so, we will illustrate that while the BRE Guidelines offer a starting point to assess daylight and sunlight impacts, they do not provide an illustration of the “real life” light condition.
- 2.2 The BRE Guidelines provide two methodologies for daylight assessment of impacts to existing properties, namely;

The Vertical Sky Component (VSC); and

The No Sky Line (NSL).
- 2.3 The BRE Guidelines provides one method of sunlight assessment, the Annual Probable Sunlight Hours (APSH).

Vertical Sky Component (VSC)

2.4 The Vertical Sky Component (VSC) method is described in the BRE Guidelines as;

“This is a measure of the amount of light reaching a window. It is the ratio of that part of illuminance, at a point on a given vertical plane, that is received directly from a CIE standard overcast sky, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky. Usually the ‘given vertical plane’ is the outside of a window wall. The VSC does not include reflected light, either from the ground or from other buildings.”¹

2.5 In simple terms, the VSC calculates the skylight falling on a vertical plane (i.e. window) in the circumstance of an overcast sky (CIE standard). The VSC is quantified as a percentage of the amount of light reaching a window straight from the sky.

2.6 The strict national numerical value target “ideal” for VSC is 27%. The BRE Guidelines advise that upon implementation of a development, a window should retain a VSC value of 27% or at least 0.8 of its former value (i.e. no more than a 20% change).²

2.7 The image in Figure 01 indicatively illustrates the VSC analysis. The images shows the view from a nearby window and the VSC figures relate to this window. The existing buildings are shown in white with the proposed scheme in green/teal.

2.8 This form of assessment does not take account of context or detailed matters such as window size, room use, room size, window number or dual aspect rooms. This assessment also assumes that all obstructions to the sky are 100% non-reflective.

1 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 6

2 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, para 2.2.7 and 2.2.23

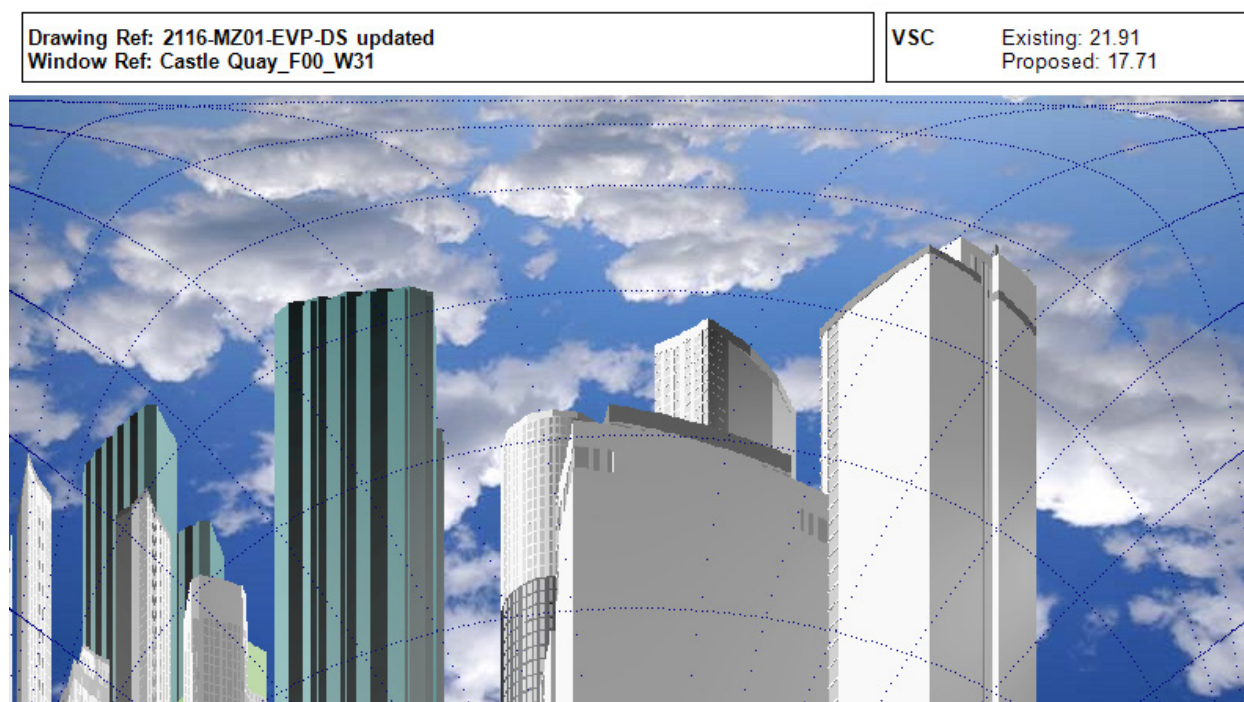


Figure 01: Vertical Sky Component (VSC) indicative analysis

- 2.9 In the images below we provide an example of how the VSC methodology does not necessarily paint an accurate picture of the experiential change in daylight condition within a room, as it only considers the visible sky from the outside face of a window. It should therefore be reviewed in tandem with the NSL assessment. Figure 02 shows three windows of different size serving three rooms of identical size. In each case, the windows will have equal VSC values given that VSC is a measurement of the amount of sky visible from the centre point of a window.

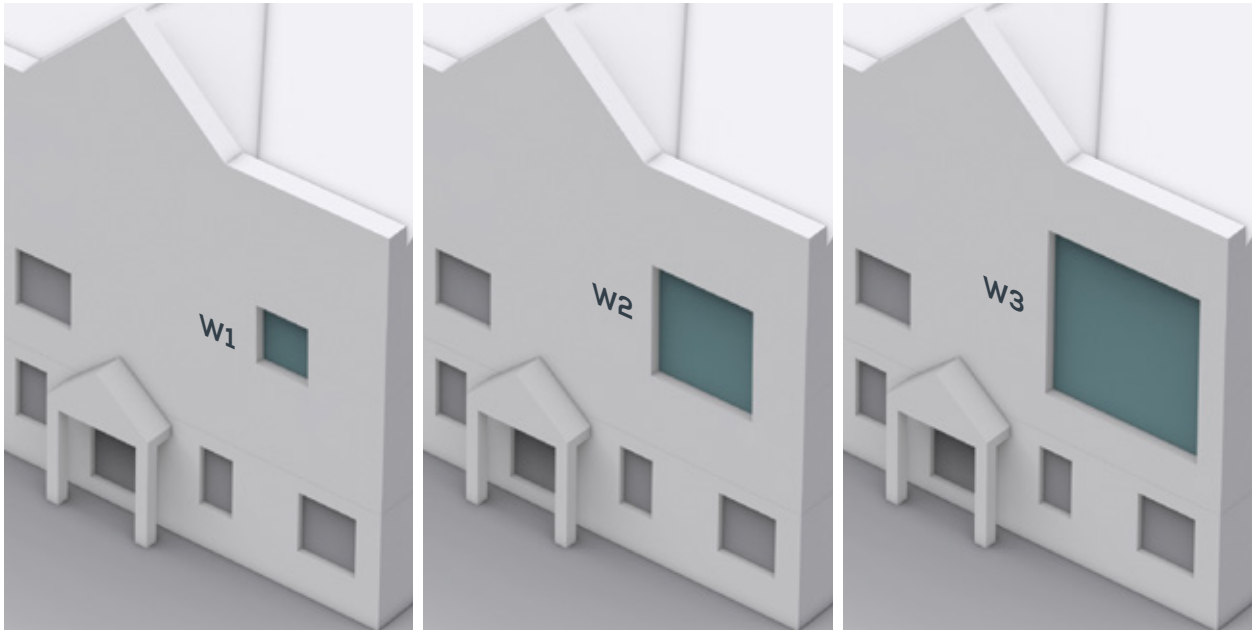


Figure 02: Vertical Sky Component (VSC) indicative analysis

- 2.10 The three rooms will experience a very different daylight environment because of the varying window sizes serving each one. Figure 03 depicts how window size affects the distribution of daylight within a room despite each window having an identical VSC value. This highlights that while the VSC methodology is a reasonable starting point to assess daylight, it does not accurately depict the change likely to be experienced with the room.
- 2.11 The BRE Guidelines state that a VSC of 27% VSC or more should mean that enough skylight is reaching the window of an existing building and that if windows retain at least 0.8 times its former value, occupants would not notice the reduction in skylight.

DAYLIGHT FACTOR STUDIES FOR SAMPLE ROOMS WITH SAME VSC

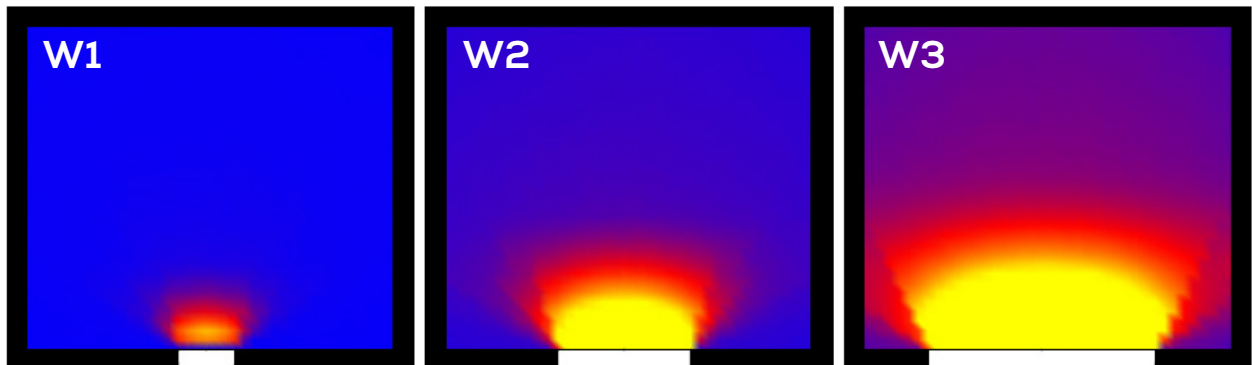


Figure 03: Comparative radiance analysis

- 2.12 As an example, if a window with a retained VSC value of 27% experiences a reduction of 20% thus retaining 21.6% VSC (see Figure 04), the impact would meet the recommendations of the BRE Guidelines by reference to paragraph 2.2.7. This indicates logically that a retained value of 21.6% should be acceptable in principle. Of course, in urban areas, the threshold of what might be acceptable must for the reasons identified above be much more flexible.

- 2.13 If, however, a window has a higher existing value than 27% and it experiences a greater than 20% reduction (which still provides a retained value of 21.7% VSC) the reduction is technically outside of the recommendations of the BRE Guidelines despite an identical retained level of VSC (see Figure 04).
- 2.14 This was explored at the public inquiry for the redevelopment of Hertford Gasworks (PINS Ref: APP/J1915/W/19/3234842) in which the Inspector considered that a minimum value of 21.6% VSC would be acceptable:
- 2.15 “The appellant took this further and adopted (with explanation) an approach with a retained VSC of 21.6% as the minimum level. This was specifically accepted by the Council’s witness in cross-examination. On that basis, there would be only a very small number of windows falling below that level, and those which did fail would only do so by a narrow margin.”³
- 2.16 In this case, the Inspector considered that a minimum VSC value of 21.6% would be appropriate in the county town of Hertford. It would follow that the expectation for dense urban areas and Opportunity Areas would fall below this minimum VSC value.

3 PINS Ref: APP/J1915/W/19/3234842 (para 57)

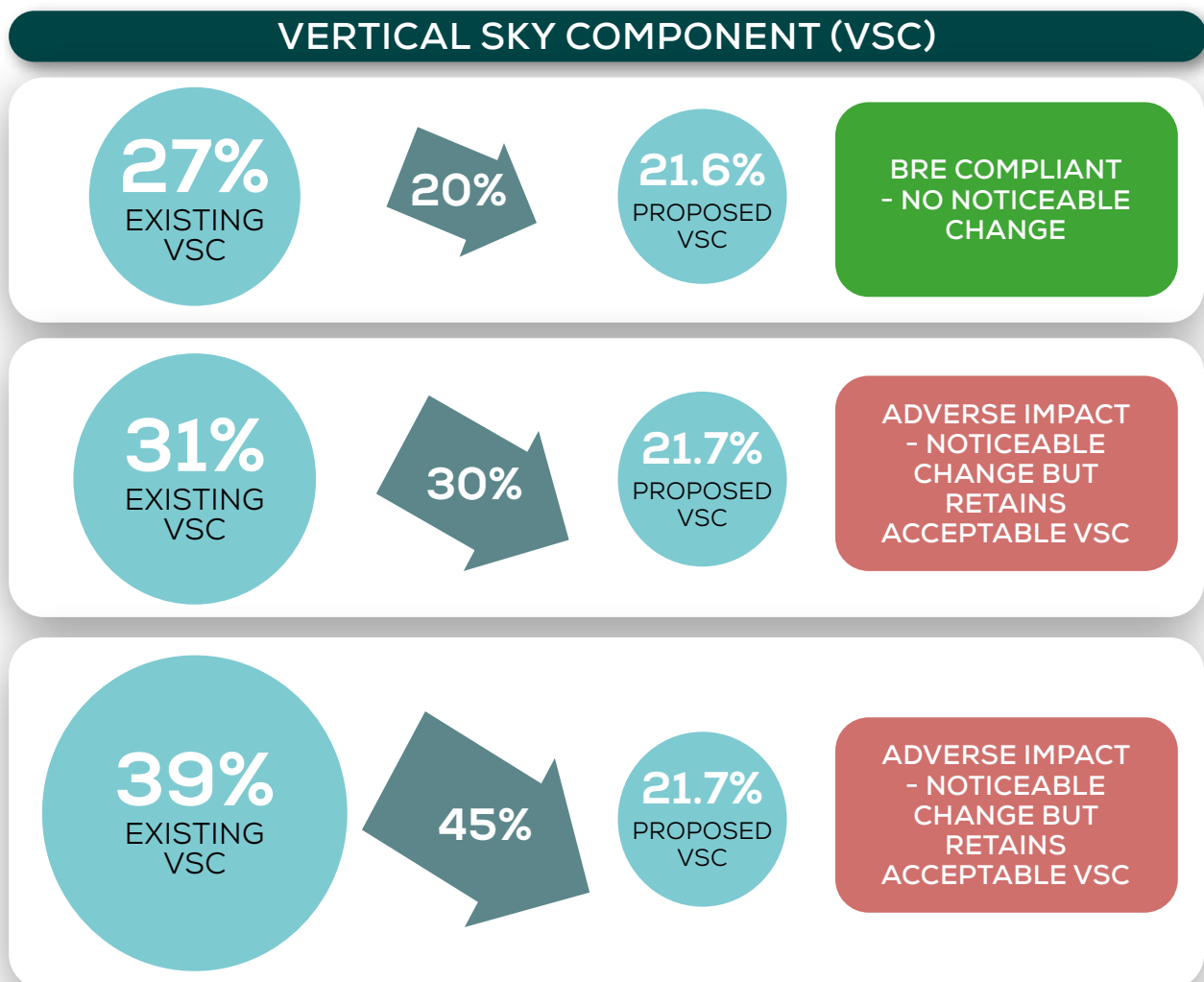


Figure 04: Percentage reduction in VSC and retained VSC values

No Sky Line (NSL)

- 2.17 The No Sky Line (NSL) or Daylight Distribution (DD) method is described as *"the outline on the working plane of the area from which no sky can be seen."*⁴
- 2.18 In summary, the NSL calculation assesses where the sky can and cannot be seen from inside a room at the working plane, *"in houses the working plane is assumed to be horizontal and 0.85m high"*⁵.
- 2.19 The Guidelines state that *"Where room layouts are known (for example if they are available on the local authority's planning portal), the impact on the daylighting distribution in the existing building should be found by plotting the no sky line in each of the main rooms"*⁶. While the NSL calculation considers the size and configuration of a room, it is not generally recommended where room layouts are unknown. It is industry practice, however, to assume room sizes and configurations in order to calculate any movement of the no sky line.
- 2.20 The change in position of the NSL between the existing and proposed scenario is then calculated. This change is illustrated on a contour plot, an example of which can be found in Figure 05. This shows the areas within the room from where the sky was previously visible (orange and grey), and the areas where the sky is visible with the proposed development in place (grey only). The change between the two represents the reduction in NSL.

- 4 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 6
- 5 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 16 para 2.2.10
- 6 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 15 para 2.2.10

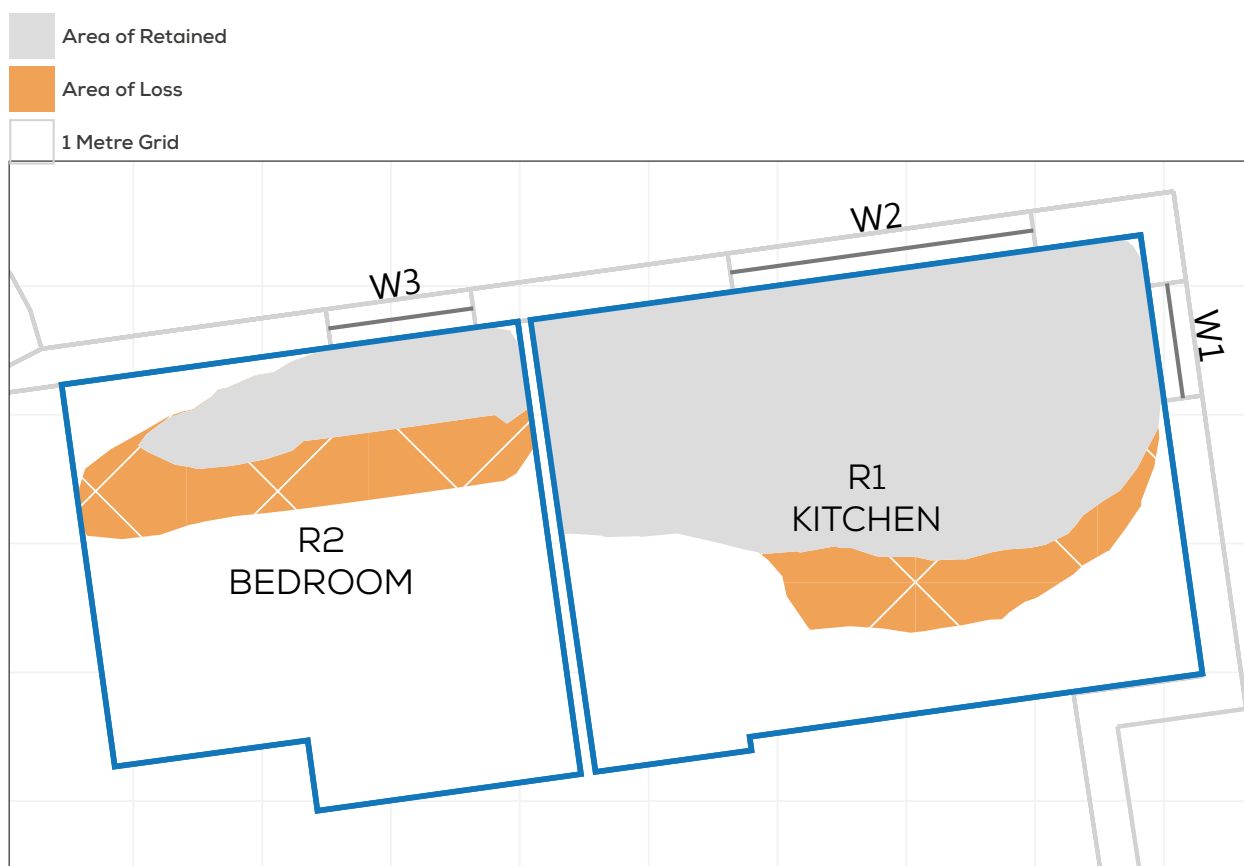


Figure 05: Example NSL Contour Plot

2.21 The BRE Guidelines state at paragraph 2.2.11 that;

"If, following construction of a new development, the no sky line moves so that the area of the existing room, which does receive direct skylight, is reduced to less than 0.8 times its former value this will be noticeable to the occupants, and more of the room will appear poorly lit. This is also true if the no sky line encroaches on key areas like kitchen sinks and worktops."⁷

2.22 In simple terms this calculation plots where the sky can and cannot be seen within a room at table top height. If the NSL experiences more than a 20% change from the existing situation then, in accordance with the strict application of the national numerical values, the change in daylight would be noticeable to the occupants.

2.23 This assessment takes the number and size of windows serving a room into account however, there is no qualitative assessment of the light in the room, only where sky can or cannot be seen.

2.24 Figure 06 articulates that even a minor single storey extension may result in a significant reduction in NSL, but it does not accurately depict the change in light likely to be experienced within the room.

7 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 16 para 2.2.11

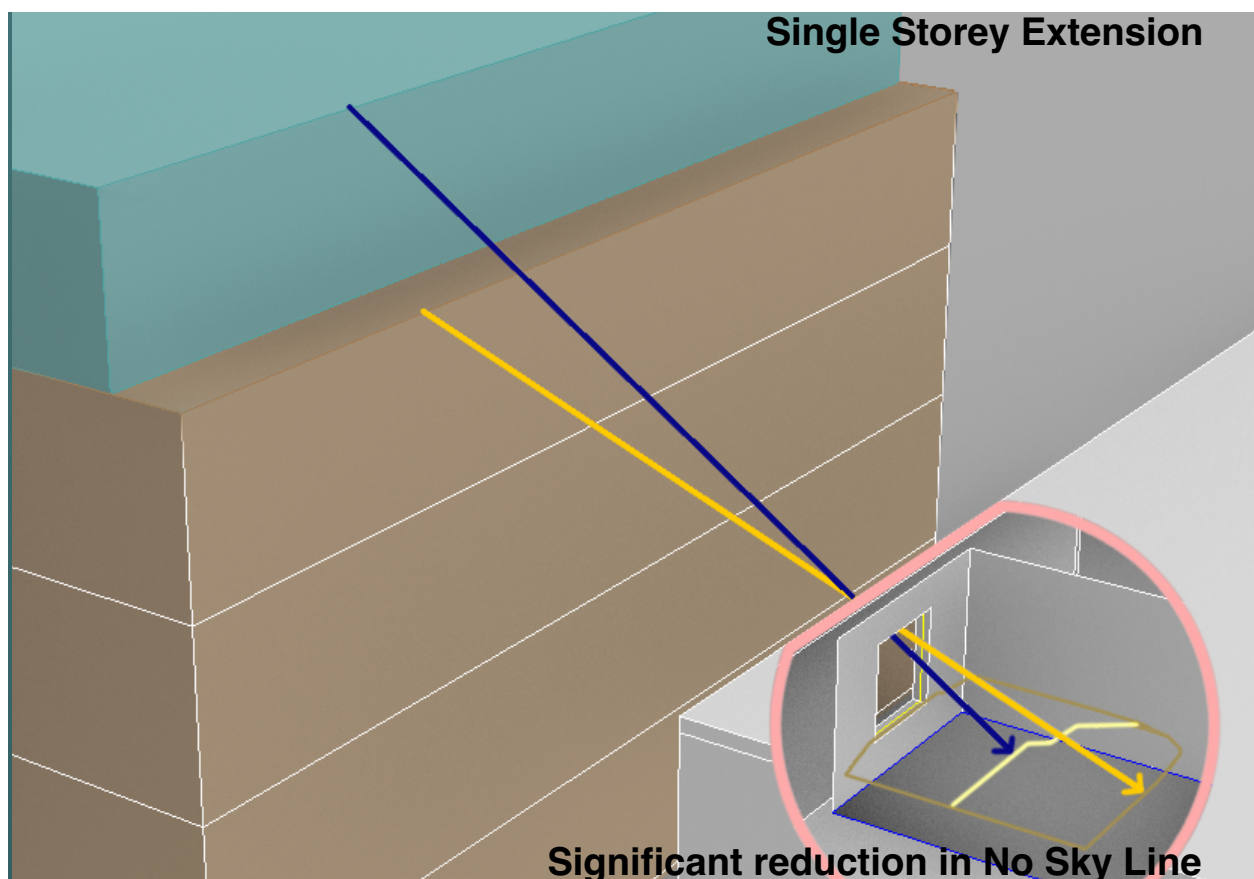


Figure 06: Example of movement of NSL

Decision Chart (Figure 20 of the BRE Guide)

- 2.25 The flowchart in Figure 08⁸ illustrates the steps and criteria outlined within the BRE Guidelines to understand whether the daylighting (VSC and NSL) has been significantly affected.
- 2.26 Almost invariably when this methodology is applied in a town centre or more generally in an urban context the flowchart will point to “*daylight likely to be significantly affected*” when the real-life experiential change in light may not appear to be even noticeably affected.
- 2.27 The section at Figure 07⁹ provides an example of the angle measurement subtended by a new development (referred to in the second box on the adjacent flow chart). This is the starting point provided within the BRE Guidelines from which to assess whether daylighting is likely to be significantly affected by new development. It is clear from the image that this principle has not been developed with urban town centre locations in mind.¹⁰

- 8 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, Figure 20 p. 18
- 9 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, Figure 14 p. 15
- 10 Appeal Ref: APP/E5900/W/17/3171437 para 108

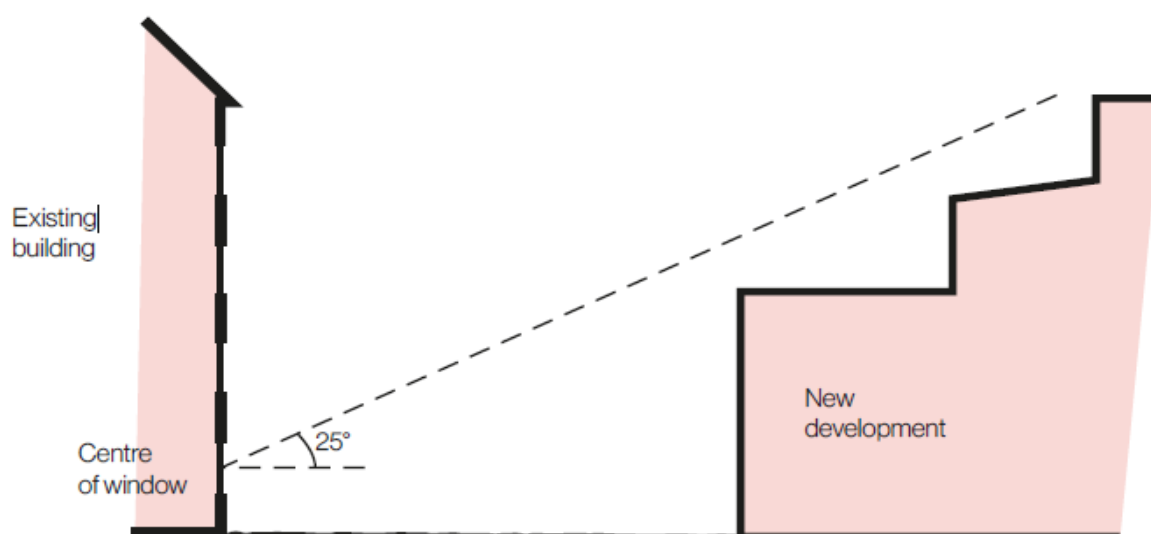


Figure 07: BRE VSC diagram (Figure 14): Section in plane perpendicular to the affected window wall

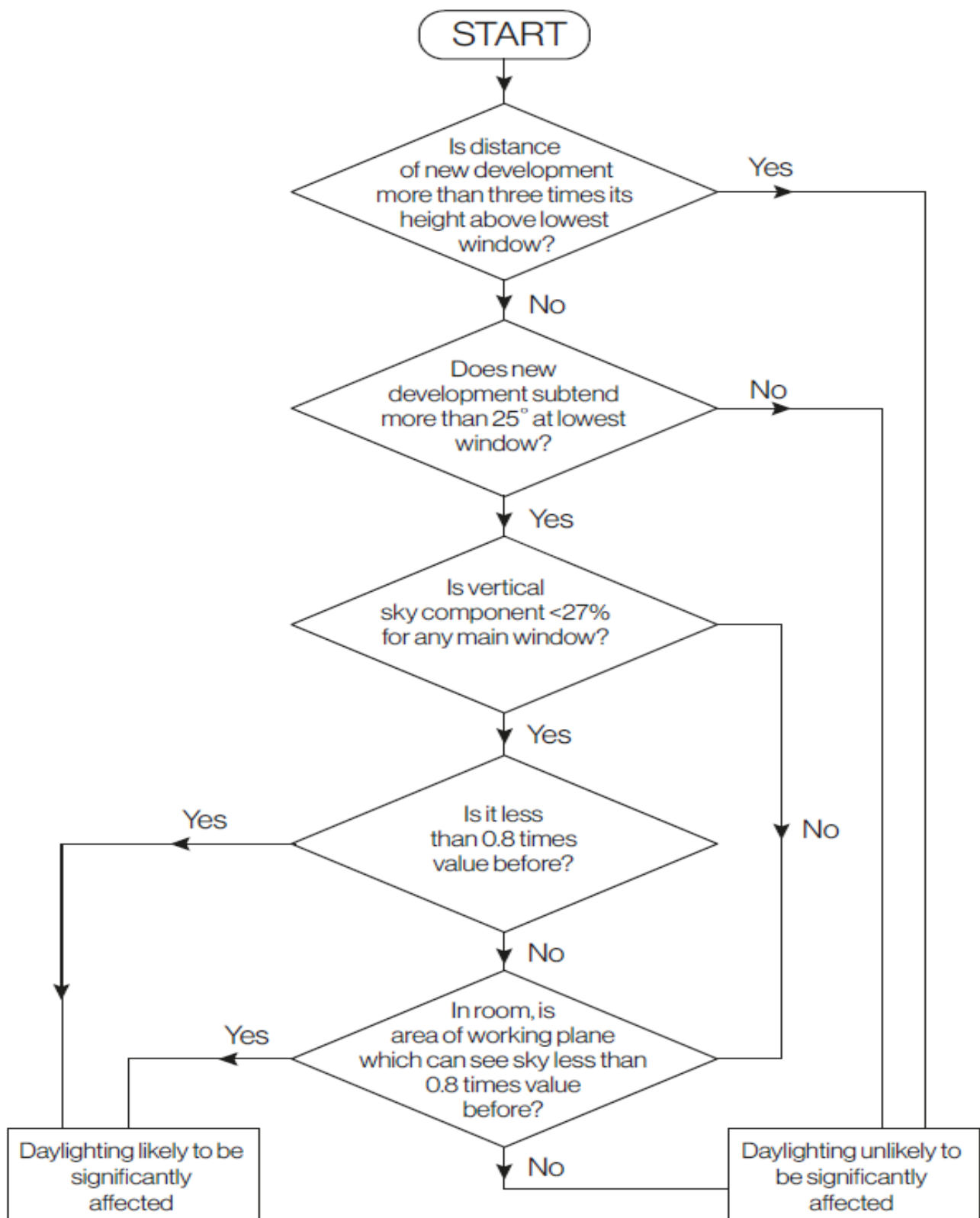


Figure 08: BRE Decision Chart (Figure 20): *diffuse daylight in existing buildings.*

Annual Probable Sunlight Hours (APSH)

- 2.28 Sunlight is measured using a sun indicator which contains 100 spots, each representing 1% of Annual Probable Sunlight Hours (APSH).
- 2.29 Where no obstruction exists the total annual unobstructed total number of sunlight hours in Manchester is 1486 hours.
- 2.30 The number of spots is calculated for both the whole year and during the winter period (21st September to 21st March), prior to an obstruction and after the obstruction is put in place. This provides a percentage of APSH for each of the time periods for each window assessed.
- 2.31 The BRE Guidelines set out the overall methodology and criteria for the assessment of sunlight in Chapter 3. The BRE Guidelines state:
- “all main living rooms of dwellings...should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun.”¹¹
 - “If the main living room to a dwelling has a main window facing within 90° of due north, but a secondary window facing within 90° of due south, sunlight to the secondary window should be checked.”¹²
 - “If a room can receive more than one quarter of annual probable sunlight hours (APSH), including at least 5% of APSH in the winter months between 21 September and 21 March, then it should still receive enough sunlight.”¹³
 - “any reduction in sunlight access below this level should be kept to a minimum. If the available sunlight hours are both less than the amount above and less than 0.8 times their former value, either over the whole year or just during the winter months (21 September – 21 March), then the occupants of the existing building will notice the loss of sunlight; if the overall annual loss is greater than 4% of APSH, the room may appear colder and less cheerful and pleasant.”¹⁴
- 2.32 The BRE Guidelines provide that for existing buildings, the Sunlight to a window may be adversely affected if a point at the centre of a window receives:
- Less than 25% of the APSH during the whole year, of which 5% APSH must be in the winter period; and
 - Receives less than 0.8 times its former sunlight hours in either time period; and
 - Has a reduction in Sunlight for the whole year of more than 4% APSH.¹⁵

11 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 24 para 3.2.3

12 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 25 para 3.2.5

13 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 25 para 3.2.6

14 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 25 para 3.2.7

15 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 25 para 3.2.6

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- 2.33 In the images opposite, we have provided an example of how this is assessed through the practice of counting the sun spots.
- 2.34 In Figures 09 and 10, the number of spots is calculated for both the whole year and also during the winter period (21st September to 21st March) prior to an obstruction and after the obstruction is put in place.
- 2.35 The adjacent images show a view from the window of an adjacent building which has been assessed for sunlight. In this scenario, the proposed development will result in a good level of APSH (37% against the BRE's target of 25%), meaning 37% of sun spots which are visible from that window can be seen. It is only in the winter months where a transgression occurs because sun is lower in the sky. In this instance, 3% of sun spots that are visible in winter can be seen, against a BRE target of 5%. Despite good levels of retained sunlight throughout the year, the winter sunlight transgression results in a limited breach when strictly applying the methodology within the BRE Guidelines.
- 2.36 This test does not consider surrounding context or how sunlight is experienced in the remainder of the year.
- 2.37 In locations which have an urban character, it can be challenging to meet the target for sunlight within the BRE Guidelines.

Sun Analysis Key:

- Winter sun restricted by the existing buildings
- Summer sun restricted by the existing buildings
- No impact to Winter sun
- No impact to Summer sun
- Winter sun restricted by the Proposed Development
- Summer sun restricted by the Proposed Development

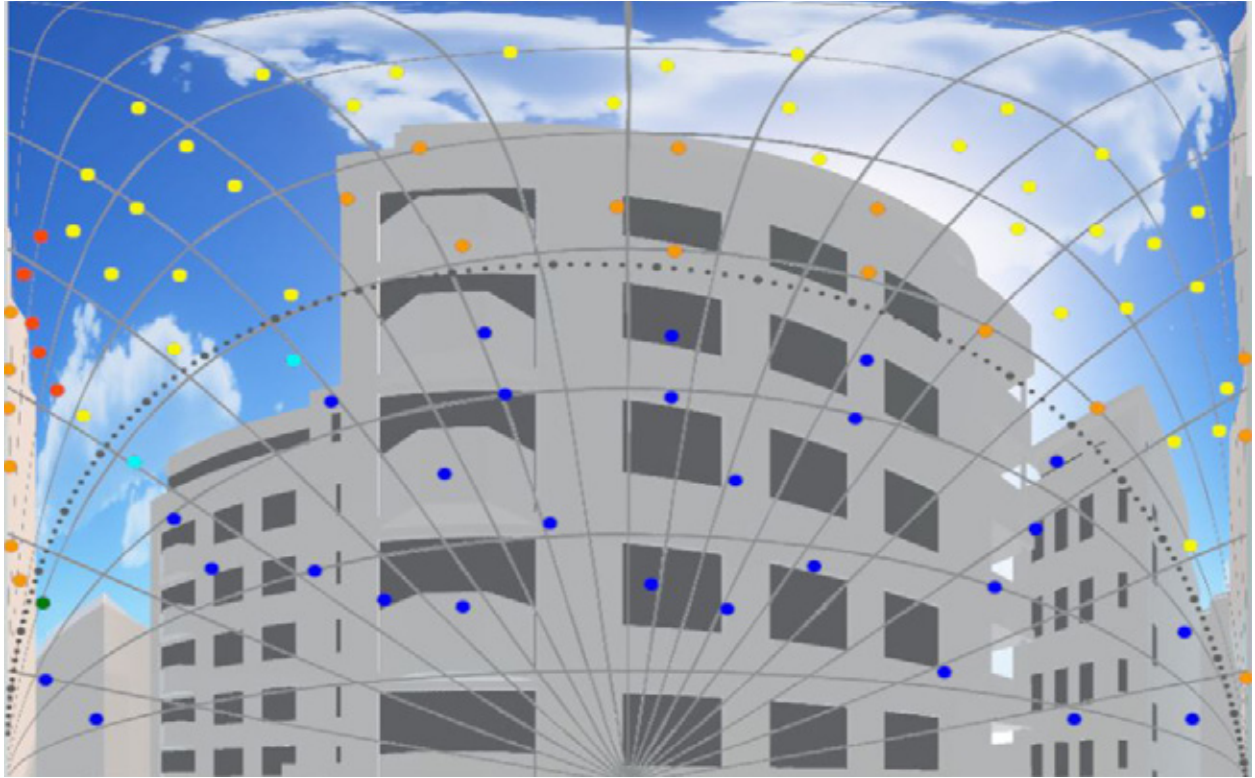


Figure 09: Existing APSH: 43% Existing WPSH: 3%

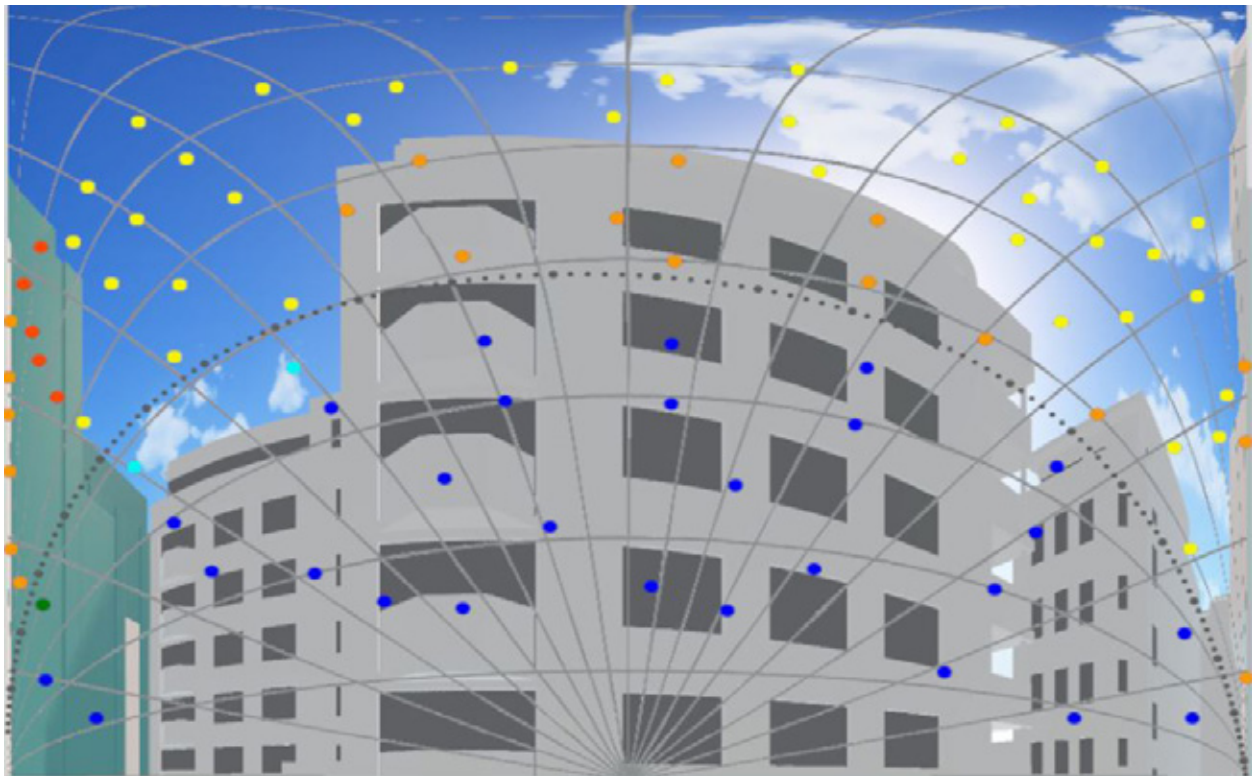


Figure 10: Proposed APSH 37% Proposed WPSH: 2%

BRE GUIDELINES: ADDITIONAL DAYLIGHT & SUNLIGHT CONSIDERATIONS

- 2.38 The BRE Guidelines note that the document is intended to be used in conjunction with the interior Daylight recommendations found within the British Standard EN 17037.
- 2.39 The BRE Guidelines also provide advice on site layout planning to determine the quality of daylight and sunlight within open spaces between buildings.
- 2.40 It is important to note, however, that this document is a guide and states that its aim *“is to help rather than constrain the designer”*¹⁶.
- 2.41 The BRE Guidelines provide advice, but also clearly state that it *“is not mandatory and this document should not be seen as an instrument of planning policy.”* The BRE Guidelines also acknowledge in its introduction that *“it is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location.”*
- 2.42 It is an inevitable consequence of the built-up urban environment that daylight and sunlight will be more limited in dense urban areas. It is well acknowledged that in such situations there may be many other conflicting and potentially more important planning and urban design matters to consider other than just the provision of ideal levels of daylight and sunlight.
- 2.43 The BRE Guidelines provide alternative assessments to understand the impact on a neighbouring property in such situations.

Setting Alternative Target Values for Skylight and Sunlight analysis

- 2.44 The BRE Guidelines dedicates a full appendix to setting alternative values and how they can be derived. F1 notes:
- 2.45 Sections 2.1, 2.2 and 2.3 give numerical target values in assessing how much light from the sky is blocked by obstructing buildings. These values are purely advisory and different targets may be used based on the special requirements of the proposed development or its location. Such alternative targets may be generated from the layout dimensions of existing development.¹⁷
- 2.46 Within this appendix, a table is provided which details how one could derive alternative VSC values. As is evident from paragraph F1, alternative values can be applied to the VSC, NSL and APSH studies.
- 2.47 Table F1 provides a method of deriving a VSC value based on an obstruction angle. Table F1 of the BRE Guidelines references the Equivalent VSCs, spacing-to-height ratios and boundary parameters corresponding to particular obstruction angles between rows of buildings.
- 2.48 Table F1 denotes that an obstruction angle of 25° equates to a VSC of 27%; to achieve a VSC value of 18%, the obstruction must subtend 40°.
- 2.49 This is a simple method that does not take account for the variation in height and distance of obstructions on an average streetscape.
- 2.50 On the basis of table F1, calculating the VSC, NSL and APSH values for an area to derive the appropriate alternative value is a more accurate process. This is also in line with the approach provided within Appendix F.

16 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 7 para 1.6

17 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 85 para F1

- 2.51 In recent years, Inspectors and other decision makers have observed that achieving the target level of VSC is challenging. Even in Woking, the satellite town of London, the Inspector who determined the Goldsworth Road appeal notes that:
- 2.52 “Retaining a VSC level of 27% in neighbouring properties is unrealistic; as has been recognised in many appeal decisions and other documents. Even retaining 20% VSC is considered, generally, to be reasonably good, and in urban areas retaining around mid-teen % VSC is considered to be acceptable.”¹⁸
- 2.53 In the determination of the Burgess Business Park appeal in Camberwell, the Inspector considered that:
- 2.54 “In terms of residual values, I do not consider that adopting a mid-teen approach to VSC would be appropriate as a test for acceptability for the reasons I have given above. Nevertheless, I accept that a VSC level of 27% may be hard to achieve and I consider that 20%, as discussed at the inquiry, would be a more appropriate yardstick to follow in this case.”¹⁹
- 2.55 The BRE Guidelines dedicates an appendix to considering alternative target values and thus accept that in certain circumstances, target levels of daylight and sunlight are not achievable or realistic.

Balconies and Projecting Wings

- 2.56 The BRE Guidelines recognise the burden that can arise from the presence of balconies or overhangs above windows, stating:
- “Existing windows with balconies above them typically receive less daylight. Because the balcony cuts out light from the top part of the sky, even a modest obstruction opposite may result in a large relative impact on the VSC, and on the area receiving direct skylight. One way to demonstrate this would be to carry out an additional calculation of the VSC and area receiving direct skylight, for both the existing and proposed situations, without the balcony in place. For example, if the proposed VSC with the balcony was under 0.80 times the existing value with the balcony, but the same ratio for the values without the balcony was well over 0.8, this would show that the presence of the balcony, rather than the size of the new obstruction, was the main factor in the relative loss of light.”²⁰*
- 2.57 This is taken further and the same logic is applied to the presence of projecting wings on existing buildings. The Guidelines state:
- “A larger relative reduction in VSC may also be unavoidable if the existing window has projecting wings on one or both sides of it, or is recessed into the building so that it is obstructed on both sides as well as above.”²¹*
- 2.58 Both statements recognise that the existing buildings can have features which restrict the receipt of daylight and sunlight to neighbouring windows.

18 PINS Ref: APP/A3655/W/21/3276474 para 35

19 PINS Ref: APP/A5840/W/19/3225548 para 445

20 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 16 para 2.2.13

21 Littlefair, P. (2022). Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice. Hertfordshire: HIS BRE Press, p 16 para 2.2.14

3 DAYLIGHT & SUNLIGHT IMPACTS TO NEIGHBOURING PROPERTIES

This section details the daylight and sunlight impacts in relation to the relevant properties neighbouring the Site. The methods set out here are the same as those in the submitted ES Chapter.

- 3.1 A three-dimensional computer model of the Site and surrounding properties was produced based on photogrammetry. Where available we have included floor plans of the relevant properties and this context model has been used to carry out the technical assessments. All relevant assumptions made in producing this model can be found in Appendix 01.
- 3.2 This assessment reviews the VSC for each of the surrounding properties as this is a consistent method of assessing daylight. Both NSL and APSH rely on the internal configuration of rooms, so VSC is the most appropriate method of assessment to use for the purposes of this report.

TWO-STAGE APPROACH

- 3.3 The impacts to relevant neighbouring properties have been considered in two stages:

Stage 1 - Is there a strict compliance with the BRE Guidelines?

- The national numerical assessments for daylight and sunlight as outlined in the BRE Guidelines are applied. Where properties, windows and/or rooms meet the recommendations of the BRE Guidelines, these are not discussed further.

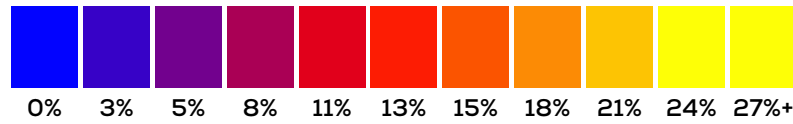
Stage 2 - Is there a satisfactory level of amenity for neighbouring occupiers?

- Where properties, windows and rooms do not meet the recommendations of the BRE Guidelines, wider material considerations are examined and applied, such as the location of the development, emerging height and density in the area, existing daylight levels, sensitivity of the receptor, etc.

RELEVANT SENSITIVE RECEPTORS

- 3.4 GIA have identified the following properties as relevant for daylight and sunlight assessment:
- Hill Quays
 - Lumiere
 - Deansgate Square
 - City South
 - Deansgate Quay
 - Castle Wharf
 - Castlegate
 - Citygate
 - Castle Quay
 - Blade
 - Three60
 - Elizabeth Tower
 - School House Jackson Crescent
 - Plot F Great Jackson Street
 - Plot G Great Jackson Street
 - Deansgate South
 - Bridgewater House
 - Crown Street Primary School
- 3.5 Citygate and Lumiere will fully comply with the relevant BRE target criteria with the Proposed Development in place and are therefore is not discussed in further detail.
- 3.6 The remaining properties are fully discussed in the following sections. All results can be found in Appendix 02.

DAYLIGHTING
VERTICAL SKY COMPONENT (VSC)



Blues (levels of VSC at 0%-5%)

Low daylight values, it is likely that electric lighting will be in use.

These values are generally found in dense urban locales.

Yellow (levels of VSC at 27% or above)

Good daylight values.

Minimum value required to adhere to the BRE guide. Generally found in suburban locales where the buildings are 2-3 storeys with good road widths.

Reds (levels of VSC at 5%-15%)

Low daylight levels commensurate with an urban locale.

Oranges (levels of VSC at 15%-27%)

Reasonable to good daylight values. Mid-teens as a retained value is generally deemed acceptable within an urban locale.

HILL QUAYS

3.7 The reductions in daylight and sunlight to Hill Quays were found to be acceptable in context to the area for the following reasons:

- The property has low baseline daylight levels which places a high burden on the site to maintain existing levels;
- The average VSC daylight levels are reduced from 6.48% to 6.16% with the Proposed Development in place, which is a minor reduction;
- The largest absolute change in VSC is 2.6%, which the BRE state would not be noticeable to occupants were the windows receiving the published BRE target of 27% in the baseline scenario; and
- The building is designed with deep, single aspect rooms served by recessed windows located beneath balconies, which leads to low baseline levels and makes deviations from the BRE target criteria unavoidable.

3.8 The unnoticeably small absolute changes in VSC daylight to Hill Quays with the Proposed Development constructed are shown in Figures 12 and 13.

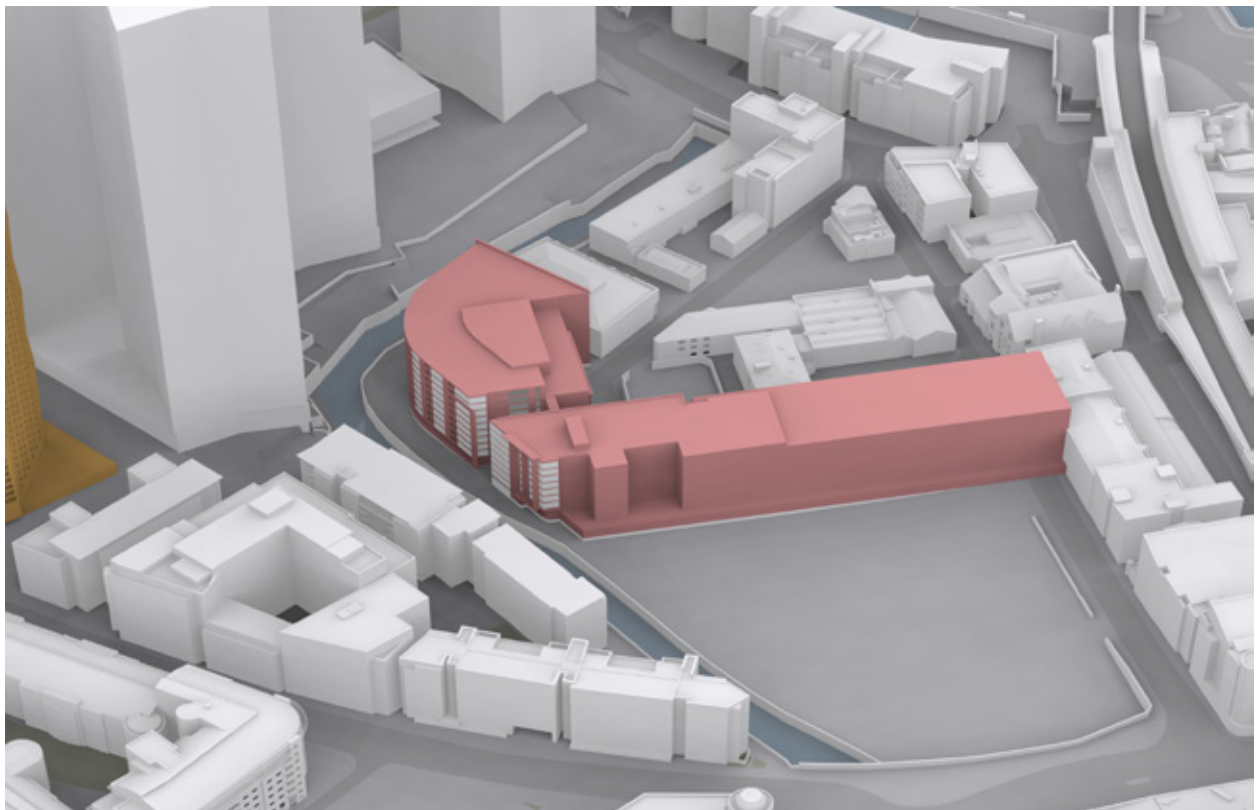
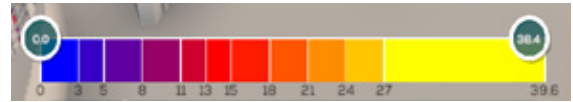


Figure 11: Hill Quays

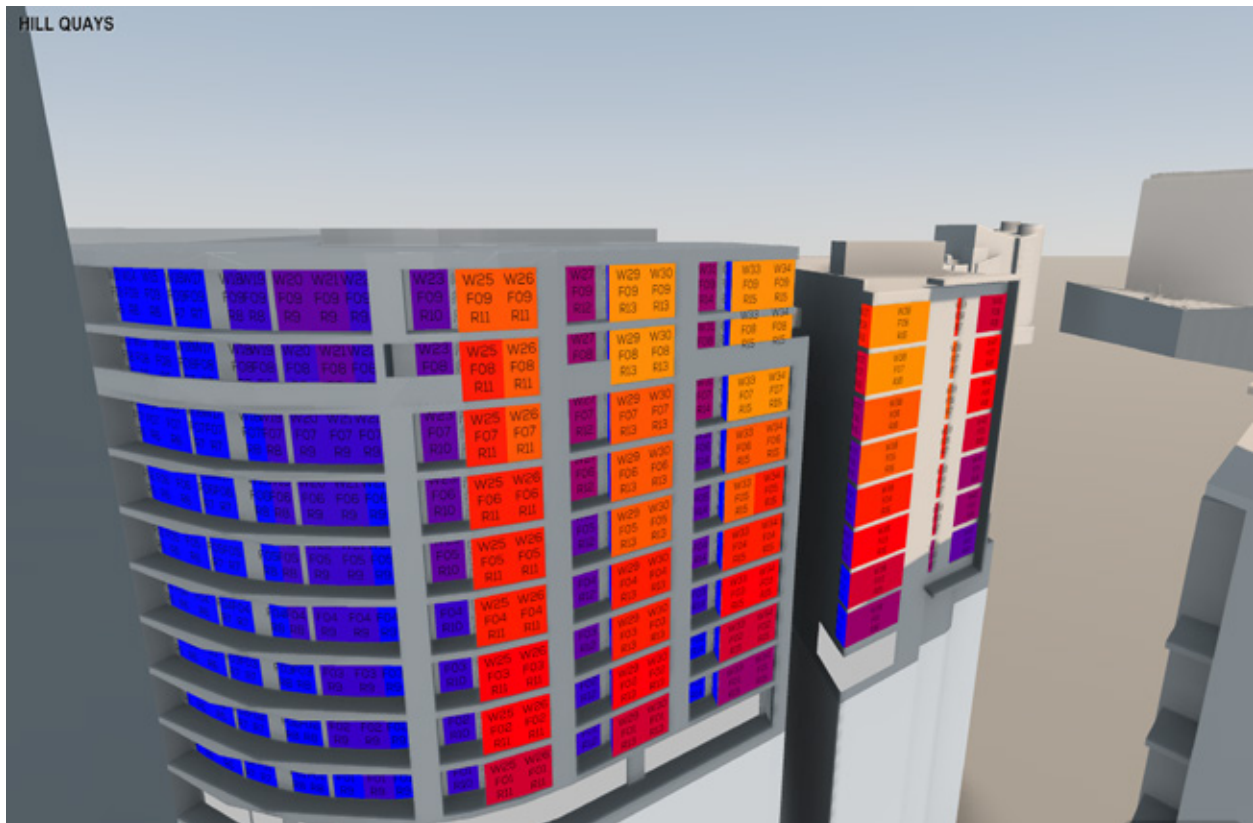


Figure 12: Hill Quays - Existing VSC Daylight

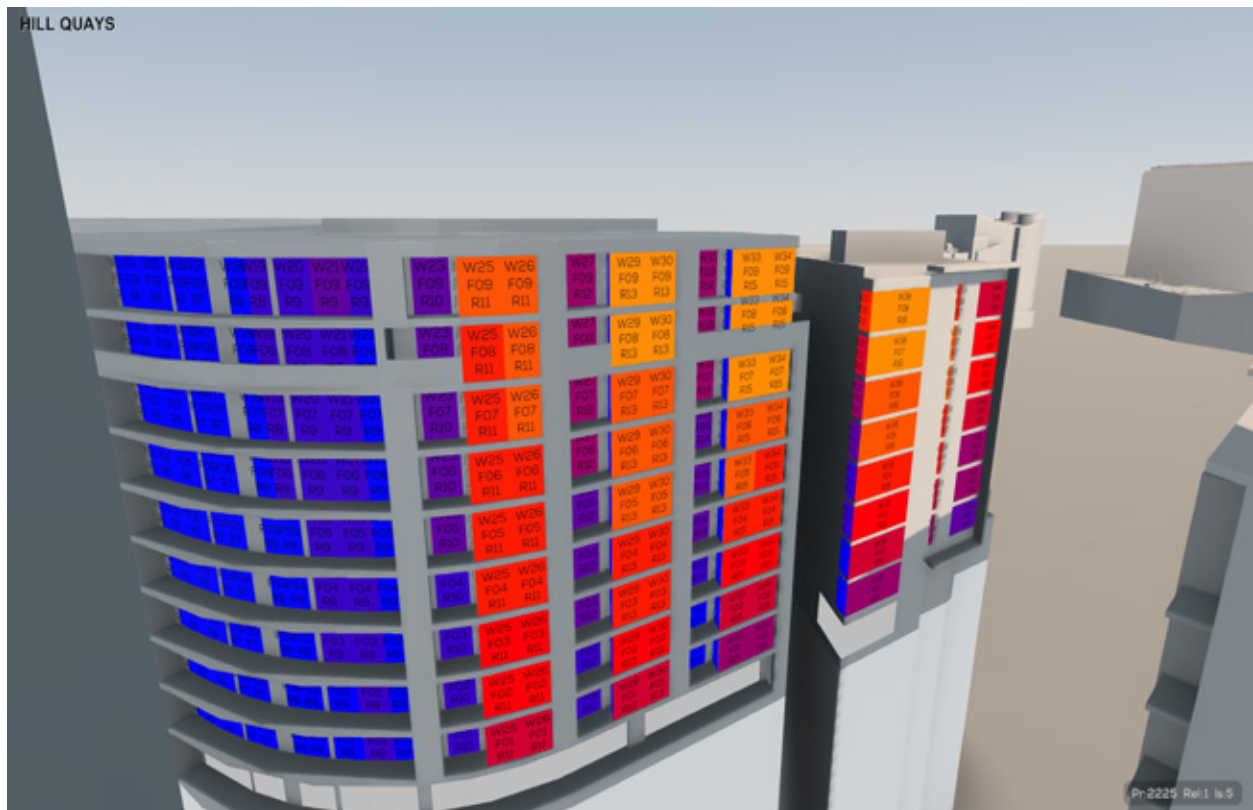


Figure 13: Hill Quays - Proposed VSC Daylight

DEANSGATE SQUARE

3.9 The reductions in daylight and sunlight to Deansgate Square were found to be acceptable in context to the area for the following reasons:

- The property has higher baseline daylight levels given the underdeveloped nature of the Site;
- The baseline levels were never anticipated to be a permanent condition as the Site has been proposed for high density development in the SRF for several years;
- The residents of Deansgate Square were therefore aware of the proposed development and anticipated changes in daylight;
- The property will retain average VSC daylight levels of 19.76%, which is commensurate with other successful residential locations in the city centre.
- Retained VSC daylight levels are reduced by less than 20% with the Proposed Development in place, which is considered minor; and
- Several of the windows and rooms which do not meet the BRE target criteria are bedrooms, which are considered by the BRE as having a lesser requirement for daylight.

3.10 To support the above, the individual retained daylight levels to Deansgate Square with the Proposed Development constructed are shown in Figures 15-18.

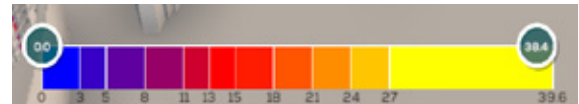


Figure 14: Deansgate Square

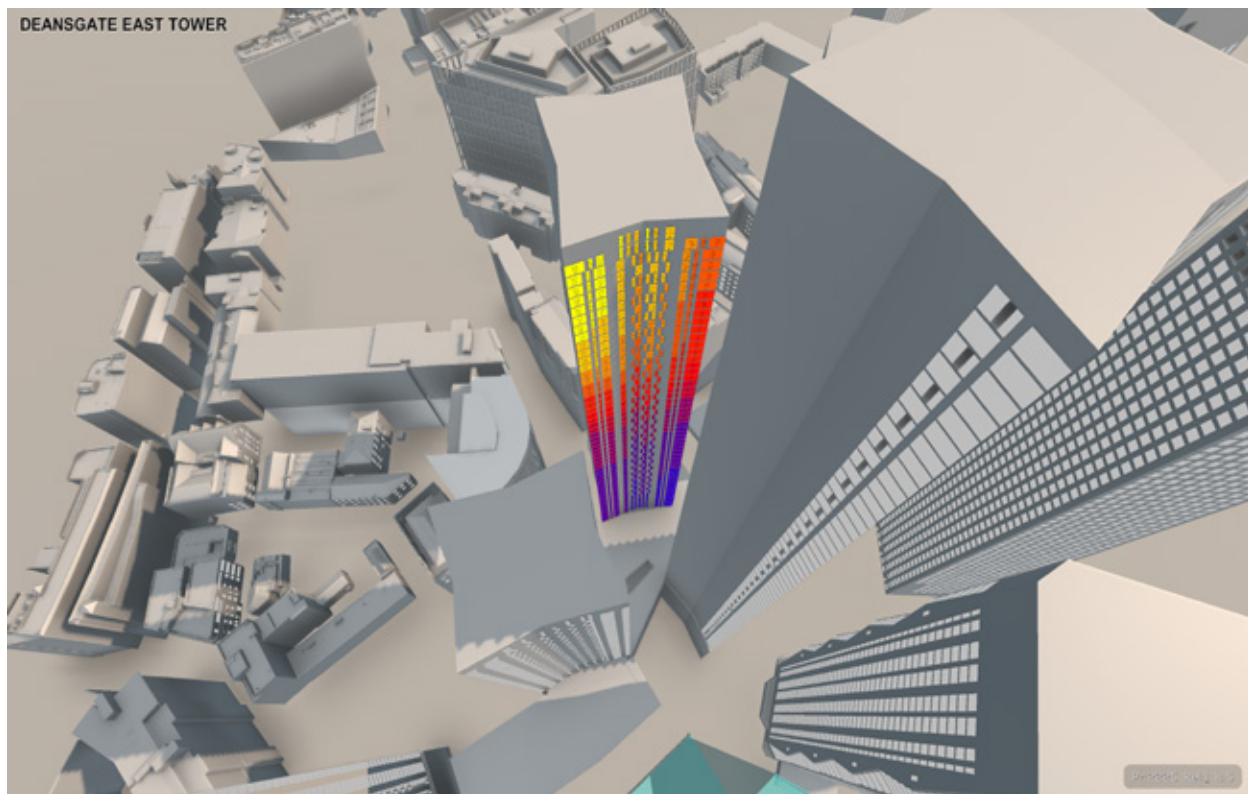


Figure 15: Deansgate Square - Proposed Retained VSC Daylight

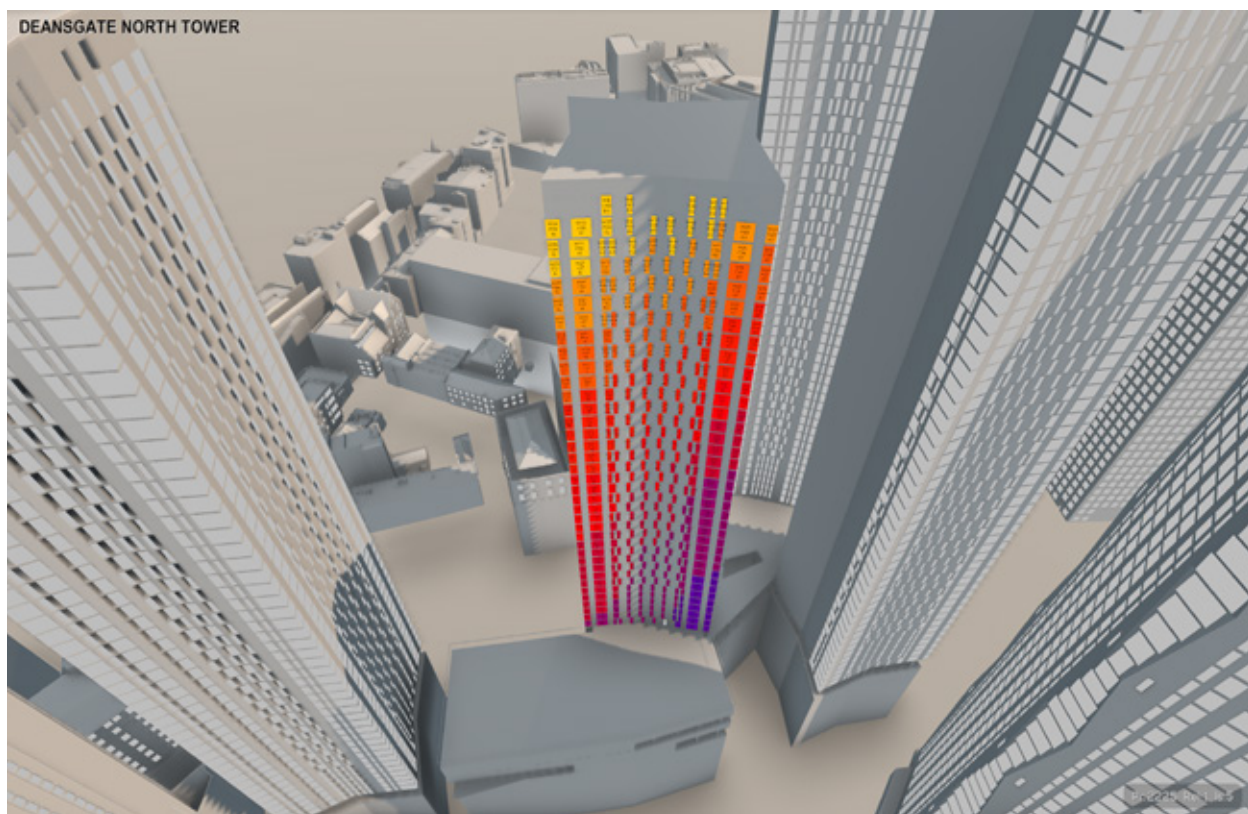


Figure 16: Deansgate Square - Proposed Retained VSC Daylight

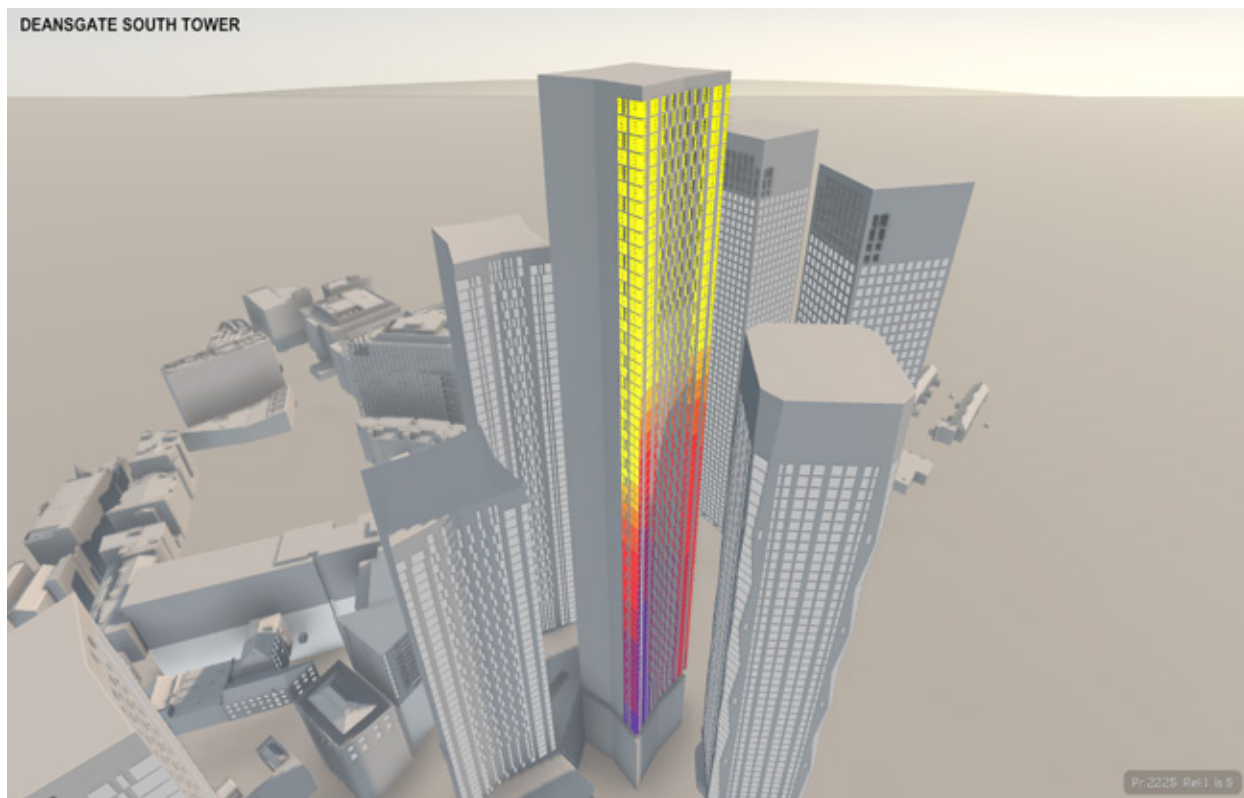


Figure 17: Deansgate Square - Proposed Retained VSC Daylight

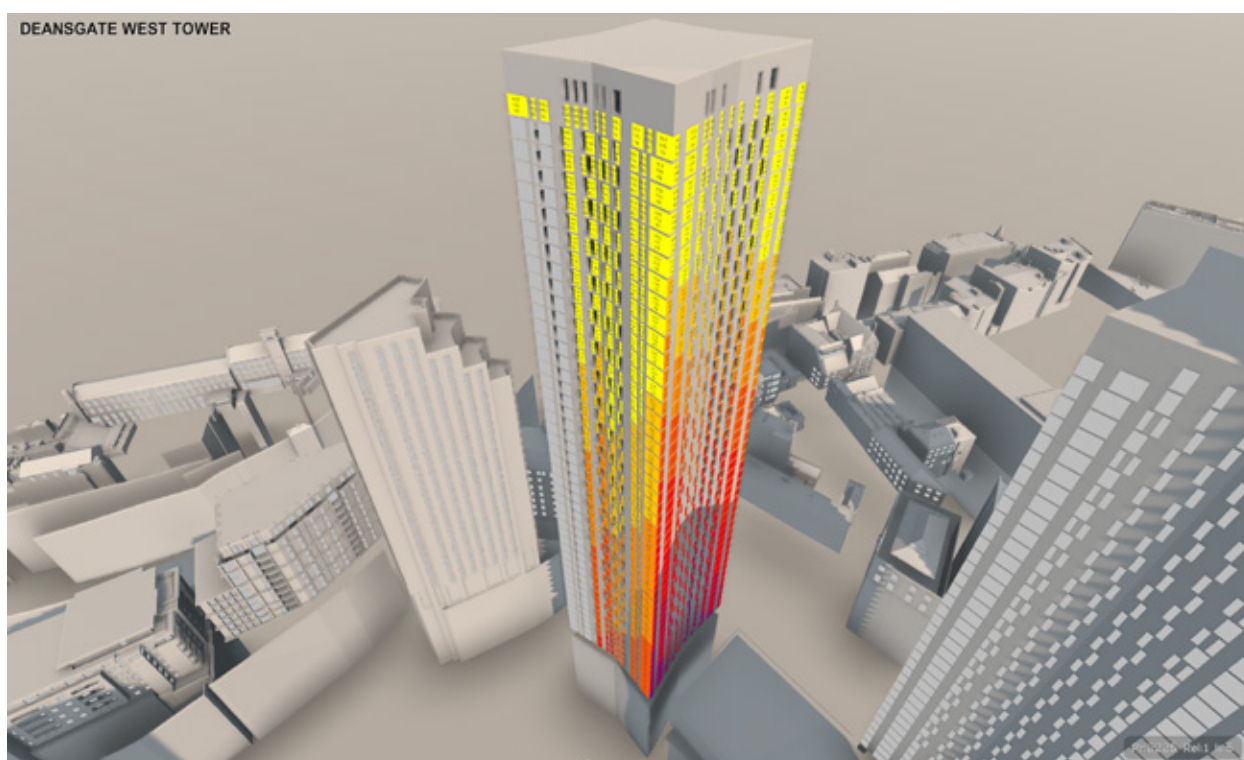


Figure 18: Deansgate Square - Proposed Retained VSC Daylight

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CITY SOUTH

3.11 The reductions in daylight and sunlight to City South were found to be acceptable in context to the area for the following reasons:

- The property has low baseline daylight levels, which places a high burden on the Site to maintain existing levels;
- The average VSC daylight levels are reduced from 9.81% to 9.52% with the Proposed Development in place, which is a minor reduction;
- The largest absolute change in VSC is 1.5%, which the BRE state would not be noticeable to occupants were the windows receiving the published BRE target of 27% in the baseline scenario;
- The design is such that deep, single aspect rooms face the Site, several of which are located beneath balconies; and
- Several of the affected windows and rooms are bedrooms, which are considered by the BRE to have a lesser requirement for daylight.

3.12 The unnoticeably small absolute changes in VSC daylight to City South without and with the Proposed Development constructed are shown in Figures 20 and 21.

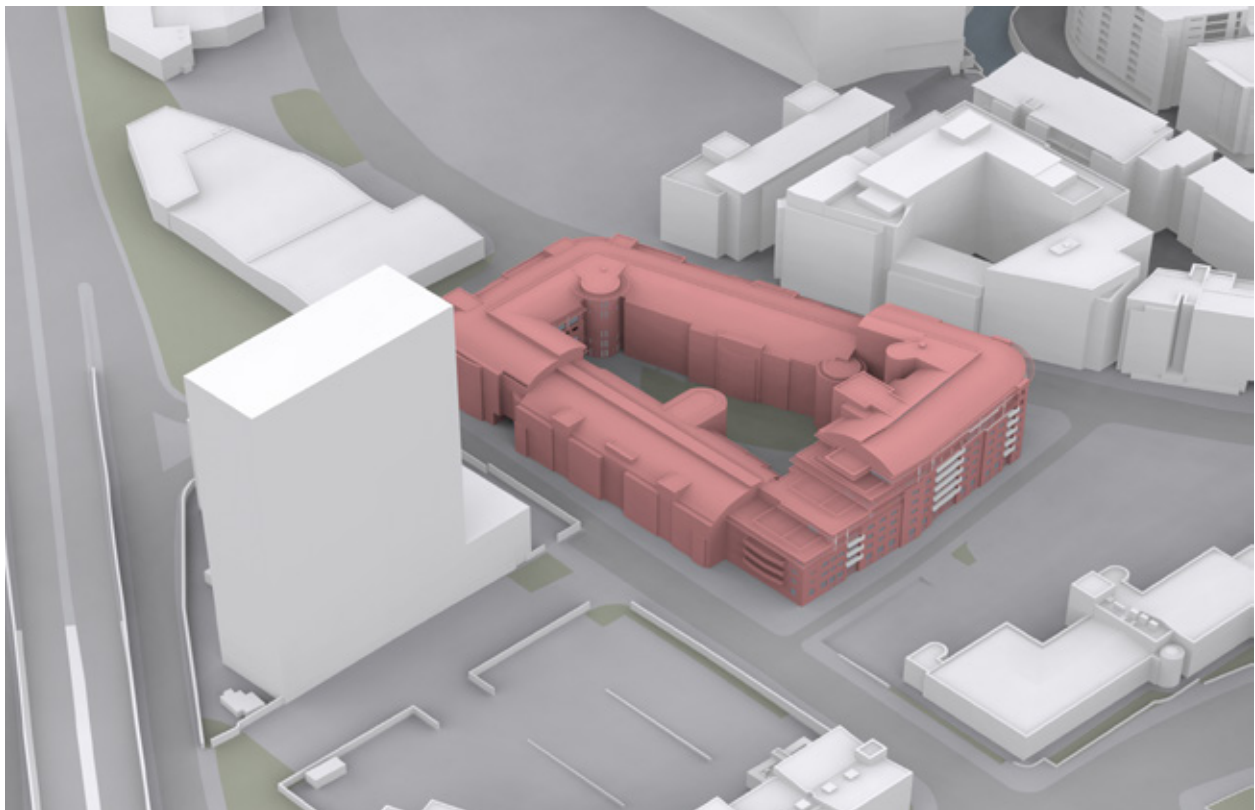
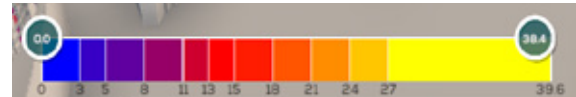


Figure 19: City South

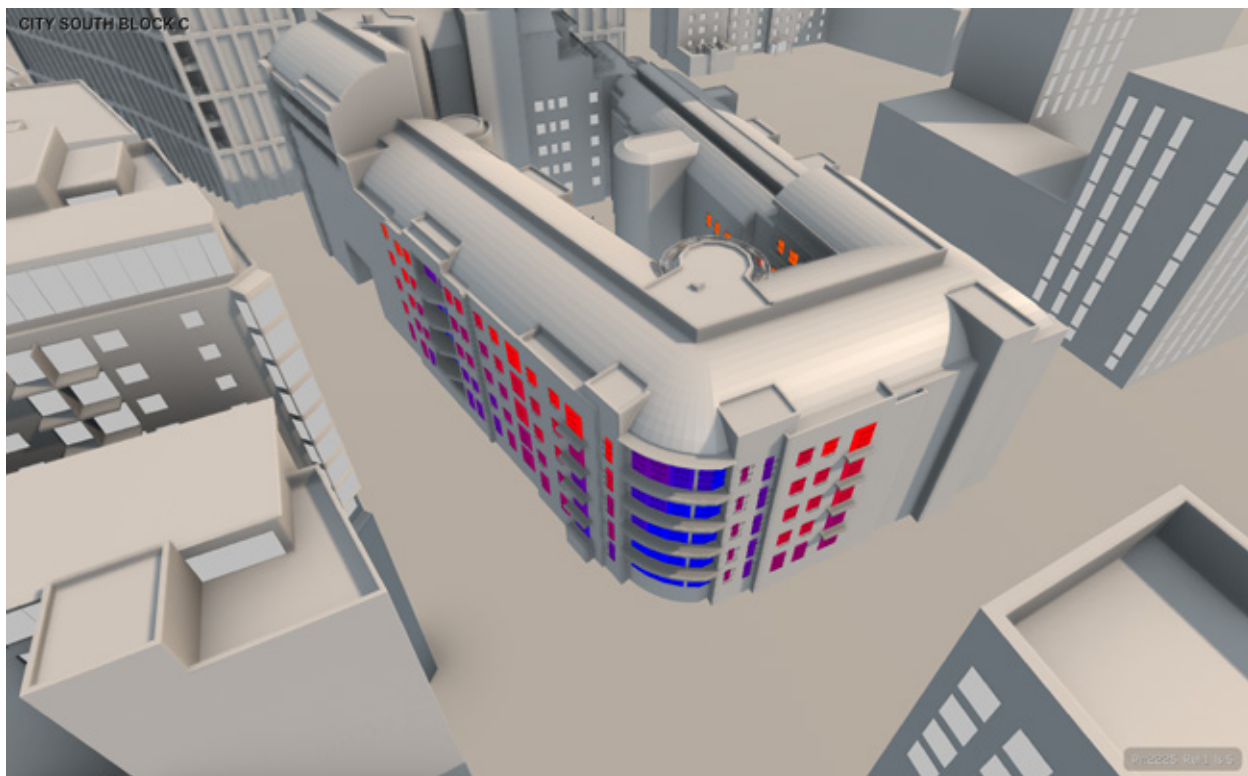


Figure 20: City South - Existing VSC Daylight Levels

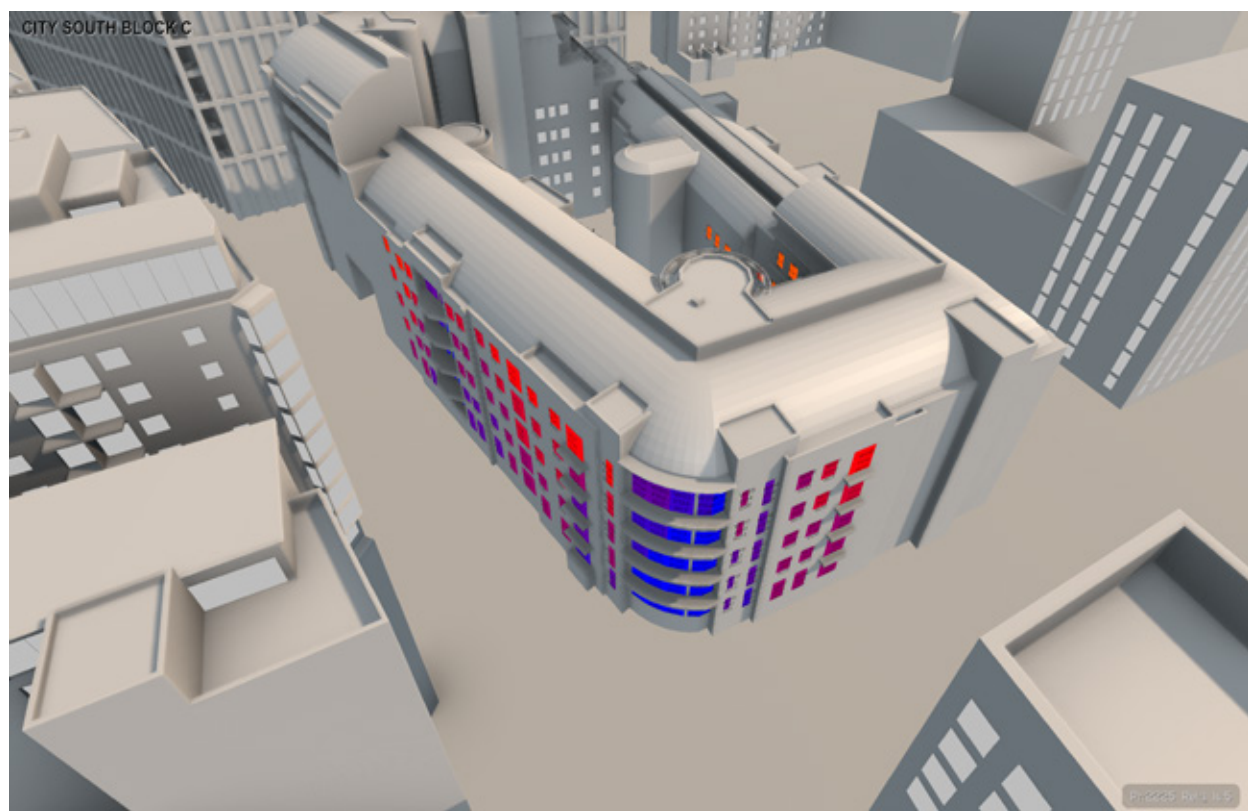


Figure 21: City South - Proposed VSC Daylight Levels

DEANSGATE QUAY

3.13 The reductions in daylight and sunlight to Deansgate Quay were found to be acceptable in context to the area for the following reasons:

- The property has low baseline daylight levels, which places a high burden on the Site to maintain existing levels;
- The average VSC daylight levels are reduced from 5.76% to 3.95% with the Proposed Development in place, which is a minor reduction;
- The largest absolute change in VSC is 5.1%, which the BRE state would not be noticeable to occupants were the windows receiving the published BRE target of 27% in the baseline scenario;
- The design is such that deep, single aspect rooms face the Site, several of which are located beneath balconies; and
- Several of the affected windows and rooms are bedrooms, which are considered by the BRE to have a lesser requirement for daylight.

3.14 The low levels of change to VSC daylight to Deansgate Quay with the Proposed Development constructed is shown in Figure 23. Where windows meet the VSC daylight target, they are shown in green.

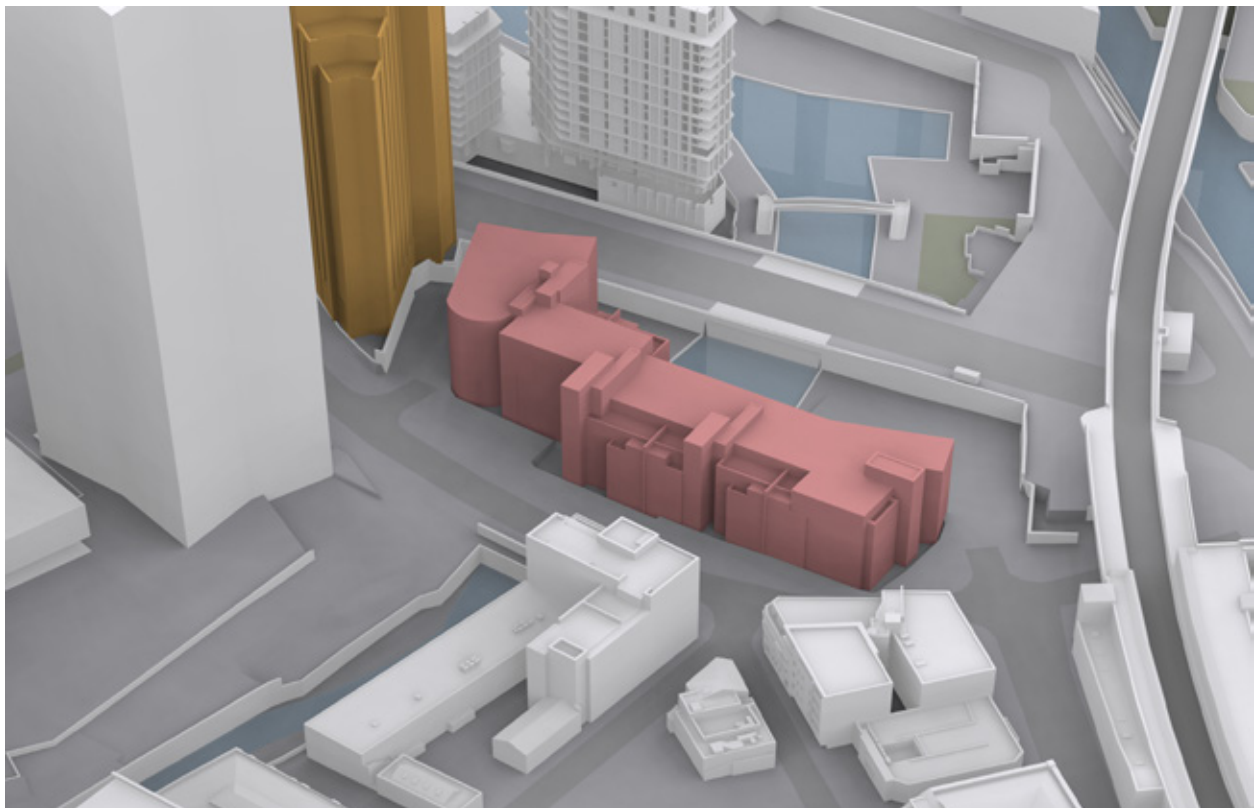
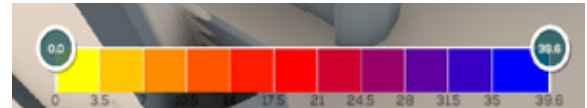


Figure 22: Deansgate Quay

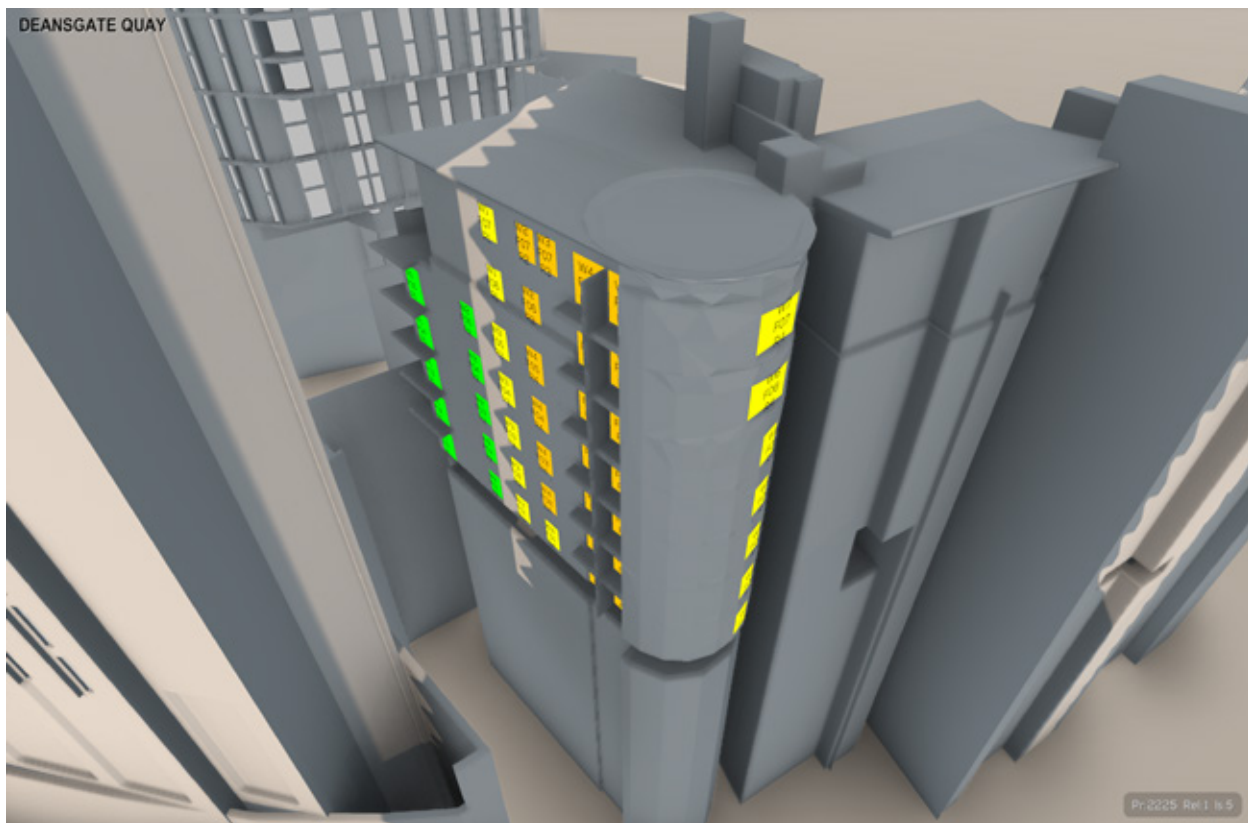


Figure 23: Deansgate Quay - Proposed Reductions in VSC Daylight

CASTLE WHARF

3.15 The reductions in daylight and sunlight to Castle Wharf were found to be acceptable in context to the area for the following reasons:

- The property has low baseline daylight levels, which places a high burden on the Site to maintain existing levels;
- The average VSC daylight levels are reduced from 14.08% to 11.81% with the Proposed Development in place, which is a minor reduction; and
- Several of the affected windows and rooms are bedrooms, which are considered by the BRE to have a lesser requirement for daylight.

3.16 The low levels of changes to VSC daylight to Castle Wharf considering the currently undeveloped nature of the site are shown in Figures 25 and 26. Where windows meet the VSC daylight target, they are shown in green.

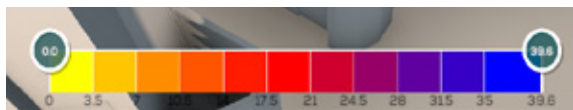


Figure 24: Castle Wharf



Figure 25: Castle Wharf - Proposed Reductions in VSC Daylight

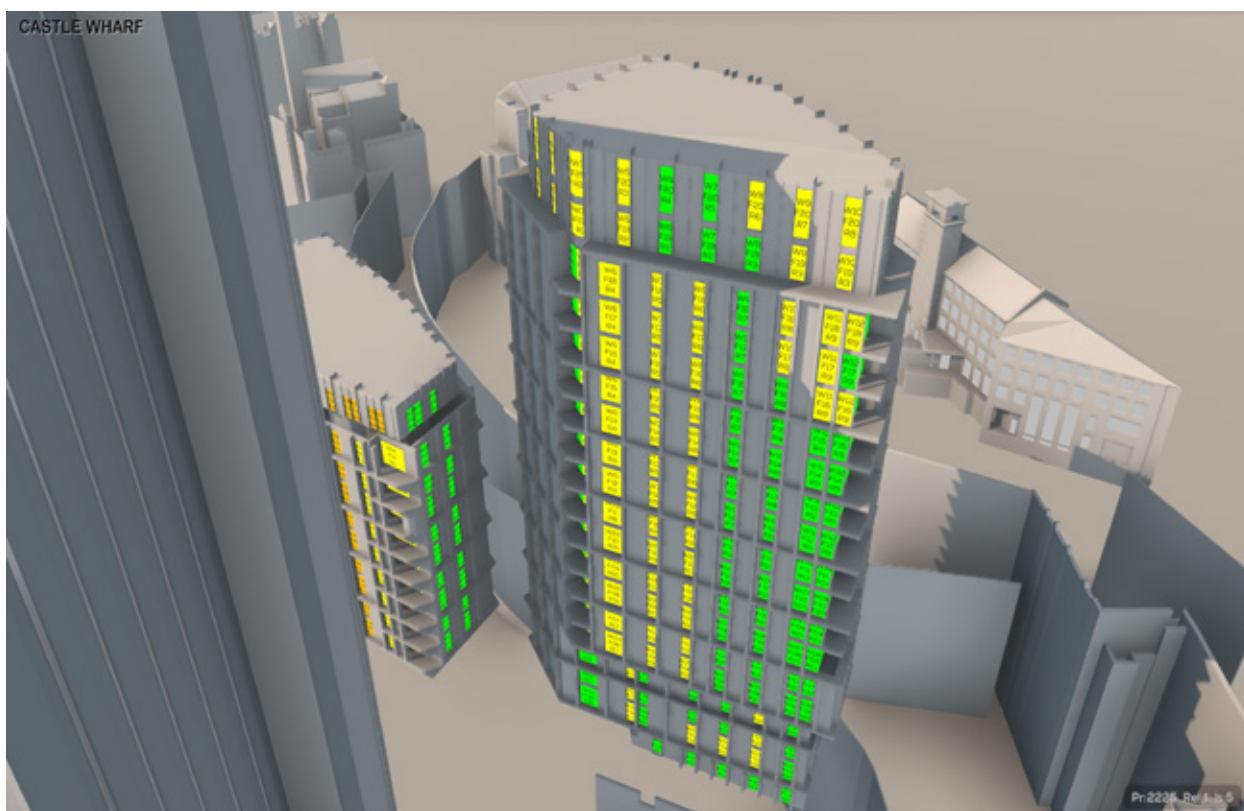


Figure 26: Castle Wharf - Proposed Reductions in VSC Daylight

CASTLEGATE

- 3.17 The reductions in daylight and sunlight to Castle Gate were found to be acceptable in context to the area for the following reasons:
- The property is designed such that several deep, single aspect rooms with overhanging or inset balconies overlook the Site;
 - The property has low baseline daylight levels, and only 5% of windows meet the VSC daylight criteria, which places a high burden on the Site to maintain existing levels; and
 - The average VSC daylight levels are reduced from 14.11% to 10.32% with the Proposed Development in place, which is a minor reduction.
- 3.18 To support the above, the individual retained daylight levels to Castlegate are shown in Figures 28 and 29, where it can be seen that the lower levels of daylight amenity are due to inherent architectural features such as balconies and recesses

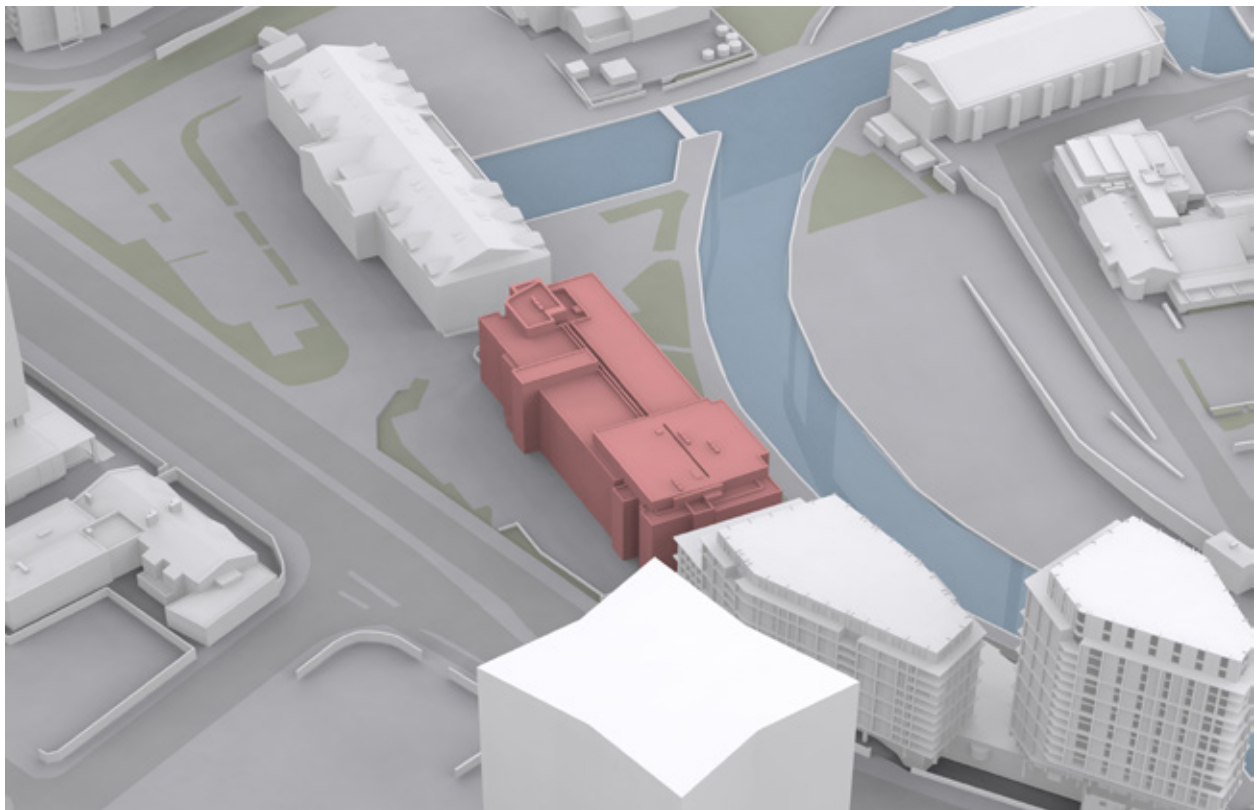
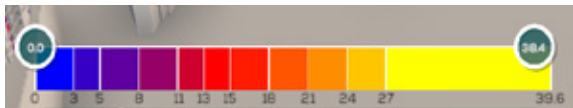


Figure 27: Castle Gate

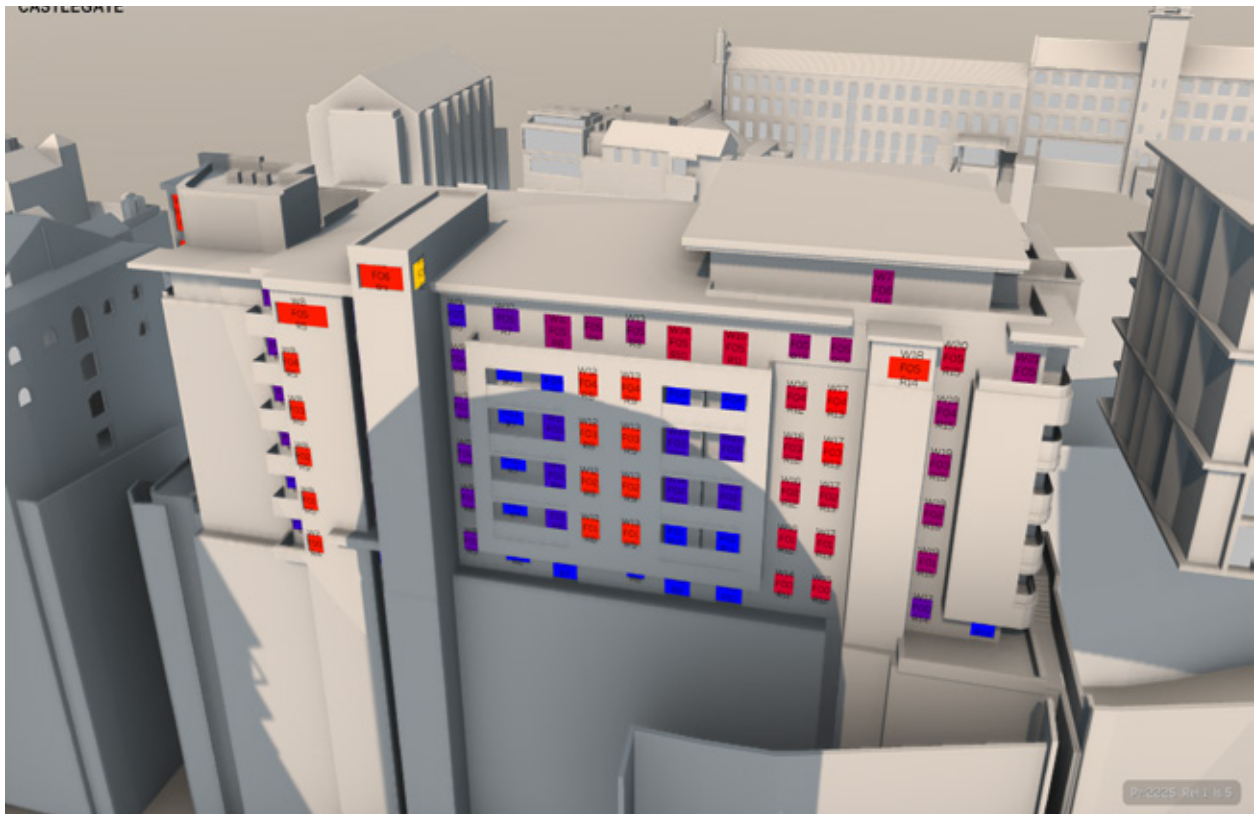


Figure 28: Castlegate - Proposed Retained VSC Daylight



Figure 29: Castlegate - Proposed Retained VSC Daylight

BRIDGEWATER HOUSE

3.19 The effect on daylight is considered to be reasonable in context to the area for the following reasons:

- The property is not yet constructed, and it therefore has a lower sensitivity to changes in daylight;
- Future occupants will not be aware of any reductions in daylight and will anticipate lower daylight levels due to the proposals set out in the SRF; and
- The building has low baseline levels which places a burden on the Site to maintain them, particularly given that it is a low-rise building in an area of emerging height and density.

3.20 To support the above, the individual retained daylight levels to Bridgewater House is shown in Figure 31.

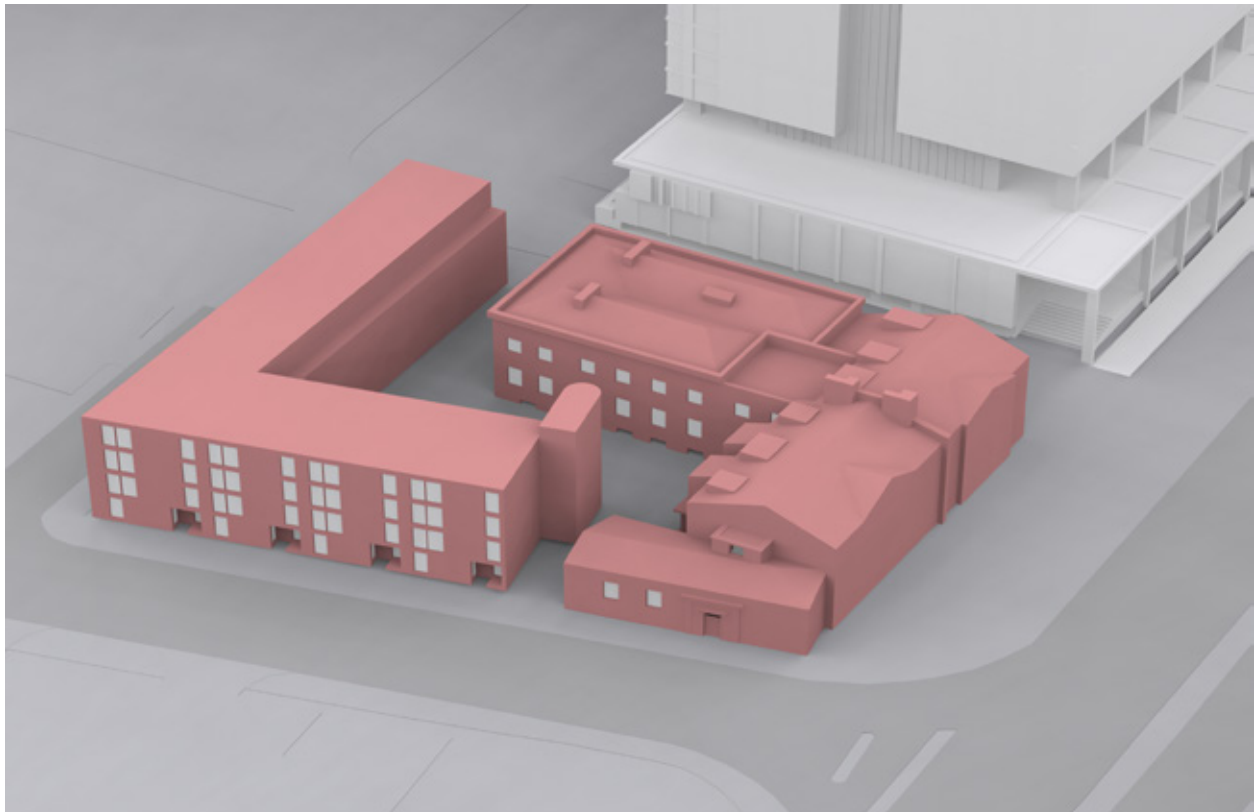
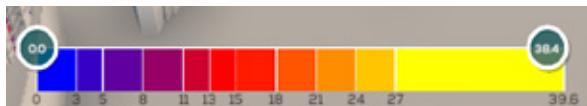


Figure 30: Bridgewater House

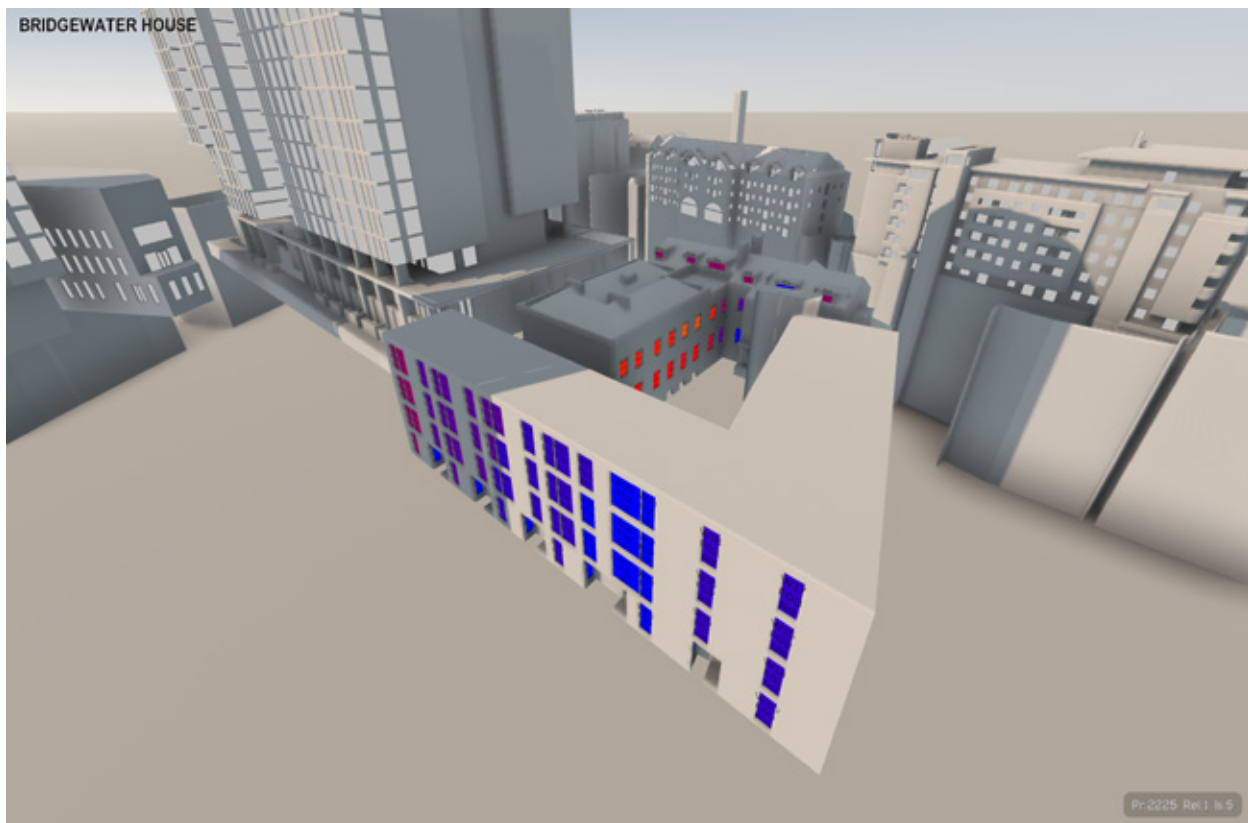


Figure 31: Bridgewater House - Proposed Retained VSC Daylight

CASTLE QUAY

3.21 The effect on daylight is considered to be reasonable in context to the area for the following reasons:

- The property is designed such that several deep, single aspect rooms with overhanging or inset balconies overlook the Site;
- The property has low baseline daylight levels, and only 14% of windows meet the VSC daylight criteria, which places a high burden on the Site to maintain existing levels; and
- The average VSC daylight levels are reduced from 21.44% to 19.67% with the Proposed Development in place, which is a minor reduction.

3.22 The low levels of change to VSC daylight to Castle Quay considering the currently undeveloped nature of the site is shown in Figure 33. Where windows meet the VSC daylight target, they are shown in green.

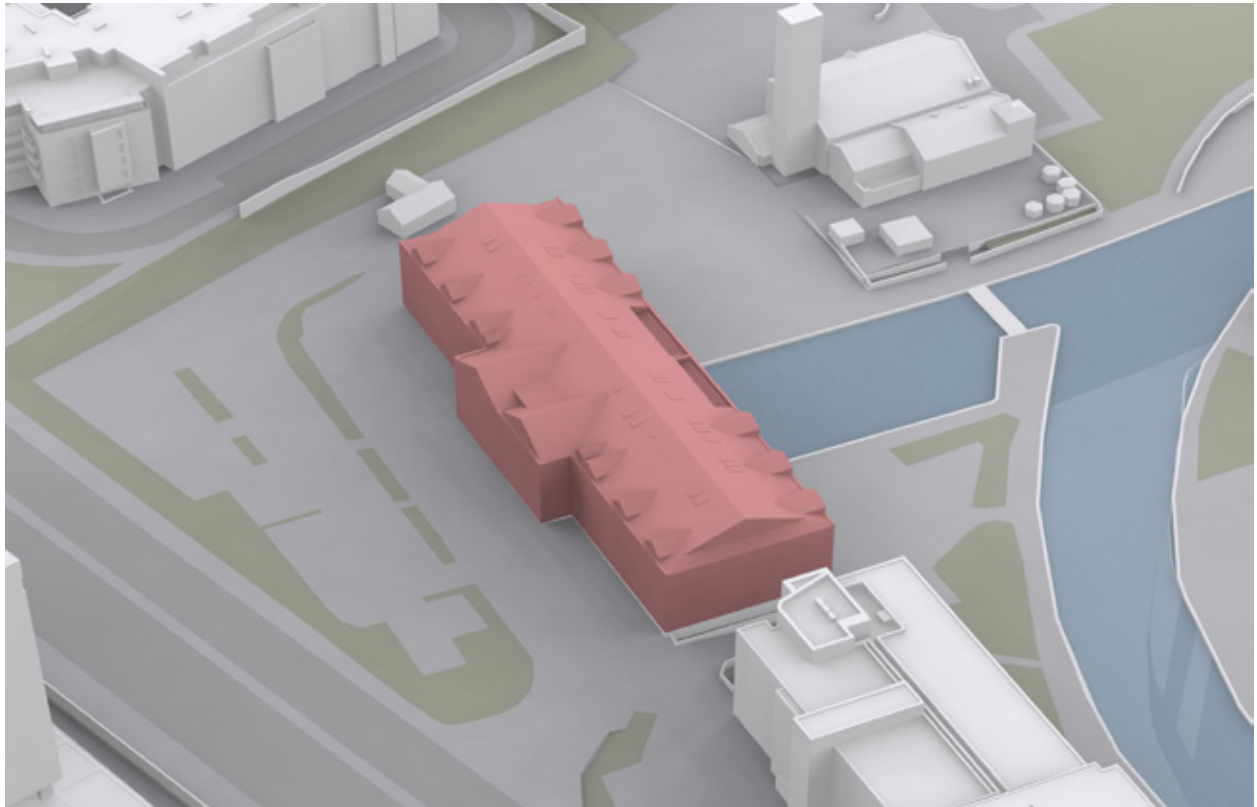


Figure 32: Castle Quay

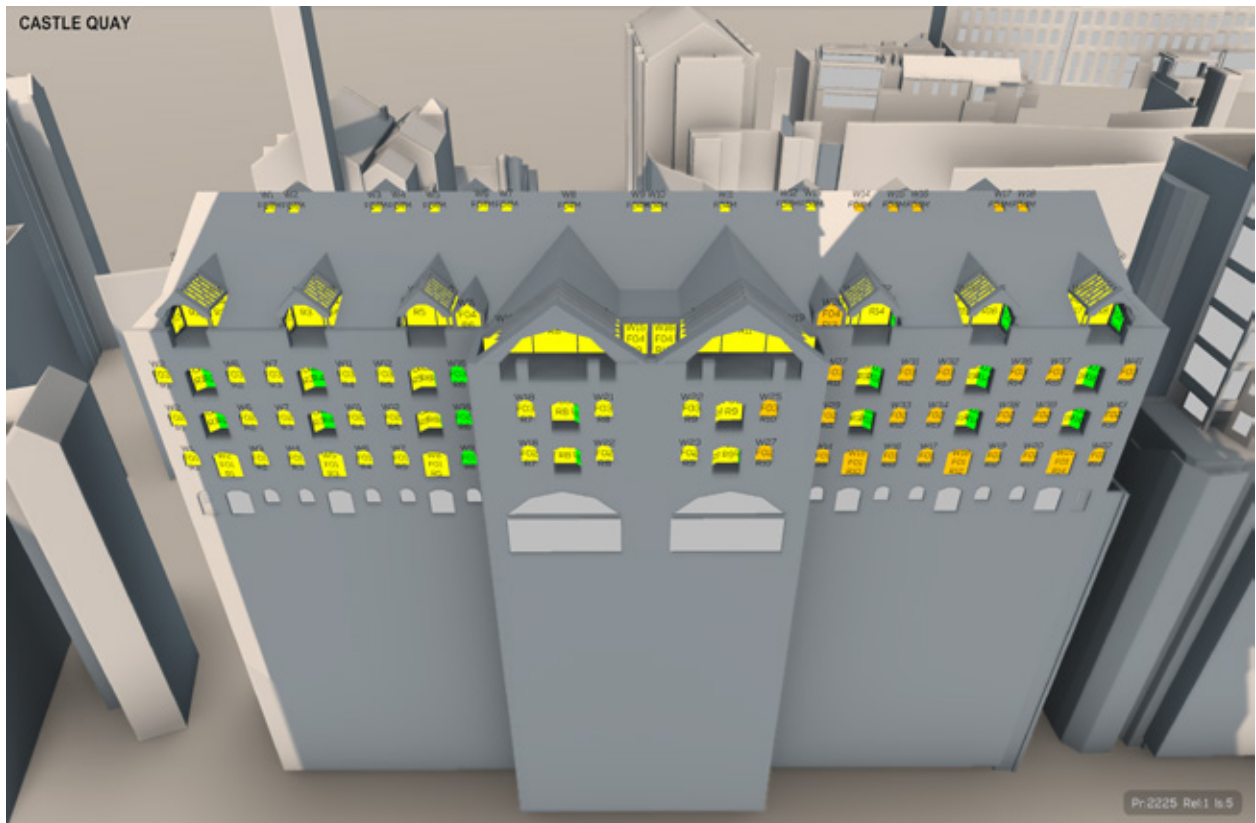


Figure 33: Castle Quay - Proposed Reductions in VSC Daylight

BLADE

3.23 The reductions in daylight and sunlight to Blade were found to be acceptable in context to the area for the following reasons:

- The property fully accords with the BRE target criteria for NSL daylight;
- The property has unusually high baseline daylight levels given the underdeveloped nature of the Site;
- The property is not yet constructed, and it therefore has a lower sensitivity to changes in daylight;
- Future occupants will not be aware of any reductions in daylight and will anticipate lower daylight levels due to the proposals set out in the SRF;
- The property will retain average VSC daylight levels of 26.14%, which is excellent given its location and emerging height and density in the area; and
- None of the affected windows experience a major reduction and the majority of reductions are minor in magnitude.

3.24 The individual retained daylight levels to Blade is shown in Figure 35.

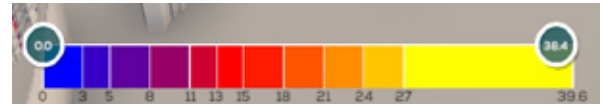


Figure 34: Blade

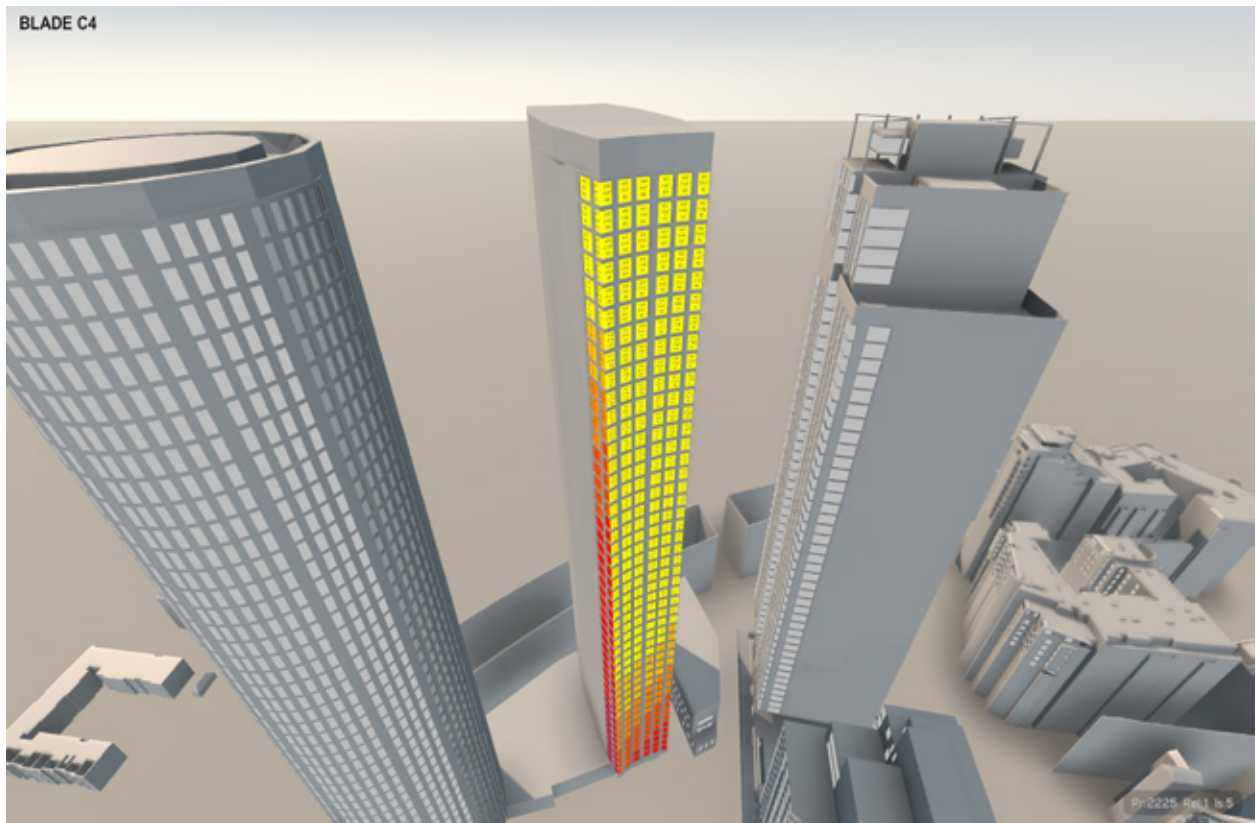


Figure 35: Blade - Proposed Retained VSC Daylight

THREE60

3.25 The reductions in daylight and sunlight to Three60 were found to be acceptable in context to the area for the following reasons:

- The property has unusually high baseline daylight levels given the underdeveloped nature of the Site;
- The property is not yet constructed, and it therefore has a lower sensitivity to changes in daylight;
- Future occupants will not be aware of any reductions in daylight and will anticipate lower daylight levels due to the proposals set out in the SRF; and
- The property will retain average VSC daylight levels of 18.77%, which is acceptable and commensurate with its location in an area of emerging height and density.

3.26 The individual retained VSC daylight levels to Three60 are shown in Figures 37 and 38.

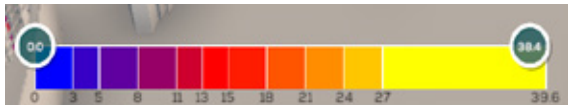


Figure 36: Three60

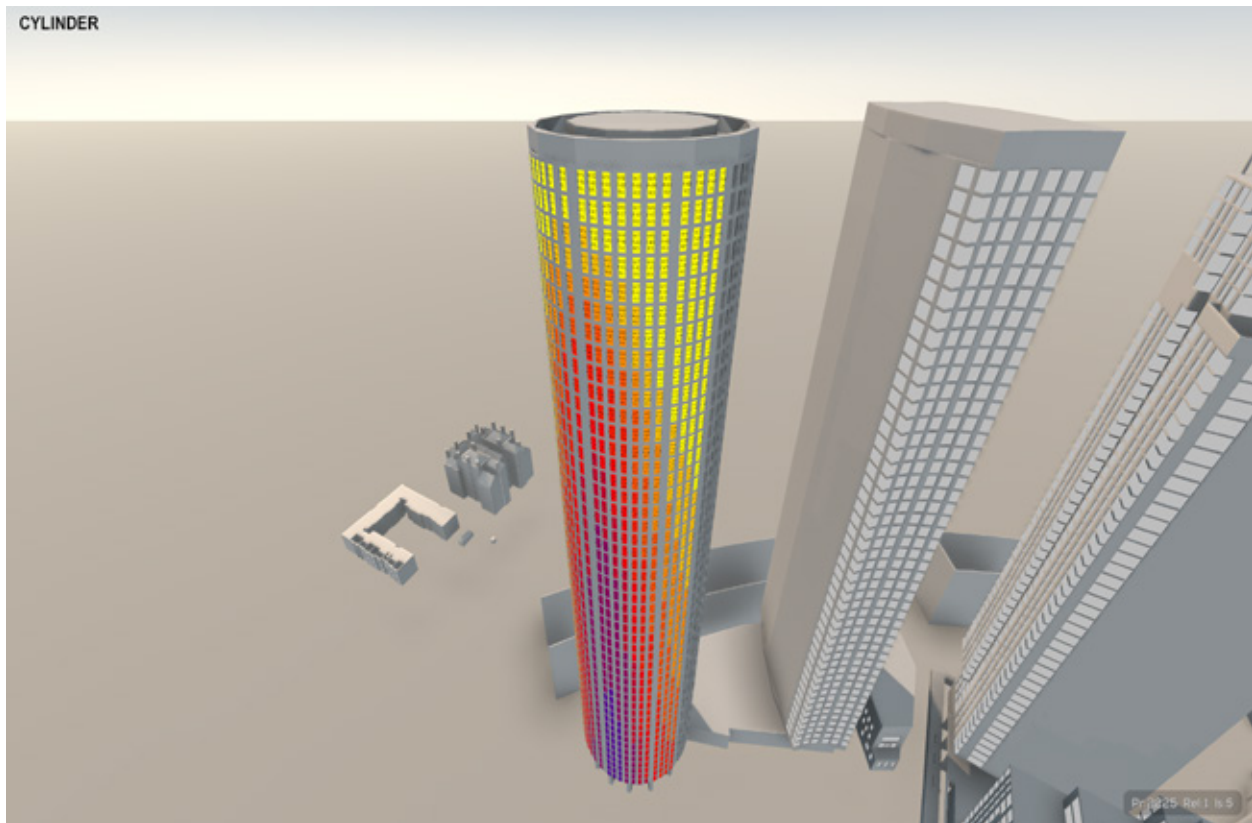


Figure 37: Three60 - Proposed Retained VSC Daylight

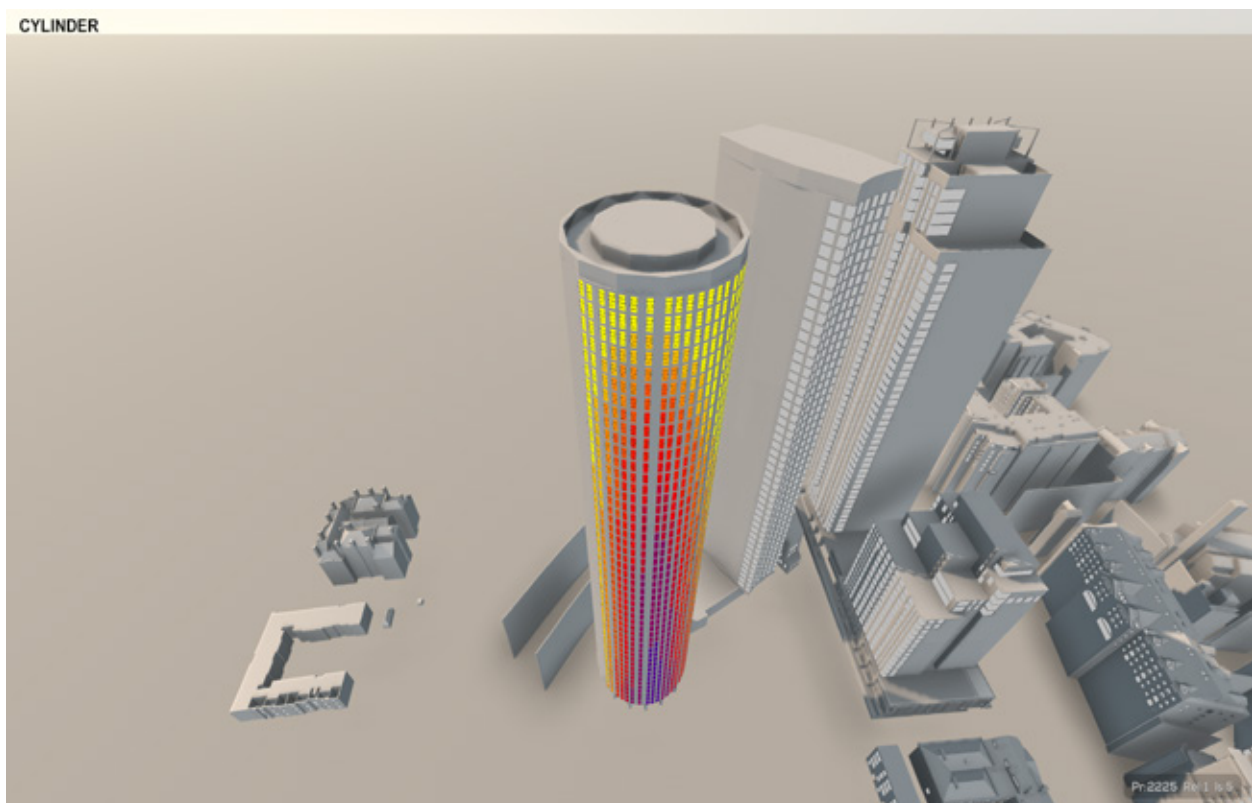


Figure 38: Three60 - Proposed Retained VSC Daylight

ELIZABETH TOWER

3.27 The reductions in daylight and sunlight to Elizabeth Tower were found to be acceptable in context to the area for the following reasons:

- The property forms part of the Great Jackson Street Development Framework, meaning the levels of daylight were never intended to be permanent;
- The property will retain average VSC daylight levels of 19.64%, which is acceptable and commensurate with its location in an area of emerging height and density;
- Despite VSC daylight reductions to windows, a greater proportion of rooms meet the overall VSC daylight criteria; and
- A small proportion of rooms do not meet the NSL daylight criteria which, when considered in tandem with the VSC room criteria, means the rooms will remain well-lit internally.

3.28 The individual retained VSC daylight levels to Elizabeth Tower are shown in Figures 40 and 41.

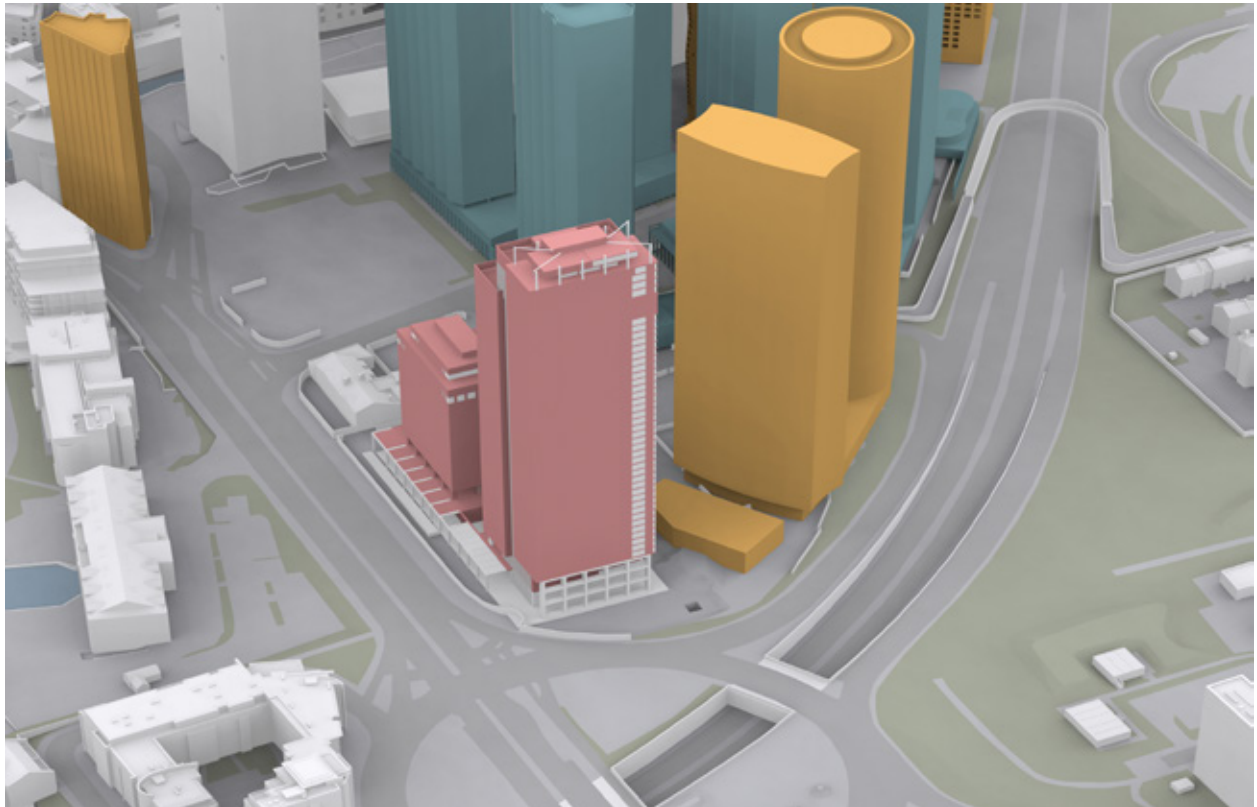
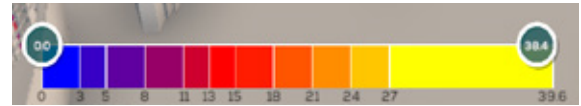


Figure 39: Elizabeth Tower

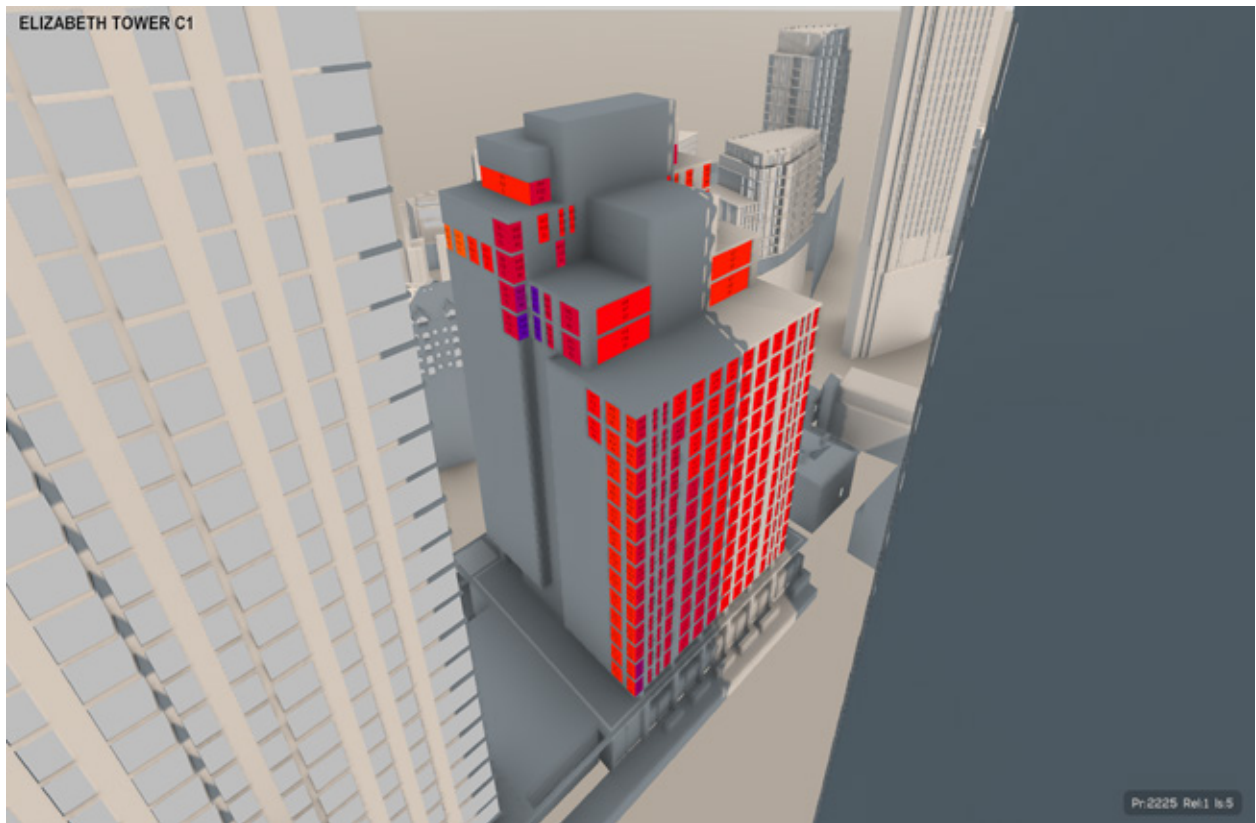


Figure 40: Elizabeth Tower - Proposed Retained VSC Daylight

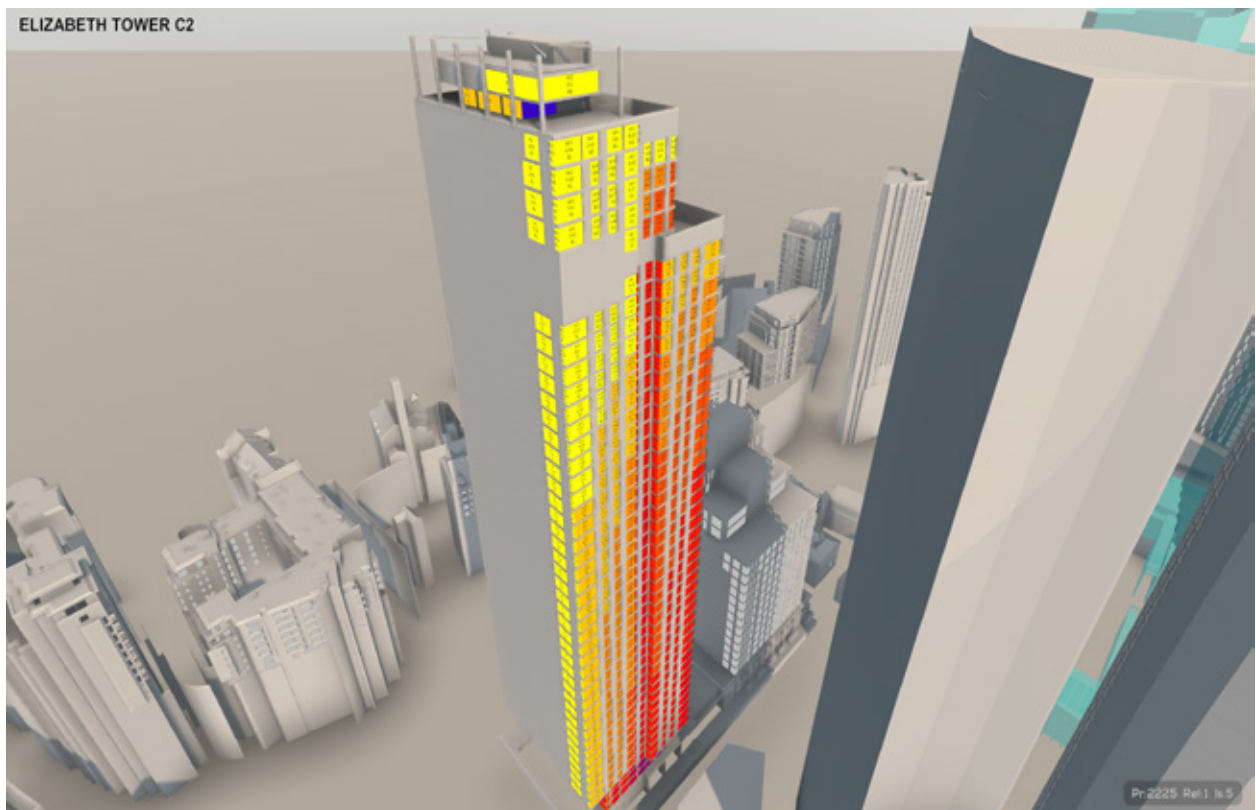


Figure 41: Elizabeth Tower - Proposed Retained VSC Daylight

SCHOOL HOUSE, JACKSON CRESCENT

3.29 The reductions in daylight and sunlight to School House, Jackson Crescent were found to be acceptable in context to the area for the following reasons:

- The property will fully accord with the BRE target criteria for NSL daylight;
- All of the windows which do not meet the VSC daylight criteria serve bedrooms, which the BRE consider as having a lesser requirement for daylight; and
- All of the windows are reduced by between 20-30%, which is minor, and the worst affected window is reduced by 24.5% against a target of 20%.

3.30 The levels of change to VSC daylight to School House, Jackson Crescent is shown in Figure 43..

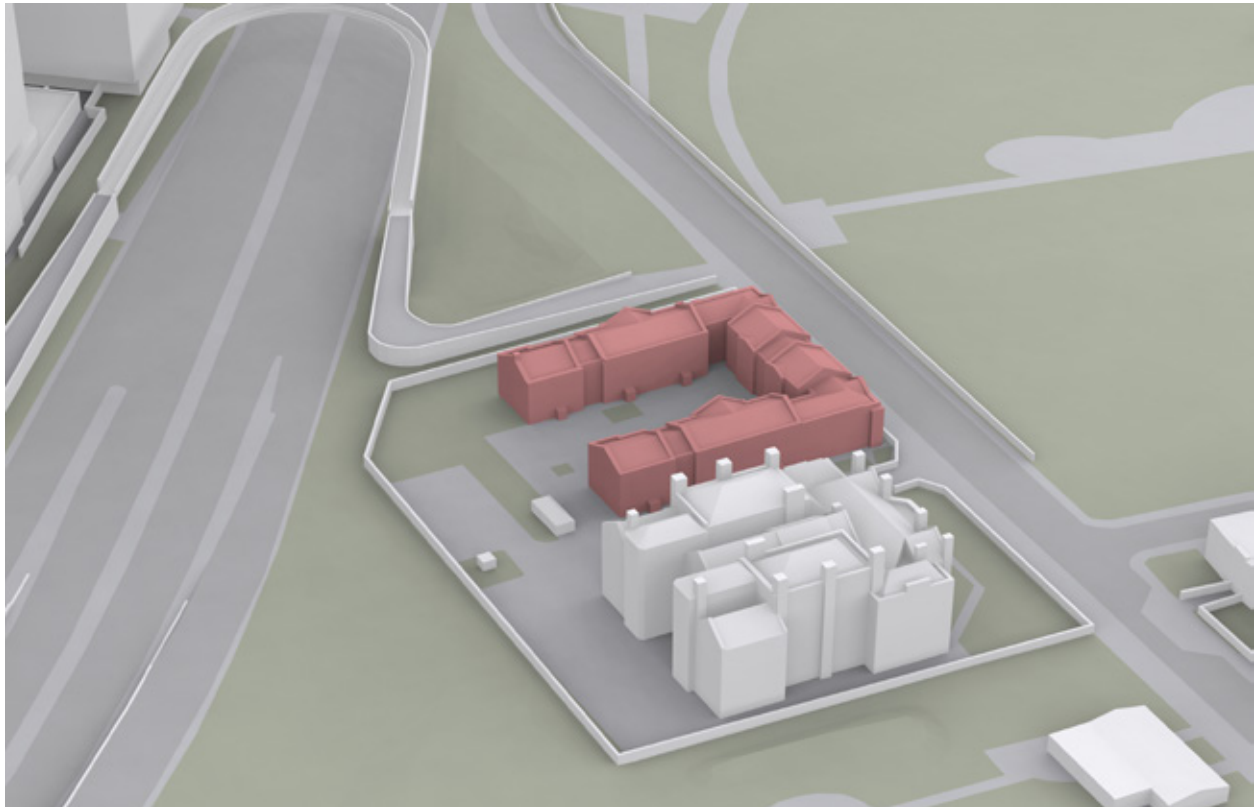
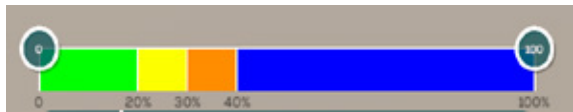


Figure 42: School House, Jackson Crescent

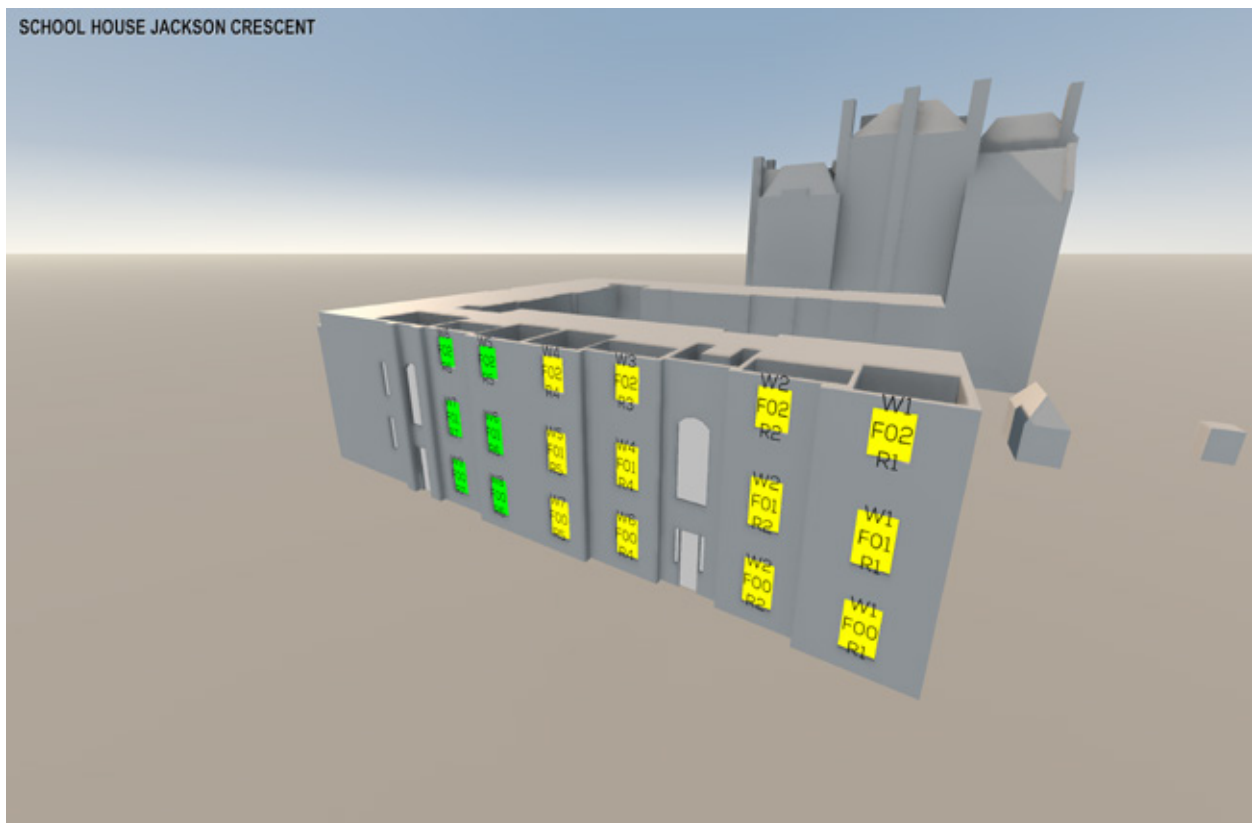


Figure 43: School House, Jackson Crescent - Proposed Reductions in VSC Daylight

PLOT F, GREAT JACKSON STREET

3.31 The reductions in daylight and sunlight to Plot F, Great Jackson Street were found to be acceptable in context to the area for the following reasons:

- The property is not yet constructed, and it therefore has a lower sensitivity to changes in daylight;
- Future occupants will not be aware of any reductions in daylight and will anticipate lower daylight levels due to the proposals set out in the SRF; and
- The property will retain average VSC daylight levels of 19.62%, which is acceptable and commensurate with its location in an area of emerging height and density.
- Retained VSC daylight levels are reduced by less than 20% with the Proposed Development in place, which is considered minor; and
- Several of the windows and rooms which do not meet the BRE target criteria are bedrooms, which are considered by the BRE as having a lesser requirement for daylight.

3.32 The individual retained VSC daylight levels to Plot F, Great Jackson Street are shown in Figures 45 and 46.

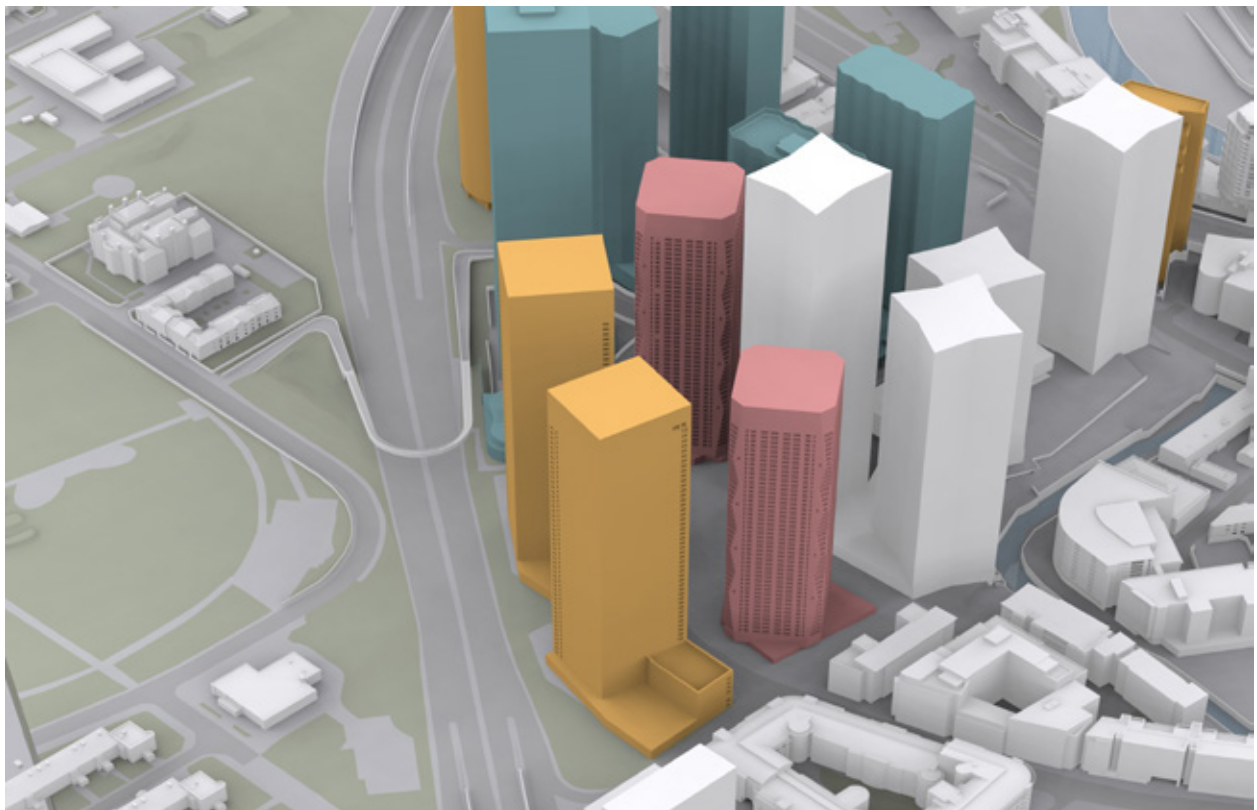
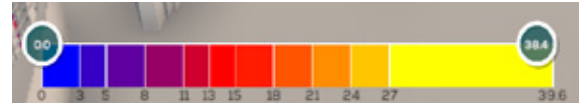


Figure 44: Plot F, Great Jackson Street

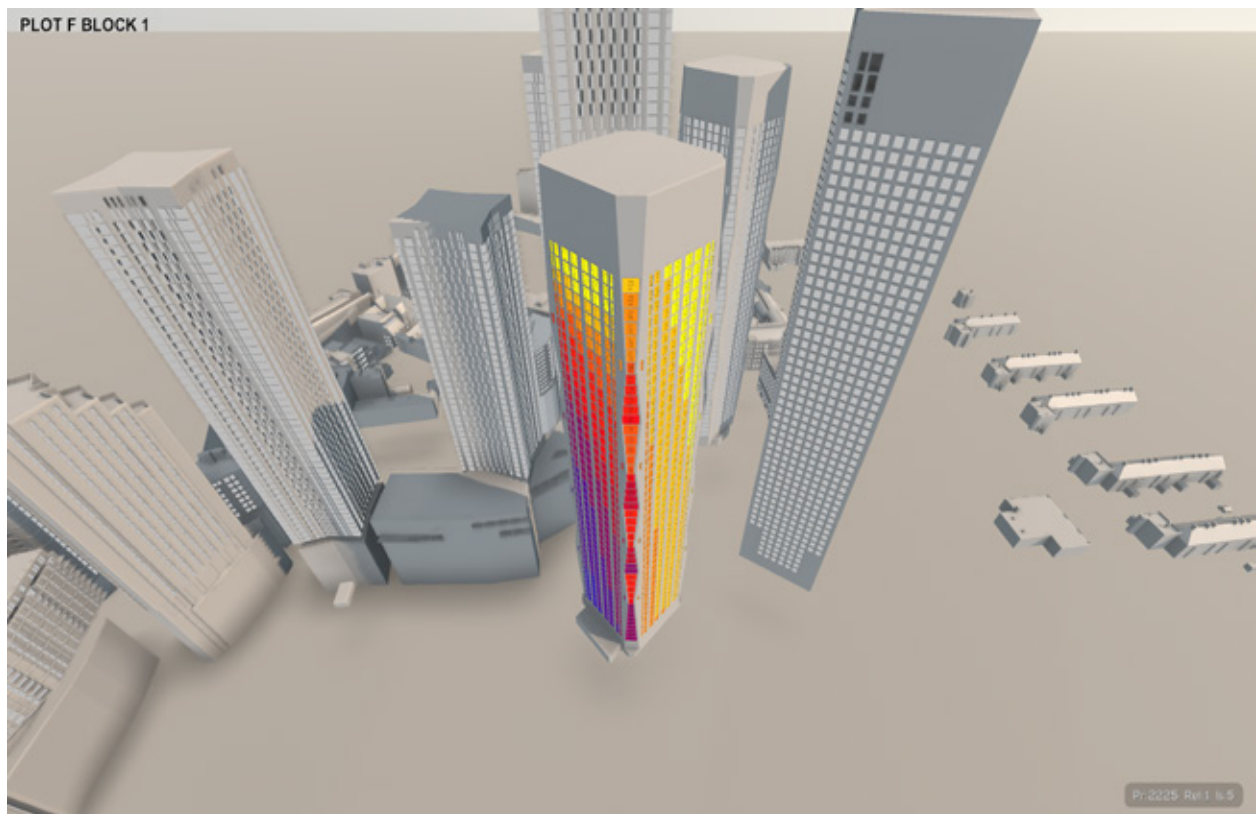


Figure 45: Plot F, Great Jackson Street - Proposed Retained VSC Daylight

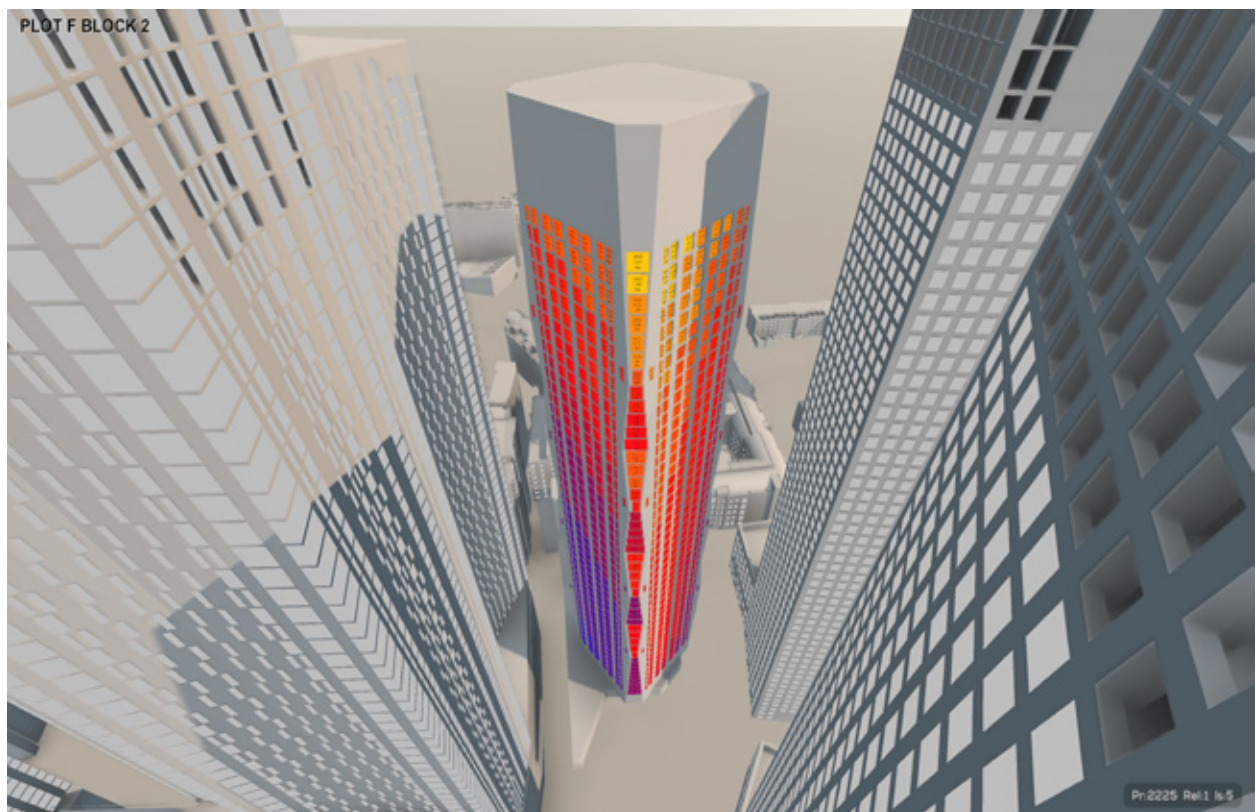


Figure 46: Plot F, Great Jackson Street - Proposed Retained VSC Daylight

PLOT G, GREAT JACKSON STREET

3.33 The reductions in daylight and sunlight to Plot G, Great Jackson Street were found to be acceptable in context to the area for the following reasons:

- The property is not yet constructed, and it therefore has a lower sensitivity to changes in daylight;
- Future occupants will not be aware of any reductions in daylight and will anticipate lower daylight levels due to the proposals set out in the SRF;
- The property will retain average VSC daylight levels of 21.22%, which is acceptable and commensurate with its location in an area of emerging height and density.
- The majority of reductions to VSC daylight are minor, 5% of rooms assessed do not meet the NSL target and only 2% experience a greater than minor reduction; and
- Retained VSC daylight levels are reduced by less than 20% with the Proposed Development in place, which is considered minor.

3.34 The individual retained VSC daylight levels to Plot G, Great Jackson Street are shown in Figures 48 and 49.

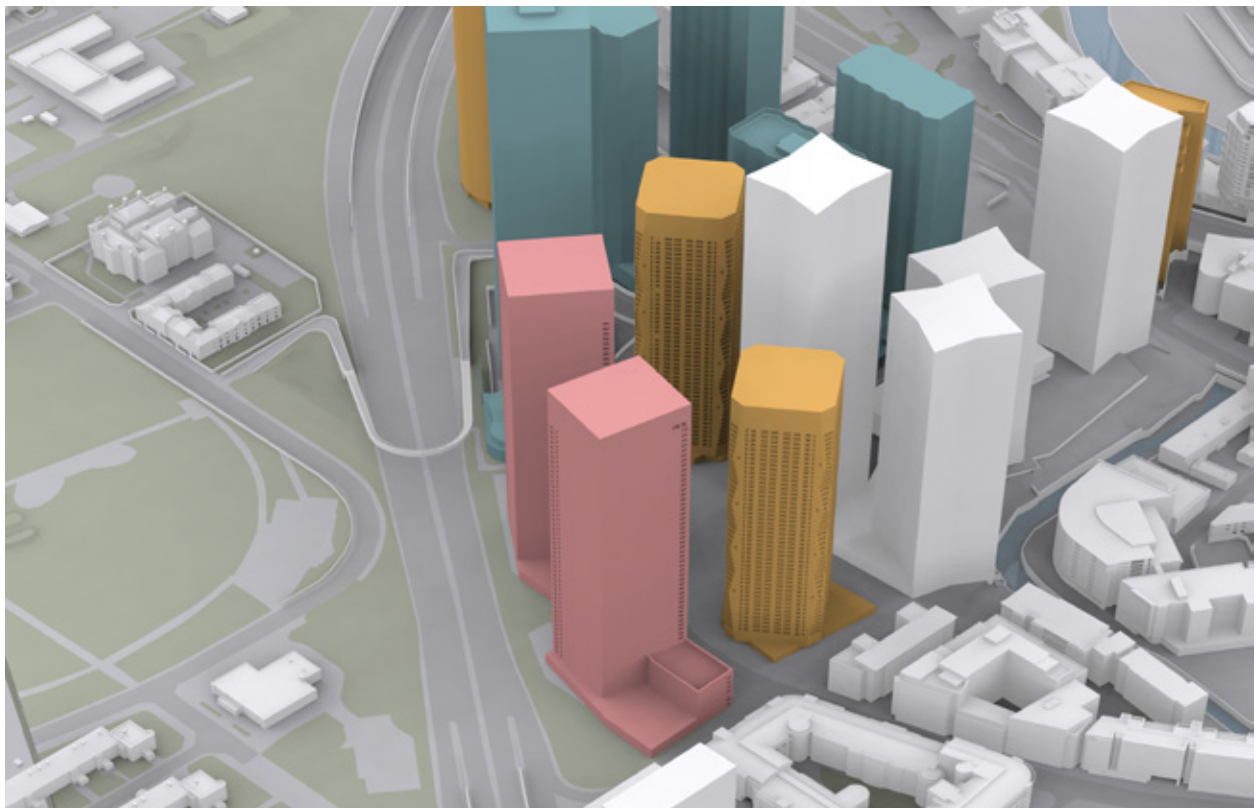
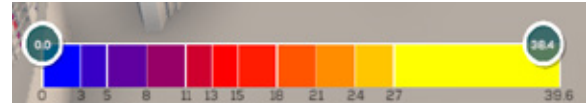


Figure 47: Plot G, Great Jackson Street

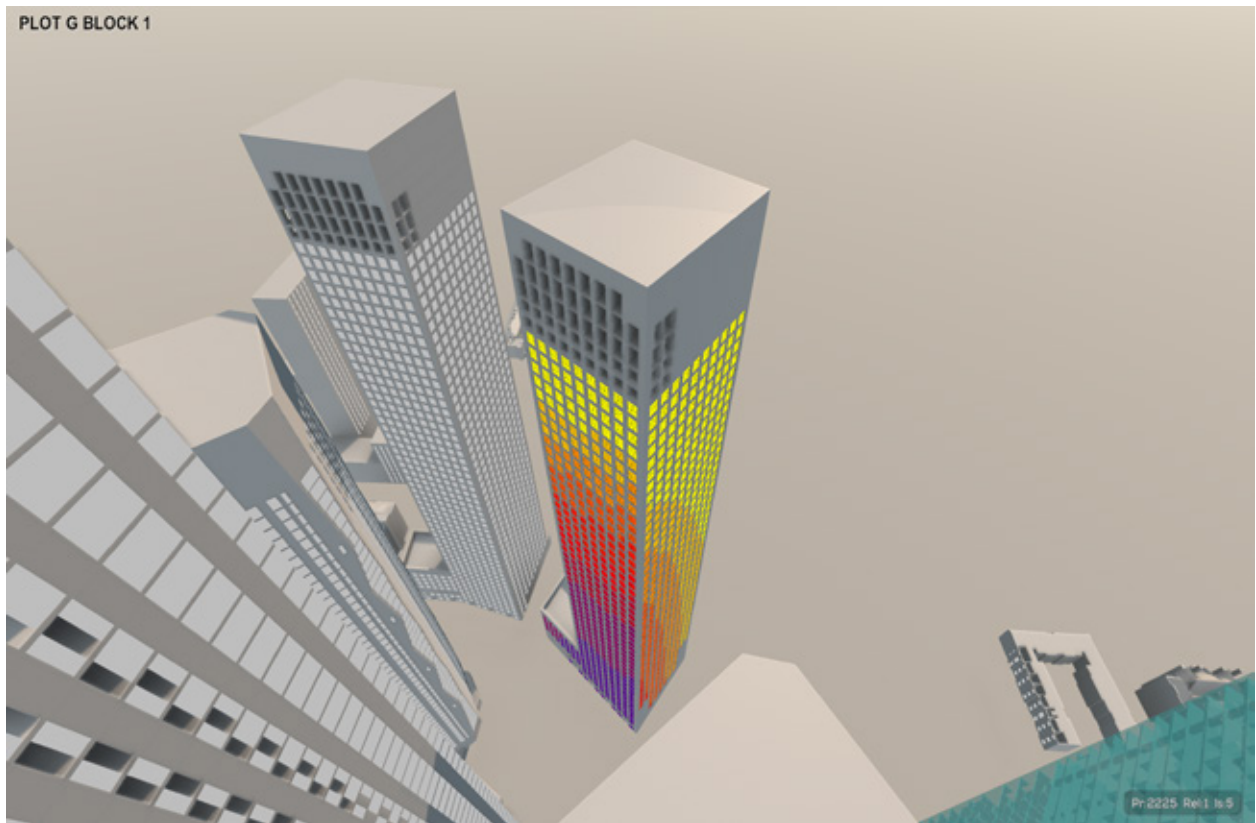


Figure 48: Plot G, Great Jackson Street - Proposed Retained VSC Daylight

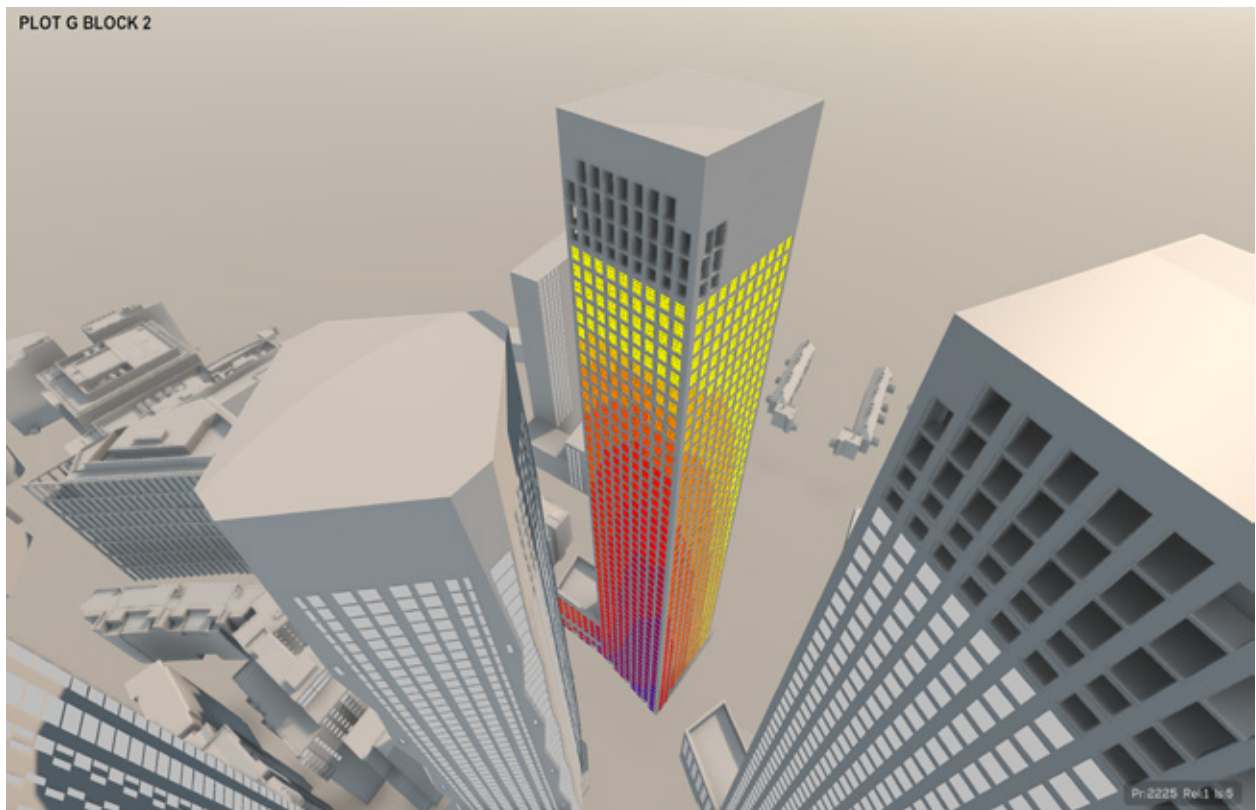


Figure 49: Plot G, Great Jackson Street - Proposed Retained VSC Daylight

DEANSGATE SOUTH

3.35 The reductions in daylight and sunlight to Deansgate South were found to be acceptable in context to the area for the following reasons:

- The property is not yet constructed, and it therefore has a lower sensitivity to changes in daylight;
- Future occupants will not be aware of any reductions in daylight and will anticipate lower daylight levels due to the proposals set out in the SRF;
- The majority of affected windows and rooms are bedrooms, which the BRE consider as having a lesser requirement for daylight; and
- The proposed use as student accommodation further reduces the sensitivity of the property as students are in occupation on a relatively short-term basis and are provided with alternative habitable accommodation within the building.

3.36 The individual retained VSC daylight levels to Deansgate South is shown in Figure 51.

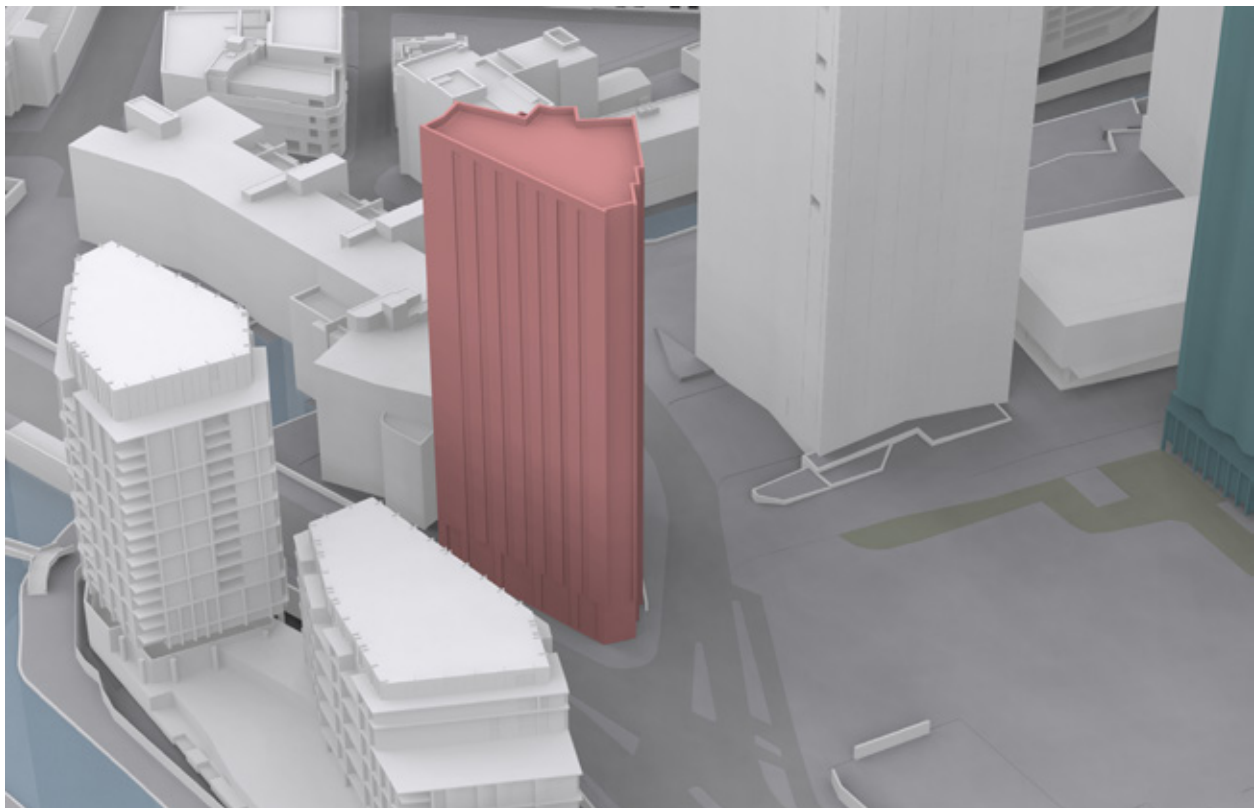
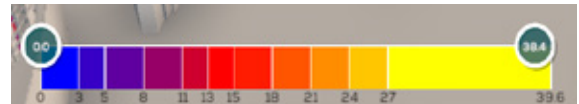


Figure 50: Deansgate South

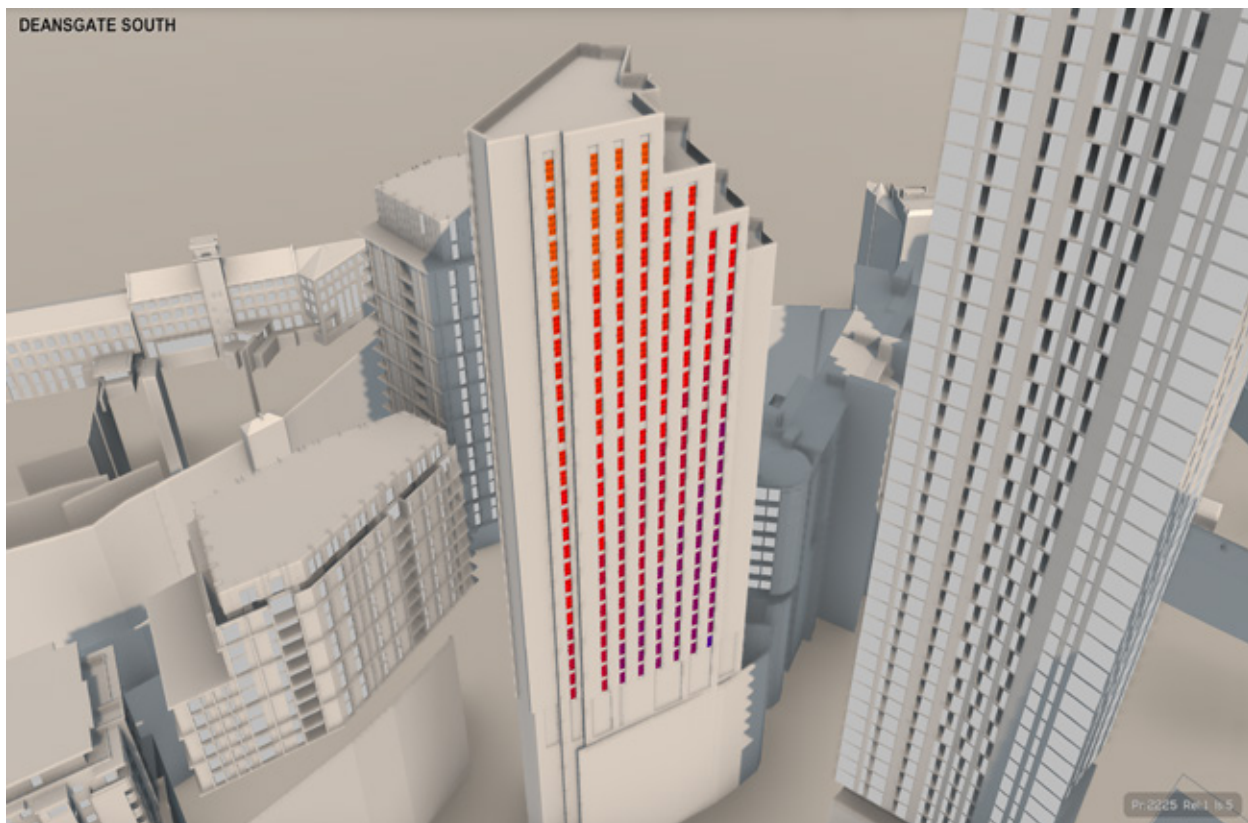


Figure 51: Deansgate South - Proposed Retained VSC Daylight

CROWN STREET PRIMARY SCHOOL

3.37 The reductions in daylight and sunlight to Crown Street Primary School were found to be acceptable in context to the area for the following reasons:

- The property is an educational building not a residential dwelling, so it has a lower sensitivity to changes in daylight;
- Additionally, the property is not yet constructed, which adds to its lower sensitivity to changes in daylight;
- Future occupants will not be aware of any reductions in daylight, which will be no greater than 5.8% in absolute terms, and will anticipate lower daylight levels due to the proposals set out in the SRF; and
- The property has low baseline levels given its height relative to the emerging density in the locality, which places a burden on the Site to maintain them.

3.38 The low levels of change to VSC daylight to Crown Street Primary School is shown in Figure 53.

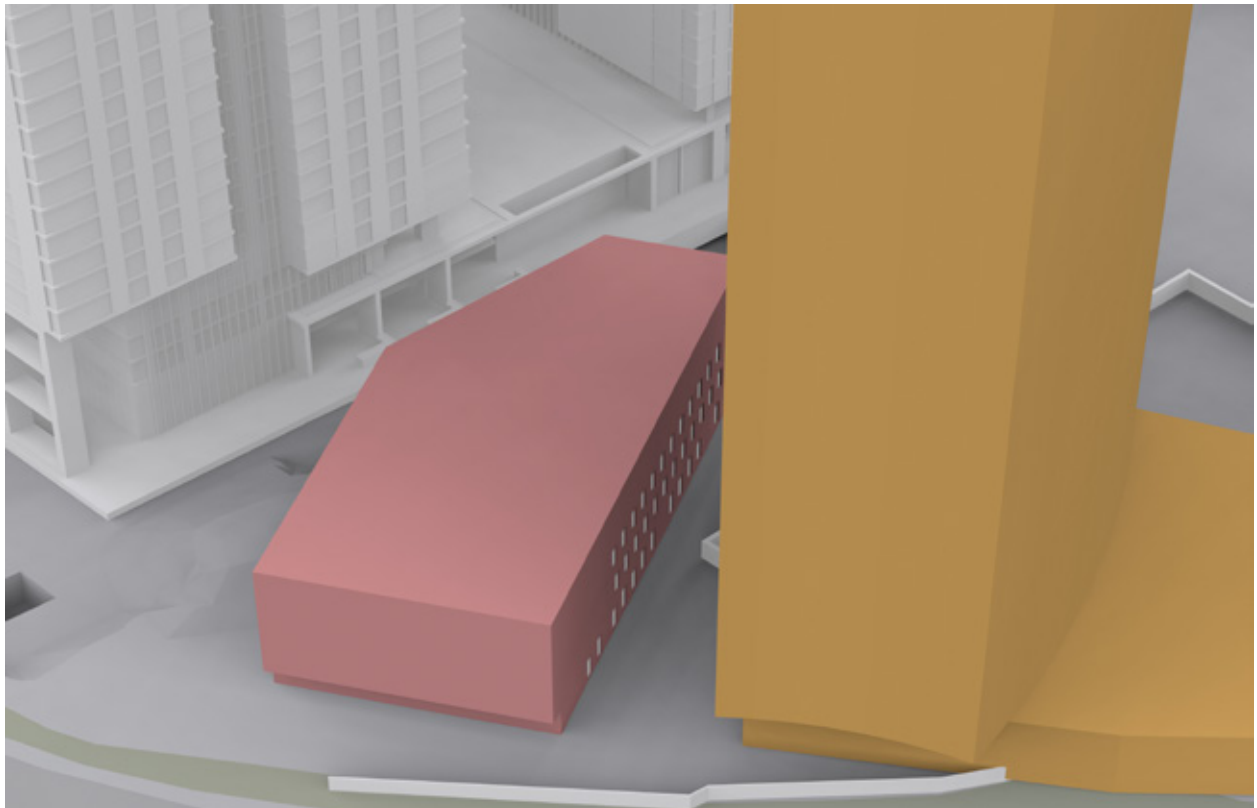


Figure 52: Crown Street Primary School

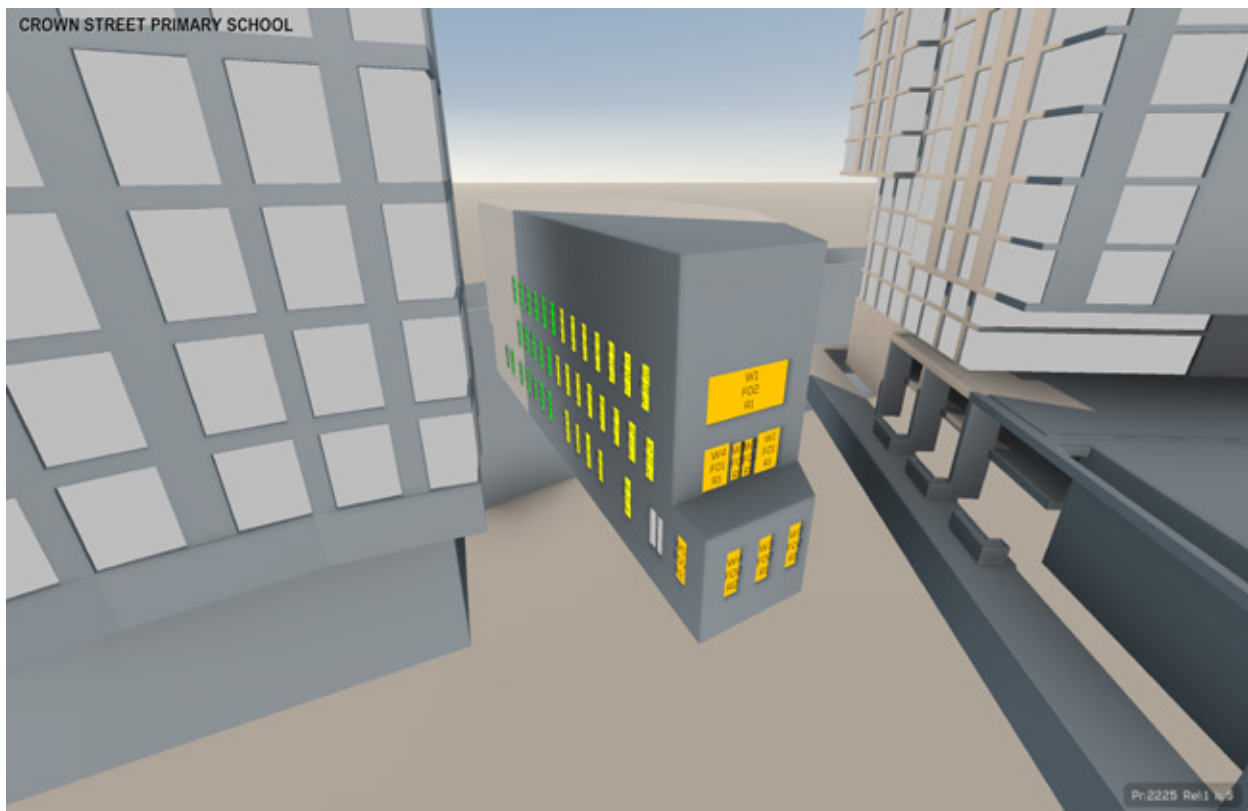


Figure 53: Crown Street Primary School- Proposed Reductions in VSC Daylight

4 CONCLUSIONS

GIA have prepared a non-technical summary of the daylight and sunlight ES Chapter prepared in respect of Crown Street Phase 3 & Plot D, Great Jackson Street, Manchester.

- 4.1 GIA have been instructed by Renaker Build Ltd to provide daylight and sunlight advice in relation to the proposed development known as Crown Street Phase 3 & Plot D, Great Jackson Street, Manchester.
- 4.2 The technical analysis has been considered by reference to the criteria and methodology within the Building Research Establishment Guidance (BR209, 2022) which when published, recognised that it *"is advisory and the numerical target values within it may be varied to meet the needs of the development and its location"*.
- 4.3 It is inevitable when constructing buildings in an urban environment that alterations in daylight and sunlight to surrounding properties can occur. It is well established and accepted that the BRE Guidelines, which set out the numerical benchmark for daylight and sunlight assessments, are purely advisory and are predicated on a relatively low-rise suburban environment.
- 4.4 In areas of increased density such as Great Jackson Street, it is expected that there will be deviations from the published target criteria, but it does not mean that they are not acceptable in context to the area.
- 4.5 This is acknowledged in the Manchester Core Strategy 2012-2027, which states:

"City Centre development will generally be high-density. It is a location where land should be used to its maximum efficiency. The appropriate scale, massing and height of development in the City Centre will significantly exceed what is appropriate elsewhere in the City."
- 4.6 It would therefore be unrealistic for the surrounding residential properties to expect to maintain similar levels of daylight as those currently experienced, given that the site is underutilised with only very low structures. Furthermore, as the site has been proposed for redevelopment in the Great Jackson Street Strategic Regeneration Framework for several years, surrounding residents will have an expectation of high-density development coming forward, and an understanding that the current daylight conditions were never intended to be permanent.
- 4.7 It is also important to note that there are many other design factors considered by the project team when considering the scale, massing and design of the buildings.
- 4.8 The site will bring a range of significant benefits to the local area. As such, the alterations in daylight and sunlight should not be considered in isolation and weight should be given to the demands of planning policy/guidance at a national, regional and local level whilst considering what is contextually appropriate and acceptable for a site of this nature in Manchester city centre.
- 4.9 As such, it is our opinion that daylight and sunlight impacts to surrounding properties will be acceptable in context, when considered against the flexibility with which the BRE guide is intended to be used, aspirations for redevelopment in the area as set out in the SRF, and acknowledgement that lower levels of daylight and sunlight are to be anticipated in dense, urban areas.

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