EAST CENTRAL HOUSE

LONDON, EC1V 3RH

DAYLIGHT & OVERSHADOWING STUDY

AUGUST 2018

CONTENTS

1.0	INTROD	DUCTION	1
2.0	PROPO	SED DEVELOPMENT	1
3.0	PLANNI	ING POLICY & GUIDELINES	1
4.0	Asses	SMENT METHODOLOGY	1
	4.1	Daylight to buildings	2
	4.2	Sunlight to buildings	2
	4.3	Sunlight to gardens and amenity spaces	3
	4.4	Scope of assessment	3
5.0	Assum	PTIONS MADE	3
6.0	Sourc	E INFORMATION	4
7.0	SIGNIF	ICANCE CRITERIA	4
8.0	BASELI	NE CONDITION	4
9.0	EFFEC ⁻	TS OF PROPOSED DEVELOPMENT ON NEIGHBOURING PROPERTIES	5
	9.1	Daylight – VSC Façade Analysis	5
	9.2	Sunlight to gardens and amenity spaces	5
10.0	LIGHT \	WITHIN PROPOSED DEVELOPMENT	5
	10.1	Internal Daylight Adequacy – ADF	5
11.0	CONCL	USION	6

APPENDICES

APPENDIX A - SPOT HEIGHT DRAWING - 18332/SPT/800

APPENDIX B – DAYLIGHT VSC FAÇADE ANALYSIS RESULTS – 18332/3D/PDF/800

APPENDIX C - OVERSHADOWING ANALYSIS RESULTS - 18332/SHD/500-501

APPENDIX D – INTERNAL DAYLIGHT ADEQUACY RESULTS – 18332/LOC/803

1.0 Introduction

Delva Patman Redler LLP have been instructed by Unite Students to assess the potential effects of the proposed development within the courtyard at East Central House on daylight, sunlight and overshadowing to neighbouring residential properties.

This study has been carried out in accordance with the recommendations of the Building Research Establishment (BRE) Report 209, Site Layout Planning for Daylight and Sunlight: A guide to good practice (second edition, 2011) ("the BRE guide").

A location drawing of the site and surrounding properties that have been assessed is attached at Appendix A. Our analysis results are attached in the remaining appendices.

2.0 PROPOSED DEVELOPMENT

The proposed development comprises the erection of a 3 storey extension block within the courtyard of East Central House which would accommodate an additional 18 student bedrooms and amenity to increase the capacity for students studying at the City, University of London.

3.0 PLANNING POLICY & GUIDELINES

This study has been carried out in accordance with the recommendations of the abovementioned BRE guide. This is the recognised guidance against which daylight and sunlight effects should be assessed.

The BRE guide states:

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given is not mandatory and the report should not be seen as a part 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."

"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... The calculation methods ... are entirely flexible in this respect."

Whilst technical analysis can be carried out in accordance with numerical guidelines and reported factually by comparison with those guidelines, the final assessment as to whether affected dwellings are left with acceptable amounts of daylight and sunlight in an urban context, where the findings are to be interpreted in a flexible manner, is a matter of subjective opinion.

4.0 ASSESSMENT METHODOLOGY

The daylight and sunlight assessments have been undertaken in accordance with the assessment methodology recommended in the BRE guide. This measures the available daylight and sunlight in the existing and proposed conditions and presents the numerical results both on an absolute scale and a comparative scale, measuring the factor of former value, to quantify the magnitude of impact.

For neighbouring residential properties, the BRE guide advises that rooms/windows should be assessed where daylight and sunlight is required. It regards bedrooms as less important for daylight and both kitchens and bedrooms as less important for sunlight. Bathrooms, toilets, storerooms, circulation areas and garages need not be analysed.

The guidelines may also be applied to non-domestic buildings where occupants have a reasonable expectation of daylight, including schools, hospitals, hotels and hostels, small workshops and some offices, and any with a specific requirement for sunlight. However, it is common practice for studies for



planning applications to assess residential properties only, unless the neighbouring buildings are sensitive receptors such as residential care homes, schools or hospitals.

4.1 Daylight to buildings

The BRE guide states that:

"If, for any part of the new development, the angle from the centre of the lowest affected window to the head of the new development is more than 25°, then a more detailed check is needed to find the loss of skylight to the existing buildings."

The BRE guidelines propose several methods for assessing the effect on daylight. The two main methods predominantly used are:

- vertical sky component (VSC), which measures the total amount of skylight available on the outside plane of the window wall at the centre of each window; and
- no-sky line (NSL), which measures the area of the working plane in a room which can receive direct skylight.

The VSC measures the potential for daylight reaching a room, as it does not take account of the size or number of windows serving it. If a room has two or more windows of equal size, the mean of their VSCs may be taken.

The NSL is the line on the working plane that divides areas that receive direct skylight from those that do not. It therefore measures the distribution of daylight around the room and can be displayed graphically on floor plans.

A third daylight metric is the average daylight factor (ADF), which assesses the average level of daylight inside a room. It is a detailed calculation that takes account of the amount of sky visible at each of the windows serving the room, the glazed area of each window, the diffuse light transmittance of the glazing, the total surface area of the room and the reflectance of those surfaces. British Standard *BS8206-2:2008, Lighting for Buildings – Part 2: Code of Practice for Daylighting* recommends minimum ADF values for dwellings of 1% in bedrooms, 1.5% in living rooms and 2% in kitchens. For other uses, where it is expected that supplementary electric lighting will be used throughout the daytime, such as in offices, it recommends an ADF value of 2%.

The ADF test is primarily intended for assessing light within new development, including neighbouring consented buildings that are not yet built. However, when considering the acceptability of VSC and NSL effects it can be helpful to understand whether the retained ADF values with the proposed development in place will satisfy the ADF guidelines for new dwellings.

For the purposes of this report, the primary VSC method of assessment has been conducted.

4.2 Sunlight to buildings

Sunlight to buildings is assessed by calculating the percentage of annual probable sunlight hours (APSH) for the main windows of the relevant rooms which face within 90° of due south. Probable sunlight hours is the long-term average of the total number of hours during a year in which direct sunlight reaches the unobstructed ground when clouds are taken into account.

The BRE publishes APSH indicators for three latitudes in the UK: London (51.5°N, 1486 unobstructed hours), Manchester (53.5°N, 1392 unobstructed hours) and Edinburgh (56°N, 1267 unobstructed hours). The assessment uses whichever indicator is nearest to the latitude of the proposed development.

The assessment calculates the percentage of APSH over the whole year (annual sunlight) and between 21 September and 21 March (winter sunlight).



4.3 Sunlight to gardens and amenity spaces

Sunlight should be assessed on the equinox (21 March) to main back gardens of houses, allotments, parks and playing fields, children's playgrounds, outdoor swimming pools, sitting-out area, such as in public squares and focal points for views, such as a group of monuments or fountains.

The assessment measures the percentage of each area that can receive at least two hours of sunlight on 21 March – the-two-hours sun-on-ground test. Sunlight at an altitude of 10° or less is ignored, because it is likely to be blocked by planting, and fences or walls less than 1.5 metres high can also be ignored. Front gardens, driveways and hard standing for cars are usually omitted. Normally, trees and shrubs need not be included, partly because their shapes are almost impossible to predict, and partly because the dappled shade of a tree is more pleasant than a deep shadow of a building.

When a large building is proposed which may affect a number of gardens or open spaces, it can be illustrative to plot shadow plans showing the location of shadows at different times of day and year. The equinox (21 March) is the best assessment date as it shows the average level of shadowing. Midsummer (21 June) is an optional additional date.

4.4 Scope of assessment

We have used 3D computer modelling and specialist software to run the assessments recommended in the BRE guide.

We have assessed the neighbouring properties facades that may potentially be adversely affected by the proposed development, having regard to the BRE preliminary 25° angle test and using professional judgement.

We have included the following drawings at Appendix A and B to show the 3D computer model used in our assessment and the neighbouring properties that have been assessed.

5.0 ASSUMPTIONS MADE

Access has not been sought into any of the neighbouring properties; however, we have carried out research in an attempt to determine building uses wherever reasonably possible. Table 1 shows the uses of all the immediate neighbouring buildings within the vicinity of the site.

Table 1 - Neighbouring building uses

Address	Building Use
Existing East Central House	Student Accommodation
Export House, 25-31 Ironmonger Row	Commercial yoga studio at basement and ground floor with residential flats from first floor and above
Overseas House, 19-23 Ironmonger Row	Commercial
Europa House, 13-17 Ironmonger Row	Commercial with fourth floor level residential flats
Ironmonger Row Baths	Commercial

For the ADF assessment undertaken on the proposed dwellings, we used the parameters stated in Table 2.

Table 2 - Parameters used in ADF calculations

Parameter	Value – Proposed Dwellings
Maintenance factor (dirt on glass)	0.92 – urban residential
Diffuse light transmittance of glazing	0.68 – double glazing



Frame and glazing bar factor	0.85 – metal frame, large pane
Internal surface reflectance	0.50 – BRE default mean value where finishes are not known

6.0 Source Information

The studies have been undertaken by calculating the daylight & overshadowing based on the template drawings provided within the BRE Guide. The study was undertaken with plan drawings derived from:

- Existing and surrounding buildings: Accucities 3D contextual model: Dwg No: TQ3282_NW_HD_SOLID.dwg
- Proposed scheme: Cooley Architects: Dwg No: 921 Model_1.dwg received 29/06/2018: Dwg No's: 921-DG-0S 01 Rev B, 921-EX-XX01, 921-EX-XX01, 921-DG-XX01 Rev B, 921-DG-XX02 Rev B, 921-DG-XX03, 921-DG-XX04, 921-DG-XX05, 921-DG-XX06

7.0 SIGNIFICANCE CRITERIA

The BRE guide sets out numerical guidelines against which the potential effects of proposed development on daylight and sunlight may be assessed. The numerical guidelines are summarised in Table 3 below.

Table 3 - BRE assessment criteria for neighbouring properties

Issue	Criteria
Daylight to buildings	Daylight may be adversely affected if: • the vertical sky component (VSC) measured at the centre of the window is reduced to less than 27% and less than 0.8 times its former value, or In new dwellings, the minimum recommended average daylight factor (ADF) is 1% for bedrooms, 1.5% for living rooms and 2% for kitchens and in offices 2% is recommended.
Sunlight to gardens & amenity areas	Sunlight to gardens and amenity areas may be adversely affected if the area which can receive two hours of direct sunlight on 21 March is reduced to less than 50% of its area and less than 0.8 times its former size.

In short, the BRE guidelines work on the general principle that, except where certain minimum values are retained (i.e. 27% VSC, 25% APSH annually, 5% APSH in winter and 50% of a garden/amenity space receiving at least two hours of sunlight), a reduction in light to less than 0.8 times its former value (i.e. more than 20% reduction) will be noticeable to the occupiers.

As noted in section 1 of this report, the BRE guide states that these numerical guidelines are not mandatory and must be interpreted flexibly because natural lighting is only one of many factors in site layout design. In certain circumstance, such as 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.

Therefore, the assessment results must interpreted carefully, with due consideration given to the site context and whether acceptable amounts of daylight and sunlight will be retained for an urban context.

8.0 BASELINE CONDITION

A façade analysis has been undertaken to determine the daylight levels on the external elevations of all neighbouring buildings and amenity spaces in the baseline condition. The existing site conditions and the proposed extension in green along with key building heights are shown on drawing 18332/SPT/800 at Appendix A.



The development site is situated in the courtyard of East Central House which bounds this to the north and west with properties on Ironmonger Row to the east and the Ironmonger Row Baths to the south. The courtyard is surrounded immediately with neighbouring properties on all sides.

The findings from the technical assessments can be seen from the results, both in graphical and tabular form, in the Technical Appendices.

An analysis of the existing daylight levels enjoyed by the neighbouring residential amenity has been undertaken to provide a baseline against which the impacts arising from the proposed development can be assessed.

9.0 EFFECTS OF PROPOSED DEVELOPMENT ON NEIGHBOURING PROPERTIES

9.1 Daylight - VSC Façade Analysis

The results of the VSC façade analysis are presented in our 3D PDF and drawing number 18332/3D/PDF/800 in Appendix B.

This study demonstrates that 94.30% of all neighbouring elevations considered for the analysis comfortably comply with the BRE guide in VSC terms. Only 5.7% of the neighbouring elevations considered experiences an adverse impact as a result of the proposals.

It must be noted that the areas which fall shy of the BRE guide are located predominately to the existing East Central House block. This is student accommodation which due to the short tenancies and lifestyle of occupants should be considered to have different amenity standards applied as opposed to the same standards as those for permanent residential accommodation.

The remaining areas are situated at ground floor levels within Export and Overseas House which are of commercial use.

9.2 Sunlight to gardens and amenity spaces

The results of the two-hour sun-on-ground analyses on 21 March is shown on drawing number 18332/SHD/500 in Appendix D. In summary, the courtyard will fall below of the BRE guidelines for sun on ground.

An alternative assessment has been conducted on the 21 June and the results of this study are shown on drawing number 18332/SHD/501 in Appendix D. This demonstrates that the courtyard will comfortably comply with the BRE guidelines for sun on ground.

The sun of ground assessment demonstrates that although the courtyard falls below the minimum BRE guidelines on 21 March, the alternative assessment demonstrates that during the summer months the space will remain adequately sunlit.

10.0 LIGHT WITHIN PROPOSED DEVELOPMENT

10.1 Internal Daylight Adequacy - ADF

The results of the daylight analysis of the habitable rooms within the proposed scheme are tabulated and shown with drawing number 18332/LOC/803 at Appendix D and summarised in Table 4 below.

Table 4 - Number of rooms meeting ADF guidelines

Location within the proposed development	Total number of rooms tested	Number of rooms meeting ADF guidelines	Number of rooms below ADF guidelines
Ground	2	2	0
First	10	10	0
Second	10	10	0



Total	22	22	0

Table 4 shows that all 22 (100%) of rooms assessed will satisfy the BRE guidelines for ADF.

11.0 CONCLUSION

The development site is situated in the courtyard of East Central House which bounds this to the north and west with properties on Ironmonger Row to the east and the Ironmonger Row Baths to the south. The courtyard is surrounded immediately with neighbouring properties on all sides.

The proposed development comprises the erection of a 3 storey extension block within the courtyard of East Central House which would accommodate an additional 18 student bedrooms and amenity to increase the capacity for students studying at the City, University of London.

We have assessed the potential effects of the proposed development on daylight and sun on ground to surrounding residential properties using the methodology recommended in the BRE guidelines, *Site Layout Planning for Daylight and Sunlight: A guide to good practice (second edition, 2011)*.

Overall the neighbouring VSC daylight façade analysis illustrates that the quality of light to the majority of neighbouring elevations will generally remain BRE compliant.

The sun of ground assessment demonstrates that although the courtyard falls below the minimum BRE guidelines on 21 March, the alternative assessment demonstrates that during the summer months the space will remain adequately sunlit.

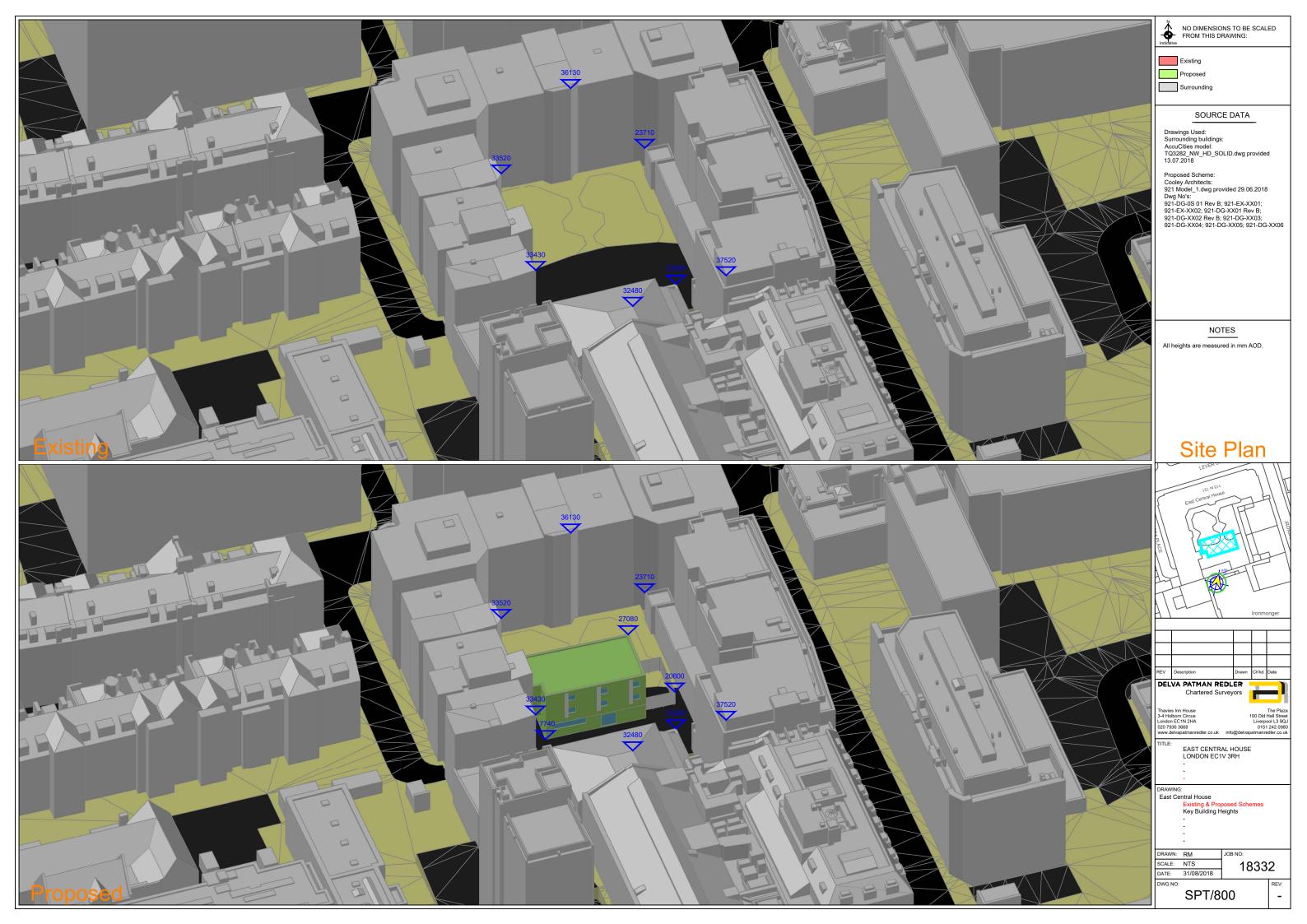
The internal daylight assessment of the internal configurations of the proposals themselves demonstrate full compliance of the BRE guidelines.

In conclusion, it is submitted that the proposed development generally recognises and observes the intentions of the London Borough of Islington local planning policy and the BRE guidelines in daylight and overshadowing terms.

Delva Patman Redler LLP



APPENDIX A
SPOT HEIGHT DRAWING
18332/SPT/800



APPENDIX B

DAYLIGHT VSC FAÇADE ANALYSIS RESULTS – NEIGHBOURING PROPERTIES

18332/3D/PDF/800



APPENDIX C
OVERSHADOWING RESULTS

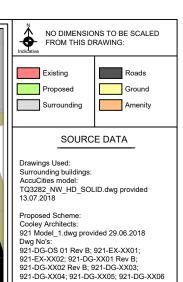
18332/SHD/500-501



Existing Shadow Contour - 21st March

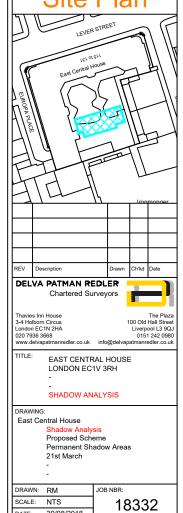
Proposed Shadow Contour - 21st March

Amenity Area (m²)		BRE Recommendations (At least 50% of Amenity Area)		Existing %age of Area	Proposed Area	Proposed %age of Area	%age Change	Condition
East Central House\Ground\A1	506.99	253.49	479.72	95%	114.51	23%	76%	Fail
Total	506.99	253.49	479.72	95%	114.51	23%	76%	Fail



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 less fill that the particular. then the loss of light is likely to be noticeable

Site Plan



DATE: 30/08/2018

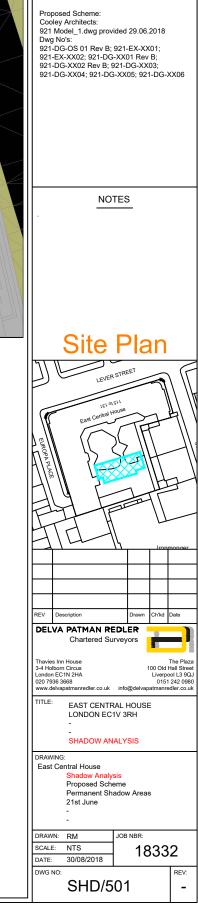
SHD/500



Existing Shadow Contour - 21st June

Proposed Shadow Contour - 21st June

	Amenity Area (m²)		BRE Recommendations (At least 50% of Amenity Area)		Existing %age of Area	Proposed Area	Proposed %age of Area	%age Change	Condition
E	ast Central House\Ground\A1	506.99	253.49	503.41	99%	360.27	71%	28%	Pass
Г	Total	506.99	253.49	503.41	99%	360.27	71%	28%	Pass



Ground

SOURCE DATA

APPENDIX D

INTERNAL DAYLIGHT ADEQUACY RESULTS

18332/LOC/803

	Ground	Lounge/R1	W1 W2 W6 W7	2.12%		
	Ground		W6	2.12%		
	Ground			2.12%		
	Ground		W7		1.50%	Pass
	Ground					
			W8			
		1	W3			
		Games Lounge/R2	W4	1.69%	1.50%	Pass
			W5			
		Bedroom/R1	W1	1.35%	1.00%	Pass
		Bedroom/R2	W2	1.42%	1.00%	Pass
		Bedroom/R3	W3	1.39%	1.00%	Pass
		Bedroom/R4	W4	1.05%	1.00%	Pass
		Bedroom/R5	W5	1.19%	1.00%	Pass
	Firet	Bedroom/R6	W6	1.19%	1.00%	Pass
	1 1131	Bedroom/R7	W7	1.26%	1.00%	Pass
et Central House		Bedroom/R8	W8	1.26%	1.00%	Pass
t Central House		Bedroom/R9	W9	1.25%	1.00%	Pass
			W10			
		Kitchen/Lounge/R10	W11	1.56%	1.50%	Pass
			W12	1		
		Bedroom/R1	W1	1.52%	1.00%	Pass
		Bedroom/R2	W2	1.60%	1.00%	Pass
		Bedroom/R3	W3	1.58%	1.00%	Pass
		Bedroom/R4	W4	1.22%	1.00%	Pass
	Second	Bedroom/R5	W5	1.40%	1.00%	Pass
		Bedroom/R6	W6	1.41%	1.00%	Pass
Secon		Bedroom/R7	W7	1.48%	1.00%	Pass
		Bedroom/R8	W8	1.47%	1.00%	Pass
		Bedroom/R9	W9	1.46%	1.00%	Pass
			W10			
				- 1		
		Kitchen/Lounge/R10	W11	1.85%	1.50%	Pass
if	Central House		Bedroom/R6 Bedroom/R7 Bedroom/R8 Bedroom/R9 Kitchen/Lounge/R10 Bedroom/R1 Bedroom/R2 Bedroom/R3 Bedroom/R4 Bedroom/R5 Bedroom/R6 Bedroom/R7 Bedroom/R8 Bedroom/R9	First Bedroom/R6	First Bedroom/R6 W6 1.19% Bedroom/R7 W7 1.26% Bedroom/R8 W8 1.26% Bedroom/R9 W9 1.25% W10 Kitchen/Lounge/R10 W11 1.56% W12 Bedroom/R1 W1 1.52% Bedroom/R2 W2 1.60% Bedroom/R3 W3 1.58% Bedroom/R4 W4 1.22% Bedroom/R5 W5 1.40% Bedroom/R6 W6 1.41% Bedroom/R7 W7 1.48% Bedroom/R8 W8 1.47% Bedroom/R9 W9 1.46%	First Bedroom/R6 W6 1.19% 1.00% Bedroom/R7 W7 1.26% 1.00% Bedroom/R8 W8 1.26% 1.00% Bedroom/R9 W9 1.25% 1.00% W10 Kitchen/Lounge/R10 W11 1.56% 1.50% W12 Bedroom/R2 W2 1.60% 1.00% Bedroom/R2 W2 1.60% 1.00% Bedroom/R3 W3 1.58% 1.00% Bedroom/R4 W4 1.22% 1.00% Bedroom/R5 W5 1.40% 1.00% Bedroom/R6 W6 1.41% 1.00% Bedroom/R7 W7 1.48% 1.00% Bedroom/R8 W8 1.47% 1.00% Bedroom/R8 W8 1.47% 1.00%

Dwg No	Address	Floor Level	Room Name	Window ID	ADF (Room) %age	Pass Rate %age	Condition

