



Internal Daylight Assessment Addendum

4 Wild Court
Project No: 5412

September 23, 2010



DAYLIGHT AND SOLAR DESIGN





- IR07-5412

Client	Kensington College of Business
Architect	Pendelton Associates Ltd
Project Title	4 Wild Court
Project Number	5412
Report Title	Internal Daylight Assessment Addendum
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Checked by	Jerome webb
Type	For Planning

Revisions	Date:	Notes:	Signed:
--	18/06/10	DRAFT - for comment	TB
01	18/06/10	For Planning	TB
02	29/06/10	updated floor plan annotations	TB
03	23/09/10	Updated room layouts and 7th floor addition	SP



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1. Summary

With the combined assessment by Right of Light Consultants and GIA it can be shown that all of the 100 proposed bed rooms in the design comply with the minimum requirements for daylight set out in BS 8206-2:2008.

The additional rooms located on the Upper Ground Floor, First Floor have been tested and their compliance demonstrated in the following tables.

The addition of a further floor of accommodation on the 7th floor of the building will not have any detrimental impact upon the daylight levels within the rooms at located on the lower floors. This is because the proposed accommodation does not increase the height of the building, but falls within the walled communal area extent, presently occupying the 7th floor. This means that no additional obstruction is imposed on the daylight entering the courtyard.

The small infill proposed on the 6th floor will not be visible from any of the windows located at the lower floors. This is because the infill is set back from the current 5th floor edge overlooking the courtyard. Hence the presence of such infill and its relatively small impact on daylight will not be felt until further up the light-well where rooms show levels of ADF much in excess of the required minimum and can sustain an impact far beyond the one caused by the additional massing proposed.

For these reasons and based upon the results previously achieved there the assessment of the 7th floor accommodation and the 6th floor infill is redundant, as these room undoubtedly enjoy the highest levels of daylight achievable in the proposed scheme.

2. Introduction and Objective

GIA has been instructed to provide a report upon the potential availability of Daylight to the proposed accommodation within the student hall development scheme prepared by Peter Pendelton & Associates. GIA was specifically instructed to carry out the following:

- Carry out a daylight analysis using the methodologies set out in BS 8206-2:2008 for Average Daylight Factor for rooms which have been modified after a previous assessed application.
- Preparation of a report setting out the combined results and analysis of our findings.

3. BRE guidelines

The Building Research Establishment (BRE) have set out in their handbook *Site Layout Planning for Daylight and Sunlight a Guide to Good Practice (1991)*, guidelines and methodology for the measurement and assessment of daylight within proposed buildings. This document states that it is also intended to be used in conjunction with the interior daylight recommendations in the *British Standard BS8206-2:2008* and *The Applications Manual on Window Design* of the Chartered Institution of Building Services Engineers (CIBSE).

The guide also provides advice on the site layout planning to determine the quality of daylight and sunlight within open spaces between buildings.

It is important to note, however, that this document is a guide whose stated aim "is to help rather than constrain the designer".

The document provides advice, however, it also clearly states that this advice "is not mandatory and this document should not be seen as an instrument of planning policy." The report acknowledges also in its introduction that "in special circumstances the developer or planning authority may wish to use different target values. For example, in a historic City centre a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings."

It is an inevitable consequence of the built up urban environment that daylight and sunlight will be more limited. It is well acknowledged that in such situations there may be many other conflicting and potentially more important planning and urban design matters to consider other than just the provision of ideal levels of daylight and sunlight.

3.1. Daylight

The BRE guidance in respect of the daylight quality for new development is set out in section 2.1 and Appendix C of the handbook. These set out different methods for assessing the daylight potential within a proposed building.

Appendix C of the BRE guide *Interior Daylighting Recommendations* states:

"The British Standard for daylighting, and the CIBSE Applications manual Window Design contain advice and guidance on interior daylighting. This guide to good practice is intended to be used in conjunction with them, and its guidance is intended to fit in with their recommendations.

For skylight, the British Standard and the CIBSE manual put forward three main criteria, based on the average daylight factor, room depth, and the position of the no skyline."

In discussion with the planning officer it was agreed that the *Average Daylight Factor* method should be used to assess the daylight quality of the proposed development.

3.1.1. Average Daylight Factor (ADF)

"If a predominantly daylit appearance is required, then df should be 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary electric lighting is provided. There are additional recommendations for dwellings, of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. These last are minimum values of Average Daylight Factor, and should be attained even if a predominantly daylit appearance is not required."

The formula to calculate the ADF is given in section 13 of BS 8206-2:2008. This formula takes into account the total glazed area to the room, the transmittance quality of the glazing proposed, the total area of the room surfaces including ceilings and floors, and the internal average reflectance for the room being assessed.

The method also takes into account the visible sky angle θ or, in a modified form, the *Vertical Sky Component (VSC)*.

3.1.2. Further relevant information

Further information can be found in *The Daylight in Urban Areas Design Guide* (Energy Saving Trust CE257, 2007) which provides us with the following recommendation with regards to θ and VSC levels in urban areas:

"If 'theta' (visible sky angle) is greater than 65° (obstruction angle less than 25° or VSC at least 27 percent) conventional window design will usually give reasonable results.

If 'theta' is between 45° and 65° (Obstruction angle between 25° and 45°, VSC between 15 and 27 percent), special measures such as larger windows and changes to room layout are usually needed to provide adequate daylight.

If 'theta' is between 25° and 45° (obstruction angle between 45° and 65°, VSC from 5 – 15 percent.), it is very difficult to provide adequate daylight unless very large windows are used.

If 'theta' is less than 25° (obstruction angle more than 65°, VSC less than 5 percent) it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed."



4. Methodology

The majority of the rooms in the current proposal has been assessed for a previous application by Right of Light Consulting, Southend-on-Sea (RoLC). The current proposal is based on the same layouts with modifications to the Ground and First Floor and minor changes to the floors 2-4. Therefore the results of the previous assessment have been used to prove compliance for those rooms that have not been changed from the previous application. Only the rooms on the Ground Floor and modified rooms on the floors 1-4 have been reassessed by GIA for this application.

In order to provide consistent results between both assessments the values for window transmittance, surface reflectivity and visibly sky angle have been taken from the previous report. These values are independent of the internal layout and therefore are still valid for the new design. In the new assessment modified room layouts and the increased floor height on the Ground Floor have been taken into account.

The reference area for the ADF calculation is the principal usable area of the room. Circulation, and storage do not take part in the calculation because these cannot be dedicated to activities that would require a minimum daylight level.

The results of both calculations are shown in a combined table with reference to the date of the assessment.

4.1. Simulation assumptions

Reflectance values

avg. internal reflectance 0.75

Transmittance value (including frames and maintenance):

Double glazing: 0.65

5. Sources of information

Drawings provided by Peter Pendelton & Associates

Internal reference number: IR07-541

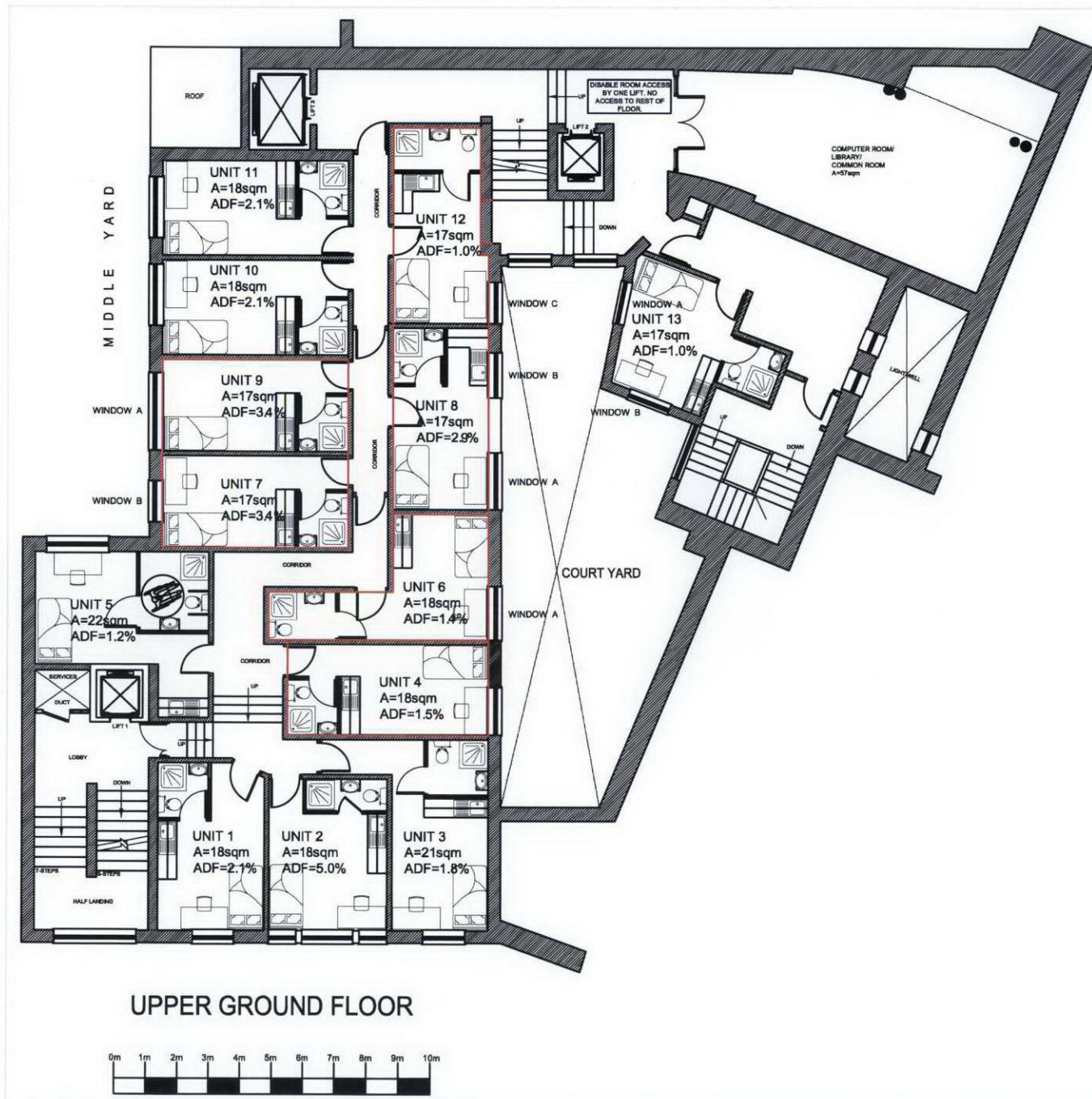


NOTE: All re-tested rooms have been high-lighted in yellow for quicker reference

GROUND FLOOR		room		window			assessment			
room	window	surface area	area w. refl.	area	trans.	theta	ADF	result	date	by
Unit 1		69.92	0.72	3.72	0.65	28.4	2.1	pass	09/06/10	GIA
Unit 2		69.25	0.68	9.31	0.65	30.3	5.0	pass	09/06/10	GIA
Unit 3		89.30	0.72	3.72	0.65	33.0	1.8	pass	09/06/10	GIA
Unit 4		62.30	0.71	6.93	0.65	10.4	1.5	pass	23/09/10	GIA
Unit 5		72.18	0.71	2.51	0.65	26.5	1.2	pass	09/06/10	GIA
Unit 6		57.40	0.72	5.36	0.65	10.8	1.4	pass	23/09/10	GIA
Unit 7		58.70	0.72	5.67	0.65	26.5	3.4	pass	23/09/10	GIA
	8A	70.20	0.72	7.24	0.65	10.8	1.5			
	8B	70.20	0.72	7.24	0.65	9.9	1.4			
Unit 8		70.20					2.9	pass	23/09/10	GIA
Unit 9		58.80	0.71	5.71	0.65	26.5	3.4	pass	23/09/10	GIA
Unit 10		108.01	0.71	5.71	0.65	30.9	2.1	pass	09/06/10	GIA
Unit 11		108.01	0.71	5.71	0.65	30.7	2.1	pass	09/06/10	GIA
Unit 12		64.30	0.71	5.71	0.65	9.0	1.0	pass	23/09/10	GIA
	11A	86.89	0.71	4.15	0.65	6.3	0.4			
	11B	86.89	0.72	2.94	0.65	12.0	0.6			
Unit 13							1.0	pass	09/06/10	GIA

FIRST FLOOR		room		window			assessment			
room	window	surface area	area w. refl.	area	trans.	theta	ADF	result	date	by
Unit 1		69.92	0.74	1.90	0.65	34.4	1.3	pass	01/03/10	RoLC
		70.87	0.73	1.90	0.65	35.3	1.3			
		70.87	0.73	1.90	0.65	36.6	1.4			
Unit 2							2.7	pass	01/03/10	RoLC
Unit 3		88.76	0.75	1.90	0.65	38.3	1.2	pass	01/03/10	RoLC
Unit 4		92.15	0.71	4.73	0.65	15.5	1.0	pass	09/06/10	GIA
Unit 5		123.24	0.74	2.32	0.65	40.2	1.1	pass	09/06/10	GIA
Unit 6		87.68	0.71	4.73	0.65	16.9	1.2	pass	09/06/10	GIA
Unit 7		58.70	0.74	2.74	0.65	39.2	2.6	pass	23/09/10	GIA
	8A	70.20	0.73	3.87	0.65	39.2	3.0	pass		
	8B	70.20	0.73	3.01	0.65	39.2	2.3	pass		
Unit 8							5.3	pass	23/09/10	GIA
Unit 9		58.80	0.72	5.14	0.65	43.0	5.1	pass	23/09/10	GIA
Unit 10		72.18	0.73	2.32	0.65	46.1	2.1	pass	01/03/10	RoLC
Unit 11		72.25	0.73	2.32	0.65	46.9	2.1	pass	01/03/10	RoLC
Unit 12		64.30	0.73	2.80	0.65	39.2	2.4	pass	23/09/10	GIA
Unit 13		75.58	0.72	1.63	0.65	33.5	1.0	pass	09/06/10	GIA
Unit 14		82.64	0.72	1.63	0.65	36.2	1.0	pass	09/06/10	GIA

Table 1: ADF results for Ground Floor and First Floor



NOTE: All re-tested rooms have been outlined in red for quicker reference

Figure 1: Layout Ground Floor



NOTE: All re-tested rooms have been outlined in red for quicker reference

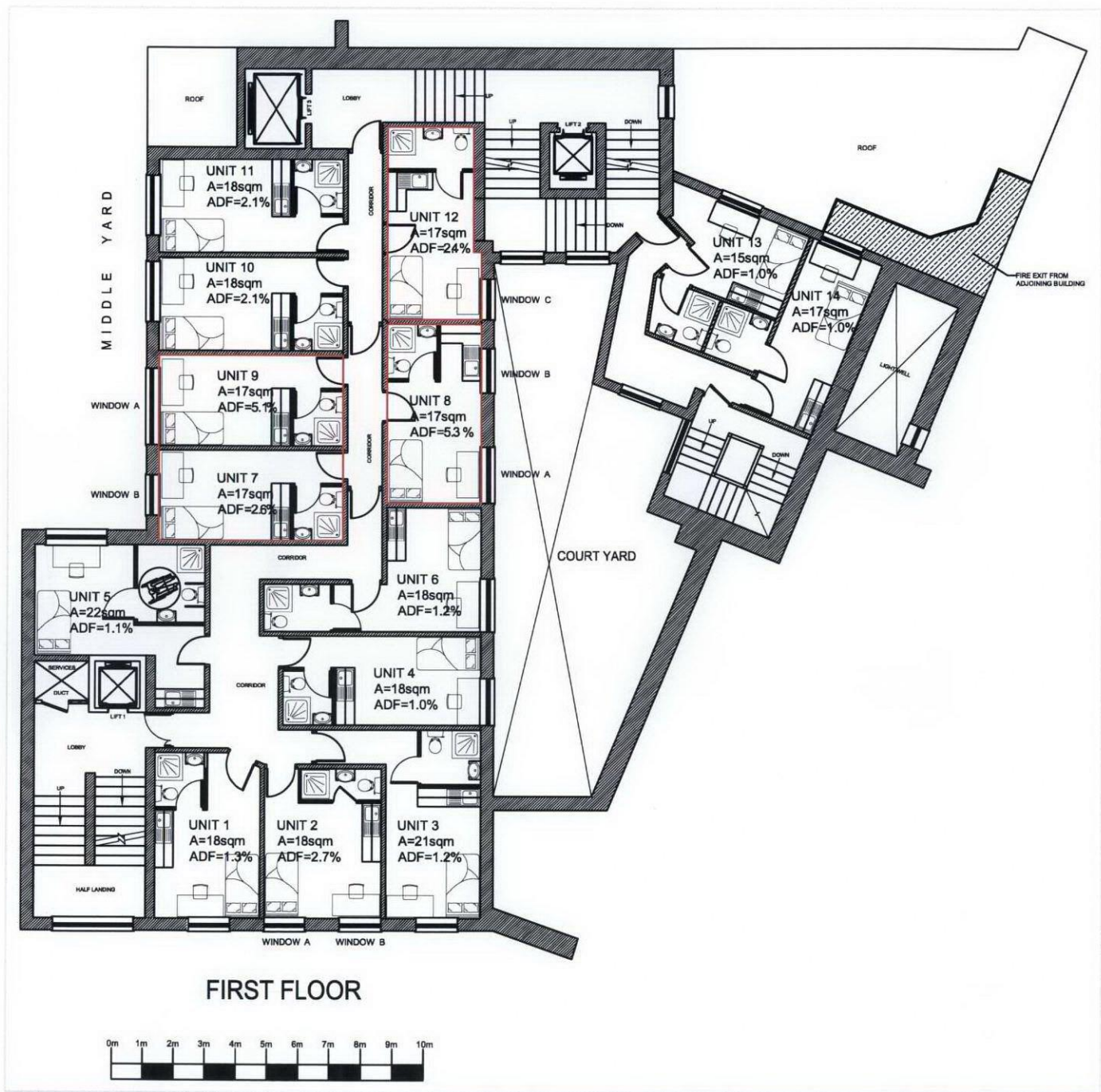


Figure 2: Layout First Floor