DAYLIGHT & SUNLIGHT STUDY

139 ALBERT STREET

Prepared by: Michael Harper

Reference: 3322

Date: 14th December 2006

Client:	Peter Bell Peter Bell Architects 78 Albert Street London NW1 7NR
Issue Date:	14th December 2006
Reason for Issue:	Daylight and Sunlight Study
Re:	139 Albert Street (3322)
Author:	Michael Harper
Authorisation for GIA:	GIA. .....

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Appendices

1.0 INTRODUCTION

GIA have been instructed to carry out a daylight and sunlight assessment into the impact from the proposed extension to 139 Albert Street on the rear of 61 Park Way. The scheme is that by Peter Bell Architects.

Our understanding of the existing site is shown on drawings 3322-01-02, whilst that of the extension is shown on drawings 3322-03-04.

We understand that there is concern from the Local Planning Authority in relation to loss of daylight and sunlight to the rear of 61 Park Way through the proposed extension.

Daylight and sunlight are normally assessed by reference to the Building Research Establishment (BRE) Guidelines. These specify various methods which have been included within this report for assessing impact in relation to daylight and sunlight.

2.0 SOURCES OF INFORMATION

Peter Bell Architects

Existing and Proposed Scheme Drawings

Dwg No. 991. 13a Seconf Floor Prop,

991.14a Third Floor Prop,

991.17 Elevations Prop,

991.18 Plan First Floor, 991.19 Rear Elev 139,

991.20 Floor Plans Ex, 991.21 Section & Elev Ex,

991.22 Floor Plans Prop,

991.23 Section & Elev Prop

Peter Bell Architects

Site Photographs

Promap Site Plan

GIA

Various Site Photographs

3.0 DAYLIGHT AND SUNLIGHT METHODOLOGY

Planning authorities assess the impact to daylight and sunlight by reference to the BRE Site Planning for Daylight and Sunlight by Paul Littlefair, 1991, referred to below as the BRE Guidelines.

The BRE Guidelines use two main methods for measuring daylight. These are known as the Vertical Sky Component (VSC) method and Average Daylight Factor (ADF) method.

The BRE Guidelines use the Annual Probable Sunlight Hours (APSH) method for measuring sunlight availability.

The BRE Guidelines indicate that these criteria should be used flexibly and in context of the location of the site. They were written with a suburban environment in mind, predominantly comprising two storey dwellings at least 20 metres apart. Clearly this situation is uncommon in a dense city centre location and therefore some reduction in these figures is likely to be acceptable.

3.1 VERTICAL SKY COMPONENT METHOD

For an existing building, the BRE document states:

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

- *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;*

or

- *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".*

It should be noted that this Vertical Sky Component method does not differentiate between a room served by a small window or a large window; thus a window the size of postage stamp on a wall would have the same Vertical Sky Component as a large window on the same wall.

The vertical sky component has several limitations

- It is a basic "rule of thumb"
- It takes no account of mitigating light sources to the room which the window assessment is being undertaken.
- It takes no account of the size of the window being assessed.
- It takes no account of the size of the room behind the window.
- It takes no account of the room use.
- It takes no account of any reflected light.

The BRE Guidelines then go on to suggest that if the Vertical Sky Component levels are not met then additional Average Daylight Factor analysis should be used to assess the internal daylight conditions to potentially affected rooms.

3.2 Average Daylight Factor Method

Appendix C of the BRE Guidelines gives the method and criteria for the average daylight factor method of assessment. This is derived from the British Standard BS8206 Part II and the CIBSE applications manual: Window Design, and contains advice and guidance on interior lighting.

The average daylight factor method is a method for assessing the daylight within a room taking into account the total area of glazing to that room the total area and volume of the room, the transmittance value of the glazing, the internal reflectivity of the room itself and allows for an allocation of a proportion of the light entering the room to be derived from reflected light off the obstacles and obstructions outside the window.

For dwellings, the BRE handbook suggests additional recommendations of minimum values which are as follows. A minimum of 2% for kitchens, a minimum of 1.5% for living rooms, a minimum of 1% for bedrooms.

3.3 APSH method of measuring sunlight availability

Sunlight only applies to windows that face within 90 degrees of due south.

The BRE calculated that where no obstructions exist, the total annual probable sunlight hours (APSH) would amount to 1486. The reference point is taken to be the centre of the window. The sunlight to a window is measured as a proportion of this potential 1486 annual probable sunlight hours in a year.

A summary is given in the BRE Guidelines for existing buildings as follows:-

"If a living room of an existing dwelling has a main window facing within 90 degrees of due south, and any part of a new development subtends an angle of more than 25 degrees to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if a point at the centre of the window, in the plane of the inner window wall, receives in the year less than one quarter of annual probable sunlight hours including at least 5% of annual probable sunlight hours between 21 September and 21 March and less than 0.8 times its former sunlight hours during either period."

4.0 DAYLIGHT AND SUNLIGHT ASSUMPTIONS

1. Where survey information has been lacking we have used site photographs and OS information to estimate as closely as possible the position of buildings and windows within their elevations.

2. We have not sought or obtained access to any of the adjoining properties and therefore have made reasonable assumptions as to the internal layouts of the rooms behind the fenestration. This is normal practice where access to adjoining properties is undesirable in terms of development confidentiality. Unless the building form dictates otherwise, we assume a standard 4.2m deep room (14ft) for residential properties and the 6m (20ft) deep for commercial properties.

3. Floor levels have been assumed for adjoining properties, as access has not been obtained. This dictates the level of the working plane which is the point at which No Sky Line assessments are carried out. It also impacts upon the Average Daylight Factor assessments as the floor to ceiling heights determine in part the volume of the space.

4. We have made best estimates as to the uses which are carried out legally within the adjoining properties in terms of commercial and residential. We have estimated these from external observation and the uses are identified in the report below.

5.0 DAYLIGHT AND SUNLIGHT RESULTS

We have assessed the impact from the proposed extension at 139 Albert Street on the rear of 61 Park Way. We have assessed the VSC and ADF for daylight and APSH for sunlight. These results are shown in Appendix 2.

The daylight results show that there will be no loss of either VSC, or ADF in relation to the proposed extension at 139 Albert Street. This is because the existing parapet on the northern flank wall of 139 Albert Street obscures the view from any of the windows within 61 Park Way of the extended part of 139 Albert Street. Therefore there can be no reduction of light to the windows of 61 Park Way. Therefore the level of retained

daylight will meet the BRE Guidelines, in accordance with the Local UDP Policy and will therefore be acceptable.

In relation to sunlight, for similar reasons to the fact that the daylight is unobstructed by the proposed extension at 139 Albert Street, the level of sunlight is also unaffected by the proposal. As before, this is because the extension does not protrude beyond the existing northern flank wall of 139 Albert Street and so cannot obstruct any further sunlight to 61 Park Way.

The views from the two windows on the lowest visible floor within the rear of 61 Park Way are shown on drawing 3320-05 in Appendix 1. These show Waldram Diagram views from the lowest two windows at the rear of 61 Park Way. They show that the existing and proposed situations are identical, when viewed from these two lowest windows. The green part of these drawings shows the existing massing, whilst that in red is that of the proposal. As the extension is behind this flank wall of 139 Albert Street, there is actually no difference between these two images.

6.0 CONCLUSION

This report details the daylight and sunlight assessment for the proposed extension at 139 Albert Street and its potential impact in relation to daylight and sunlight to the rear of 61 Park Way.

Detailed quantitative assessment has been carried out by reference to the BRE Guideline criteria.

The daylight and sunlight results show that there will be no loss of daylight and sunlight whatsoever to the rear of 61 Park Way, through the extension at 139 Albert Street. This is because the extension will be located behind the northern parapet wall of 139 Albert Street, such that no window within the rear of 61 Park Way will be able to see the proposed extension. Therefore there can be no loss of daylight or sunlight. Therefore the extension will be in accordance with the BRE Guidelines, the local UDP policy on daylight and sunlight and as such will be acceptable.

There is therefore no reason why this extension should be rejected on the basis of loss of daylight and sunlight to the rear of 61 Park Way.

APPENDIX 1

PARKWAY

ALBERT STREET

57

59

61

63

65

141

139

137

Sources of Information

Peter Bell Architects
Existing and Proposed Scheme Drawings
Dwg No. 991.13a Seconf Floor Prop,
991.14a Third Floor Prop,
991.17 Elevations Prop,
991.18 Plan First Floor, 991.19 Rear Elev 139,
991.20 Floor Plans Ex, 991.21 Section & Elev Ex,
991.22 Floor Plans Prop,
991.23 Section & Elev Prop

Peter Bell Architects
Site Photographs

Promap Site Plan

GIA
Various Site Photographs

Key

Rev	Description	Date

Project
139 Albert Street
London NW1

Title
Site Plan
Existing

Scale
1:200

Date
Dec 06

Drawn
MF/HP

Checked

Drawing No.
3322-01

Revision

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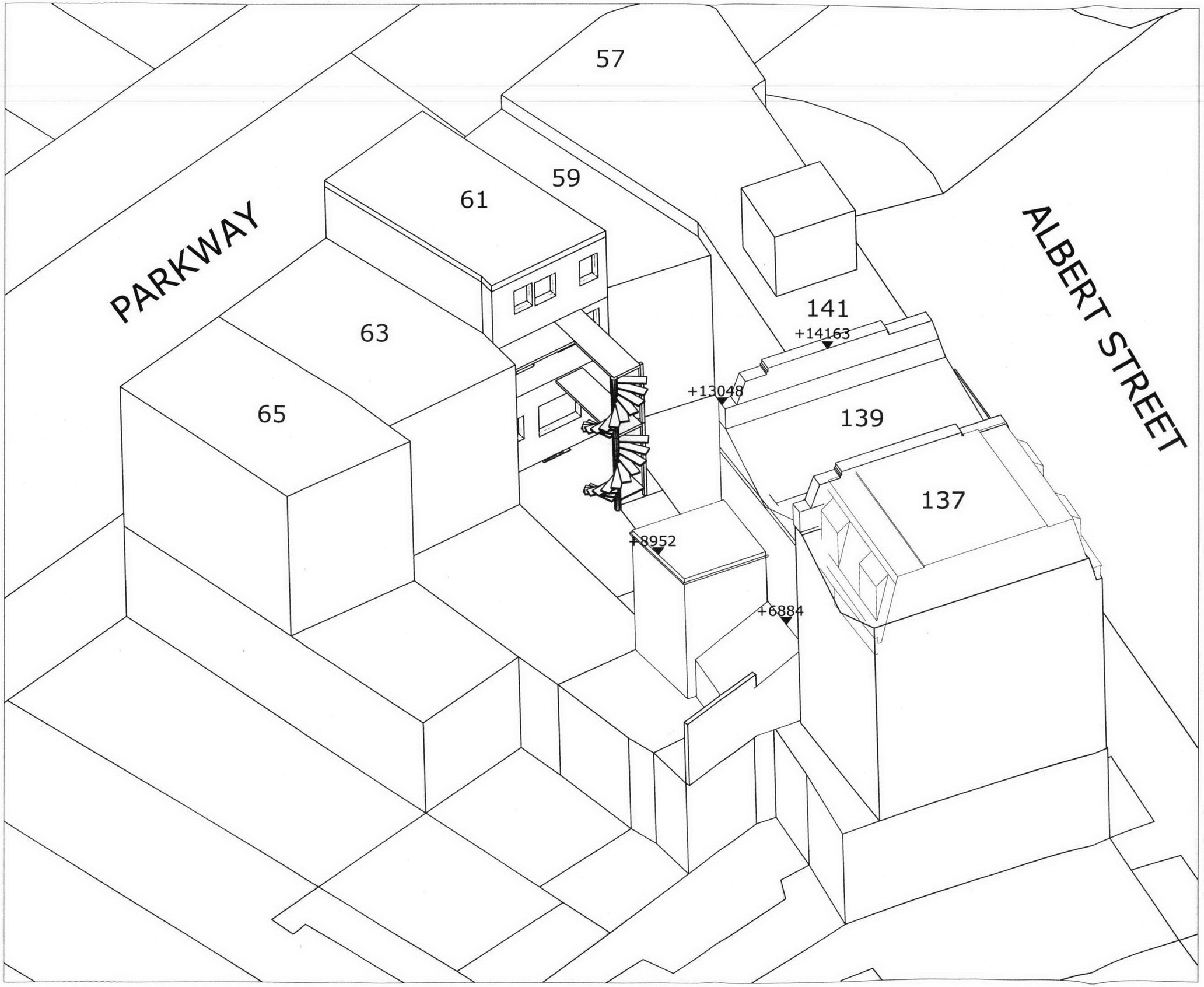

Sources of Information

Peter Bell Architects
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Dwg No. 991.13a Seconf Floor Prop,
991.14a Third Floor Prop,
991.17 Elevations Prop,
991.18 Plan First Floor, 991.19 Rear Elev 139,
991.20 Floor Plans Ex, 991.21 Section & Elev Ex,
991.22 Floor Plans Prop,
991.23 Section & Elev Prop

Peter Bell Architects
Site Photographs

Promap Site Plan

GIA
Various Site Photographs

Key

Rev	Description	Date

Project
139 Albert Street
London NW1

Title
3D View
Existing

Scale	Date
1:200	Dec 06
Drawn	Checked
MF/HP	
Drawing No.	Revision
3322-02	

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Sources of Information

Peter Bell Architects
Existing and Proposed Scheme Drawings
Dwg No. 991.13a Seconf Floor Prop,
991.14a Third Floor Prop,
991.17 Elevations Prop,
991.18 Plan First Floor, 991.19 Rear Elev 139,
991.20 Floor Plans Ex, 991.21 Section & Elev Ex,
991.22 Floor Plans Prop,
991.23 Section & Elev Prop

Peter Bell Architects
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Promap Site Plan

GIA
Various Site Photographs

Key

Rev	Description	Date

Project
139 Albert Street
London NW1

Title
Site Plan
Proposed

Scale
1:200

Date
Dec 06

Drawn
MF/HP

Checked

Drawing No.
3322-03

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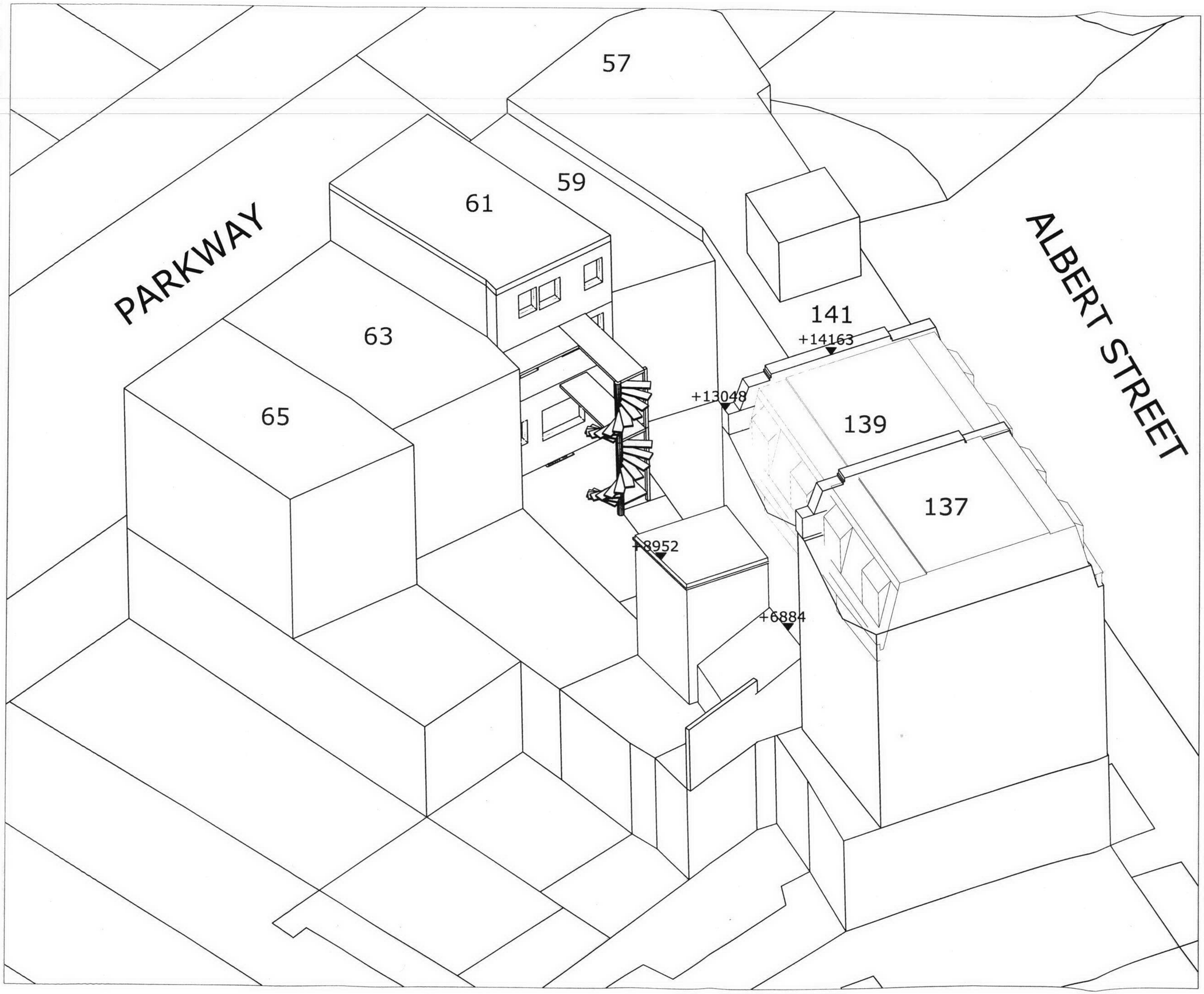

Sources of Information

Peter Bell Architects
Existing and Proposed Scheme Drawings
Dwg No. 991.13a Seconf Floor Prop,
991.14a Third Floor Prop,
991.17 Elevations Prop,
991.18 Plan First Floor, 991.19 Rear Elev 139,
991.20 Floor Plans Ex, 991.21 Section & Elev Ex,
991.22 Floor Plans Prop,
991.23 Section & Elev Prop

Peter Bell Architects
Site Photographs

Promap Site Plan

GIA
Various Site Photographs

Key

Rev	Description	Date

Project
139 Albert Street
London NW1

Title
3D View
Proposed

Scale
1:200

Date
Dec 06

Drawn
MF/HP

Checked

Drawing No.
3322-04

Revision

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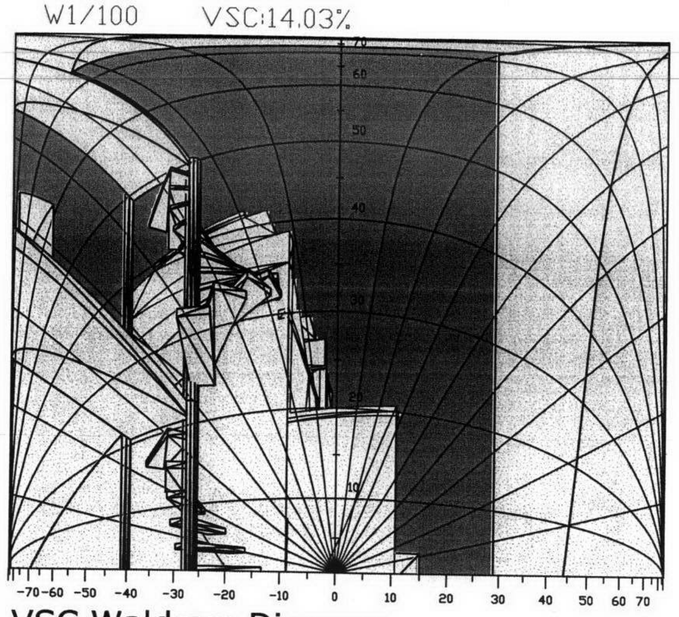
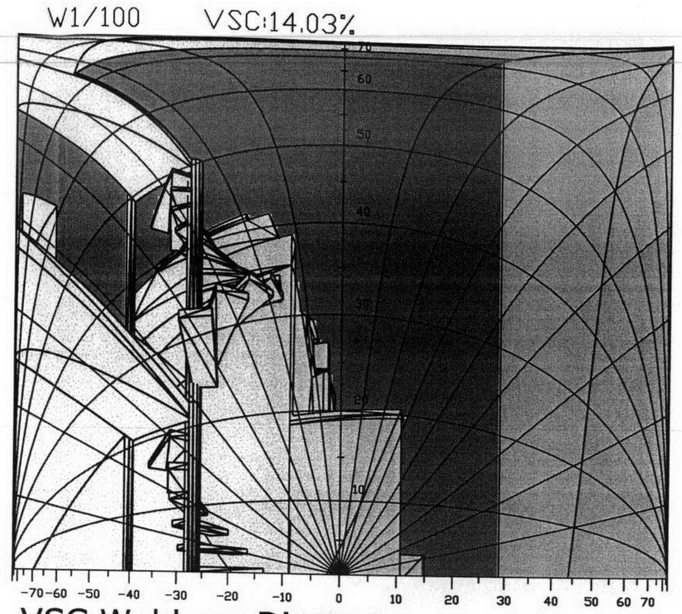
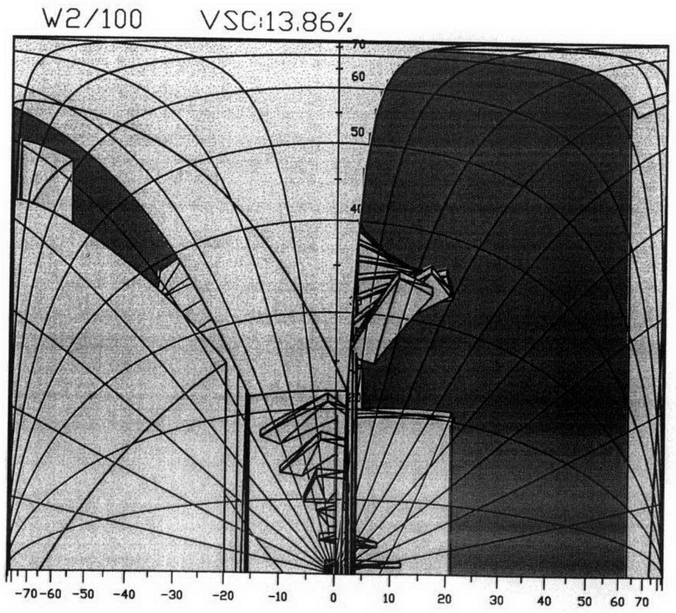


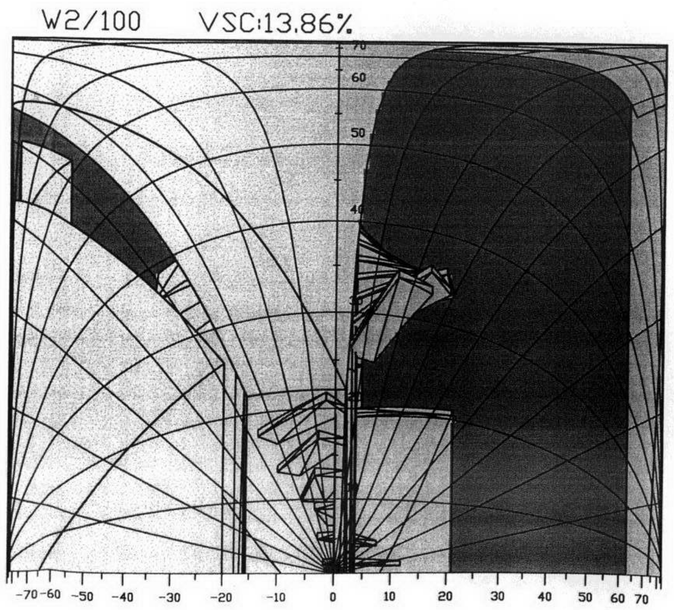
VSC Waldram Diagram
Window W1 On Level 100
Existing View



VSC Waldram Diagram
Window W1 On Level 100
Proposed View



VSC Waldram Diagram
Window W2 On Level 100
Existing View



VSC Waldram Diagram
Window W2 On Level 100
Proposed View

Sources of Information

Peter Bell Architects
Existing and proposed Scheme Drawings
Dwg No. 991.13a Second Floor Prop,
991.14a Third Floor Prop,
991.17 Elevations Prop,
991.18 Plan First Floor, 991.19 Rear Elev 139,
991.20 Floor Plans Ex, 991.21 Section & Elev Ex,
991.11 Floor Plans Prop,
991.23 Section & Elev prop

Peter Bell Architects
Site Photographs

Promap Site Plan

GIA
Various Site Photographs

Key

Rev	Description	Date

Project
139 Albert Street
London NW1

Title
Waldram Diagrams
VSC

Scale
NTS

Date
DEC 06

Drawn
HP/MF

Checked

Drawing No.
3322-05

Revision

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APPENDIX 2

Project No. 3322
Existing Vs Proposed Scheme
Release 01
Window Transmission: 0.68%

139 Albert Street
London NW1
Daylight Analysis

December 06

Room	Window	Room Use	Vertical Sky Component			Average Daylight Factor					
			Existing	Proposed	Loss	Existing		Proposed		Loss	
						ADF	Total	ADF	Total		
61 Parkway											
R1/100	W1/100		14.03	14.03	0.00	0.52		0.52			
R1/100	W2/100		13.86	13.86	0.00	1.54	2.06	1.54	2.06	0.00	0.00
R1/101	W1/101		9.43	9.43	0.00	0.57	0.57	0.57	0.57	0.00	0.00
R2/101	W2/101		10.33	10.33	0.00	0.55		0.55			
R2/101	W3/101		19.19	19.19	0.00	0.62	1.17	0.62	1.17	0.00	0.00
R1/102	W1/102		36.42	36.42	0.00	0.87		0.87			
R1/102	W2/102		35.99	35.99	0.00	1.05	1.93	1.05	1.93	0.00	0.00
R2/102	W3/102		34.91	34.91	0.00	1.18	1.18	1.18	1.18	0.00	0.00

Project No 3322
Existing Vs Proposed Scheme
Release 01

139 Albert Street
London NW1
Sunlight Analysis

December 06

Position	Existing Summer	Existing Winter	Existing Total	Proposed Summer	Proposed Winter	Proposed Total	% Loss Winter	% Loss Total
61 Parkway								
W1/100	17.00	5.00	22.00	17.00	5.00	22.00	0.00	0.00
W2/100	16.00	12.00	28.00	16.00	12.00	28.00	0.00	0.00
W1/101	4.00	10.00	14.00	4.00	10.00	14.00	0.00	0.00
W2/101	10.00	8.00	18.00	10.00	8.00	18.00	0.00	0.00
W3/101	28.00	4.00	32.00	28.00	4.00	32.00	0.00	0.00
W1/102	49.00	23.00	72.00	49.00	23.00	72.00	0.00	0.00
W2/102	49.00	23.00	72.00	49.00	23.00	72.00	0.00	0.00
W3/102	46.00	23.00	69.00	46.00	23.00	69.00	0.00	0.00

APPENDIX 3

PRINCIPLES OF DAYLIGHT AND SUNLIGHT

BACKGROUND

The quality of amenity for buildings and open spaces is increasingly becoming the subject of concern and attention for many interested parties.

Historically the Department of Environment provided guidance of these issues and, in this country, this role has now been taken on by the Building Research Establishment (BRE), the British Standards Institution (BSI) and the Chartered Institute of Building Services Engineers (CIBSE). Fortunately they have collaborated in many areas to provide as much unified advice as possible in these areas.

Further emphasis has been placed on these issues through the European directive that Environmental Impact Assessments (EIA's) are required for large projects. Part of these assessments includes the consideration of the micro-climate around and within a proposal. The EIA requires a developer to advise upon, amongst other matters, the quality of and impact to daylight, sunlight, overshadowing, solar glare and light pollution.

It is also clear, particularly through either adopted or emerging Unitary Development Plans (UDP's), that local Authorities take this matter far more seriously than they previously did. There are many instances of planning applications being refused due to impact on daylight and sunlight to neighbouring properties and proportionately more of these refusals are appealed by applicants.

Where developers are seeking to maximise their development value, it is often in the area of daylight and sunlight issues that they may seek to 'push the boundaries'. Local Authorities vary in their attitude of how flexible they can be with worsening the impact on the amenity enjoyed by neighbouring owners. In city centres, where there is high density, it can be the subject of hot debate as to whether further loss of amenity is material or not. There are many factors that need to be taken into account and therefore each case has to be considered on its own merits. Clearly, though, there are governing principles which direct and inform on the approach that is taken.

These principles are effectively embodied within the UDP's and the guidance they expressly rely upon. For example, in central London, practically all of the Local Authorities expressly state they will not permit or encourage developments which create a material impact to neighbouring buildings or amenity areas. Often the basis on what is constituted as 'material' will be derived specifically from the BRE Guidelines. Their guidelines were produced in 1991, as a direct commission from the Department of the Environment, and entitled 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice'.

These guidelines are normally the only official document used by local Authorities and consequently they are referred to extensively by designers, consultants and planners. Whilst they are expressly not mandatory and state that they should not be used as an instrument of planning policy, they are heavily relied upon as they advise on the approach, methodology evaluation of impact in daylight and sunlight matters.

THE BRE GUIDELINES

The BRE give criteria and methods for calculating daylight, and sunlight and to some degree overshadowing and through that approach define what they consider as a material impact. As these different methods of calculation vary in their depth of analysis, it is often arguable as to whether the BRE definition of 'material' is applicable in all locations and furthermore if it holds under the different methods of calculation.

As the majority of the controversial daylight and sunlight issues occur within city centres these explanatory notes focus on the relevant criteria and parts of the Handbook which are applicable in such locations.

In the Introduction of 'Site Layout Planning for Daylight and Sunlight' it states that:-

> *"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of many factors in site layout design (see Section 5). In special circumstances the developer or Planning Authority may wish to use different target values. For example, in an historic city centre a higher degree of*
> *Obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings".*

Again, the second paragraph of Chapter 2.2 of the document states:-

The reason for including these statements in the Report is to appreciate that when quoting the criteria suggested by the BRE, they should not necessarily be considered as appropriate. However, rather than suggest alternative values, consultants in this field often remind local Authorities that this approach is supportable and thus flexibility applied.

MEASUREMENT AND CRITERIA FOR DAYLIGHT & SUNLIGHT

The BRE handbook provides two main methods of measurement of calculating daylight which we use for the assessment in our Reports. In addition, in conjunction with the BSI and CIBSE it provides a further method in Appendix C of the Handbook. In relation to sunlight only one method is offered for calculating sunlight availability for buildings. There is an overshadowing test offered in connection with open spaces.

DAYLIGHT

In the first instance, if a proposed development falls beneath a 25° angle taken from a point two metres above ground level, then the BRE say that no further analysis is required as there will be adequate skylight (i.e. sky visibility) availability.

The three methods for calculating daylight are as follows:

(a) Vertical Sky Component (VSC)

(b) No Sky Contours (NSC)

(c) Average Daylight Factor (ADF)

Each are briefly described below.

(a) Vertical Sky Component

Methodology

This is defined in the Handbook as:-

Ratio of that part of luminance, at a point on a given vertical plane, that is received directly From a CIE Standard Overcast Sky, to illuminate on a horizontal plane due to an unobstructed hemisphere of this sky.

"Note that numerical values given here are purely advisory. Different criteria may be used, based on the requirements for daylighting in an area viewed against other site layout constraints".

The ratio referred to in the above definition is the percentage of the total unobstructed view that is available, once obstructions, in the form of buildings (trees are excluded) are placed in front of the point of view. The view is always taken from the centre of the outward face of a window.

This statement means, in practice that if one had a totally unobstructed view of the sky, looking in a single direction, then just under 40% of the complete hemisphere would be visible.

The measurement of this vertical sky component is undertaken using two indicators, namely a skylight indicator and a transparent direction finder. Alternatively a further method of measuring the vertical sky component, which is easier to understand both in concept and analysis, is often more precise and can deal with more complex instructions, is that of the Waldram diagram.

The point of reference is the same as for the skylight indicator. Effectively a snap shot is taken from that point of the sky in front of the window, together with all the relevant obstructions to it, i.e. the buildings.

An unobstructed sky from that point of reference would give a vertical sky component of 39.6%, corresponding to 50% of the hemisphere, and therefore the purpose of the diagram is to discover how much sky remains once obstructions exist in front of that point.

The diagram comes on an A4 sheet (landscape) and this sheet represents the unobstructed sky, which in one direction equates to a vertical sky component of 39.6%. The obstructions in front of a point of reference are then plotted onto the diagram and the resultant area remaining is proportional to the vertical sky component from that point.

<u>Criteria</u>

The BRE Handbook provides criteria for:

(a) New Development

(b) Existing Buildings

A summary of the criteria for each of these elements is given and these are repeated below:-

New Development

Summary

In general, a building will retain the potential for good interior diffuse daylighting provided that on all its main faces:-

(a) no obstruction, measured in a vertical section perpendicular to the main face, from a point 2m above ground level, subtends an angle of more than 25 degrees to the horizontal;

(b) If (a) is not satisfied, then all points on the main face on a line 2m above ground level are within 4m (measured sideways) of a point which has a vertical sky component of 27% or more.

Existing Buildings

Summary

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

(a) 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;

or

(b) 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.

The VSC calculation has, like the other two methods, both advantages and disadvantages. In fact they are tied together. It is a quick simple test which looks to give an early indication of the potential for light. However, it does not, in any fashion, indicate the quality of actual light within a space. It does not take into account the window size, the room size or room use. It helps by indicating that if there is an appreciable amount of sky visible from a given point there will be a reasonable potential for daylighting.

(b) No Sky Contours

This is the part (b) of the alternative method of analysis which is given under the Vertical Sky Component heading in this Appendix. It is similar to the VSC approach in that a reduction of 0.8 times in the area of sky visibility at the working plane may be deemed to adversely affect daylight. It is however, very dependent upon knowing the actual room layouts or having a reasonable understanding of the likely layouts. The contours are also known as daylight distribution contours. They assist in helping to understand the way the daylight is distributed within a room and the comparisons of existing and limitations of proposed circumstances within neighbouring properties. Like the VSC method, it relates to the amount of visible sky but does not consider the room use in its criteria, it is simply a test to assess the change in position of the No Sky Line, between the existing and proposed situation. It does take into account the number and size of windows to a room, but does not give any quantative or qualative assessment of the light in the rooms, only where sky can or cannot be seen.

(c) Average Daylight Factor

This is defined in Appendix H of the BRE Document as:

Ratio of total daylight flux incident on the working plane, expressed as a percentage of the outdoor illuminance on a horizontal plane due to an unobstructed CIE Standard Overcast Sky.

This factor considers interior daylighting to a room and therefore is a more accurate indication of available light in a given room, if details of the room size and use are available.

<u>Criteria</u>

The British Standard, BS8206 Part II gives the following recommendations for the average daylight factor (ADF) in dwellings.

The BRE Handbook provides the formula for calculating the average daylight factor. If the necessary information can be obtained to use the formula then this criteria would be more useful.

Room	Percentage
Kitchen	2%
Living Rooms	1.5%
Bedrooms	1%

It is sometimes questioned whether the use of the ADF is valid when assessing the impact on neighbouring buildings. Firstly, it is often the case that room layouts and uses may not have been established with certainty. Additionally this method is not cited in the main body of text in the BRE Guidelines but only in Appendix C of that document. It is however, the principal method used by both the British Standard and CIBSE in their detailed daylight publications with which the BRE guide recommends that it should be read.

The counter-argument to this view is that whilst room uses and layouts may be not definitely established, reasonable assumptions can easily be made to give sufficient understanding of the likely quality of light. Building types and layouts for certain buildings, particularly residential, are often similar. In these circumstances reasonable conclusions can be drawn as to whether a particular room will have sufficient light against the British Standards. In addition, the final result is less sensitive to changes in the room layout that the No Sky Contour method as it is an average and this element represents only one of the input factors. It is in cases where rooms sizes have been assumed a more reliable indicator than the No Sky Line method.

Clearly if a room which is being designed for a new development is deemed to have sufficient light against the British Standards, then it should equally follow for a room assessed in a neighbouring existing building.

The average daylight factor considers the light within the room behind the fenestration which serves it. The latter is therefore likely to be more accurate because it takes into account the following:-

a) All the windows serving the room in question.

b) The room use.

c) The size and layout of the room.

d) The finishes of the room surfaces.

New Development

Summary

In general, a dwelling or non-domestic building which has a particular requirement for sunlight, will appear reasonably sunlit provided that:

(a) at least one main window wall faces within 90 degrees of due south;

and

(b) on this window wall, all points on a line 2m above ground level are within 4m (measured sideways) of a point which receives at least a quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months, between 21 September and 21 March.

Existing Buildings

Summary

If a living room of an existing dwelling has a main window facing within 90 degrees of due south, and any part of a new development subtends an angle of more than 25 degrees to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if a point at the centre of the window, in the plane of the inner window wall, receives in the year less than one quarter of annual probable sunlight hours including at least 5% of annual probable sunlight hours between 21 September and 21 March and less than 0.8 times its former sunlight hours during either period.

It will be noted that the BRE clearly separate summer from winter and indicate that a 20% reduction for either may be material. The Handbook also states that *"To find out whether an existing building still receives enough sunlight, the British Standard can be used. It is suggested that all main living rooms of dwellings and conservatories, should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun ..... The British Standard recommends that a 'window reference point', at the centre of each window on the plane of the inside surface of the wall, should be used for the calculations"* and thus this practice gives greater consideration to the effect on the main window of a living room.

(b) Area of Permanent Shadow

The BRE Handbook, 'Site Layout Planning for Daylight and Sunlight' also provides criteria for open spaces.

In particular it gives guidance for calculating any areas of open space that may be in permanent shadow on 21 March. There is no criteria for the overshadowing of buildings.

In summary the BRE document states the following:-

"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".

In relation to general overshadowing we often provide, where appropriate, an hourly record for existing and proposed situations, the effect of overshadowing on December 21st. March 21st and June 21st.

For open spaces the permanent shadow criteria is naturally adopted but this offers limited understanding of how a space will feel or appear generally.

CITY CENTRES

The introduction of the BRE document gives the example of *'historic city centres'* being a case where there is the need for flexibility and altering the target values for criteria when appropriate, to reflect other site and layout constraints.

To explain why it is appropriate to alter these values, one needs to go further into the BRE Handbook to examine how the criteria for the vertical sky component criteria was determined and the reason therefore for varying the criteria in City Centres.

Appendix G of the document is dedicated to the use of alternative values and, it also demonstrates the manner in which the criteria for skylight was determined for the Summary given above, i.e. the need for 27% vertical sky component for adequate daylighting.

This figure of 27% was achieved in the following manner:

A theoretical road was created with two storey terraced houses upon either side, approximately twelve metres apart. The houses have windows at ground and first floor level, and a pitched roof with a central ridge.

Thereafter, a reference point was taken at the centre of a ground floor window of one of the properties and a line was drawn from this point to the central ridge of the property on the other side of the road. The angle of this line equated to 25 degrees (the 25 degrees referred to in the summaries given with reference to the criteria for skylight).

This 25 degrees line obstructs 13% of the totally unobstructed sky available, leaving a resultant figure of 27% which is deemed to give adequate daylighting. This figure of 27% is the recommended criteria referred to earlier in this report. It will be readily appreciated that in a City Centre, this kind of urban form is unlikely and is impractical. It would therefore be inappropriate to consider values for two storey terraced housing in a City Centre.

It is therefore sometimes necessary to apply different target criteria or at least acknowledge that the recommendations in the BRE cannot be achieved.

In addition, it is often the case that residential buildings within city centres are served by balconies. Balconies restrict lighting levels even more and thus if they were to be rigidly taken into account, a neighbouring proposal would be artificially and inappropriately constrained. This view is supported by the BRE and is equally another reason for flexible and sensible interpretation of the guidelines.