

GVA Schatunowski Brooks



Detailed Daylight and Sunlight Report

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52-55 Friar Street, Reading, RG1

AIPT

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Technical Assessment Drawings FR20/05 BRE30 - BRE/33 and FR20/06 BRE34 to BRE/36 inclusive and Associated Results Tables

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For and on behalf of GVA Grimley Ltd

1. Introduction

- 1.1 GVA Schatunowski Brooks has been instructed by AIPT to provide a detailed Daylight and Sunlight report considering the potential effects to neighbouring dwellings and the quality of natural light amenity which would be provided for future occupants due to their proposed development at 52-55 Friar Street, Reading.
- 1.2 The report has been undertaken based on desktop research and a site inspection, together with drawings of the proposals as provided by LDA Architects, drawing series 1509 PL3, dated March 2016.

2. Executive Summary

- 2.1 There are no nearby dwellings which would be affected by the proposed development.
- 2.2 The student accommodation at Central Studios, Reading would similarly be unaffected by the proposals.
- 2.3 Within the proposed development, given the site constraints, degree of existing obstruction and city centre location, the high degree of compliance with the recommendations set out in the BRE/BS Guidance documents are considered to demonstrate acceptable natural light amenity for future occupants.
- 2.4 Given the above, we are of the opinion that the proposed development is fully acceptable on daylight and sunlight grounds.

3. Daylight/Sunlight Planning Principles

- 3.1 The Building Research Establishment (BRE) guidelines – Site Layout Planning for Daylight and Sunlight: a guide to good practice (2011) (the guidelines) is the document referred to by most local authorities.
- 3.2 The Building Research Establishment (BRE) guidelines – Site Layout Planning for Daylight and Sunlight: a guide to good practice (2011) (the guidelines) is the document referred to by most local authorities.
- 3.3 The introduction to the guidelines states: -

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the developer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design."

Existing Neighbours

Daylighting

- 3.4 The requirements governing daylighting to existing residential buildings around a development site are set out in Part 2.2 of the guidelines, whereas Part 2.1 deals with the quality and quantity of daylight to residential habitable rooms within new development.
- 3.5 The amount of light available to any window depends upon the amount of unobstructed sky that can be seen from the centre of the window under consideration. The amount of visible sky and consequently the amount of available skylight is assessed by calculating the Vertical Sky Component (VSC) at the centre of the window. The guidelines advise that bathrooms, toilets, storerooms, circulation areas and garages need not be analysed.
- 3.6 The guidelines also suggest that distribution of daylight within rooms is reviewed where layouts are known, although bedrooms are considered to be less important.

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- 3.7 The VSC can be calculated by using the skylight indicator provided as part of the guidelines, by mathematical methods using what is known as a waldram diagram or by 3D CAD modelling.
- 3.8 Paragraph 2.2.7 of the guidelines states the following:-
- 3.9 "If this VSC is greater than 27% then enough skylight should still be reaching the window of the existing building. Any reduction below this level should be kept to a minimum. If the VSC with the new development in place, is both less than 27% and less than 0.8 times its former value, then occupants of the existing building will notice the reduction in the amount of skylight."
- 3.10 It must be interpreted from this criterion that a 27% VSC constitutes adequacy, but where this value cannot be achieved, a reduction of up to 0.8 times its former value (in other words less than 20% reduction of existing VSC) would not be noticeable and would not therefore be considered material.
- 3.11 The VSC calculation only measures light reaching the outside plane of the window under consideration, so this is potential light rather than actual. Depending upon the room and window size, the room may still be adequately lit with a lesser VSC value than the target values referred to above.
- 3.12 The NSL (sometimes referred to as Daylight Distribution) contour shows the extent of light penetration into the room at working plane level, 850mm above floor level. If a substantial part of the room falls behind the no sky-line contour, the distribution of light within the room may look poor.

Sunlighting

- 3.13 Recommendations for consideration of sunlight amenity to existing residential buildings neighbouring a development site are set out in Part 3.2 of the guidelines.
- 3.14 There is a requirement to assess windows of surrounding properties where the main windows face within 90 degrees of due south. The calculations are taken at the window reference point at the centre of each window on the plane of the inside surface of the wall.

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- 3.15 The guidelines further state that kitchens and bedrooms are less important in the context of considering sunlight, although care should be taken not to block too much sun.
- 3.16 Paragraphs 3.2.5 and 3.2.6 of the guidelines sets the following recommendation:-
- 3.17 "If this window reference point can receive more than one quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months of 21st September and 21st March, then the room should still receive enough sunlight. The sunlight availability indicator in Appendix A can be used to check this.
- 3.18 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 given and less than 0.8 times their former value, either over the whole year or just during the winter months 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."
- 3.19 To summarize the above, a good level of sunlight to a window is 25% annual probable sunlight hours, of which 5% should be in winter months. Where sunlight levels fall below the suggested level, a comparison with the existing condition is reviewed and if the ratio reduction is within 0.8 of its former value (in other words less than 20% reduction of existing APSH) then the sunlight loss will not be noticeable.
- 3.20 Sunlight reductions that fall below a ratio of 0.8 ((in other words a greater than 20% reduction of existing APSH) will be noticed by the occupants. If the overall annual loss is greater than 4% APSH the guidelines state the dwelling may be adversely affected.
- 3.21 The guide further recommends that where window positions are known, the centre of each main living window can be used for the calculation.

Permanent Overshadowing (Time In Sun)

- 3.22 The BRE Guidelines acknowledge that the spaces between buildings have an important impact on their overall appearance and ambience.

3.23 An unfavourable situation would be to have substantial areas on which the sun does not fall for a large part of the year. The BRE Guidelines state that the sunlight reaching these spaces is valuable for a number of reasons, namely to:

- Provide attractive sunlit views (all year);
- Make outdoor activities like sitting out and children's play more pleasant (mainly warmer months);
- Encourage plant growth (mainly spring and summer);
- To dry out the ground, reducing moss and slime (mainly in colder months);
- Melt frost, ice and snow (in winter); and
- Dry clothes (all year).

3.24 As can be seen from the above list, it is important to ensure good sunlight penetration throughout the year for various reasons.

3.25 The BRE Guidelines state that the availability of sunlight should be checked for all open spaces where it will be required. This would normally include:

- Gardens, usually the main back garden of a house;
- Parks and playing fields;
- Children's playground;
- Outdoor swimming pools and paddling pools;
- Sitting out areas such as those between non-domestic buildings and in public squares; and
- Focal points for views such as a group of monuments or fountains.

3.26 The BRE Guidelines state that each of the above spaces will have different sunlighting requirements and therefore it is difficult to suggest a hard and fast rule for all. However, given that there is a need to ensure adequate sunlight penetration throughout the year, the BRE Guidelines state that the Equinox (21 March) can be chosen for a date in terms of conducting an assessment as this date represents average annual conditions.

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- 3.27 The BRE Guidelines suggest that as a check for adequate sunlight penetration that as a recommendation at least half of the amenity areas listed above should receive at least 2 hours of sunlight on 21 March.
- 3.28 The BRE Guidelines state that it would be instructive to draw the '2 hours sun contour' which marks this area on plan, because the use of specific parts of a site can be planned with sunlight in mind.
- 3.29 The guidance applies both to new gardens and amenity areas as well as existing ones which are affected by new development. If an existing garden or outdoor space is already heavily obstructed then any further loss of sunlight should be kept to a minimum.
- 3.30 In this poorly sunlit case (i.e. where a space is already heavily obstructed), if as a result of new development the area which can receive 2 hours of direct sunlight on 21 March is reduced to less than 0.8 times its former size, this further loss of sunlight would be considered significant. A garden or amenity area would tend to look more heavily overshadowed.

FUTURE OCCUPANTS

- 3.31 The quality of Daylight for New-Build dwellings is measured using the standards set out in the British Standard Code of Practice for Daylighting, BS8206 Part 2. These standards are also referred to in Appendix C of the BRE Guidelines.
- 3.32 For New-Build dwellings, Daylight is measured using Average Daylight Factors (ADF) rather than Vertical Sky Components (VSC) as the Designer has greater control over the various design inputs and variables which dictate the availability of daylight within the room.
- 3.33 VSC is more commonly used for assessing the availability of Daylight to existing neighbouring buildings as it represents the amount of light striking the face of a window. It is a "spot" measurement and equates to the amount of direct light from the sky that is incident on the face of the window. As such, it has its limitations as it does not take account of the size of the window or the size of the room served by the window. It

therefore does not necessarily represent the availability and quality of daylight that will be received within the room itself.

3.34 In the case of New-Build dwellings, it is possible to change aspects of the design in order to achieve good daylighting conditions. The use of ADF is therefore seen as a more appropriate method of measurement during the design process as it is calculated from a number of design variables and co-efficient which provide a more accurate assessment of internal lighting conditions.

3.35 Those input variables comprise:-

- The size of the window serving the room (area of glazing).
- The size of the room being assessed (internal surface area).
- The average reflectance values of the internal finishes.
- The loss of transmittance of Daylight through the glazing.
- A correction factor for maintenance and soiling of the glass finish.
- The amount of daylight actually received by the window (the angle of visible sky) calculated from the VSC.
- The actual use of the room in question.

3.36 In addition, the application of ADF values makes a distinction between the different uses of the rooms being assessed. For example, a higher ADF value should be achieved for a principal living room in comparison to a bedroom.

4. Report

- 4.1 Please refer to Appendix I for the technical assessment drawings upon which the following report has been based, together with 3D views of the existing and proposed site conditions.
- 4.2 As can be seen from the satellite image of this site below, the proposed development site is located within the centre of Reading and does not have any residential dwellings in close proximity likely to be affected by the proposals.



- 4.3 Notwithstanding the above, a conservative assessment was undertaken of the Central Studios student accommodation located directly to the west of the proposed development site, given that the student bedrooms derive their light from the general direction of the development site and are in close proximity to it.
- 4.4 The results for the central studio Reading units are attached, drawings FR20/05 BRE/32 and BRE/33. Consideration of these and the associated results table setting out the

VSC and daylight distribution results confirms that there will be no material impact to existing amenity enjoyed by occupants of the studio rooms, by reference to the BRE guidance.

Internal Amenity within New Dwellings

- 4.5 Please refer to Appendix 1, which contains assessment drawings considering the daylight distribution within the newly proposed dwellings. The associated results tables set out the Average Daylight Factor (ADF), Daylight Distribution (DD) and Annual Probable Sunlight Hours (APSH) results for the rooms analysed.

Daylight

- 4.6 The ADF assessment confirms that a high level of compliance with the British Standard Recommendations would be achieved with the vast majority of rooms achieving the recommended targets for their room use.
- 4.7 Of the 39 living areas assessed, 27 would achieve 1.5%ADF, the recommended target for Living Rooms.
- 4.8 18 of these would have in excess of 80% of their area covered by the no-sky line, which is considered very challenging to achieve in a central location such as this.
- 4.9 As it common in contemporary developments of this type, the proposed dwellings feature a food preparation/ kitchenette area at the rear of the open plan living area, which is not intended to be directly naturally lit.
- 4.10 Whilst the default recommendation in the BRE Guidance is that the higher target of 2%ADF should typically be applied where living areas also feature kitchens, this is intended to be applied flexibly.
- 4.11 This target is not considered to be appropriate in this situation, in which the kitchen areas are located so far from the window. These kitchenettes are not designed to be naturally lit but rather by direct artificial task lighting.
- 4.12 Of the 54 bedrooms analysed, 51 would achieve the recommended ADF value of 1.0% for their use.

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- 4.13 In overall terms this level of daylight provision is considered to be high given the site constraints and central location.

Sunlight

- 4.14 Although the site is constrained by its location and orientation, the majority of the living areas have a southerly aspect, demonstrating the effort which was made to achieve a high level of sunlight amenity for future occupants.
- 4.15 The BRE recognises that due to existing factors outside the control of the designer it is not always possible to provide a southerly aspect to all living areas, and this development is no exception.
- 4.16 There has however been an effort to ensure that most living areas have a southerly orientation, which provides sunlight amenity.

Non Compliance

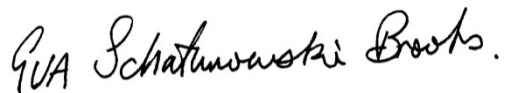
- 4.17 As would be expected in a development of this nature there are limited areas in which the proposed habitable rooms would not meet the default recommendations.
- 4.18 In overall terms this is a very small number of the proposed habitable rooms and would be considered a typical level of compliance in a town or city centre environment, where full compliance with the default recommendations is usually unachievable and a degree of flexibility needs to be applied.
- 4.19 These habitable rooms are located either in the corner junctions of the blocks and/or below projecting balconies above, which will provide highly valuable private amenity space for occupants.
- 4.20 This is a common scenario in town centre developments such as this, whereby there is an inevitable tension between the provision of private amenity space and the inevitable impact to natural light amenity for units placed directly beneath.
- 4.21 Reducing the limited number of habitable rooms not achieving the default recommendations would be aided by removing balconies above windows; however this would remove private amenity space for future occupants.

4.22 As such, we would consider that the set of results reported on here represent a pragmatic compromise between the demands for private amenity space versus daylight and sunlight amenity.

5. Conclusion

- 5.1 The proposed development would have no adverse effect to the student accommodation directly adjacent to the proposed developments.
- 5.2 Within the proposed development, a high level of daylight and sunlight amenity would be achieved for future occupants. The degree of compliance is considered consistent with the site location and orientation, having regard for the need to provide private amenity space.
- 5.3 We therefore consider the proposed development to be acceptable on daylight and sunlight grounds.

Yours faithfully

A handwritten signature in black ink that reads "GVA Schatunowski Brooks." The signature is written in a cursive, flowing style.

GVA Schatunowski Brooks



Appendix I

Technical Assessment
Drawings FR20/05 BRE30
- BRE/33 and FR20/06
BRE34 to BRE/36
inclusive and
Associated Results
Tables