

## 18. Daylight, Sunlight, Overshadowing and Light Pollution

### Introduction

- 18.1 This Chapter, which has been prepared by eb7 presents an assessment of the likely significant effects of the Development on daylight, sunlight, overshadowing and light pollution at sensitive receptors surrounding the Site.
- 18.2 This Chapter provides a description of the methods used in the assessment, followed by a description of the relevant baseline conditions of the Site and surrounding area, together with an assessment of the likely significant effects of the Development during the Works and once the Development is completed and operational. Mitigation measures and the nature and significance of likely residual effects are considered thereafter.
- 18.3 This Chapter is accompanied by the following appendices presented in **Volume 3**:
- **Appendix 18.1:** Drawings of the Baseline Condition and Development Scenario;
  - **Appendix 18.2:** Detailed Results of the Daylight (VSC, NSC and ADF) and Sunlight (APSH) Analysis;
  - **Appendix 18.3:** Results of the Overshadowing (Sunlight Amenity) Analysis;
  - **Appendix 18.4:** Transient Overshadowing Images; and
  - **Appendix 18.5:** Light Pollution.
- 18.4 As agreed during the EIA Scoping Process, internal daylight and sunlight of the residential units within the Development is not considered an EIA issue, as such, this will be presented in a standalone report prepared by eb7, to accompany the planning application.
- 18.5 In addition, due to the location and materials used for the proposed buildings, Solar Glare has been scoped out of the EIA (refer to **Chapter 2: EIA Methodology**).

### Assessment Methodology and Significance Criteria

- 18.6 The technical analysis has been undertaken via the creation of a digital three-dimensional model of the Site and surroundings, based on laser scan measured survey data. Where survey data was not available, building dimensions have been worked out using Ordnance Survey (OS) data and Site photographs. Reasonable assumptions as to the internal configuration of the existing surrounding rooms behind the fenestration were made. Where information can be sourced from publicly available data, these layouts have been applied. This information can include plans from the local authority planning portal or estate agent plans. Where no information is available, a standard 4.27 m deep room was assumed unless the building form dictated otherwise. The use of the rooms behind the fenestration was also assumed from external observation. The depth equates to 14 feet and this is common accepted practice when access is unavailable.
- 18.7 In respect of the assessment of the outline component of the Development, the assessment set out within this Chapter has considered the maximum allowable spatial parameters sought for approval. This would give rise to the greatest massing and so can be considered to reflect a 'worst-case' assessment. That said, based on professional and expert judgement, it is unlikely that the minimum allowable spatial parameters sought for approval would give rise to materially different daylight, sunlight and overshadowing effects, given the minimal difference in scale between the minimum and maximum parameters.
- 18.8 The appendices for this Chapter are presented in **Appendices 18.1 - 18.5**.

## The Works Assessment Methodology

- 18.9 No technical analysis of the likely significant effects on the surrounding properties and amenity areas during the Works was carried out due to the transient nature of the massing of the Development as construction progresses. However, a qualitative assessment of the likely effects during the Works have been made based on professional judgement.

## Completed Development Assessment Methodology

- 18.10 The Building Research Establishment (BRE) 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice'<sup>1</sup> document provides advice on site layout planning to achieve good sunlighting and daylighting within buildings, and in the open spaces between them (referred to as the BRE guidelines in this report). It is intended to be used in conjunction with the interior daylight recommendations in the Applications Manual Window Design of the Chartered Institute of Building Services Engineers (CIBSE)<sup>2</sup>.
- 18.11 The BRE guidelines are intended for building designers, developers, consultants and planning officials. The advice it gives is not mandatory and should not be used as an instrument of planning policy. It states:
- 18.12 *"Its aim is to help rather than constrain the designer. Although it gives numerical guidelines these should be interpreted flexibly since natural lighting is only one of many factors in the site layout design. In special circumstances the developer or 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 heights and proportions of existing buildings."*
- 18.13 Likely effects (and their significance) on daylight, sunlight and overshadowing are assessed with respect to relevant target criteria as described in further detail below. The BRE Guidelines do not specifically relate to town centre locations and therefore, a degree of flexibility should be applied when assessing the significance of daylight and sunlight effects in urban locations.
- 18.14 In addition to the primary daylight and sunlight assessment, which considers the Development in place, an alternative assessment scenario has been undertaken. This scenario considers daylight and sunlight level with the balconies removed from neighbouring properties that face the Site. The BRE Guidelines state that with a balcony in place, even a modest obstruction may result in a large relative impact on VSC; and suggests that in such circumstances, an assessment with the balcony removed is undertaken to consider whether it is the balcony causing the relative loss.

## Daylight

- 18.15 The BRE guidelines provide three different methods for assessing daylight for existing residential accommodation:
- Vertical Sky Component (VSC) method;
  - No Sky Line (NSC); and
  - Average Daylight Factor (ADF).
- 18.16 Each methodology is summarised in the following sections. When reviewing the daylight results for each surrounding property in the first instance the VSC results are considered, looking at the daylight potential at the window face. This is the most basic daylight assessment and is considered in conjunction with the NSC to consider the daylight entering the rooms.
- 18.17 The levels of significance for impact to neighbouring properties is determined through VSC and NSC assessment. The ADF results have been provided as supplementary information only. The

BRE Guidance states that “Daylight provision in new rooms may be checked using the average daylight factor” and that the ADF value depends on room reflectance’s and internal configuration and so it is not always appropriate to use this measurement on existing receptors where these details are not known.

#### *Vertical Sky Component (VSC) Method*

- 18.18 VSC is a quantified measurement of the amount of skylight falling on a vertical wall or window. This is the ratio of the direct sky luminance falling on a vertical wall at the reference point for the simultaneous horizontal illuminance under an unobstructed sky. The ‘standard overcast sky’ is used and the ratio is usually expressed as a percentage. The maximum value is almost 40% for a completely unobstructed vertical wall. The vertical sky component on a window can be related to the average daylight factor in a room, which is one basis for the BREs recommendations on interior daylighting.
- 18.19 VSC is calculated by using a sky light indicator or 'Waldram Diagram'. For calculation purposes, trees are ignored unless they form dense continuous belts. In addition, whilst not technically relevant, VSC levels have been included for windows that are not vertical (e.g. skylights) for completeness.

#### *No Sky Line Contour (NSC) Method*

- 18.20 The NSC method is a measure of the distribution of daylight at the 'working plane' within a room. In houses, the 'working plane' means a horizontal 'desktop' plane 0.85 metres (m) in height.
- 18.21 The NSC divides those areas of the working plane in a room which receive direct sky light through the windows from those areas of the working plane which cannot.
- 18.22 If a significant area of the working plane lies beyond the NSC (i.e. it receives no direct sky light), then the distribution of daylight in the room will be poor and supplementary electric lighting may be required.
- 18.23 The effect of daylight distribution in an existing building is found by plotting the NSC in each of the main rooms. For houses, this will include living rooms, dining rooms and kitchens. Bedrooms should also be analysed, although they are considered less important.

#### *Average Daylight Factor (ADF) Method*

- 18.24 The ADF is defined as:
- “...a ratio of total daylight flux incident on a reference area to the total area of the reference area, expressed as a percentage of outdoor luminance on a horizontal plane, due to an unobstructed sky of assumed or known luminance distribution.”*
- 18.25 The ADF method of assessment takes into account the diffuse visible transmittance of the glazing to the room in question (i.e. how much light gets through the window glass); the net glazed area of the window in question; the total area of the room surfaces (ceiling, walls, floor and windows); proportion of window located above the working plane and the angle of visible sky reaching the window / windows in question. It also makes allowance for the average reflectance of the internal surfaces of the room and of external obstruction. Reasonable estimations of internal reflectance are used if not known.
- 18.26 It is only the visible sky angle element which is dependent upon external obstruction. It can be directly related both to the obstruction angle and to the VSC on the external window wall.

## Sunlight Assessment

### *Annual Probable Sunlight Hours*

- 18.27 With regard to sunlighting, the same skylight indicator is used for the VSC test at the same reference point to calculate Annual Probable Sunlight Hours (APSH), which is expressed as a percentage.
- 18.28 The BRE guidelines also notes:
- “Access to sunlight should be checked for the main window of each room which faces within 90 degrees (°) of due south”.*
- 18.29 Therefore, any windows facing 90° of due north need not be analysed as they have no expectation of sunlight.

## Overshadowing Assessment

### *Sunlight Amenity Assessment (Sun on the Ground)*

- 18.30 The sunlight amenity assessment calculates the proportion of an outside amenity area which receives at least 2 hours of direct sunlight. This is achieved by plotting a contour of the area which receives at least 2 hours of direct sunlight on the 21<sup>st</sup> March. An amenity space with at least 2 hours of sunlight across the majority of its area can be said to see acceptable levels of direct sun. Amenity areas surrounding the Development with the potential to see increased levels of shadow (those to the north) will be defined and assessed.

### *Transient Overshadowing*

- 18.31 The BRE guidelines suggest that where large buildings are proposed which may affect a number of gardens or open spaces, it is useful and illustrative to plot a shadow plan to show the location of shadows at different times of the day and year. This can be done by using the sun on the ground indicator in reverse. For the purpose of this assessment the overshadowing has been mapped for the following three key dates in the year:
- 21st March (Spring Equinox);
  - 21st June (Summer Solstice); and
  - 21st December (Winter Solstice).
- 18.32 For each of these dates, the overshadowing was calculated at hourly intervals throughout the day from 8.00am to 7.00pm. September 21st (Autumn Equinox) provides the similar overshadowing images as March 21st (Spring Equinox) as the sun follows a similar path at these corresponding times of year.
- 18.33 The indicators are calculated for different latitudes, London being 51.5° north. Clearly, southern orientation is critically important, as are the heights of the Development, existing buildings on Site and surrounding buildings.

## Light Pollution

- 18.34 Light pollution or obtrusive light can be defined as any light emitting from artificial sources into spaces where this light would be unwanted, such as the needless spillage of light into the night sky or spillage of light into the windows of neighbouring residential properties, where this would cause disruption to the sleeping patterns of the occupants.

- 18.35 Light pollution is a general term which encompasses Sky Glow, Light ~~Spill/Trespass~~, Glare and Building Luminance as described in the Institute of Lighting Professionals (ILP) Guidelines<sup>3</sup>. [The relevant considerations for the scheme at this stage are Light ~~Spill/Trespass~~ and Glare as set out below:-as follows:](#)
- ~~Sky Glow is the brightening of the of the night sky over our towns, cities and countryside. This can be quantified by measuring the Upward Light Ratio (ULR). This is the maximum permitted percentage of luminaire flux for the total installation that goes directly into the sky. The values suggested in Table 18.1 are the maximum allowable levels for their respective environmental zones.~~
  - ~~Light ~~Spill/Trespass~~ is the spilling of light beyond the Site boundary of the area being lit. This is assessed using vertical illuminance in lux (EV) measured flat on the glazing at the centre of the window.~~
  - ~~Glare is the uncomfortable brightness of a light source when viewed against a darker background. This applies to each source in the obtrusive direction and is quantified as source intensity (I) (kcd). The values suggested in Table 18.1 are the maximum allowable levels for their respective environmental zones (pre and post curfew).~~
  - ~~Building Luminance can cause an increase in the brightness of the general area. This is measured in Cd/m<sup>2</sup> (L) as an average over the building façade. The values suggested in Table 18.1 are the maximum allowable pre curfew levels for their respective environmental zones caused only by externally lighting on the building façade.~~
- 18.36 The ILP Guidelines suggest that in many cases the target levels for each of the forms of light pollution are not obtainable. Specific cases will be dealt with on a case by case basis and maximum mitigation should be utilised to ensure that the effects are within acceptable limits.
- 18.37 The ILP Guidelines quantify the levels of sky glow, glare and light ~~spill trespass~~ seen as acceptable for varying environmental zones:
- E0: [Astronomical Observable dark skies](#), UNESCO Starlight Reserves, IDA Dark Sky Parks;
  - E1: [Relatively uninhabited rural areas](#)~~Intrinsically dark landscapes~~ - National Parks, Areas of Outstanding Natural Beauty, [IDA buffer zones](#) etc;
  - E2: [Low district brightness - Sparsely inhabited](#) ~~Low district brightness areas~~ — [Rrural areas](#), ~~small~~ village, or relatively dark [outer suburban](#) locations;
  - E3: Medium district brightness areas - Small town centres or [suburban](#) locations; and
  - E4: High district brightness areas - Town/city centres with high levels of night time activity.
- 18.38 **Table 18.1** sets out [the suggested](#) light limitations [of Light ~~Spill/Trespass~~](#) for exterior lighting installations specified in the ILP Guidelines.

Table 18.1: Obtrusive Light Limitations for Exterior Lighting Installations

Environmental Zone	Light <del>Spill</del> Trespass (Into Windows) Vertical Illuminance (Lux) <sup>1</sup>	
	Pre-curfew	Post-curfew
E1	2	<0.14 <sup>13</sup>
E2	5	1
E3	10	2
E4	25	5

Notes:

<sup>1</sup> –  $E_v$  = Vertical Illuminance in Lux normal to glazing.

<sup>2</sup> – Light Intensity in kilo-candelas.

<sup>13</sup> – Acceptable from public road lighting installations only.

Curfew - The time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of use of lighting applied by a LPA. As there is no curfew stated in local planning policy, 23.00hrs has been used as suggested in the ILP guidance.

- 18.39 The Site is considered to fall under Zone E3 as a Medium District Brightness area. By reference to the ILP Guidance, Environmental Zone E3 allows up to 10 lux of light pre-curfew measured vertically upon the face of residential windows surrounding the Development and an 'after curfew' value of 2 lux. This value has therefore been used to assess the light pollution associated with the Development.
- 18.40 A detailed lighting scheme has not been fixed for the Development as a whole at the time the assessment was undertaken and, as such, a qualitative assessment has been provided as is standard practice. This is based on the Provisional Lighting Masterplan put forward by Michael Grubb Studio. Further to this, the sports pitch would be served by floodlights. A final design is not fixed at this stage and two options have been prepared based on either 120 lux or 200 lux and as such, an assessment of light ~~spill~~trespass as a result of these floodlights has been provided to ensure that it would be possible to control the light emitted.

### Significance Criteria

- 18.41 The BRE guidelines states the following for use in Environmental Impact Assessments (EIA):

*"The guidance in this book may be used as the basis for environmental impact assessment, where the skylight and sunlight impact of a new Development on its surroundings are taken into account.*

*Adverse impacts occur when there is a significant decrease in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space.*

*The assessment of impact would depend on a combination of factors and there is no simple rule of thumb that can be applied.*

*Where the loss of skylight or sunlight fully meets the guidelines in this book, the impact would be **Insignificant** or **minor adverse**. Where the loss of light is well within the guidelines, or only a small number of windows or limited area of open space lose light (within the guidelines), a classification of **Insignificant** is more appropriate. Where the loss of light is only just within the guidelines, and a larger number of windows or open space area are affected, a **minor adverse** impact would be more appropriate, especially if there is a particularly strong requirement for daylight or sunlight in the affected building or open space.*



Where the loss of skylight or sunlight does not meet the guidelines in this book, the impact is assessed as **minor**, **moderate** or **substantial adverse**. Factors tending towards **minor adverse** impact would include:

- Only a small number of windows or limited area or open space are affected;
- The loss is only marginally outside the guidelines;
- The affected room has other sources of skylight or sunlight;
- The affected building or open space only has a low level requirement for skylight or sunlight; and
- There are particular reasons why an alternative, less stringent guidelines should be applied.

Factors tending towards a **substantial adverse** impact include:

- A large number of windows or large area of open space are affected;
- The loss of light is substantially outside the guidelines;
- All the windows in a particular property are affected; and
- The affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight.”

## Daylight

### VSC Criteria

- 18.42 The BRE guidelines recommend that a window serving a habitable room should be able to benefit from a minimum VSC value of 27%.
- 18.43 In order to be regarded as meeting the VSC criteria once the Development has been constructed, a window should either:
- Retain at least 27% VSC in absolute terms; or
  - Retain at least 80% of its existing VSC value after the Development is constructed.
- 18.44 In special circumstances the developer or Local Planning Authority (LPA) 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.
- 18.45 Where a neighbouring window has its light obscured by an overhang, existing levels will be low. As such, this can lead to relatively modest developments causing technical breaches of the BRE guidance. In order to allow for this, the BRE guidance recommends an additional assessment with balconies removed is undertaken to determine if this is the driver of the impact. Where balconies unfairly constrain daylight, professional judgment may be applied to set a suitable level of significance which deviates from the targets set out below.
- 18.46 Where the results show compliance with the BRE guidelines criteria, the effect is considered to be **Insignificant** since the BRE guidelines indicate that the occupants are unlikely to experience any noticeable change to their daylight amenity levels.
- 18.47 Where there will be a noticeable change, the results have been summarised dependant on how far beyond the suggested targets the reductions from baseline levels will occur. For VSC, the ranges of reduction have been set at 20-29.9% (**minor significance**), 30-39.9% (**moderate**

**significance**) and >40% (**major significance** (note, substantial as used in the BRE guidelines has been replaced with major to match the terminology within this ES)).

#### *NSC Criteria*

- 18.48 If, following construction of a new Development, the NSC moves so that the area of the existing room which does receive direct sky light is reduced to less than 0.8 times its former value, then this will be noticeable to the occupants and more of the room will appear poorly lit.
- 18.49 In order to be regarded as meeting the NSC criteria once the Development has been constructed, it should retain at least 80% of its existing NSC value after the Development is constructed.
- 18.50 Where a neighbouring window has its light obscured by an overhang, existing levels will be low. As such, this can lead to relatively modest developments causing technical breaches of the BRE guidance. In order to allow for this, the BRE guidance recommends an additional assessment with balconies removed is undertaken to determine if this is the driver of the impact. Where this assessment has been applied, it has been described in the description of likely significant effects. Where balconies unfairly constrain daylight, professional judgment may be applied to set a suitable level of significance which deviates from the targets set out below.
- 18.51 Where the results show compliance with the BRE guidelines criteria, the effect is considered to be **insignificant** since the BRE guidelines indicate that the occupants are unlikely to experience any noticeable change to their daylight amenity levels.
- 18.52 Where there will be a noticeable change, the results have been summarised dependant on how far beyond the suggested targets the reductions from baseline levels will occur. For NSC, the ranges of reduction have been split into 20-29.9% (**minor significance**), 30-39.9% (**moderate significance**) and >40% (**major significance**).

#### *ADF Criteria*

- 18.53 The recommended ADF value is dependent upon the use of the room in question. The BRE guidelines suggest a bedroom should have an ADF of 1%, a living room 1.5%, and a kitchen 2%. Where room use is unknown an ADF target value of 1.5% (that of a living room) has been assumed. The ADF results are presented as supplementary information and are not used to determine significance of impact.

#### *Sunlight*

- 18.54 The BRE Guidelines states that if a window:
- "...can receive more than one quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months between 21 September and 21 March, then the room should still receive enough sunlight."*
- 18.55 In order to be regarded as meeting APSH criteria once the Development has been constructed, a window should either:
- Retain at least 25% total APSH with 5% in the winter months in absolute terms;
  - Retain at least 80% of its existing total and winter APSH values after the Development is constructed; or
  - Loss of total absolute annual APSH is less than 4% of total APSH from the existing level.



18.56 Where the results show compliance with the BRE Guidance criteria, the effect is considered to be **insignificant** since the BRE Guidelines indicate that the occupants are unlikely to experience any noticeable change to their sunlight amenity levels.

#### Overshadowing

18.57 The BRE Guidance states that for an area to appear adequately sunlit throughout the year, at least half (50%) of any assessment area should see direct sunlight for at least 2 hours on the 21st March (sunlight amenity assessment).

18.58 Where the results show compliance with the BRE guidelines criteria, the effect is considered to be **insignificant**. Should the relevant criteria not be achieved, a judgment is made on significance of effect based on the level of loss, retained sunlight levels and the relevant baseline condition.

#### Transient Overshadowing

18.59 The BRE guidelines give no criteria for the significance of transitory overshadowing other than to suggest that by establishing the different times of day and year when shadow will be cast over surrounding areas an indication is given as to the significance of the Development's effect. For this reason the significance of effect is described through the sunlight amenity assessment described above.

#### Light Pollution

18.60 Where the results show compliance with the ILP Guidelines, the effect is considered to be **insignificant**. Should the relevant criteria not be achieved, professional judgment was made on significance of the likely adverse effect based on the level of additional light spill/respass.

## Baseline Conditions

### Sensitive Receptors

18.61 Following the Chapter presented in the 2018 ES and the assessment set out in the May 2019 ES Addendum, the potentially sensitive receptors (existing nearby residential and relevant educational buildings as well as amenity areas) to the Development are identified in **Table 18.2** and their locations in relation to the Site is shown in **Figure 18.1**. The window maps for the residential properties are shown in within **Appendix 18.1**. The receptors remain the same with the addition of the rear gardens serving Reid Court. These amenity spaces have been included in the technical analysis for completeness.

Table 18.2: Potentially Sensitive Receptors

Type of Receptor	Property Address (All floors unless otherwise stated)
Residential properties	Butler House
	Boat Race House
	Rann House
	31 Vineyard Path
	Vineyard Heights (third floor and above)
	The Tapestry (first floor only)
	3 – 9 Richmond Road (odd numbers only)
	39 – 41 Lower Richmond Road

Type of Receptor	Property Address (All floors unless otherwise stated)
	43 – 51 Lower Richmond Road
	51a – 55 Lower Richmond Road
	57 – 59 Lower Richmond Road
	61 – 63 Lower Richmond Road
	67 Lower Richmond Road
	Lady Elizabeth House
	2 – 10 Waldeck Road (even numbers only)
	3 – 9 Waldeck Road (odd numbers only)
	1 – 5 Varsity Row
	6 – 7 Varsity Row
	2 – 6 Williams Lane (even numbers only)
	8 – 10 Williams Lane (even numbers only)
	12 – 20 Williams Lane (even numbers only)
	22 – 26 Williams Lane (even numbers only)
	1 – 3 Watney Road
	4 – 5 Watney Road
	11 – 13 Watney Road (odd numbers only)
	15 – 21 Watney Road (odd numbers only)
	23 – 29 Watney Road (odd numbers only)
	31 – 37 Watney Road (odd numbers only)
	39 – 45 Watney Road (odd numbers only)
	47 and 49 Watney Road
	51 and 53 Watney Road
	55 and 57 Watney Road
	59 and 61 Watney Road
	63 and 65 Watney Road
	Parliament Mews
	Combe House
	1 – 10 Cromwell Place
	22 Cromwell Place
	Reid Court
	Churchill Court
	17 – 18 Langdon Place
	Tudor Lodge
	The Ship
	Thames Bank Cottage
	Asplin Cottage

Type of Receptor	Property Address (All floors unless otherwise stated)
	Aynescombe Cottage
	Thames Bank House
	Old Stable
	Leyden House
	Jolly Gardeners (first and second floor only)
Nursery / Daycare	35 Lower Richmond Road
External Amenity Spaces	Gardens serving 11-61 (odd only) Watney Road
	Gardens serving 1-11 Parliament Mews
	Gardens serving Aspin Cottage
	Gardens serving Thames Bank House
	Gardens serving Tudor Lodge
	Gardens serving Reid Court
	Thames Tow Path
	Mortlake Green

18.62 The baseline condition has been assessed as the light levels which exist within the building surrounding the Site as they currently stand. **Figure 18.1** shows the buildings included within the baseline scenario assessment.

### Daylight and Sunlight

18.63 **Tables 18.3 to 18.6** summarise the baseline daylight and sunlight results at the relevant receptors identified above. Only Site facing windows with a potential to see a change in light levels have been assessed.

Table 18.3: Baseline Daylight (VSC) Summary

Surrounding Properties	Total Number of Windows	Total number of windows that achieve VSC levels above those suggested in the BRE Guidance	Total number of windows that achieve VSC levels below those suggested in the BRE Guidance
Butler House	63	29	34
Boat Race House	48	42	6
Rann House	96	24	72
31 Vineyard Path	30	28	2
Vineyard Heights	149	135	14
The Tapestry	5	3	2
3 – 9 Richmond Road	16	8	8
39 – 41 Lower Richmond Road	5	5	0
43 – 51 Lower Richmond Road	33	33	0
51a – 55 Lower Richmond Road	14	9	5
57 – 59 Lower Richmond Road	8	6	2
61 – 63 Lower Richmond Road	6	6	0

Surrounding Properties	Total Number of Windows	Total number of windows that achieve VSC levels above those suggested in the BRE Guidance	Total number of windows that achieve VSC levels below those suggested in the BRE Guidance
67 Lower Richmond Road	17	10	7
Lady Elizabeth House	50	47	3
2 – 10 Waldeck Road	25	16	9
3 – 9 Waldeck Road	37	19	18
1 – 5 Varsity Row	31	29	2
6 – 7 Varsity Row	10	9	1
2 – 6 Williams Lane	17	17	0
8 – 10 Williams Lane	8	8	0
12 – 20 Williams Lane	21	20	1
22 – 26 Williams Lane	10	9	1
1 – 3 Watney Road	15	12	3
4 – 5 Watney Road	11	8	3
11 – 13 Watney Road	9	9	0
15 – 21 Watney Road	21	21	0
23 – 29 Watney Road	29	27	2
31 – 37 Watney Road	23	21	2
39 – 45 Watney Road	25	25	0
47 and 49 Watney Road	10	10	0
51 and 53 Watney Road	10	10	0
55 and 57 Watney Road	10	10	0
59 and 61 Watney Road	10	10	0
63 and 65 Watney Road	10	10	0
Parliament Mews	88	61	27
Combe House	75	61	14
1 – 10 Cromwell Place	90	80	10
22 Cromwell Place	1	1	0
Reid Court	88	81	7
Churchill Court	83	52	31
17 – 18 Langdon Place	4	2	2
Tudor Lodge	9	8	1
The Ship	9	3	6
Thames Bank Cottage	11	8	3
Asplin Cottage	5	5	0
Aynescombe Cottage	13	11	2
Thames Bank House	28	24	4

Surrounding Properties	Total Number of Windows	Total number of windows that achieve VSC levels above those suggested in the BRE Guidance	Total number of windows that achieve VSC levels below those suggested in the BRE Guidance
Old Stable	23	18	5
Leyden House	20	15	5
Jolly Gardeners	11	11	0
35 Lower Richmond Road	31	12	19

Table 18.4: Baseline Daylight (NSC) Summary

Surrounding Properties	Total Number of Rooms	Total number of rooms above 50% well lit	Total number of rooms below 50% well lit
Butler House	21	19	2
Boat Race House	30	30	0
Rann House	48	48	0
31 Vineyard Path	24	24	0
Vineyard Heights	75	75	0
The Tapestry	3	3	0
3 – 9 Richmond Road	8	8	0
39 – 41 Lower Richmond Road	5	5	0
43 – 51 Lower Richmond Road	31	31	0
51a – 55 Lower Richmond Road	11	10	1
57 – 59 Lower Richmond Road	6	6	0
61 – 63 Lower Richmond Road	6	6	0
67 Lower Richmond Road	7	6	1
Lady Elizabeth House	40	40	0
2 – 10 Waldeck Road	12	12	0
3 – 9 Waldeck Road	29	27	2
1 – 5 Varsity Row	18	18	0
6 – 7 Varsity Row	6	6	0
2 – 6 Williams Lane	9	9	0
8 – 10 Williams Lane	6	6	0
12 – 20 Williams Lane	16	15	1
22 – 26 Williams Lane	9	9	0
1 – 3 Watney Road	11	11	0
4 – 5 Watney Road	7	7	0
11 – 13 Watney Road	7	7	0
15 – 21 Watney Road	15	15	0
23 – 29 Watney Road	15	15	0

Surrounding Properties	Total Number of Rooms	Total number of rooms above 50% well lit	Total number of rooms below 50% well lit
31 – 37 Watney Road	15	15	0
39 – 45 Watney Road	17	17	0
47 and 49 Watney Road	6	6	0
51 and 53 Watney Road	6	6	0
55 and 57 Watney Road	6	6	0
59 and 61 Watney Road	6	6	0
63 and 65 Watney Road	6	6	0
Parliament Mews	48	45	3
Combe House	60	60	0
1 – 10 Cromwell Place	73	71	2
22 Cromwell Place	1	1	0
Reid Court	64	64	0
Churchill Court	32	32	0
17 – 18 Langdon Place	4	4	0
Tudor Lodge	5	5	0
The Ship	6	5	1
Thames Bank Cottage	9	9	0
Asplin Cottage	5	5	0
Aynescombe Cottage	6	6	0
Thames Bank House	9	9	0
Old Stable	8	6	2
Leyden House	9	9	0
Jolly Gardeners	4	4	0
35 Lower Richmond Road	5	4	1

Table 18.5: Baseline Daylight (ADF) Summary

Surrounding Properties	Total Number of rooms	Total number of rooms above BRE suggested targets	Total number of rooms below BRE suggested targets
Butler House	21	12	9
Boat Race House	30	19	11
Rann House	48	38	10
31 Vineyard Path	24	21	3
Vineyard Heights	75	45	30
The Tapestry	3	2	1
3 – 9 Richmond Road	8	8	0
39 – 41 Lower Richmond Road	5	5	0



Surrounding Properties	Total Number of rooms	Total number of rooms above BRE suggested targets	Total number of rooms below BRE suggested targets
43 – 51 Lower Richmond Road	31	24	7
51a – 55 Lower Richmond Road	11	6	5
57 – 59 Lower Richmond Road	6	6	0
61 – 63 Lower Richmond Road	6	0	6
67 Lower Richmond Road	7	6	1
Lady Elizabeth House	40	27	13
2 – 10 Waldeck Road	12	10	2
3 – 9 Waldeck Road	29	10	19
1 – 5 Varsity Row	18	15	3
6 – 7 Varsity Row	6	4	2
2 – 6 Williams Lane	9	8	1
8 – 10 Williams Lane	6	6	0
12 – 20 Williams Lane	16	15	1
22 – 26 Williams Lane	9	8	1
1 – 3 Watney Road	11	6	5
4 – 5 Watney Road	7	4	3
11 – 13 Watney Road	7	4	3
15 – 21 Watney Road	15	11	4
23 – 29 Watney Road	15	9	6
31 – 37 Watney Road	15	5	10
39 – 45 Watney Road	17	6	11
47 and 49 Watney Road	6	2	4
51 and 53 Watney Road	6	2	4
55 and 57 Watney Road	6	0	6
59 and 61 Watney Road	6	0	6
63 and 65 Watney Road	6	0	6
Parliament Mews	45	13	32
Combe House	60	14	46
1 – 10 Cromwell Place	73	53	20
22 Cromwell Place	1	0	1
Reid Court	64	46	18
Churchill Court	32	13	19
17 – 18 Langdon Place	4	0	4
Tudor Lodge	5	3	2
The Ship	6	3	3
Thames Bank Cottage	9	2	7

Surrounding Properties	Total Number of rooms	Total number of rooms above BRE suggested targets	Total number of rooms below BRE suggested targets
Asplin Cottage	5	0	5
Aynescombe Cottage	6	4	2
Thames Bank House	9	7	2
Old Stable	8	3	5
Leyden House	9	5	4
Jolly Gardeners	4	4	0
35 Lower Richmond Road	5	2	3

Table 18.6: Baseline Sunlight (APSH) Summary

Surrounding Properties	Total Number of windows facing the Site and within 90° of due south	Total number of windows above BRE suggested targets for total and winter APSH	Total number of windows below BRE suggested targets for total and winter APSH
Butler House	28	15	13
Boat Race House	37	34	3
Rann House	16	0	16
31 Vineyard Path	0	0	0
Vineyard Heights	46	40	6
The Tapestry	1	1	0
3 – 9 Richmond Road	0	0	0
39 – 41 Lower Richmond Road	0	0	0
43 – 51 Lower Richmond Road	11	11	0
51a – 55 Lower Richmond Road	2	0	2
57 – 59 Lower Richmond Road	1	0	1
61 – 63 Lower Richmond Road	0	0	0
67 Lower Richmond Road	6	4	2
Lady Elizabeth House	6	6	0
2 – 10 Waldeck Road	10	10	0
3 – 9 Waldeck Road	17	17	0
1 – 5 Varsity Row	24	24	0
6 – 7 Varsity Row	10	10	0
2 – 6 Williams Lane	2	2	0
8 – 10 Williams Lane	8	8	0
12 – 20 Williams Lane	20	20	0
22 – 26 Williams Lane	10	10	0
1 – 3 Watney Road	2	0	2
4 – 5 Watney Road	1	0	1

Surrounding Properties	Total Number of windows facing the Site and within 90° of due south	Total number of windows above BRE suggested targets for total and winter APSH	Total number of windows below BRE suggested targets for total and winter APSH
11 – 13 Watney Road	0	0	0
15 – 21 Watney Road	0	0	0
23 – 29 Watney Road	3	3	0
31 – 37 Watney Road	0	0	0
39 – 45 Watney Road	0	0	0
47 and 49 Watney Road	0	0	0
51 and 53 Watney Road	0	0	0
55 and 57 Watney Road	0	0	0
59 and 61 Watney Road	0	0	0
63 and 65 Watney Road	0	0	0
Parliament Mews	64	59	5
Combe House	3	3	0
1 – 10 Cromwell Place	52	50	2
22 Cromwell Place	1	1	0
Reid Court	44	44	0
Churchill Court	20	16	4
17 – 18 Langdon Place	0	0	0
Tudor Lodge	9	9	0
The Ship	9	8	1
Thames Bank Cottage	8	7	1
Asplin Cottage	3	3	0
Aynescombe Cottage	4	4	0
Thames Bank House	16	15	1
Old Stable	19	19	0
Leyden House	16	16	0
Jolly Gardeners	6	6	0
35 Lower Richmond Road	17	11	6

18.64 A number of neighbouring properties under the existing baseline scenario enjoy a relatively open outlook and as such enjoy good light levels. These levels are typical of suburban locations and this should be considered when applying the BRE criteria.

18.65 In the baseline condition, a small number of windows surrounding the Site fall below the BRE suggested VSC levels of 27%. These instances are where the low levels are primarily driven by overhanging / recessed balconies and amenity spaces which serve to self-limit both daylight and sunlight to the window face below. Where this is the case, additional analysis has been provided to show levels without balconies as suggested in the BRE. With balconies removed the light

levels to these properties are much higher. The following properties have windows with low existing levels of daylight as the results of the overhanging / recessed amenity spaces:

- Butler House;
- Rann House; and
- Churchill Court.

18.66 The APSH results indicate that some of the surrounding properties will have low existing levels of direct sunlight, below those suggested in the BRE guidelines. Given the suburban nature of the Site, these results are not unusual.

### Overshadowing

18.67 The results of the sunlight amenity assessment has shown that 21 of the 40 existing areas surrounding the Site receive direct sunlight for two hours or more on the 21<sup>st</sup> March across more than 50% of its area, which is the recommended level suggested in the BRE guidance. These areas include the Thames Tow Path, Mortlake Green and various gardens serving neighbouring residential properties.

18.68 The other areas all fall below the targets due to the density and orientation of the spaces and these spaces can be identified within the drawings within **Appendix 18.3** as follows:

- 11 Watney Road;
- 17 Watney Road;
- 19 Watney Road;
- 21 Watney Road;
- 25 Watney Road;
- 29 Watney Road;
- 31 Watney Road;
- 33 Watney Road;
- 37 Watney Road;
- 41 Watney Road;
- 43 Watney Road;
- 45 Watney Road;
- 51 Watney Road;
- 10 Parliament Mews;
- 11 Parliament Mews;
- 6 Parliament Mews;
- 7 Parliament Mews;
- 8 Parliament Mews; and
- 9 Parliament Mews.

### Transient Overshadowing

18.69 The transient shadow images for three key points throughout the year are set out within **Appendix 18.4** and commented on below.

- 18.70 A review of the transient shadow drawings shows that the existing buildings on-Site cause little additional shadow to the surrounding amenity areas identified in the current condition in March and June. The only area that is overshadowed by the existing buildings on Site at these times of the year is the element of the Thames Tow path to the north east of the Site. This area sees a level of shadow throughout the day on these dates.

### Light Pollution

- 18.71 It is not possible to measure the Sky Glow caused by the lighting on the Site in the baseline condition as the light emitted from all sources is not known. However, a review of the fittings indicates the majority are downward facing and as such it is considered that sky glow would be within suggested levels. Similarly, there is currently no lighting on Site that would cause adverse effects with regard to Building Luminance or Glare.
- 18.72 In order to ascertain the vertical illuminance levels at neighbouring residential properties in the current condition, a night-time Site visit was undertaken at 9pm on the 30<sup>th</sup> October 2017 and light levels measured with a light meter. A review of the Site and its surroundings has not identified any significant highway lighting upgrades since the Site visit was undertaken. This is pre curfew (11pm) in the hours of darkness. It should be noted that best efforts were made to take readings that occurred as a result of fixed lighting on and surrounding the Site. Notwithstanding this, due to the level of traffic on Lower Richmond Road and Mortlake High Street, car headlights may have caused increased readings. Readings were taken as close to surrounding residential properties as possible, although without gaining access it was not possible to obtain readings at the window face. The results can be found in **Appendix 18.5**. They show that the pre-curfew light levels are generally below 5 Lux apart from along Lower Richmond Road and Mortlake High Street where levels increase up to 30 Lux, primarily as a result of street lighting and the headlights of passing traffic.
- 18.73 It should be noted that the sports pitch on Site is not currently artificially lit.

## Likely Significant Effects

### The Works

#### Demolition Effects

- 18.74 The level of effect in relation to daylight, sunlight and overshadowing to the surrounding properties would vary throughout the Work, depending on the level of obstruction caused. There would be a slight temporary improvement in levels of daylight and sunlight after the buildings and structures on the Site are demolished. The likely effects to daylight, sunlight and overshadowing would be generally **local, short to medium term** and of **minor to moderate beneficial** significance at the closest sensitive receptors but would be **insignificant** at those sensitive receptors at a greater distance from the Site.
- 18.75 Lighting used during the Works would accord with the ILP Guidance so as not to cause a nuisance to nearby receptors. The likely effect is therefore considered to be **insignificant**.

#### Construction Effects

- 18.76 The construction of the new buildings on the Site would have a gradual effect upon the levels of daylight, sunlight and overshadowing to residential properties and amenity spaces surrounding the Site as the massing of the proposed buildings increases over time as construction progresses. The effects upon light spillage and light pollution would not occur until the external pedestrian

lighting and internal lighting was commissioned and activated after construction. The likely effects that are perceptible as the superstructure progresses would be similar, albeit lesser, to those of the completed Development. Therefore, reference should be made to the assessments of the completed Development below.

- 18.77 During the construction phase, a number of tall cranes would be present on Site; however, their size and temporary presence would lead to generally imperceptible effects to local reductions in daylight and sunlight. The likely effect of construction cranes on daylight, sunlight and overshadowing levels is considered to be **insignificant**.

## Completed Development

### Daylight to Existing Surrounding Properties

- 18.78 The assessed scenario is shown in **Appendix 18.1**. The detailed results can be found within **Appendix 18.2**. **Tables 18.7 to 18.11** below summarise the daylight and sunlight effects of the Development on existing nearby residential properties.
- 18.79 Properties with windows that do not have a direct line of sight to the Development or are at a significant distance from the Site have not been included within this assessment. In some cases where buildings are a significant distance from the Site, only windows which would see the greatest loss have been assessed to present a worst case. Should these windows see a minor adverse or insignificant effect it can be said that other windows within the building would see an effect that is the same or less.

Table 18.7: Completed Development – VSC in relation to the BRE Guidance

Existing Property	Total Number of Windows	Total number of windows that achieve VSC levels in excess of 27% or a reduction of less than 20% from the baseline level	Total number of windows that see VSC reductions suggested as noticeable in the BRE Guidance			Total
			20%-29.9% reduction	30% - 39.9% reduction	>40% reduction	
Butler House	63	45	4	8	6	18
Boat Race House	48	33	0	5	10	15
Rann House	96	71	8	7	10	25
31 Vineyard Path	30	18	1	8	3	12
Vineyard Heights	149	148	1	0	0	1
The Tapestry	5	5	0	0	0	0
3 – 9 Richmond Road	16	16	0	0	0	0
39 – 41 Lower Richmond Road	5	5	0	0	0	0
43 – 51 Lower Richmond Road	33	33	0	0	0	0
51a – 55 Lower Richmond Road	14	14	0	0	0	0
57 – 59 Lower Richmond Road	8	8	0	0	0	0



Existing Property	Total Number of Windows	Total number of windows that achieve VSC levels in excess of 27% or a reduction of less than 20% from the baseline level	Total number of windows that see VSC reductions suggested as noticeable in the BRE Guidance			
			20%-29.9% reduction	30% - 39.9% reduction	>40% reduction	Total
61 – 63 Lower Richmond Road	6	6	0	0	0	0
67 Lower Richmond Road	17	17	0	0	0	0
Lady Elizabeth House	50	50	0	0	0	0
2 – 10 Waldeck Road	25	25	0	0	0	0
3 – 9 Waldeck Road	37	37	0	0	0	0
1 – 5 Varsity Row	31	31	0	0	0	0
6 – 7 Varsity Row	10	10	0	0	0	0
2 – 6 Williams Lane	17	13	4	0	0	4
8 – 10 Williams Lane	8	8	0	0	0	0
12 – 20 Williams Lane	21	21	0	0	0	0
22 – 26 Williams Lane (even numbers only)	10	10	0	0	0	0
1 – 3 Watney Road	15	15	0	0	0	0
4 – 5 Watney Road	11	11	0	0	0	0
11 – 13 Watney Road	9	9	0	0	0	0
15 – 21 Watney Road	21	21	0	0	0	0
23 – 29 Watney Road	29	29	0	0	0	0
31 – 37 Watney Road	23	23	0	0	0	0
39 – 45 Watney Road	25	25	0	0	0	0
47 and 49 Watney Road	10	10	0	0	0	0
51 and 53 Watney Road	10	10	0	0	0	0
55 and 57 Watney Road	10	10	0	0	0	0
59 and 61 Watney Road	10	10	0	0	0	0

Existing Property	Total Number of Windows	Total number of windows that achieve VSC levels in excess of 27% or a reduction of less than 20% from the baseline level	Total number of windows that see VSC reductions suggested as noticeable in the BRE Guidance			
			20%-29.9% reduction	30% - 39.9% reduction	>40% reduction	Total
63 and 65 Watney Road	10	10	0	0	0	0
Parliament Mews	88	88	0	0	0	0
Combe House	75	75	0	0	0	0
1 – 10 Cromwell Place	90	90	0	0	0	0
22 Cromwell Place	1	1	0	0	0	0
Reid Court	88	83	5	0	0	5
Churchill Court	83	76	4	3	0	7
17 – 18 Langdon Place	4	4	0	0	0	0
Tudor Lodge	9	9	0	0	0	0
The Ship	9	9	0	0	0	0
Thames Bank Cottage	11	11	0	0	0	0
Asplin Cottage	5	5	0	0	0	0
Aynescombe Cottage	13	12	1	0	0	1
Thames Bank House	28	28	0	0	0	0
Old Stable	23	23	0	0	0	0
Leyden House	20	20	0	0	0	0
Jolly Gardeners	11	8	1	0	2	3
35 Lower Richmond Road	31	31	0	0	0	0

Table 18.8: Completed Development – NSC in relation to the BRE Guidelines

Existing Property	Total Number of rooms	Total number of rooms that see a reduction of less than 20% baseline level in NSC	Total number of windows that see NSC reductions suggested as noticeable in the BRE Guidance			
			20%-29.9% reduction	30% - 39.9% reduction	>40% reduction	Total
Butler House	21	19	1	0	1	2
Boat Race House	30	19	2	3	6	11
Rann House	48	48	0	0	0	0
31 Vineyard Path	24	15	0	1	8	9
Vineyard Heights	75	74	1	0	0	1

Existing Property	Total Number of rooms	Total number of rooms that see a reduction of less than 20% baseline level in NSC	Total number of windows that see NSC reductions suggested as noticeable in the BRE Guidance			
			20%-29.9% reduction	30% - 39.9% reduction	>40% reduction	Total
The Tapestry	3	3	0	0	0	0
3 – 9 Richmond Road	8	7	1	0	0	1
39 – 41 Lower Richmond Road	5	5	0	0	0	0
43 – 51 Lower Richmond Road	31	31	0	0	0	0
51a – 55 Lower Richmond Road	11	11	0	0	0	0
57 – 59 Lower Richmond Road	6	6	0	0	0	0
61 – 63 Lower Richmond Road	6	6	0	0	0	0
67 Lower Richmond Road	7	7	0	0	0	0
Lady Elizabeth House	40	40	0	0	0	0
2 – 10 Waldeck Road	12	12	0	0	0	0
3 – 9 Waldeck Road	29	29	0	0	0	0
1 – 5 Varsity Row	18	18	0	0	0	0
6 – 7 Varsity Row	6	6	0	0	0	0
2 – 6 Williams Lane	9	8	0	0	1	1
8 – 10 Williams Lane	6	6	0	0	0	0
12 – 20 Williams Lane	16	16	0	0	0	0
22 – 26 Williams Lane	9	9	0	0	0	0
1 – 3 Watney Road	11	11	0	0	0	0
4 – 5 Watney Road	7	7	0	0	0	0
11 – 13 Watney Road	7	7	0	0	0	0
15 – 21 Watney Road	15	15	0	0	0	0
23 – 29 Watney Road	15	15	0	0	0	0
31 – 37 Watney Road (odd numbers only)	15	15	0	0	0	0

Existing Property	Total Number of rooms	Total number of rooms that see a reduction of less than 20% baseline level in NSC	Total number of windows that see NSC reductions suggested as noticeable in the BRE Guidance			
			20%-29.9% reduction	30% - 39.9% reduction	>40% reduction	Total
39 – 45 Watney Road (odd numbers only)	17	17	0	0	0	0
47 and 49 Watney Road	6	6	0	0	0	0
51 and 53 Watney Road	6	6	0	0	0	0
55 and 57 Watney Road	6	6	0	0	0	0
59 and 61 Watney Road	6	6	0	0	0	0
63 and 65 Watney Road	6	6	0	0	0	0
Parliament Mews	48	48	0	0	0	0
Combe House	60	60	0	0	0	0
1 – 10 Cromwell Place	73	73	0	0	0	0
22 Cromwell Place	1	1	0	0	0	0
Reid Court	64	64	0	0	0	0
Churchill Court	32	30	1	1	0	2
17 – 18 Langdon Place	4	4	0	0	0	0
Tudor Lodge	5	5	0	0	0	0
The Ship	6	6	0	0	0	0
Thames Bank Cottage	9	9	0	0	0	0
Asplin Cottage	5	5	0	0	0	0
Aynescombe Cottage	6	6	0	0	0	0
Thames Bank House	9	8	0	1	0	1
Old Stable	8	8	0	0	0	0
Leyden House	9	9	0	0	0	0
Jolly Gardeners	4	3	0	0	1	1
35 Lower Richmond Road	5	5	0	0	0	0

Table 18.9: Completed Development – ADF in relation to the BRE Guidelines

Surrounding Properties	>2%	1.5-1.99%	1-1.49%	0.5-0.99%	<0.49%	Total number of rooms	Total number of rooms above suggested levels for use	Total number of rooms below suggested levels for use
Butler House	9	0	2	5	5	21	11	10
Boat Race House	2	7	8	12	1	30	10	20
Rann House	6	18	3	21	0	48	27	21
31 Vineyard Path	6	9	7	2	0	24	15	9
Vineyard Heights	31	14	23	3	4	75	45	30
The Tapestry	0	1	2	0	0	3	1	2
3 – 9 Richmond Road	4	0	4	0	0	8	8	0
39 – 41 Lower Richmond Road	1	4	0	0	0	5	5	0
43 – 51 Lower Richmond Road	13	11	5	2	0	31	24	7
51a – 55 Lower Richmond Road	4	2	4	0	1	11	6	5
57 – 59 Lower Richmond Road	4	1	1	0	0	6	6	0
61 – 63 Lower Richmond Road	0	0	6	0	0	6	0	6
67 Lower Richmond Road	4	2	0	0	1	7	6	1
Lady Elizabeth House	4	12	22	2	0	40	27	13
2 – 10 Waldeck Road	4	3	3	2	0	12	9	3
3 – 9 Waldeck Road	7	3	11	7	1	29	10	19
1 – 5 Varsity Row	7	6	2	3	0	18	15	3
6 – 7 Varsity Row	2	2	0	2	0	6	4	2
2 – 6 Williams Lane	4	4	0	1	0	9	6	3
8 – 10 Williams Lane	4	0	2	0	0	6	6	0
12 – 20 Williams Lane	10	0	5	0	1	16	15	1

Surrounding Properties	>2%	1.5-1.99%	1-1.49%	0.5-0.99%	<0.49%	Total number of rooms	Total number of rooms above suggested levels for use	Total number of rooms below suggested levels for use
22 – 26 Williams Lane	3	5	0	1	0	9	8	1
1 – 3 Watney Road	0	6	3	2	0	11	6	5
4 – 5 Watney Road	3	1	1	2	0	7	4	3
11 – 13 Watney Road	2	2	1	1	1	7	4	3
15 – 21 Watney Road	0	11	0	4	0	15	11	4
23 – 29 Watney Road	4	4	5	2	0	15	9	6
31 – 37 Watney Road	3	2	9	0	1	15	5	10
39 – 45 Watney Road	5	1	10	1	0	17	6	11
47 and 49 Watney Road	0	1	4	1	0	6	1	5
51 and 53 Watney Road	0	2	3	1	0	6	2	4
55 and 57 Watney Road	0	0	5	1	0	6	0	6
59 and 61 Watney Road	0	0	4	2	0	6	0	6
63 and 65 Watney Road	0	0	4	2	0	6	0	6
Parliament Mews	4	9	20	12	3	48	15	33
Combe House	2	10	36	0	12	60	12	48
1 – 10 Cromwell Place	29	15	17	8	4	73	57	16
22 Cromwell Place	0	0	0	1	0	1	0	1
Reid Court	16	18	29	1	0	64	34	30
Churchill Court	7	6	8	11	0	32	11	21
17 – 18 Langdon Place	0	0	4	0	0	4	0	4



Surrounding Properties	>2%	1.5-1.99%	1-1.49%	0.5-0.99%	<0.49%	Total number of rooms	Total number of rooms above suggested levels for use	Total number of rooms below suggested levels for use
Tudor Lodge	2	1	1	1	0	5	3	2
The Ship	1	2	2	0	1	6	3	3
Thames Bank Cottage	1	1	2	5	0	9	2	7
Asplin Cottage	0	0	2	3	0	5	0	5
Aynescombe Cottage	2	1	2	1	0	6	4	2
Thames Bank House	6	2	0	1	0	9	8	1
Old Stable	3	0	1	3	1	8	3	5
Leyden House	3	2	1	3	0	9	5	4
Jolly Gardeners	2	0	2	0	0	4	4	0
35 Lower Richmond Road	3	0	1	1	0	5	3	2

18.80 The VSC and NSC results indicate that the following properties would not see a noticeable effect in terms of daylight potential at the window face:

- The Tapestry;
- 39 - 41 Lower Richmond Road;
- 43 – 51 Lower Richmond Road;
- 51a – 55 Lower Richmond Road;
- 57 – 59 Lower Richmond Road;
- 61 – 63 Lower Richmond Road;
- 67 Lower Richmond Road;
- Lady Elizabeth House;
- 2 – 10 Waldeck Road;
- 3 – 9 Waldeck Road;
- 1 – 5 Varsity Row;
- 6 – 7 Varsity Row;
- 8 – 10 Williams Lane;
- 12 – 20 Williams Lane;
- 22 – 26 Williams Lane;
- 1 – 3 Watney Road;
- 4 – 5 Watney Road;

- 11 – 13 Watney Road;
- 15 – 21 Watney Road;
- 23 – 29 Watney Road;
- 31 – 37 Watney Road;
- 39 – 45 Watney Road;
- 47 and 49 Watney Road;
- 51 and 53 Watney Road;
- 55 and 57 Watney Road;
- 59 and 61 Watney Road;
- 63 and 65 Watney Road;
- Parliament Mews;
- Combe House;
- 1 – 10 Cromwell Place;
- 22 Cromwell Place;
- 17 – 18 Langdon Place;
- Tudor Lodge;
- The Ship;
- Thames Bank Cottage;
- Asplin Cottage;
- Old Stable;
- Leyden House; and
- 35 Lower Richmond Road.

18.81 It can therefore be said that the effect of the Development on the daylight to these properties would be **insignificant** and no further detailed discussion of the daylight levels is required.

#### *Butler House*

- 18.82 The VSC results suggest that with the Development in place, 45 (71%) of the 63 windows assessed within Butler House would see no noticeable change in the daylight received at the window face. Of the remaining windows, 4 would see minor reductions, 8 moderate and 6 major reductions in VSC. Of these 18 windows, 12 are overhung by balconies, thus self-limiting light to the windows below.
- 18.83 In addition to the windows affected that are overhung by balconies, all but 1 window serve rooms that are also served by additional windows that do not experience any noticeable change to their VSC. The remaining window serves a single aspect bedroom which is considered to be less sensitive compared to main living spaces.
- 18.84 Of the remaining 5 windows which are not overhung by a balcony, 2 would receive minor adverse effects and 3 would see moderate adverse. Of the 3 windows which see moderate impacts, all serve rooms that are also served by at least one other additional window which would not experience a noticeable change in VSC.
- 18.85 Floor layouts have been obtained and these have been applied for the NSC assessment. The results of the NSC assessment have shown that 19 (90%) of the 21 rooms assessed would

experience no noticeable alteration in daylight. The remaining two rooms are a ground floor bedroom and would see major adverse effect, and a first floor bedroom, which would see a minor adverse effect. Both rooms are served by at least one window overhung by a balcony, with the remaining window a flank window within the side elevation.

- 18.86 A 'balconies off' assessment has been undertaken and the results of this further technical analysis can be found in Appendix 18.2. The results of this analysis have shown that of the windows situated beneath balconies, all but 3 windows would see no noticeable change in VSC. The remaining 3 windows can be identified as W14 / W15 on the ground floor and W15 on the first floor showing significantly reduced effects. As mentioned in paragraph 18.86 above, these windows serve dual aspect spaces, with the remaining window situated within the unconstrained flank elevation showing no noticeable change in VSC levels. It should be noted that the results of the NSC assessment for W15 on the first floor have shown no noticeable change to the NSC levels. The results of the balconies off assessment have shown the self-limiting effects of the balconies with the residual VSC impacts being isolated to secondary windows.
- 18.87 As the vast majority of rooms assessed are being served by windows restricted by external balconies, and all but one rooms have at least one window with an insignificant effect by reference to VSC, coupled with isolated deviations in respect of the NSC analysis, the likely effect to daylight with the Development in place is considered to be of **long-term, local** and of **minor adverse** significance.

#### *Boat Race House*

- 18.88 The VSC results suggest that with the Development in place, 33 (69%) of the 48 windows assessed within Boat Race House would see no noticeable change in the daylight received at the window face. Of the remaining windows, 5 would see moderate adverse reductions and 10 would see major adverse reductions.
- 18.89 The reductions are primarily driven by the comparative change from unusually high daylight levels for an urban context in the baseline condition due to an existing unobstructed view over the Site.
- 18.90 In addition, a number of windows indicating potential noticeable reductions serve dual aspect rooms, with the additional primary windows situated within the northern or southern elevation. The results show 5 windows indicating adverse effects, are served by at least one other window experiencing little or no noticeable effect with the Development in place, with retained VSC levels in excess of 27%. As the main windows serving these rooms experience little material change and retain compliant levels of VSC, the daylight levels within these rooms would remain acceptable. The remaining windows serve 10 rooms, 1 being an Living/Kitchen/Dining (LKD) (R8 First floor) and the remaining being bedrooms.
- 18.91 The results of the NSC assessment have shown that 19 (63%) of the 30 rooms assessed would experience no noticeable alteration in daylight. Of the remaining rooms, 2 would see minor adverse reductions, 3 would see moderate adverse reductions and 6 would see major adverse effects. As with VSC, high daylight levels in the baseline condition leave this building open to relatively high proportional reductions.
- 18.92 This property was subject to recent consent/permitted development (conversion from B1 (offices) to C3 (dwelling houses) and increased by one storey to provide additional residential units) and the implemented design includes a number of single aspect rooms in close proximity to the Site and therefore increases its sensitivity and reliance on light from across the Site. To illustrate this point, an additional 'mirror-image' analysis has been undertaken, which compared the daylight and sunlight levels that would be left by the Development against a building of identical height and

size as the neighbour on the Site opposite and the drawings and results can be found at **Appendix 18.2**. This approach is recommended in Appendix F of the BRE guidelines for existing buildings with windows “*unusually close to the site boundary...taking more than their fair share of light*” and “*to ensure that new development matches the height and proportions of existing buildings*”.

- 18.93 The Development has been sensitively designed to be a similar scale as this neighbouring property in this location and this is reflected in the generally minor absolute change in daylight levels from the mirrored condition. Whilst the results show some minor reductions in VSC, NSC and ADF levels, the overall levels are in broadly line with those shown by the ‘mirrored’ baseline position.
- 18.94 Considering the 10 single aspect site facing rooms, the LKD is situated on the first floor and can be identified as R8. The results of the mirrored baseline approach show a reduction from 16.2% to 14.2%, with the absolute change being minor at 2% VSC. The remaining 9 rooms are single aspect bedrooms and show a slight change in VSC levels. The results show one room (R10 first floor) would experience an increase, with the remaining rooms showing a reduction of no more than 5.2% VSC. It should be noted that bedrooms, whilst relevant for assessment have a lower requirement for daylighting than main living spaces and this should be considered when applying the targets.
- 18.95 Finally, as the room layouts are known, the ADF assessment are useful in understanding the daylight impacts. The results show that the ADF levels are within 0.1% of the proposed values under the mirrored baseline confirming broadly similar impacts.
- 18.96 The effect to daylight at this property with the Development in place is considered to be of **long-term, local** and of **moderate to major adverse** significance (purely based on reduction from the current unobstructed view).
- 18.97 The element of the Development in proximity to this neighbour has been designed to be of a similar scale and distance from the boundary, in line with the suggestions of the BRE guidance and confirmed by the mirrored baseline assessment. On the basis of the alternative mirrored baseline, it may be suitable to downgrade that significance of effect based on the mirrored baseline to Minor to Moderate Adverse.
- 18.98 In summary, the BRE guidelines acknowledge and advocate flexibility in precisely the context describe above. Therefore, the potential daylight effects arising from the Development are considered to be in line with the overall intentions of the BRE Guidance.

#### *Rann House*

- 18.99 The VSC results suggest that with the Development in place, 71 (74%) of the 96 windows assessed within Rann House would see no noticeable change in the daylight received at the window face. Of the remaining windows, 8 would see minor reductions, 7 moderate and 10 major reductions in VSC. These windows all sit behind recessed balconies and as such, are currently limited in direct daylight levels and sensitive to changes in massing on the Site.
- 18.100 The results of the NSC assessment have shown that all rooms assessed would experience no noticeable alteration in daylight.
- 18.101 Given the self-limiting effects of the balconies, a ‘balconies off’ assessment has been considered and the results of this further technical analysis can be found in **Appendix 18.2**. The results of the VSC analysis have shown 88 (92%) of the 96 windows would see no noticeable change in VSC levels. The remaining 8 windows see minor reductions in VSC. In addition, the results of

the NSC analysis have shown no noticeable change in NSC levels. The results of the balconies off assessment show the increased burden caused by the overhangs, with the effects with them removed being minimal.

- 18.102 The overall likely effect daylight with the Development in place is considered to be of **long-term, local** and of **minor to moderate adverse** significance.

### *31 Vineyard Path*

- 18.103 The VSC results suggest that with the Development in place, 18 (60%) of the 30 windows assessed within 31 Vineyard Path would see no noticeable change in the daylight received at the window face. Of the remaining windows, 1 would see minor reductions, 8 moderate and 3 major reductions in VSC.
- 18.104 The reductions in daylight are driven by the high daylight levels in the baseline condition, which is proven by the good retained levels of retained VSC to these windows with the majority of windows achieving at least 22%, with all windows achieving at least 12% VSC.
- 18.105 The results of the NSC assessment have shown that 15 (62%) of the 24 rooms assessed would experience no noticeable alteration in daylight. Of the remaining rooms, 1 would show moderate adverse and 8 major adverse reductions. The rooms that see adverse effects are situated within the front elevation Mortlake High Street. As mentioned above, these rooms currently enjoy an open outlook over the underutilised Site, and therefore the NSC levels under the existing scenario show high NSC levels, being on or in excess of 93% under the assumed room layouts. With the Development in place, these rooms see a reduction however the proportionate reductions are driven by the high existing levels. As with VSC, high daylight levels in the baseline condition leave this building open to relatively high proportional reductions.
- 18.106 The effect to daylight with the Development in place is considered to be of **long-term, local** and of **minor to moderate adverse** significance.

### *Vineyard Heights*

- 18.107 The VSC results suggest that with the Development in place, 148 (99%) of the 149 windows assessed within Vineyard Heights would see no noticeable change in the daylight received at the window face. The remaining window would see a minor reduction in VSC.
- 18.108 The window which experiences the reduction in daylight, W8 on the 3<sup>rd</sup> floor, will see a proportional reduction of 20.1%, marginally above the noticeable threshold. This window is a flank window within a bay window, where all other windows including the primary outward facing window show no noticeable alteration as a result of the Development.
- 18.109 The results of the NSC assessment have shown that 74 (99%) of the 75 rooms assessed would experience no noticeable alteration in daylight. The remaining room would show a minor adverse reduction. The room that sees the adverse effect is situated within the front elevation Mortlake High Street. As mentioned above, this room currently enjoy an open outlook over the underutilised Site and, therefore, the NSC levels under the existing scenario show high NSC levels of 90% under the assumed room layouts. With the Development in place, this room sees a reduction however the proportionate reductions are driven by the high existing levels.
- 18.110 The effect to daylight with the Development in place is considered to be of **long-term, local** and of **minor adverse** significance.

### *3-9 Richmond Road*

- 18.111 The VSC results suggest that with the Development in place, none of the 16 windows assessed within 3-9 Richmond Road would see a noticeable change in the VSC received at the window face.
- 18.112 The results of the NSC assessment have shown that 7 (88%) of the 8 rooms assessed would experience no noticeable alteration in daylight. The remaining room would see minor adverse reductions.
- 18.113 The minor reduction in daylight is to bedroom at first floor. The reduction is 22.2%, being marginally above the 20% level where changes may be noticeable.
- 18.114 The effect to daylight with the Development in place is considered to be of **long-term, local** and of **minor adverse** significance.

### *2 – 6 Williams Lane*

- 18.115 The VSC results suggest that with the Development in place, 13 (76%) of the 17 windows assessed within 2 – 6 Williams Lane would see no noticeable change in the daylight received at the window face. The remaining 4 windows would see minor reductions.
- 18.116 The reductions in daylight are driven by the high daylight levels in the baseline condition, which is proven by the good retained levels of retained VSC to these windows of at least 23.9% VSC.
- 18.117 The results of the NSC assessment have shown that 8 (89%) of the 9 rooms assessed would experience no noticeable alteration in daylight. The remaining room would see major adverse impacts. As with VSC, high daylight levels in the baseline condition leave this buildings open to relatively high proportional reductions.
- 18.118 It should also be noted that floor plans have been obtained and applied in respect of the analysis. Based on the information publicly available, nos. 2 and 6 Williams Lane are comprised of a dual aspect living / kitchen / diner at ground floor. The ground floor rooms contain one window with no noticeable change in VSC levels, with the room seeing no noticeable change to the No Sky Line Contour. The ground floor of 4 Williams Lane contains a single aspect living / music room facing the Development, with a large living / kitchen / dining space within the rear elevation. Given the size and aspect of this living / kitchen / dining room, this is likely to be the primary living area. The floor plans obtained show the primary living areas at the rear would not be affected by the Development as they do not have a direct view.
- 18.119 The likely effect to daylight with the Development in place is considered to be of **long-term, local** and of **minor - moderate adverse** significance. It should be noted that the Development has been designed to respect 2-6 Williams Lane.
- 18.120 It should also be noted that the elements of the Development in proximity to this receptor have been submitted in outline and assessed at their maximum extents, thus presenting the worst case position.

### *Reid Court*

- 18.121 The VSC results suggest that with the Development in place, 83 (94%) of the 88 windows assessed within Reid Court would see no noticeable change in the daylight received at the window face. All five of the remaining windows would see minor reductions.
- 18.122 Of the rooms to see noticeable effects, 3 are situated at ground floor, and the remaining 2 at second floor level.



- 18.123 The reductions are principally driven by the high daylight levels in the baseline condition. The results show good retained levels of retained VSC to the windows at ground of at least 25% VSC. The windows at second floor are further constrained by overhanging eaves which directly limit the daylight potential to the rooms set beneath and cause an increased sensitivity to change. The results show that the two windows still retain at least 19.3% VSC. These deviations are largely driven by the eave, as the first floor windows show full no noticeable alterations and retain in excess of 27.8% VSC.
- 18.124 The results of the NSC assessment have shown that all rooms assessed would experience no noticeable alteration in daylight.
- 18.125 The likely effect to daylight with the Development in place is considered to be of **long-term, local** and of **minor adverse** significance.
- 18.126 It should also be noted the elements of the Development in proximity to this receptor have been submitted in outline and assessed at their maximum extents thus presenting the worst case position.

#### *Churchill Court*

- 18.127 The VSC results suggest that with the Development in place, 76 (92%) of the 83 windows assessed within Churchill Court would see no noticeable change in the daylight received at the window face. Of the remaining windows, 4 would see minor reductions, and 3 would see moderate reductions in VSC.
- 18.128 Of these windows, all 7 are overhung by balconies, thus self-limiting light to the windows below.
- 18.129 The results of the NSC assessment have shown that 30 (94%) of the 32 rooms would see no noticeable alteration in daylight. Of the remaining rooms, 1 would see a minor reduction and 1 would see a moderate reduction. As mentioned above both rooms have the main windows that are situated beneath or close to overhanging balconies.
- 18.130 Given the above, a 'balconies off' assessment has been undertaken. The results of this further technical analysis can be found in **Appendix 18.2**. The results of this analysis have shown an increase in the retained VSC levels confirming the effects of the overhangs directly limiting daylight potential. In addition, the results have shown all 83 windows would see no noticeable change in VSC levels. In addition, the results of the NSC analysis have shown 30 (94%) of the 32 rooms would see noticeable reductions. Both of the remaining rooms would see minor reductions. These effects are primarily driven by the unusually high daylight levels enjoyed under the existing scenario. With the proposal in place, these rooms show a disproportionate change in NSC levels.
- 18.131 Given the nature of the VSC and NSC impacts, together with the effects of self-limiting balconies, the overall likely effect to daylight with the Development in place is considered to be of **long-term, local** and of **minor to moderate adverse** significance.
- 18.132 It should be noted that the elements of the Development in proximity to this receptor have been submitted in outline and assessed at their maximum extents thus presenting the worst case position.

#### *Aynescombe Cottage*

- 18.133 The VSC results suggest that with the Development in place, 12 (92%) of the 13 windows assessed within Aynescombe Cottage would see no noticeable change in the daylight received at the window face. The remaining window would see a minor adverse reduction.

- 18.134 The remaining window serves a single bedroom. This window serves a room that has additional windows that do not experience any noticeable change to their VSC.
- 18.135 The results of the NSC assessment have shown that none of the rooms assessed would experience a noticeable alteration.
- 18.136 The likely effect to daylight with the Development in place is considered to be of **long-term, local** and of **minor adverse** significance.
- 18.137 It should be noted the elements of the Development in proximity to this receptor have been submitted in outline and assessed at their maximum extents thus presenting the worst case position.

#### *Jolly Gardeners*

- 18.138 This Public House includes an element of residential accommodation, the floor plans for which have been retrieved from the planning portal. In line with the BRE guidance, the rooms serving habitable (residential) use have been assessed and windows serving circulation / commercial space has been removed.
- 18.139 The VSC results suggest that with the Development in place, 8 (73%) of the 11 windows assessed within Jolly Gardeners would see no noticeable change in the daylight received at the window face. Of the remaining windows, 1 would see minor adverse and 2 would see major adverse reductions.
- 18.140 Two windows serve a dual aspect bedroom on the first floor and show minor and major adverse VSC reduction. The retained VSC levels for these windows are 14.9% and 23.6%.
- 18.141 The remaining 1 window serves dual aspect room on the second floor. The primary window serving these rooms are situated within the flank elevation and shows no noticeable reduction to VSC levels with the Development in place.
- 18.142 The results of the NSC assessment have shown that 3 (75%) of the 4 rooms assessed would experience no noticeable reduction in NSC levels. The remaining room would see major adverse reduction. The remaining room is a bedroom on the first floor and whilst this room sees a reduction, as set out in the BRE guidelines, bedrooms are considered less important.
- 18.143 The overall likely effect to daylight with the Development in place is considered to be of **long-term, local** and of **minor to moderate adverse** significance. The elements of the Development in proximity to this receptor have been submitted in outline and assessed at their maximum extents thus presenting the worst case position.

## Sunlight to Existing Surrounding Properties

Table 18.10: Completed Development – APSH in relation to the BRE Guidelines

Surrounding Properties	Total Number of windows facing the Site and within 90° of due south	Total number of windows above BRE suggested targets for total and winter APSH	Total number of windows below BRE suggested targets for total and winter APSH
Butler House	28	28	0
Boat Race House	37	27	10
Rann House	16	16	0
31 Vineyard Path	0	0	0
Vineyard Heights	46	46	0
The Tapestry	1	1	0
3 – 9 Richmond Road	0	0	0
39 – 41 Lower Richmond Road	0	0	0
43 – 51 Lower Richmond Road	11	11	0
51a – 55 Lower Richmond Road	2	2	0
57 – 59 Lower Richmond Road	1	1	0
61 – 63 Lower Richmond Road	0	0	0
67 Lower Richmond Road	6	6	0
Lady Elizabeth House	6	6	0
2 – 10 Waldeck Road	10	10	0
3 – 9 Waldeck Road	17	17	0
1 – 5 Varsity Row	24	24	0
6 – 7 Varsity Row	10	10	0
2 – 6 Williams Lane	2	2	0
8 – 10 Williams Lane	8	8	0
12 – 20 Williams Lane	20	20	0
22 – 26 Williams Lane	10	10	0
1 – 3 Watney Road	2	2	0
4 – 5 Watney Road	1	1	0
11 – 13 Watney Road	0	0	0
15 – 21 Watney Road	0	0	0
23 – 29 Watney Road	3	3	0
31 – 37 Watney Road	0	0	0
39 – 45 Watney Road	0	0	0
47 and 49 Watney Road	0	0	0
51 and 53 Watney Road	0	0	0
55 and 57 Watney Road	0	0	0
59 and 61 Watney Road	0	0	0

Surrounding Properties	Total Number of windows facing the Site and within 90° of due south	Total number of windows above BRE suggested targets for total and winter APSH	Total number of windows below BRE suggested targets for total and winter APSH
63 and 65 Watney Road	0	0	0
Parliament Mews	64	64	0
Combe House	3	3	0
1 – 10 Cromwell Place	52	52	0
22 Cromwell Place	1	1	0
Reid Court	44	44	0
Churchill Court	20	19	1
17 – 18 Langdon Place	0	0	0
Tudor Lodge	9	9	0
The Ship	9	9	0
Thames Bank Cottage	8	8	0
Asplin Cottage	3	3	0
Aynescombe Cottage	4	4	0
Thames Bank House	16	16	0
Old Stable	19	19	0
Leyden House	16	16	0
Jolly Gardeners	6	6	0
35 Lower Richmond Road	17	17	0

18.144 The APSH results in **Table 18.10** indicate that the vast majority of properties with windows orientated towards 90° of due south would not see a noticeable effect in terms of sunlight potential. These properties include:

- Butler House;
- Rann House;
- Vineyard Heights;
- The Tapestry;
- 43 – 51 Lower Richmond Road;
- 51a – 55 Lower Richmond Road;
- 57 – 59 Lower Richmond Road;
- 67 Lower Richmond Road;
- Lady Elizabeth House;
- 2 – 10 Waldeck Road;
- 3 – 9 Waldeck Road;
- 1 – 5 Varsity Row;
- 6 – 7 Varsity Row;
- 2 – 6 Williams Lane;

- 8 – 10 Williams Lane;
- 12 – 20 Williams Lane;
- 22 – 26 Williams Lane;
- 1 – 3 Watney Road;
- 4 – 5 Watney Road;
- 23 – 29 Watney Road;
- Parliament Mews;
- Combe House;
- 1 – 10 Cromwell Place;
- 22 Cromwell Place;
- Tudor Lodge;
- The Ship Thames;
- Thames Bank Cottage;
- Asplin Cottage;
- Aynescombe Cottage;
- Thames Bank House;
- Old Stable;
- Leyden House;
- Jolly Gardeners; and
- 35 Lower Richmond Road.

18.145 It can therefore be said that the effect of the Development on the sunlight to these properties would be **insignificant** and no further detailed discussion of the daylight levels is required.

18.146 The results of the APSH assessment for Boat Race House show a small number of windows affected and these are discussed below. In addition, Churchill Court would experience a deviation from the targets to one window as discussed below:

#### *Boat Race House*

18.147 The results show 10 windows would experience APSH levels below the target. These windows are situated within the flank elevation, with 9 of the 10 windows serving bedrooms. In line with the BRE guidelines, main living spaces are considered more important for sunlighting and this room use should be considered when applying the criteria.

18.148 The remaining window is a secondary flank window serving a dual aspect room. The primary window serving the room enjoys river views to the north of the Site.

18.149 Given the orientation of the windows serving main living spaces, the overall effect of the Development on the sunlight to these properties would be **long-term, local** and of **minor adverse** significance.

#### *Churchill Court*

18.150 The results show 1 out of the 20 relevant windows would experience APSH levels below the target. The window in question, W5 is a flank window situated underneath a balcony and serves

a dual aspect bedroom. In line with the BRE guidelines, main living spaces are considered more important for sunlighting and this room use should be considered when applying the criteria.

- 18.151 Given the orientation of the windows serving main living spaces, the overall effect of the Development on the sunlight to these properties would be **long-term, local** and of **minor adverse** significance.

#### Overshadowing to Existing Amenity Spaces Surrounding the Site

##### *Sunlight Amenity (Sun on Ground)*

###### *Surrounding Amenity Areas*

- 18.152 The results of the sunlight amenity assessment has shown that all amenity areas surrounding the Site would experience direct sunlight across more than 50% of their area for 2 hours or more on the 21<sup>st</sup> of March; or see a reduction of less than 20% from the existing level. The effect of the Development on surrounding amenity areas is considered to be **insignificant**.

###### *Proposed Amenity Areas*

- 18.153 As part of the Development there would be newly created external amenity spaces relevant for assessment. The Development has been designed to allow suitable light penetration to amenity areas where possible. The assessment has shown that 10 of the 20 amenity areas would experience direct sunlight across more than 50% of their area for 2 hours or more on the 21<sup>st</sup> of March. The results for the amenity areas as a whole including the school playing field show that 77% of the total area would experience 2 hours of direct sunlight. Excluding the school, the overall percentage equates to c.59%.
- 18.154 The Development is comprised of detailed and outline component and these areas have been discussed below:
- Detailed Component of the Site
- 18.155 The amenity areas within the detailed element of the Development (East of Ship Lane) and these areas can identified as 1 – 13 and 20 as shown in **Appendix 18.3**.
- 18.156 The results have shown 6 of the 14 amenity area would experience 2 hours of direct sunlight across at least 50% of the area. The total across the overall area as a whole equate to 57%.
- 18.157 The remaining 8 areas that would not achieve the target can be identified as 1, 4, 6, 7, 8, 9, 10 and 20.
- 18.158 The Development has been designed to maximise the views towards the river which is situated to the north of the site. The pleasant outlook over the River Thames are beneficial to the future occupiers and therefore the Development has been designed to maximise this outlook, however there is a design trade off with respect to the southerly aspect.
- 18.159 Of the remaining areas, five areas (identifiable as 1, 4, 8, 9 and 20) show levels only slightly below the 50% target, being between 36% to 46.9%. In addition to undertaking an assessment to show the areas that achieve 2 hours of sunlight, a graded assessment showing the areas that achieve between 0 – 2 hours of sunlight has been provided in **Appendix 18.3**. The results show that whilst these areas may not achieve 2 hours of direct sunlight, at least half of each of these areas would receive 1.5 hours of level of direct sunlight on the 21<sup>st</sup> March.
- 18.160 The remaining 3 areas can be identified as 6, 7 and 10 show low levels of direct sunlight. These areas all serve private accommodation and have been designed to maximise the river views

where possible. Whilst these areas show sunlight levels below the targets, the scheme includes a 'green link' which retains high sunlight levels and can be accessed by all occupiers.

- 18.161 Finally, it is noted that where there are significant deviations, these are primarily to the amenity spaces serving the private accommodation, with the amenity spaces serving the affordable units seeing high direct sunlight levels. The affordable units are located within Buildings 10, 18 and 19. The amenity spaces situated to close proximity to these areas generally see high sunlight amenity levels.

#### Outline Component of the Site

- 18.162 The amenity areas serving the residential accommodation within the outline element of the Development (West of Ship Lane) can be identified as areas 14 – 18 in **Appendix 18.3**.
- 18.163 The results have shown 3 of the 5 amenity area would experience 2 hours of direct sunlight across at least 50% of the area. The total across the overall area as a whole equates to 62%.
- 18.164 Of the remaining two areas, one shows levels marginally below the target. The results for area 17 show 43.2% of the area would experience 2 hours of direct sunlight, which is marginally below the suggested targets. The remaining area shows levels below the targets, however this area is situated to the north of the Site and has been designed to limit effects to the surrounding properties. It should be noted that the maximum extent parameters have been utilised for the technical analysis and as such this is likely to show the worst case scenario in regard to the effects.
- 18.165 In addition, a supplementary study for the 21<sup>st</sup> of June has been undertaken as the amenity areas will be most utilised during the summer months and this can be found at **Appendix 18.3**. It is generally accepted that amenity spaces are primarily used in the summer months when the temperatures are generally warmer. The results of this additional study have shown that the 20 areas assessed would experience 2 hours of direct sunlight across 97% of the total area at this time of year.

#### *Transient Overshadowing*

- 18.166 The transient shadow images for three key points throughout the year are located within **Appendix 18.4**.
- 21<sup>st</sup> March*
- 18.167 As would be expected with an increase in massing, the Development would cause additional shadowing in the morning to a small area of the residential gardens serving Reid Court situated to the west of the Site.
- 18.168 In addition, during morning and throughout the afternoon there is an element of shading to the Thames Tow Path. However, it should be noted that the existing buildings, structures on Site already cause a level of overshadowing in the afternoon. The proposed buildings within the detailed component of the Development (East of Ship Lane) have been designed to have gaps facing onto the Thames Tow Path in order to allow a good level of direct sunlight to penetrate. As such, levels of overshadowing would be less than in the baseline condition at specific times during the day.
- 18.169 Finally, the gardens serving the residential properties to the north, being Leyden House, Old House, Thames Bank House, Aynescombe House, Asplin Cottage, 1-2 Thames Bank will also experience some minor additional overshadowing to the rear gardens during the afternoon on the 21<sup>st</sup> of March. These gardens are generally large, with the additional shading occurring to the

areas to the rear / perimeter, away from the main property / house and this is further confirmed by the results of the 2 hours sunlight amenity test. It should also be noted that the rear of these gardens include large mature trees and whilst not simulated, already cast a shadow on the gardens under the existing scenario. For the purposes of this assessment, the worst case scenario has been tested, with the trees being excluded and therefore the 'real world' impact of the Development upon these gardens would be less than that shown in this assessment.

18.170 Given the small levels of additional shading caused by the proposal the 'real world' impacts of the Development are likely to be marginal in respect of additional shading.

18.171 It should be noted the elements of the Development in proximity to this receptor have been submitted in outline and assessed at their maximum extents thus presenting the worst case position.

*21st June*

18.172 Additional assessments for 21st June (when the shadows cast would be at their shortest) has been undertaken. At this time of year, when gardens are likely to be used most the extent of the shadow is significantly reduced.

*21st December*

18.173 The shadows cast on the 21st of December are longer and as such effect a larger area. Again, should the mature trees on the boundary be considered, the real world change in shadow would be less.

#### Light Pollution

18.174 As is usual at the planning stage, a final and fixed lighting scheme has not been developed for the Development. There is however a provisional lighting scheme in place produced by Michael Grubb Studio. As the provisional lighting scheme is not fixed, a qualitative review of light pollution has been provided for the majority of the Site. The only area that has been assessed quantitatively is the area surrounding the sports pitch, as this includes floodlighting in order to stratify the requirements of this use. Two options have been assessed for the sports pitch, Class III FA standard and Class II. It should be noted that the lighting strategy for this area, as with the remainder of the Development, has not been fixed and this assessment simply shows that it would be possible to light the area for use without causing an adverse impact on the neighbours. The provisional lighting scheme has been designed to meet the recommendations of the ILP guidelines. The key receptors were identified as the residential accommodation and ecological receptors along the River Thames.

18.175 In the development of the provisional lighting scheme, full consideration has been given to the sensitive receptors described above. The primary ecological consideration is the river bank along the River Thames. The provisional lighting scheme primarily lights this area with recessed wall luminaires within the river wall facing away from the river and towards the Site to light this area. These would not result in light ~~spill~~~~resp~~~~ass~~ to the river or river bank.

18.176 External light fittings have not been located in proximity to surrounding residential receptors in order to avoid issues relating to light ~~spill~~~~resp~~~~ass~~. Mortlake High Street and Lower Richmond Road are currently sufficiently lit by street lighting and as such it is not proposed to add significant additional lighting to these areas.

18.177 The provisional lighting scheme for the sports pitch is proposed to provide a facility to FA Class III standard (120 lux / 0.6 Uo) or Class II (200 lux / 0.6 Uo)



- 18.178 This schemes both include 8 No 15m columns, as these are needed to provide the correct levels of uniformity. This height means the lights would not be tilted beyond what is considered good practice and the required light uniformity values are achieved across the pitch.
- 18.179 The fitting suggested are Philips Lighting 'OptiVision' floodlights. These floodlights include internal louvres that are used to control light ~~spill+respass~~ to neighbouring residential properties, ensuring that the maximum value at neighbouring receptors is below what is an acceptable level for E3 Environment Zone (pre-curfew - 10 lux and post curfew 2 lux) for both schemes. This ground level light spill grid can be seen in drawing 2201 – LP2 and 2201 – LP3 respectively within **Appendix 18.5** which shows the light levels in lux mapped onto the pitch and surrounding area. The light spill on the façades for the FA class III scheme (120 Lux) are shown in drawings 2201 – ~~LP044~~ (houses to the west) and 2201 – ~~LP065~~ (houses to the north west). The light spill on the façades for the Class II scheme (200 Lux) are shown in drawings 2201 – ~~LP056~~ (houses to the west) and 2201 – ~~LP07~~ (houses to the north west). The assessment of vertical illuminance to the windows at the rear of the properties across Williams Lane shows that levels as a result of the flood lights would not exceed ~~0.24-13~~ Lux when in use (shown in drawings 2201-LP~~023~~ and 2201-LP~~034~~ within **Appendix 18.5**).
- 18.180 In addition to light ~~spill+respass~~, ~~glare Luminaire Intensity (glare)~~ has been considered as is recommended for floodlights. ~~The analysis shows that Tthere is no visible glare beyond curfew when when the fittings are off and the analysis shows negligible amounts visible when the fittings are on upon the neighbouring properties~~This assessment considers 3 assessment points located at the windows at the residential properties across Williams Lane. In each case the Luminaire intensity would not exceed 1,000 lumens. This is well below the suggested 10,000 Lumens suggested as the maximum pre curfew levels.
- 18.181 Finally, it should be noted that the simulations do not include for any obstacles, such as the proposed landscaping around the perimeter of the pitch. As such, this analysis presents a worst case scenario and light ~~spill+respass~~ would reduce further should the proposed landscaping be included.
- 18.182 The provisional lighting scheme has been designed in order to ensure that the ILP guidelines are met. The overall likely effect to light ~~spill+respass~~ and luminaire intensity as a result of the provisional lighting scheme is considered to be **insignificant**.

## Mitigation Measures and Likely Residual Effects

### The Works

#### Demolition Effects

- 18.183 As existing buildings are demolished, some temporary improvements to daylight, sunlight and overshadowing are predicted at the closest residential receptors to the Site. No adverse effects are predicted during demolition activities. Therefore, mitigation measures are not required and the likely residual effect would remain insignificant to generally **local, long-term** and of **minor to moderate beneficial**.
- 18.184 Nevertheless, the main contractor and sub-contractors would adhere to a Construction Environmental Management Plan (CEMP) to help minimise environmental effects arising from demolition works. For example, the CEMP would recommend that the use of portable external lighting be used in such a way so as to avoid the ~~spill+respass~~ of light into neighbouring properties and into the night sky. Furthermore, lighting used during the Works would accord with the ILP

Guidance so as not to cause a nuisance to nearby receptor. The likely residual effect from light pollution during the Works would therefore remain **insignificant**.

#### Construction Works

- 18.185 Worst case construction effects are considered to be directly comparable to the effects of the completed Development. As such, reference should be made to the sections below.
- 18.186 However, the likely residual effect of construction cranes on daylight, sunlight and overshadowing levels would remain **insignificant**.

### Completed Development

#### Daylight and Sunlight

- 18.187 As would be expected with a Development of this scale, there are isolated significant effects to the neighbouring residential properties. In this case, the Development replaces relatively low rise buildings in many cases and as such the proportional reduction of daylight, on which significance is based, is large to the residential receptors nearest to the Site. The number of properties that experience significant effects with the Development in place is low and the majority of effects are to windows that are placed beneath overhanging balconies, which inhibit levels of daylight.
- 18.188 Once the Development is completed, the likely effects on daylight for residential properties in the vicinity of the Site would range from being insignificant for the majority of the residential properties to long-term, local, adverse and of minor significance on Butler House, Vineyard Heights, 3-9 Richmond Road, Reid Court and Aynescombe Cottage. There is minor to moderate significance effects for Rann House, 31 Vineyard Path, 2 to 6 Williams Lane, Churchill Court House and Jolly Gardeners. The minor to moderate adverse effects are generally isolated or driven by self-light limiting overhangs. Furthermore, the effects of outline massing consider the 'worst case' scenario and as the scheme evolves, the impacts are likely to lessen. Accordingly, no mitigation measures are considered necessary. The effect on daylight to Boat Race House is considered to be moderate to major adverse. The results are not unusual where windows face an underdeveloped site and reasonable development cause high proportional changes in daylight levels.
- 18.189 With regard to Boat Race House, the Development has been sensitively designed with the building most proximate to this neighbour being of a similar scale, and this is reflected in the generally minor absolute change in daylight levels under the alternative mirroring assessment. Given the isolated nature of the deviations, no mitigation measures are considered necessary.
- 18.190 The likely residual effects in relation to daylight would be **insignificant to long-term, local, adverse** and of **minor to major** significance.
- 18.191 Once the Development is completed, the likely effects on sunlight for residential properties in the vicinity of the Site would range from being insignificant for the majority of the residential properties to long-term, local, adverse and of minor significance on Boat Race House and Churchill Court House.
- 18.192 Once the Development is completed, the effects on sunlight for residential receptors in the vicinity of the Site are **insignificant to long-term, local, minor adverse** significance.

#### Overshadowing

- 18.193 Once the Development is completed, the likely residual effects on overshadowing to existing surrounding amenity areas would remain **insignificant**.

18.194 Once the Development is completed, the results of the overall amenity provision show levels in line with the BRE criteria. For the detailed component of the Development, when considering the area as a whole, 57% of the areas tested would experience 2 hours of direct sunlight. These are isolated areas where amenity levels are below targets, however these are largely driven by the utilisation of the river views / outlooks guiding the Development design. Where there are significant deviations, these are primarily to the private accommodation, with the affordable units seeing high direct sunlight levels. The results for the outline component of the Development see levels of 62%, however this considers the maximum parameters extents. The In addition, in regard to the outline component, further assessment will be undertaken at the reserved matters application stage.

### Light Pollution

18.195 The provisional lighting scheme has been designed to the ILP guidelines and would have **insignificant** residual effects, as such no mitigation has been suggested.

## Summary

**Table 18.11** summaries the likely significant effects, mitigation measures, and likely residual effects identified within this Chapter.

Table 18.11: Summary of Likely Significant Effects, Mitigation Measures and Likely Residual Effects

Description of Effect	Likely Significant Effect	Mitigation Measures	Likely Residual Effect
<b>The Works</b>			
<i>Demolition of existing buildings on-Site.</i>			
Daylight, sunlight and overshadowing to surrounding receptors.	<b>Local, short to medium-term</b> and of <b>minor to moderate beneficial.</b>	No mitigation required.	<b>Local, short to medium-term</b> and of <b>minor to moderate beneficial.</b>
Light Pollution	<b>Insignificant.</b>	No mitigation required.	<b>Insignificant.</b>
<i>Construction of proposed buildings</i>			
Daylight to surrounding receptors.	<b>Insignificant.</b> <b>Local, long-term, adverse</b> and of <b>minor significance</b> (Butler House, Vineyard Heights, 3-9 Richmond Road, Reid Court and Aynescombe Cottage). <b>Local, long-term, adverse</b> and of <b>minor to moderate significance</b> (Rann House, 31 Vineyard Path, 2 to 6 Williams Lane, Churchill Court and Jolly Gardeners). <b>Local, long-term, adverse</b> and of <b>moderate to major</b>	Not applicable.	<b>Insignificant.</b> <b>Local, long-term, adverse</b> and of <b>minor significance</b> (Butler House, Vineyard Heights, 3-9 Richmond Road, Reid Court and Aynescombe Cottage). <b>Local, long-term, adverse</b> and of <b>minor to moderate significance</b> (Rann House, 31 Vineyard Path, 2 to 6 Williams Lane, Churchill Court and Jolly Gardeners). <b>Local, long-term, adverse</b> and of <b>moderate to major</b>

Description of Effect	Likely Significant Effect	Mitigation Measures	Likely Residual Effect
	<b>significance</b> (Boat Race House).		<b>significance</b> (Boat Race House).
Sunlight to surrounding receptors.	<b>Insignificant.</b> <b>Local, long-term, adverse</b> and of <b>minor significance</b> (Boat Race House and Churchill Court)	Not applicable.	<b>Insignificant.</b> <b>Local, long-term, adverse</b> and of <b>minor significance</b> (Boat Race House and Churchill Court )
Overshadowing (Surrounding amenity areas).	<b>Insignificant.</b>	No mitigation required.	<b>Insignificant.</b>
Light Pollution.	<b>Insignificant.</b>	No mitigation required.	<b>Insignificant.</b>
<b>Completed Development</b>			
Daylight to surrounding receptors	<b>Insignificant.</b> <b>Local, long-term, adverse</b> and of <b>minor significance</b> (Butler House, Vineyard Heights, 3-9 Richmond Road, Reid Court and Aynescombe Cottage). <b>Local, long-term, adverse</b> and of <b>minor to moderate significance</b> (Rann House, 31 Vineyard Path, 2 to 6 Williams Lane, Churchill Court and Jolly Gardeners). <b>Local, long-term, adverse</b> and of <b>moderate to major significance</b> (Boat Race House).	Not applicable.	<b>Insignificant.</b> <b>Local, long-term, adverse</b> and of <b>minor significance</b> (Butler House, Vineyard Heights, 3-9 Richmond Road, Reid Court and Aynescombe Cottage). <b>Local, long-term, adverse</b> and of <b>minor to moderate significance</b> (Rann House, 31 Vineyard Path, 2 to 6 Williams Lane, Churchill Court and Jolly Gardeners). <b>Local, long-term, adverse</b> and of <b>moderate to major significance</b> (Boat Race House).
Sunlight to surrounding receptors	<b>Insignificant.</b> <b>Local, long-term, adverse</b> and of <b>minor significance</b> (Boat Race House and Churchill Court)	Not applicable.	<b>Insignificant.</b> <b>Local, long-term, adverse</b> and of <b>minor significance</b> (Boat Race House and Churchill Court)
Overshadowing (surrounding amenity areas).	<b>Insignificant.</b>	No mitigation required.	<b>Insignificant.</b>
Light Pollution.	<b>Insignificant.</b>	No mitigation required.	<b>Insignificant.</b>

## References

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- 1 Building Research Establishment (BRE) (2011): 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice.
- 2 Applications Manual Window Design of the Chartered Institute of Building Services Engineers (CIBSE) (1999).
- 3 Institute of Lighting Practitioners: Guidance Notes for the Reduction of Obtrusive Light, 20241.