



Our Ref: AC/19100

31 May 2019 (Rev B)

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Dear Lucy,

**Re: Homebase site, 84 Manor Road, Richmond TW9 1YB
Independent review of daylight, sunlight and overshadowing report**

In accordance with your instructions, we have carried out an independent review of the daylight and sunlight report prepared by the Applicant's consultant, Point 2 Surveyors, ("the assessment") submitted in support of the planning application for the proposed development at Homebase site, 84 Manor Road, Richmond. You have specifically asked me to:

- Determine whether the assessment and report has been undertaken in accordance with BRE '*Site layout planning for daylight and sunlight: A guide to good practice*' (the BRE guidelines), in particular the methods of assessment recommended therein;
- State if I agree with the findings in the assessment report;
- Identify any further assessments that might be necessary;
- Confirm whether or not the development would achieve good levels of daylight and sunlight within the proposed development (internal accommodation, amenity space and public realm) and maintain an acceptable relationship with the surrounding residential properties and amenity spaces with respect to sunlight, daylight and overshadowing and by reference to the BRE guidelines.

Our review is intended to assist the Council in understanding the potential effects of the proposed development on the surrounding properties and the adequacy of light within the proposed new dwellings, having regard to published guidelines.

This review does not extend to a detailed technical analysis of our own, nor have we checked the consultant's 3D computer model or calculations. We have assumed that the assessment is accurate and simply report on the results and conclusions; although, if we feel there is reason to seek confirmation on matters affecting accuracy we have stated so below.

1. Planning policy and guidance

The assessment report, and your briefing specification, includes a summary of the Council's local planning policies relating to daylight and sunlight. I note that the Council seeks to ensure that the design and layout of development enables good standards of daylight and sunlight to be achieved in both new development and existing buildings affected by new development. In assessing whether that aspiration is met, the Council will have regard to the BRE guidelines.

Your briefing specification refers to paragraph 4.8.6 of the Local Plan, which notes that reflected solar glare or dazzle can occur when sunlight is reflected from a glazed façade or area of metal cladding, which can affect drivers of cars, buses and trains, cyclists and pedestrians. It advises that the potential for such issues needs careful consideration.

The assessment report also highlights relevant elements of regional and national planning policy.

The Mayor of London's 'Housing Supplementary Planning Guidance' (March 2016) advises that the BRE guidelines should be applied with an appropriate degree of flexibility and sensitivity to higher density housing development, especially in opportunity areas, town centres, large sites and accessible locations. It suggests that account should be taken of local circumstances, the need to optimise housing capacity and scope for the character and form of an area to change over time. It notes that the degree of harm on adjacent properties should be assessed drawing on broadly comparable residential typologies within the area and of a similar nature across London. Decision makers should recognise that fully optimising housing potential on large sites may necessitate standards which depart from those presently experienced but which still achieve satisfactory levels of residential amenity and avoid unacceptable harm.

The National Planning Policy Framework (NPPF) (revised July 2018) includes a chapter entitled "*Making effective use of land*", which promotes the effective use of land in meeting the need for homes and other uses. Under the heading "*Achieving appropriate densities*" it urges local planning authorities to refuse applications which they consider fail to make efficient use of land, taking into account the policies in the NPPF. When considering applications for housing, "*Authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of the site (as long as the resulting scheme would provide acceptable living standards).*"

In the [Rainbird](#) judicial review the judge noted that the assessment of impact on daylight and sunlight amenity is a two-part process:

- First, as a matter of calculation, whether there would be a material deterioration in conditions; and
- Second, as a matter of judgment, whether that deterioration would be acceptable in the particular circumstances of the case, including the local context.

In Appeal Ref: APP/E5900/W/17/3191757 (Enterprise House, 21 Buckle Street, London E1 within the London Borough of Tower Hamlets) the Inspector noted that matters forming part of the first stage include the usual daylight and sunlight calculations and quantification of reduction in light, as explained in the next section of this letter. Matters forming part of the second stage include much wider considerations, such as:

- i. Whether the neighbouring building stands unusually close to the site boundary taking more than its fair share of light, such that a greater reduction in light may be unavoidable if one site is not to be prejudiced by how another has been developed. This can potentially be demonstrated with a mirror massing test.
- ii. Whether windows in neighbouring buildings are self-obstructed by overhanging or inset balconies or projecting wings such as to make relatively larger reductions unavoidable even if there is a modest new obstruction opposite (per *Rainbird*) - in effect themselves taking away more than their fair share of light.
- iii. In historic city centres or areas characterised by modern tall buildings, high density and close proximity, a higher degree of obstruction may be unavoidable if new buildings are to match the height and proportion of existing buildings.
- iv. In areas that are designated by the local planning authority for substantial growth or providing opportunities for change and sustainable regeneration, the sort of change that would be brought about by the introduction of taller, denser development is to be expected, including reductions in daylight and sunlight levels, closer proximity, loss of outlook, etc.

2. Relevant guidelines for daylight, sunlight and overshadowing

The applicant's assessment seeks to summarise the BRE guidelines. There are few anomalies in its explanation; for example the vertical sky component (VSC) test is not the "primary" daylight test in a hierarchical sense. It and the no-sky line (NSL) (also known as daylight distribution) test are two parts of one assessment. If either criteria will not be met, the diffuse daylighting to the room will be adversely affected. One test does not 'trump' the other.

It is not clear where the quoted text at paragraph 2.20 is sourced from. Unlike the quoted text at paragraphs 2.23 and 2.24, it does not come from the BRE guidelines. Is it lifted from the Council's planning policy documents?

Please refer to Appendix 1 of this letter for our summary of the BRE guidelines relating to daylight, sunlight and overshadowing, including assessment methodology and numerical criteria. The appendix also explains the terminology and acronyms used in this letter (e.g. VSC, NSL, ADF, APSH, etc.).

In respect of solar glare/dazzle, the BRE guide refers to BRE Information Paper IP 3/87, '*Solar dazzle reflected from sloping glazed façades*' (1987), which provides guidance on assessing when reflected glare could potentially occur at a point, for example where motorists and other road users may be approaching a junction or train drivers may be approaching signals. Solar glare is not covered by the assessment report.

3. *Scope of the assessment*

The report assesses the potential impact of the proposed development on:

- daylight and sunlight levels to existing surrounding residential properties; and
- overshadowing to the surrounding areas.

The scope of the neighbouring residential properties that have been assessed appears to be appropriate. The assessed properties are identified in blue on Plate 01 of the report.

The report also assesses the daylight levels to new dwellings from basement to fourth floor levels within the proposed development and sunlight to the proposed amenity spaces. This appears to be a reasonable scope upon which to form an opinion as to the likely adequacy of daylight on the higher floor levels.

The report does not include an assessment of sunlight to the proposed dwellings. If the Council wishes to understand the level of sunlight amenity to the proposed accommodation a separate assessment would need to be requested from the applicant.

The report does not include an assessment of the potential for reflected solar glare to cause issues for drivers of trains or road vehicles who are approaching signals where the proposed development is within their line of sight. From a cursory review of a number of proposed elevations on the planning portal, I note that the proposed buildings will have brick facades and that glazing is confined to windows that are residential in scale, with brick reveals and balconies, all of which serve to limit the expanse of reflective material that might cause solar glare. It is probably for that reason that the applicant's report does not address solar glare and paragraph 4.8.6 of the Local Plan. If in doubt, you may wish to ask the applicant to comment on the potential for solar glare issues to occur.

4. *Site context and proposed development*

A 3D computer model of the existing and proposed site massing in its surrounding context has been built by the applicant's consultant and is shown in Figures 1 and 2 below.



Fig. 1 – 3D model – existing massing in context



Fig. 2 – 3D model – proposed massing in context

It is evident from the above images that the proposed development is denser and taller than the existing surrounding context and will obstruct views of sky from surrounding buildings.

The GLA's stage 1 referral report (GLA/4795/01 dated 15 April 2019) comments on the site context, stating:

“38 ... Whilst the wider context is predominantly ‘suburban’, the site and its immediate surrounds could be considered ‘urban’ in character. If the site is considered suburban, the density would exceed the maximum guidance ranges in the London Plan, whereas if it is considered urban the density would fall within the centre of the range.”

The GLA report also comments on residential quality within the development as follows:

- “39 The higher the density of a development, the greater the level of scrutiny that is required of its design, with particular regard to residential quality and standards and its ongoing management.*
- 42 There are single aspect units that should be designed out of the scheme, as they present a concern in terms of outlook and overall residential quality. There are also some cores serving nine units, which should also be addressed.*
- 43 Internal layouts should be provided to ensure that all units will provide liveable environments with good access to natural daylight. The application is supported by an assessment which confirms that 93% of the rooms tested will either meet or exceed the recommended ADF targets.”*

5. Applicant’s assessment methodology and application of the guidelines

I have reviewed the method of assessment for daylight, sunlight and overshadowing and am satisfied that it is sufficient and in accordance with the BRE guidelines, with some qualifications, as explained below.

3D modelling and sources information

The 3D computer model used in the assessment appears to have been built from robust information, including 3D laser scan measured survey (point cloud), a 3D massing model of surrounding context massing produced from photogrammetry, site photos, information obtained by researching planning records and the architect’s 3D massing model of the proposed scheme (10/01/2019).

The RICS Professional Guidance Note, ‘*Daylighting and sunlighting*’ (1st edition, 2012), recommends that surveyors should search the local authority’s planning portal to obtain floor plans to ensure a robust approach and enable the surveyor to produce reliable information for NSL analyses and to help understand room uses. Where room layouts cannot be established, it is customary to make reasonable assumptions as to likely layouts. I consider that to be an acceptable approach.

The report does not explain which of the neighbouring properties have been assessed using floor plans obtained through research and therefore which are based on assumed room layouts and uses. I suspect that where room uses are stated in the tables of results in Appendix B, the corresponding property has probably been modelled from plans, and where they state “assumed”, the property has probably been modelled with assumed internal layouts. The properties with assumed room uses are listed on the left below and those with stated room uses are listed on the right.

Properties understood to be based on assumed internal layouts and uses	Properties understood to be modelled from known layouts and uses
1, 2, 4, 6, 7, 8, 9, 10 & 11 Manor Grove	3 & 5 Manor Grove
2, 3, 4 & 5 Marylebone Gardens	1 Marylebone Gardens
69A, 71, 73, 75, 77, 79, 81 Manor Road	6, 8, 12, 18, 24 Manor Park
2, 4, 10, 14, 16, 20, 22 Manor Park	8 Manor Road
1, 3, 5, 7, 9, 11, 13, 17, 19, 21 Manor Park	15 Manor Park
1-53 Calvert Court (partial)	1-53 Calvert Court (partial)
19-39 Robinson Court	1-18 Robinson Court (partial)
1-18 Robinson Court (partial)	52 St Mary’s Grove
50 St Mary’s Grove	19-22 Victoria Villas
Clarence Court	2-6 Bardolph Road
33-39 Crown Terrace	13 & 15 Trinity Cottages
1-18 Victoria Villas	5 St George’s Road
14 Trinity Cottages	St George’s House (partial)
7 to 15 (odds) Trinity Road	40, 44, 46, 50, 52, 54 St George’s Road
12 to 24 (evens) Trinity Road	
3, 7, 9, 11 St George’s Road	

Properties understood to be based on assumed internal layouts and uses	Properties understood to be modelled from known layouts and uses
Falstaff House St George's House (partial) 42, 48, 56, 58 St George's Road	

You may wish to ask the applicant to clarify if the above interpretation is correct.

Aside from the above query, I have no reason to doubt that the assessment model is sufficiently accurate for the purposes of the assessment.

Assessment methodology – impacts on surrounding environment

The correct BRE assessment methodology has been used for assessing the effects on daylight (the two-part assessment of VSC and NSL) and sunlight (the two-part assessment of APSH annually and in winter) to existing surrounding buildings. The results are tabulated in Appendix B. The window maps in Appendix D aid identifications of the subject windows.

A transient overshadowing assessment has been run in the existing and proposed conditions and hourly snapshots are given in Appendix F for appropriate dates and times as follows:

- spring equinox (21 March) – 7 am to 6 pm
- summer solstices (21 June) – 6 am to 9 pm
- winter solstice (21 December) – 9 am to 3 pm

Assessment methodology – daylight within the proposed development and sunlight to proposed amenity spaces

The BRE guide recommends assessing daylight to new accommodation using the ADF, NSL and room depth criterion (RDC) tests. Whilst it may be preferable for all three tests to be run, it is more common for assessments to only assess ADF. The lack of NSL and RDC results means there is no information on the distribution of daylight around the room or on whether the rooms have been appropriately sized for daylight. The ADF results give the average level of daylight in the space assessed. As this is in accordance with common practice, it is considered acceptable.

All habitable rooms have been assessed from basement to fourth floor levels, i.e. 779 rooms in all. The scope seems sufficient with which to judge the adequacy of daylight across the development as a whole.

The ADF results are shown on the layout plans in Appendix C, which also indicate the size and shape of the room and locations of windows and note the room uses.

There are a number of potential deficiencies in the ADF assessment, as follows:

- a) According to the report, the assessment is based on architect's plans dated January 2019, whereas the submitted plans are dated February 2019. Furthermore, the layouts and room uses shown in the ADF plans at Appendix C differ in some areas from the submitted plans on the planning portal. It therefore appears that the assessment is based on a slightly earlier scheme iteration and not the planning application scheme.
- b) In addition to (a), there are other discrepancies between the room uses and room depths shown on the ADF plans for principal living spaces and those shown on the architect's submitted plans that suggest to me that the consultant has heavily truncated the deep open-plan living/kitchen/dining rooms (LKDs) to ignore the kitchen and, in some spaces, dining area altogether and calculated an indicative ADF for just the living area nearest the window, which would have a higher value than that of the whole room and therefore more likely to 'pass'. Whilst notional truncation of LKDs is a deviation from the BRE assessment methodology, it is not an uncommon approach in dense residential developments, where there is more justification for flexible application of the guidelines. However, in such cases it should be clearly explained so that the results can be interpreted accordingly and a primary set of results based on the full room depth should be included. Only then can the Council may make an informed decision as to the acceptability of the standard of daylight. If it is done without explanation and presented as a percentage adherence to the BRE guidelines, that would be incorrect and potentially misleading.

- c) Paragraph 2.34 cites the minimum recommended ADF values for kitchens (2%), living rooms (1.5%) and bedrooms (1%). The guide also advises that for LKDs the higher target, i.e. 2% ADF, should apply. However, I would consider 1.5% ADF to be a reasonable alternative target for LKDs in dense modern housing development.
- d) As I explain on page A1.3 of the Appendix to this letter, the ADF test takes account of the diffuse light transmittance of the glazing, effects of dirt on glass, frame and glazing bar correction, the area of the room surfaces and their surface reflectance. It is essential that reasonable parameters are adopted for each of these variables; however, they are not stated in the report. Without them it is impossible to determine the accuracy and validity of the results and I am unable to comment further. If parameters other than those recommended in the guidelines have been adopted, justification should be provided. That said, I would consider it reasonable in dense modern development to adopt lighter than average internal surface finishes for the calculations.

As noted above, sunlight to the proposed dwellings has not been assessed. The overall sunlighting potential of a large residential development may be initially assessed by counting how many dwellings have a window to a main living room facing south, east or west. The aim should be to minimise the number of dwellings whose living rooms face solely north, northeast or northwest, unless there is some compensating factor such as an appealing view to the north. A review of the architect's plans suggests that by and large the design appears to have minimised single-aspect north-facing flats. Where they do still exist, it typically on the long diagonal (southwestern) boundary, which is influenced by the relationship with the railway.

Sunlight to proposed amenity spaces has been appropriately assessed using the BRE two-hours sun-on-ground assessment on the spring equinox on 21 March. A supplementary assessment has been run on 21 June, which shows the best-case scenario at the height of summer.

6. Effects of proposed development on existing surroundings

Daylight and sunlight to neighbouring properties

The assessment results show the levels of daylight and sunlight in the existing and proposed conditions and the magnitudes of impact, expressed as an absolute loss and as a percentage loss. The assessment applies the BRE standard numerical guidelines, explained above.

The impacts on neighbouring properties are summarised within the report in Table 02 – VSC Summary, Table 03 – NSL Summary and Table 04 – APSH Summary. These state the number of receptors in each property where the impact would satisfy the guidelines and, of those that would not, the number falling within categories of increasing levels of impact (i.e. 20-30% loss, 30-40% loss and >40% loss). I would term these 'small', 'medium' and 'large' relative losses.

The daylight results show 84% adherence to the VSC guidelines and 93% adherence to the NSL guidelines for the properties tested.

Appendix I of the BRE guide provides guidance for use in EIAs to determine the significance of impact. This takes into account the number of impacts that are outside the BRE guidelines, the magnitude of the impacts and the margin by which they are outside, the sensitivity of the receptors (in terms of the strength of their requirement for daylight and sunlight), whether the receptors have other sources of light and whether there are particular reasons why an alternative, less stringent, guideline should be applied (as advised in Appendix F of the BRE guide). Although this guidance need not be applied to non-EIA assessments, it can be helpful when considering the significance and acceptability of impacts of non-EIA development. I have taken this approach in my review.

The report includes very brief commentary on the impacts on daylight to each building where there will be transgressions of the guide. I would add the comments set out below in relation to the most-affected properties.

1 to 11 (consecutive) Manor Grove

Small and medium relative losses of VSC (up to 39% loss) and small, medium and large relative losses of NSL (up to 53% relative loss), with greatest impact on the ground floor. Currently overlook an open car park, so relative impacts BRE recommendations are likely, if the site is to be redeveloped with a significant height and massing. Retained VSC values are not unreasonable (low to mid-20s) for an urban area. Retained daylight areas (NSL) are a bit on the low side (circa. 45% in the poorest-lit rooms) even for an urban area.

Sunlight need not be assessed due to orientation.

18 to 24 (evens) Manor Grove

A few windows/rooms with small relative losses of VSC and/or NSL. Currently overlook low-rise warehouse and an open car park, so greater relative impacts are likely, if the site is to be redeveloped. Retained VSC values to those windows are not unreasonable (low to mid-20s) and retained daylight areas (NSL) would be good (circa.75%). Sunlight need not be assessed due to orientation. The windows sit beneath overhanging balconies, which may to some extent exacerbate the relative impacts.

Sunlight need not be assessed due to orientation.

1 Victoria Villas (flats)

Small and medium relative losses of VSC (up to 32% loss) to a group of ground to third floor large windows and small, medium and large relative losses of NSL (up to 41% relative loss). Overhanging balconies are very likely to be a contributory factor in the relative loss of daylight, in my opinion, although the additional calculation without balconies noted in BRE paragraph 2.2.11 has not been provided to demonstrate this is the case.

Sunlight impacts are BRE adherent.

Cliveden House, 19-22 Victoria Villas

Some small, medium and large relative impacts on VSC (up to 42% loss) and small losses of NSL. Windows satisfy APSPH guidelines except one. The windows are constrained by their proximity to 2-8 Bardolph Road. Retained VSC values are in the high teens and low to mid-20s and retained daylight areas (NSL) are circa. 60-70%.The retained VSC and daylight distribution values are not unreasonable for an urban area.

2-8 Bardolph Road

Mostly large relative reductions in VSC (up to 49% loss) on all three floors. A few small and medium NSL transgressions on the second floor.

Sunlight impacts are BRE adherent.

Falstaff House

A small number of BRE transgressions occur to windows that are heavily recessed, as shown on the window maps. It is almost inevitable that a greater relative loss will arise in such instances.

Summary

The proposed development will result in reductions in daylight to a number of the properties immediately facing the site that are medium and large in magnitude beyond the BRE standard numerical guidelines. Having regard to the advice in Appendix I of the BRE guide, these should be considered moderate and major adverse. The retained values are potentially not unreasonable for an urban area; however, it is not entirely clear to me if the surrounding context is urban or suburban in nature. Ultimately that is a matter of judgment for the Council, including whether or not the effects are outweighed by the benefits of the proposed development.

In exercising that judgment the Council should take account of local circumstances. The degree of harm to adjacent properties should be assessed drawing on broadly comparable residential typologies within the area and of a similar nature across London and consideration should be given to whether the surrounding properties would still achieve satisfactory levels of residential amenity and thereby avoid unacceptable harm.

You asked whether a comparative assessment could be undertaken. It is certainly possible to run a contextual assessment, which would involve calculating the available daylight (VSC) on the facades of other buildings in locations that are considered to be broadly comparable residential typologies within the area and of a similar nature across London. (Sunlight need not be done, as it is not a particular issue here.) A comparison could then be made between the retained VSC values to the properties that surround the site and the comparative buildings. The Council could request that assessment from the applicant.

Transient overshadowing

The overshadowing study does not reveal excessive overshadowing on the surrounding environment and I am satisfied with the findings.

7. Internal daylight to proposed dwellings and sunlight to proposed amenity spaces

For the reasons already explained I am unable to recommend acceptance of the internal daylight assessment. I suggest the applicant be asked to consider and address my review comments.

It would be helpful in any further assessment for a breakdown to be provided of the number or rooms of each type that do not meet the guidelines. Preferably these should be indicated on the ADF plans for ease of identification by the Council.

The two-hours sun-on-ground assessment on 21 March of the proposed amenity spaces shows that all but one of the amenity spaces will satisfy the guidelines. The exception is the space at the centre of Block A. The additional test on 21 June shows it will be well sunlit at the height of summer. Overall the sunlight to proposed amenity spaces is acceptable.

8. Executive summary and conclusions

The scope and methodology of assessment is appropriate and in line with the BRE guidelines, subject to my query on the ADF methodology, but sunlight to the proposed dwellings has not been assessed and no commentary is provided on reflected solar glare. If you feel you need further information in this regard you should request it from the applicant.

Effects on existing surrounding properties and spaces

There will be noticeable adverse daylight effects to a number of properties around the site, as I have explained in this letter, including moderate and major adverse effects. Relevant considerations are that (a) currently the neighbouring properties overlook open car parking and a low-rise warehouse building, so greater relative impacts are likely if the site is to be redeveloped with significant height and massing and (b) in general the retained daylight and sunlight levels would not be unreasonable for an urban area. However, it is not entirely clear to me if the surrounding context is urban or suburban in nature. Ultimately that is a matter for judgment by the Council; so too is whether or not the adverse effects are outweighed by the benefits of the proposed development.

In exercising that judgment, the Council should take account of local circumstances. If you feel it is important to better understand daylight levels enjoyed by broadly comparable residential typologies within the area and of a similar nature across London, the Council could consider requesting from the applicant a contextual assessment comprising VSC façade analysis as a comparator. You might wish to agree at least a couple of locations to be included in such a study.

Internal daylight and sunlight within the proposed development

I am unable to recommend acceptance of the internal daylight assessment for the reasons given in this letter. I suggest the applicant be asked to consider and address my review comments.

Yours sincerely



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Enc: Appendix 1 - Summary of guidelines for daylight, sunlight and overshadowing



Appendix 1

Summary of relevant guidelines for daylight, sunlight and overshadowing

This appendix summarises the BRE guidelines for daylight, sunlight and overshadowing, including assessment methodology and numerical criteria.

BRE guidelines on daylight, sunlight and overshadowing

The leading guidelines on daylight and sunlight amenity are published by the Building Research Establishment in BRE Report 209 '*Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice*' (second edition, 2011). This document sets out an assessment methodology and numerical guidelines for assessing the effects of development on daylight and sunlight to surrounding properties and sunlight to amenity spaces. It also sets out a methodology and criteria for assessing the adequacy of daylight and sunlight within new development.

Effects on daylight and sunlight to neighbouring properties

In short, where some part of the proposed development will subtend an angle greater than 25° to the horizontal measured from the level of the centre of the lowest neighbouring windows, the effect on daylight and sunlight to the habitable rooms in the relevant neighbouring properties is assessed using the following tests:

- Daylight:
 - vertical sky component (VSC) at the window, which assesses the total available skylight, and
 - no-sky line contour (NSL) on the working plane inside the room, which assesses the distribution of daylight around the room
- Sunlight:
 - percentage of annual probable sunlight hours (APSH) for windows of main habitable rooms that face within 90° due south, both annually and in the winter months
- Sunlight to gardens/amenity spaces:
 - percentage of each area that receives at least two hours of sunlight on 21 March
 - where a large building is proposed, shadow plots can be produced at different times of day and year, with the equinox (21 March) being the best assessment date and summer and winter solstices (21 June and 21 December) as optional additional dates.

The assessments are run in the existing and proposed scenarios on an absolute scale, followed by a comparative scale measuring the factor of former value or percentage reduction, so that the magnitude of impact is quantified.

The BRE numerical guidelines work on the principle that, except where specified minimum values will be retained with the proposed development in place (i.e. 27% VSC, 25% APSH annually, 5% APSH in winter and 50% of a garden/amenity space receiving at least two hours of sunlight) or in the case of sunlight the annual loss will be no greater than 4% APSH, a reduction to less than 0.8 times former value (i.e. loss of more than 20% of an existing light level) will be noticeable to the occupiers.

In the case of daylight, a room will be adversely affected if:

- either the VSC at the centre of the window is reduced to less than 27% and less than 0.8 times its former value;
- or the area of the working plane in a room which can receive direct skylight (i.e. within the NSL) is reduced to less than 0.8 times its former value.

The daylight test is therefore a two-part assessment. Neither test carries more weight than or 'trumps' the other.

The average daylight factor (ADF) is another means of quantifying daylight inside a room; however, it is primarily intended for assessing daylight within new development (see below). The BRE guide advises it can be appropriate to use the ADF test for assessing neighbouring buildings in certain instances, such as neighbouring consented buildings that are not yet built.

Appendix F of the BRE guide provides advice on setting alternative target values for daylight and sunlight. This notes that the numerical target values are purely advisory and different targets may be used based on the special requirements of the proposed development or its location. Such alternative targets may be generated from the layout dimensions of existing development or be based on an extant planning permission. Table F1 of the BRE guide gives various building-to-building angles of long, uniform obstructions and their corresponding VSC values. An example is given of a narrow mews in an historic city centre where the VSC values derived from the obstruction angle could be used as a target value for development in that street if new development is to match the existing layout. The guide notes that a similar approach may be adopted in cases where an existing building has windows that are unusually close to the site boundary and taking more than their fair share of light. In that case, to ensure that new development matches the height and proportions of existing buildings, the VSC and APSH targets for the relevant windows could be set to those for a 'mirror-image' building of the same height and size, an equal distance away on the other side of the boundary.

Where there is an extant planning consent for the application site and the developer wishes to change the design, the BRE guide states:

"In assessing the loss of light to existing windows nearby, a local authority may allow the vertical sky component (VSC) and annual probable sunlight hours (APSH) for the permitted scheme to be used as alternative benchmarks. However, since the permitted scheme only exists on paper, it would be inappropriate for it to be treated in the same way as an existing building, and for the developer to set 0.8 times the values for the permitted scheme as benchmarks."

Appendix I of the BRE guide provides advice on ascribing a significance to effects in EIAs. The guide 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.

Where the loss of skylight or sunlight fully meets the guidelines, the impact is assessed as negligible 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 negligible impact 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 and sunlight in the affected building or open space.

Where the loss of skylight or sunlight does not meet the guidelines, the impact is assessed as minor, moderate or major adverse. Factors tending towards a minor adverse impact include:

- only a small number of windows or limited area of open 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; and*
- there are particular reasons why an alternative, less stringent, guideline should be applied.*

Factors tending towards a major 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, e.g. a living room in a dwelling or a children's playground.*

Daylight and sunlight conditions within the proposed development

At early stages in design, before room layouts and window sizes/locations are decided, which is typically the case for outline applications, the BRE guide recommends calculating VSC and APSH levels at a series of points on each

main face of the proposed building 1.6 m above ground and no more than 5 m apart. Living rooms and kitchens need more daylight than bedrooms, so where there is a choice it is best to site the living room or kitchen away from obstructions. Sensitive layout design of flats will attempt to ensure that each individual dwelling has at least one main living room which can receive a reasonable amount of sunlight.

For daylight, the guide recommends the following:

- if VSC is at least 27% conventional window design will usually give reasonable results;
- if VSC is between 15% and 27% special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight;
- if VSC is between 5% and 15% it is very difficult to provide adequate daylight unless very large windows are used; and
- if VSC is less than 5% it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed.

Where room layouts and window sizes/locations are known, daylight provision in new rooms may be checked using the following tests:

- ADF, which measures the average amount of daylight inside the room;
- NSL, which measures the distribution of daylight around the room by plotting the percentage of the working plane enclosed by the no-sky line and enjoying a view of sky; and
- RDC, which applies the room depth criterion to any single-aspect rooms to check they are suitably sized relative to the size of their windows.

Even if the amount of daylight in a room, given by the ADF, is sufficient, Appendix C of the BRE guide notes that the overall daylight appearance will be impaired if its distribution is poor. For that reason, the NSL and RDC criteria should also be satisfied for the whole of the room to look adequately daylight. Nevertheless, it is very common for designers, developers and local planning officials to form a view on the adequacy of internal daylight conditions based on ADF results alone.

The ADF is a measure of the overall amount of daylight in a space. The BRE guide and BS 8206-2:2008, '*Code of practice for daylighting*' advise that in housing minimum recommended values of ADF are 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. The ADF calculation takes account of the amount of sky visible at the window, diffuse light transmittance of the glazing, effects of dirt on glass, frame and glazing bar correction, the area of the room surfaces and their surface reflectance. Reasonable parameters must be adopted and clearly stated and the view of sky should be measured accurately taking account of external obstructions, including balconies. Where groups of dwellings are planned, site layout design should aim to maximise the number of dwellings that meet the minimum ADF recommendations.

The BRE guide and BS8206-2:2008 suggest a number of default parameters that may be used in ADF calculations in early stages of design, including diffuse light transmittance of 0.68 for clean, clear double glazing, and average surface reflectance of 0.5 for fairly light-coloured rooms. Where glazing details and surface finishes are known the guides acknowledge that more accurate parameters may be used instead.

For sunlight, the overall sunlighting potential of a large residential development may be initially assessed by counting how many dwellings have a window to a main living room facing south, east or west. The aim should be to minimise the number of dwellings whose living rooms face solely north, north east or north west, unless there is some compensating factor such as an appealing view to the north. BS 8206-2 recommends that interiors where the occupants expect sunlight should receive at least 25% APSH, including at least 5% APSH in the winter months between 21 September and 21 March.

Proposed amenity spaces should be assessed on the equinox (21 March). The sunlighting requirements of each space may differ depending on use, but in general it will be considered adequately sunlit if at least half its area can receive at least two hours of sunlight on 21 March (the two-hours sun-on-ground test). Normally trees and shrubs, fences or walls less than 1.5 metres high and sunlight at an altitude of 10° or less are all ignored. Where a large building is proposed, it can be illustrative to plot shadow plots, as described above.