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Daylight and Sunlight Study (Within Development)
Former Car Showroom, East Bay Close
Cardiff CF10 4BA

3 April 2018



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DAYLIGHT AND SUNLIGHT STUDY
Former Car Showroom, East Bay Close, Cardiff CF10 4BA

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1 EXECUTIVE SUMMARY

1.1 Overview

- 1.1.1 Right of Light Consulting has been commissioned by JEDS Investments Ltd to undertake a daylight and sunlight study in connection with the development at Former Car Showroom, East Bay Close, Cardiff CF10 4BA. The aim of the study is to check whether or not the proposed ground and first floor receive satisfactory levels of daylight and sunlight.
- 1.1.2 The study is based on the numerical tests laid down in the Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a good practice guide' by P J Littlefair 2011.
- 1.1.3 Appendix 1 identifies the windows analysed in this study. The numerical test results (including all calculation workings) are provided in Appendix 2. No sky line contours are presented in Appendix 3.
- 1.1.4 Right of Light Consulting confirms that the proposed design satisfies all the requirements set out in the BRE guide 'Site Layout Planning for Daylight and Sunlight'.

2 INFORMATION SOURCES

2.1 Documents Considered

2.1.1 This report is based on the following drawings:

KDP Architects

100	Existing Site Plan	Rev A
101	Proposed Site Plan	Rev B
102	Proposed Site Plan	Rev A
201-NS	Proposed Basement and Ground Floor Plans	Rev C
202-NS	Proposed First and Second Floor Plans	Rev C
203-NS	Proposed Third and Fourth Floor Plans	Rev C
204-NS	Proposed Fifth and Sixth Floor Plans	Rev C
205-NS	Proposed Seventh and Eighth Floor Plans	Rev C
206-NS	Proposed Ninth and Tenth Floor Plans	Rev C
207-NS	Proposed Eleventh Floor Plan	Rev C
210-NS	Proposed Elevations 1	Rev A
211-NS	Proposed Elevations 2	Rev A
212-NS	Proposed Elevations 3	Rev A

Survey and Engineering Projects

S13864-T	Topographical Survey	Rev –
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3 METHODOLOGY OF THE STUDY

3.1 BRE Guide: Site Layout Planning for Daylight and Sunlight

- 3.1.1 The study is based on the numerical tests laid down in the Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a good practice guide' by P J Littlefair 2011.
- 3.1.2 The standards set out in the BRE guide are intended to be used flexibly. In instances where there is a special requirement for daylight or sunlight, higher levels may be deemed necessary. In other situations, such as with urban developments, lower daylight and sunlight levels may be unavoidable. The following statement is quoted directly from the BRE guide:
- 3.1.3 "The guide is intended for building designers and their clients, consultants and planning officials. The advice given is not mandatory and this document should not be considered 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 the many factors in site layout design."

3.2 Interior Daylighting

- 3.2.1 The interior daylighting recommendations set out in BRE guide are based on British Standard BS 8206 Part 2 and the Chartered Institute of Building Services Engineers Applications Manual on window design. Collectively, the guides set out three main criteria for interior daylighting. These are summarised as follows:

3.2.2 Test 1 Average Daylight Factor (df)

The Average Daylight Factor can be calculated using the following formula:

$$df = \frac{T A_w \theta}{A (1-R^2)} \%$$

Where

- T is the diffuse visible transmittance of the glazing (BRE standard of 0.68)
A_w is the net glazed area of the window (m²)
A is the total area of the room surfaces (m²)
R is their average reflectance
θ is the angle of visible sky in degrees

The Average Daylight factor test is applied to habitable rooms within domestic properties. A kitchen is generally deemed to be a habitable room if it is large enough to accommodate a dining area. If the kitchen is small or if the property has a separate dining area then the accepted practice is to treat the kitchen as a non habitable room.

For the purpose of this study we have assumed BRE internal reflectance values pertaining to medium wooden floors, light painted walls and matte white painted ceilings.

The guide recommends an Average Daylight Factor of 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary lighting is provided. There are additional minimum recommendations for dwellings of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms.

A special procedure is required for floor to ceiling windows such as patio doors. If part of a window is below the height of the working plane (a horizontal plane 0.85m above the floor in housing), this portion should be treated as a separate window. The ADF for this window has an extra factor applied to it, to take account of the reduced effectiveness of low level glazing in lighting the room. A value equal to the floor reflectance may be taken for this factor. The ADF for the portion of the window above the working plane is calculated in the normal way without this additional factor, and the ADFs for the two portions are added together.

3.2.3 Test 2 Room Depth

If a daylit room is lit by windows in one wall only, the depth of the room L should not exceed the limiting value given by:

$$\frac{L}{W} + \frac{L}{H} \leq \frac{2}{1-R_b}$$

Where

W is the room width
H is the window-head height above floor level
R_b is the average reflectance of the surfaces in the rear half of the room

3.2.4 Test 3 Position of the no sky line

If a significant area of the working plane lies beyond the no sky line (i.e. it receives no direct skylight), then the distribution of daylight in the room will look poor and supplementary electric lighting will be required.

The no sky line assessment is not applicable where a room derives its daylight solely from a light well or atrium. In these situations the room relies on borrowed light instead of direct skylight.

3.3 Sunlight to Windows

- 3.3.1 The BRE guide recommends that where possible each dwelling should have at least one main living room window that faces within 90 degrees of due south. However, the guide acknowledges that this is not always possible when it comes to flats.
- 3.3.2 The BRE sunlight tests should be applied to all main living rooms and conservatories which have a window which faces within 90 degrees of due south. The guide states that sunlight is viewed as less important in kitchens and bedrooms. In non-domestic buildings, any spaces which are deemed to have a specific requirement for sunlight should be checked.
- 3.3.3 The BRE guide recommends that main living room windows should receive 25% of the total annual probable sunlight hours, including 5% of the annual probable sunlight hours during the winter months between 21st September and 21st March.

4 RESULTS OF THE STUDY

4.1 Window Reference Points

4.1.1 Refer to Appendix 1 for a drawing which identifies the positions of the windows analysed in this study. We have tested the windows at the ground and first floor levels on the basis that, if these satisfy the BRE requirements, the windows at the upper levels are likely to surpass the BRE minimum requirements by an even greater margin.

4.2 Numerical Results

4.2.1 The numerical test results including all calculation workings are provided in Appendix 2.

4.3 Interior Daylighting

4.3.1 All rooms meet or surpass the BRE Average Daylight Factor targets.

4.3.2 All rooms pass the room depth test.

4.3.3 The BRE guide does not give fixed numerical pass/fail criteria for the No Sky Line test when applied to new dwellings (guidance is given for when this test is applied to existing neighbouring buildings). However, for completeness, we have illustrated the no sky line contours in Appendix 1.

4.4 Sunlight to Windows

4.4.1 Not all living room windows face within 90 degrees of due south and will therefore not all receive ideal levels of direct sunlight. However, the BRE guide acknowledges that it is not always possible for every dwelling to be well situated to receive direct sunlight. The proposed development therefore satisfies the BRE direct sunlight to windows requirements.

4.5 Conclusion

4.5.1 Right of Light Consulting confirms that the proposed design satisfies all the requirements set out in the BRE guide 'Site Layout Planning for Daylight and Sunlight'.

5 CLARIFICATIONS

5.1 General

- 5.1.1 The report provided is solely for the use of the client and no liability to anyone else is accepted.
- 5.1.2 We have undertaken the survey following the guidelines of the RICS publication "Surveying Safely".
- 5.1.3 Where limited access is available, assumptions will have been made.
- 5.1.4 Right of Light Consulting have endeavoured to include in the report those matters, which they have knowledge of or of which they have been made aware, that might adversely affect the validity of the opinion given.
- 5.1.5 Right of Light Consulting will notify those instructing them immediately and confirm in writing if for any reason the report requires any correction or qualification.
- 5.1.6 This report is based upon and subject to the scope of work set out in Right of Light Consulting's quotation and standard terms and conditions.
- 5.1.7 Right of Light Consulting confirm that they have used their best endeavours to ensure that the facts stated in this report are correct and that the opinions expressed represent a true and complete professional opinion.

5.2 Project Specific

- 5.2.1 None.

APPENDICES

APPENDIX 1

WINDOW KEY & NO SKY LINE CONTOURS

Proposed Ground Floor

Appendix 1 Window Key & No Sky Line Contours

Key:

Window 1 ● Window reference

G1 Gardens and Amenity Areas



Project Name: Former Car Showroom, East Bay Close
CF10 4BA

Drawing Title: Window Key

Scale: Do not scale

Drawing No: 1 of 2

Rev. -

Rev. Date Details of revision



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Appendix 1 Window Key

Proposed First Floor

Key:

Window 1 ● Window reference

G1 Gardens and Amenity Areas



Project Name: Former Car Showroom, East Bay Close CF10 4BA	
Drawing Title: Window Key	
Scale: Do not scale	
Drawing No: 2 of 2	Rev. -
Rev	Date
Details of revision	



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APPENDIX 2

DAYLIGHT AND SUNLIGHT CALCULATIONS

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
<u>Proposed Ground Floor</u>									
Window 1 (lower)			0.68	0.97	105.13	0.71	30.7	0.1%	
Window 1 (upper)			0.68	3.61	105.13	0.71	31.6	1.5%	
Window 2			0.68	1.33	105.13	0.71	33.1	0.6%	
Total ADF for room	Bedroom	1.0%						2.2% Pass	
Window 3	Bedroom	1.0%	0.68	7.66	105.13	0.7	35.1	3.4% Pass	
Window 5			0.68	1.34	105.13	0.72	37.8	0.7%	
Window 4			0.68	3.44	105.13	0.72	36.8	1.7%	
Total ADF for room	Bedroom	1.0%						2.4% Pass	
Window 6	Bedroom	1.0%	0.68	7.65	97.22	0.7	39.6	4.1% Pass	
Window 8 (lower)			0.68	0.38	97.22	0.71	40.2	0.0%	
Window 8 (upper)			0.68	1.4	97.22	0.71	41.9	0.8%	
Window 7			0.68	3.43	97.22	0.71	41.1	2.0%	
Total ADF for room	Bedroom	1.0%						2.8% Pass	
Window 9 (lower)			0.68	2.17	97.22	0.68	41.5	0.2%	
Window 9 (upper)			0.68	8.03	97.22	0.68	43.4	4.5%	
Total ADF for room	Bedroom	1.0%						4.7% Pass	
Window 10 (lower)			0.68	1.81	97.22	0.69	42.8	0.2%	
Window 10 (upper)			0.68	6.69	97.22	0.69	44.8	4.0%	
Total ADF for room	Bedroom	1.0%						4.2% Pass	
Window 11	Bedroom	1.0%	0.68	5.1	97.22	0.71	45.3	3.3% Pass	
Window 13 (lower)			0.68	0.66	146.06	0.67	43.7	0.0%	
Window 13 (upper)			0.68	0.97	146.06	0.67	44.6	0.4%	
Window 12 (lower)			0.68	2.75	146.06	0.67	44.1	0.2%	
Window 12 (upper)			0.68	10.17	146.06	0.67	46.2	3.9%	
Total ADF for room	Kitchen/Lounge	2.0%						4.5% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients				Actual ADF		
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 15			0.68	6.69	138.72	0.7	76.7	4.9%	
Window 14 (lower)			0.68	0.66	138.72	0.7	39.5	0.0%	
Window 14 (upper)			0.68	0.97	138.72	0.7	40.1	0.4%	
Total ADF for room	Kitchen/Lounge	2.0%						5.3% Pass	
Window 16	Bedroom	1.0%	0.68	6.37	104.57	0.71	79.1	6.5% Pass	
Window 17 (lower)			0.68	1.81	97.22	0.69	77.9	0.3%	
Window 17 (upper)			0.68	6.7	97.22	0.69	79.1	7.1%	
Total ADF for room	Bedroom	1.0%						7.4% Pass	
Window 18 (lower)			0.68	2.17	97.22	0.68	80.5	0.3%	
Window 18 (upper)			0.68	8.03	97.22	0.68	81.7	8.5%	
Total ADF for room	Bedroom	1.0%						8.8% Pass	
Window 20			0.68	3.44	97.22	0.71	83.0	4.1%	
Window 19 (lower)			0.68	0.37	97.22	0.71	80.2	0.1%	
Window 19 (upper)			0.68	1.38	97.22	0.71	81.4	1.6%	
Total ADF for room	Bedroom	1.0%						5.8% Pass	
Window 21	Bedroom	1.0%	0.68	7.65	97.22	0.7	83.7	8.7% Pass	
Window 23			0.68	6.69	124.77	0.7	84.6	6.0%	
Window 22			0.68	1.31	124.77	0.7	82.8	1.2%	
Total ADF for room	Bedroom	1.0%						7.2% Pass	
Window 24	Bedroom	1.0%	0.68	6.36	105.13	0.71	84.9	7.0% Pass	
Window 25	Bedroom	1.0%	0.68	6.69	105.13	0.7	85.0	7.3% Pass	
Window 26 (lower)			0.68	2.04	118.56	0.68	85.4	0.3%	
Window 26 (upper)			0.68	8.03	118.56	0.68	86.3	7.4%	
Total ADF for room	Study	1.5%						7.7% Pass	
Window 27	Bedroom	1.0%	0.68	6.69	105.13	0.7	83.8	7.2% Pass	
Window 28	Bedroom	1.0%	0.68	6.37	97.22	0.7	86.4	7.6% Pass	
Window 29	Bedroom	1.0%	0.68	6.69	97.22	0.7	86.8	8.0% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 30	Bedroom	1.0%	0.68	6.36	97.22	0.7	87.0	7.7%	Pass
Window 31	Bedroom	1.0%	0.68	6.69	97.22	0.7	87.1	8.0%	Pass
Window 32	Kitchen/Lounge	2.0%	0.68	6.36	122.63	0.7	87.3	6.1%	Pass
Window 33	Kitchen/Lounge	2.0%	0.68	6.38	122.63	0.7	53.3	3.7%	Pass
Window 34	Bedroom	1.0%	0.68	6.68	97.22	0.7	51.5	4.7%	Pass
Window 35	Bedroom	1.0%	0.68	6.38	97.22	0.7	48.3	4.3%	Pass
Window 36	Bedroom	1.0%	0.68	6.67	97.22	0.7	45.5	4.2%	Pass
Window 37 (lower)			0.68	1.81	97.22	0.69	40.3	0.1%	
Window 37 (upper)			0.68	6.7	97.22	0.69	41.7	3.7%	
Total ADF for room	Bedroom	1.0%						3.8%	Pass
Window 38 (lower)			0.68	1.89	105.13	0.69	37.3	0.1%	
Window 38 (upper)			0.68	7.01	105.13	0.69	38.4	3.3%	
Total ADF for room	Bedroom	1.0%						3.4%	Pass
Window 40			0.68	13.69	227.46	0.66	57.5	4.2%	
Window 39			0.68	5.1	227.46	0.66	53.3	1.4%	
Total ADF for room	Lounge	1.5%						5.6%	Pass
<u>Proposed First Floor</u>									
Window 41 (lower)			0.68	4.14	125.99	0.62	87.3	0.5%	
Window 41 (upper)			0.68	7.8	125.99	0.62	87.5	6.0%	
Window 42 (lower)			0.68	1.45	125.99	0.62	58.5	0.1%	
Window 42 (upper)			0.68	2.72	125.99	0.62	59.4	1.4%	
Total ADF for room	Kitchen/Lounge	2.0%						8.0%	Pass
Window 43 (lower)			0.68	1.45	70.36	0.69	45.9	0.2%	
Window 43 (upper)			0.68	2.72	70.36	0.69	46.6	2.3%	
Total ADF for room	Bedroom	1.0%						2.5%	Pass

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 44 (lower)			0.68	1.45	70.36	0.69	49.6	0.2%	
Window 44 (upper)			0.68	2.72	70.36	0.69	50.1	2.5%	
Total ADF for room	Bedroom	1.0%						2.7% Pass	
Window 45 (lower)			0.68	0.72	76.51	0.71	36.6	0.1%	
Window 45 (upper)			0.68	1.36	76.51	0.71	37.0	0.9%	
Total ADF for room	Bedroom	1.0%						1.0% Pass	
Window 46 (lower)			0.68	1.45	76.52	0.69	43.4	0.2%	
Window 46 (upper)			0.68	2.72	76.52	0.69	43.6	2.0%	
Total ADF for room	Bedroom	1.0%						2.2% Pass	
Window 47 (lower)			0.68	2.75	91.89	0.66	55.0	0.3%	
Window 47 (upper)			0.68	5.18	91.89	0.66	55.6	3.8%	
Total ADF for room	Bedroom	1.0%						4.1% Pass	
Window 49 (lower)			0.68	0.38	70.35	0.69	63.3	0.1%	
Window 49 (upper)			0.68	0.71	70.35	0.69	64.2	0.9%	
Window 48 (lower)			0.68	0.95	70.35	0.69	60.6	0.2%	
Window 48 (upper)			0.68	1.78	70.35	0.69	61.5	2.0%	
Total ADF for room	Bedroom	1.0%						3.2% Pass	
Window 51 (lower)			0.68	0.38	70.08	0.69	61.4	0.1%	
Window 51 (upper)			0.68	0.71	70.08	0.69	62.1	0.8%	
Window 50 (lower)			0.68	0.89	70.08	0.69	63.9	0.2%	
Window 50 (upper)			0.68	1.67	70.08	0.69	64.8	2.0%	
Total ADF for room	Bedroom	1.0%						3.1% Pass	
Window 53 (lower)			0.68	0.24	70.09	0.7	34.9	0.0%	
Window 53 (upper)			0.68	0.46	70.09	0.7	19.7	0.2%	
Window 52 (lower)			0.68	0.89	70.09	0.7	55.7	0.1%	
Window 52 (upper)			0.68	1.67	70.09	0.7	56.2	1.8%	
Total ADF for room	Bedroom	1.0%						2.1% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 54 (lower)			0.68	1.7	70.36	0.68	42.6	0.2%	
Window 54 (upper)			0.68	3.19	70.36	0.68	24.3	1.4%	
Total ADF for room	Bedroom	1.0%						1.6% Pass	
Window 55 (lower)			0.68	1.45	70.36	0.69	41.5	0.2%	
Window 55 (upper)			0.68	2.72	70.36	0.69	24.5	1.2%	
Total ADF for room	Bedroom	1.0%						1.4% Pass	
Window 56 (lower)			0.68	1.45	109.49	0.69	66.8	0.2%	
Window 56 (upper)			0.68	2.72	109.49	0.69	67.7	2.2%	
Total ADF for room	Kitchen/Lounge	2.0%						2.4% Pass	
Window 58 (lower)			0.68	1.87	103.43	0.67	45.0	0.2%	
Window 58 (upper)			0.68	3.52	103.43	0.67	46.3	1.9%	
Window 57 (lower)			0.68	0.72	103.43	0.67	42.3	0.1%	
Window 57 (upper)			0.68	1.36	103.43	0.67	44.2	0.7%	
Total ADF for room	Kitchen/Lounge	2.0%						2.9% Pass	
Window 59 (lower)			0.68	1.83	76.08	0.68	43.8	0.2%	
Window 59 (upper)			0.68	3.44	76.08	0.68	45.1	2.6%	
Total ADF for room	Bedroom	1.0%						2.8% Pass	
Window 60 (lower)			0.68	1.35	70.36	0.7	41.1	0.2%	
Window 60 (upper)			0.68	1.76	70.36	0.7	41.9	1.4%	
Total ADF for room	Bedroom	1.0%						1.6% Pass	
Window 61 (lower)			0.68	0.95	70.36	0.7	39.9	0.1%	
Window 61 (upper)			0.68	1.79	70.36	0.7	40.9	1.4%	
Total ADF for room	Bedroom	1.0%						1.5% Pass	
Window 62 (lower)			0.68	2.17	70.36	0.67	38.4	0.2%	
Window 62 (upper)			0.68	4.08	70.36	0.67	39.3	2.8%	
Total ADF for room	Bedroom	1.0%						3.0% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 64 (lower)			0.68	0.95	70.36	0.69	35.6	0.1%	0.1%
Window 64 (upper)			0.68	1.79	70.36	0.69	36.4	1.2%	1.2%
Window 63 (lower)			0.68	0.4	70.36	0.69	36.7	0.0%	0.0%
Window 63 (upper)			0.68	0.75	70.36	0.69	37.5	0.5%	0.5%
Total ADF for room	Bedroom	1.0%						1.8% Pass	
Window 65 (lower)			0.68	2.17	76.52	0.67	33.9	0.2%	0.2%
Window 65 (upper)			0.68	4.08	76.52	0.67	34.6	2.3%	2.3%
Total ADF for room	Bedroom	1.0%						2.5% Pass	
Window 67 (lower)			0.68	0.95	76.52	0.69	30.3	0.1%	0.1%
Window 67 (upper)			0.68	1.79	76.52	0.69	30.8	0.9%	0.9%
Window 66 (lower)			0.68	0.4	76.52	0.69	32.0	0.0%	0.0%
Window 66 (upper)			0.68	0.75	76.52	0.69	32.6	0.4%	0.4%
Total ADF for room	Bedroom	1.0%						1.4% Pass	
Window 68 (lower)			0.68	0.72	78.52	0.71	38.6	0.1%	0.1%
Window 68 (upper)			0.68	1.36	78.52	0.71	39.0	0.9%	0.9%
Total ADF for room	Bedroom	1.0%						1.0% Pass	
Window 69 (lower)			0.68	1.45	62.67	0.69	43.7	0.2%	0.2%
Window 69 (upper)			0.68	2.72	62.67	0.69	44.4	2.5%	2.5%
Total ADF for room	Bedroom	1.0%						2.7% Pass	
Window 70 (lower)			0.68	1.81	62.67	0.68	46.3	0.3%	0.3%
Window 70 (upper)			0.68	3.41	62.67	0.68	47.2	3.2%	3.2%
Total ADF for room	Bedroom	1.0%						3.5% Pass	
Window 71 (lower)			0.68	1.89	62.67	0.67	47.1	0.3%	0.3%
Window 71 (upper)			0.68	3.56	62.67	0.67	47.9	3.4%	3.4%
Total ADF for room	Bedroom	1.0%						3.7% Pass	
Window 72 (lower)			0.68	1.81	97.21	0.68	49.6	0.2%	0.2%
Window 72 (upper)			0.68	3.41	97.21	0.68	50.5	2.2%	2.2%
Total ADF for room	Kitchen/Lounge	2.0%						2.4% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 73 (lower)			0.68	1.89	97.21	0.68	49.6	0.2%	
Window 73 (upper)			0.68	3.56	97.21	0.68	50.5	2.3%	
Total ADF for room	Kitchen/Lounge	2.0%						2.5% Pass	
Window 74 (lower)			0.68	1.81	62.67	0.68	47.0	0.3%	
Window 74 (upper)			0.68	3.4	62.67	0.68	47.8	3.3%	
Total ADF for room	Bedroom	1.0%						3.6% Pass	
Window 75 (lower)			0.68	1.89	62.67	0.67	46.8	0.3%	
Window 75 (upper)			0.68	3.56	62.67	0.67	47.6	3.4%	
Total ADF for room	Bedroom	1.0%						3.7% Pass	
Window 76 (lower)			0.68	1.45	62.67	0.69	44.7	0.2%	
Window 76 (upper)			0.68	2.72	62.67	0.69	45.4	2.5%	
Total ADF for room	Bedroom	1.0%						2.7% Pass	
Window 77 (lower)			0.68	0.72	78.52	0.71	38.6	0.1%	
Window 77 (upper)			0.68	1.36	78.52	0.71	38.9	0.9%	
Total ADF for room	Bedroom	1.0%						1.0% Pass	
Window 79 (lower)			0.68	0.38	76.52	0.69	34.5	0.0%	
Window 79 (upper)			0.68	0.71	76.52	0.69	35.1	0.4%	
Window 78 (lower)			0.68	0.97	76.52	0.69	32.7	0.1%	
Window 78 (upper)			0.68	1.83	76.52	0.69	33.2	1.0%	
Total ADF for room	Bedroom	1.0%						1.5% Pass	
Window 80 (lower)			0.68	2.17	76.52	0.67	36.6	0.2%	
Window 80 (upper)			0.68	4.08	76.52	0.67	37.3	2.5%	
Total ADF for room	Bedroom	1.0%						2.7% Pass	
Window 82 (lower)			0.68	0.38	76.52	0.69	39.6	0.0%	
Window 82 (upper)			0.68	0.71	76.52	0.69	40.5	0.5%	
Window 81 (lower)			0.68	0.97	76.52	0.69	38.4	0.1%	
Window 81 (upper)			0.68	1.83	76.52	0.69	39.3	1.2%	
Total ADF for room	Bedroom	1.0%						1.8% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 83 (lower)			0.68	2.17	70.36	0.67	41.6	0.2%	
Window 83 (upper)			0.68	4.08	70.36	0.67	42.5	3.0%	
Total ADF for room	Bedroom	1.0%						3.2% Pass	
Window 85 (lower)			0.68	0.38	70.36	0.69	44.3	0.0%	
Window 85 (upper)			0.68	0.71	70.36	0.69	45.4	0.6%	
Window 84 (lower)			0.68	0.97	70.36	0.69	43.2	0.1%	
Window 84 (upper)			0.68	1.83	70.36	0.69	44.3	1.5%	
Total ADF for room	Bedroom	1.0%						2.2% Pass	
Window 86 (lower)			0.68	2.17	70.36	0.67	45.9	0.3%	
Window 86 (upper)			0.68	4.08	70.36	0.67	47.1	3.4%	
Total ADF for room	Bedroom	1.0%						3.7% Pass	
Window 87 (lower)			0.68	1.8	70.36	0.68	47.4	0.2%	
Window 87 (upper)			0.68	3.39	70.36	0.68	48.8	3.0%	
Total ADF for room	Bedroom	1.0%						3.2% Pass	
Window 88 (lower)			0.68	1.45	70.36	0.69	47.9	0.2%	
Window 88 (upper)			0.68	2.72	70.36	0.69	49.3	2.5%	
Total ADF for room	Bedroom	1.0%						2.7% Pass	
Window 89 (lower)			0.68	2.75	110.55	0.66	49.2	0.2%	
Window 89 (upper)			0.68	5.17	110.55	0.66	50.7	2.9%	
Total ADF for room	Kitchen/Lounge	2.0%						3.1% Pass	
Window 91 (lower)			0.68	1.9	103.43	0.67	79.4	0.3%	
Window 91 (upper)			0.68	3.57	103.43	0.67	80.3	3.4%	
Window 90 (lower)			0.68	0.72	103.43	0.67	44.0	0.1%	
Window 90 (upper)			0.68	1.36	103.43	0.67	45.5	0.7%	
Total ADF for room	Kitchen/Lounge	2.0%						4.5% Pass	
Window 92 (lower)			0.68	1.8	76.08	0.68	81.0	0.4%	
Window 92 (upper)			0.68	3.39	76.08	0.68	81.9	4.6%	
Total ADF for room	Bedroom	1.0%						5.0% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 93 (lower)			0.68	1.81	70.36	0.68	80.8	0.4%	
Window 93 (upper)			0.68	3.4	70.36	0.68	81.5	5.0%	
Total ADF for room	Bedroom	1.0%						5.4% Pass	
Window 94 (lower)			0.68	2.17	70.36	0.67	83.4	0.5%	
Window 94 (upper)			0.68	4.08	70.36	0.67	84.1	6.0%	
Total ADF for room	Bedroom	1.0%						6.5% Pass	
Window 95 (lower)			0.68	0.98	70.36	0.7	84.5	0.2%	
Window 95 (upper)			0.68	1.84	70.36	0.7	85.1	3.0%	
Total ADF for room	Bedroom	1.0%						3.2% Pass	
Window 96 (lower)			0.68	2.17	70.36	0.67	85.1	0.5%	
Window 96 (upper)			0.68	4.08	70.36	0.67	85.6	6.1%	
Total ADF for room	Bedroom	1.0%						6.6% Pass	
Window 98 (lower)			0.68	1.9	92.22	0.67	85.8	0.3%	
Window 98 (upper)			0.68	3.57	92.22	0.67	86.3	4.2%	
Window 97 (lower)			0.68	0.37	92.22	0.67	84.1	0.1%	
Window 97 (upper)			0.68	0.7	92.22	0.67	84.6	0.8%	
Total ADF for room	Bedroom	1.0%						5.4% Pass	
Window 99 (lower)			0.68	1.8	76.52	0.68	86.1	0.4%	
Window 99 (upper)			0.68	3.39	76.52	0.68	86.5	4.9%	
Total ADF for room	Bedroom	1.0%						5.3% Pass	
Window 100 (lower)			0.68	1.9	76.52	0.68	86.2	0.4%	
Window 100 (upper)			0.68	3.57	76.52	0.68	86.6	5.1%	
Total ADF for room	Bedroom	1.0%						5.5% Pass	
Window 101 (lower)			0.68	1.8	76.52	0.68	83.9	0.4%	
Window 101 (upper)			0.68	3.39	76.52	0.68	84.3	4.7%	
Total ADF for room	Bedroom	1.0%						5.1% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 102 (lower)			0.68	1.45	76.51	0.69	87.1	0.3%	
Window 102 (upper)			0.68	2.72	76.51	0.69	87.5	4.0%	
Total ADF for room	Bedroom	1.0%						4.3% Pass	
Window 103 (lower)			0.68	2.17	76.52	0.67	87.4	0.5%	
Window 103 (upper)			0.68	4.08	76.52	0.67	87.7	5.8%	
Total ADF for room	Bedroom	1.0%						6.3% Pass	
Window 104 (lower)			0.68	1.9	76.52	0.68	84.7	0.4%	
Window 104 (upper)			0.68	3.57	76.52	0.68	85.0	5.0%	
Total ADF for room	Bedroom	1.0%						5.4% Pass	
Window 105 (lower)			0.68	1.8	70.36	0.68	87.3	0.4%	
Window 105 (upper)			0.68	3.39	70.36	0.68	87.6	5.3%	
Total ADF for room	Bedroom	1.0%						5.7% Pass	
Window 106 (lower)			0.68	1.9	70.36	0.68	87.7	0.4%	
Window 106 (upper)			0.68	3.57	70.36	0.68	87.9	5.6%	
Total ADF for room	Bedroom	1.0%						6.0% Pass	
Window 107 (lower)			0.68	1.8	70.36	0.68	87.9	0.4%	
Window 107 (upper)			0.68	3.39	70.36	0.68	88.1	5.4%	
Total ADF for room	Bedroom	1.0%						5.8% Pass	
Window 108 (lower)			0.68	1.9	70.36	0.68	88.0	0.4%	
Window 108 (upper)			0.68	3.57	70.36	0.68	88.2	5.6%	
Total ADF for room	Bedroom	1.0%						6.0% Pass	
Window 109 (lower)			0.68	1.8	91.49	0.68	88.1	0.3%	
Window 109 (upper)			0.68	3.39	91.49	0.68	88.3	4.1%	
Total ADF for room	Kitchen/Lounge	2.0%						4.4% Pass	
Window 110 (lower)			0.68	1.81	91.49	0.68	57.1	0.2%	
Window 110 (upper)			0.68	3.41	91.49	0.68	58.2	2.7%	
Total ADF for room	Kitchen/Lounge	2.0%						2.9% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 111 (lower)			0.68	1.89	70.36	0.68	54.3	0.3%	
Window 111 (upper)			0.68	3.56	70.36	0.68	55.3	3.5%	
Total ADF for room	Bedroom	1.0%						3.8% Pass	
Window 112 (lower)			0.68	1.81	70.36	0.68	50.6	0.2%	
Window 112 (upper)			0.68	3.41	70.36	0.68	51.4	3.1%	
Total ADF for room	Bedroom	1.0%						3.3% Pass	
Window 113 (lower)			0.68	1.89	70.36	0.68	47.5	0.2%	
Window 113 (upper)			0.68	3.56	70.36	0.68	48.3	3.1%	
Total ADF for room	Bedroom	1.0%						3.3% Pass	
Window 114 (lower)			0.68	1.81	70.36	0.68	43.4	0.2%	
Window 114 (upper)			0.68	3.41	70.36	0.68	44.0	2.7%	
Total ADF for room	Bedroom	1.0%						2.9% Pass	
Window 115 (lower)			0.68	1.89	76.52	0.68	39.8	0.2%	
Window 115 (upper)			0.68	3.56	76.52	0.68	40.2	2.4%	
Total ADF for room	Bedroom	1.0%						2.6% Pass	
Window 116 (lower)			0.68	0.72	76.52	0.71	37.1	0.1%	
Window 116 (upper)			0.68	1.36	76.52	0.71	37.3	0.9%	
Total ADF for room	Bedroom	1.0%						1.0% Pass	
Window 117 (lower)			0.68	1.44	62.67	0.69	55.2	0.2%	
Window 117 (upper)			0.68	2.72	62.67	0.69	55.8	3.1%	
Total ADF for room	Bedroom	1.0%						3.3% Pass	
Window 118 (lower)			0.68	1.9	62.67	0.67	59.7	0.3%	
Window 118 (upper)			0.68	3.57	62.67	0.67	60.4	4.3%	
Total ADF for room	Bedroom	1.0%						4.6% Pass	
Window 119 (lower)			0.68	1.8	62.67	0.68	60.4	0.3%	
Window 119 (upper)			0.68	3.39	62.67	0.68	61.0	4.1%	
Total ADF for room	Bedroom	1.0%						4.4% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients				Actual ADF		
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 120 (lower)			0.68	1.9	97.21	0.68	65.9	0.2%	
Window 120 (upper)			0.68	3.57	97.21	0.68	66.9	3.1%	
Total ADF for room	Kitchen/Lounge	2.0%						3.3% Pass	
Window 121 (lower)			0.68	1.8	97.21	0.68	65.9	0.2%	
Window 121 (upper)			0.68	3.39	97.21	0.68	66.9	3.0%	
Total ADF for room	Kitchen/Lounge	2.0%						3.2% Pass	
Window 122 (lower)			0.68	1.9	62.67	0.67	61.3	0.3%	
Window 122 (upper)			0.68	3.57	62.67	0.67	62.1	4.4%	
Total ADF for room	Bedroom	1.0%						4.7% Pass	
Window 123 (lower)			0.68	1.8	62.67	0.68	59.5	0.3%	
Window 123 (upper)			0.68	3.39	62.67	0.68	60.4	4.1%	
Total ADF for room	Bedroom	1.0%						4.4% Pass	
Window 124 (lower)			0.68	1.44	62.67	0.69	54.7	0.2%	
Window 124 (upper)			0.68	2.72	62.67	0.69	55.5	3.1%	
Total ADF for room	Bedroom	1.0%						3.3% Pass	
Window 125 (lower)			0.68	0.72	78.7	0.71	37.0	0.1%	
Window 125 (upper)			0.68	1.36	78.7	0.71	37.5	0.9%	
Total ADF for room	Bedroom	1.0%						1.0% Pass	
Window 126 (lower)			0.68	1.44	62.67	0.69	38.2	0.2%	
Window 126 (upper)			0.68	2.72	62.67	0.69	38.5	2.2%	
Total ADF for room	Bedroom	1.0%						2.4% Pass	
Window 127 (lower)			0.68	1.81	62.67	0.68	42.2	0.2%	
Window 127 (upper)			0.68	3.41	62.67	0.68	42.8	2.9%	
Total ADF for room	Bedroom	1.0%						3.1% Pass	
Window 128 (lower)			0.68	1.89	62.67	0.67	45.1	0.3%	
Window 128 (upper)			0.68	3.56	62.67	0.67	45.7	3.2%	
Total ADF for room	Bedroom	1.0%						3.5% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					Actual ADF	
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 129 (lower)			0.68	1.81	62.67	0.68	48.1	0.3%	
Window 129 (upper)			0.68	3.41	62.67	0.68	48.9	3.3%	
Total ADF for room	Bedroom	1.0%						3.6% Pass	
Window 130 (lower)			0.68	1.89	62.67	0.67	44.7	0.3%	
Window 130 (upper)			0.68	3.56	62.67	0.67	45.4	3.2%	
Total ADF for room	Bedroom	1.0%						3.5% Pass	
Window 133 (lower)			0.68	0.81	111.11	0.63	52.0	0.1%	
Window 133 (upper)			0.68	1.38	111.11	0.63	52.9	0.7%	
Window 131 (lower)			0.68	2.13	111.11	0.63	55.9	0.2%	
Window 131 (upper)			0.68	3.64	111.11	0.63	56.9	2.1%	
Window 132 (lower)			0.68	2.13	111.11	0.63	81.5	0.3%	
Window 132 (upper)			0.68	3.63	111.11	0.63	83.9	3.1%	
Total ADF for room	Kitchen/Lounge	2.0%						6.5% Pass	
Window 136 (lower)			0.68	2.13	101.65	0.62	81.8	0.3%	
Window 136 (upper)			0.68	4.01	101.65	0.62	82.1	3.5%	
Window 134 (lower)			0.68	1.02	101.65	0.62	86.0	0.1%	
Window 134 (upper)			0.68	1.73	101.65	0.62	87.0	1.6%	
Window 135 (lower)			0.68	2.13	101.65	0.62	87.3	0.3%	
Window 135 (upper)			0.68	4.01	101.65	0.62	88.3	3.8%	
Total ADF for room	Kitchen/Lounge	2.0%						9.6% Pass	
Window 137 (lower)			0.68	1.9	62.67	0.67	68.2	0.4%	
Window 137 (upper)			0.68	3.57	62.67	0.67	68.7	4.9%	
Total ADF for room	Bedroom	1.0%						5.3% Pass	
Window 138 (lower)			0.68	1.8	62.67	0.68	71.1	0.4%	
Window 138 (upper)			0.68	3.39	62.67	0.68	71.8	4.9%	
Total ADF for room	Bedroom	1.0%						5.3% Pass	
Window 139 (lower)			0.68	1.9	62.67	0.67	64.3	0.4%	
Window 139 (upper)			0.68	3.57	62.67	0.67	64.9	4.6%	
Total ADF for room	Bedroom	1.0%						5.0% Pass	

**Appendix 2 - Average Daylight Factor (ADF)
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Reference	Target ADF based on room use		Average Daylight Factor Coefficients				Actual ADF		
	Primary room use	ADF	T	Aw	A	R	Theta	ADF	Result
Window 140 (lower)			0.68	1.8	62.67	0.68	57.1	0.3%	
Window 140 (upper)			0.68	3.39	62.67	0.68	57.6	3.9%	
Total ADF for room	Bedroom	1.0%						4.2% Pass	
Window 141 (lower)			0.68	1.45	62.67	0.69	46.9	0.2%	
Window 141 (upper)			0.68	2.72	62.67	0.69	46.9	2.6%	
Total ADF for room	Bedroom	1.0%						2.8% Pass	
Window 142 (lower)			0.68	0.72	76.51	0.69	44.4	0.1%	
Window 142 (upper)			0.68	1.36	76.51	0.69	44.4	1.0%	
Window 143 (lower)			0.68	0.72	76.51	0.69	0.4	0.0%	
Window 143 (upper)			0.68	1.36	76.51	0.69	0.4	0.0%	
Total ADF for room	Bedroom	1.0%						1.1% Pass	
Window 144 (lower)			0.68	1.45	70.36	0.69	58.5	0.2%	
Window 144 (upper)			0.68	2.72	70.36	0.69	58.7	2.9%	
Total ADF for room	Bedroom	1.0%						3.1% Pass	
Window 145 (lower)			0.68	1.45	70.36	0.69	56.0	0.2%	
Window 145 (upper)			0.68	2.72	70.36	0.69	56.3	2.8%	
Total ADF for room	Bedroom	1.0%						3.0% Pass	
Window 146 (lower)			0.68	1.45	90.73	0.62	69.3	0.2%	
Window 146 (upper)			0.68	2.72	90.73	0.62	69.6	2.3%	
Window 147 (lower)			0.68	3.04	90.73	0.62	87.5	0.5%	
Window 147 (upper)			0.68	5.73	90.73	0.62	87.7	6.2%	
Total ADF for room	Kitchen/Lounge	2.0%						9.2% Pass	

**Appendix 2 - Room Depth Calculation
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Room	Room Depth Coefficients				Room Depth Calculation		Result
	L	W	H	Rb	$L/W + L/H$	$2/1-Rb$	
<u>Proposed Ground Floor</u>							
Window 1	6.2	3.0	4.0	0.71	3.62 <=	6.87	Pass
Window 2	6.2	3.0	4.0	0.71	3.62 <=	6.87	Pass
Window 3	6.2	3.0	4.0	0.7	3.62 <=	6.61	Pass
Window 4	6.2	3.0	4.0	0.72	3.62 <=	7.05	Pass
Window 5	6.2	3.0	4.0	0.72	3.62 <=	7.05	Pass
Window 6	5.7	3.0	4.0	0.7	3.33 <=	6.57	Pass
Window 7	5.7	3.0	4.0	0.71	3.33 <=	6.96	Pass
Window 8	5.7	3.0	4.0	0.71	3.33 <=	6.96	Pass
Window 9	5.7	3.0	4.0	0.68	3.33 <=	6.2	Pass
Window 10	5.7	3.0	4.0	0.69	3.33 <=	6.44	Pass
Window 11	5.7	3.0	4.0	0.71	3.33 <=	6.98	Pass
Window 12	7.7	3.8	4.0	0.67	3.95 <=	5.99	Pass
Window 13	3.8	7.7	2.1	0.67	2.3 <=	5.99	Pass
Window 14	3.0	8.4	2.1	0.7	1.79 <=	6.63	Pass
Window 15	8.4	3.0	4.0	0.7	4.9 <=	6.63	Pass
Window 16	6.2	3.0	4.0	0.71	3.62 <=	6.8	Pass
Window 17	5.7	3.0	4.0	0.69	3.33 <=	6.44	Pass
Window 18	5.7	3.0	4.0	0.68	3.33 <=	6.2	Pass
Window 19	5.7	3.0	4.0	0.71	3.33 <=	6.97	Pass
Window 20	5.7	3.0	4.0	0.71	3.33 <=	6.97	Pass
Window 21	5.7	3.0	4.0	0.7	3.33 <=	6.57	Pass
Window 22	6.2	4.3	4.0	0.7	2.99 <=	6.63	Pass
Window 23	6.2	4.3	4.0	0.7	2.99 <=	6.63	Pass
Window 24	6.2	3.0	4.0	0.71	3.62 <=	6.8	Pass
Window 25	6.2	3.0	4.0	0.7	3.62 <=	6.76	Pass
Window 26	6.8	3.0	4.0	0.68	3.97 <=	6.28	Pass

Appendix 2 - Room Depth Calculation
Former Car Showroom, East Bay Close, Cardiff CF10 4BA

Room	Room Depth Coefficients				Room Depth Calculation			Result
	L	W	H	Rb	$L/W + L/H$	\leq	$2/1-Rb$	
Window 27	6.2	3.0	4.0	0.7	3.62	\leq	6.76	Pass
Window 28	5.7	3.0	4.0	0.7	3.33	\leq	6.77	Pass
Window 29	5.7	3.0	4.0	0.7	3.33	\leq	6.72	Pass
Window 30	5.7	3.0	4.0	0.7	3.33	\leq	6.77	Pass
Window 31	5.7	3.0	4.0	0.7	3.33	\leq	6.72	Pass
Window 32	7.0	3.0	4.0	0.7	4.08	\leq	6.75	Pass
Window 33	7.0	3.0	4.0	0.7	4.08	\leq	6.75	Pass
Window 34	5.7	3.0	4.0	0.7	3.33	\leq	6.72	Pass
Window 35	5.7	3.0	4.0	0.7	3.33	\leq	6.77	Pass
Window 36	5.7	3.0	4.0	0.7	3.33	\leq	6.72	Pass
Window 37	5.7	3.0	4.0	0.69	3.33	\leq	6.44	Pass
Window 38	6.2	3.0	4.0	0.69	3.62	\leq	6.44	Pass
Window 39	5.5	9.6	4.0	0.66	1.95	\leq	5.9	Pass
Window 40	5.5	9.6	4.0	0.66	1.95	\leq	5.9	Pass
Proposed First Floor								
Window 41	4.9	8.3	2.5	0.62	2.55	\leq	5.3	Pass
Window 42	8.3	5.0	2.5	0.62	4.98	\leq	5.3	Pass
Window 43	5.7	3.0	2.5	0.69	4.18	\leq	6.45	Pass
Window 44	5.7	3.0	2.5	0.69	4.18	\leq	6.45	Pass
Window 45	3.0	6.2	2.5	0.71	1.68	\leq	6.89	Pass
Window 46	6.2	3.0	2.5	0.69	4.55	\leq	6.47	Pass
Window 47	6.2	4.3	2.5	0.66	3.92	\leq	5.94	Pass
Window 48	5.7	3.0	2.5	0.69	4.18	\leq	6.52	Pass
Window 49	5.7	3.0	2.5	0.69	4.18	\leq	6.52	Pass
Window 50	5.7	3.0	2.5	0.69	4.18	\leq	6.55	Pass
Window 51	5.6	3.0	2.5	0.69	4.11	\leq	6.55	Pass
Window 52	5.6	3.0	2.5	0.7	4.11	\leq	6.64	Pass

**Appendix 2 - Room Depth Calculation
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Room	Room Depth Coefficients				Room Depth Calculation		Result
	L	W	H	Rb	$L/W + L/H$	$2/1-Rb$	
Window 53	5.6	3.0	2.5	0.7	4.11 <=	6.64	Pass
Window 54	5.7	3.0	2.5	0.68	4.18 <=	6.3	Pass
Window 55	5.7	3.0	2.4	0.69	4.28 <=	6.45	Pass
Window 56	7.6	3.8	2.4	0.69	5.17 <=	6.41	Pass
Window 57	3.0	8.4	2.5	0.67	1.56 <=	6.05	Pass
Window 58	8.4	3.0	2.5	0.67	6.16 <=	6.05	Pass
Window 59	6.2	3.0	2.5	0.68	4.55 <=	6.26	Pass
Window 60	5.7	3.0	2.0	0.7	4.75 <=	6.67	Pass
Window 61	5.7	3.0	2.5	0.7	4.18 <=	6.75	Pass
Window 62	5.7	3.0	2.5	0.67	4.18 <=	6.05	Pass
Window 63	5.7	3.0	2.5	0.69	4.18 <=	6.5	Pass
Window 64	5.7	3.0	2.5	0.69	4.18 <=	6.5	Pass
Window 65	6.2	3.0	2.5	0.67	4.55 <=	6.1	Pass
Window 66	6.2	3.0	2.5	0.69	4.55 <=	6.52	Pass
Window 67	6.2	3.0	2.4	0.69	4.65 <=	6.52	Pass
Window 68	3.4	5.8	2.5	0.71	1.95 <=	6.82	Pass
Window 69	5.0	3.0	2.5	0.69	3.67 <=	6.41	Pass
Window 70	5.0	3.0	2.5	0.68	3.67 <=	6.18	Pass
Window 71	5.0	3.0	2.5	0.67	3.67 <=	6.13	Pass
Window 72	7.6	3.0	2.5	0.68	5.57 <=	6.27	Pass
Window 73	7.6	3.0	2.5	0.68	5.57 <=	6.24	Pass
Window 74	5.0	3.0	2.5	0.68	3.67 <=	6.18	Pass
Window 75	5.0	3.0	2.5	0.67	3.67 <=	6.13	Pass
Window 76	5.0	3.0	2.5	0.69	3.67 <=	6.41	Pass
Window 77	3.4	5.8	2.5	0.71	1.95 <=	6.82	Pass
Window 78	6.2	3.0	2.5	0.69	4.55 <=	6.52	Pass
Window 79	6.2	3.0	2.5	0.69	4.55 <=	6.52	Pass

**Appendix 2 - Room Depth Calculation
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Room	Room Depth Coefficients				Room Depth Calculation		Result
	L	W	H	Rb	$L/W + L/H$	$2/1-Rb$	
Window 80	6.2	3.0	2.5	0.67	4.55 <=	6.1	Pass
Window 81	6.2	3.0	2.5	0.69	4.55 <=	6.52	Pass
Window 82	6.2	3.0	2.5	0.69	4.55 <=	6.52	Pass
Window 83	5.7	3.0	2.4	0.67	4.28 <=	6.05	Pass
Window 84	5.7	3.0	2.5	0.69	4.18 <=	6.5	Pass
Window 85	5.7	3.0	2.5	0.69	4.18 <=	6.5	Pass
Window 86	5.7	3.0	2.4	0.67	4.28 <=	6.05	Pass
Window 87	5.7	3.0	2.5	0.68	4.18 <=	6.24	Pass
Window 88	5.7	3.0	2.4	0.69	4.28 <=	6.45	Pass
Window 89	7.7	3.8	2.4	0.66	5.23 <=	5.96	Pass
Window 90	3.0	8.4	2.5	0.67	1.56 <=	6.04	Pass
Window 91	8.4	3.0	2.5	0.67	6.16 <=	6.04	Pass
Window 92	6.2	3.0	2.5	0.68	4.55 <=	6.28	Pass
Window 93	5.7	3.0	2.4	0.68	4.28 <=	6.24	Pass
Window 94	5.7	3.0	2.5	0.67	4.18 <=	6.05	Pass
Window 95	5.7	3.0	2.4	0.7	4.28 <=	6.73	Pass
Window 96	5.7	3.0	2.5	0.67	4.18 <=	6.05	Pass
Window 97	6.2	4.3	2.5	0.67	3.92 <=	6.13	Pass
Window 98	6.2	4.3	2.5	0.67	3.92 <=	6.13	Pass
Window 99	6.2	3.0	2.4	0.68	4.65 <=	6.28	Pass
Window 100	6.2	3.0	2.5	0.68	4.55 <=	6.23	Pass
Window 101	6.2	3.0	2.5	0.68	4.55 <=	6.28	Pass
Window 102	6.2	3.0	2.4	0.69	4.65 <=	6.47	Pass
Window 103	6.2	3.0	2.5	0.67	4.55 <=	6.1	Pass
Window 104	6.2	3.0	2.5	0.68	4.55 <=	6.23	Pass
Window 105	5.7	3.0	2.4	0.68	4.28 <=	6.24	Pass
Window 106	5.7	3.0	2.5	0.68	4.18 <=	6.19	Pass

**Appendix 2 - Room Depth Calculation
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Room	Room Depth Coefficients				Room Depth Calculation		Result
	L	W	H	Rb	$L/W + L/H$	$2/1-Rb$	
Window 107	5.7	3.0	2.5	0.68	4.18 <=	6.24	Pass
Window 108	5.7	3.0	2.4	0.68	4.28 <=	6.19	Pass
Window 109	7.0	3.0	2.4	0.68	5.25 <=	6.25	Pass
Window 110	7.0	3.0	2.5	0.68	5.13 <=	6.25	Pass
Window 111	5.7	3.0	2.4	0.68	4.28 <=	6.19	Pass
Window 112	5.7	3.0	2.4	0.68	4.28 <=	6.24	Pass
Window 113	5.7	3.0	2.5	0.68	4.18 <=	6.19	Pass
Window 114	5.7	3.0	2.5	0.68	4.18 <=	6.24	Pass
Window 115	6.2	3.0	2.5	0.68	4.55 <=	6.24	Pass
Window 116	3.0	6.2	2.4	0.71	1.73 <=	6.89	Pass
Window 117	5.0	3.0	2.5	0.69	3.67 <=	6.41	Pass
Window 118	5.0	3.0	2.4	0.67	3.75 <=	6.13	Pass
Window 119	5.0	3.0	2.4	0.68	3.75 <=	6.18	Pass
Window 120	7.6	3.0	2.4	0.68	5.7 <=	6.24	Pass
Window 121	7.6	3.0	2.4	0.68	5.7 <=	6.28	Pass
Window 122	5.0	3.0	2.4	0.67	3.75 <=	6.13	Pass
Window 123	5.0	3.0	2.4	0.68	3.75 <=	6.18	Pass
Window 124	5.0	3.0	2.5	0.69	3.67 <=	6.41	Pass
Window 125	3.2	6.2	2.4	0.71	1.85 <=	6.87	Pass
Window 126	5.0	3.0	2.5	0.69	3.67 <=	6.41	Pass
Window 127	5.0	3.0	2.5	0.68	3.67 <=	6.18	Pass
Window 128	5.0	3.0	2.5	0.67	3.67 <=	6.13	Pass
Window 129	5.0	3.0	2.5	0.68	3.67 <=	6.18	Pass
Window 130	5.0	3.0	2.5	0.67	3.67 <=	6.13	Pass
Window 131	7.6	4.6	2.3	0.63	4.96 <=	5.46	Pass
Window 132	3.0	7.6	2.3	0.63	1.7 <=	5.46	Pass
Window 133	2.3	4.7	2.3	0.63	1.49 <=	5.46	Pass

**Appendix 2 - Room Depth Calculation
Former Car Showroom, East Bay Close, Cardiff CF10 4BA**

Room	Room Depth Coefficients				Room Depth Calculation			Result
	L	W	H	Rb	$L/W + L/H$	\leq	$2/1-Rb$	
Window 134	3.6	8.1	2.3	0.62	2.01	\leq	5.21	Pass
Window 135	3.0	7.6	2.4	0.62	1.64	\leq	5.21	Pass
Window 136	7.6	3.9	2.4	0.62	5.12	\leq	5.21	Pass
Window 137	5.0	3.0	2.5	0.67	3.67	\leq	6.13	Pass
Window 138	5.0	3.0	2.5	0.68	3.67	\leq	6.18	Pass
Window 139	5.0	3.0	2.5	0.67	3.67	\leq	6.13	Pass
Window 140	5.0	3.0	2.4	0.68	3.75	\leq	6.18	Pass
Window 141	5.0	3.0	2.5	0.69	3.67	\leq	6.41	Pass
Window 142	3.0	6.2	2.4	0.69	1.73	\leq	6.47	Pass
Window 143	0.0	3.7	2.4	0.69	0.0	\leq	6.47	Pass
Window 144	5.7	3.0	2.4	0.69	4.28	\leq	6.45	Pass
Window 145	5.7	3.0	2.4	0.69	4.28	\leq	6.45	Pass
Window 146	6.9	3.5	2.4	0.62	4.85	\leq	5.31	Pass
Window 147	3.5	6.9	2.5	0.62	1.91	\leq	5.31	Pass

Appendix 2 - Sunlight to Windows
Former Car Showroom, East Bay Close, Cardiff CF10 4BA

Reference	Use Class	Annual Probable Sunlight Hours	
		Total	Winter
<u>Proposed Ground Floor</u>			
Window 12	Kitchen/Lounge	26%	6%
Window 13	Kitchen/Lounge	5%	5%
Window 14	Kitchen/Lounge	4%	3%
Window 15	Kitchen/Lounge	1%	0%
Window 32	Kitchen/Lounge	7%	0%
Window 33	Kitchen/Lounge	37%	5%
Window 39	Lounge	26%	3%
Window 40	Lounge	20%	2%
<u>Proposed First Floor</u>			
Window 41	Kitchen/Lounge	63%	25%
Window 42	Kitchen/Lounge	33%	12%
Window 56	Kitchen/Lounge	41%	16%
Window 57	Kitchen/Lounge	7%	1%
Window 58	Kitchen/Lounge	0%	0%
Window 72	Kitchen/Lounge	22%	3%
Window 73	Kitchen/Lounge	23%	3%
Window 89	Kitchen/Lounge	31%	9%
Window 90	Kitchen/Lounge	7%	2%
Window 91	Kitchen/Lounge	1%	0%
Window 109	Kitchen/Lounge	8%	0%
Window 110	Kitchen/Lounge	37%	7%
Window 120	Kitchen/Lounge	17%	0%
Window 121	Kitchen/Lounge	12%	0%
Window 131	Kitchen/Lounge	0%	0%
Window 132	Kitchen/Lounge	21%	2%
Window 133	Kitchen/Lounge	0%	0%

Appendix 2 - Sunlight to Windows
Former Car Showroom, East Bay Close, Cardiff CF10 4BA

Reference	Use Class	Annual Probable Sunlight Hours	
		Total	Winter
Window 134	Kitchen/Lounge	30%	6%
Window 135	Kitchen/Lounge	25%	5%
Window 136	Kitchen/Lounge	57%	21%
Window 146	Kitchen/Lounge	21%	2%
Window 147	Kitchen/Lounge	63%	25%