

Hyde Park 3, Hayes

Internal Daylight and Sunlight Report

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Hyde Park 3, Hayes

INTERNAL DAYLIGHT AND SUNLIGHT REPORT

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EXECUTIVE SUMMARY

- This is a report into the daylight and sunlight internally to the scheme at Hyde Park 3, Hayes. This analysis has been based upon scheme drawings provided by Front Architecture, a photogrammetric survey, and site photography.
- The analysis has been carried out in accordance with the methodologies contained in the Building Research Establishment's *Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice* (2011) (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 100% of rooms meet their ADF target value for their room use and 94% meet the daylight distribution target value. In sunlight terms, all 65 living rooms with a south facing window meet for APSH across the whole year and 63 meet for APSH during the winter months.
- When considering the urban location of the site, the levels of daylight and sunlight achieved within the scheme should be considered contextually appropriate and therefore, in our view, acceptable.



1 INTRODUCTION

Waldrams have been instructed to provide daylight and sunlight analysis for the scheme at Hyde Park 3, Hayes. This analysis is based upon scheme drawings by Front Architecture, a photogrammetric survey of the site and surrounding context and site photography.

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.

Internal layouts showing the position of rooms analysed in the proposed scheme can be found on drawings 2789-02-01 and -02-02 in Appendix 1. 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 BS8206 Part 2. The BRE Guidelines provide scientific, objective methods for establishing the acceptability of daylight and sunlight internal 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."

(Page 1, BRE Guidelines)



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.

The BRE Guidelines specifies in Paragraph H1.2:

"Where the effect of a new building on existing buildings nearby is being analysed, it is usual to ignore the effect of trees. This is because daylight is at its scarcest and most valuable in winter months when most trees will not be in leaf."

We have not therefore included trees within our assessment model.

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 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 refer to BS8206 Part 2 and CIBSE Lighting Guide LG10 which set out the following criteria for assessing interior daylight:

- Average Daylight Factor
- Position of the no sky line (Daylight distribution)



The ADF measure of daylight takes into account the main factors that affect the actual daylight appearance of a room including the area of the window.

ADF provides an absolute measure of daylight expressed as a ratio of daylight for the room in question as a proportion of the daylight outside at any moment in time. The ADF for a living room should be above 1.5% (i.e. the room should enjoy a minimum of 1.5% of the average external daylight at any moment in time), whilst that for a bedroom and kitchen should be in excess of 1% and 2% respectively. ADF is dependent on the area of sky visibility, which is closely related to VSC, the area of the window serving the room, the glazing transmittance, the total area of the room's surfaces and the internal reflectance of the room.

In terms of ADF, while the BRE Guidelines recommend that in cases where one room serves more than one purpose the minimum ADF should be that for the room type with the higher value, for rooms designated as a 'living room/kitchen/dining room' (LKD), we would argue that the principal use of the room is as a living room. Accordingly, it would therefore be reasonable to apply the minimum ADF value for a living room (1.5%) as an alternative target value for a room designated as an LKD.

We have therefore used the threshold of 1.5% as a benchmark of acceptability for living room/kitchen/dining rooms.

In relation to the position of the no-sky line (daylight distribution), the BRE Guidelines state in paragraph C16:

"If a significant area of the working plane (normally more than 20%) 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."

We have therefore calculated the proportion of each habitable room internally to the scheme between the window and the no-sky line.

For internal sunlight, the only test put forward in the BRE Guidelines is Annual Probable Sunlight Hours (APSH). The test for sunlight is calculated for each main living room. Bedrooms and kitchens are considered by the BRE Guidelines as less important for sunlight. The BRE Guidelines state that a window may potentially receive up to 1486 hours of sunlight per year on average, representing 100% of the annual probable sunlight hours (APSH). The BRE Guidelines recommend that interiors where the occupants expect sunlight should receive at least 25% APSH, including in the winter months between 21 September and 21 March at least 5% APSH.

Following the BRE Guidelines recommendations, APSH is measured from a point on the inner window wall whilst ADF is measured from the point halfway between the inner and



outer window wall.

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 (ADF and daylight distribution) and sunlight (APSH) 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*, by PJ Littlefair (2011).

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 assumed window transmittance and internal reflectance values have been used in the ADF calculations:

- Transmittance (T): 0.68
- Reflectance (R): 0.64

Please note that we have not applied a maintenance factor in the calculation; we have assumed that the windows are cleaned regularly. The details of the proportion of frame to each window aperture have not yet been finalised and so a frame factor of 9% has been assumed and applied for the ADF calculations internally within the rooms within the scheme.



4 SOURCES OF INFORMATION USED IN THE REPORT

Front Architecture

1028_SHG_DR_PP_A_1200_Level 00 Proposed Plan.dwg
1028_SHG_DR_PP_A_1201_Level 01 Proposed Plan.dwg
1028_SHG_DR_PP_A_1202_Level 02 Proposed Plan.dwg
1028_SHG_DR_PP_A_1203_Level 03 Proposed Plan.dwg
1048_HPH3_Revised PD DWGS_2021-06-09 (1).zip
1048_SHG_DR_PP_A_1100_Proposed Level 00 Plan.dwg
1048_SHG_DR_PP_A_1101_Proposed Level 01 Plan.dwg
1048_SHG_DR_PP_A_1102_Proposed Level 02 Plan.dwg
1048_SHG_DR_PP_A_1103_Proposed Level 03 Plan.dwg
1048_SHG_DR_PP_A_1104_Proposed Level 04 Plan.dwg
1048_SHG_DR_PP_A_1105_Proposed Level 05 Plan.dwg
1048_SHG_DR_PP_A_1106_Proposed Level 06 Plan.dwg
1048_SHG_DR_PS_A_1300_Proposed Section AA.dwg
1048_SHG_DR_SC_A_1400_Proposed Accomodation Schedules.dwg
1048_SHG_DR_SP_A_1000_Proposed Site Plan.dwg
1048_SHG_DR_XP_A_0000_Location Plan.dwg
1048_SHG_DR_XP_A_0010_Existing Level 00 Plan.dwg
1048_SHG_DR_XP_A_0011_Existing Level 01 Plan.dwg
1048_SHG_DR_XP_A_0012_Existing Level 02 Plan.dwg
1048_SHG_DR_XP_A_0013_Existing Level 03 Plan.dwg
1048_SHG_DR_XP_A_0014_Existing Level 04 Plan.dwg
1048_SHG_DR_XP_A_0015_Existing Level 05 Plan.dwg
1048_SHG_DR_XP_A_0016_Existing Level 06 Plan.dwg
1048_SHG_DR_XS_A_0200_Existing Section AA.dwg

Received 04.11.21

FRNT_21.602_Planning Drawings.dwg
FRNT_21.602_204_PROPOSED FLOOR PLANS (SHEET 1).pdf

Received 05.01.22

Waldrams Chartered Surveyors

Photogrammetric Survey



5 INTERNAL DAYLIGHT & SUNLIGHT ANALYSIS

The room layouts within the proposed development are shown on drawings 2789-02-01 and 02-02 in Appendix 1, which reference the results of the internal daylight and sunlight analysis, included in Appendix 2.

The BRE Guidelines make it clear that ADF is a primary measure for daylight for new build accommodation such as this, and APSH is the measure for sunlight. It is important to note that the BRE Guidelines recommend that a kitchen should enjoy daylight levels of 2% ADF, a living room levels of 1.5%, and bedrooms 1% ADF. Where a room is designated as a living room/kitchen/dining room (LKD), the threshold of 1.5% has been used as an alternative target value as detailed in section 2.3 above.

RESULTS

All 143 (100%) habitable rooms analysed meet target values for ADF for their room use. 135 of the 143 (94%) rooms meet target values for daylight distribution, in that at least 80% of their room area at desk height can see the sky.

In sunlight terms, we have analysed 113 main living rooms across the scheme (e.g. LKDs and studio apartments), 65 of which have at least one window facing within 90 degrees of due south. Due to the orientation of the site, there will inevitably be a high proportion of north facing units which will not meet the APSH target values and have a reduced expectation for sunlight. Of those 65 main living rooms with at least one south facing window, 63 meet for APSH across both the whole year and during the winter months. The remaining two rooms (rooms R4 on the ground and first floor) exceed the annual target value achieving 33% and 37% APSH across the whole year respectively, well above the 25% target value. These two rooms also achieve 4% APSH during the winter months, as compared with the 5% target value.

COMMENTARY

In our view, the scheme will be very well daylit overall with all rooms meeting their ADF target value and 94% meeting for daylight distribution. The BRE Guidelines state that, while bedrooms should also be tested for daylight distribution, they are considered less important. Of the eight rooms not meeting the daylight distribution target values, one (R5 on the ground floor) is a bedroom which can be considered less important when it comes to the measure of daylight distribution. The remaining seven rooms, retain high ADF levels, well above the required values. Thus, in our opinion, we expect these rooms to be well daylit.

In sunlight terms, all 65 living rooms with a south facing window meet for APSH across the whole year and 63 meet for APSH during the winter months. Overall, in our opinion, the levels achieved within the scheme are good for an urban location such as this and



should be considered acceptable.

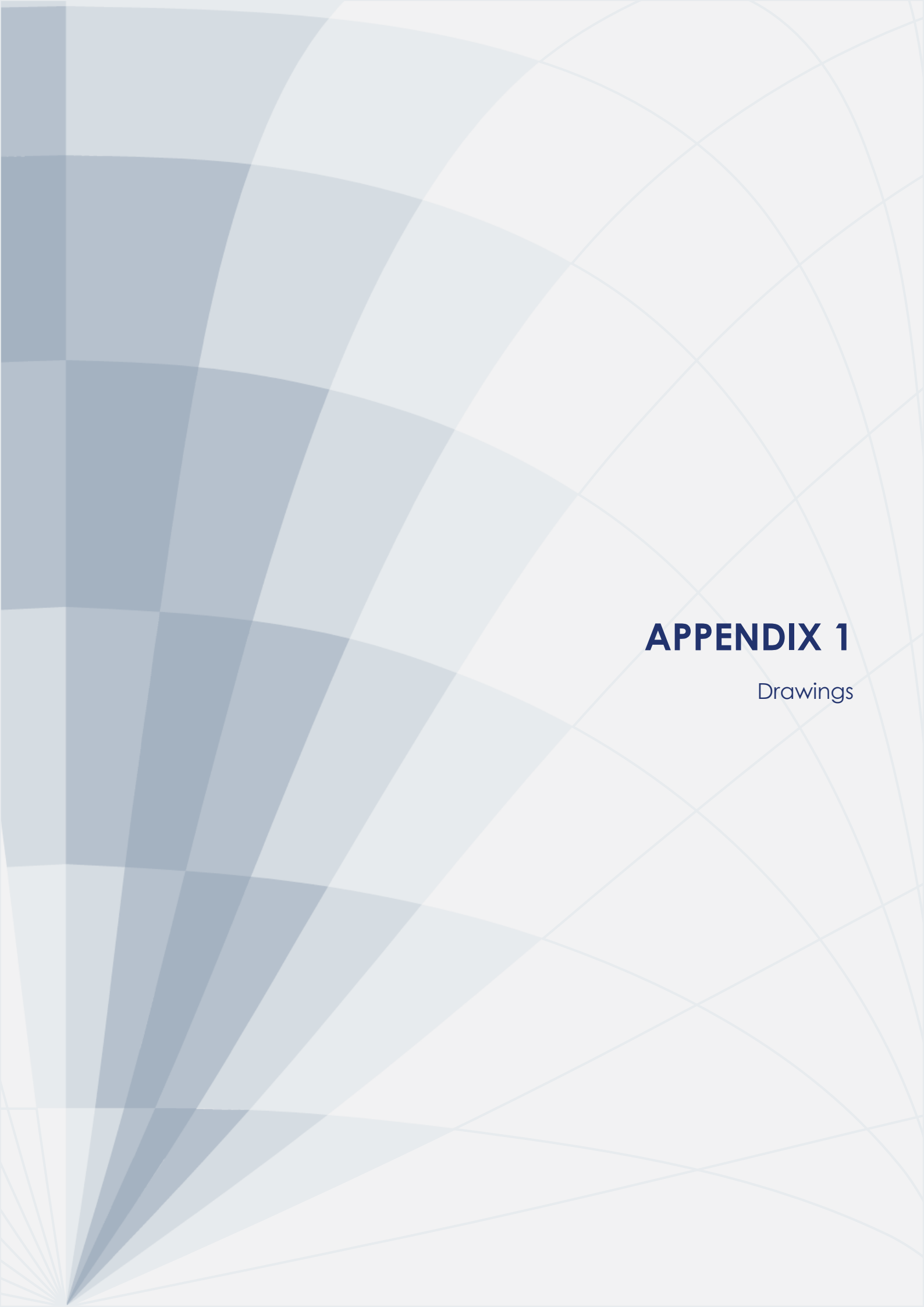
6 CONCLUSIONS

This is a report into the daylight and sunlight internally to the scheme at [project name]. This analysis has been based upon scheme drawings provided by [architect name], a photogrammetric survey, and site photography.

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 100% of rooms meet their ADF target value for their room use and 94% meet the daylight distribution target value. In sunlight terms, all 65 living rooms with a south facing window meet for APSH across the whole year and 63 meet for APSH during the winter months.

When considering the urban location of the site, the levels of daylight and sunlight achieved within the scheme should be considered contextually appropriate and therefore, in our view, acceptable.



APPENDIX 1

Drawings

SOURCES OF INFORMATION:

SOURCE 1
IRO5 (RECEIVED 05.01.22)



PROJECT
HYDE PARK 3, HAYES
UB3

DRAWING
INTERNAL LAYOUTS

SCALE @ A3
1:180

DATE
16.11.2021

MODELLED BY
DF

DRAWN BY
DF

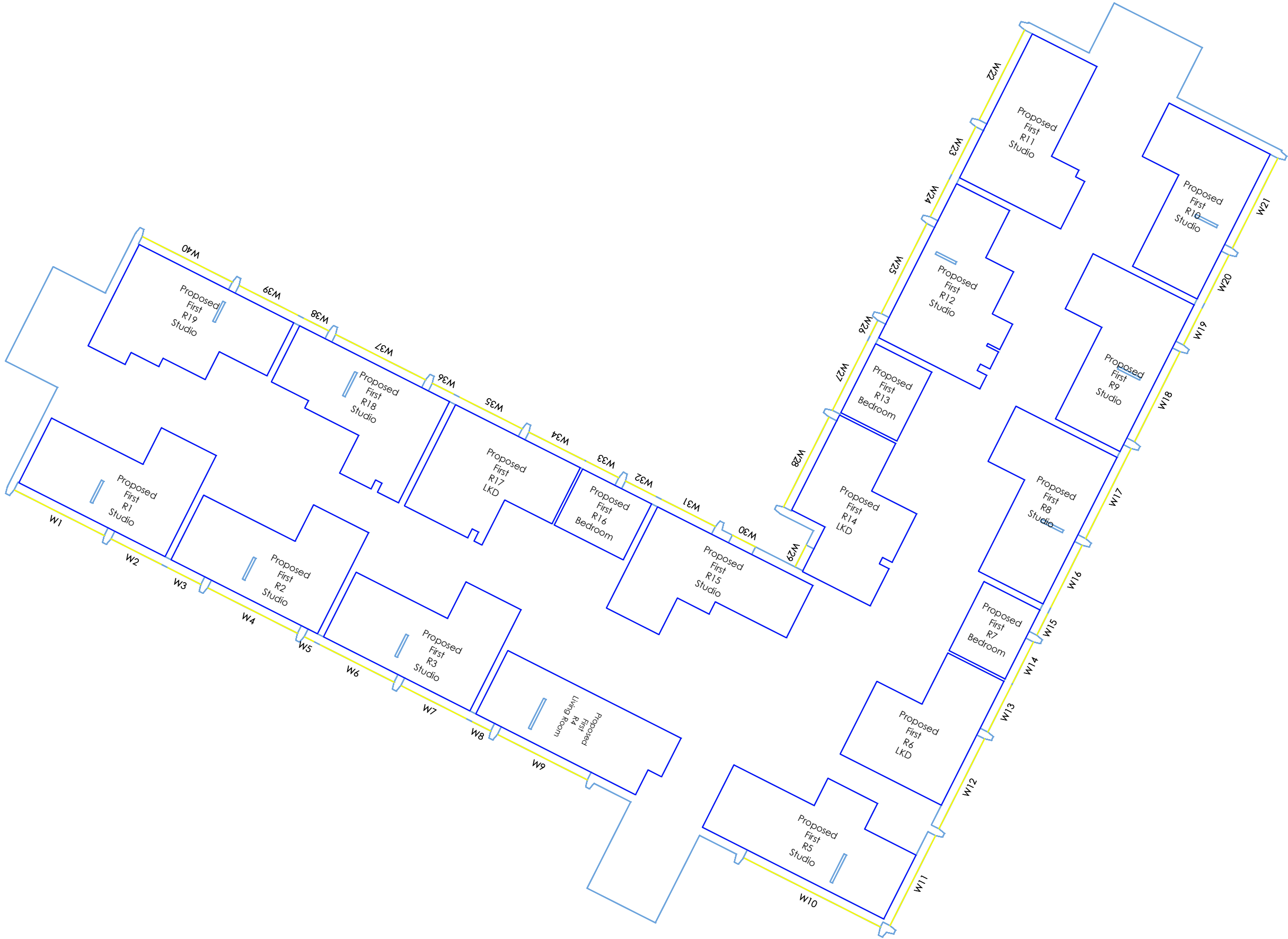
PROJECT No.
2789

REL No. - DWG No.
02-01



SOURCES OF INFORMATION:

SOURCE 1
IRO5 (RECEIVED 05.01.22)



PROJECT
HYDE PARK 3, HAYES
UB3

DRAWING
INTERNAL LAYOUTS

SCALE @ A3
1:180

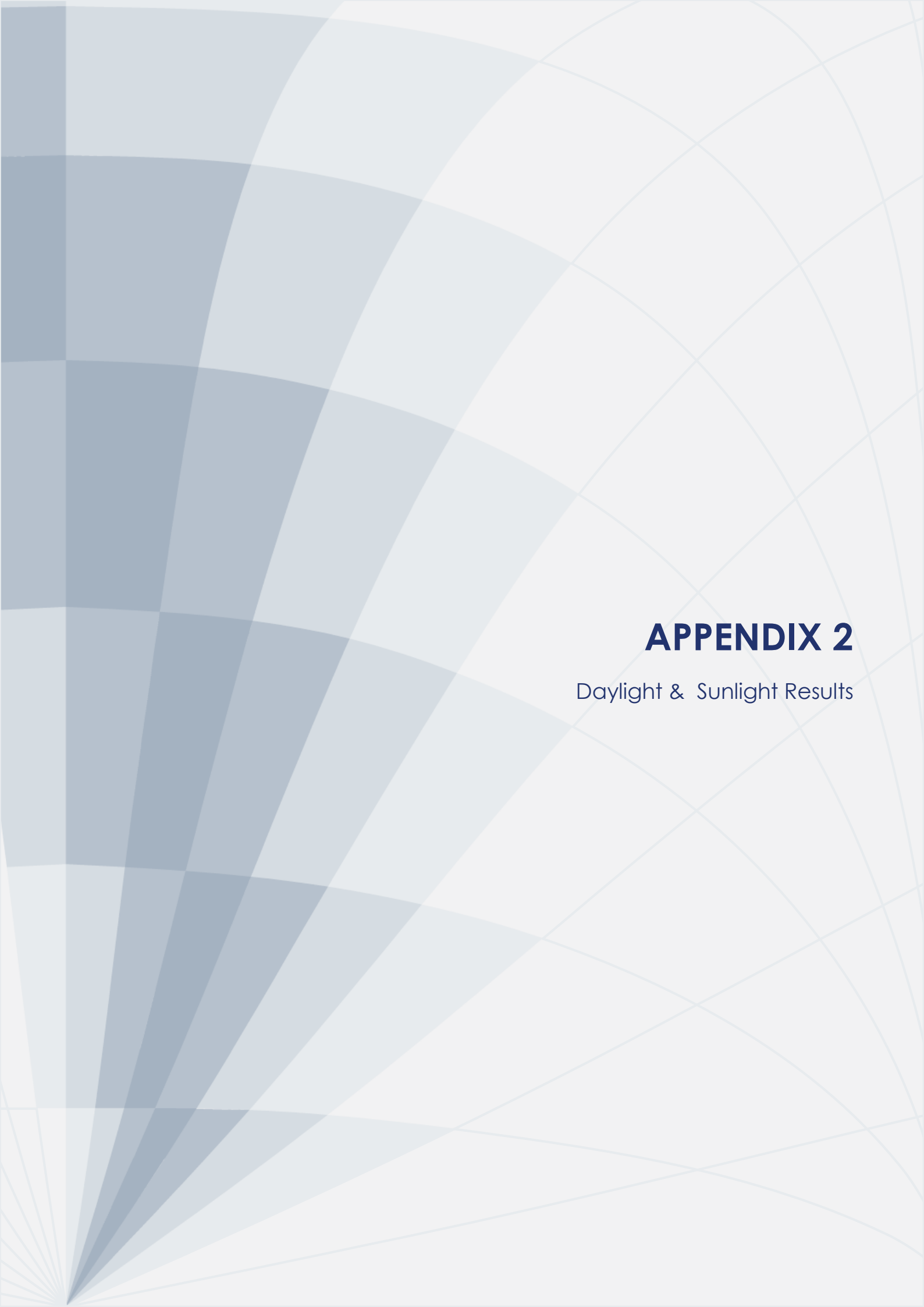
DATE
16.11.2021

MODELLED BY
DF

DRAWN BY
DF

PROJECT No.
2789

REL No.- DWG No.
02-02



APPENDIX 2

Daylight & Sunlight Results

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value
Proposed ADF												
Ground	R1	Studio	W1-L	0.68	1.00	3.48	46.68	142.88	0.64	0.15	0.20	1.50
		Studio	W1-U	0.68	1.00	7.99	46.65	142.88	0.64	1.00	3.00	
											3.20	
Ground	R2	Studio	W2-L	0.68	1.00	3.53	43.77	144.20	0.64	0.15	0.19	1.50
		Studio	W2-U	0.68	1.00	8.10	43.78	144.20	0.64	1.00	2.83	
											3.02	
Ground	R3	Studio	W3-L	0.68	1.00	3.53	41.97	144.24	0.64	0.15	0.18	1.50
		Studio	W3-U	0.68	1.00	8.10	42.12	144.24	0.64	1.00	2.72	
											2.90	
Ground	R4	Studio	W4-L	0.68	1.00	3.53	41.19	144.24	0.64	0.15	0.17	1.50
		Studio	W4-U	0.68	1.00	8.10	41.41	144.24	0.64	1.00	2.68	
		Studio	W43	0.68	1.00	1.78	90.73	144.24	0.64	1.00	1.29	
Ground	R5	Bedroom	W5-L	0.68	1.00	1.86	40.72	58.20	0.64	0.15	0.22	1.00
		Bedroom	W5-U	0.68	1.00	4.26	41.12	58.20	0.64	1.00	3.47	
											3.69	
Ground	R6	LKD	W6-L	0.68	1.00	1.72	40.82	143.06	0.64	0.15	0.08	1.50
		LKD	W6-U	0.68	1.00	3.94	41.29	143.06	0.64	1.00	1.31	
		LKD	W44	0.68	1.00	1.78	85.97	143.06	0.64	1.00	1.23	
Ground	R7	Bedroom	W7	0.68	1.00	0.66	32.00	71.06	0.64	1.00	0.34	1.00
		Bedroom	W45	0.68	1.00	1.78	81.61	71.06	0.64	1.00	2.36	
											2.70	
Ground	R8	Studio	W8-L	0.68	1.00	3.71	32.98	135.40	0.64	0.15	0.16	1.50
		Studio	W8-U	0.68	1.00	8.52	21.36	135.40	0.64	1.00	1.55	
		Studio	W46	0.68	1.00	1.78	72.91	135.40	0.64	1.00	1.11	
Ground	R9	Studio	W9-L	0.68	1.00	2.32	38.32	136.65	0.64	0.15	0.11	1.50
		Studio	W9-U	0.68	1.00	5.32	25.59	136.65	0.64	1.00	1.15	
		Studio	W10-L	0.68	1.00	2.32	43.24	136.65	0.64	0.15	0.13	
		Studio	W10-U	0.68	1.00	5.32	29.65	136.65	0.64	1.00	1.33	
		Studio	W11-L	0.68	1.00	2.32	48.59	136.65	0.64	0.15	0.14	
		Studio	W11-U	0.68	1.00	5.32	30.08	136.65	0.64	1.00	1.35	
Ground	R11	Studio	W15-L	0.68	1.00	3.50	70.27	127.31	0.64	0.15	0.33	1.50
		Studio	W15-U	0.68	1.00	8.03	75.22	127.31	0.64	1.00	5.46	
		Studio	W16-L	0.68	1.00	1.57	81.60	127.31	0.64	0.15	0.17	
		Studio	W16-U	0.68	1.00	3.60	82.45	127.31	0.64	1.00	2.68	
											8.65	
Ground	R12	Studio	W17-L	0.68	1.00	1.71	83.38	129.14	0.64	0.15	0.19	1.50
		Studio	W17-U	0.68	1.00	3.92	83.69	129.14	0.64	1.00	2.92	
		Studio	W18-L	0.68	1.00	3.50	86.93	129.14	0.64	0.15	0.41	
		Studio	W18-U	0.68	1.00	8.02	86.45	129.14	0.64	1.00	6.19	
											9.71	
Ground	R13	LKD	W19-L	0.68	1.00	3.50	87.54	142.63	0.64	0.15	0.37	

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value
		LKD	W19-U	0.68	1.00	8.04	86.79	142.63	0.64	1.00	5.63	1.50
											6.01	
Ground	R14	Bedroom	W20-L	0.68	1.00	2.79	87.50	60.80	0.64	0.15	0.69	1.00
		Bedroom	W20-U	0.68	1.00	6.40	86.67	60.80	0.64	1.00	10.51	
											11.21	1.00
Ground	R15	LKD	W21-L	0.68	1.00	0.48	70.56	107.22	0.64	0.15	0.05	1.50
		LKD	W21-U	0.68	1.00	1.10	70.35	107.22	0.64	1.00	0.83	
		LKD	W22-L	0.68	1.00	2.28	87.07	107.22	0.64	0.15	0.32	
		LKD	W22-U	0.68	1.00	5.22	86.26	107.22	0.64	1.00	4.84	
											6.05	1.50
Ground	R16	Bedroom	W23-L	0.68	1.00	1.14	82.51	58.21	0.64	0.15	0.28	1.00
		Bedroom	W23-U	0.68	1.00	2.61	81.99	58.21	0.64	1.00	4.23	
		Bedroom	W24-L	0.68	1.00	0.84	79.04	58.21	0.64	0.15	0.20	
		Bedroom	W24-U	0.68	1.00	1.93	78.64	58.21	0.64	1.00	3.01	
											7.71	1.00
Ground	R17	Bedroom	W25-L	0.68	1.00	2.57	87.44	64.86	0.64	0.15	0.60	1.00
		Bedroom	W25-U	0.68	1.00	5.89	86.60	64.86	0.64	1.00	9.06	
											9.66	1.00
Ground	R18	Bedroom	W26-L	0.68	1.00	2.57	77.00	64.86	0.64	0.15	0.53	1.00
		Bedroom	W26-U	0.68	1.00	5.90	76.82	64.86	0.64	1.00	8.05	
											8.58	1.00
Ground	R19	Bedroom	W27-L	0.68	1.00	0.84	73.42	58.21	0.64	0.15	0.18	1.00
		Bedroom	W27-U	0.68	1.00	1.93	73.39	58.21	0.64	1.00	2.80	
		Bedroom	W28-L	0.68	1.00	1.14	70.66	58.21	0.64	0.15	0.24	
		Bedroom	W28-U	0.68	1.00	2.62	70.73	58.21	0.64	1.00	3.66	
											6.88	1.00
Ground	R20	LKD	W29-L	0.68	1.00	2.27	73.10	107.22	0.64	0.15	0.27	1.50
		LKD	W29-U	0.68	1.00	5.21	73.03	107.22	0.64	1.00	4.09	
		LKD	W30-L	0.68	1.00	0.48	59.06	107.22	0.64	0.15	0.05	
		LKD	W30-U	0.68	1.00	1.11	59.35	107.22	0.64	1.00	0.71	
											5.11	1.50
Ground	R21	Bedroom	W31-L	0.68	1.00	2.68	68.89	60.80	0.64	0.15	0.53	1.00
		Bedroom	W31-U	0.68	1.00	6.16	68.85	60.80	0.64	1.00	8.03	
											8.56	1.00
Ground	R22	LKD	W32-L	0.68	1.00	3.50	63.64	142.98	0.64	0.15	0.27	1.50
		LKD	W32-U	0.68	1.00	8.04	63.64	142.98	0.64	1.00	4.12	
											4.39	1.50
Ground	R23	LKD	W33-L	0.68	1.00	3.50	57.26	142.07	0.64	0.15	0.24	1.50
		LKD	W33-U	0.68	1.00	8.03	57.22	142.07	0.64	1.00	3.72	
											3.97	1.50
Ground	R24	Studio	W34-L	0.68	1.00	2.96	70.40	158.53	0.64	0.15	0.23	1.50
		Studio	W34-U	0.68	1.00	6.80	70.30	158.53	0.64	1.00	3.47	
											3.70	1.50
Ground	R25	Bedroom	W35-L	0.68	1.00	0.31	55.87	54.20	0.64	0.15	0.05	1.00
		Bedroom	W35-U	0.68	1.00	0.70	55.98	54.20	0.64	1.00	0.84	
		Bedroom	W36-L	0.68	1.00	1.29	72.94	54.20	0.64	0.15	0.30	
		Bedroom	W36-U	0.68	1.00	2.96	73.15	54.20	0.64	1.00	4.60	
											5.78	1.00

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value
Ground	R26	LKD	W37-L	0.68	1.00	2.12	73.67	129.85	0.64	0.15	0.21	
		LKD	W37-U	0.68	1.00	4.86	74.09	129.85	0.64	1.00	3.20	
												3.40
Ground	R27	Bedroom	W38-L	0.68	1.00	1.97	70.92	68.15	0.64	0.15	0.35	
		Bedroom	W38-U	0.68	1.00	4.53	73.58	68.15	0.64	1.00	5.63	
												5.99
Ground	R28	Studio	W39-L	0.68	1.00	1.29	58.00	130.14	0.64	0.15	0.10	
		Studio	W39-U	0.68	1.00	2.97	62.03	130.14	0.64	1.00	1.63	
												1.73
Ground	R29	Bedroom	W42-L	0.68	1.00	0.55	66.04	52.64	0.64	0.15	0.12	
		Bedroom	W42-U	0.68	1.00	3.55	65.67	52.64	0.64	1.00	5.10	
												5.22
Ground	R30	Bedroom	W40-L	0.68	1.00	2.32	38.53	73.51	0.64	0.15	0.21	
		Bedroom	W40-U	0.68	1.00	5.32	38.90	73.51	0.64	1.00	3.24	
		Bedroom	W41-L	0.68	1.00	2.32	82.32	73.51	0.64	0.15	0.45	
		Bedroom	W41-U	0.68	1.00	5.32	81.63	73.51	0.64	1.00	6.81	
												10.71
First	R1	Studio	W1	0.68	1.00	6.19	51.15	120.25	0.64	1.00	3.03	
		Studio	W2	0.68	1.00	3.45	48.37	120.25	0.64	1.00	1.60	
												4.64
First	R2	Studio	W3	0.68	1.00	2.31	45.84	120.44	0.64	1.00	1.01	
		Studio	W4	0.68	1.00	6.18	47.73	120.44	0.64	1.00	2.82	
		Studio	W5	0.68	1.00	0.65	36.70	120.44	0.64	1.00	0.23	
												4.06
First	R3	Studio	W6	0.68	1.00	5.12	46.81	120.40	0.64	1.00	2.29	
		Studio	W7	0.68	1.00	4.48	45.22	120.40	0.64	1.00	1.94	
												4.23
First	R4	Studio	W8	0.68	1.00	1.29	40.36	113.49	0.64	1.00	0.53	
		Studio	W9	0.68	1.00	6.18	39.92	113.49	0.64	1.00	2.50	
												3.03
First	R5	Studio	W10	0.68	1.00	9.40	51.00	132.76	0.64	1.00	4.16	
		Studio	W11	0.68	1.00	6.18	81.88	132.76	0.64	1.00	4.39	
												8.55
First	R6	LKD	W12	0.68	1.00	6.18	81.88	108.37	0.64	1.00	5.38	
		LKD	W13	0.68	1.00	3.22	80.31	108.37	0.64	1.00	2.75	
												8.13
First	R7	Bedroom	W14	0.68	1.00	2.81	79.60	51.07	0.64	1.00	5.04	
		Bedroom	W15	0.68	1.00	1.47	74.16	51.07	0.64	1.00	2.46	
												7.50
First	R8	LKD	W16	0.68	1.00	4.29	81.37	120.47	0.64	1.00	3.34	
		LKD	W17	0.68	1.00	6.18	81.88	120.47	0.64	1.00	4.84	
												8.18
First	R9	Studio	W18	0.68	1.00	6.18	81.88	120.46	0.64	1.00	4.84	
		Studio	W19	0.68	1.00	2.49	78.79	120.46	0.64	1.00	1.88	
												6.72
First	R10	Studio	W20	0.68	1.00	3.28	80.43	119.02	0.64	1.00	2.56	
		Studio	W21	0.68	1.00	6.18	81.88	119.02	0.64	1.00	4.90	
												7.46

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value
First	R11	Studio	W22	0.68	1.00	6.18	74.06	118.41	0.64	1.00	4.45	
		Studio	W23	0.68	1.00	3.24	70.28	118.41	0.64	1.00	2.21	
											6.67	1.50
First	R12	Studio	W24	0.68	1.00	2.54	70.21	132.23	0.64	1.00	1.55	
		Studio	W25	0.68	1.00	6.18	67.17	132.23	0.64	1.00	3.62	
		Studio	W26	0.68	1.00	0.93	54.95	132.23	0.64	1.00	0.45	
First	R13	Bedroom	W27	0.68	1.00	4.74	61.53	51.04	0.64	1.00	6.58	
											6.58	1.00
First	R14	LKD	W28	0.68	1.00	6.17	55.66	115.81	0.64	1.00	3.42	
		LKD	W29	0.68	1.00	1.50	35.61	115.81	0.64	1.00	0.53	
											3.95	1.50
First	R15	Studio	W30	0.68	1.00	1.59	48.86	120.67	0.64	1.00	0.74	
		Studio	W31	0.68	1.00	3.71	55.18	120.67	0.64	1.00	1.95	
											2.70	1.50
First	R16	Bedroom	W32	0.68	1.00	2.06	54.70	51.04	0.64	1.00	2.54	
		Bedroom	W33	0.68	1.00	2.22	61.42	51.04	0.64	1.00	3.07	
											5.61	1.00
First	R17	LKD	W34	0.68	1.00	3.80	63.18	111.97	0.64	1.00	2.47	
		LKD	W35	0.68	1.00	4.31	67.89	111.97	0.64	1.00	3.01	
											5.48	1.50
First	R18	Studio	W36	0.68	1.00	1.45	62.89	123.15	0.64	1.00	0.86	
		Studio	W37	0.68	1.00	6.18	72.34	123.15	0.64	1.00	4.18	
		Studio	W38	0.68	1.00	1.74	72.99	123.15	0.64	1.00	1.19	
First	R19	Studio	W39	0.68	1.00	4.03	74.71	125.90	0.64	1.00	2.75	
			W40	0.68	1.00	6.19	77.19	125.90	0.64	1.00	4.37	
											7.12	1.50
Second	R1	Studio	W1	0.68	1.00	6.19	54.21	120.25	0.64	1.00	3.22	
		Studio	W2	0.68	1.00	3.45	51.70	120.25	0.64	1.00	1.71	
											4.93	1.50
Second	R2	Studio	W3	0.68	1.00	2.31	49.32	120.44	0.64	1.00	1.09	
		Studio	W4	0.68	1.00	6.18	51.38	120.44	0.64	1.00	3.03	
		Studio	W5	0.68	1.00	0.65	40.29	120.44	0.64	1.00	0.25	
Second	R3	Studio	W6	0.68	1.00	5.12	50.65	120.40	0.64	1.00	2.48	
			W7	0.68	1.00	4.48	49.15	120.40	0.64	1.00	2.11	
											4.59	1.50
Second	R4	Studio	W8	0.68	1.00	1.29	44.35	113.49	0.64	1.00	0.58	
		Studio	W9	0.68	1.00	6.18	44.01	113.49	0.64	1.00	2.76	
											3.34	1.50
Second	R5	Studio	W10	0.68	1.00	9.40	53.91	132.76	0.64	1.00	4.39	
		Studio	W11	0.68	1.00	6.18	81.88	132.76	0.64	1.00	4.39	
											8.79	1.50
Second	R6	LKD	W12	0.68	1.00	6.18	81.88	108.37	0.64	1.00	5.38	
		LKD	W13	0.68	1.00	3.22	80.31	108.37	0.64	1.00	2.75	
											8.13	1.50
Second	R7	Bedroom	W14	0.68	1.00	2.81	79.60	51.07	0.64	1.00	5.04	

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		Bedroom	W15	0.68	1.00	1.47	74.16	51.07	0.64	1.00	2.46	1.00
											7.50	
Second	R8	LKD	W16	0.68	1.00	4.29	81.37	120.47	0.64	1.00	3.34	1.50
		LKD	W17	0.68	1.00	6.18	81.88	120.47	0.64	1.00	4.84	
											8.18	
Second	R9	Studio	W18	0.68	1.00	6.18	81.88	120.46	0.64	1.00	4.84	1.50
		Studio	W19	0.68	1.00	2.49	78.79	120.46	0.64	1.00	1.88	
											6.72	
Second	R10	Studio	W20	0.68	1.00	3.28	80.43	119.02	0.64	1.00	2.56	1.50
		Studio	W21	0.68	1.00	6.18	81.88	119.02	0.64	1.00	4.90	
											7.46	
Second	R11	Studio	W22	0.68	1.00	6.18	75.24	118.41	0.64	1.00	4.53	1.50
		Studio	W23	0.68	1.00	3.24	71.60	118.41	0.64	1.00	2.25	
											6.78	
Second	R12	Studio	W24	0.68	1.00	2.54	71.41	132.23	0.64	1.00	1.58	1.50
		Studio	W25	0.68	1.00	6.18	68.69	132.23	0.64	1.00	3.70	
		Studio	W26	0.68	1.00	0.93	56.37	132.23	0.64	1.00	0.46	
Second	R13	Bedroom										1.00
			W27	0.68	1.00	4.74	62.87	51.04	0.64	1.00	6.72	
											6.72	
Second	R14	LKD	W28	0.68	1.00	6.17	56.47	115.81	0.64	1.00	3.47	1.50
		LKD	W29	0.68	1.00	1.50	35.67	115.81	0.64	1.00	0.53	
											4.00	
Second	R15	Studio	W30	0.68	1.00	1.59	48.98	120.67	0.64	1.00	0.75	1.50
		Studio	W31	0.68	1.00	3.71	55.81	120.67	0.64	1.00	1.98	
											2.72	
Second	R16	Bedroom	W32	0.68	1.00	2.06	55.67	51.04	0.64	1.00	2.59	1.00
		Bedroom	W33	0.68	1.00	2.22	62.59	51.04	0.64	1.00	3.13	
											5.72	
Second	R17	LKD	W34	0.68	1.00	3.80	64.48	111.97	0.64	1.00	2.52	1.50
		LKD	W35	0.68	1.00	4.31	69.26	111.97	0.64	1.00	3.07	
											5.59	
Second	R18	Studio	W36	0.68	1.00	1.45	64.14	123.15	0.64	1.00	0.87	1.50
		Studio	W37	0.68	1.00	6.18	73.55	123.15	0.64	1.00	4.25	
		Studio	W38	0.68	1.00	1.74	73.43	123.15	0.64	1.00	1.20	
Second	R19	Studio										1.50
			W39	0.68	1.00	4.03	75.66	125.90	0.64	1.00	2.79	
			W40	0.68	1.00	6.19	77.95	125.90	0.64	1.00	4.42	
Third	R1	Studio	W1	0.68	1.00	6.19	57.80	120.25	0.64	1.00	3.43	1.50
		Studio	W2	0.68	1.00	3.45	55.58	120.25	0.64	1.00	1.84	
											5.27	
Third	R2	Studio	W3	0.68	1.00	2.31	53.34	120.44	0.64	1.00	1.18	1.50
		Studio	W4	0.68	1.00	6.18	55.61	120.44	0.64	1.00	3.28	
		Studio	W5	0.68	1.00	0.65	44.31	120.44	0.64	1.00	0.28	
Third	R3	Studio										1.50
			W6	0.68	1.00	5.12	55.09	120.40	0.64	1.00	2.70	
			W7	0.68	1.00	4.48	53.67	120.40	0.64	1.00	2.30	

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											5.00	1.50
Third	R4	Studio	W8	0.68	1.00	1.29	48.85	113.49	0.64	1.00	0.64	
		Studio	W9	0.68	1.00	6.18	48.61	113.49	0.64	1.00	3.05	
											3.69	1.50
Third	R5	Studio	W10	0.68	1.00	9.40	57.33	132.76	0.64	1.00	4.67	
		Studio	W11	0.68	1.00	6.18	81.88	132.76	0.64	1.00	4.39	
											9.07	1.50
Third	R6	LKD	W12	0.68	1.00	6.18	81.88	108.37	0.64	1.00	5.38	
		LKD	W13	0.68	1.00	3.22	80.31	108.37	0.64	1.00	2.75	
											8.13	1.50
Third	R7	Bedroom	W14	0.68	1.00	2.81	79.60	51.07	0.64	1.00	5.04	
		Bedroom	W15	0.68	1.00	1.47	74.16	51.07	0.64	1.00	2.46	
											7.50	1.00
Third	R8	LKD	W16	0.68	1.00	4.29	81.37	120.47	0.64	1.00	3.34	
		LKD	W17	0.68	1.00	6.18	81.88	120.47	0.64	1.00	4.84	
											8.18	1.50
Third	R9	Studio	W18	0.68	1.00	6.18	81.88	120.46	0.64	1.00	4.84	
		Studio	W19	0.68	1.00	2.49	78.79	120.46	0.64	1.00	1.88	
											6.72	1.50
Third	R10	Studio	W20	0.68	1.00	3.28	80.43	119.02	0.64	1.00	2.56	
		Studio	W21	0.68	1.00	6.18	81.88	119.02	0.64	1.00	4.90	
											7.46	1.50
Third	R11	Studio	W22	0.68	1.00	6.18	76.56	118.41	0.64	1.00	4.60	
		Studio	W23	0.68	1.00	3.24	73.19	118.41	0.64	1.00	2.30	
											6.91	1.50
Third	R12	Studio	W24	0.68	1.00	2.54	72.82	132.23	0.64	1.00	1.61	
		Studio	W25	0.68	1.00	6.18	70.70	132.23	0.64	1.00	3.81	
		Studio	W26	0.68	1.00	0.93	58.33	132.23	0.64	1.00	0.47	
											5.89	1.50
Third	R13	Bedroom	W27	0.68	1.00	4.74	64.84	51.04	0.64	1.00	6.93	
											6.93	1.00
Third	R14	LKD	W28	0.68	1.00	6.17	57.75	115.81	0.64	1.00	3.55	
		LKD	W29	0.68	1.00	1.50	35.77	115.81	0.64	1.00	0.53	
												4.08
Third	R15	Studio	W30	0.68	1.00	1.59	49.17	120.67	0.64	1.00	0.75	
		Studio	W31	0.68	1.00	3.71	56.83	120.67	0.64	1.00	2.01	
											2.76	1.50
Third	R16	Bedroom	W32	0.68	1.00	2.06	57.19	51.04	0.64	1.00	2.66	
		Bedroom	W33	0.68	1.00	2.22	64.34	51.04	0.64	1.00	3.22	
											5.88	1.00
Third	R17	LKD	W34	0.68	1.00	3.80	66.38	111.97	0.64	1.00	2.59	
		LKD	W35	0.68	1.00	4.31	71.11	111.97	0.64	1.00	3.16	
											5.75	1.50
Third	R18	Studio	W36	0.68	1.00	1.45	65.74	123.15	0.64	1.00	0.89	
		Studio	W37	0.68	1.00	6.18	75.06	123.15	0.64	1.00	4.34	
		Studio	W38	0.68	1.00	1.74	73.92	123.15	0.64	1.00	1.21	
											6.44	1.50
Third	R19	Studio	W39	0.68	1.00	4.03	76.77	125.90	0.64	1.00	2.83	

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		Studio	W40	0.68	1.00	6.19	78.77	125.90	0.64	1.00	4.46	1.50
											7.29	
Fourth	R1	Studio	W1	0.68	1.00	6.19	61.93	120.25	0.64	1.00	3.67	1.50
		Studio	W2	0.68	1.00	3.45	60.02	120.25	0.64	1.00	1.99	
											5.66	1.50
Fourth	R2	Studio	W3	0.68	1.00	2.31	57.91	120.44	0.64	1.00	1.28	1.50
		Studio	W4	0.68	1.00	6.18	60.43	120.44	0.64	1.00	3.57	
											0.30	1.50
											5.15	
Fourth	R3	Studio	W6	0.68	1.00	5.12	60.15	120.40	0.64	1.00	2.95	1.50
		Studio	W7	0.68	1.00	4.48	58.85	120.40	0.64	1.00	2.52	
											5.47	1.50
Fourth	R4	Studio	W8	0.68	1.00	1.29	53.81	113.49	0.64	1.00	0.70	1.50
		Studio	W9	0.68	1.00	6.18	53.80	113.49	0.64	1.00	3.37	
											4.08	1.50
Fourth	R5	Studio	W10	0.68	1.00	9.40	61.38	132.76	0.64	1.00	5.00	1.50
		Studio	W11	0.68	1.00	6.18	81.88	132.76	0.64	1.00	4.39	
											9.40	1.50
Fourth	R6	LKD	W12	0.68	1.00	6.18	81.88	108.37	0.64	1.00	5.38	1.50
		LKD	W13	0.68	1.00	3.22	80.31	108.37	0.64	1.00	2.75	
											8.13	1.50
Fourth	R7	Bedroom	W14	0.68	1.00	2.81	79.60	51.07	0.64	1.00	5.04	1.00
		Bedroom	W15	0.68	1.00	1.47	74.16	51.07	0.64	1.00	2.46	
											7.50	1.00
Fourth	R8	LKD	W16	0.68	1.00	4.29	81.37	120.47	0.64	1.00	3.34	1.50
		LKD	W17	0.68	1.00	6.18	81.88	120.47	0.64	1.00	4.84	
											8.18	1.50
Fourth	R9	Studio	W18	0.68	1.00	6.18	81.88	120.46	0.64	1.00	4.84	1.50
		Studio	W19	0.68	1.00	2.49	78.79	120.46	0.64	1.00	1.88	
											6.72	1.50
Fourth	R10	Studio	W20	0.68	1.00	3.28	80.43	119.02	0.64	1.00	2.56	1.50
		Studio	W21	0.68	1.00	6.18	81.88	119.02	0.64	1.00	4.90	
											7.46	1.50
Fourth	R11	Studio	W22	0.68	1.00	6.18	77.98	118.41	0.64	1.00	4.69	1.50
		Studio	W23	0.68	1.00	3.24	75.02	118.41	0.64	1.00	2.36	
											7.05	1.50
Fourth	R12	Studio	W24	0.68	1.00	2.54	74.42	132.23	0.64	1.00	1.65	1.50
		Studio	W25	0.68	1.00	6.18	73.26	132.23	0.64	1.00	3.95	
											0.50	1.50
											6.09	
Fourth	R13	Bedroom	W27	0.68	1.00	4.74	67.77	51.04	0.64	1.00	7.24	1.00
											7.24	
Fourth	R14	LKD	W28	0.68	1.00	6.17	59.91	115.81	0.64	1.00	3.68	1.50
		LKD	W29	0.68	1.00	1.50	35.94	115.81	0.64	1.00	0.54	
											4.21	1.50
Fourth	R15	Studio	W30	0.68	1.00	1.59	49.53	120.67	0.64	1.00	0.75	1.50
		Studio	W31	0.68	1.00	3.71	58.65	120.67	0.64	1.00	2.08	
											2.83	1.50

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Fourth	R16	Bedroom	W32	0.68	1.00	2.06	59.68	51.04	0.64	1.00	2.77	
		Bedroom	W33	0.68	1.00	2.22	66.85	51.04	0.64	1.00	3.35	
												6.12
Fourth	R17	LKD	W34	0.68	1.00	3.80	69.10	111.97	0.64	1.00	2.70	
		LKD	W35	0.68	1.00	4.31	73.46	111.97	0.64	1.00	3.26	
												5.96
Fourth	R18	Studio	W36	0.68	1.00	1.45	67.72	123.15	0.64	1.00	0.92	
		Studio	W37	0.68	1.00	6.18	76.80	123.15	0.64	1.00	4.44	
		Studio	W38	0.68	1.00	1.74	74.43	123.15	0.64	1.00	1.21	
											6.57	1.50
Fourth	R19	Studio	W39	0.68	1.00	4.03	77.96	125.90	0.64	1.00	2.87	
		Studio	W40	0.68	1.00	6.19	79.63	125.90	0.64	1.00	4.51	
												7.38
Fifth	R1	Studio	W1	0.68	1.00	6.19	66.57	120.25	0.64	1.00	3.95	
		Studio	W2	0.68	1.00	3.45	64.98	120.25	0.64	1.00	2.15	
												6.10
Fifth	R2	Studio	W3	0.68	1.00	2.31	62.94	120.44	0.64	1.00	1.39	
		Studio	W4	0.68	1.00	6.18	65.78	120.44	0.64	1.00	3.89	
		Studio	W5	0.68	1.00	0.65	53.52	120.44	0.64	1.00	0.33	
											5.61	1.50
Fifth	R3	Studio	W6	0.68	1.00	5.12	65.75	120.40	0.64	1.00	3.22	
		Studio	W7	0.68	1.00	4.48	64.75	120.40	0.64	1.00	2.77	
												5.99
Fifth	R4	Studio	W8	0.68	1.00	1.29	59.11	113.49	0.64	1.00	0.77	
		Studio	W9	0.68	1.00	6.18	59.84	113.49	0.64	1.00	3.75	
												4.53
Fifth	R5	Studio	W10	0.68	1.00	9.40	66.30	132.76	0.64	1.00	5.40	
		Studio	W11	0.68	1.00	6.18	81.88	132.76	0.64	1.00	4.39	
												9.80
Fifth	R6	LKD	W12	0.68	1.00	6.18	81.88	108.37	0.64	1.00	5.38	
		LKD	W13	0.68	1.00	3.22	80.31	108.37	0.64	1.00	2.75	
												8.13
Fifth	R7	Bedroom	W14	0.68	1.00	2.81	79.60	51.07	0.64	1.00	5.04	
		Bedroom	W15	0.68	1.00	1.47	74.16	51.07	0.64	1.00	2.46	
												7.50
Fifth	R8	LKD	W16	0.68	1.00	4.29	81.37	120.47	0.64	1.00	3.34	
		LKD	W17	0.68	1.00	6.18	81.88	120.47	0.64	1.00	4.84	
												8.18
Fifth	R9	Studio	W18	0.68	1.00	6.18	81.88	120.46	0.64	1.00	4.84	
		Studio	W19	0.68	1.00	2.49	78.79	120.46	0.64	1.00	1.88	
												6.72
Fifth	R10	Studio	W20	0.68	1.00	3.28	80.43	119.02	0.64	1.00	2.56	
		Studio	W21	0.68	1.00	6.18	81.88	119.02	0.64	1.00	4.90	
												7.46
Fifth	R11	Studio	W22	0.68	1.00	6.18	79.46	118.41	0.64	1.00	4.78	
		Studio	W23	0.68	1.00	3.24	77.00	118.41	0.64	1.00	2.42	
												7.20
Fifth	R12	Studio	W24	0.68	1.00	2.54	76.11	132.23	0.64	1.00	1.68	

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Proposed	Req'd Value
		Studio	W25	0.68	1.00	6.18	76.30	132.23	0.64	1.00	4.11	1.50
		Studio	W26	0.68	1.00	0.93	64.45	132.23	0.64	1.00	0.52	
											6.32	
Fifth	R13	Bedroom	W27	0.68	1.00	4.74	72.00	51.04	0.64	1.00	7.70	1.00
											7.70	
Fifth	R14	LKD	W28	0.68	1.00	6.17	63.96	115.81	0.64	1.00	3.93	1.50
		LKD	W29	0.68	1.00	1.50	35.41	115.81	0.64	1.00	0.53	
											4.46	
Fifth	R15	Studio	W30	0.68	1.00	1.59	50.33	120.67	0.64	1.00	0.77	1.50
		Studio	W31	0.68	1.00	3.71	62.25	120.67	0.64	1.00	2.20	
											2.97	
Fifth	R16	Bedroom	W32	0.68	1.00	2.06	63.93	51.04	0.64	1.00	2.97	1.00
		Bedroom	W33	0.68	1.00	2.22	70.34	51.04	0.64	1.00	3.52	
											6.49	
Fifth	R17	LKD	W34	0.68	1.00	3.80	72.88	111.97	0.64	1.00	2.85	1.50
		LKD	W35	0.68	1.00	4.31	76.26	111.97	0.64	1.00	3.38	
											6.23	
Fifth	R18	Studio	W36	0.68	1.00	1.45	70.02	123.15	0.64	1.00	0.95	1.50
		Studio	W37	0.68	1.00	6.18	78.68	123.15	0.64	1.00	4.55	
		Studio	W38	0.68	1.00	1.74	74.95	123.15	0.64	1.00	1.22	
											6.72	
Fifth	R19	Studio	W39	0.68	1.00	4.03	79.19	125.90	0.64	1.00	2.92	1.50
		Studio	W40	0.68	1.00	6.19	80.49	125.90	0.64	1.00	4.56	
											7.48	
Sixth	R1	Studio	W1	0.68	1.00	6.19	70.05	120.25	0.64	1.00	4.16	1.50
		Studio	W2	0.68	1.00	3.45	68.85	120.25	0.64	1.00	2.28	
											6.43	
Sixth	R2	Studio	W3	0.68	1.00	2.31	66.99	120.44	0.64	1.00	1.48	1.50
		Studio	W4	0.68	1.00	6.18	69.96	120.44	0.64	1.00	4.13	
		Studio	W5	0.68	1.00	0.65	57.43	120.44	0.64	1.00	0.36	
											5.97	
Sixth	R3	Studio	W6	0.68	1.00	5.12	70.13	120.40	0.64	1.00	3.43	1.50
		Studio	W7	0.68	1.00	4.48	69.69	120.40	0.64	1.00	2.99	
											6.42	
Sixth	R4	Studio	W8	0.68	1.00	1.29	63.38	113.49	0.64	1.00	0.83	1.50
		Studio	W9	0.68	1.00	6.18	66.21	113.49	0.64	1.00	4.15	
											4.98	
Sixth	R5	Studio	W10	0.68	1.00	9.40	69.93	132.76	0.64	1.00	5.70	1.50
		Studio	W11	0.68	1.00	6.18	80.04	132.76	0.64	1.00	4.29	
											9.99	
Sixth	R6	LKD	W12	0.68	1.00	6.18	80.04	108.37	0.64	1.00	5.26	1.50
		LKD	W13	0.68	1.00	3.22	78.64	108.37	0.64	1.00	2.69	
											7.95	
Sixth	R7	Bedroom	W14	0.68	1.00	2.81	77.99	51.07	0.64	1.00	4.94	1.00
		Bedroom	W15	0.68	1.00	1.47	72.89	51.07	0.64	1.00	2.42	
											7.36	
Sixth	R8	LKD	W16	0.68	1.00	4.29	79.59	120.47	0.64	1.00	3.27	
		LKD	W17	0.68	1.00	6.18	80.04	120.47	0.64	1.00	4.73	

[illegible]

Floor Ref.	Room Ref.	Room Use.		Room Area	Lit Area Proposed
Proposed Daylight Distribution					
Ground	R1	Studio	Area m2	30.68	19.64
			% of room		64.00%
Ground	R2	Studio	Area m2	31.15	15.75
			% of room		51.00%
Ground	R3	Studio	Area m2	31.17	12.23
			% of room		39.00%
Ground	R4	Studio	Area m2	31.17	19.38
			% of room		62.00%
Ground	R5	Bedroom	Area m2	10.04	3.24
			% of room		32.00%
Ground	R6	LKD	Area m2	29.54	12.73
			% of room		43.00%
Ground	R7	Bedroom	Area m2	13.41	10.94
			% of room		82.00%
Ground	R8	Studio	Area m2	31.01	25.46
			% of room		82.00%
Ground	R9	Studio	Area m2	31.27	30.48
			% of room		97.00%
Ground	R11	Studio	Area m2	27.89	27.89
			% of room		100.00%
Ground	R12	Studio	Area m2	28.49	28.49
			% of room		100.00%
Ground	R13	LKD	Area m2	28.87	26.94
			% of room		93.00%
Ground	R14	Bedroom	Area m2	11.08	11.08
			% of room		100.00%
Ground	R15	LKD	Area m2	23.88	23.76
			% of room		99.00%
Ground	R16	Bedroom	Area m2	10.35	10.35
			% of room		100.00%
Ground	R17	Bedroom	Area m2	12.18	12.18
			% of room		100.00%
Ground	R18	Bedroom	Area m2	12.18	12.18
			% of room		100.00%
Ground	R19	Bedroom	Area m2	10.35	10.35
			% of room		100.00%
Ground	R20	LKD	Area m2	23.88	23.52
			% of room		98.00%
Ground	R21	Bedroom	Area m2	11.08	11.08
			% of room		100.00%
Ground	R22	LKD	Area m2	28.83	25.70
			% of room		89.00%
Ground	R23	LKD	Area m2	29.89	29.49
			% of room		99.00%
Ground	R24	Studio	Area m2	33.01	30.27
			% of room		92.00%
Ground	R25	Bedroom	Area m2	9.12	9.12
			% of room		100.00%
Ground	R26	LKD	Area m2	25.35	22.82
			% of room		90.00%
Ground	R27	Bedroom	Area m2	12.70	12.70
			% of room		100.00%
Ground	R28	Studio	Area m2	30.64	28.86
			% of room		94.00%
Ground	R29	Bedroom	Area m2	8.89	8.76
			% of room		98.00%
Ground	R30	Bedroom	Area m2	14.60	14.56
			% of room		100.00%
First	R1	Studio	Area m2	29.00	26.73
			% of room		92.00%

Floor Ref.	Room Ref.	Room Use.		Room Area	Lit Area Proposed
First	R2	Studio	Area m2	29.06	25.33
			% of room		87.00%
First	R3	Studio	Area m2	29.05	24.24
			% of room		83.00%
First	R4	Studio	Area m2	26.97	18.38
			% of room		68.00%
First	R5	Studio	Area m2	32.28	32.04
			% of room		99.00%
First	R6	LKD	Area m2	25.88	25.86
			% of room		100.00%
First	R7	Bedroom	Area m2	9.80	9.68
			% of room		99.00%
First	R8	LKD	Area m2	29.07	29.07
			% of room		100.00%
First	R9	Studio	Area m2	29.07	29.04
			% of room		100.00%
First	R10	Studio	Area m2	28.59	28.55
			% of room		100.00%
First	R11	Studio	Area m2	28.38	28.38
			% of room		100.00%
First	R12	Studio	Area m2	31.32	31.25
			% of room		100.00%
First	R13	Bedroom	Area m2	9.79	9.68
			% of room		99.00%
First	R14	LKD	Area m2	26.40	26.03
			% of room		99.00%
First	R15	Studio	Area m2	28.06	26.40
			% of room		94.00%
First	R16	Bedroom	Area m2	9.79	9.68
			% of room		99.00%
First	R17	LKD	Area m2	26.43	26.40
			% of room		100.00%
First	R18	Studio	Area m2	28.86	28.84
			% of room		100.00%
First	R19	Studio	Area m2	30.78	30.67
			% of room		100.00%
Second	R1	Studio	Area m2	29.00	26.89
			% of room		93.00%
Second	R2	Studio	Area m2	29.06	25.45
			% of room		88.00%
Second	R3	Studio	Area m2	29.05	24.37
			% of room		84.00%
Second	R4	Studio	Area m2	26.97	19.66
			% of room		73.00%
Second	R5	Studio	Area m2	32.28	32.04
			% of room		99.00%
Second	R6	LKD	Area m2	25.88	25.86
			% of room		100.00%
Second	R7	Bedroom	Area m2	9.80	9.68
			% of room		99.00%
Second	R8	LKD	Area m2	29.07	29.07
			% of room		100.00%
Second	R9	Studio	Area m2	29.07	29.04
			% of room		100.00%
Second	R10	Studio	Area m2	28.59	28.55
			% of room		100.00%
Second	R11	Studio	Area m2	28.38	28.38
			% of room		100.00%
Second	R12	Studio	Area m2	31.32	31.25
			% of room		100.00%
Second	R13	Bedroom	Area m2	9.79	9.68
			% of room		99.00%
Second	R14	LKD	Area m2	26.40	26.05

Floor Ref.	Room Ref.	Room Use.		Room Area	Lit Area Proposed
Second	R15	Studio	% of room Area m2	28.06	99.00% 26.40
Second	R16	Bedroom	% of room Area m2	9.79	94.00% 9.68
Second	R17	LKD	% of room Area m2	26.43	99.00% 26.40
Second	R18	Studio	% of room Area m2	28.86	100.00% 28.84
Second	R19	Studio	% of room Area m2	30.78	100.00% 30.67
			% of room		100.00%
Third	R1	Studio	Area m2	29.00	27.47
			% of room		95.00%
Third	R2	Studio	Area m2	29.06	26.38
			% of room		91.00%
Third	R3	Studio	Area m2	29.05	25.30
			% of room		87.00%
Third	R4	Studio	Area m2	26.97	22.55
			% of room		84.00%
Third	R5	Studio	Area m2	32.28	32.04
			% of room		99.00%
Third	R6	LKD	Area m2	25.88	25.86
			% of room		100.00%
Third	R7	Bedroom	Area m2	9.80	9.68
			% of room		99.00%
Third	R8	LKD	Area m2	29.07	29.07
			% of room		100.00%
Third	R9	Studio	Area m2	29.07	29.04
			% of room		100.00%
Third	R10	Studio	Area m2	28.59	28.55
			% of room		100.00%
Third	R11	Studio	Area m2	28.38	28.38
			% of room		100.00%
Third	R12	Studio	Area m2	31.32	31.25
			% of room		100.00%
Third	R13	Bedroom	Area m2	9.79	9.68
			% of room		99.00%
Third	R14	LKD	Area m2	26.40	26.06
			% of room		99.00%
Third	R15	Studio	Area m2	28.06	26.40
			% of room		94.00%
Third	R16	Bedroom	Area m2	9.79	9.68
			% of room		99.00%
Third	R17	LKD	Area m2	26.43	26.40
			% of room		100.00%
Third	R18	Studio	Area m2	28.86	28.84
			% of room		100.00%
Third	R19	Studio	Area m2	30.78	30.67
			% of room		100.00%
Fourth	R1	Studio	Area m2	29.00	28.22
			% of room		97.00%
Fourth	R2	Studio	Area m2	29.06	27.51
			% of room		95.00%
Fourth	R3	Studio	Area m2	29.05	26.78
			% of room		92.00%
Fourth	R4	Studio	Area m2	26.97	26.42
			% of room		98.00%
Fourth	R5	Studio	Area m2	32.28	32.07
			% of room		99.00%
Fourth	R6	LKD	Area m2	25.88	25.86
			% of room		100.00%
Fourth	R7	Bedroom	Area m2	9.80	9.68
			% of room		99.00%

Floor Ref.	Room Ref.	Room Use.		Room Area	Lit Area Proposed
Fourth	R8	LKD	Area m2	29.07	29.07
			% of room		100.00%
Fourth	R9	Studio	Area m2	29.07	29.04
			% of room		100.00%
Fourth	R10	Studio	Area m2	28.59	28.55
			% of room		100.00%
Fourth	R11	Studio	Area m2	28.38	28.38
			% of room		100.00%
Fourth	R12	Studio	Area m2	31.32	31.25
			% of room		100.00%
Fourth	R13	Bedroom	Area m2	9.79	9.68
			% of room		99.00%
Fourth	R14	LKD	Area m2	26.40	26.10
			% of room		99.00%
Fourth	R15	Studio	Area m2	28.06	26.40
			% of room		94.00%
Fourth	R16	Bedroom	Area m2	9.79	9.68
			% of room		99.00%
Fourth	R17	LKD	Area m2	26.43	26.40
			% of room		100.00%
Fourth	R18	Studio	Area m2	28.86	28.84
			% of room		100.00%
Fourth	R19	Studio	Area m2	30.78	30.67
			% of room		100.00%
Fifth	R1	Studio	Area m2	29.00	29.00
			% of room		100.00%
Fifth	R2	Studio	Area m2	29.06	29.06
			% of room		100.00%
Fifth	R3	Studio	Area m2	29.05	29.02
			% of room		100.00%
Fifth	R4	Studio	Area m2	26.97	26.43
			% of room		98.00%
Fifth	R5	Studio	Area m2	32.28	32.28
			% of room		100.00%
Fifth	R6	LKD	Area m2	25.88	25.86
			% of room		100.00%
Fifth	R7	Bedroom	Area m2	9.80	9.68
			% of room		99.00%
Fifth	R8	LKD	Area m2	29.07	29.07
			% of room		100.00%
Fifth	R9	Studio	Area m2	29.07	29.04
			% of room		100.00%
Fifth	R10	Studio	Area m2	28.59	28.55
			% of room		100.00%
Fifth	R11	Studio	Area m2	28.38	28.38
			% of room		100.00%
Fifth	R12	Studio	Area m2	31.32	31.25
			% of room		100.00%
Fifth	R13	Bedroom	Area m2	9.79	9.68
			% of room		99.00%
Fifth	R14	LKD	Area m2	26.40	26.08
			% of room		99.00%
Fifth	R15	Studio	Area m2	28.06	26.40
			% of room		94.00%
Fifth	R16	Bedroom	Area m2	9.79	9.68
			% of room		99.00%
Fifth	R17	LKD	Area m2	26.43	26.40
			% of room		100.00%
Fifth	R18	Studio	Area m2	28.86	28.84
			% of room		100.00%
Fifth	R19	Studio	Area m2	30.78	30.67
			% of room		100.00%
Sixth	R1	Studio	Area m2	29.00	29.00

Floor Ref.	Room Ref.	Room Use.		Room Area	Lit Area Proposed
			% of room		100.00%
Sixth	R2	Studio	Area m2	29.06	29.06
			% of room		100.00%
Sixth	R3	Studio	Area m2	29.05	29.01
			% of room		100.00%
Sixth	R4	Studio	Area m2	26.97	26.15
			% of room		97.00%
Sixth	R5	Studio	Area m2	32.28	32.28
			% of room		100.00%
Sixth	R6	LKD	Area m2	25.88	25.86
			% of room		100.00%
Sixth	R7	Bedroom	Area m2	9.80	9.68
			% of room		99.00%
Sixth	R8	LKD	Area m2	29.07	29.07
			% of room		100.00%
Sixth	R9	Studio	Area m2	29.07	29.04
			% of room		100.00%
Sixth	R10	Studio	Area m2	28.59	28.55
			% of room		100.00%
Sixth	R11	Studio	Area m2	28.38	28.38
			% of room		100.00%
Sixth	R12	Studio	Area m2	31.32	31.25
			% of room		100.00%
Sixth	R13	Bedroom	Area m2	9.79	9.68
			% of room		99.00%
Sixth	R14	LKD	Area m2	26.40	25.94
			% of room		98.00%
Sixth	R15	Studio	Area m2	28.06	26.40
			% of room		94.00%
Sixth	R16	Bedroom	Area m2	9.79	9.68
			% of room		99.00%
Sixth	R17	LKD	Area m2	26.43	26.40
			% of room		100.00%
Sixth	R18	Studio	Area m2	28.86	28.84
			% of room		100.00%
Sixth	R19	Studio	Area m2	30.78	30.67
			% of room		100.00%

Floor Ref.	Room Ref.	Property Type	Room Use.	Window Ref.	Window Orientation	Total Suns per Room Annual	Total Suns per Room Winter
Proposed APSH							
Ground	R1	Residential	Studio	W1	207°	41.00	5.00
	R2	Residential	Studio	W2	207°	39.00	5.00
	R3	Residential	Studio	W3	207°	37.00	5.00
	R4	Residential	Studio	W4 W43	207° 90° Hz	38.00	4.00
	R6	Residential	LKD	W6 W44	207° 90° Hz	41.00	5.00
	R8	Residential	Studio	W8 W46	207° 90° Hz	34.00	9.00
	R9	Residential	Studio	W9 W10 W11	207° 207° 117°	28.00	19.00
	R11	Residential	Studio	W15 W16	117° 117°	55.00	15.00
	R12	Residential	Studio	W17 W18	117° 117°	62.00	20.00
	R13	Residential	LKD	W19	117°	60.00	20.00
	R15	Residential	LKD	W21 W22	117° 117°	62.00	20.00
	R20	Residential	LKD	W29 W30	297°N 297°N	10.00	0.00
	R22	Residential	LKD	W32	297°N	3.00	0.00
	R23	Residential	LKD	W33	297°N	1.00	0.00
	R24	Residential	Studio	W34	27°N	0.00	0.00
	R26	Residential	LKD	W37	27°N	1.00	0.00
	R28	Residential	Studio	W39	27°N	1.00	0.00
	R1	Residential	Studio	W1 W2	207° 207°	52.00	8.00
	R2	Residential	Studio	W3 W4 W5	207° 207° 207°	49.00	7.00
	R3	Residential	Studio	W6 W7	207° 207°	43.00	5.00
	R4	Residential	Studio	W8 W9	207° 207°	37.00	4.00

Floor Ref.	Room Ref.	Property Type	Room Use.	Window Ref.	Window Orientation	Total Suns per Room Annual	Total Suns per Room Winter
First	R5	Residential	Studio	W10 W11	207° 117°	73.00	20.00
	R6	Residential	LKD	W12 W13	117° 117°	60.00	20.00
	R8	Residential	LKD	W16 W17	117° 117°	62.00	20.00
	R9	Residential	Studio	W18 W19	117° 117°	60.00	20.00
	R10	Residential	Studio	W20 W21	117° 117°	62.00	20.00
	R11	Residential	Studio	W22 W23	297°N 297°N	20.00	0.00
	R12	Residential	Studio	W24 W25 W26	297°N 297°N 297°N	11.00	0.00
	R14	Residential	LKD	W28 W29	297°N 297°N	1.00	0.00
	R15	Residential	Studio	W30 W31	27°N 27°N	0.00	0.00
	R17	Residential	LKD	W34 W35	27°N 27°N	0.00	0.00
	R18	Residential	Studio	W36 W37 W38	27°N 27°N 27°N	1.00	0.00
	R19	Residential	Studio	W39 W40	27°N 27°N	3.00	0.00
	R1	Residential	Studio	W1 W2	207° 207°	55.00	9.00
	R2	Residential	Studio	W3 W4 W5	207° 207° 207°	53.00	8.00
	R3	Residential	Studio	W6 W7	207° 207°	47.00	6.00
	R4	Residential	Studio	W8 W9	207° 207°	41.00	5.00
	R5	Residential	Studio	W10 W11	207° 117°	76.00	20.00
	R6	Residential	LKD	W12 W13	117° 117°	60.00	20.00
	R8	Residential	LKD	W16 W17	117° 117°		

Floor Ref.	Room Ref.	Property Type	Room Use.	Window Ref.	Window Orientation	Total Suns per Room Annual	Total Suns per Room Winter
Second						62.00	20.00
	R9	Residential	Studio	W18 W19	117° 117°	60.00	20.00
	R10	Residential	Studio	W20 W21	117° 117°	62.00	20.00
	R11	Residential	Studio	W22 W23	297°N 297°N	22.00	0.00
	R12	Residential	Studio	W24 W25 W26	297°N 297°N 297°N	17.00	0.00
	R14	Residential	LKD	W28 W29	297°N 297°N	1.00	0.00
	R15	Residential	Studio	W30 W31	27°N 27°N	0.00	0.00
	R17	Residential	LKD	W34 W35	27°N 27°N	0.00	0.00
	R18	Residential	Studio	W36 W37 W38	27°N 27°N 27°N	1.00	0.00
	R19	Residential	Studio	W39 W40	27°N 27°N	7.00	0.00
Third	R1	Residential	Studio	W1 W2	207° 207°	61.00	12.00
	R2	Residential	Studio	W3 W4 W5	207° 207° 207°	60.00	12.00
	R3	Residential	Studio	W6 W7	207° 207°	54.00	9.00
	R4	Residential	Studio	W8 W9	207° 207°	47.00	8.00
	R5	Residential	Studio	W10 W11	207° 117°	81.00	21.00
	R6	Residential	LKD	W12 W13	117° 117°	60.00	20.00
	R8	Residential	LKD	W16 W17	117° 117°	62.00	20.00
	R9	Residential	Studio	W18 W19	117° 117°	60.00	20.00
	R10	Residential	Studio	W20 W21	117° 117°	62.00	20.00
				W22	297°N		

Floor Ref.	Room Ref.	Property Type	Room Use.	Window Ref.	Window Orientation	Total Suns per Room Annual	Total Suns per Room Winter
	R11	Residential	Studio	W23	297°N	24.00	0.00
	R12	Residential	Studio	W24 W25 W26	297°N 297°N 297°N	21.00	0.00
	R14	Residential	LKD	W28 W29	297°N 297°N	1.00	0.00
	R15	Residential	Studio	W30 W31	27°N 27°N	0.00	0.00
	R17	Residential	LKD	W34 W35	27°N 27°N	0.00	0.00
	R18	Residential	Studio	W36 W37 W38	27°N 27°N 27°N	4.00	0.00
	R19	Residential	Studio	W39 W40	27°N 27°N	9.00	0.00
Fourth	R1	Residential	Studio	W1 W2	207° 207°	66.00	15.00
	R2	Residential	Studio	W3 W4 W5	207° 207° 207°	65.00	15.00
	R3	Residential	Studio	W6 W7	207° 207°	60.00	12.00
	R4	Residential	Studio	W8 W9	207° 207°	53.00	12.00
	R5	Residential	Studio	W10 W11	207° 117°	83.00	23.00
	R6	Residential	LKD	W12 W13	117° 117°	60.00	20.00
	R8	Residential	LKD	W16 W17	117° 117°	62.00	20.00
	R9	Residential	Studio	W18 W19	117° 117°	60.00	20.00
	R10	Residential	Studio	W20 W21	117° 117°	62.00	20.00
	R11	Residential	Studio	W22 W23	297°N 297°N	27.00	2.00
	R12	Residential	Studio	W24 W25 W26	297°N 297°N 297°N	24.00	0.00
	R14	Residential	LKD	W28 W29	297°N 297°N		

Floor Ref.	Room Ref.	Property Type	Room Use.	Window Ref.	Window Orientation	Total Suns per Room Annual	Total Suns per Room Winter
						1.00	0.00
	R15	Residential	Studio	W30 W31	27°N 27°N	0.00	0.00
	R17	Residential	LKD	W34 W35	27°N 27°N	1.00	0.00
	R18	Residential	Studio	W36 W37 W38	27°N 27°N 27°N	9.00	0.00
	R19	Residential	Studio	W39 W40	27°N 27°N	12.00	0.00
Fifth	R1	Residential	Studio	W1 W2	207° 207°	71.00	20.00
	R2	Residential	Studio	W3 W4 W5	207° 207° 207°	72.00	21.00
	R3	Residential	Studio	W6 W7	207° 207°	69.00	19.00
	R4	Residential	Studio	W8 W9	207° 207°	59.00	17.00
	R5	Residential	Studio	W10 W11	207° 117°	85.00	24.00
	R6	Residential	LKD	W12 W13	117° 117°	60.00	20.00
	R8	Residential	LKD	W16 W17	117° 117°	62.00	20.00
	R9	Residential	Studio	W18 W19	117° 117°	60.00	20.00
	R10	Residential	Studio	W20 W21	117° 117°	62.00	20.00
	R11	Residential	Studio	W22 W23	297°N 297°N	29.00	4.00
	R12	Residential	Studio	W24 W25 W26	297°N 297°N 297°N	27.00	2.00
	R14	Residential	LKD	W28 W29	297°N 297°N	3.00	0.00
	R15	Residential	Studio	W30 W31	27°N 27°N	0.00	0.00
	R17	Residential	LKD	W34 W35	27°N 27°N	8.00	0.00
				W36	27°N		

Floor Ref.	Room Ref.	Property Type	Room Use.	Window Ref.	Window Orientation	Total Suns per Room Annual	Total Suns per Room Winter
	R18	Residential	Studio	W37 W38	27°N 27°N	13.00	0.00
	R19	Residential	Studio	W39 W40	27°N 27°N	14.00	0.00
Sixth	R1	Residential	Studio	W1 W2	207° 207°	72.00	24.00
	R2	Residential	Studio	W3 W4 W5	207° 207° 207°	72.00	24.00
	R3	Residential	Studio	W6 W7	207° 207°	71.00	23.00
	R4	Residential	Studio	W8 W9	207° 207°	65.00	20.00
	R5	Residential	Studio	W10 W11	207° 117°	90.00	27.00
	R6	Residential	LKD	W12 W13	117° 117°	59.00	20.00
	R8	Residential	LKD	W16 W17	117° 117°	59.00	20.00
	R9	Residential	Studio	W18 W19	117° 117°	59.00	20.00
	R10	Residential	Studio	W20 W21	117° 117°	59.00	20.00
	R11	Residential	Studio	W22 W23	297°N 297°N	29.00	6.00
	R12	Residential	Studio	W24 W25 W26	297°N 297°N 297°N	27.00	4.00
	R14	Residential	LKD	W28 W29	297°N 297°N	19.00	0.00
	R15	Residential	Studio	W30 W31	27°N 27°N	0.00	0.00
	R17	Residential	LKD	W34 W35	27°N 27°N	12.00	0.00
	R18	Residential	Studio	W36 W37 W38	27°N 27°N 27°N	12.00	0.00
	R19	Residential	Studio	W39 W40	27°N 27°N	12.00	0.00

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