

17B. Daylight, Sunlight and Overshadowing

17B.1 Introduction

- 17B.1.1 This Chapter has been prepared by BMT and provides further information with regard to the potential daylight, sunlight and overshadowing microclimate impacts arising from the Scheme with Phase 1A (North) in place (hereafter referred to as the 'Development'). This Chapter sets out whether any significant daylight, sunlight or overshadowing impacts which are likely to arise which could not be identified at the outline planning application stage. Relevant planning condition requirements are also addressed by this Chapter.
- 17B.1.2 This Chapter presents the results of the daylight, sunlight and overshadowing assessment for properties surrounding Development Plots 53 and 54 (conducted by GL Hearn) and a shading study of the River Brent (conducted by BMT) as well as a review of other overshadowing impacts associated with the Phase 1A (North) RMAs in conjunction with the 2014 Permission.
- 17B.1.3 This Chapter is supported by **Appendix 17B.1: Daylight and Sunlight Assessment for properties surrounding development Plots 53 and 54** and **Appendix 17B.2: River Brent Overshadowing Impact Study**.

17B.2 Policy, Legislation and Guidance

- 17B.2.1 There have been no significant changes to policy, legislation or guidance since the s.73 ES was prepared which have a material effect on the approach to or findings of the assessment.

17B.3 Relevant Phase 1A (North) RMAs Details

- 17B.3.1 Key components of the Phase 1A (North) RMAs of relevance to the daylight, sunlight and overshadowing assessment include the following structures:
- Bridge structures: replacement of Templehof Bridge (A406) (B1), new River Brent bridges, Living Bridge (B7) and a new pedestrian and cycle bridge at the M1 junction (B6); and
 - Plots 53 and 54: Three storey residential buildings on Brent Terrace.
- 17B.3.2 The above elements were assessed as part of the assessment of the Scheme in outline in the s.73 ES, however further consideration is given within this Chapter to the detailed design brought forward via the Phase 1A (North) RMAs and whether this has an effect upon the conclusions of the s.73 ES in terms of any new or different likely significant effects and mitigation.

17B.4 Assessment Methodology

- 17B.4.1 At the outset, a review of the baseline conditions presented in the s.73 ES was undertaken by BMT to confirm the receptors used in the s.73 ES remain valid.
- 17B.4.2 BMT completed a review of the Phase 1A (North) detailed design to identify any potential daylight, sunlight or overshadowing impacts which may arise which were not identified in the s.73 ES. Some further assessment has also been undertaken to identify whether any significant impacts are likely to arise as described below.

Daylight, Sunlight and Overshadowing from Plots 53 and 54

17B.4.3 Development Plots 53 and 54 have been subject to further assessment by GL Hearn to confirm the potential daylight and sunlight impacts at surrounding residential properties based on the final detailed design of the units. Analysis has also been undertaken to demonstrate any significant permanent levels of overshadowing of the adjacent gardens of Brent Terrace and Cricklewood Terrace as a result of Development Plots 53 and 54. The methodology for the assessment follows guidelines published by the Building Research Establishment (BRE) in 2011ⁱ for daylight, sunlight and overshadowing as detailed in the s.73 ES

17B.4.4 The effects have been considered in **Appendix 17B.1** on those properties closest to the proposed buildings at Brent Terrace.

17B.4.5 Daylight principles as stated in the BRE report include:

“If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building from the centre of the lowest window, subtends an angle of more than 25 degrees to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if either:

- *the vertical sky component [‘VSC’] measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value; or*
- *the area of the working plane (0.85m above floor level in residential properties) in a room which can receive direct skylight is reduced to less than 0.8 times its former value.*

The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, store rooms, circulation areas and garages need not be analysed. The guidelines may also be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight; this would normally include, schools, hospitals, hotels and hostels, small workshops and some offices.”

17B.4.6 Sunlight principles as stated in the BRE report include:

“If a living room of an existing dwelling has a main window facing within 90 degrees of due south, and any part of a new development subtends an angle of more than 25 degrees to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:

- *receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September and 21 March and receives less than 0.8 times its former sunlight hours during either period and*
- *has a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours”*

17B.4.7 To note, Annual Probably Sunlight Hours (APSH) have also been used as a measurement of sunlight within this Chapter and the s.73 ES.

Daylight, Sunlight and Overshadowing from Other Phase 1A (North) features

- 17B.4.8 BMT has constructed a numerical model of the existing Site and of the Development, for the purposes of conducting further analysis of the Phase 1A (North) RMAs. The model of the Development is based on the maximum building heights parameters of the 2014 Permission together with the detailed design of bridge structures and other structures which form part of the Phase 1A (North) RMAs. The maximum building heights parameters of the 2014 Permission represents a worst-case scenario since the Development would not be built out the maximum heights for all Development Plots.
- 17B.4.9 A review of this model confirms that no significant daylight or sunlight impacts would arise from the Phase 1A (North) infrastructure components. This is primarily due to the proximity of existing receptors (i.e. residential properties) to the structures and their height/scale. These components of the Phase 1A (North) RMAs are therefore not considered further in terms of daylight or sunlight in this Chapter.
- 17B.4.10 The model of the existing Site has enabled a shading study of the River Brent to be undertaken with specific reference to the detailed bridge designs to identify whether any likely significant environmental impacts are likely to arise which were not identified in the s.73 ES, but also to address Planning Condition 34.4 of the 2014 Permission which requires:

“Prior to the Commencement of development in relation to any Bridge Structures, River Brent Bridges or Plot Development on or around the Plots immediately adjacent to the Eastern River Brent Alteration and Diversion Works, the Central River Brent Alteration and Diversion Works and/or the Western River Brent Alteration and Diversion Works a shading study for that river section shall be carried out and approved in writing with the LPA. Any shading impacts on the River Brent shall be assessed and any appropriate mitigation measures shall be detailed as part of the survey and implemented as part of the relevant Bridge Structures Plot Development or ancillary works.”

Basis of the Assessment and Significance Criteria

- 17B.4.11 This study provides a quantitative assessment of the overshadowing impacts of the detailed design of the Phase 1A (North) RMAs with the Maximum Height Parameters in place for all other Development Zones as defined by the RDSF of the 2014 Permission (with the exception of the Gateway Junctions which already have detailed approval). As stated above, the maximum building height parameters are considered to represent a worst-case scenario.
- 17B.4.12 The assessment of Plots 53 and 54 undertaken by GL Hearn are based on the final planning application drawings prepared by the architects Howarth Tompkins for the 47 unit layout. GL Hearn prepared a 3D model of the Site and surrounding buildings in order to analyse the impact of the proposed buildings at Plots 53 and 54 on the daylight and sunlight levels received by neighbouring properties. The assessment also included an analysis of overshadowing from the proposed buildings on the neighbouring properties and gardens.
- 17B.4.13 The Temporary Bus Station and Bus Stops (Plot 114 and Plot 113 respectively) are not considered further in this Chapter as they would not include structures which could result in significant daylight, sunlight or overshadowing results. The structures including bus shelters and temporary offices and toilet facilities would be the equivalent of a one storey structure and would be in place for approximately four years only during the construction period. The structures do not lie directly adjacent to any residential properties and those in closest proximity at Plot 113 to Layfield Close

are separated by an earth mound and tree line which providing existing shading of nearby properties which will not be altered by the proposals.

17B.4.14 The assessment criteria applied in this Chapter for daylight and sunlight are as per those presented in Table 17.5 of the s.73 ES, represented here for ease of reference in **Table 17B.1**.

Table 17B.1: Significance criteria for Daylight and Sunlight Impacts

Impact Rating	Deviation of APSH or VSC from Existing Site Conditions	Adheres to Best Practice Guidelines
Strong Adverse	Reduction of more than 40%	X
Moderate Adverse	Reduction of between 30% and 40%	X
Marginal Adverse	Reduction of between 20% and 30%	X
Slight Adverse	Reduction of between 10% and 20%	√
Negligible Adverse	Reduction of between 0.1% and 10%	√
None	Deviation less than 0.1%	√
Negligible Beneficial	Improvement of between 0.1% and 10%	√
Slight Beneficial	Improvement of between 10% and 20%	√
Marginal Beneficial	Improvement of between 20% and 30%	√
Moderate Beneficial	Improvement of between 30% and 40%	√
Strong Beneficial	Improvement of more than 40%	√

17B.4.15 Overshadowing results are presented in the form of contour plots which indicate the area of the River Brent receiving less than 2 hours of sunlight per day and provides the number of hours of sunlight per day that each of these areas will receive. In addition, a series of shadow plots is supplied which provide information on how the areas of shading change throughout the course of the day. BRE guidelines recommend that at least half of any amenity area should receive at least 2 hours of sunlight on the 21st March.

17B.4.16 Although there are no specific criteria for river shading from an ecological or water quality perspective the outcomes of this study have been assessed by Waterman for their potential ecological impact and considers the outcomes of the shading study in relation to the detailed landscape design for the Central Brent Riverside Park (refer to **Chapter 11: Ecology and Nature Conservation**).

Limitation and Constraints

17B.4.17 No significant limitations or constraints to the assessment have been identified. It is noted that further assessment of overshadowing is likely to be required in some areas as the detailed design of the Development progresses to satisfy Planning Condition 34.4 and as part of subsequent RMAs. In line with Planning Condition 34.4 this would apply to development Plots immediately adjacent to the River Brent.

17B.5 Consultation

- 17B.5.1 Comments from Capita in the EIA Scoping Opinion highlighted that there is potential for overshadowing from neighbouring blocks (Phase 1B (North)) to impact on amenity spaces and recommended that this be assessed (see **Table 4.1**). The s.73 ES included an assessment of sunlight availability to amenity areas which was assessed via production of detailed shadow plots from 09.00 to 16.00 on 21st March for both baseline conditions and for the proposed Development. Best practice guide values were achieved for all amenity spaces within the area surrounding the Site. This includes the amenity areas around the River Brent and Living Bridge, which are expected to be adequately sunlit on 21st March. The s.73 ES identified the areas expected to be inadequately sunlit on 21st March as Market Square, Community Square and Office District Park. Given that the Phase 1A (North) RMAs do not include development plots which would shade the aforementioned areas, and the fact that testing was undertaken as part of the EIA for the s.73 Application based on the maximum building height parameters, no further analysis has been required or undertaken. The shadow plots for the proposed scheme are presented in **Appendix 17B.1**.
- 17B.5.2 EIA Scoping Opinion comments received also stated that evergreen trees should be considered in the overshadowing assessment if included within the wind assessment. Landscaping was included within the wind assessment however the daylight, sunlight and overshadowing assessment has largely remained valid in line with the s.73 ES, except for a new overshadowing assessment for the River Brent (**Appendix 17B.2**) and a daylight, sunlight, overshadowing assessment for the detailed design of Plots 53 and 54 (**Appendix 17B.1**). The detailed landscaping plans have therefore not been incorporated into the overshadowing assessment carried out for the s.73 ES, but considering few evergreen trees are proposed on the living bridge and those that are have height restrictions and are largely ornamental in size, it is unlikely that any adverse shading impacts would result from this. The s.73 ES included an assessment of sunlight availability to amenity areas via the production of detailed shadow plots from 09.00 to 16.00 on 21st March for both baseline conditions and for the proposed development. As such, the amenity areas including the Living Bridge were previously assessed and shown to be adequately sunlit on 21st March.

17B.6 Baseline Conditions

- 17B.6.1 The daylight, sunlight and overshadowing baseline information presented in the s.73 ES Microclimate Chapter has been reviewed and its validity is confirmed. This review included a check of the receptor locations considered in the s.73 ES to confirm they remain valid and no new receptors are present in or in the vicinity of the Site.
- 17B.6.2 Sunlight and daylight availability was assessed at 49 existing façade locations in the s.73 ES within the areas surrounding the Site. Only those façade locations at Brent Terrace are considered to be relevant for the assessment of the Phase 1A (North) RMAs. Results indicated that the recommended level of daylight and sunlight was received at all receptor locations for baseline conditions.
- 17B.6.3 Of the existing amenity spaces tested in the s.73 ES, the best practice 2 hour sunlight guide was found to be achieved for all amenity spaces within the area surrounding the Site. **Appendix 17B.2** presents the detailed findings of the overshadowing assessment of the realigned River Brent, as defined by the Phase 1A (North) RMAs, taking into account the detailed design of the River Brent

bridges, Tempelhof bridge, Living Bridge and other relevant structures. **Appendix 17B.2** presents sun hours plots for the river for the 21st of March in line with BRE guidelines.

17B.7 Assessment and Mitigation

Construction

Potential Impacts

- 17B.7.1 Construction impacts were not considered in the s.73 as in terms of daylight, sunlight or overshadowing they are not likely to be significant. The principal reason for this being that construction activities do not give rise to any significant overshadowing effects which are likely to impact daylight or sunlight availability. No significant construction impacts have therefore been identified following a review of the Phase 1A (North) RMAs. The Interim Years Assessment within the s.73 ES considered the daylight and shading effects during interim stages of the Development which has been reviewed and updated by BMT and the findings presented in **Chapter 20: Intermediate Years Assessment**.

Mitigation Measures and Residual Impacts

- 17B.7.2 No mitigation measures or residual impacts relevant to construction were identified in the s.73 ES or have been identified in relation to the Phase 1A (North) RMAs.

17B.8 Operation

Potential Impacts

Scheme Review

- 17B.8.1 Following a review of legislation, policy and guidance, baseline and the Phase 1A (North) detailed design, it can be confirmed that the assessment of potential operational impacts presented in the s.73 ES Microclimate Chapter remains valid. This is primarily due to the built form of the Development remaining as per the parameters of the Scheme of the s.73 Application.

Daylight and Sunlight (Plots 53 and 54)

- 17B.8.2 The only elements of Phase 1A (North) which have the potential to give rise to daylight and sunlight effects on surrounding residential receptors are the new buildings at Plots 53 and 54. **Appendix 17B.1** presents the findings of the daylight and sunlight assessment in relation to properties at Brent Terrace.
- 17B.8.3 With the new buildings at Plots 53 and 54, the assessment concludes that with the exception of 56 and 58 Brent Terrace which are closer to the Scheme (by virtue of their rear ground floor extensions), the remaining surrounding properties comply with the preliminary 25-degree line test recommended by the BRE Report and will therefore not be adversely affected by the development at Plots 53 and 54. In line with the BRE guidelines, further detailed analysis is therefore not required for these properties.

- 17B.8.4 In addition to 56 and 58 Brent Terrace, the effect of Plots 53 and 54 on the daylight and sunlight amenity to 51, 88, 92 and 99 Brent Terrace have been considered further. The location of properties is shown in **Figure 17.B.1** and the results are presented in full in **Appendix 17B.1**.
- 17B.8.5 In terms of daylight, all of the ground floor windows on these six properties will retain Vertical Sky Component (VSC) values either in excess of 27% or at least 0.80 times the values in the existing conditions, in compliance with the BRE guidelines. The windows at first floor and above have not been assessed as they have greater access to sky visibility and will also meet the BRE guidelines.
- 17B.8.6 In terms of sunlight amenity, none of the windows on the rear elevation of the Brent Terrace properties which face Plots 53 and 54 are orientated within 90-degrees of south and therefore, in line with the BRE guidelines, have not been assessed as they will not be adversely affected by the Development at this location. Similarly, the windows to the Clitterhouse Crescent properties are too remote to be affected. There would therefore be no significant daylight or sunlight impacts to existing residential properties in the vicinity of Plots 53 and 54, i.e. the impacts would be **negligible**.

Overshadowing (Plots 53 and 54)

- 17B.8.7 The transient overshadowing drawings are included at **Appendix 17B.1** which show the assessment of overshadowing on surrounding amenity spaces on March 21st in line with BRE guidelines. The same assessment has also been undertaken on June 21st when the gardens are more likely to be used by the occupants.
- 17B.8.8 These drawings show that on March 21st, the overshadowing to the neighbouring gardens resulting from Plots 53 and 54 would be negligible and restricted to early morning to the gardens on Brent Terrace and late afternoon to the very rear part of rear gardens of Clitterhouse Crescent. On June 21st, there would be no overshadowing. The overall impact is therefore considered to be **negligible**.

River Overshadowing Study

- 17B.8.9 **Appendix 17B.2** presents the detailed findings of the overshadowing assessment of the realigned River Brent, as defined by the Phase 1A (North) RMAs, taking into account the detailed design of the River Brent bridges, Templehof bridge, Living Bridge and other relevant structures. **Appendix 17B.2** presents sun hours plots for the river for the 21st of March in line with BRE guidelines. It should be noted that the assessment is based on the detailed Phase 1A (North) RMAs together with outline parameters (maximum heights) for those of the adjacent Development Zones.
- 17B.8.10 The analysis indicates that areas of the river receiving less than two hours sunlight per day (and therefore falling below the relevant BRE criteria) on the 21st March are located below all bridge structures forming part of Phase 1A (North), with certain areas under the bridges being in permanent shade.
- 17B.8.11 According to the BRE criteria, the overshadowing caused by Phase 1A (North) RMAs together with outline parameters (maximum height) would not have an adverse impact on the sunlight availability of the river as the total area of the river receiving more than two hours of sunlight per day was found to be much greater than 50%. The potential impact will therefore be negligible.

Mitigation

- 17B.8.12 No new or different mitigation has been identified from that identified in the s.73 ES. It should be noted that the detailed design of the River Brent realignment and Central Brent Riverside Park has

accounted for shading beneath the bridge structures by ensuring planting does not occur directly under the River Brent bridges, instead areas of gravel substrate are applied to these areas to support invertebrates. The planting strategy of the river corridor can be seen in **Figure 2.22**.

Residual Impacts

17B.8.13 No new or different residual operational impacts have been identified from those in the s.73 ES, as there have been no new or additional significant impacts or mitigation identified as an outcome of the detailed design of Phase 1A (North) in relation to Plots 53 and 54 or the River Brent.

17B.9 Summary

17B.9.1 No new or different potential impacts, mitigation or residual impacts arising from the Development have been identified in respect of Daylight, Sunlight and Overshadowing Microclimate, and all of these remain as identified in the s.73 ES.

17B.9.2 Results of the river overshadowing study indicated that, within the context of the Maximum Building Height Parameters, the areas of the River Brent receiving less than 2 hours sunlight per day on the 21st March were only those located directly beneath the bridge structures, which has been accounted for within the Central Brent Riverside Park detailed design planting strategy. As such no significant impacts were identified.

References

ⁱ Building Research Establishment Report, “Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice”, P. Littlefair, Second Edition, 2011