

Appendix 2.1

Daylight and Sunlight Report



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READING METROPOLITAN

Daylight and Sunlight Report

Overshadowing

• *Daylight & Sunlight* • *Light Pollution* •

Solar Glare • *Daylight Design*

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1 Executive Summary

- 1.1 This report has considered the potential Daylight, Sunlight and Overshadowing effects to the surrounding residential properties as a result of the implementation of the proposed TP Bennetts Architects scheme for the site at Caversham Road, Reading. The daylight potential within the proposed residential units has also been assessed as part of this report.
- 1.2 The assessments contained within this report have been undertaken in accordance with the BRE report entitled 'Site layout planning for daylight and sunlight: A guide to good practice', more commonly known as "The BRE Guidelines".
- 1.3 The site is currently made up of a couple of low-level commercial buildings. The site to the north (directly adjacent) could be developed in the future and thus consideration of a hypothetical massing along the boundary has also been explored in order to establish the potential light impacts created by the proposal on the emerging area. Given the above, the following scenarios have been considered as part of this report:
- True existing site condition v the potential light effects (to all existing neighbouring buildings) produced by the implementation of the proposed scheme.
 - The effective development of the northern site (hypothetical massing) and existing baselines of the Reading Metropolitan site v the potential light effects (to all existing neighbouring buildings) produced by the implementation of the proposed scheme.
 - A daylight study to establish the potential light effects on the hypothetical blocks for the northern site.
- 1.4 The results of the detailed daylight/sunlight assessments indicate full BRE compliance with no change in light to any of the neighbouring residential properties exceeding the tests outlined within the guidance. The results for both baseline conditions are therefore very encouraging and well within planning policy.
- 1.5 The daylight amenity levels within the proposed residential units are considered good (95% BRE compliant) with a high percentage of rooms tested meeting or exceeding the recommendations of the BRE Guidelines. With an urban development such as the Reading metropolitan site, there is a balance to be struck between providing private amenity spaces and maximising daylight potential within the units. Despite the provision of balconies, the retained daylight levels recorded are very encouraging which is testament to the quality of the architecture.
- 1.6 The proposed scheme performs very well in overshadowing terms with all the neighbouring amenity areas exceeding the suggested BRE Guidelines.

2 Introduction

- 2.1 Point 2 Surveyors Ltd have been appointed by Hermes Property Unit Trust Ltd to undertake a Daylight, Sunlight and Overshadowing review with regard to the proposed redevelopment of the Caversham Road development site - hereafter referred to as Reading Metropolitan.
- 2.2 The technical review considers the assessment of the proposed scheme by reference to the Building Research Establishment (BRE) Guidelines which seek to highlight the potential changes in light to those neighbouring buildings with a residential component.
- 2.3 The site is bounded by Caversham Road (to the West) and the Railway Station to the south. There is currently a series of structures located on the development site although these are relatively low in scale. The outline planning application includes the demolition of all existing buildings and structures, site preparation by the redevelopment of the application site for a mix of land uses to include Employment and Business (B1) Residential a (C3) Retail (A1) Food and Drink (A3,A4 and A5) Complimentary Social uses (D2) ,car parking, servicing , public and private open space ,landscaping ,highways ,pedestrian and vehicular access and associated works.
- 2.4 This report and the technical analysis of the likely significant effects of the Proposed Development has been undertaken via the creation of a digital three-dimensional model of the Site and surroundings. Buildings situated within the vicinity have been modelled from both a measured survey as well as some photogrammetry Z-mapping. The information used for this model includes site-photographs and research from the local authority planning records. The calculations in this report have been based on the submitted drawings produced and supplied by TP Bennett Architects.
- 2.5 The Proposed Development under assessment is the scheme designed by TP Bennett Architects. The source materials used to create the Proposed Development are listed as follows:
- Scheme: A11113-Massing-181112.dwg
- 2.6 It is recognised that the neighbouring site (located adjacent and to the north) could be developed in the future. Whilst no specific plans have been made available by the owners of this site, a hypothetical block massing has been incorporated within the assessment model to establish the potential changes in light produced by the Reading Metropolitan scheme on this theoretical massing and separately to establish the potential light effects on the surrounding buildings by the implementation of both the Reading Metropolitan scheme after the development of hypothetical massing. Several separate reviews have therefore been considered within this report including:
- True existing site condition v the potential light effects (to all existing neighbouring buildings) produced by the implementation of the proposed scheme.
 - The effective development of the northern site (hypothetical massing) and existing baselines of the Reading Metropolitan site v the potential light effects (to all existing neighbouring buildings) produced by the implementation of the proposed scheme.
 - A daylight study to establish the potential light effects on the hypothetical blocks for the northern site.

- 2.7 The extents of the current site (drawings P1368/01 to 03) and proposed buildings (drawings P1368/19 to 21) can be seen in Appendix A. The extent of the hypothetical massing review (drawings P1368/13 & 15 - baseline) and (P1368/22 to 25 – cumulative) are also included within Appendix A.
- 2.8 Access into the surrounding properties assessed as part of this report has not been obtained and we have therefore used site photographs and information from the local authority's planning records to best establish the internal layouts and room uses.

Guidance

National Planning Policy

National Planning Policy Framework (NPPF) 2018

- 2.9 Page 123 of the NPPF (Ref. 14.1) states:

“Where there is an existing or anticipated shortage of land for meeting identified housing needs, it is especially important that planning policies and decisions avoid homes being built at low densities and ensure that developments make optimal use of the potential of each site. In these circumstances: ...

...c) local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards).”

Historic England Guidance on Tall Buildings – Historic England Advice Note 4, 2015

- 2.10 The Historic England Advice Note 4 sets out guidance on dealing with tall buildings in the planning process. It supersedes the ‘Guidance on Tall Buildings’ issued by English Heritage and CABE in 2007. The Introduction notes that:

“Alternative approaches may be equally acceptable, provided they are demonstrably compliant with legislation and national policy objectives.” It notes that what might be considered a tall building will vary from area to area and “A ten storey building in a mainly two-storey neighbourhood will be thought of as a tall building by those affected, whereas in the centre of a large city it may not.”

- 2.11 The note states that it would be important to assess social and environmental effects associated with tall buildings. Amongst others, consideration should be given of the impact on the local environment, including microclimate, overshadowing, night-time appearance, light pollution, vehicle movements, the environment and amenity of those in the vicinity of the building, and the impact on the pedestrian experience.

Building Research Establishment Guidelines: Site Layout Planning for Daylight and Sunlight 2011, A Guide to Good Practice, Second Edition

- 2.12 The *Site Layout Planning for Daylight and Sunlight* (“BRE Guidelines”) (Ref. 1.8) provide advice on site layout planning to achieve good sunlighting and daylighting within buildings, and in the open spaces between them. It is intended for building designers, developers, consultants and Local Planning Authorities (LPAs). It is intended to be used in conjunction with the interior daylight recommendations in the *British Standard BS8206 Part II* and the *Applications Manual Window Design of the Chartered Institute of Building Services Engineers (CIBSE)* (Ref 1.9). The advice it gives is not mandatory and should not be used as an instrument of planning policy. Of particular relevance, it states:

“This guide is a comprehensive revision of the 1991 edition of Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice. It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location...the aim of the document is to help rather than constrain the designer. Though it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of many factors in site layout design. In special circumstances, the developer or the planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high-rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings.”

- 2.13 Through the planning process the local authority will wish to be reassured that the construction of the new scheme will not materially harm the neighbour’s daylight and sunlight beyond BRE and British Standard Guidance.
- 2.14 The BRE guidelines are not mandatory, though local planning authorities and planning inspectors will consider the suitability of a proposed scheme for a site within the context of BRE guidance. Consideration will be given to the urban context within which a scheme is located, and the daylight and sunlight will be one of a number of planning considerations which the local authority will weigh.
- 2.15 In relation to the primary daylight test, VSC, the BRE Guidelines recognise that the target of 27% is not always suitable, especially in urban areas. It is, therefore, often appropriate to consider a suitable alternative target for the first daylight test.

Daylighting

- 2.16 It is common to consider the site context in order to establish the basis for which consideration in relation to light should be approached. The following can be used as a quick test to assess the likely effect on existing surrounding properties:
- Project a 25-degree line from the centre of the lowest window on the existing building;
 - If the whole of your new development is lower than this line, then it is unlikely to have a substantial effect on the daylight enjoyed by occupants in the existing building.
- 2.17 The above test is also known as the 25° angle test but has not been used for this assessment as it does not reflect the differing heights and layouts of the buildings in the local area.
- 2.18 More detailed tests can be undertaken to fully assess the loss of daylight in existing buildings, in particular the use of the Vertical Sky Component (VSC) method of assessment.

“The Vertical Sky Component is expressed as a ratio of the maximum value of daylight achievable for a completely unobstructed vertical wall. The maximum value is almost 40%. This is because daylight hitting a window can only come from one direction immediately halving the available light. The value is limited further by the angle of the sun. This is why if the VSC is greater than 27% enough sunlight [SIC] should be reaching the existing window. Any reduction below this level should be kept to minimum.

Windows to some existing rooms may already fail to achieve this target under existing conditions. In these circumstances it is possible to accept a reduction to the existing level of daylight to no less than 80% of its former value."

- 2.19 In summary to the above, a room is considered to continue to receive good levels of daylight if the window can receive a VSC of at least 27%. If the window receives a VSC below 27% in the existing scenario a reduction of less than 0.8 times its former value (20%), as a result of the proposed development, is considered acceptable.
- 2.20 In conjunction with the VSC tests, the BRE guidelines and British Standard 8206-Part2:2008 suggest that the distribution of daylight is assessed using the No Sky Line (NSL) test. This test separates those areas of the working plane that can receive direct skylight and those that cannot.
- 2.21 The BRE guidelines suggest that the daylight distribution test is undertaken to existing surrounding properties when the internal arrangements are known. To assess the impact of any reduction the BRE guidelines suggest:

"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."

Balconies

- 2.22 The BRE Guidelines acknowledge that existing windows with balconies above them typically receive less daylight:

"...Because the balcony cuts out 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 0.8 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."

- 2.23 Where neighbouring residential properties surrounding the Site are served by balconies, an additional assessment with the balconies removed has been undertaken to demonstrate whether the presence of the balcony is having a limiting and disproportionate effect in daylighting terms with the introduction of the Proposed Development.

Sunlighting

- 2.24 The amount of direct sunlight a window can enjoy is dependent on its orientation and the extent of any external obstructions. For example, a window that faces directly north, no matter what external obstructions are present, will not be able to receive good levels of sunlight throughout the year. However, a window that faces directly south with no obstructions will enjoy very high levels of sunlight throughout the year. As the potential to receive sunlight is dependent on a window's orientation, the BRE guidelines state:

“To assess loss of sunlight to an existing building, it is suggested that all main living rooms of dwellings, and conservatories, 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.”

- 2.25 To consider any sunlight effect to the surrounding properties the BRE guidelines suggest calculating the Annual Probable Sunlight Hours (APSH) at the centre of each window on the outside face of the window wall. The BRE guidelines suggest that:

“If this window point can receive more than one quarter of APSH (see section 3.1), including at least 5% of APSH in the winter months between 21st September and 21st March, then the room should still receive enough sunlight.”

- 2.26 If the above criteria is not met, the BRE guidelines suggest calculating the APSH at the window in the existing situation, i.e. before redevelopment. If the reduction of APSH between the existing and proposed situations is less than 0.8 times its former value for either the total APSH or in the winter months; and greater than 4% for the total APSH, then the occupants of the adjoining building are likely to notice the reduction in sunlight.
- 2.27 In assessing the daylight and sunlight to the neighbouring buildings as well as assessing the quality of light within the proposed habitable rooms that make up the residential units, the true existing baseline condition has been observed. This includes all neighbouring buildings and obstructions within the vicinity that could be affected by the scheme proposal and or affect the potential for light entering into the proposed residential rooms within the scheme.
- 2.28 Trees and any other foliage have not been considered as part of the assessments as their size, shape, and density are impossible to predict. The BRE do recognise that certain tree types can be obstructive in allowing light penetration and further provide a transparency (% radiation passing) to apply within the calculation of daylight.
- 2.29 The obstruction produced by trees will in any event be blocking a certain view of the sky dome and thus the actual impact produced by testing the changes in light (or view of the sky dome) by the scheme can be slightly misleading given that in some instances no view of the existing and proposal will be prevalent and thus no recording of any alteration observed. The results are therefore a clear indication as to what would be available in the event that no trees were present and therefore what the worst-case impacts would be by the implementation of the proposal.
- 2.30 Due to the orientation of the site not all of the neighbouring properties tested for daylight analysis qualify for sunlight analysis.

Internal Daylight Amenity within New Development

- 2.31 The BRE recognises the importance for receiving adequate daylight within the proposed residential accommodation. The use of the Average Daylight Factor (ADF) is used to determine the average illuminance on the working plane in a room, divided by the illuminance on an unobstructed surface outdoors. This analysis is undertaken in accordance with BS 8206 Part 2:2008.

- 2.32 The BRE suggests minimum ADF standards for room use for which the following is recommended:

Kitchens	2.0%
Living rooms	1.5%
Bedrooms	1.0%

- 2.33 Although the ADF test is typically used as a measure of daylight amenity within new developments, it can also act as indication of retained daylight amenity to existing neighbouring properties where room uses, and internal finishes are known.

Overshadowing

- 2.34 The 2011 BRE Guidelines acknowledge that sunlight in the space between buildings has an important effect on the overall appearance and ambience of a development. It states:

“...good site layout planning for daylight and sunlight should not limit itself to providing good natural light inside buildings. Sunlight in the space between buildings has an important effect on the overall appearance and ambience of a development.”

Sun on the Ground

- 2.35 The method for assessing sun on the ground is the ‘sun-on-ground indicator’. The BRE Guidelines suggest that the Spring Equinox (21st March) is a suitable date for the assessment.
- 2.36 Using specialist software, the path of the sun is tracked to determine where the sun would reach the ground and where it would not. This assessment reviews the total percentage of an area that receives at least 2 hours of direct sunlight on 21st March.
- 2.37 The Guidelines suggest that for a garden or amenity area to appear adequately sunlit throughout the year, no more than half (50%) of the area should be prevented by buildings from receiving 2 hours of sunlight on the 21st March or the area that can receive two hours of sun on 21st March is less than 0.8 times former value. The BRE guidelines advise that any alteration beyond these standards may be noticeable to occupants.
- 2.38 It is sometimes beneficial to run an additional test for the 21st June to establish how the sunlight potential to receive 2 hours of sun improves over the summer when occupants typically use outdoor amenity spaces more frequently.

3 Computer Model

- 3.1 The technical analysis of the likely effects of the Development has been undertaken through the creation of a digital three-dimensional model of the site, existing surrounding buildings. The measured survey model has been further extended to include photogrammetry of the extension area. The Proposed Development has been incorporated into the three-dimensional model of the site and used to inform a comparative assessment against each of the scenarios as outlined in paragraph 2.6. of this report. Detailed technical assessments have been undertaken by reference to the calculations and methodologies outlined in the BRE guidance.

4 Surrounding Properties

4.1 It is understood that only the following properties are registered with a residential usage or include a residential component which could in turn experience a change in light by the implementation of the proposed scheme.

- 1-8 Monmouth Court
- 87 Caversham Road
- 89 Caversham Road
- 91 Caversham Road
- 93-97 Caversham Road
- 97a Caversham Road
- 99-103 Caversham Road
- 17 Vastern Road
- 19 Vastern Road
- 21 Vastern Road
- 23 Vastern Road
- 25 Vastern Road
- 27 Vastern Road
- 29 Vastern Road
- 31 Vastern Road
- 33 Vastern Road
- 35 Vastern Road
- 37 Vastern Road
- 39 Vastern Road
- 41 Vastern Road
- 43 Vastern Road
- 45 Vastern Road
- 47 Vastern Road
- 49 Vastern Road
- 51 Vastern Road

4.2 It is recognised that the development site includes a few relatively low commercial structures where any additional massing could translate into recorded changes in light to the neighbouring residential properties.

4.3 A site plan illustrating the position of the above surrounding properties is shown on Plate 03 below. The BRE guide mainly focuses on residential properties in terms of daylight and thus this review concentrates on those specific buildings. The residential receptors (highlighted in *blue*) in the vicinity of the site (as shown in *orange*) with a clear view of the proposed massing are shown on Plate 01 together with the neighbouring buildings.

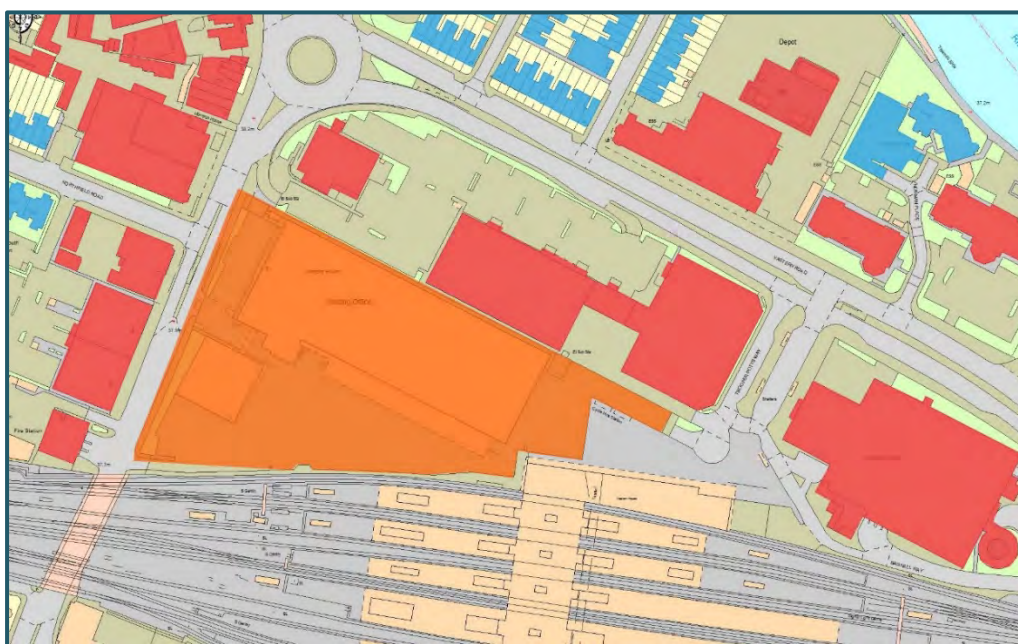


PLATE 01 – PLAN SHOWING RESIDENTIAL (BLUE) AND COMMERCIAL (RED) PROPERTIES SURROUNDING THE READING METROPOLITAN SITE (ORANGE)

- 4.4 The tabulated results of the BRE Daylight & Sunlight assessments are included within Appendix B. A detailed explanation of the results for each property is set out in Section 5 of this report.
- 4.5 Some of the properties (as highlighted on Plate 05) are either too far away to be affected by the implementation of the Proposed Development or understood to be of commercial use and not considered to have the same expectation for daylight or sunlight as those buildings with habitable uses. Detailed assessments have therefore only been undertaken to those properties closest to the development site which could in turn be affected by the implementation of the TP Bennett Architects proposal.

5 Assessment Key for Daylight & Sunlight to Neighbouring Buildings

5.1 A number of key assessments have been undertaken in order to establish the potential changes in light to the neighbouring buildings. Recognising that there could be development aspirations for the site adjacent and to the north of the Reading Metropolitan site, a hypothetical block massing has been considered in order to establish the potential light effects on this block arrangement by the scheme and separately the potential additional effects created by the Reading Metropolitan scheme after the hypothetical massing has been developed on the neighbouring buildings. Each of the following assessments have been considered:

1. True existing site condition v the potential light effects (to all existing neighbouring buildings) produced by the implementation of the proposed scheme.
2. The effective development of the northern site (hypothetical massing) and existing baselines of the Reading Metropolitan site v the potential light effects (to all existing neighbouring buildings) produced by the implementation of the proposed scheme.
3. A daylight study to establish the potential light effects on the hypothetical blocks for the northern site.

5.2 The tabulated daylight and sunlight results are enclosed within Appendix B of this report. The headline daylight results (VSC & NSL) are shown on the two tables below 01 to 06.

True Existing V Proposed Scheme

5.3 In this scenario, consideration is given to the potential changes in light produced by the implementation of the proposed scheme against the existing baseline condition.

5.4 The baseline of the site is shown on plate 02 below.

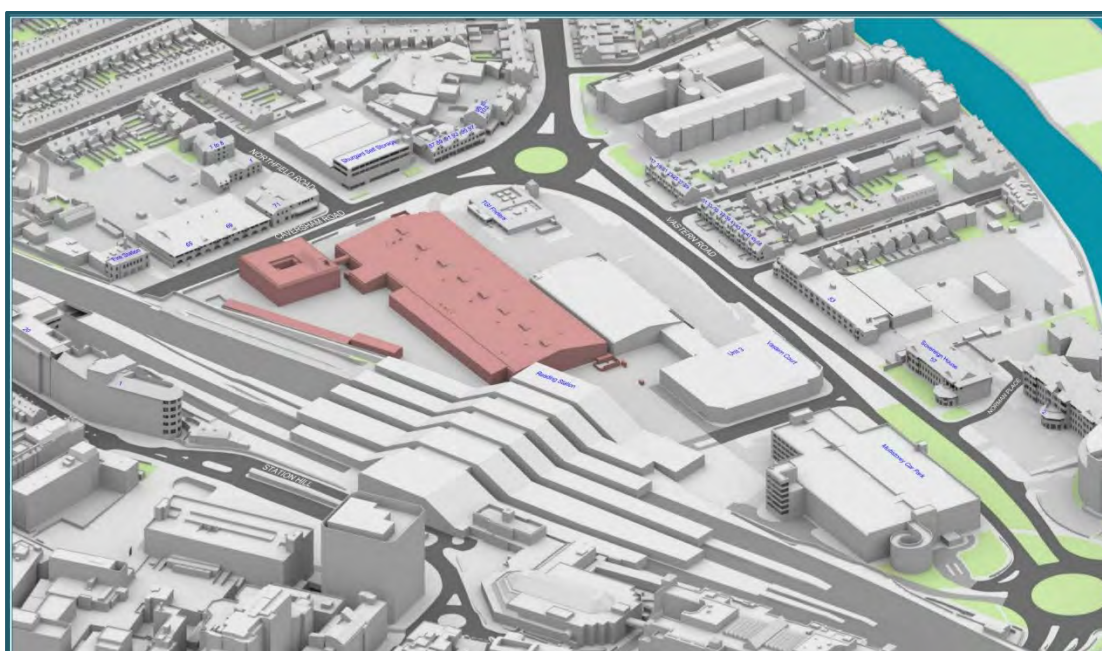


PLATE 02— TRUE EXISTING BASELINE — READING METROPOLITAN SITE BUILDINGS SHOWN IN PINK

5.5 The extent of the proposed TP Bennett scheme is shown below on plate 03.



PLATE 03- THE PROPOSED TP BENNETT ARCHITECTS SCHEME

- 5.6 The results of the Daylight & Sunlight assessment are captured within the summary tables (01,02 &03) below.

Daylight

TABLE 01 – VSC SUMMARY

Address	Total that Meet BRE Guidelines	Below BRE Guidelines			Total	Total No. of Windows
		20-29% Loss	30-39.9% Loss	>=40% Loss		
1-8 Monmouth Court	6	0	0	0	0	6
87 Caversham Road	17	0	0	0	0	17
89 Caversham Road	3	0	0	0	0	3
91 Caversham Road	3	0	0	0	0	3
93-97 Caversham Road	9	0	0	0	0	9
97a Caversham Road	1	0	0	0	0	1
99 to 103 Caversham Road	23	0	0	0	0	23
17 Vastern Road	7	0	0	0	0	7
19 Vastern Road	6	0	0	0	0	6
21 Vastern Road	6	0	0	0	0	6
23 Vastern Road	6	0	0	0	0	6
25 Vastern Road	6	0	0	0	0	6
27 Vastern Road	6	0	0	0	0	6
29 Vastern Road	5	0	0	0	0	5
31 Vastern Road	7	0	0	0	0	7
33 Vastern Road	7	0	0	0	0	7
35 Vastern Road	7	0	0	0	0	7
37 Vastern Road	7	0	0	0	0	7
39 Vastern Road	7	0	0	0	0	7
41 Vastern Road	7	0	0	0	0	7
43 Vastern Road	7	0	0	0	0	7
45 Vastern Road	7	0	0	0	0	7
47 Vastern Road	7	0	0	0	0	7
49 Vastern Road	7	0	0	0	0	7
51 Vastern Road	10	0	1	0	1	11
Total	184	0	1	0	1	185

- 5.7 The results of the first daylight test, VSC, demonstrate that 184 out of 185 windows (99.5%) meet the strict application of the BRE guide.
- 5.8 Only one window (W55/1010) experiences a change in light greater than 20%. This window forms part of an entrance doorway for the commercial building at 51 Vastern Road and in particular the door light located under the overhanging projection (see Plate 04 below).



PLATE 04 – THE COMMERCIAL PROPERTY AT 51 VASTERN ROAD AND THE DOOR LIGHT ARRANGEMENT ABOVE THE FRONT ENTRANCE DOOR

TABLE 02 – NSL SUMMARY

Address	Total that Meet BRE Guidelines	Below BRE Guidelines			Total	Total No. of Rooms
		20-29% Loss	30-39.9% Loss	>=40% Loss		
1-8 Monmouth Court	6	0	0	0	0	6
87 Caversham Road	7	0	0	0	0	7
89 Caversham Road	2	0	0	0	0	2
91 Caversham Road	2	0	0	0	0	2
93-97 Caversham Road	6	0	0	0	0	6
97a Caversham Road	1	0	0	0	0	1
99 to 103 Caversham Road	13	0	0	0	0	13
17 Vastern Road	3	0	0	0	0	3
19 Vastern Road	3	0	0	0	0	3
21 Vastern Road	3	0	0	0	0	3
23 Vastern Road	3	0	0	0	0	3
25 Vastern Road	3	0	0	0	0	3
27 Vastern Road	3	0	0	0	0	3
29 Vastern Road	2	0	0	0	0	2
31 Vastern Road	3	0	0	0	0	3
33 Vastern Road	3	0	0	0	0	3
35 Vastern Road	3	0	0	0	0	3
37 Vastern Road	3	0	0	0	0	3
39 Vastern Road	3	0	0	0	0	3
41 Vastern Road	3	0	0	0	0	3
43 Vastern Road	3	0	0	0	0	3
45 Vastern Road	3	0	0	0	0	3
47 Vastern Road	3	0	0	0	0	3
49 Vastern Road	3	0	0	0	0	3
51 Vastern Road	3	0	0	0	0	3
Total	90	0	0	0	0	90

- 5.9 The results of the NSL test demonstrate that 100% of the rooms tested will meet the BRE guidelines with the implementation of the proposed scheme.

- 5.10 In terms of the sunlight assessment, there are 162 windows which face the development site and are have within 90 degrees of due south.

TABLE 03 – APSH SUMMARY

Address	Meet BRE Guidelines	No. of windows below the APSH stated in BRE Guidelines								Total No. Windows
		% Below threshold for Winter APSH				% Below threshold for Total APSH				
		20-30%	30-40%	>40%	Total	20-30%	30-40%	>40%	Total	
1-8 Monmouth Court	6	0	0	0	0	0	0	0	0	6
87 Caversham Road	17	0	0	0	0	0	0	0	0	17
89 Caversham Road	3	0	0	0	0	0	0	0	0	3
91 Caversham Road	3	0	0	0	0	0	0	0	0	3
93-97 Caversham Road	9	0	0	0	0	0	0	0	0	9
97a Caversham Road	1	0	0	0	0	0	0	0	0	1
17 Vastern Road	7	0	0	0	0	0	0	0	0	7
19 Vastern Road	6	0	0	0	0	0	0	0	0	6
21 Vastern Road	6	0	0	0	0	0	0	0	0	6
23 Vastern Road	6	0	0	0	0	0	0	0	0	6
25 Vastern Road	6	0	0	0	0	0	0	0	0	6
27 Vastern Road	6	0	0	0	0	0	0	0	0	6
29 Vastern Road	5	0	0	0	0	0	0	0	0	5
31 Vastern Road	7	0	0	0	0	0	0	0	0	7
33 Vastern Road	7	0	0	0	0	0	0	0	0	7
35 Vastern Road	7	0	0	0	0	0	0	0	0	7
37 Vastern Road	7	0	0	0	0	0	0	0	0	7
39 Vastern Road	7	0	0	0	0	0	0	0	0	7
41 Vastern Road	7	0	0	0	0	0	0	0	0	7
43 Vastern Road	7	0	0	0	0	0	0	0	0	7
45 Vastern Road	7	0	0	0	0	0	0	0	0	7
47 Vastern Road	7	0	0	0	0	0	0	0	0	7
49 Vastern Road	7	0	0	0	0	0	0	0	0	7
51 Vastern Road	11	0	0	0	0	0	0	0	0	11
Total	162	0	0	0	0	0	0	0	0	162

- 5.11 The results of the APSH (sunlight) assessment show a 100% compliance rate.
- 5.12 When considering the (surrounding and facing the site) site as an existing baseline, it can be concluded that all residential windows and rooms will remain fully BRE compliant with the proposed scheme.

Hypothetical Massing and the Existing site baseline v Proposed scheme

- 5.13 In this scenario, consideration is given to the potential changes in light produced by the implementation of the proposed scheme (see plate 03) against a hypothetical scheme which could be developed on the site north of Reading Metropolitan (see Plates 05 & 06 – hypothetical massing in purple). The assessment considers the effects of the proposal with the hypothetical massing already developed.

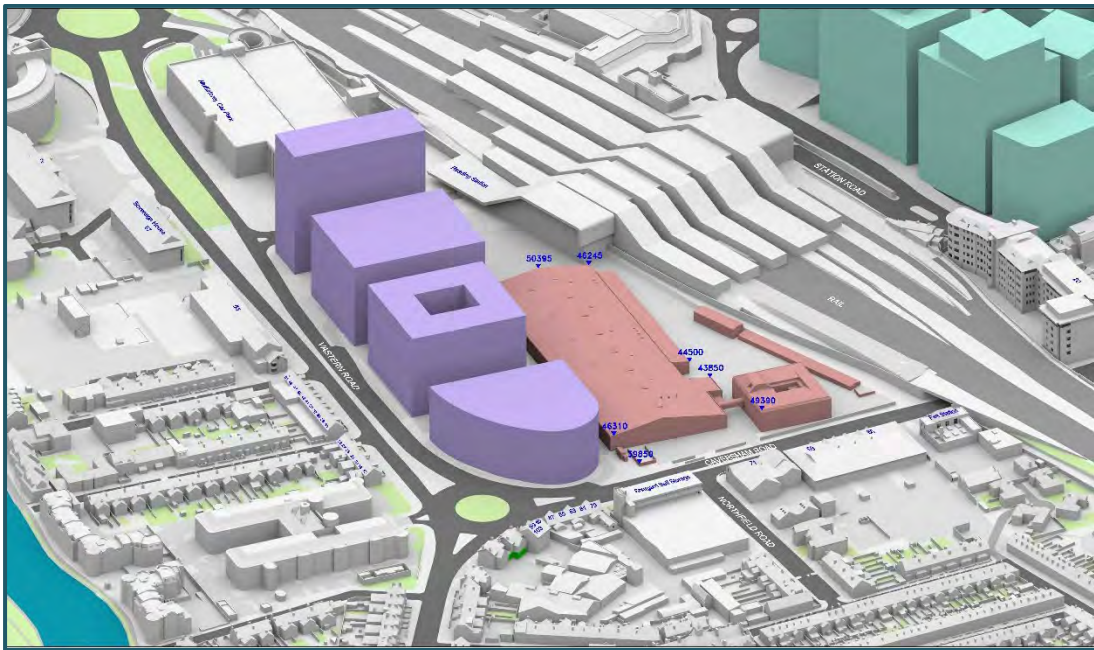


PLATE 05— HYPOTHETICAL BLOCK MASSING FOR THE NEIGHBOURING NORTHERN SITE AND EXISTING BASELINE FOR THE READING METROPOLITAN SITE



PLATE 06 — HYPOTHETICAL BLOCK MASSING FOR THE NEIGHBOURING NORTHERN SITE AT THE PROPOSED READING METROPOLITAN DEVELOPMENT

- 5.14 The results of the Daylight & Sunlight assessment are captured within the summary tables (04,05 & 06) below.

Daylight

TABLE 04 – VSC SUMMARY

Address	Total that Meet BRE Guidelines	Below BRE Guidelines 20-29% Loss	30-39.9% Loss	>=40% Loss	Total	Total No. of Windows
1-8 Monmouth Court	6	0	0	0	0	6
87 Caversham Road	17	0	0	0	0	17
89 Caversham Road	3	0	0	0	0	3
91 Caversham Road	3	0	0	0	0	3
93-97 Caversham Road	9	0	0	0	0	9
97a Caversham Road	1	0	0	0	0	1
99 to 103 Caversham Road	23	0	0	0	0	23
17 Vastern Road	7	0	0	0	0	7
19 Vastern Road	6	0	0	0	0	6
21 Vastern Road	6	0	0	0	0	6
23 Vastern Road	6	0	0	0	0	6
25 Vastern Road	6	0	0	0	0	6
27 Vastern Road	6	0	0	0	0	6
29 Vastern Road	5	0	0	0	0	5
31 Vastern Road	7	0	0	0	0	7
33 Vastern Road	7	0	0	0	0	7
35 Vastern Road	7	0	0	0	0	7
37 Vastern Road	7	0	0	0	0	7
39 Vastern Road	7	0	0	0	0	7
41 Vastern Road	7	0	0	0	0	7
43 Vastern Road	7	0	0	0	0	7
45 Vastern Road	7	0	0	0	0	7
47 Vastern Road	7	0	0	0	0	7
49 Vastern Road	7	0	0	0	0	7
51 Vastern Road	11	0	0	0	0	11
Total	185	0	0	0	0	185

- 5.15 The results of the first daylight test, VSC, demonstrate that 185 out of 185 windows (100%) meet the strict application of the BRE guide. That is to say that the Reading Metropolitan scheme will not cause a change in light to any of the windows serving the neighbouring residential buildings (or building with a residential component) as a result of the proposed scheme.

TABLE 05 – NSL SUMMARY

Address	Total that Meet BRE Guidelines	Below BRE Guidelines 20-29% Loss	30-39.9% Loss	>=40% Loss	Total	Total No. of Rooms
1-8 Monmouth Court	6	0	0	0	0	6
87 Caversham Road	7	0	0	0	0	7
89 Caversham Road	2	0	0	0	0	2
91 Caversham Road	2	0	0	0	0	2
93-97 Caversham Road	6	0	0	0	0	6
97a Caversham Road	1	0	0	0	0	1
99 to 103 Caversham Road	13	0	0	0	0	13
17 Vastern Road	3	0	0	0	0	3
19 Vastern Road	3	0	0	0	0	3
21 Vastern Road	3	0	0	0	0	3
23 Vastern Road	3	0	0	0	0	3
25 Vastern Road	3	0	0	0	0	3
27 Vastern Road	3	0	0	0	0	3
29 Vastern Road	2	0	0	0	0	2
31 Vastern Road	3	0	0	0	0	3
33 Vastern Road	3	0	0	0	0	3
35 Vastern Road	3	0	0	0	0	3
37 Vastern Road	3	0	0	0	0	3
39 Vastern Road	3	0	0	0	0	3
41 Vastern Road	3	0	0	0	0	3
43 Vastern Road	3	0	0	0	0	3
45 Vastern Road	3	0	0	0	0	3
47 Vastern Road	3	0	0	0	0	3
49 Vastern Road	3	0	0	0	0	3
51 Vastern Road	3	0	0	0	0	3
Total	90	0	0	0	0	90

- 5.16 The results of the NSL test demonstrate that 100% of the rooms (90 out of 90) meet the BRE Guidelines.
- 5.17 In terms of the sunlight assessment, there are 162 windows which face the development site and have windows within 90 degrees of due south. Every room assessed will meet the BRE Guidelines.

- 5.18 In terms of the sunlight assessment, there are 162 windows which face the development site and are have within 90 degrees of due south.

TABLE 06 – APSH SUMMARY

Address	Meet BRE Guidelines	No. of windows below the APSH stated in BRE Guidelines								Total No. Windows
		% Below threshold for Winter APSH				% Below threshold for Total APSH				
		20-30%	30-40%	>40%	Total	20-30%	30-40%	>40%	Total	
1-8 Monmouth Court	6	0	0	0	0	0	0	0	0	6
87 Caversham Road	17	0	0	0	0	0	0	0	0	17
89 Caversham Road	3	0	0	0	0	0	0	0	0	3
91 Caversham Road	3	0	0	0	0	0	0	0	0	3
93-97 Caversham Road	9	0	0	0	0	0	0	0	0	9
97a Caversham Road	1	0	0	0	0	0	0	0	0	1
17 Vastern Road	7	0	0	0	0	0	0	0	0	7
19 Vastern Road	6	0	0	0	0	0	0	0	0	6
21 Vastern Road	6	0	0	0	0	0	0	0	0	6
23 Vastern Road	6	0	0	0	0	0	0	0	0	6
25 Vastern Road	6	0	0	0	0	0	0	0	0	6
27 Vastern Road	6	0	0	0	0	0	0	0	0	6
29 Vastern Road	5	0	0	0	0	0	0	0	0	5
31 Vastern Road	7	0	0	0	0	0	0	0	0	7
33 Vastern Road	7	0	0	0	0	0	0	0	0	7
35 Vastern Road	7	0	0	0	0	0	0	0	0	7
37 Vastern Road	7	0	0	0	0	0	0	0	0	7
39 Vastern Road	7	0	0	0	0	0	0	0	0	7
41 Vastern Road	7	0	0	0	0	0	0	0	0	7
43 Vastern Road	7	0	0	0	0	0	0	0	0	7
45 Vastern Road	7	0	0	0	0	0	0	0	0	7
47 Vastern Road	7	0	0	0	0	0	0	0	0	7
49 Vastern Road	7	0	0	0	0	0	0	0	0	7
51 Vastern Road	11	0	0	0	0	0	0	0	0	11
Total	162	0	0	0	0	0	0	0	0	162

- 5.19 The results of the APSH (sunlight) assessment show a 100% compliance rate.
- 5.20 When considering the (surrounding and facing the site) site as an existing baseline, it can be concluded that all residential windows and rooms will remain fully BRE compliant with the proposed scheme.

Overall Amenity Summary

- 5.21 The results of the technical assessments demonstrate that the implementation of the proposed scheme will not result in any material changes in light to those neighbouring residential properties facing the site.

6 The Proposed development and the potential daylight effects on the hypothetical massing north of the development

- 6.1 It is understood that there is no active planning permission (at the date of this report) for the site directly adjacent and to the north of the Reading Metropolitan site although in this scenario consideration is given to the potential changes in light produced by the proposed Reading Metropolitan scheme on a hypothetical block massing.
- 6.2 Drawings P1368-FS-01 to P1368-FS12 show both the existing daylight potential both in relation to the VSC and ADF methods of assessment and proposed conditions. The VSC assessment considers the available daylight falling on the vertical surface for those elevations facing the Reading Metropolitan site and corresponding colour coded range spectrum showing the likely VSC potential. Plates 07 & 08 below shows the existing and proposed conditions.

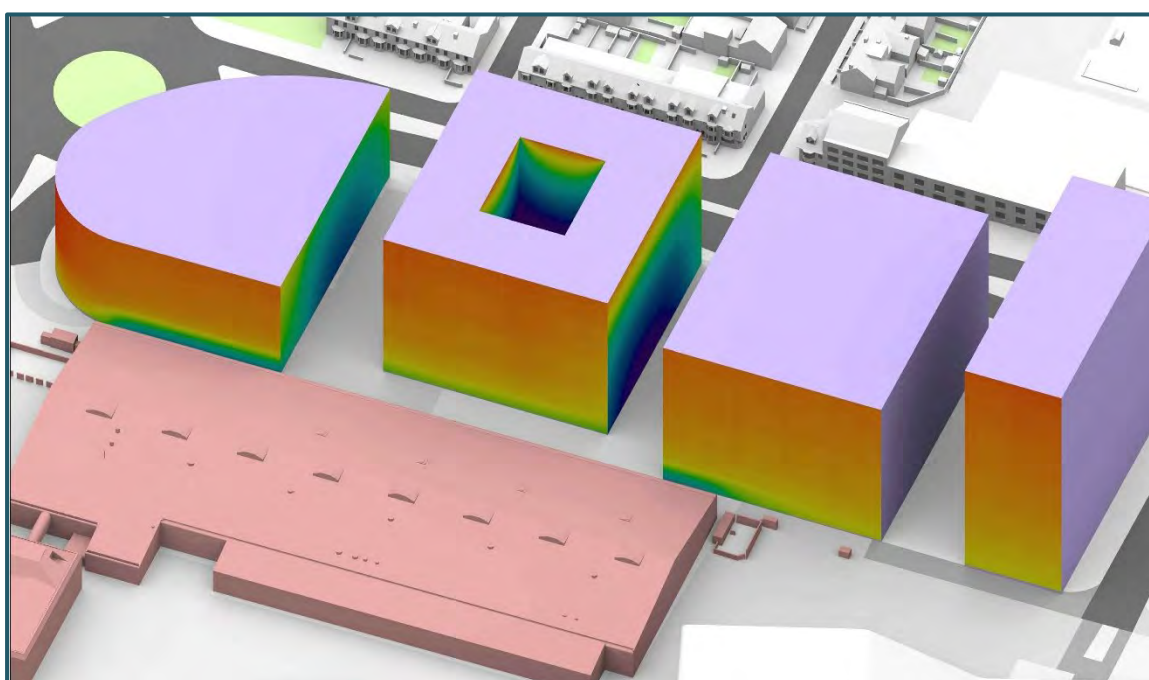


PLATE 07 – EXISTING METROPOLITAN SITE AND HYPOTHETICAL MASSING ON THE NORTH

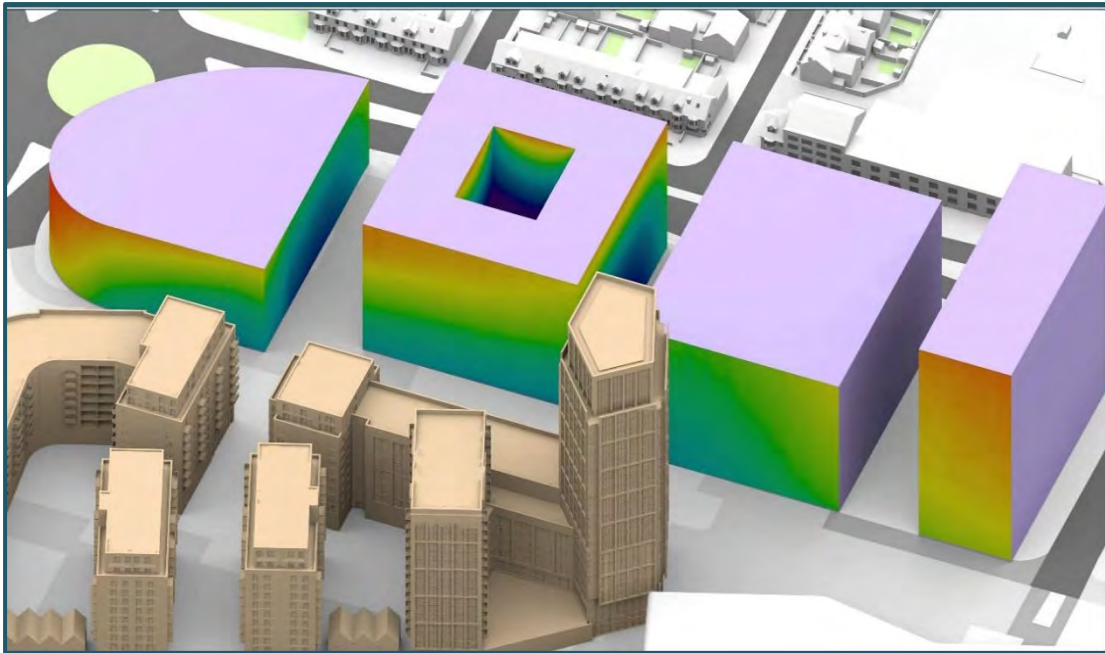


PLATE 08 – PROPOSED SCHEME AND THE NEIGHBOURING HYPOTHETICAL BLOCK MASSING

- 6.3 Whilst the assessment highlights changes to the colours, the introduction of the proposed massing will still result in very good retained values of daylight by reference to the VSC method (please see Appendix drawings for corresponding colour range table).
- 6.4 The second daylight assessment considers the ADF method. This analysis requires further input including the arrangement of rooms behind apertures as well as the aperture size. For this review a hypothetical room of 3.0m wide and 4.0m deep with a window 2.5m floor to head with a glazing to wall ratio of 66% being achieved.
- 6.5 The illustrative results (see plates 09 & 10) show that using this arrangement the elevations facing the proposed development will achieve an ADF of 2% or greater (shown by the yellow colour) which represents the highest target value for a room use.

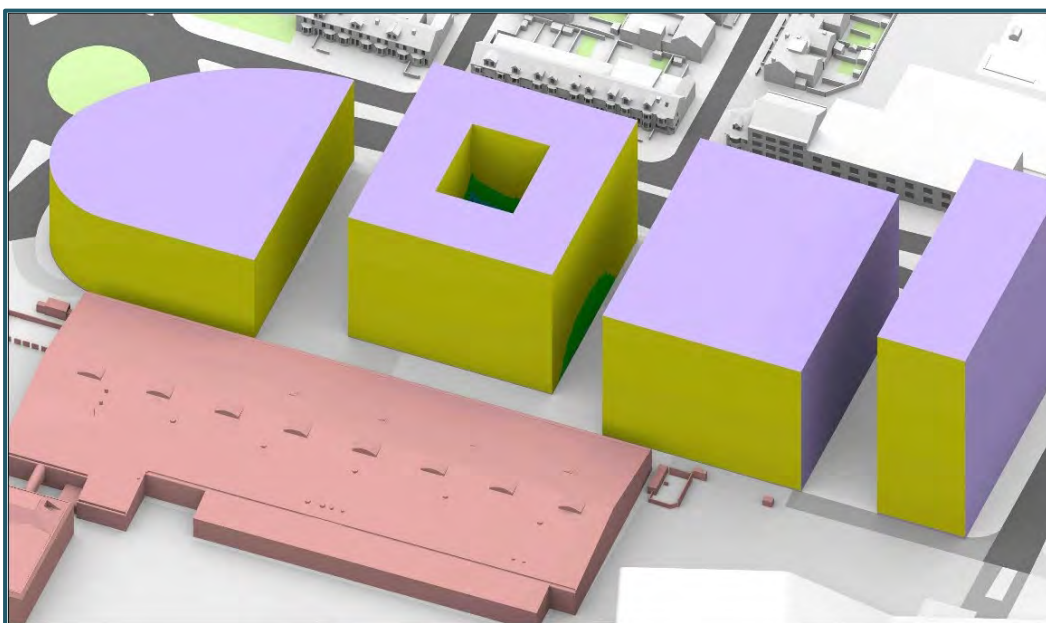


PLATE 09 -EXISTING ADF VALUE IMAGE (YELLOW SHOWING 2% OR GREATER) ON HYPOTHETICAL BLOCKS

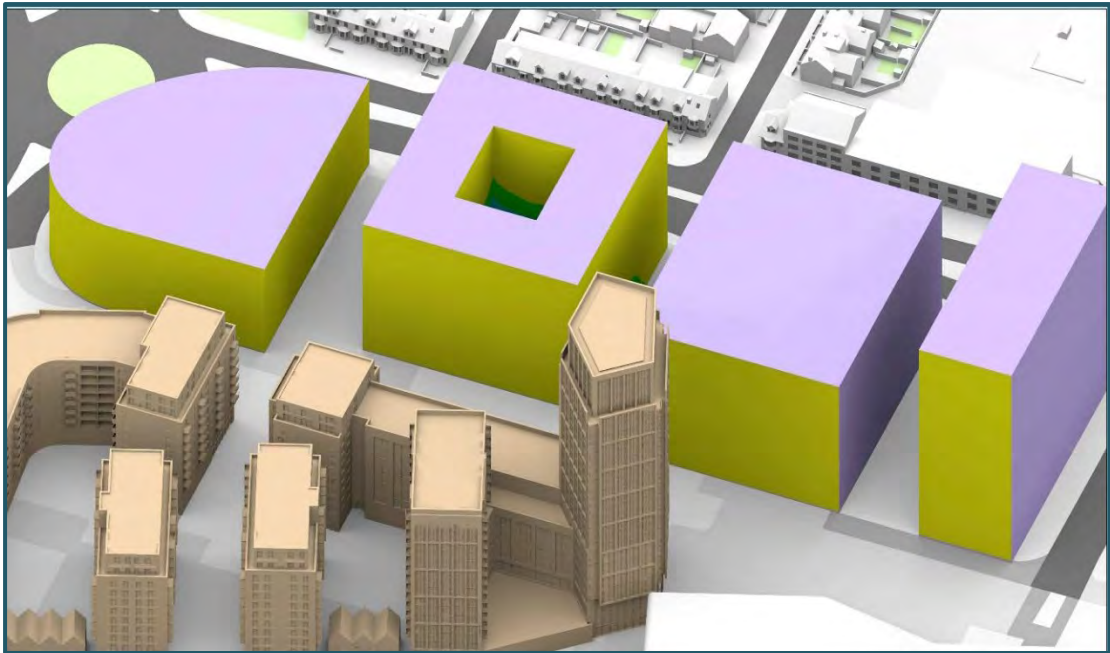


PLATE 10 – PROPOSED ADF IMAGE (YELLOW SHOWING 2.2% OR GREATER) ON THE HYPOTHETICAL BLOCKS

- 6.6 Having considered the potential changes in light created by the implementation of the proposed scheme on a hypothetical massing arrangement on the site adjacent and to the north, it is clear that the Reading Metropolitan scheme will not limit the development opportunities for this site in daylight terms.

7 Proposed Residential Accommodation

- 7.1 Point 2 have worked closely with TP Bennetts Architects to maximise the daylight potential within the proposed units. With urban developments such as the Reading Metropolitan site, there is often a trade-off between the provision of private amenity space and maximising daylight potential.
- 7.2 The full and detailed analysis can be found on drawings P1368 -Int-15 to P1368 -INT-21 within Appendix C of this report. Drawings show both the location and configuration of the rooms and the resultant Average Daylight Factor (ADF).
- 7.3 Not every habitable room within the Proposed Development has been considered but rather a selection of habitable rooms (in most areas) within the Proposed Development have been tested on the first seven levels. It can be noted that the corresponding rooms on the upper floors will receive improved levels of ADF given their elevation location and outlook over less obstruction.
- 7.4 The analysis shows that 195 out of the 206 rooms (95%) tested will either meet or exceed the recommended ADF targets. Where there are rooms that do not meet the strict application of the BRE Guidelines, this is in many instances a product of providing private amenity spaces in the form of both inset and projecting balconies. It follows that if rooms above level seven were included within this assessment, the overall compliance rate would improve significantly due to their elevated position within the Proposed Development.
- 7.5 Overall, the daylight provision to all rooms tested within the Proposed Development are considered good for a high-density scheme such as the Reading Metropolitan site.

8 Hours in Sun Assessment Results

- 8.1 The results are highlighted on Plates 11 to 15 and on drawings numbered P1368_SHA_03 & 04 and separately P1368_SHA_07 to P1368_SHA_10 located in Appendix C.
- 8.2 It is common practice to undertake the assessment to understand the existing sunlight availability for the defined area and compare this against the proposed position. The Reading Metropolitan site does not have any “amenity” area to speak of and this consideration has been given on the proposed condition as well as testing the potential changes to the sunlight availability in the hypothetical scenario. The target criteria is to determine the potential reduction (for which the BRE allow for a 20% change) and or the amount of sun availability by reference to the area for the desired time (50% of the area achieving at least 2 hours of sunlight).
- 8.3 The results are highlighted on Plates 11 to 15 and on drawings located in Appendix C.



PLATE 11 – PROPOSED READING METROPOLITAN SCHEME AND SUNLIGHT RESULTS FOR 21ST MARCH

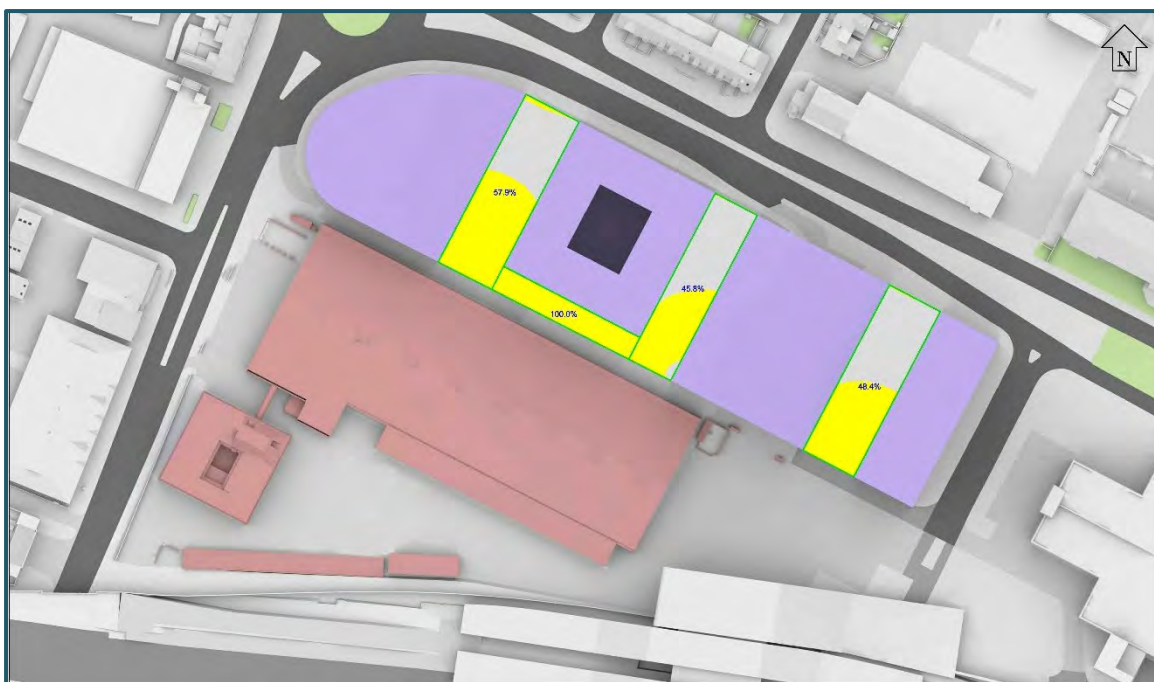


PLATE 12 – HYPOTHETICAL MASSING AND EXISTING READING METROPOLITAN BASELINE – AVAILABLE SUNLIGHT – MARCH 21ST

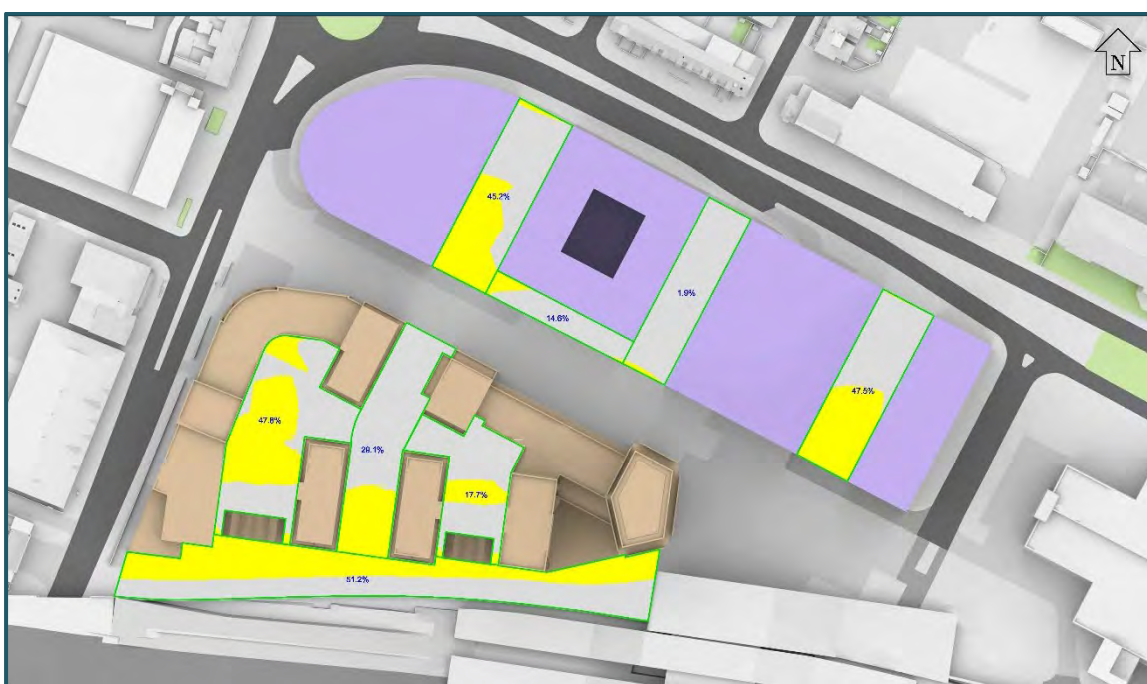


PLATE 13 – HYPOTHETICAL MASS AND PROPOSED READING METROPOLITAN SCHEME – AVAILABLE SUNLIGHT MARCH 21ST

- 8.4 The results of the detailed computer assessment show that the implementation of the proposed scheme will indicate relatively good levels of sunlight reaching the ground surface for those amenity areas surrounding the site on March 21st.
- 8.5 The BRE suggest that at least 50% of the amenity area should achieve 2 hours of sun. There are areas which will meet the standards with the scheme proposal in situ. There are however, a couple of areas within the proposed scheme which do not meet the suggested standard on the 21st of March although it is recognised that these areas would be more regularly used during the summer months.

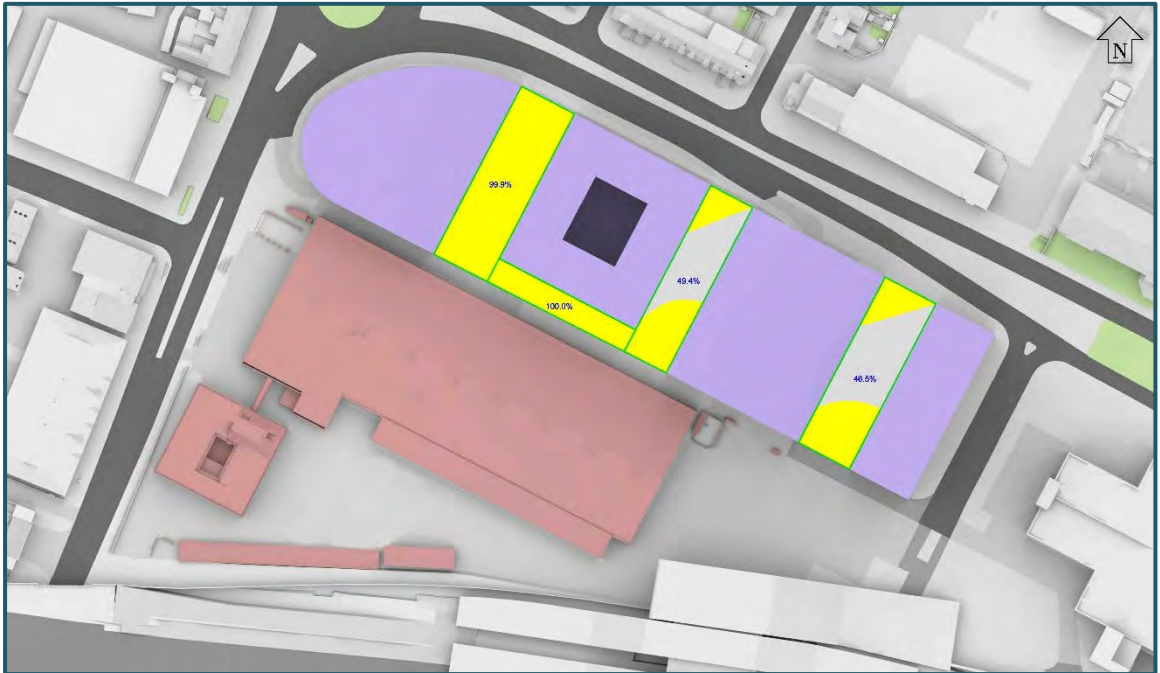


PLATE 14- HYPOTHETICAL MASSING AND EXISTING READING METROPOLITAN BASELINE — AVAILABLE SUNLIGHT — JUNE 21ST

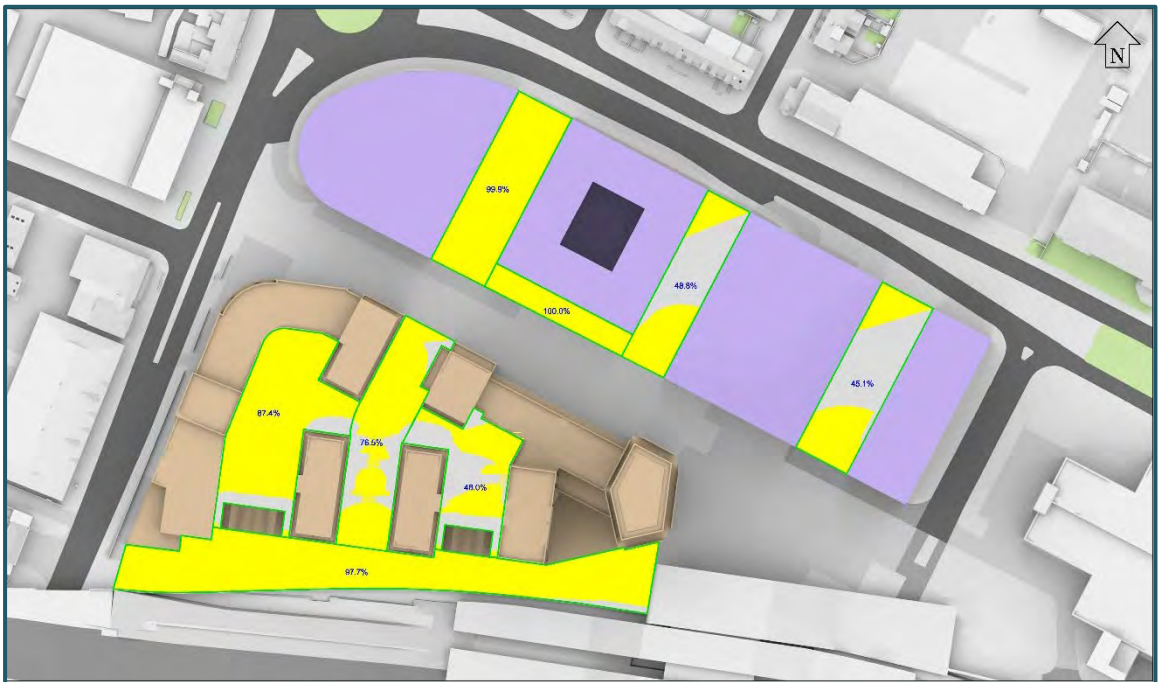


PLATE 15 — HYPOTHETICAL MASSING AND PROSED READING METROPOLITAN SCHEME — AVAILABLE SUNLIGHT — JUNE 21ST

- 8.6 A further assessment which considers this area in isolation is shown on Plates 14 & 15 where the retained levels of sunlight for June are even more encouraging.

- 8.7 The results of the Hours-in-Sun calculation assessment show that a good level of sunlight is available within the proposed amenity areas of the scheme. In addition, the implementation of the Reading Metropolitan proposal will promote good sunlight levels on the neighbouring amenity areas for the hypothetical massing.

9 Conclusions

- 9.1 This report has considered the potential Daylight, Sunlight and Overshadowing effects to the surrounding residential properties as a result of the implementation of the proposed TP Bennetts Architects scheme for the Reading Metropolitan site.
- 9.2 The site is currently made up of a couple of low-level commercial buildings. The site to the north (directly adjacent) could be developed in the future and thus consideration of a hypothetical massing along the boundary has also been explored in order to establish the potential light impacts created by the proposal on the emerging area. Given the above, the following scenarios have been considered as part of this report:
- True existing site condition v the potential light effects (to all existing neighbouring buildings) produced by the implementation of the proposed scheme.
 - The effective development of the northern site (hypothetical massing) and existing baselines of the Reading Metropolitan site v the potential light effects (to all existing neighbouring buildings) produced by the implementation of the proposed scheme.
 - A daylight study to establish the potential light effects on the hypothetical blocks for the northern site.
- 9.3 The assessments contained within this report have been undertaken in accordance with the BRE report entitled 'Site layout planning for daylight and sunlight: A guide to good practice', more commonly known as "The BRE Guidelines".
- 9.4 The results of the detailed daylight/sunlight assessments indicate full BRE compliance with no change in light to any of the neighbouring residential properties exceeding the tests outlined within the guidance. The results for both baseline conditions are therefore very encouraging and well within planning policy.
- 9.5 The daylight amenity levels within the proposed residential units are considered good (95% BRE compliant) with a high percentage of rooms tested meeting or exceeding the recommendations of the BRE Guidelines. With an urban development such as the Reading metropolitan site, there is a balance to be struck between providing private amenity spaces and maximising daylight potential within the units. Despite the provision of balconies, the retained daylight levels recorded are very encouraging which is testament to the quality of the architecture.
- 9.6 The proposed scheme performs very well in overshadowing terms with all the neighbouring amenity areas exceeding the suggested BRE Guidelines.

Appendix A – Drawings



True Existing Site Condition vs Proposed Scheme

