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1.0 INTRODUCTION

This report considers the effects of the December 2011 Earls Court Development Proposals upon the daylight and sunlight amenity to the surrounding residential properties and the overshadowing of amenity areas and open space around the Earls Court Site when assessed in accordance with the guidelines laid down in the recently revised Building Research Establishment (BRE) Handbook 'Site Layout Planning for Daylight and Sunlight 2011: A Guide to Good Practice (The 2011 BRE Handbook)

The assessment of the December 2011 Application was reported in Chapter 9: Daylight, Sunlight and Overshadowing of the December 2011 Addendum and was based upon the BRE 1991 Guidance as, at the time of the submission, the software on which the technical analysis is based had not been updated to account for the changes incorporated within the 2011 BRE Handbook. It is worth noting that the 2012 addendum was prepared in response to the scheme alterations that were made following the submission of the original application in June 2011. This report is an update to the January 2012 Addendum of the June 2011 ES and should be read in conjunction with the January 2012 Addendum report.

The purpose of this Report is to establish whether the changes made to the BRE assessment criteria will have any material impact upon the conclusions drawn in the December 2011 Addendum.

In summary, daylight impacts will remain the same, the sunlight impacts for both the total and winter requirement will be slightly improved and the overshadowing impacts will improve in some areas and worsen in others although in both cases, only marginally.

This report also considers the daylight, sunlight and overshadowing impacts associated with the revisions made to Plot BW07, block E with particular focus on 2-14 Empress Place.

This Report has been prepared by Gordon Ingram Associates who have used modelling software and professional judgment to determine whether the revised assessment method set out in the 2011 BRE Handbook result in any changes to the residual daylight, sunlight and overshadowing impacts as defined within the December 2011 Addendum Chapter 9.

This report is supplemented by the following documents which can be found within the Addendum to ES Volume III: Appendix F:

- Appendix 1: Drawings of the site as it currently exists (Existing Baseline) and as it is proposed to be redeveloped ("Earls Court Development Proposals");
- Appendix 2: Summary of tables of the Existing Baseline results;
- Appendix 3: Detailed results of the Daylight and Sunlight analysis for the Existing Baseline Vs. Earls Court Development Proposals;

- Appendix 4: Detailed results of the Daylight and Sunlight analysis for the Mirrored Baseline Vs. Earls Court Development Proposals;
- Appendix 5: Sun on the Ground Images to the Neighbouring Amenity Areas;

2.0 SUMMARY OF THE CONCLUSIONS OF THE DECEMBER 2011 ADDENDUM TO CHAPTER 9: DAYLIGHT, SUNLIGHT AND OVERSHADOWING OF THE JUNE 2011 ES

The December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES considers the potential impact of the Earls Court Development Proposals on the daylight and sunlight amenity of neighbouring residential buildings and the overshadowing of amenity areas outside of the Site.

The December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES also summarises the relevant legislative and planning policy context as of December 2011. It describes the baseline conditions currently existing across the Site and in the immediate vicinity, the methods used to assess the potential impacts arising from the Earls Court Development Proposals and it presents the recommended mitigation measures necessary to remove or reduce significant adverse impacts.

The assessment presented within the December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES was undertaken in accordance with the standards specified by the Building Research Establishment (BRE) Handbook 'Site Layout Planning for Daylight and Sunlight 1991: A Guide to Good Practice (The 1991 BRE Handbook) (Ref A9.2) which is intended to be used in conjunction with the interior daylight recommendations in the British Standard 8206 Part 2 2008 (Ref A9.3) and the Applications Manual Window Design of the Chartered Institute of Building Services Engineers (CIBSE) (Ref A9.4)

The December 2011 Earls Court Development Proposals, when assessed against the recommended guidelines within the 1991 BRE Handbook, will result in the following likely daylight, sunlight and overshadowing impacts to surrounding residential properties and areas of amenity space. Please note that the windows/rooms/amenity areas experiencing improved levels of daylight or sunlight are included within the 'negligible' category.

Table A9-1 Daylight Impacts of December 2011 Earls Court Development Proposals Compared to Existing Baseline

Scheme	No of windows which will experience an improvement in daylight	Negligible Rooms	Minor Adverse Rooms	Moderate Adverse Rooms	Major Adverse Rooms
December 2011	1025	92.4%	6%	1.5%	0.1%

Table A9-2 Daylight Impacts of December 2011 Earls Court Development Proposals Compared to Mirror Baseline

Scheme	No of windows which will experience an improvement in daylight	Negligible Rooms	Minor Adverse Rooms	Moderate Adverse Rooms	Major Adverse Rooms
December 2011	1698	95.6%	3.9%	0.4%	1 Room

Table A9-3 Total Sunlight Impacts of December 2011 Earls Court Development Proposals Compared to Existing Baseline

Scheme	No of windows which will experience an improvement in sunlight	Negligible Windows	Minor Adverse Windows	Moderate Adverse Windows	Major Adverse Windows
December 2011	414	91.6%	6.1%	1.7%	0.6%

Table A9-4 Winter Sunlight Impacts of December 2011 Earls Court Development Proposals Compared to Existing Baseline

Scheme	No of windows which will experience an improvement in sunlight	Negligible Windows	Minor Adverse Windows	Moderate Adverse Windows	Major Adverse Windows
December 2011	304	85%	6.9%	4.0%	4.0%

Table A9-5 Total Sunlight Impacts of December 2011 Earls Court Development Proposals Compared to Mirror Baseline

Scheme	No of windows which will experience an improvement in sunlight	Negligible Windows	Minor Adverse Windows	Moderate Adverse Windows	Major Adverse Windows
December 2011	650	94%	4%	1.8%	0.2%

Table A9-6 Winter Sunlight Impacts of December 2011 Earls Court Development Proposals Compared to Mirror Baseline

Scheme	No of windows which will experience an improvement in sunlight	Negligible Windows	Minor Adverse Windows	Moderate Adverse Windows	Major Adverse Windows
December 2011	454	88.4%	5.4%	3.2%	3%

Table A9-7 Overshadowing Impacts of December 2011 Earls Court Development Proposals Compared to Existing Baseline

Scheme	No of amenity spaces which will experience an improvement in sunlight	Negligible Amenity Spaces	Minor Adverse Amenity Spaces	Moderate Adverse Amenity Spaces	Major Adverse Amenity Spaces
December 2011	25	96.2%	2.3%	0%	1.5%

In terms of transient overshadowing, the assessment results confirmed that there are areas which, following the construction of the Earls Court Development Proposals, will experience increased levels of overshadowing from the proposed buildings.

The 21st June transient overshadowing assessment confirms, however, that when the sun is higher in the sky during the summer months, which is generally the period during which most benefit is derived from sunlight upon areas of amenity space, the levels of shadow upon those areas will improve substantially compared to the winter months.

In addition to the assessment of the December 2011 Earls Court Development Proposals in isolation, the December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES considers the potential for cumulative impacts arising from the following scenarios:

- Earls Court Development Proposals PLUS other consented schemes within 1km; and
- Earls Court Development Proposals PLUS the Seagrave Road Development Proposals, PLUS other consented schemes within 1km.

Whilst a detailed technical analysis was not undertaken for the above scenarios, it was GIA's professional opinion that these scenarios will have a negligible impact upon the daylight, sunlight and overshadowing impacts to the neighboring residential buildings and amenity areas as described in the December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES.

3.0 REVIEW AND UPDATE OF PLANNING POLICY & GUIDANCE CONTEXT SINCE DECEMBER 2011

Since the submission of the December 2011 Addendum, the National Planning Policy Framework (NPPF) was published in March 2012 and replaces all Planning Policy Guidance Notes and Planning Policy Statements and provides the Government's policies for England.

Paragraph 14 of the NPPF explains that "At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking".

The paragraph states that for plan-making this presumption means local planning authorities should “positively seek opportunities to meet the development needs of their area” and that Local Plans should meet “objectively assessed needs, with sufficient flexibility to adapt to rapid change unless” (in summary):

- any adverse impacts of doing so would significantly and demonstrably outweigh the benefits,
- specific policies in the NPPF indicate development should be restricted.

The NPPF provides a series of core land use planning principles. One of these is that planning should “always seek to secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings” (paragraph 17).

Whilst the NPPF makes specific reference to the impacts a development may have upon the amenity of existing buildings, whereas previously the national planning policy was silent on this point, the introduction of considerations relating to daylight, sunlight and overshadowing has no effect on the assessment methodology adopted for either the June 2011 ES or the December 2011 addendum.

The 1991 BRE Handbook was revised and updated in October 2011. The updated handbook states that *“this guide supersedes the 1991 edition which is now withdrawn.”*

As with the 1991 BRE Handbook, the 2011 BRE Handbook is intended to be used in conjunction with the interior daylight recommendations in the British Standard (BS) 8206 Part 2 2008 and the Applications Manual Window Design of the Chartered Institute of Building Services Engineers (CIBSE).

The 2011 BRE Handbook is intended for building designers, developers, consultants and Local Planning Authorities (LPAs). The advice it gives is not mandatory and should not be used as an instrument of planning policy. Of particular relevance, it states:

“This guide is a comprehensive revision of the 1991 edition of Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice. It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location.”

and

“...the aim of the document is to help rather than constrain the designer. Though it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of many factors in site layout design. In special circumstances, the developer or the planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings.”

The effect of the changes to the BRE Handbook are considered below.

4.0 REVIEW OF ASSESSMENT METHODOLOGY

The revisions to the 1991 BRE Handbook contained within the 2011 BRE Handbook do not materially alter the Vertical Sky Component (VSC) and No Sky Line (NSL) assessment methodologies as described in Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES.

The 2011 BRE Handbook has, however, altered the technical formula for assessing the Average Daylight Factor (ADF), the Annual Probable Sunlight Hours (APSH) and permanent shadow impacts.

In relation to the technical assessment of ADF, the 2011 BRE Handbook make allowances for maintenance factors of the glass within a window opening, i.e. how dirt may affect the transmittance of the glazing. Additionally, in relation to full height glazing/ patio windows, the new ADF calculation has an extra factor which accounts for the reduced effectiveness of any glazing below the working plane. Both of the above have the effect of making the assessment criteria more stringent and challenging to satisfy.

The 2011 BRE Handbook now recommends that, in relation to the daylight impact assessment of existing properties, the use of ADF as an assessment tool is generally not recommended although in the following situations, it may be considered appropriate:

- Where the existing building is one of a series of new buildings that are being built one after another, and each building has been designed as part of the larger group;
- As a special case of (i), where the existing building is proposed but not built.
- Where the developer of the new building also owns the existing nearby building and proposes to carry out improvements to the existing building...to compensate for the loss of light.
- Where the developer of the new building also owns the existing nearby building and the affected rooms are either unoccupied or would be occupied by different people following the construction of the new building.

That said, the 2011 BRE Handbook also provides an Appendix F, Setting Alternate Target Values for Skylight and Sunlight Access, within which it provides guidance on possible alternate target value setting in special circumstances. This includes the use of ADF in the assessment of existing buildings.

Whilst the ADF method is not considered to be a primary technique for assessing the impacts to existing buildings, it is nonetheless widely used in urban locations to provide a holistic representation of the impacts upon daylight amenity. Furthermore, it would seem logical that if the method is appropriate for establishing suitable daylight conditions for new accommodation then one could reasonably use the same standards to understand the quality of light retained within an adjacent building. The ADF method has therefore been adopted within this assessment in a similar manner to the December 2011 Addendum to provide an understanding of the daylight conditions within a room which is unable to satisfy either the VSC or NSL criteria.

In relation to sunlight, the point at which the assessment is performed has been moved from the inner face of the window to the outer face. The BRE Handbook has also introduced a third test to establish whether the sunlighting to a window within an existing dwelling will be adversely affected and this is described in the section below.

The 2011 BRE Handbook replaces the permanent overshadowing assessment with the Sun-on-Ground assessment. This assessment is undertaken using specialist software which tracks the path of the sun. This Sun-on-Ground assessment maps the obstructions and compares them to the known sun paths to determine where and for how long the sun will reach the ground and where it will not.

GIA have reanalysed the daylight, sunlight and overshadowing impacts of the December 2011 Application to all of the neighbouring buildings to ensure the technical data presented accounts for the changes made to the assessment methodology defined within the 2011 Handbook.

5.0 REVIEW OF SIGNIFICANCE CRITERIA

The table below provides a comparison of the daylight, sunlight and overshadowing criteria for both the 1991 and 2011 BRE Handbooks. Where the assessment criteria between the two handbooks has changed these are highlighted in the table across the page.

Assessment Technique	1991 Criteria	2011 Criteria
VSC	A window may be adversely affected if the Vertical Sky Component measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value.	A window may be adversely affected if the Vertical Sky Component measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value.
NSL	A room may be adversely affected if the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value.	A room may be adversely affected if the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value.
ADF	Bedroom = 1% Living Room = 1.5% Kitchen = 2%	Bedroom = 1% Living Room = 1.5% Kitchen = 2%
Sunlight	If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if a point at the centre of the window, in the plane of the inner window wall, receives in the year less than one quarter (25%) of annual probable sunlight hours between including at least 5% of annual probable sunlight hours between 21 September & 21 March, and less than 0.8 times its former sunlight hours during either period.	<p>If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:</p> <ul style="list-style-type: none"> receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September & 21 March and receives less than 0.8 times its former sunlight hours during either period and has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.
Overshadowing	It is suggested that, for it to appear adequately sunlit throughout the year no more than two-fifths and preferably no more than a quarter of any garden or amenity area should be prevented by buildings from receiving any sun at all on 21 March. If, as a result of new development, an existing garden or amenity area does not meet these guidelines, and the area which can receive some sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.	It is recommended that for it to appear adequately sunlit throughout the year, at least half of the garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March.

In relation to daylight, the criteria for achieving compliance with the VSC and NSL tests have not altered since the republication of the BRE Handbook. In relation to ADF, the target values and thus criteria for a particular room type have also remained unchanged between the 1991 and 2011 versions although the technique for calculating the ADF is subtly different.

In relation to sunlight, the 2011 BRE Handbook has introduced a third criterion for establishing whether a development will have an adverse impact upon a neighbouring building. This has been factored into GIA's impact assessment to all of the windows within the surrounding properties.

Where the results show compliance with the BRE Guidance criteria, the impact is considered **negligible** since the BRE Guidance indicate that the occupants are unlikely to experience any noticeable change to their daylight and sunlight amenity levels.

Within Appendix I of the 2011 BRE Handbook, guidance is offered as to how one should categorise an impact which exceeds the specified criteria. This categorisation was previously defined by the daylight consultant undertaking the assessment and to some extent was a subjective judgement. The 2011 BRE Handbook suggests that a **minor adverse** impact should be extended in circumstances where the following may apply:-

- *Only a small number of windows or limited area of space are affected*
- *The loss of light is only marginally outside the guidelines*
- *An 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*
- *There are particular reasons why an alternative, less stringent, guideline should be applied.*

Appendix I in the 2011 BRE Handbook suggests that a **major adverse** impact should be extended in circumstances where the following may apply:-

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

Whilst the above significance criteria are a useful guide in determining the impacts to the neighbouring buildings and has been incorporated into this revised assessment, it should be remembered that the BRE Guidelines are predicated upon a suburban environment as opposed to dense urban locations and for this reason, a degree of flexibility therefore needs to be applied when assessing the significance of daylight and sunlight effects in urban locations.

The 2011 BRE Handbook itself states:-

“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 will depend on a combination of factors, and there is no simple rule of thumb that can be applied.”

In view of the above, the interpretation of the daylight and sunlight results must be assessed in terms of the quantum of light lost or gained, not purely on the percentage of change. The percentage value may well be misleading, particularly where the baseline values are low. In these situations, a small change in the quantum of light could represent a high percentage change in the overall figure, implying that there would be a significant change in daylight and sunlight whereas in reality the difference would be negligible.

Therefore whilst the impacts of the proposal have been considered in conjunction with the new BRE recommendations, a degree of subjectivity remains when applying significance criteria which are to be judged by the daylight and sunlight consultant and in that way, the approach adopted within this report remains substantially similar to that adopted in both the June 2011 and December 2011 ES.

6.0 REVIEW OF THE BASELINE CONDITIONS

The baseline results for ADF, APSH and sun-on-ground have been recalculated to account for the changes in assessment methodology presented within the 2011 BRE Handbook. Full details of the baseline VSC, NSL, ADF and APSH analysis results are provided within Appendix 3. Full details of the baseline permanent sun-on-ground analysis including a plan of the surrounding area of amenity space are provided within Appendix 5.

DAYLIGHT

Since the VSC & NSL assessment methodologies have not changed as a result of the revision of the 1991 BRE Handbook, the baseline assessment results remain as described in the December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES which are shown in table A9-1 & 2 above.

SUNLIGHT

A summary of the changes to the APSH baseline conditions compared to those of the December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES is set out in Table A9-8.

Table A9-8 Comparison of Baseline Sunlight Results- Existing and Mirrored Baselines

Scheme	Total No. of Windows that meet BRE Guidelines in Existing Baseline Conditions		Total No. of Windows meet BRE Guidelines in Mirrored Baseline Conditions	
	PASS	TOTAL	PASS	TOTAL
December 2011 1991 Guidelines	2098	3297	1955	3297
	63%		59%	
December 2011 2011 Guidelines	2621	3815	2539	3815
	69%		67%	

The increase in the number of windows and compliance levels is due to the change in the APSH assessment methodology which now recommends that the assessment be undertaken at the centre of the outside, rather than the inside, of the window face and that all windows serving a room which has a window which faces within 90 degrees of due south are assessed.

SUN-ON-GROUND

The analysis shows that in the existing baseline situation, when the sun-on-ground assessment is used in place of the permanent overshadowing assessment, 60% of the assessed gardens or areas of amenity space comply with BRE recommended guidelines compared to 70% in the December 2011 baseline conditions when the previously recommended permanent overshadowing assessment was used.

This reduced rate of compliance is attributable to the new and more stringent method of assessing shadow levels which requires that 2 hours of sunlight must fall on 50% of the amenity area as opposed.

TRANSIENT OVERSHADOWING

Since the assessment methodology has not changed as a result of the revision of the 1991 BRE Handbook, the baseline assessment results remain as described in the December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES.

7.0 REVIEW OF DECEMBER 2011 POTENTIAL IMPACTS & MITIGATION MEASURES

DEMOLITION AND CONSTRUCTION

The level of impact in relation to the daylight and sunlight amenity and overshadowing for the surrounding properties will vary throughout the construction phase, depending on the level of obstruction caused.

The impact will be less than that of the completed development, given that the extent of permanent massing will increase throughout the construction phase, until the buildings are complete.

The potential impacts of the construction of the Earls Court Development Proposals will steadily increase in magnitude as the superstructure is built and then clad. Those impacts that are perceptible, as the superstructure and cladding progress, will be similar to those during the completion and occupation of the Earls Court Development Proposals as presented below. Hence, the completed development impact is considered a 'worst case'.

8.0 COMPLETED EARLS COURT DEVELOPMENT PROPOSALS

Full details of the VSC, NSL, ADF and APSH analysis are provided within Appendix 3 together with a summary table of the impact assessment referred to below.

DAYLIGHT TO SURROUNDING PROPERTIES

The daylight impact of the December 2011 Earls Court Development Proposals takes into consideration the 6,258 windows which serve 3,859 rooms within the 292 properties.

These have been assessed, as described above, against the existing baseline using the recommended guidelines from the 2011 BRE Handbook.

In this instance the ADF assessment has been used in consideration of the daylight impact to the surrounding existing properties. It has, however, only been used to establish whether a room, which does not meet the VSC or NSL assessments, still retains 1.5% ADF, which is considered adequate daylight for a principle habitable living room or that the room in question retains 85% or greater of its baseline assessment. Should this be the case, a minor adverse significance has been extended.

The ADF assessment has been used in this assessment due to urban location of the Earls Court Site, within which the expectation for daylight would be less than in more suburban locations. An ADF value of 1.5% would, in an urban environment such as the Earls Court Site, be considered a good level of daylight to achieve.

The impact results, compared to those of the December 2011 Earls Court Development Proposals against the existing baseline using the recommended guidelines from the 1991 BRE Handbook, are summarised in table A9.9 below. Any room which experiences an improvement in daylight amenity has been classified as 'negligible' as the impacts obviously satisfy either the VSC or NSL test:-

Table A9-9 Daylight Impacts of December 2011 Earls Court Development Proposals Compared to Existing Baseline

BRE Handbook Version	No of windows which will experience an improvement in daylight	Negligible Rooms	Minor Adverse Rooms	Moderate Adverse Rooms	Major Adverse Rooms
1991	1025	92.4%	6%	1.5%	0.1%
2011	1025	92.9%	6.2%	0.7%	0.2%

It can be seen from the above results that assessing the daylight impact of the December 2011 Earls Court Development Proposals using the 2011 BRE guidelines does not materially change the daylight impact of the December 2011 Earls Court Development Proposals when assessed against the 1991 BRE guidelines.

The increased number of negligible impacts under the 2011 assessment is due the inclusion of the negligible impacts extended to those rooms which remain within the assessment but which are either not residential or not principle habitable rooms.

The very small increase in the number of rooms which are impacted to a major extent is due to the BRE Handbook no longer generally recommending the use of ADF as an assessment tool for existing buildings. As such, the assessment of ADF beyond that of checking for retained values of 1.5% and above and a reduction of no more than 15% of the baseline value, have not been included in this impact assessment.

That said, it should be borne in mind that the 2011 BRE Handbook does now suggest that impact assessments can be considered on a property by property basis rather than just on a room by room basis.

If this assessment option were to be exercised in this case, the 2011 BRE Guidelines state that one of the factors tending towards a minor adverse impact would be that only a small number of windows are affected.

Looking at this in the context of the 7 out of 3859 rooms which are likely to experience a major adverse impact, in the case of each property the window/room which experiences the major adverse impact constitutes between 1% and 12% of the total number of windows/rooms serving that property. On a property basis, therefore, the overall impact assessment for the properties in question would, under the new guidelines, be less than that extended to the individual rooms.

Following the assessment of the December 2011 Earls Court Development Proposals using the 2011 BRE guidelines, the number of rooms and properties impacted, therefore, remain, in the majority of cases, the same as those detailed in the December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES in which the December 2011 Earls Court Development Proposals was assessed using the 1991 BRE guidelines .

The same daylight technical assessments have also been undertaken to assess the impact of the December 2011 Earls Court Development Proposals compared to the Mirror Baseline using the recommended guidelines detailed in the 2011 BRE, the details of which are included within Appendix 4. A full impact assessment has not, however, been undertaken in this respect as the existing baseline results show the impacts attributable to the 1991 and 2011 assessments are the same.

SUNLIGHT TO SURROUNDING PROPERTIES

There are 3,815 windows serving 197 properties which are material for consideration in sunlight terms as a result of the main window of the room being orientated to within 90 degrees of due south.

These have been assessed, as described above, against the existing baseline using the recommended guidelines from the 2011 BRE Handbook.

The impact results, compared to those of the December 2011 Earls Court Development Proposals against the existing baseline using the recommended guidelines from the 1991 BRE Handbook, are summarised in tables A9.10 and A9.11 below. Any window which experiences an improvement in sunlight has been classified as 'negligible' as the impacts obviously satisfy guidance:-

Table A9-10 Total Sunlight Impacts of December 2011 Earls Court Development Proposals Compared to Existing Baseline

BRE Handbook Version	No of windows which will experience an improvement in sunlight	Negligible Rooms	Minor Adverse Rooms	Moderate Adverse Rooms	Major Adverse Rooms
1991	414	91.6%	6.1%	1.7%	0.6%
2011	544	95.8%	2.5%	1.1%	0.6%

Table A9-11 Winter Sunlight Impacts of December 2011 Earls Court Development Proposals Compared to Existing Baseline

BRE Handbook Version	No of windows which will experience an improvement in sunlight	Negligible Rooms	Minor Adverse Rooms	Moderate Adverse Rooms	Major Adverse Rooms
1991	304	85%	6.9%	4.0%	4.0%
2011	357	93.4%	2%	1.7%	2.9%

The assessment results show that the revised assessment methodology and significance criteria recommended in the 2011 BRE Handbook results in an increased number of negligibly impacted windows. Consequently, there is also a reduction in the proportion of windows which will experience alterations of a minor, moderate and adverse significance.

The same sunlight assessments have also been undertaken to assess the impact of the December 2011 Earls Court Development Proposals compared to the Mirror Baseline using the recommended guidelines detailed in the 2011 BRE. A full impact assessment has not, however, been undertaken in this respect since the increased levels of compliance demonstrated by that assessment will be proportionately the same as those detailed in the December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES.

SUN-ON-GROUND

Full details of the sun-on-ground analysis are provided within Appendix 5 together with a summary table of the results described below.

130 areas of amenity space have been assessed as described above, against the existing baseline using the recommended guidelines from the 2011 BRE Handbook.

The impact results, compared to those of the December 2011 Earls Court Development Proposals against the existing baseline using the recommended guidelines from the 1991 BRE Handbook, are summarised in table A9.12.

Table A9-12 Overshadowing Impacts of December 2011 Earls Court Development Proposals Compared to Existing Baseline

BRE Handbook Version	No of amenity spaces which will experience an improvement in sunlight	Negligible Amenity Spaces	Minor Adverse Amenity Spaces	Moderate Adverse Amenity Spaces	Major Adverse Amenity Spaces
1991	25	96.2%	2.3%	0%	1.5%
2011	27	83.9%	9.2%	4.6%	2.3%

As can be seen from the above results, assessing the overshadowing impact of the December 2011 Earls Court Development Proposals using the revised and more stringent methodology and impact assessments detailed in the 2011 BRE guidelines results in a small increase in the number of minor, moderate and major impacts compared to the impact assessment of the December 2011 Earls Court Development Proposals against the 1991 BRE guidelines.

That said, the compliance rate remains very high considering the sensitive nature of the surrounding areas of amenity space,

with those areas being affected being the ones with either very sensitive low baseline levels of shadow or those with uncharacteristically high levels of sun-on-ground due to their current and uncharacteristically unencumbered surroundings considering their urban location.

TRANSIENT OVERSHADOWING

Neither the methodology nor significance criteria for transient overshadowing has changed as a result of the revision of the BRE guidelines in 2011. The results, therefore, remain the same as described in the December 2011 Addendum to the June 2011 ES.

9.0 SOLAR GLARE

Solar glare is not relevant in the case of Planning Application 1 and 2 combined (i.e. the Earls Court Development Proposals) as the Earls Court Development Proposals enclose (and create the Lost River Park) majority of the West London Line and so remove any potential glare locations along this railway line. There is a ventilation point along the Lost River Park adjacent to development plot WV01; however there is no signal at this location and so no potential glare location.

10.0 SUMMARY OF THE IMPACTS SPECIFICALLY ATTRIBUTABLE TO THE REVISIONS MADE TO PLOT BW07, BLOCK E

Following a period of public consultation of the December 2011 application, the height of the maximum parameter for Plot BW07, Block E has been reduced to a points whereby it matches the height set by the adjacent properties at 4-12 Lillie Road.

The daylight, sunlight and overshadowing impacts have been recalculated and the results are described below.

DAYLIGHT

When compared to the Existing Baseline, the results in Appendix 6 show that 92% (110 out of 119) of the windows within 2-14 Empress Place would meet the VSC criteria compared with 83% for the December 2011 Application.

The results of the sequential approach to the daylight analysis described in Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES is summarised below.

Table A9.14 shows that all of the windows serving 83 out of the 93 rooms assessed (89%) will satisfy the VSC criteria which compares with 80% for the December 2011 Application, the results of which are shown in A9.3.

In accordance with the BRE Guidelines, the occupants of the rooms are unlikely to notice a material alteration in skylight following the construction of the Earls Court Proposals and therefore the impact to these rooms is considered to be of **negligible significance**.

The remaining 10 rooms have been assessed for the NSL.

4 of the remaining rooms will experience less than a 20% alteration in the area of the room that can benefit from direct skylight at working plane height and therefore satisfy the NSL criteria. Therefore, in accordance with the BRE Guidance, there are 87 rooms (83 meeting VSC + 4 meeting NSL) out of the 93 (94%) rooms assessed where the occupants of the properties are unlikely to experience a noticeable change in the level of daylight within their properties as a consequence of the construction of the Earls Court Proposals. The impact to them is, therefore, considered to be of **negligible significance**. This represents an improvement on the December 2011 Application where there were 83 rooms that fell within this category.

The detailed results for the remaining 6 rooms where the impacts do not satisfy either the VSC or NSL criteria are also presented in Table A9.14 below.

Within the table, the reference of the impacted room is presented so that it can be cross referenced to the detailed analysis in Appendix 6 and a significance criteria is applied to each room based upon professional judgment.

It is evident from the VSC results that the VSC alterations are only slightly beyond the 20% reduction permitted in the BRE Guidelines and all relate to windows at the lowest levels of the impacted properties where slightly greater impacts are to be expected. Furthermore, in the majority of cases, the reductions are from existing levels that are below guidance in the existing baseline which dictates that in percentage terms, they will be sensitive to any further alteration in skylight.

Importantly, all of the rooms above the lowest level are able to satisfy the BRE daylight criteria and will maintain excellent daylight conditions following the construction of the Earls Court Development Proposals. For the reason mentioned above, the impacts to all 6 rooms are considered to be **minor adverse**.

SUNLIGHT

With regards to sunlight, the results in Appendix 6 and within summary table A9.16 below show that 88% (61 out of 69) of the windows with 2-14 Empress Place will meet both the total and winter APSH criteria which represents a material improvement on the December 2011 planning application where 57% for the windows satisfied the sunlight criteria.

In accordance with the BRE Guidelines, the occupants within the rooms behind the fenestration are, therefore, unlikely to experience a noticeable change in the level of sunlight within the rooms behind the fenestration as a consequence of the construction of the Earls Court Development Proposals and the impact to them is, therefore, considered to be of **negligible** significance.

Using professional judgement and in consideration of both the quantum of sunlight lost and retained, the remaining 8 compared to 26 windows for the December 2011 planning application, will experience the total and winter APSH impacts that are detailed in table A9.16 below.

An overall comparison of the sunlight impacts compared to the December 2011 planning application is summarised below in Table A9.13

Table A9.13 – Comparison of sunlight impacts - December 2011 application v Amended Block BW07 E application

	December 2011	Amended Block BW07 E
Negligible Total APSH Impacts	83.6%	95.7%
Negligible Winter APSH Impacts	57.4%	88.4%
Minor Total APSH Impacts	14.8%	2.9%
Minor Winter APSH Impacts	11.5%	1.4%
Moderate Total APSH Impacts	1.6%	1.4%
Moderate Winter APSH Impacts	26.2%	4.4%
Major Total APSH Impacts	0%	0%
Major Winter APSH Impacts	4.9%	5.8%

Table A9.13 shows a substantial improvement in the level of compliance with the sunlight criteria. Furthermore, where breaches of guidance do occur, the severity of those breaches is much reduced as a result of the amendments to block BW07 E.

It can also be seen the higher levels of impact are in relation to winter sunlight amenity only. The majority of windows maintain acceptable levels of total sunlight, which is to be expected given that 2-14 Empress Place face almost due west and, therefore, the windows only benefit from afternoon sun, which in the winter months is of course at a low trajectory.

Table A9-14 Daylight Impacts of December 2011 Earls Court Development Proposals on 2-14 Empress Place Compared to Existing Baseline using 1991 BRE Guidelines

2-14 Empress Place - December 2011 – BRE 1991 Guidelines																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
Property	No of Rooms	No of rooms within which all windows retain at least 27% VSC or at least 80% of their baseline value	No of rooms not in column 3 which retain at least 80% of their baseline NSL value	No of rooms not in columns 3 & 4 which retain at least 1.5% ADF	No of rooms not in columns 3, 4 & 5 which retain 80% of their baseline ADF	Room Refs for those Rooms not in columns 3,4,5 & 6	Window Ref	Baseline VSC	Proposed VSC	% Change in VSC	Baseline % of room which can benefit from direct skylight at working plane height (NSL)	Proposed % of room which can benefit from direct skylight at working plane height (NSL)	Baseline ADF	Proposed ADF	% Change in ADF	Assessment of level of adverse impact in consideration of both the quantum of daylight amenity lost and retained			
																Negligible	Minor	Moderate	Major
2 Empress Place	13	11	2	0	0														
4 Empress Place	15	12	0	0	3														
10 Empress Place	12	11	1	0	0														
12 Empress Place	14	11	1	0	2														
14 Empress Place	13	11	1	0	1														
8 Empress Place	13	9	2	0	1	R1/4965	WA1/4965	28.37	20.12	29.08%	98.07%	47.91%	1.288	0.994	22.83%	0	1	0	0
6 Empress Place	13	9	2	0	0	R1/4970	WA2/4970	25.19	18.43	26.84%	97.55%	47.64%	1.057	0.844	20.15%	0	1	0	0
						R2/4970	WA1/4970	27.51	19.83	27.92%	98.22%	48.80%	1.127	0.886	21.38%	0	1	0	0
	93	74	9	0	7											0	3	0	0

Table A9-15 Daylight Impacts of December 2011 Earls Court Development Proposals with amended block E on 2-14 Empress Place Compared to Existing Baseline using 2011 BRE Guidelines

2-14 Empress Place – December 2011 with Amended block E – BRE 2011 Guidelines																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14				
Property	No of Rooms	No of rooms within which all windows retain at least 27% VSC or at least 80% of their baseline value	No of rooms not in column 3 which retain at least 80% of their baseline NSL value	No of rooms not in columns 3 & 4 which retain at least 1.5% ADF or, if the baseline ADF is less than 1.5%, then it retains 80% of its baseline value	Room Refs for those Rooms not in columns 3, 4 or 5	Window Ref	Baseline VSC	Proposed VSC	% Change in VSC	Baseline % of room which can benefit from direct skylight at working plane height (NSL)	Proposed % of room which can benefit from direct skylight at working plane height (NSL)	% Change in NSL	Assessment of level of adverse impact in consideration of both the quantum of daylight amenity lost and retained				
													Negligible	Minor	Moderate	Major	
14 Empress Place	13	12	1	0									13				
10 Empress Place	12	12	0	0									12				
2 Empress Place	13	13	0	0									13				
12 Empress Place	14	11	1	0	R1/4939	WA2/4939	18.23	13.04	28.47				12	0	0	0	
12 Empress Place					R1/4939	WA3/4939	8.16	7.68	5.88	88.19	52.12	40.90	0	1	0	0	
12 Empress Place					R2/4939	WA1/4939	13.54	10.53	22.23	85.89	53.20	38.06	0	1	0	0	
8 Empress Place	13	11	1	0	R1/4965	WA1/4965	28.37	21.4	24.57	98.07	53.37	45.58	12	1	0	0	
6 Empress Place	13	10	1	0	R1/4970	WA2/4970	25.19	19.6	22.19	97.55	55.68	42.92	11	1	0	0	
6 Empress Place					R2/4970	WA1/4970	27.51	21.08	23.37	98.22	54.59	44.41	0	1	0	0	
4 Empress Place	15	14	0	0	R1/4980	WA2/4980	20.8	16.44	20.96	97.04	47.69	50.86	14	1	0	0	
	93	83	4	0									87	6	0	0	

Table A9-16 Sunlight Impacts of December 2011 Earls Court Development Proposals on 2-14 Empress Place Compared to Existing Baseline using 1991 BRE Guidelines

2-14 Empress Place - December 2011 – BRE 1991 Guidelines															
Address	Total No. of Windows	Meet Total & Winter BRE Guidelines	Window Ref which breach guidance	Baseline Total APSH	Proposed Total APSH	Neg	Minor	Moderate	Major	Baseline Winter APSH	Proposed Winter APSH	Neg	Minor	Moderate	Major
14 Empress Place	9	7	WA1/4929	21	17	1	0	0	0	5	2	0	0	1	0
14 Empress Place	9	7	WA2/4930	29	25	1	0	0	0	7	3	0	0	1	0
12 Empress Place	11	8	WA2/4939	22	13	0	0	1	0	4	0	0	0	0	1
12 Empress Place	11	8	WA1/4939	15	10	0	1	0	0	2	0	0	0	1	0
12 Empress Place	11	8	WA3/4940	20	15	0	1	0	0	5	1	0	0	1	0
8 Empress Place	8	4	WA1/4960	22	17	0	1	0	0	5	1	0	0	1	0
8 Empress Place	8	4	WA1/4961	33	31	1	0	0	0	5	3	0	1	0	0
8 Empress Place	8	4	WA1/4965	37	27	1	0	0	0	9	3	0	0	1	0
8 Empress Place	8	4	WA1/4966	33	28	1	0	0	0	7	3	0	0	1	0
6 Empress Place	11	7	WA2/4970	34	27	1	0	0	0	5	1	0	0	1	0
6 Empress Place	11	7	WA1/4970	35	27	1	0	0	0	7	2	0	0	1	0
6 Empress Place	11	7	WA3/4971	37	32	1	0	0	0	7	3	0	0	1	0
6 Empress Place	11	7	WA4/4971	40	36	1	0	0	0	7	4	0	1	0	0
4 Empress Place	9	2	WA2/4980	22	17	0	1	0	0	2	0	0	0	1	0
4 Empress Place	9	2	WA1/4980	28	21	0	1	0	0	4	0	0	0	0	1
4 Empress Place	9	2	WA1/4981	28	22	0	1	0	0	4	0	0	0	0	1
4 Empress Place	9	2	WA1/4982	32	28	1	0	0	0	5	2	0	0	1	0
4 Empress Place	9	2	WA1/4985	24	19	0	1	0	0	5	1	0	0	1	0
4 Empress Place	9	2	WA1/4986	37	33	1	0	0	0	7	4	0	1	0	0
4 Empress Place	9	2	WA1/4988	22	20	1	0	0	0	6	4	0	1	0	0
2 Empress Place	7	1	WA1/4990	8	6	0	1	0	0	1	0	0	1	0	0
2 Empress Place	7	1	WA1/4991	14	10	0	1	0	0	2	0	0	0	1	0
2 Empress Place	7	1	WA1/4992	16	14	1	0	0	0	2	0	0	0	1	0
2 Empress Place	7	1	WA2/4993	24	22	1	0	0	0	3	2	0	1	0	0
2 Empress Place	7	1	WA1/4993	29	27	1	0	0	0	3	2	0	1	0	0
2 Empress Place	7	1	WA1/4996	11	9	1	0	0	0	2	0	0	0	1	0
10 Empress Place	6	6													
	61	35				16	9	1	0			0	7	16	3

Table A9-17 Sunlight Impacts of December 2011 Earls Court Development Proposals with amended block E on 2-14 Empress Place Compared to Existing Baseline using 2011 BRE Guidelines

2-14 Empress Place – December 2011 with Amended block E – BRE 2011 Guidelines																
Address	Total No. of Windows	Meet Total & Winter BRE Guidelines	Window Ref which breach guidance	Baseline Annual APSH	Proposed Annual APSH	Loss	Total Sunlight Assessment in consideration of both the quantum of sunlight amenity lost and retained by each window				Winter Sunlight Assessment in consideration of both the quantum of sunlight amenity lost and retained by each Window					
							Neg	Minor	Moderate	Major	Baseline Winter APSH	Proposed Winter APSH	Neg	Minor	Moderate	Major
12 Empress Place	14	11	WA2/4939	22	14	8	0	0	1	0	4	0	0	0	0	1
			WA1/4939	16	11	5	0	1	0	0	3	0	0	0	0	1
			WA3/4940	21	15	6	0	1	0	0	6	1	0	0	0	1
8 Empress Place	10	9	WA1/4966	38	33	5	1	0	0	8	4	0	1	0	0	
6 Empress Place	12	10	WA2/4970	38	33	5	1	0	0	5	1	0	0	1	0	
			WA1/4970	42	36	6	1	0	0	7	3	0	0	1	0	
4 Empress Place	9	7	WA1/4980	29	24	5	1	0	0	4	0	0	0	0	1	
			WA1/4981	30	25	5	1	0	0	4	1	0	0	1	0	
2 Empress Place	7	7														
10 Empress Place	6	6														
14 Empress Place	11	11														
	69	61					5	2	1	0			0	1	3	4

SHADOW

When assessed using the 2011 BRE Handbook sun on ground assessment, construction of the December 2011 Earls Court Development Proposals with the amended block BW07 E will result in the overshadowing impacts, compared to those detailed in the December 2011 Addendum to Chapter 9 (which uses the permanent overshadowing assessment test), shown in Table A9.18 below

Table A9.18 – Comparison of shadow impacts - December 2011 application v Amended Block BW07 E application

	4 Empress Place	6 Empress Place	8 Empress Place	10 Empress Place	12 Empress Place	14 Empress Place
December 2011	Major	Major	Negligible	Negligible	Negligible	Minor
Amended Block BW07 E	Major	Major	Major	Negligible	Minor	Moderate

Table A9.18 shows that, despite the amendment to block BW07 E, the overshadowing impacts have remained the same or slightly worse than those detailed in the December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES.

This is due to the more stringent nature of the sun on ground assessment compared to the previous permanent overshadowing assessment and, as discussed in the December 2011 Addendum to Chapter 9: Daylight, Sunlight and Overshadowing of the June 2011 ES, their relatively high and consequently sensitive level of existing shadows which are due to the westerly orientation of the gardens and the height of the surrounding boundary walls.

11.0 MITIGATION MEASURES

No additional mitigation measures to those described below are proposed as there is a high level of daylight, sunlight and shadow compliance and there are areas in which the scheme will improve the amenity for neighbouring properties.

DEMOLITION AND CONSTRUCTION

The level of impact caused by the proposed development will vary throughout the demolition and construction phase, depending on the level of obstruction caused. It will however, almost certainly be less than the Earls Court Development Proposals as the extent of permanent massing increases over time. Therefore, the impact of the completed development provides a worst-case scenario. For this reason any mitigation for the proposed development will be included in the completed development section.