

105 Truro Road

Internal Daylight and Sunlight Report

14 October 2022

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105 Truro Road

INTERNAL DAYLIGHT AND SUNLIGHT REPORT

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Reference: 3000

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EXECUTIVE SUMMARY

- This is a report into the daylight and sunlight internally to the scheme at 105 Truro Road. This analysis has been based upon scheme drawings provided by Seesaw Studios and a photogrammetric survey of the site and surrounding context.
- The analysis has been carried out in accordance with the methodologies contained in the BRE Guidelines which is used by the local authority to determine the acceptability of a scheme in terms of its daylight and sunlight.
- The analysis shows that the habitable rooms in all three flats meet their target daylight values and that all three units meet their target sunlight values.



1 INTRODUCTION

Waldrams have been instructed to provide daylight and sunlight analysis for three flats within the proposed scheme at 105 Truro Road. This analysis is based upon scheme drawings by Seesaw Studios and a photogrammetric survey of the site and surrounding context.

The analysis has been carried out in accordance with the methodologies contained in the BRE Guidelines which is used by the local authority to determine the acceptability of a proposal in terms of its daylight and sunlight.

The layouts of the three flats are shown on drawing 3000-02-01 in Appendix 1. The internal daylight and sunlight results can be found in Appendix 2.

2 SUMMARY OF HOW DAYLIGHT AND SUNLIGHT ARE CONSIDERED FOR PLANNING

2.1 INTRODUCTION TO THE BRE GUIDELINES

Daylight and sunlight are planning considerations. The main reference used by local planning authorities to determine the acceptability of proposals in terms of their internal daylight and sunlight is the Building Research Establishment (BRE) Guidelines, used in conjunction with British Standard *Daylight in Buildings*, BS EN 17037. The BRE Guidelines provide scientific, objective methods for establishing the acceptability of daylight and sunlight internally to the scheme. In practice, it is principally the main habitable rooms internal to the scheme that are sensitive in terms of daylight and sunlight. This report therefore focuses on the internal daylight and sunlight to the main habitable rooms within the scheme.

The BRE Guidelines specify that the daylight and sunlight results should be considered flexibly and in the context of the site. Clearly, there would be a higher expectation for daylight and sunlight in a rural or suburban environment than in a dense city centre location. The important factor in all cases is that the levels of daylight and sunlight are appropriate, taking into account all the planning policy requirements of the site. The BRE Guidelines acknowledge this in the introduction where the BRE Guidelines state:

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and thus this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design. In special circumstances the developer or planning authority may wish to use different target values."



The numerical figures should not be rigidly applied, but instead used as part of the overall evaluation of the daylight and sunlight to the surroundings in context of the site, its existing massing, and the need for regeneration and local planning policy guidance for the site. In particular, existing local precedents or recent planning consents may provide a good indication as to appropriate levels in the vicinity.

2.2 ALTERNATIVE TARGET VALUES AND APPLYING A FLEXIBLE APPROACH

The BRE Guidelines recommend that, in urban development locations, alternative baselines or lower target values may be used (c.f. Appendix F of the BRE Guidelines for Daylight & Sunlight). Paragraph F1 states:

"These values [those set out in the BRE Guidelines] are purely advisory and different targets may be used based on the special requirements of the proposed development or its location. Such alternative targets may be generated from the layout dimensions of existing development, or they may be derived from considering the internal layout and daylight needs of the proposed development itself."

Indeed, in paragraph 2.2.3 of the BRE Guidelines it states:

"Note that numerical values given here are purely advisory. Different criteria may be used based on the requirements for daylighting in an area viewed against other site layout constraints. Another important issue is whether the existing building is itself a good neighbour, standing a reasonable distance from the boundary and taking more than its fair share of light. Appendix F gives further guidance."

2.3 INTERNAL DAYLIGHT & SUNLIGHT CRITERIA FOR NEW BUILDS

The BRE Guidelines set out their interior daylight recommendations in Appendix C of their document. They refer to the British Standard *Daylight in Buildings* BS EN17037 and its UK National Annex which sets out two criteria for assessing interior daylight. One is based on target illuminances from daylight to be achieved over specified fractions of the reference plane (a plane at table top height covering the room) for at least half of the daylight hours in a typical year. The other, alternative, method is based on calculating the daylight factors achieved over specified fractions of the reference plane.

Illuminance Method

This method involves using climatic data for the location of the site (via the use of an appropriate, typical or average year, weather file within the software) to calculate the illuminance from daylight at each point on an assessment grid on the reference plane at an at least hourly interval for a typical year.



Daylight Factor Method

This method involves the computation of the daylight factor at each calculation point on an assessment grid. The daylight factor is the illuminance at a point on the reference plane in a space, divided by the illuminance on an unobstructed horizontal surface outdoors. The CIE standard overcast sky is used, and the ratio is usually expressed as a percentage.

Since the calculation uses an overcast sky model, the daylight factor is independent of orientation and location. For spaces with side windows, equivalent daylight factor targets to achieve a target illuminance over at least half of the daylight hours in a year are based on the formula:

$$D = \text{Target illuminance} / \text{Median external diffuse horizontal illuminance} \times 100 (\%)$$

where the median external diffuse horizontal illuminance ($E_{v,d,med}$) is the illuminance from the sky on an unobstructed horizontal surface achieved for half of the yearly daylight hours at a particular location.

Residential Rooms in UK Dwellings

The UK National Annex gives specific minimum recommendations for habitable rooms in dwellings in the United Kingdom. The National Annex therefore provides the UK guidance on minimum daylight provision in all UK dwellings.

The UK National Annex gives illuminance recommendations of:

- 100 lux in bedrooms
- 150 lux in living rooms
- 200 lux in kitchens.

These are the median illuminances, to be exceeded over at least 50% of the assessment points in the room for at least half of the daylight hours. The recommended levels over 95% of a reference plane need not apply to dwellings in the UK.

The BRE Guidelines state in paragraph C17 that:

"Where a room has a shared use, the highest target should apply. For example in a bed sitting room in student accommodation, the value for a living room should be used if students would often spend time in their rooms during the day. Local authorities could use discretion here. For example, the target for a living room could be used for a combined living/dining/kitchen area if the kitchens are not treated as habitable spaces, as it may avoid small separate kitchens in a design."

The table below shows the daylight factor targets to be achieved over at least 50% of the



assessment grid in domestic habitable rooms with vertical and/or inclined daylight apertures. The UK National Annex gives alternative target values for rooms with diffusing horizontal rooflights. The recommendations are met if the median of the daylight factors calculated in a room meets or exceeds the specific target for room type and location.

Target daylight factors (D _T) to achieve over at least 50% of the assessment grid in UK domestic habitable rooms with vertical and/or inclined daylight apertures			
Location	D _T for 100 lx (Bedroom)	D _T for 150 lx (Living room)	D _T for 200 lx (Kitchen)
St Peter (Jersey)	0.6%	0.9%	1.2%
London (Gatwick Airport)	0.7%	1.1%	1.4%
Birmingham	0.6%	0.9%	1.2%
Hemsby (Norfolk)	0.6%	0.9%	1.3%
Finningley (Yorkshire)	0.7%	1.0%	1.3%
Aughton (Lancashire)	0.7%	1.1%	1.4%
Belfast	0.7%	1.0%	1.4%
Leuchars (Fife)	0.7%	1.1%	1.4%
Oban	0.8%	1.1%	1.5%
Aberdeen	0.7%	1.1%	1.4%

Sunlight

For internal sunlight, the BRE Guidelines state in paragraph 3.1.15:

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

- at least one main window wall faces within 90° of due south and*
- a habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 March. This is assessed at the inside centre of the window(s); sunlight received by different windows can be added provided they occur at different times and sunlight hours are not double counted."*

2.4 METHOD USED FOR CALCULATING THE DAYLIGHT AND SUNLIGHT RESULTS

The analysis provided in this report utilizes state-of-the-art software to calculate in three dimensions the daylight and sunlight following the methods specified in the BRE Guidelines. A three dimensional accurate computer model has been created for the existing site in context of the immediate surrounding properties, based upon a photogrammetric survey of the site and surrounding properties and site photographs..

Daylight and sunlight internally to the scheme are then calculated. These results are



provided in Appendix 2.

REFERENCES:

BRE Guidelines (BR 209): *Site layout planning for daylight and sunlight: a guide to good practice*(2022).

These Guidelines provide the basis of the analysis described in this report. Please refer to this document for a detailed description as to the approach, methodology, and implementation of the numerical analysis used in this report. A summary of the approach and methods recommended by the BRE Guidelines is included in Section 2 above of this report.



3 ASSUMPTIONS USED IN THE ANALYSIS

The following reflectance, transmittance, maintenance and framing values have been used in the internal daylight calculations:

- Transmittance (T): 0.68
- Reflectance (R): 0.4 for floors, 0.8 for ceilings, and 0.7 for walls
- Maintenance Factor: 0.92
- Framing Factor: 0.6

BS EN 17037 section B.3.1 states that, "the recommended values of reflectance for the major interior surfaces would be in the following ranges: ceiling 0.7 to 0.9; interior walls 0.5 to 0.8; floor 0.2 to 0.4." Paragraph C24 of the BRE Guidelines meanwhile states, "Where surface finishes have been specified or measured on site, they can be used in the calculations with appropriate factors for maintenance and furniture. To allow for these factors, maximum reflectances for white painted surfaces in the calculations should not exceed 0.8 indoors, and 0.6 outdoors. Maximum reflectances for light pastel walls should not exceed 0.7 in the calculations, and maximum reflectances for light wood floors should not exceed 0.4."

We understand that the applicant intends to use white painted ceilings, light painted walls, and light wood floors and have therefore used the corresponding values.

4 SOURCES OF INFORMATION USED IN THE REPORT

Seesaw Studios

P4_105 Truro road, N22 8DH_September 2022_Conversion_REV_14.10

Received 14.10.22

Waldrams Chartered Surveyors

Photogrammetry



5 INTERNAL DAYLIGHT & SUNLIGHT ANALYSIS

The results of the internal daylight and sunlight analysis are included in Appendix 2.

For internal daylight, the UK National Annex to BS EN 17037 gives the following illuminance targets to be achieved over at least 50% of the assessment grid in domestic habitable rooms with vertical and/or inclined daylight apertures:

- 100 lux in bedrooms
- 150 lux in living rooms
- 200 lux in kitchens.

These are the median illuminances, to be exceeded over at least 50% of the assessment points in the room for at least half of the daylight hours.

As per paragraph C17 of the BRE Guidelines, the target for a combined living/dining/kitchen room has been set to that of a living room in cases where the kitchens have been added to the main living space in order to avoid small separate kitchens in the design. In these cases, the primary use of the room is as a living room and the kitchen area is there solely for food preparation etc.

For internal sunlight, the BRE Guidelines state that a dwelling will appear reasonably sunlit provided that at least one main window wall faces within 90° of due south and a habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 March.

The proposed scheme includes two small kitchens on the ground floor that are below the threshold described in the Mayor of London's Supplementary Planning Guidance in paragraph 1.3.19:

"There is no statutory definition for kitchens to be counted as a habitable room, nor is there a statutory size threshold. Many boroughs, however, include a figure of between 13 and 15 square metres in LDF [Local Development Frameworks]: any kitchen above that minimum is usually counted as a habitable room. Generally, a kitchen with a small table and chairs in one corner, or a kitchen 'bar', would not be counted as a habitable room. A room with a clearly defined kitchen at one end and a clearly defined dining area at the other (with a dining table and chairs) would be counted as a habitable room."

As such, these small kitchens have not been analysed.



RESULTS

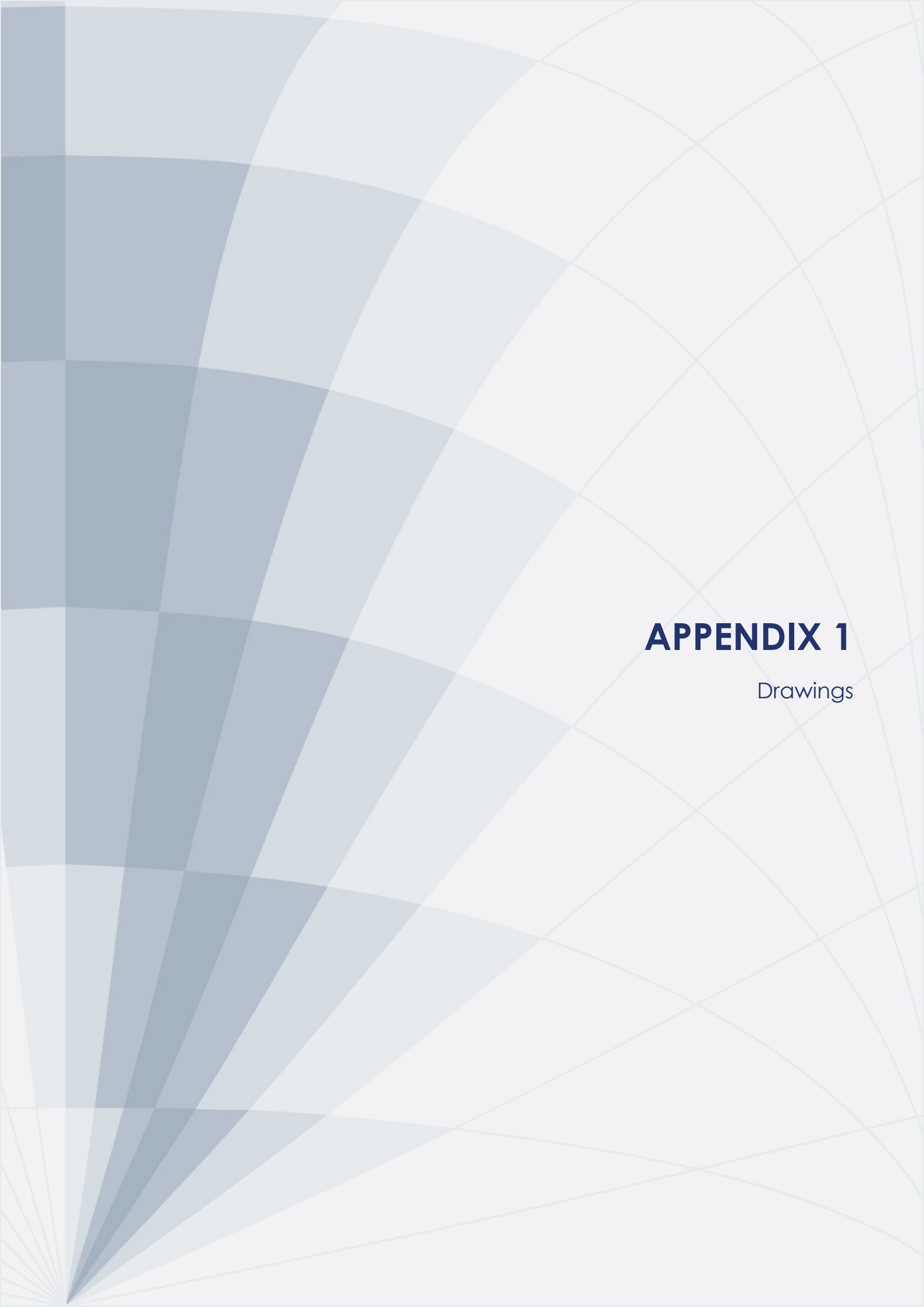
All habitable rooms meet their target daylight value and all units meet the target sunlight value.

6 CONCLUSIONS

This is a report into the daylight and sunlight internally to three flats within the proposed scheme at 105 Truro Road. This analysis has been based upon scheme drawings provided by Seesaw Studios and a photogrammetric survey.

The analysis has been carried out in accordance with the methodologies contained in the BRE Guidelines which is used by the local authority to determine the acceptability of a scheme in terms of its daylight and sunlight.

The analysis shows that the habitable rooms in all three flats meet their target daylight values and that all three units meet their target sunlight values.



APPENDIX 1

Drawings

SOURCES OF INFORMATION:

SEESAW
IR04 (RECEIVED 06.10.2022)

WALDRAMS LTD
3000_01

SITE PHOTOGRAPHS

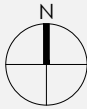
SURROUNDING PROPERTY INFORMATION

NOTES:

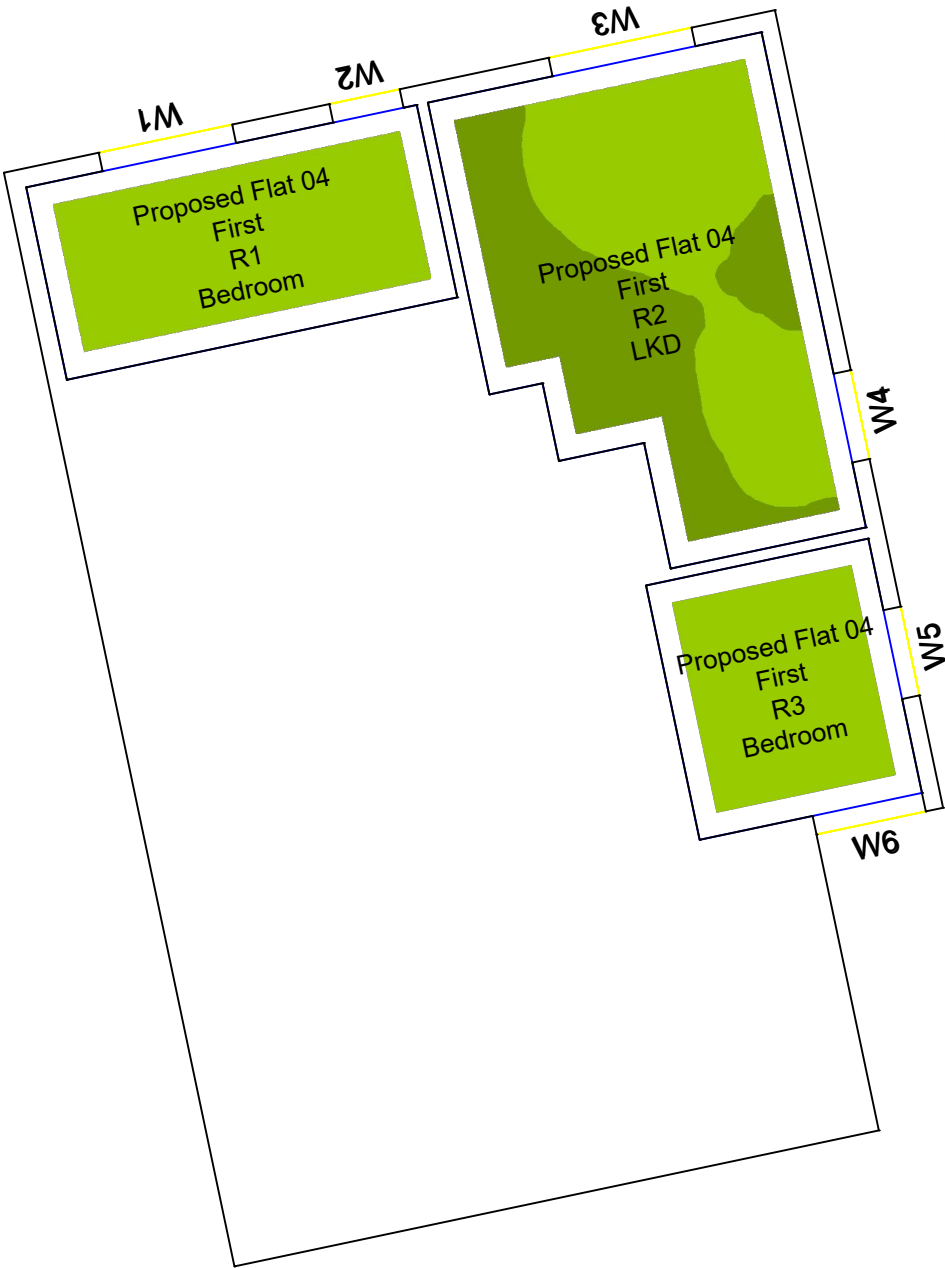
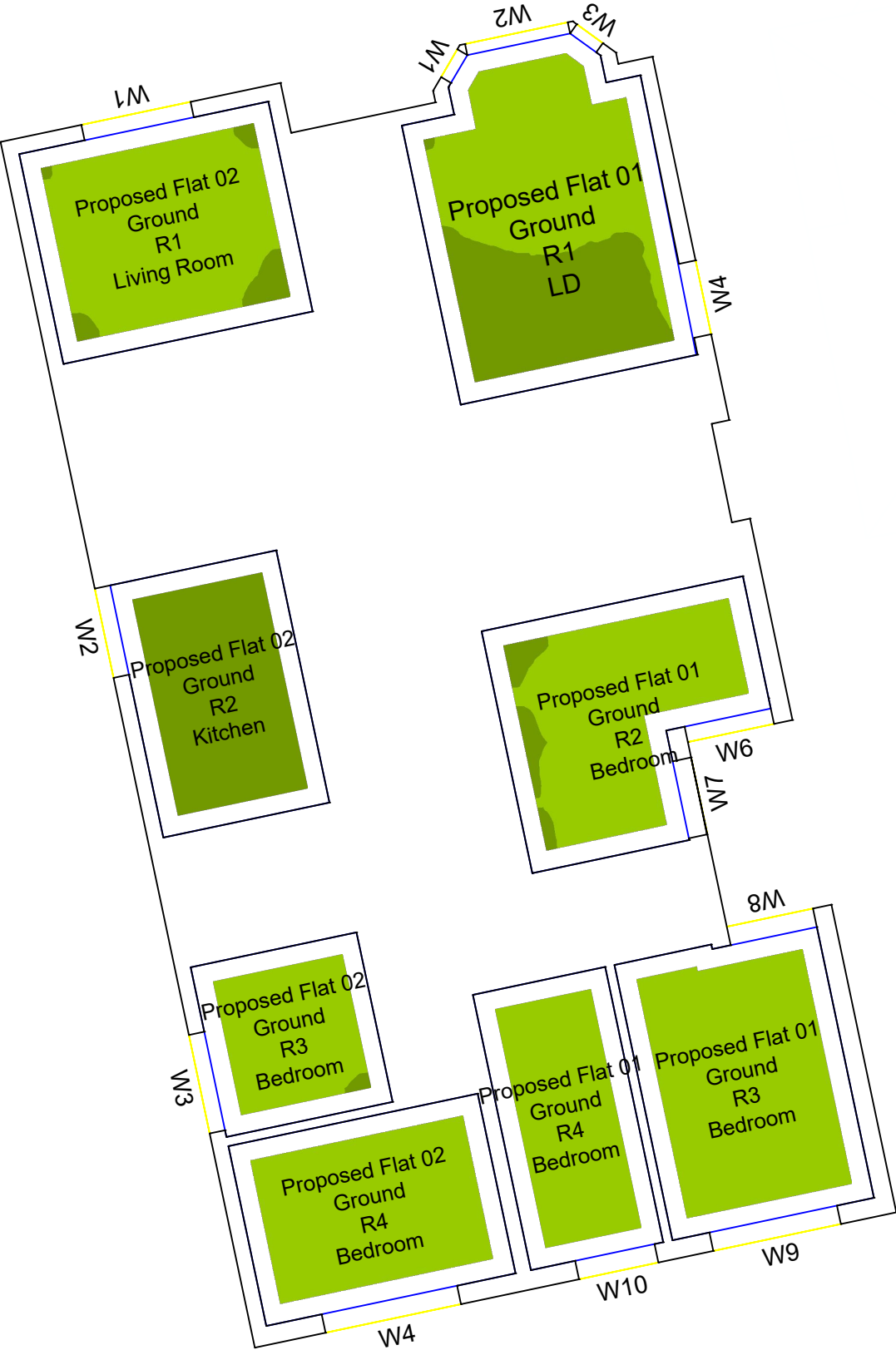
SDA % OF HOURS

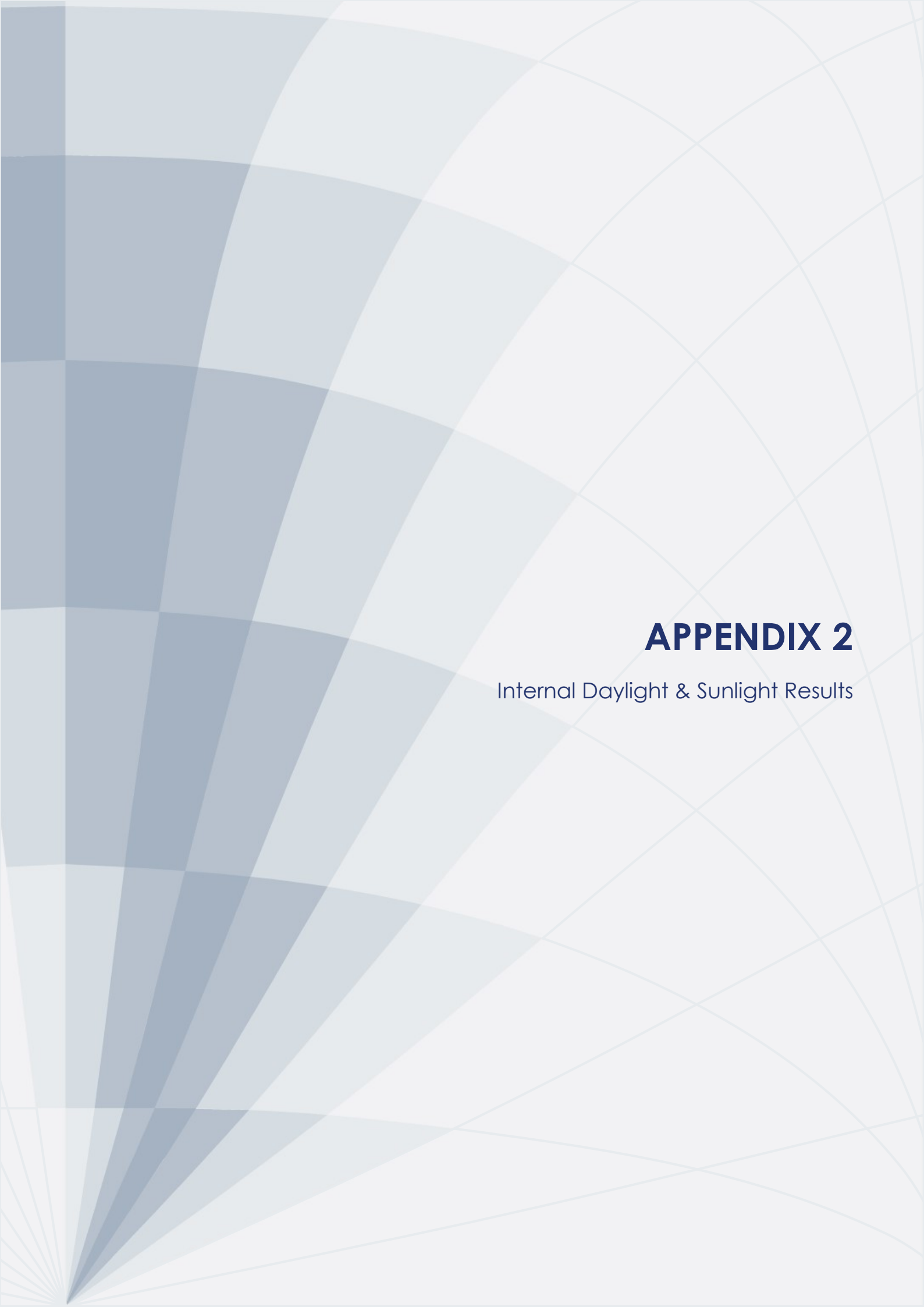
LESS THAN 50

MORE THAN 50



PROJECT	
105 TRURO ROAD LONDON N22	
DRAWING	
SPATIAL DAYLIGHT AUTONOMY	
SCALE @ A3	DATE
1:100	14.10.2022
MODELLED BY	DRAWN BY
VR	VR
PROJECT No.	REL No.- DWG No.
3000	02-01





APPENDIX 2

Internal Daylight & Sunlight Results

Floor Ref	Room Ref	Room Attribute	Property Type	Room Use	Room Area m2	Effective Area	Median Lux	Area Meeting Req Lux	% of Area Meeting Req Lux	Req Lux	Req % of Effective Area	Req % of Daylight Hours	Daylight Hours
Proposed Flat 01													
Ground	R1	Residential	LD		19.47	14.38	166	8.36	58%	150	50%	50%	4380
	R2	Residential	Bedroom		13.66	9.12	188	8.26	91%	100	50%	50%	4380
	R3	Residential	Bedroom		14.52	10.23	602	10.23	100%	100	50%	50%	4380
	R4	Residential	Bedroom		9.62	6.00	413	6.00	100%	100	50%	50%	4380
Proposed Flat 02													
Ground	R1	Residential	Living Room		13.81	9.69	210	8.89	92%	150	50%	50%	4380
	R3	Residential	Bedroom		7.43	4.52	208	4.44	98%	100	50%	50%	4380
	R4	Residential	Bedroom		11.83	8.01	763	8.01	100%	100	50%	50%	4380
Proposed Flat 04													
First	R1	Residential	Bedroom		13.73	9.36	273	9.36	100%	100	50%	50%	4380
	R2	Residential	LKD		26.26	19.90	151	10.40	52%	150	50%	50%	4380
	R3	Residential	Bedroom		10.33	6.82	421	6.82	100%	100	50%	50%	4380

Floor Ref	Room Ref	Room Attribute	Property Type	Room Use	Window Ref	Window Orientation	Proposed Sunlight Exposure (Hours)
Proposed Flat 01							
Ground	R1		Residential	LD	W1	300°N	0
					W2	348°N	0
					W3	36°N	0
					W4	78°N	0
							0
Ground	R2	Residential	Bedroom	W6	168°	2.4	
				W7	78°N	0.2	
						2.6	
Ground	R3	Residential	Bedroom	W8	348°N	0	
				W9	168°	8.4	
						8.4	
Ground	R4	Residential	Bedroom	W10	168°	7.8	
						7.8	
Proposed Flat 02							
Ground	R1	Residential	Living Room	W1	348°N	0	
						0	
Ground	R2	Residential	Kitchen	W2	258°	0.5	
						0.5	
Ground	R3	Residential	Bedroom	W3	258°	3.4	
						3.4	
Ground	R4	Residential	Bedroom	W4	168°	8.5	
						8.5	
Proposed Flat 04							
First	R1	Residential	Bedroom	W1	348°N	0	
				W2	348°N	0	
						0	
First	R2	Residential	LKD	W3	348°N	0	
				W4	78°N	1.7	
						1.7	
First	R3	Residential	Bedroom	W5	78°N	2.3	
				W6	168°	4.7	
						5.5	

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