

UCL

Astor College, Charlotte Street

Daylight/sunlight Assessment

February 2015

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Proposed Development of Astor College, Charlotte Street, London W1 Daylight and Sunlight Report

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19 February 2015

Dear Sirs

Astor College, Charlotte Street, London W1 – Daylight and Sunlight Advice

We enclose our report ("the report") on Astor College, Charlotte Street, which has been prepared for the sole purpose of assisting and advising University College London in accordance with our completed task form ("the engagement") dated May 2010. This report includes information provided by you, and your architects/consultants, details of which are clearly referenced in the report.

This Report has been prepared for you and on the understanding that it will be made publically available on the London Borough of Camden's website. All copyright and other proprietary rights in the Report remain the property of Deloitte LLP and any rights not expressly granted in these terms or in the Contract are reserved. No party other than Transport for London is entitled to rely on the Report for any purpose whatsoever and thus we accept no liability to any other party who is shown or gains access to this document. The Report makes use of a range of third party data sources. Whilst every reasonable care has been taken in compiling this Report, Deloitte cannot guarantee its accuracy.

Neither the whole nor any part of this Report nor any reference thereto may be included in any published document, circular or statement nor published in any way without our written approval as to the form and context in which it may appear.

We have not commented on the terms of any transaction with Astor College, as this is outside our remit. We have not been asked to advise on cost, town planning or legal matters, although our work shall inevitably interface with these elements. As noted in the engagement, the focus of the review is limited to the Astor College. Charlotte Street, property only.

. Yours faithfully

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Deloitte LLP

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1 Introduction

- 1.1 Deloitte LLP has been appointed by University College London to undertake a daylight and sunlight study in respect of the proposed development of Astor College, Charlotte Road, London W1.
- 1.2 This report assesses the potential daylight and sunlight impacts to the proposed residential scheme known as Middlesex Hospital Annex, 44 Cleveland Street, London W1, as detailed in the Development Management Forum report, dated 27 March 2014, which result from the Astor College proposals.
- 1.3 The assessment in this report is based on land survey information and the following plans and elevations supplied by Levitt Bernstein Architects.

Drawing Name	Number	Date
Proposed Elevations	2869 L251 – L252	September 2014
Proposed Floor Plans	2869 L099 – L103	September 2014
Proposed Sections	2869 L201 – L202	September 2014

2 Executive Summary

- 2.1 The proposed site is located within the London Borough of Camden and the potential impacts have therefore been assessed in accordance with its current planning policies and the recommendations set out in the BRE guidelines.
- 2.2 The results show that the vast majority of windows to the proposed Middlesex Hospital Annex residential scheme will experience negligible reductions of daylight and sunlight in accordance with the BRE guidelines.
- 2.3 The remaining rooms that are achieving levels of daylight below the recommended guidelines are located underneath deep balconies and overhangs. The balcony significantly reduces the ability of natural light to reach the window and therefore there should be a trade-off between providing amenity space and natural light within the rooms below. These balconies significantly reduce the ability of natural light to reach the window and therefore would unduly burden the Astor College scheme.
- 2.4 The Annual Probable Sunlight hours (APSH) assessment results show that all of the windows to the proposed Middlesex Hospital Annex residential scheme, that face within 90° of due south, exceed the BRE guidelines criteria, they continue to receive at least 25% APSH of which 5% are in the winter months in the proposed scenario or experience a ratio reduction of above 0.8 times its former value.
- 2.5 There are no areas requiring an overshadowing assessment.
- 2.6 Overall, taking into account the urban location of the site, these findings show that the proposed redevelopment of Astor College will have a negligible impact on the proposed Middlesex Hospital Annex residential scheme, and can therefore be considered acceptable and in accordance with the London Borough of Camden's planning policy.

3 Planning Policy

3.1 The proposed site is located within the London Borough of Camden (Camden) and the proposals have therefore been considered against Camden's Core Strategy (2010). In particular the proposals have been considered against Development Policies section DP26 which states:

Visual privacy, overlooking, overshadowing, outlook, sunlight and Daylight

a development's impact on visual privacy, overlooking, overshadowing, outlook, access to daylight and sunlight and disturbance from artificial light can be influenced by its design and layout, the distance between properties, the vertical levels of onlookers or occupiers and the angle of views. These issues will also affect the amenity of the new occupiers. We will expect that these elements are considered at the design stage of a scheme to prevent potential negative impacts of the development on occupiers and neighbours. To assess whether acceptable levels of daylight and sunlight are available to habitable spaces, the Council will take into account the standards recommended in the Building Research Establishment's Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice (2011).

3.2 In addition, the proposals have also been considered against Camden Planning Guidance CPG6 which states:

The Council expects that all developments receive adequate daylight and sunlight to support the activities taking place in that building.

- 3.3 As cited within Camden's core strategy (2010) the above policy has been considered utilising the standards and recommendations set out in the BRE guidelines.
- 3.4 P J Littlefair (2011) "Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice, Second Edition", Building Research Establishment Report 209.

4 Daylight, Sunlight and Overshadowing Methodology

4.1 Generally

- 4.1.1 It is clear that much greater emphasis is now being placed upon amenity. With any new construction project, consideration has to be given to not just the new building itself but more particularly to all surrounding adjoining buildings and the surrounding outside amenity spaces. Environmental Impact Assessments are now required for large projects and local authorities in their Unitary Development Plans or Local Development Framework documents have to be aware of the issue. Most local authorities now specifically refer to daylight/sunlight impacts and how they will not find acceptable any developments causing a detrimental effect on adjoining buildings and open spaces.
- 4.1.2 This is a report from the previous page.
- 4.1.3 The introduction to the BRE guidelines makes the following statements:

"If these guidelines on site layout are followed, along with the detailed window design guidance in BS 8206-02 and Lighting guide: daylighting and window design, there is the potential to achieve good daylighting in new buildings, and retain it in existing buildings nearby."

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and the guide 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 since 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 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. Alternatively, where natural light is of special importance in a building, less obstruction and hence more sunlight and daylight may be deemed necessary."

4.1.4 This is the statement most widely used to justify daylight/sunlight reductions for inner city or town centre developments.

4.2 Daylight Measurement

- 4.2.1 The BRE guidelines have a number of methods of assessing daylighting levels.
- 4.2.2 The first of these methods is to strike a line at an angle of 25° from the centre of existing windows. If the profile of the proposed building subtends an angle greater then 25° then the second test needs to be applied. Deloitte LLP do not usually use the first method, as it does not always reflect the differing heights and layouts of a proposed development. In tight City sites it is virtually impossible in any case to build below an angle of 25°. From reviewing Appendix F of the BRE guidelines it is clear that this angle arises from a theoretical situation with two storey terraced houses either side of a road approximately 12m apart and each house will then be just below the 25 degree line.

- 4.2.3 The second test is a more accurate method of analysing daylighting levels and most commonly used. A pass rate of 27% Vertical Sky Component (VSC) is given in the BRE guidelines. (Indeed this is the VSC achievable when the two storey terraced houses are placed either side of the road 12m apart.)
- 4.2.4 However if a window does not achieve the 27% Vertical Sky Component in the proposed condition, then the third test is used. This involves calculating the Vertical Sky Component of the window in the existing situation, i.e. before redevelopment, and then with the new development in place. If when the Vertical Sky Component, with the new development in place, is both less than 27% and less than 0.8 its former value, then the occupants of the adjoining building will notice the reduction in the amount of skylight.
- 4.2.5 There is a secondary test which should be used in assessing daylight known as the "no-sky line" assessment or daylight distribution. The no-sky line divides points on the working plane which can and cannot see the sky the working plane being 850mm in houses and 700mm in offices. Different heights might be appropriate with different building uses. The BRE advise that areas beyond the no-sky line usually look more dark and gloomy than those in front of the no-sky line. Plotting the no-sky line contours before and after a development depends upon knowing the actual room layouts and floor to window cill/head heights which is as critical as knowing how each room is used.
- 4.2.6 An alternative daylighting method, which is mainly used for internal daylighting levels of new residential construction rather than existing, is demonstrated in Appendix C of the BRE guidelines. This summarises the British Standard Average Daylight Factor test, which assesses the size of the windows in relation to the size of the rooms. The daylighting calculations use the formula as set out in the British Standard document "Lighting for buildings Part 2: Code of practice for daylighting" BS 8206-2:2008. The recommended minimum values of the Average Daylight Factor in dwellings are 1% for bedrooms, 1.5% for living rooms and 2% for kitchens.
- 4.2.7 Certain constants are normally assumed in the formula, these being the internal surface reflectance values within the room and the diffuse transmittance value of the glass.
- 4.2.8 The diffuse transmittance value of glass is one important factor within an internal daylighting assessment as there are many different glazing specifications. Transmittance depends on the thickness of the glass used, the colour of the glass and whether there is any specific reflective material or fritting applied. In the BS a table is provided which suggests standard values for different glazing types.
- 4.2.9 The new 2008 BS has suggested that any direct transmittance values stated by manufacturers have to be reduced by 0.91 times to take into account the diffused transmittance values. Whilst this is a highly technical issue it now means that the glazing manufacturers' statistical data cannot be relied on.
- 4.2.10 In addition to the correction factor of 0.91 added to the glazing manufacturers' direct transmittance values, the latest British Standard also suggests that a maintenance factor value is applied to domestic properties. The BS and the BRE guidelines advise that any glazing below working plane height is given an additional factor, suggested to be the average reflectance of the floor surface. The maintenance factor allows for the reduction of daylight transmittance due to dirt on the glass and the additional factor for low level glazing is due to the fact that any light entering the room through this portion of the glass has to be reflected off at least two surfaces before getting to the working plane.
- 4.2.11 The Code for Sustainable Homes has a section of relevance here namely Category 7 Health and Wellbeing. Daylighting, which provides 3 credits, is the relevant part of this category and is made up of three criteria giving a credit each. The three credits need to be put into the context of the whole of the section called Health and Wellbeing where 12 is the maximum number of credits or points. Over the whole of the Code the total maximum is 104 credits or points so daylighting is therefore a very small proportion.

4.2.12 The three criteria are:-

Kitchens must achieve a minimum average daylight factor of at least 2%.

All living rooms, dining rooms and studies (including any room designated as a home office under Ene 9 – Home Office) must achieve a minimum average daylight factor of at least 1.5%.

80% of the working plane in kitchens, living rooms, dining rooms and studies (including any room designated as a home office under Ene 9 – Home Office) must receive direct light from the sky.'

- 4.2.13 The average daylight factor analysis has been explained above and covers the first two criteria. From experience only the living rooms are likely to achieve the suggested values as most modern designs have small kitchens with little or no window provision.
- 4.2.14 The third criteria is where the Code for Sustainable Homes requires 80% of the working plane in all the habitable rooms, namely kitchens, living rooms, dining rooms and studies to receive light from the sky under the "View of the Sky" assessment.
- 4.2.15 However when reviewing the mathematics of figure F1 on page 69 of the BRE document, Appendix F, it is clear that it is virtually impossible to meet this standard. Taking the view that the head height to windows could only be a maximum of say 2.3m then the angle coming from the back of a room 4m deep straight out over any obstruction opposite will be very low and would have to be unobstructed.
- 4.2.16 To comply it would be necessary to have very tall and wide windows with head heights at the maximum of 2.3m and a significant distance to any obstruction. Clearly this has significant implications for town planning.

4.3 Sunlight Measurement

- 4.3.1 The BRE guidelines use the skylight indicator at the same reference points as the daylighting assessment to calculate the Annual Probable Sunlight Hours (APSH), which is expressed as a percentage.
- 4.3.2 The guidelines say with regard to <u>new</u> developments that:

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

at least one main window wall faces within 90° of due south and

the centre of at least one window to a main living room can receive 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months, between 21 September and 21 March....

.....Where groups of dwellings are planned, site layout design should aim to maximise the number of dwellings with a main living room that meets the above recommendations."

4.3.3 In the case of <u>adjoining</u> buildings the BRE guidelines state ...

"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:

- receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September and 21 March and
- receives less than 0.8 times its former sunlight hours during either period and

- has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours."
- 4.3.4 In summary each window should achieve at least 25% annual probable sunlight hours of which 5% should be in winter months. Where this is not achieved a reduction in comparison to the existing condition should not be less than 0.8, and there should not be a reduction over the whole year of more than 4% of annual probable sunlight hours.

4.4 Overshadowing Measurement

- 4.4.1 The BRE guidelines make the point that sunlight is important in the spaces between buildings and should normally be checked for the following:-
 - gardens, usually the main back garden of a house
 - parks and playing fields
 - children's playgrounds
 - outdoor swimming pools and paddling pools
 - sitting out areas, such as those between non-domestic buildings and in public squares
 - focal points for views, such as a group of monuments or fountains'
- 4.4.2 The guidelines state that sunlight at an altitude of 10° or less does not count and summarise ...

"It is recommended that for it to appear adequately sunlit throughout the year, at least half of a 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."

4.4.3 The guidance applies both to new gardens and amenity areas and to existing ones which are affected by new developments. The guidelines mention that *"relatively small"* front gardens should be omitted from any analysis.

5 Surrounding Residential Properties

- 5.1 Following a site visit and checks via the Valuations Office Agency website, we are satisfied that there are no existing residential properties within the vicinity of the proposed extension to Astor College. However, we have been asked by the London Borough of Camden to consider the latest proposals for the adjacent site known as Middlesex Hospital Annex, 44 Cleveland Street, London W1, as detailed in the Development Management Forum report dated 27 March 2013. A site plan highlighting the location of the above residential scheme is included at Appendix A.
- 5.2 The Middlesex Hospital Annex site is located to the west of Astor College. It is understood that the proposal for the Middlesex Hospital Annex is for it to be split into various flats. Daylight assessments have therefore been undertaken to all windows facing the proposed site. Sunlight assessments have also been undertaken for all of the habitable room windows facing the development site that are orientated within 90° of due south.
- 5.3 There are no areas that require an overshadowing assessment.

6 Assessment Results

- 6.1 The daylight, sunlight and overshadowing assessments have been undertaken using a 3D model of the site and surrounding buildings using bespoke computer software. The 3D model has been built from land survey information combined with the architect's proposals.
- 6.2 Our assessment of the Middlesex Hospital Annex is based on the limited scheme information proposals found in the public domain and the London Borough of Camden's planning website. As a result, some of the information used is limited in areas and is not comprehensive. Some is also not to scale and we have therefore had to make some assumptions in order to carry out our assessment. This report can therefore not be relied upon, as some of our results may prove to be inaccurate. We would therefore recommend that a further assessment is carried out once detailed design information for the Middlesex Hospital Annex becomes available.
- 6.3 A full set of the VSC, NSL and APSH results are set out in Appendix B.

Middlesex Hospital Annex, 44 Cleveland Street

- 6.4 We have analysed all windows that would face towards the Astor College. It should be noted that the VSC test results show that out of 152 windows assessed only 19 windows would receive 27% VSC, in the existing condition.
- 6.5 Under the proposed Astor College scheme, 107 windows would exceed the BRE guideline criteria for daylight, experiencing a ratio reduction of 0.8 times their former value or above.
- 6.6 It should be noted that the proposed neighbouring scheme would experience poor levels of light under the existing condition, regardless of whether or not the proposed Astor College went ahead with the proposed scheme.
- 6.7 The remaining forty five windows that would experience a ratio reduction below that recommended by the BRE guidelines serve either bedrooms or combined kitchen and living rooms some of which are dual aspect.
- 6.8 Having taken the VSC results into account, we have also assessed the NSL and out of the 75 rooms tested, only 5 rooms would experience ratio reductions below 0.8 times their former value. Although these windows would have low daylight levels, it should be noted that the proposals for Middlesex Hospital Annex, suggest that the majority of these affected flats would be provided with their own amenity space which should be seen as a direct trade off for the lower test results.
- 6.9 It is important to note that the majority of the windows that would experience a ratio reduction of below 0.8 are for rooms that would achieve low levels of daylight below the recommended guidelines because they are located underneath deep balconies and overhangs. These balconies significantly reduce the ability of natural light to reach the window and therefore would unduly burden the Astor College scheme.
- 6.10 Overall, when taking into account the urban context of the site, the results can be considered acceptable with a good level of compliance to the BRE guidelines.

Appendix A – Site Plan



Appendix B – Daylight and Sunlight Results



















Vertical Sky Component Results Table			ble	Vertical Sky Component Results Table								
W	indow		Eviating	Dranaad	Datia Daduatian		W		Eviating	Proposed	Datia Daduatian	
Name	Level	Number	Existing	Proposed	Ratio Reduction		Name	Level	Number			
Kit/Living	-01	1	5.46	5.60	1.02		bedroom	01	48	19.44	19.50	1.00
Kit/Living	-01	2	6.97	5.02	0.72		Kit/Living	01	49	8.17	8.29	1.01
Kit/Living	-01	3	6.86	4.66	0.68		Kit/Living	01	50	1.85	2.23	1.21
Kit/Living	-01	4	7.10	4.39	0.62		Kit/Living	01	51	2.07	2.28	1.10
Kit/Living	-01	5	7.60	4.37	0.58		Kit/Living	01	52	2.88	2.35	0.82
Bedroom	-01	6	8.52	4.33	0.51		Kit/Living	01	53	5.34	2.91	0.55
Bedroom	-01	7	8.73	4.09	0.47		Bedroom	01	54	11.73	5.60	0.48
Kit/Living	-01	8	8.03	4.11	0.51		Bedroom	01	55	11.47	4.67	0.41
Kit/Living	-01	9	7.95	4.64	0.58		Kit/Living	01	56	4.01	2.38	0.59
Bedroom	-01	10	8.47	6.15	0.73		Kit/Living	01	57	3.89	3.56	0.92
Kit/Living	-01	11	8.23	6.65	0.81		Bedroom	01	58	10.75	7.80	0.73
Kit/Living	-01	12	8.38	7.29	0.87		Kit/Living	01	59	4.26	3.65	0.86
Bedroom	-01	13	9.11	8.61	0.95		Kit/Living	01	60	4.57	5.70	1.25
Bedroom	-01	14	9.46	9.32	0.99		Bedroom	01	61	11.77	12.34	1.05
Kit/Living	-01	15	9.33	9.61	1.03		Bedroom	01	62	13.22	13.45	1.02
Kit/Living	-01	16	8.76	9.39	1.07		Kit/Living	01	63	11.91	12.70	1.07
Kit/Living	-01	17	8.54	9.29	1.09		Kit/Living	01	64	5.75	6.91	1.20
Kit/Living	-01	18	8.55	9.39	1.10		Kit/Living	01	65	3.75	5.12	1.36
Kit/Living	-01	19	8.83	9.75	1.10		Kit/Living	01	66	3.59	5.55	1.55
Kit/Living	-01	20	20.59	20.86	1.01		Kit/Living	01	67	4.70	6.85	1.46
bedroom	00	21	2.97	2.97	1.00		Kit/Living	01	68	29.15	29.41	1.01
bedroom	00	22	9.21	9.21	1.00		bedroom	02	69	5.46	5.46	1.00
Living room	00	23	13.04	13.04	1.00		bedroom	02	70	14.83	14.83	1.00
bedroom	00	24	15.26	15.33	1.00		Living room	02	71	20.08	20.08	1.00
Kit/Living	00	25	6.52	6.64	1.02		bedroom	02	72	24.94	24.99	1.00
Kit/Living	00	26	0.34	1.18	3.46		Kit/Living	02	73	10.32	10.43	1.01
Kit/Living	00	27	0.53	1.33	2.50		Kit/Living	02	74	4.67	3.84	0.82
Kit/Living	00	28	1.20	1.55	1.29		Kit/Living	02	75	4.58	3.45	0.75
Kit/Living	00	29	3.44	2.05	0.60		Kit/Living	02	76	5.44	3.37	0.62
Bedroom	00	30	9.58	4.60	0.48		Kit/Living	02	77	7.94	4.10	0.52
Bedroom	00	31	9.25	3.56	0.38		Bedroom	02	78	14.41	7.09	0.49
Kit/Living	00	32	2.31	1.62	0.70		Bedroom	02	79	14.42	6.32	0.44
Kit/Living	00	33	2.09	2.79	1.34		Kit/Living	02	80	6.98	3.31	0.47
Bedroom	00	34	8.59	6.09	0.71		Kit/Living	02	81	6.70	4.48	0.67
Kit/Living	00	35	2.89	1.95	0.67		Bedroom	02	82	13.56	9.98	0.74
Kit/Living	00	36	2.86	4.00	1.40		Kit/Living	02	83	7.17	5.85	0.82
Bedroom	00	37	9.50	10.09	1.06		Kit/Living	02	84	7.54	7.82	1.04
Bedroom	00	38	10.88	10.90	1.00		Bedroom	02	85	14.65	15.12	1.03
Kit/Living	00	39	9.50	10.01	1.05		Bedroom	02	86	16.18	16.61	1.03
Kit/Living	00	40	4.28	4.06	0.95		Kit/Living	02	87	14.95	16.02	1.07
Kit/Living	00	41	2.33	2.50	1.08		Kit/Living	02	88	8.76	10.28	1.17
Kit/Living	00	42	2.08	2.90	1.39		Kit/Living	02	89	6.79	8.45	1.24
Kit/Living	00	43	3.15	4.12	1.31		Kit/Living	02	90	6.68	8.63	1.29
Kit/Living	00	44	24.30	24.56	1.01		Kit/Living	02	91	7.84	9.98	1.27
bedroom	01	45	3.71	3.71	1.00		Kit/Living	02	92	32.66	32.91	1.01
bedroom	01	46	11.29	11.29	1.00		bedroom	03	93	8.45	8.45	1.00
Living room	01	47	15.83	15.83	1.00		bedroom	03	94	18.69	18.69	1.00

	Notes	
Date	Revision	•
Draw	ing No. C-0157285/04 Rev	—▲— rision
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Midd] Dayli	lesex Hospital Annex ght & Sunlight Results	
<i>Client</i> Unive	ersity College London	
Date	Drawn by K.V. Scale A	30
		»
	Deloitte.	
	Real Estate Athene Place, 66 Shoe Lane	
	London EC4A 3BQ Telephone 020-7007 9000 Fax 020-7583 1198	

	Vertic	al Sky Co	mponent	Results Ta	ble			
W	indow		Evisting	Proposed	Ratio Reduction			
Name	Level	Number						
Living room	03	95	24.02	24.02	1.00			
bedroom	03	96	28.62	28.66	1.00			
Kit/Living	03	97	13.10	13.20	1.01			
Kit/Living	03	98	8.11	5.79	0.71			
Kit/Living	03	99	7.69	4.86	0.63			
Kit/Living	03	100	8.62	4.74	0.55			
Kit/Living	03	101	11.17	5.81	0.52			
Bedroom	03	102	17.79	9.55	0.54			
Bedroom	03	103	18.10	9.01	0.50			
Kit/Living	03	104	10.60	4.54	0.43			
Kit/Living	03	105	10.35	5.68	0.55			
Bedroom	03	106	17.13	12.99	0.76			
Kit/Living	03	107	10.80	8.86	0.82			
Kit/Living	03	108	11.14	10.58	0.95			
Bedroom	03	109	18.25	18.54	1.02			
Bedroom	03	110	19.84	20.52	1.03			
Kit/Living	03	111	18.60	19.93	1.07			
Kit/Living	03	112	12.33	14.07	1.14			
Kit/Living	03	113	10.34	12.20	1.18			
Kit/Living	03	114	10.18	12.13	1.19			
Kit/Living	03	115	11.32	13.41	1.18			
Kit/Living	03	116	35.23	35.47	1.01			
Kit/Living	04	117	16.68	16 75	1 00			
Kit/Living	04	118	12 15	8 55	0.70			
Kit/Living	04	119	11 39	7 11	0.62			
Kit/Living	04	120	12 37	7 09	0.57			
Kit/Living	04	121	14.98	8 73	0.58			
Bedroom	04	121	22.13	14.09	0.64			
Bedroom	04	123	22.10	13.91	0.61			
Kit/Living	04	120	14.83	6.88	0.01			
Kit/Living		125	14 60	7 77	0.53			
Bedroom		126	21.80	17.8/	0.00			
Kit/Living		120	15 12	12.04	0.01			
Kit/Living	04	121	15.12	1// /1	0.07			
RitLiving	04	120	22.70	22.01	0.94			
Bedroom	04	129	22.13	25.01	1.01			
Kit/Living	04	100	24.43	20.40	1.04			
	04	100	16 40	10.01	1.00			
	04	132	10.42		1.11			
Kit/Living	04	133	14.39	10.20	1.13			
		134	14.18		1.14			
Kit/Living	04	135	15.27	17.24	1.13			
Kit/Living	04	136		37.31	1.01			
Kit/Living	05	137		21.20	1.00			
Kit/Living	05	138	27.68	25.56	0.92			
Kit/Living	05	139	27.90	25.25	0.91			
Kit/Living	05	140	28.10	24.73	0.88			
Kit/Living	05	142	28.28	24.22	0.86			

Vertical Sky Component Results Table								
W	indow		Eviating	Dranaaad	Ratio Reduction			
Name	Level	Number	Existing	Proposed				
Bedroom	05	143	28.97	23.27	0.80			
Kit/Living	05	144	29.26	24.86	0.85			
Bedroom	05	145	29.39	27.04	0.92			
Kit/Living	05	146	29.49	28.78	0.98			
Kit/Living	05	147	29.54	29.49	1.00			
Bedroom	05	148	29.62	30.32	1.02			
Bedroom	05	149	29.72	30.82	1.04			
Kit/Living	05	150	29.86	31.24	1.05			
Kit/Living	05	151	30.04	31.58	1.05			
Kit/Living	05	152	38.57	38.78	1.01			

Annual Probable Sunlight Hours Results Table									
V	1	Existing		Prop	osed	Ratio Reduction			
Name	Level	Number	Total Winter Total V		Winter	Total	Winter		
Kit/Living	-01	20	49.00	10.00	49.00	10.00	1.00	1.00	
Kit/Living	00	44	56.00	13.00	56.00	13.00	1.00	1.00	
Kit/Living	01	68	62.00	16.00	62.00	16.00	1.00	1.00	
Kit/Living	02	92	70.00	22.00	70.00	22.00	1.00	1.00	
Kit/Living	03	116	76.00	28.00	76.00	28.00	1.00	1.00	
Kit/Living	04	136	76.00	28.00	76.00	28.00	1.00	1.00	
Kit/Living	05	152	76.00	28.00	77.00	28.00	1.01	1.00	

	Notes						
Date	Revision						
Draw	ring No. C-0157285/05 Rev	− ⊾ − ision					
Addr 44 C Lond W1T <i>Title</i> Midd Dayli	ress. Clevelend Street on 4JU 2. lesex Hospital Annex ight & Sunlight Results						
<u>.</u>							
Univ	x ersity College London						
Date	Drawn by K.V. Scale A	30					
29/0	01/15 File No. C-0157285 NTS	3					
	Deloitte.						
	Athene Place 66 Shoa Lanc						
	Autene Flace, 00 Snoe Lane, London EC4A 3BQ Telephone 020-7007 9000 Fax 020-7583 1198						
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No Sky Line Results Table									
	Room		Existing (sg.m)	Proposed (sq.m)	Loss Total (sq.m)	Ratio Reduction	Existing % Lit	Proposed % Lit	
Name	Floor Level	Base Area (sq.m)	g (= q)	26.19	0.60	1.02	02.66	05.00	
Rit/Liv-LG-01	-01	27.30	25.57	20.18	-0.60	1.02	93.00	95.90	
Bed LG-02	-01	8.70	1.00	2.33	-0.47	1.23	20.11	24.94	
Kit/Liv LG-04	-01	23.51	5.03	5.37	-0.34	1.07	21.40	22.84	
Bed LG-05	-01	15.10	2.35	2.66	-0.31	1.13	15.56	17.62	
Kit/Liv LG-06	-01	23.40	4.14	4.37	-0.23	1.06	17.69	18.68	
Bed LG-07	-01	15.07	2.31	2.35	-0.04	1.02	15.33	15.59	
Bed LG-08	-01	12.94	2.25	2.33	-0.08	1.04	17.39	18.01	
Kit/Liv LG-09	-01	27.10	5.26	6.05	-0.79	1.15	19.41	22.32	
Kit/Liv-00-01	00	27.30	26.91	26.99	-0.08	1.00	98.57	98.86	
Bed 00-02	00	8.70	2.59	3.20	-0.61	1.24	29.77	36.78	
Beu 00-03	00	0.70 23.51	2.30	6.46	-0.59	1.23	29.00	27.48	
Bed 00-05	00	15 10	3.78	3.94	-0.16	1.04	25.03	26.09	
Kit/Liv 00-06	00	23.40	4.76	5.03	-0.27	1.06	20.34	21.50	
Bed 00-07	00	15.07	3.90	3.46	0.44	0.89	25.88	22.96	
Bed 00-08	00	12.94	4.34	4.34	0.00	1.00	33.54	33.54	
Kit/Liv 00-09	00	27.10	8.03	7.26	0.77	0.90	29.63	26.79	
Bed 00-12	00	13.04	4.81	4.88	-0.07	1.01	36.89	37.42	
Liv 00-11	00	15.57	4.73	4.73	0.00	1.00	30.38	30.38	
Bed 00-10	00	11.61	2.83	2.83	0.00	1.00	24.38	24.38	
Rod 01 02	01	27.30	27.16	27.04	0.12	1.00	99.49	99.05	
Bed 01-02	01	0.70 8.70	2.90 2.07	3.03 3.67	-0.07	1.23	34.02	41.7Z	
Kit/L iv 01-04	01	23 51	6 59	7 08	-0.49	1 07	28.03	30 11	
Bed 01-05	01	15.10	4.37	4.52	-0.16	1.03	28.94	29.93	
Kit/Liv 01-06	01	23.40	5.52	5.56	-0.03	1.01	23.59	23.76	
Bed 01-07	01	15.07	4.51	3.64	0.87	0.81	29.93	24.15	
Bed 01-08	01	12.94	5.01	4.66	0.35	0.93	38.72	36.01	
Kit/Liv 01-09	01	27.10	9.69	8.64	1.04	0.89	35.76	31.88	
Bed 01-12	01	13.04	5.01	5.11	-0.10	1.02	38.42	39.19	
Liv 01-11	01	15.57	4.97	4.97	0.00	1.00	31.92	31.92	
Bed 01-10	01	11.61	3.19	3.19	0.00	1.00	27.48	27.48	
Rit/LIV-02-01	02	27.30	3.75	27.21	0.00	1.00	99.67	99.67 52.18	
Bed 02-02	02	8.70	3.83	4.54	-0.73	1.21	44.02	52.10	
Kit/Liv 02-04	02	23.51	8.23	8.47	-0.24	1.03	35.01	36.03	
Bed 02-05	02	15.10	5.53	5.63	-0.10	1.02	36.62	37.28	
Kit/Liv 02-06	02	23.40	7.24	7.10	0.13	0.98	30.94	30.34	
Bed 02-07	02	15.07	5.71	3.78	1.93	0.66	37.89	25.08	
Bed 02-08	02	12.94	6.34	5.54	0.80	0.87	49.00	42.81	
Kit/Liv 02-09	02	27.10	12.93	12.68	0.26	0.98	47.71	46.79	
Bed 02-12	02	13.04	6.35	6.43	-0.07	1.01	48.70	49.31	
Liv 02-11	02	15.57	5.77	5.77	0.00	1.00	37.06	37.06	
Kit/Liv-03-01	02	27.30	4.01	27.26	-0.03	1.00	00.74	00.85	
Bed 03-02	03	8 70	4 87	5 79	-0.91	1.00	55.98	66 55	
Bed 03-03	03	8.70	4.95	5.79	-0.83	1.17	56.90	66.55	
Kit/Liv 03-04	03	23.51	10.08	10.78	-0.70	1.07	42.88	45.85	
Bed 03-05	03	15.10	7.15	7.30	-0.14	1.02	47.35	48.34	
Kit/Liv 03-06	03	23.40	10.18	9.71	0.47	0.95	43.50	41.50	
Bed 03-07	03	15.07	7.36	4.21	3.15	0.57	48.84	27.94	
Bed 03-08	03	12.94	8.20	6.47	1.73	0.79	63.37	50.00	
Kit/Liv 03-09	03	27.10	16.11	16.24	-0.12	1.01	59.45	59.93	
	03	15.04	7.04 7.67	7.04 7.67	0.00	1.00	<u> </u>	00.09 ∕10.07	
Bed 03-10	03	11 61	5.52	5 52	0.00	1.00	47.55	47.55	
Kit/Liv-04-01	04	27.30	27.26	27.30	-0.04	1.00	99.85	100.00	
Bed 04-02	04	8.70	6.69	8.05	-1.36	1.20	76.90	92.53	
Bed 04-03	04	8.70	6.80	8.16	-1.35	1.20	78.16	93.79	
Kit/Liv 04-04	04	23.51	13.83	15.55	-1.72	1.12	58.83	66.14	
Bed 04-05	04	15.10	9.86	10.67	-0.81	1.08	65.30	70.66	
Kit/Liv 04-06	04	23.40	14.33	13.08	1.25	0.91	61.24	55.90	
Bed 04-07	04	15.07	10.17	4.94	5.24	0.49	67.49	32.78	
Bed 04-08	04	12.94	11.06	/.64	3.42	0.69	85.47	59.04	
Kit/Liv 04-09	05	27.10	19.94	11.29	-1.35	1.07	100.00	100.00	
Red 05 02	05	14.00 9.70	14.00 8.70	14.00 8.70	0.00	1.00	100.00	100.00	
Bed 05-02	05	8.70	8.70	8.70	0.00	1.00	100.00	100.00	
Kit/Liv 05-04	05	23.51	22.24	23.50	-1.26	1.06	94.60	99.96	
Bed 05-05	05	15.10	14 92	14.74	0.18	0.99	98.81	97.62	
Kit/Liv 05-06	05	23.40	22.98	18.84	4.14	0.82	98.21	80.51	
Bed 05-07	05	15.07	15.01	10.03	4.98	0.67	99.60	66.56	
Bed 05-08	05	12.94	12.84	11.05	1.78	0.86	99.23	85.39	
Kit/Liv 05-09	05	27.10	25.51	27.06	-1.55	1.06	J 94.13	99.85	



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