

INTERNAL
DAYLIGHT & SUNLIGHT
ANALYSIS

CENTRAL ST GILES

Prepared by: Michael Harper
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Date: 22nd March 2007

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REASON FOR ISSUE:

Internal Daylight and Sunlight Report

RE:

Central St Giles

AUTHOR:

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AUTHORISATION FOR GIA:



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1.0 INSTRUCTIONS

GIA have been instructed to carry out an internal daylight and sunlight analysis into the revised position of the residential accommodation at Central St Giles, based on the scheme layouts by PRP Architects dated March 2007.

This report provides the daylight (Vertical Sky Component, Daylight Distribution and Average Daylight Factor) and sunlight (Annual Probable Sunlight Hours) results in relation to the revised position of the residential accommodation at Central St Giles.

Our understanding of these revised layouts are shown on drawings 1325/464-475.

2.0 DAYLIGHT AND SUNLIGHT METHODOLOGY

The following methods have been used to assess the internal daylight and sunlight to the habitable rooms within the scheme.

2.1 The Vertical Sky Component Method

The amount of skylight falling on a vertical wall or window can be quantified as the vertical sky component. This is the ratio of the direct sky illuminance falling on a vertical wall at the reference point for the simultaneous horizontal illuminance under an unobstructed sky. The 'standard overcast sky' of the Commission Internationale de l'Eclairage (CIE-International Commission on Illuminance) is used as the ratio is usually expressed a percentage. The maximum value is almost 40% for completely unobstructed vertical wall. The vertical sky component on a window can be related to the average daylight factor in a room, which is one basis for the British Standard recommendations on interior daylighting.

Vertical Sky Components may be calculated by using the sky light indicator or Waldram Diagram. Note that all obstructing buildings will have an effect, not just those on the same site. For calculation purposes, trees may be ignored unless they form dense continuous belts.

2.2 The Average Daylight Factor Method

The Average Daylight Factor is defined as '*A ratio of total daylight flux incident on a reference area to the total area of the reference area, expressed as a percentage of outdoor illuminance on a horizontal plain, due to an unobstructed sky of assumed or known illuminance distribution*'. The ADF method of assessment considers the diffuse visible transmittance of the glazing to the room in question, it considers the net glazed area of the window in question, the total area of the room surfaces; ceiling, walls, floor, and windows. It also makes allowance for the average reflectance of the internal surfaces of the room and of external obstruction. The BRE and British Standard recommend that for a fairly light coloured room an internal reflectance value of 0.5 can be taken. The ADF method also takes into account the angle of visible sky reaching the window/windows in question.

It is only this final part, the visible sky angle, which is dependent upon external obstruction. It can be directly related both to the obstruction angle and to the vertical sky component on the external window wall.

Reductions in the vertical sky component received by the windows of an existing building can also be related to reductions in daylight factor.

2.3 Sunlight

In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day, but especially in the afternoon. It is deemed as less important in bedrooms and in kitchens, where people prefer it in the morning rather than the afternoon.

Site Layout is the most important factor affecting the duration of sunlight in buildings. It can be divided into two main issues, Orientation and Overshadowing. The BRE states for these as follows:

3.0 THE PROPOSED ACCOMMODATION

The internal rooms to the residential parts of the scheme have been modelled and analysed based upon the internal drawings for the scheme. The VSC and ADF methods have been used to assess daylight, whereas the APSH method has been used to assess sunlight internal to the scheme. The actual window dimensions have been taken from the plans and elevations. The following perimeters have been used in the ADF analysis:

Glazing transmittance = 0.64

Internal surface reflectance = 0.5

3.1 Daylight & Proposed Accommodation

For the proposed accommodation it is only necessary to undertake an ADF assessment in accordance with the Methodology set out in the BRE Handbook. This states :-

'If a predominantly daylit appearance is required, then a daylight factor (DF) should be 5% or more, if there is no supplementary electric lighting, or 2% or more if supplementary electric lighting is provided. There are additional recommendations for dwellings of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms.'

It is these three significant criteria values, which are used as the test of acceptability in this assessment.

3.2 Sunlight & Proposed Accommodation

As the window locations and room uses for the proposed accommodation is known, and has been included in the computer model for the assessment, the significant criteria in relation to sunlight is the same for the proposed accommodation as it is for the existing accommodation. This is as follows: -

If the window reference point can receive more than one quarter (25%) of Annual Probable Sunlight Hours, including at least 5% of APSH during the winter months, between 21st September and 21st March, then the room should still receive enough sunlight.

Any reduction in sunlight access below this level should be kept to a minimum. If the available sunlight hours are both less than the amount given and less than 0.8 times their former value, either the whole year or just during the winter months, then the occupants of the existing building will notice the loss of sunlight.

4.0 SOURCES OF INFORMATION

Fletcher Priest Architects

Proposed Ground Level Plan

FP-BM-SC-LGR-01003.dwg

Elevations

FP-BM-SC-LM-21001 to 21004.dwg's

Sections

FP-BM-SC-LM-22000 to 22004.dwg's

PRP-R1-SC-L01-06001.dwg

PRP Architects

Floor Plans

PRP-R1-SC-L01-06001.dwg

PRP-R1-SC-L14-06014.dwg

5.0 INTERNAL DAYLIGHT AND SUNLIGHT RESULTS

The Vertical Sky Component and Average Daylight Factor results have been calculated for each room and window to the habitable rooms within the residential section of the scheme. The plan layouts are shown on drawings 1325/464-475 in Appendix 1. These results show that out of a total of 298 habitable rooms, 288 (i.e 97%) meet the BRE Guideline criteria. Of the 10 rooms which do not, all of these are only marginally below the BRE Guideline level. Therefore there are no rooms where there is a significant reduction beneath the BRE Guideline criteria. Given that these units are located in a dense urban location and that 97% meet the guidelines and that no rooms are significantly beneath the guidelines, the residential section of the scheme will be acceptable in daylight terms. Indeed, many of the rooms, particularly on the upper levels will have very good levels of daylight.

In relation to sunlight, only those windows which face within 90 ° of due south need to be analysed, as only these windows can receive sunlight, as referred to in the BRE Guidelines. The results show that out of the 477 windows which face south, 387 meet the BRE Guideline criteria (81%). Many of the windows which do not meet the criteria, are secondary glazing to the main fenestration within the room which receives good levels of sunlight which meets the guidelines, or serve bedrooms. The BRE Guidelines state that secondary windows and windows serving bedrooms and kitchens are less important in relation to sunlight. Therefore the degree of compliance is significantly above the 81% reflected here. Given the dense urban location where it is difficult for all windows to receive sunlight levels which meet the BRE Guidelines, it is considered that the degree of compliance is acceptable.

6.0 CONCLUSION

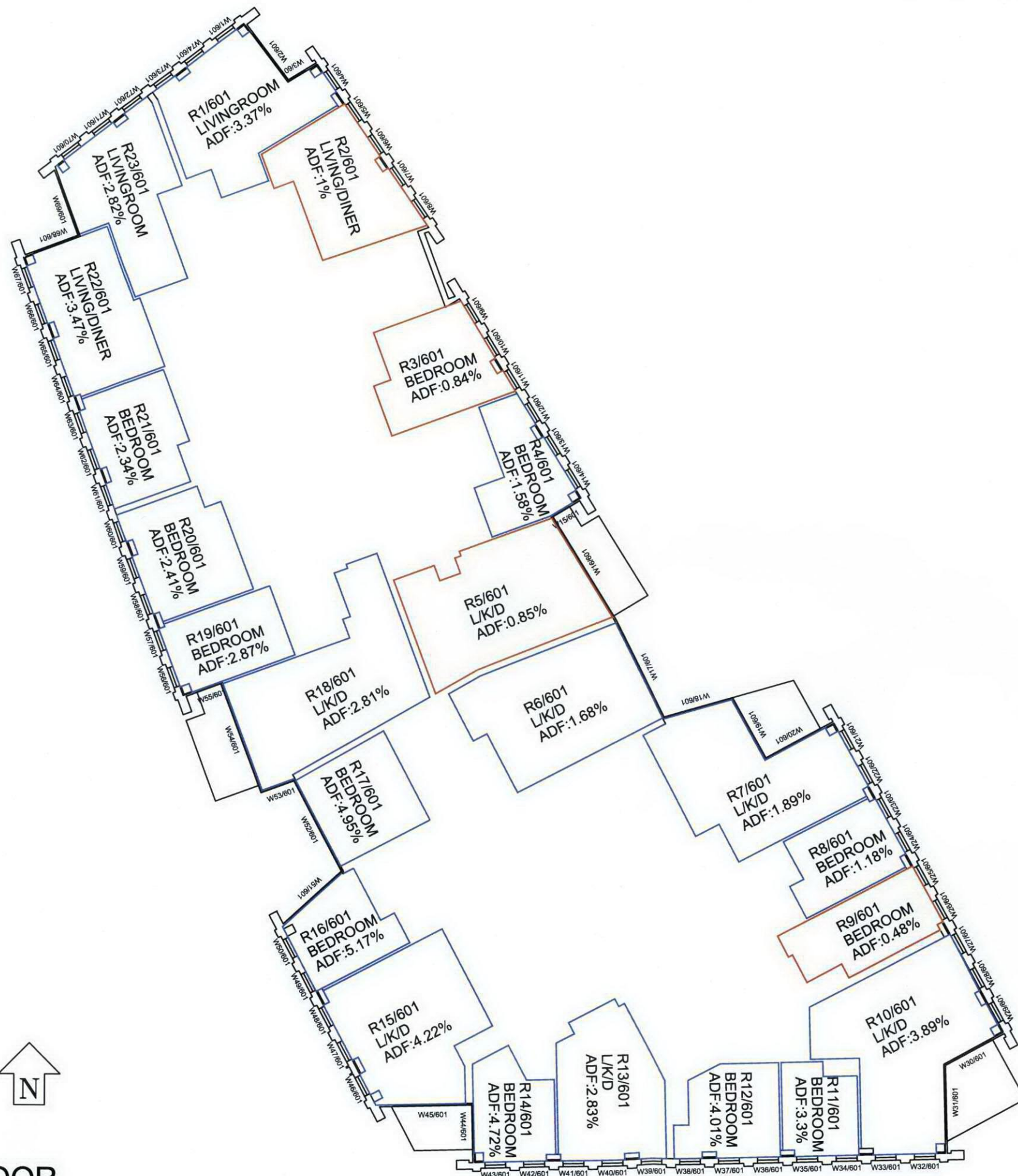
This report details the internal daylight and sunlight analysis to the residential section of the Central St Giles scheme by PRP Architects dated March 2007.

The daylight results show that almost all rooms (97%) will meet the BRE Guidelines. The few rooms which are beneath are sufficiently close as to be considered acceptable given the dense urban location of the site.

In relation to sunlight, the majority of windows will meet the BRE Guideline criteria. Many of those which do not, are secondary fenestration to rooms which receive good levels of sunlight which meet the guidelines, or serve bedrooms which are considered less important in relation to sunlight. Therefore, sunlight to the proposed accommodation is considered acceptable, given the dense urban location of the site and the flexibility allowed within the BRE Guidelines in such locations.

Therefore, the daylight and sunlight internal to the scheme will be acceptable and in accordance with the Camden UDP Policy for new build accommodation.

1ST FLOOR



Sources of Information

FLETCHER PRIEST ARCHITECTS
PROPOSED GROUND LEVEL PLAN
FP-BM-SC-LGR-01003.dwg
ELEVATIONS
FP-BM-SC-LM-21001 to 21004.dwg's
SECTIONS
FP-BM-SC-LM-22000 to 22004.dwg's
PRP-R1-SC-L01-06001.dwg to
PRP-R1-SC-L01-06001.dwg to

PRP ARCHITECTS
FLOOR PLANS
PRP-R1-SC-L01-06001.dwg to
PRP-R1-SC-L01-06014.dwg's

ROOMS WHICH FAIL ADF PASS/FAIL
CRITERIA SHOWN IN RED

Rev	Description	Date

Project

ST GILES COURT

Title

ROOM LAYOUTS &
ADF VALUES

Scale

1:175

Drawn

MG

Drawing No.

1325/464

Date

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Sources of Information

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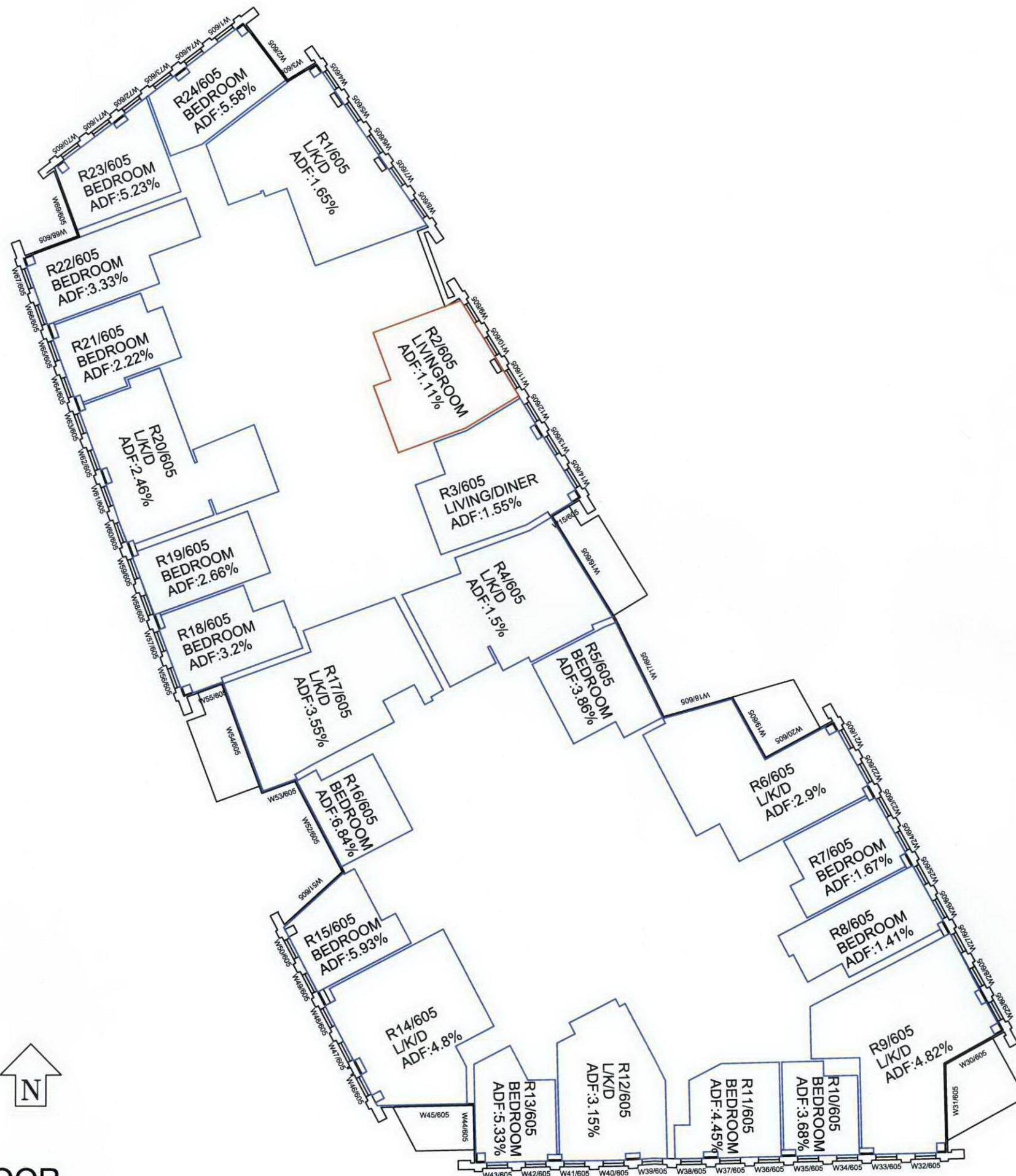
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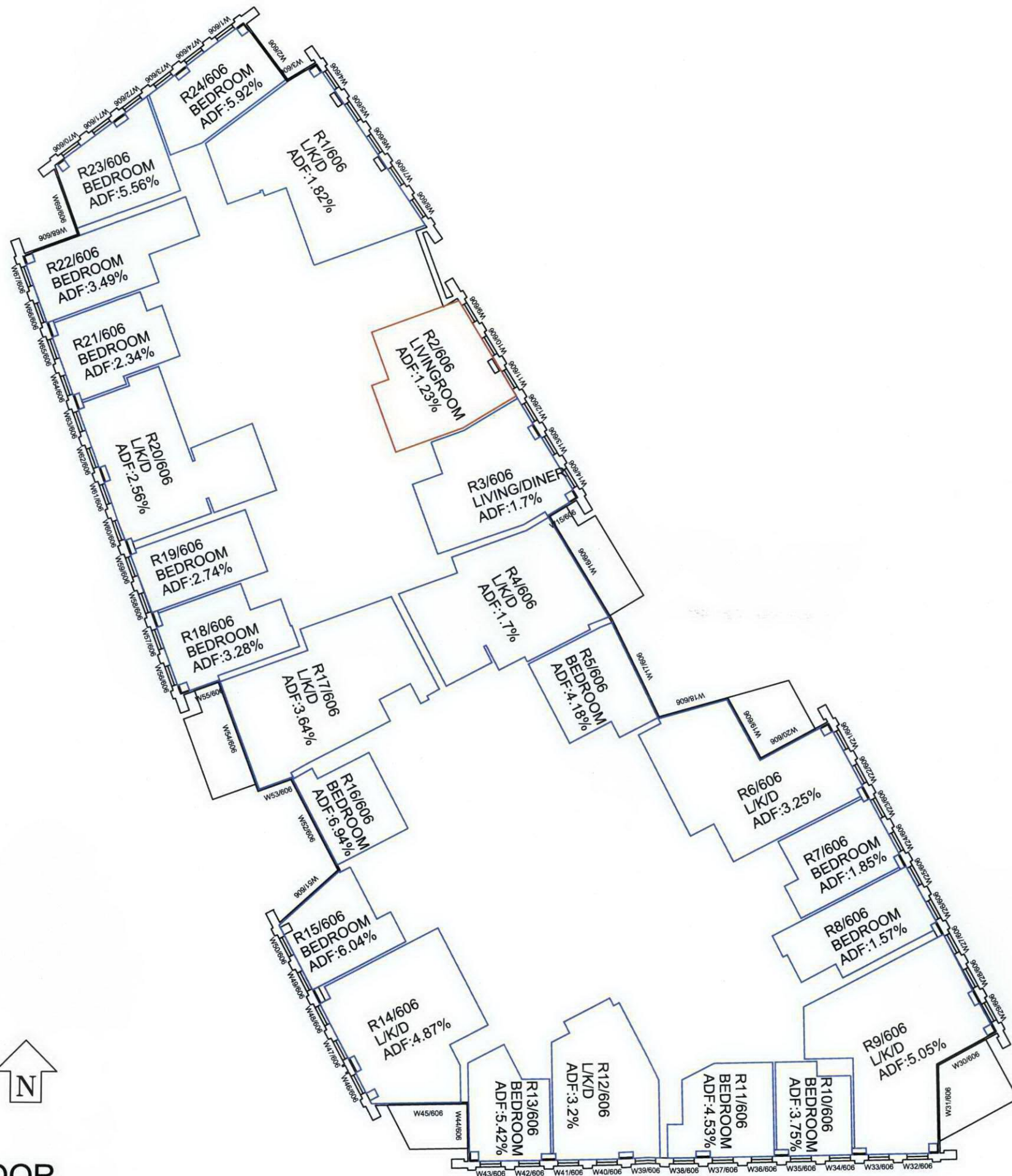
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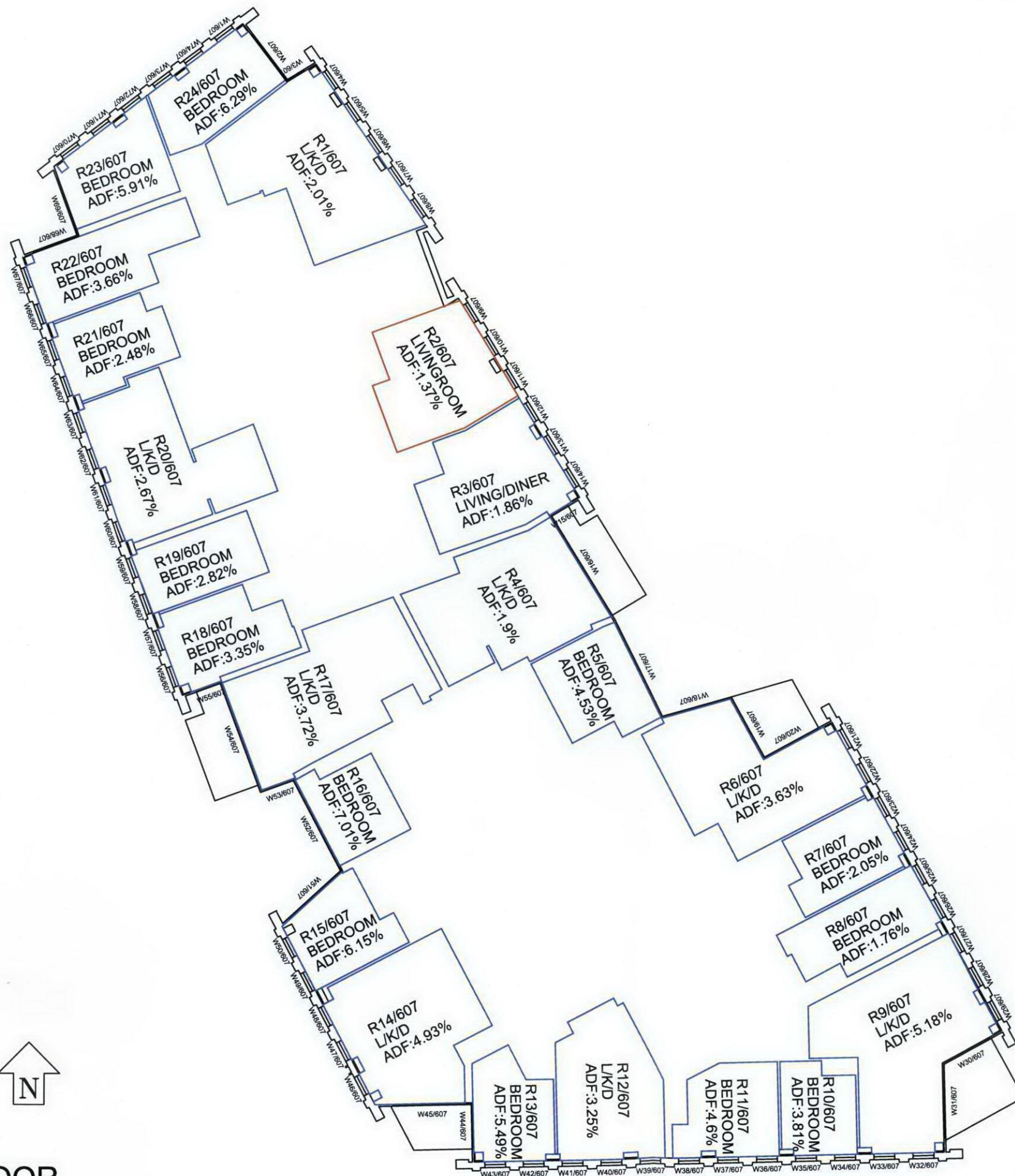
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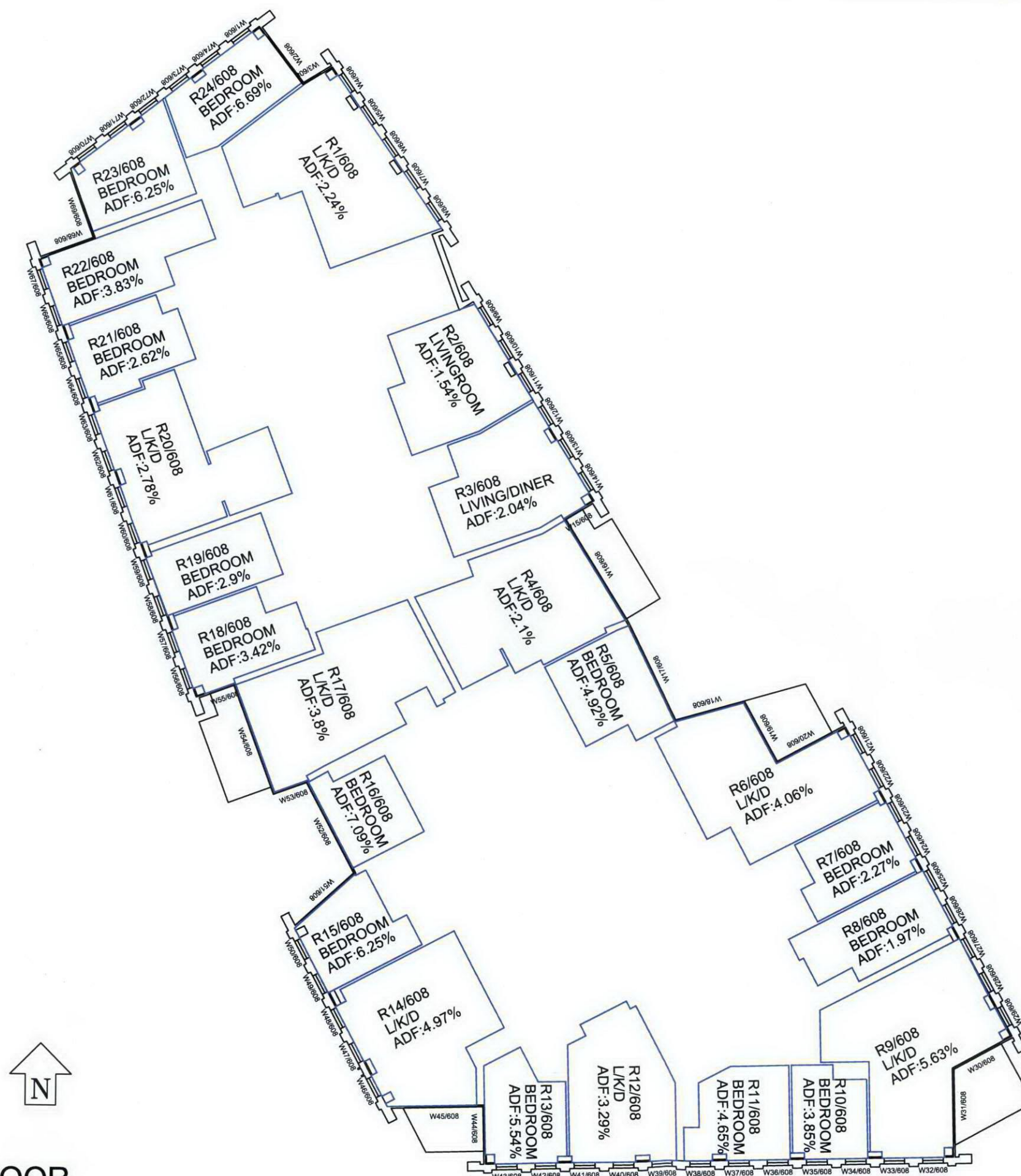
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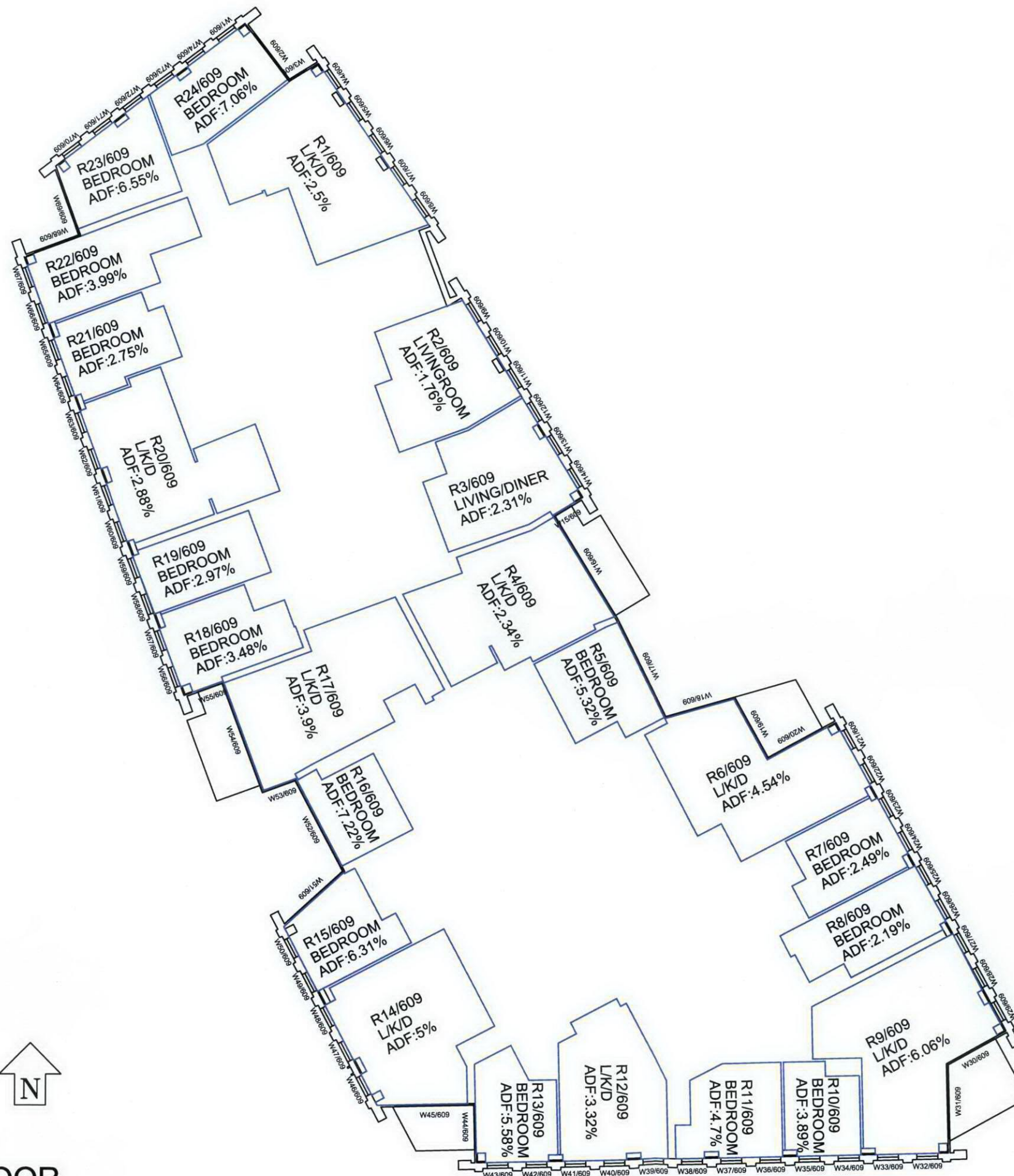
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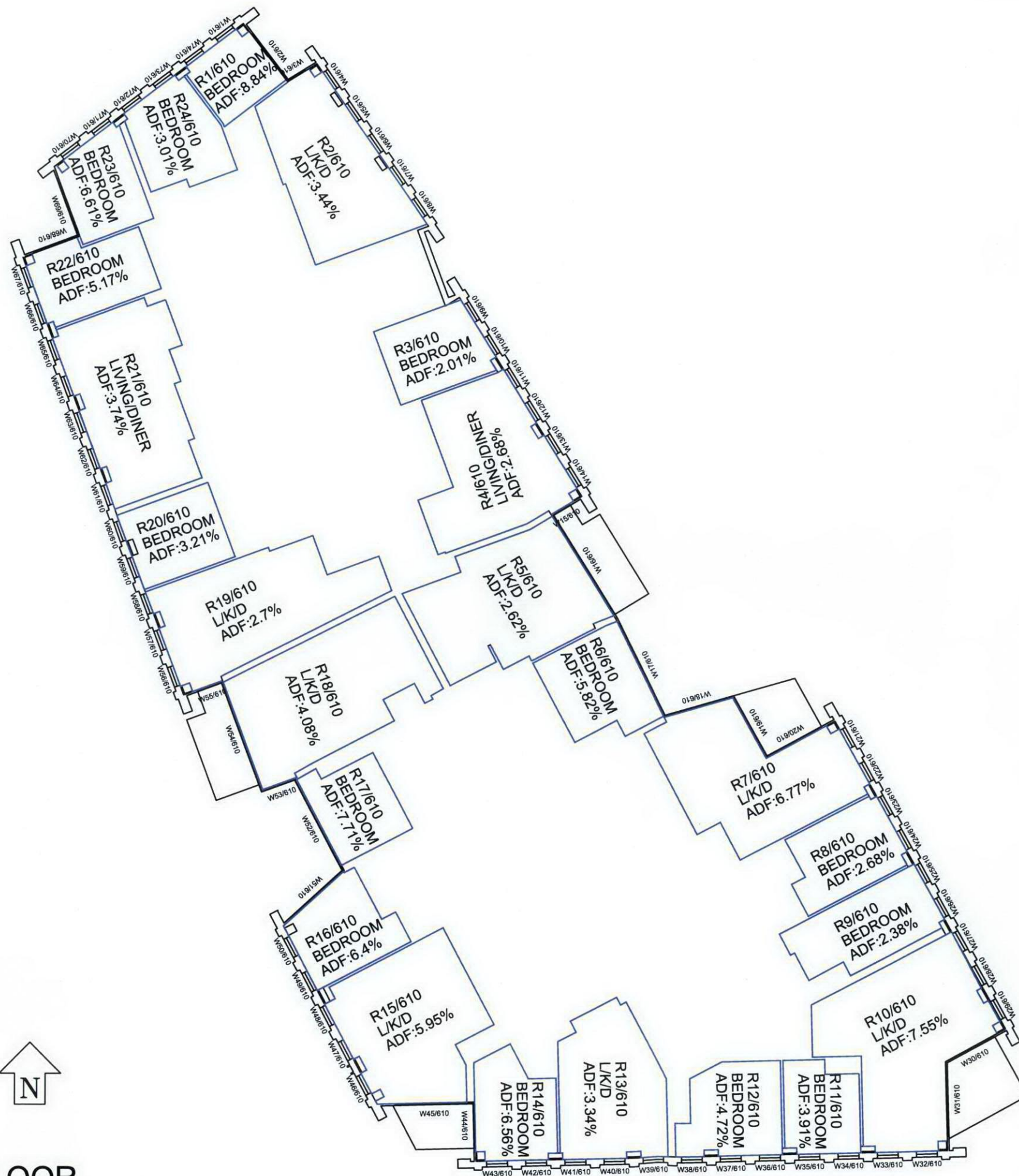
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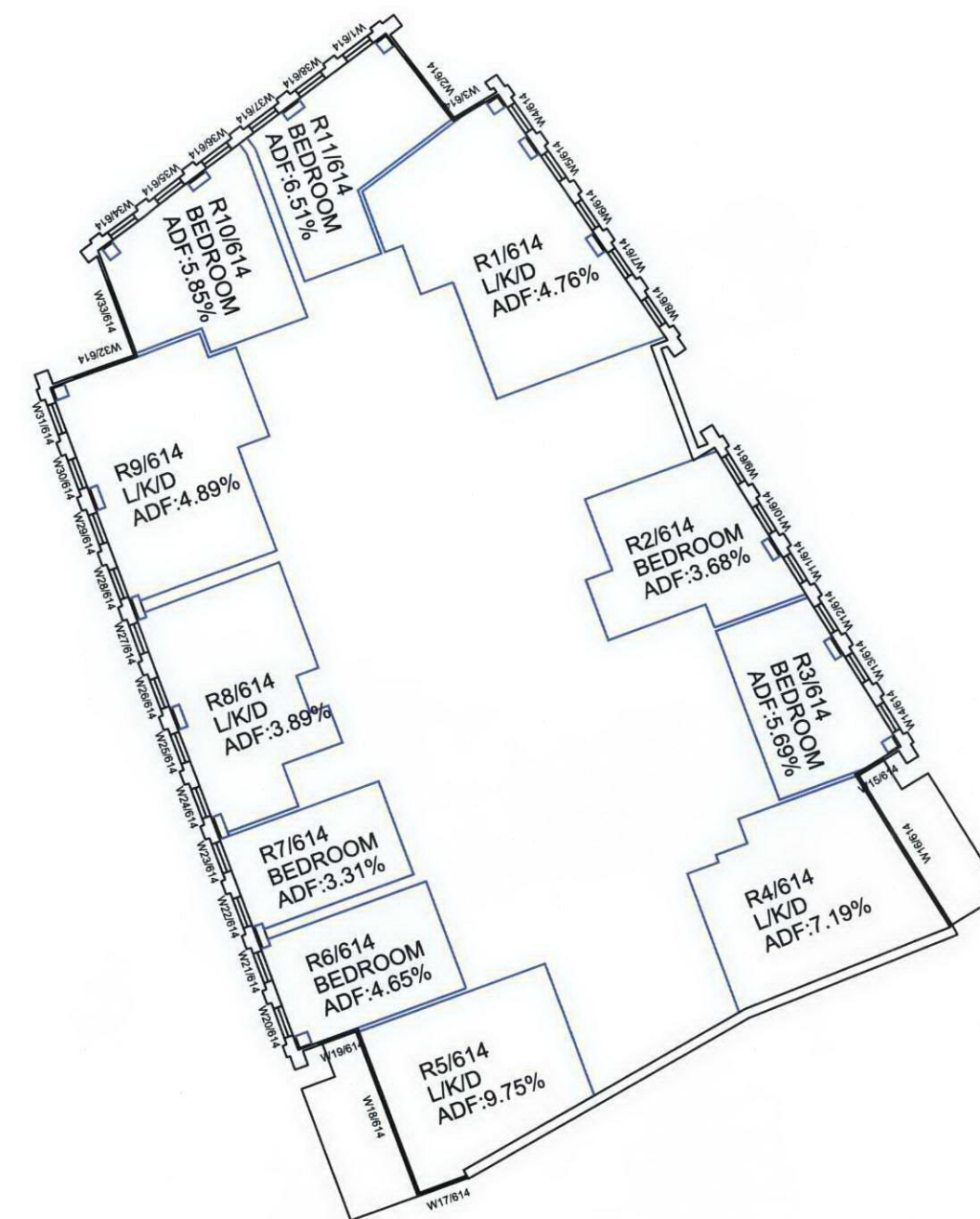
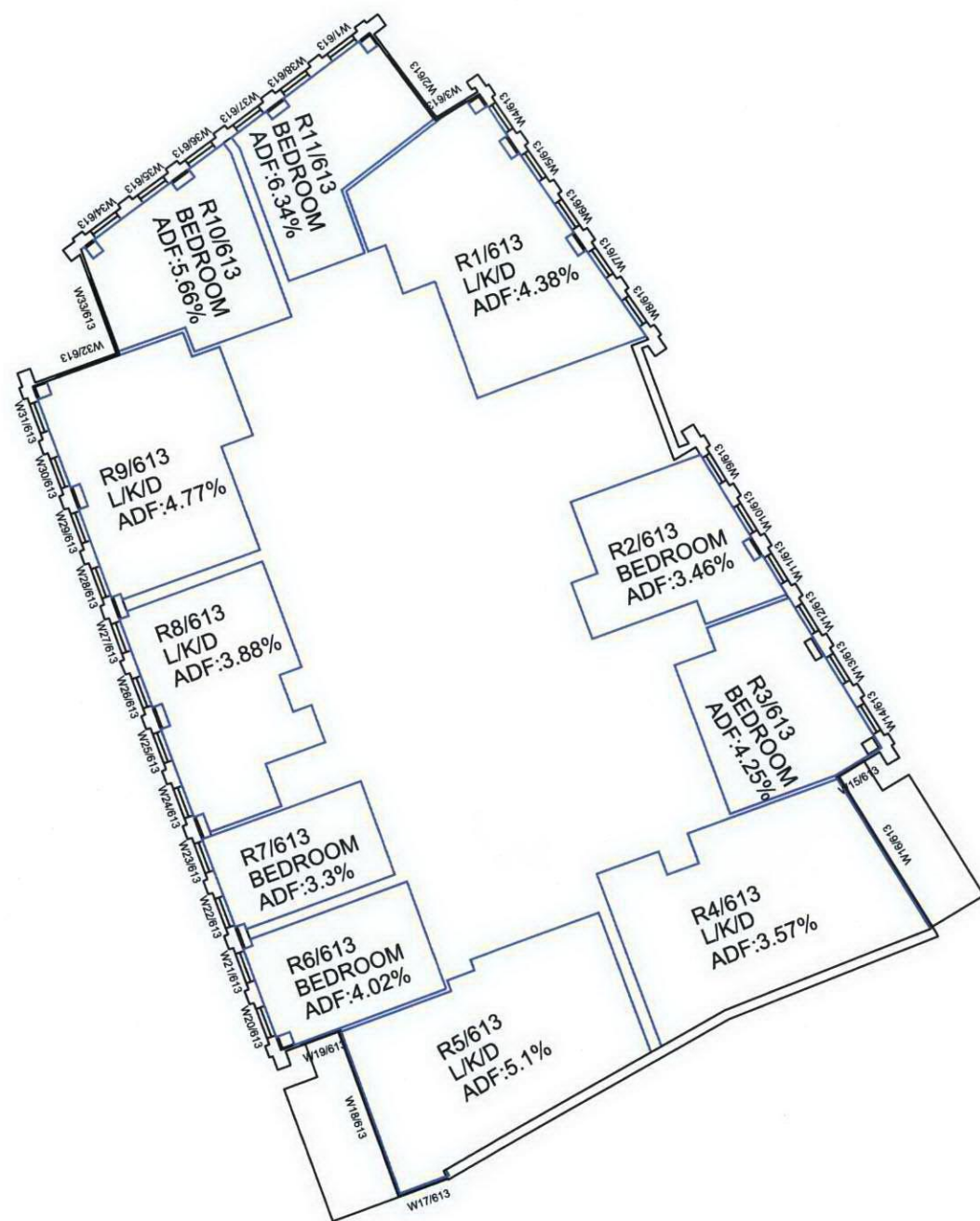
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1325/475	-

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APPENDIX 2

Project No: 1325
Existing v Proposed

MAR 2007

St Giles Court
PRP Scheme Dated 14/02/07
INTERNAL DAYLIGHT ANALYSIS

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
PROPOSED SCHEME					
R1/601	LIVINGROOM	W1/601	16.93	0.55	
R1/601	LIVINGROOM	W2/601	8.38	1.10	
R1/601	LIVINGROOM	W3/601	5.10	0.28	
R1/601	LIVINGROOM	W4/601	7.57	0.33	
R1/601	LIVINGROOM	W73/601	17.37	0.56	
R1/601	LIVINGROOM	W74/601	17.20	0.56	3.37
R2/601	LIVING/DINER	W5/601	6.43	0.35	
R2/601	LIVING/DINER	W6/601	4.62	0.27	
R2/601	LIVING/DINER	W7/601	3.45	0.21	
R2/601	LIVING/DINER	W8/601	3.14	0.17	1.00
R3/601	BEDROOM	W9/601	3.90	0.24	
R3/601	BEDROOM	W10/601	4.37	0.28	
R3/601	BEDROOM	W11/601	4.96	0.32	0.84
R4/601	BEDROOM	W12/601	5.55	0.42	
R4/601	BEDROOM	W13/601	6.19	0.47	
R4/601	BEDROOM	W14/601	6.90	0.51	
R4/601	BEDROOM	W15/601	0.60	0.18	1.58
R5/601	L/K/D	W16/601	1.43	0.85	0.85
R6/601	L/K/D	W17/601	6.84	1.68	1.68
R7/601	L/K/D	W18/601	4.27	0.81	
R7/601	L/K/D	W19/601	0.08	0.11	
R7/601	L/K/D	W20/601	0.81	0.34	
R7/601	L/K/D	W21/601	8.24	0.31	
R7/601	L/K/D	W22/601	8.22	0.31	1.89

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
PROPOSED SCHEME					
R1/601	LIVINGROOM	W1/601	16.93	0.55	
R1/601	LIVINGROOM	W2/601	8.38	1.10	
R1/601	LIVINGROOM	W3/601	5.10	0.28	
R1/601	LIVINGROOM	W4/601	7.57	0.33	
R1/601	LIVINGROOM	W73/601	17.37	0.56	
R1/601	LIVINGROOM	W74/601	17.20	0.56	3.37
R2/601	LIVING/DINER	W5/601	6.43	0.35	
R2/601	LIVING/DINER	W6/601	4.62	0.27	
R2/601	LIVING/DINER	W7/601	3.45	0.21	
R2/601	LIVING/DINER	W8/601	3.14	0.17	1.00
R3/601	BEDROOM	W9/601	3.90	0.24	
R3/601	BEDROOM	W10/601	4.37	0.28	
R3/601	BEDROOM	W11/601	4.96	0.32	0.84
R4/601	BEDROOM	W12/601	5.55	0.42	
R4/601	BEDROOM	W13/601	6.19	0.47	
R4/601	BEDROOM	W14/601	6.90	0.51	
R4/601	BEDROOM	W15/601	0.60	0.18	1.58
R5/601	L/K/D	W16/601	1.43	0.85	0.85
R6/601	L/K/D	W17/601	6.84	1.68	1.68
R7/601	L/K/D	W18/601	4.27	0.81	
R7/601	L/K/D	W19/601	0.08	0.11	
R7/601	L/K/D	W20/601	0.81	0.34	
R7/601	L/K/D	W21/601	8.24	0.31	
R7/601	L/K/D	W22/601	8.22	0.31	1.89

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R8/601	BEDROOM	W23/601	8.03	0.60	
R8/601	BEDROOM	W24/601	7.93	0.58	1.18
R9/601	BEDROOM	W26/601	7.79	0.48	0.48
R10/601	L/K/D	W27/601	7.66	0.25	
R10/601	L/K/D	W28/601	7.62	0.25	
R10/601	L/K/D	W29/601	7.92	0.25	
R10/601	L/K/D	W30/601	6.31	0.77	
R10/601	L/K/D	W31/601	7.11	1.15	
R10/601	L/K/D	W32/601	30.40	0.61	
R10/601	L/K/D	W33/601	30.66	0.62	3.89
R11/601	BEDROOM	W34/601	30.89	1.65	
R11/601	BEDROOM	W35/601	31.08	1.65	3.30
R12/601	BEDROOM	W36/601	31.22	1.34	
R12/601	BEDROOM	W37/601	31.31	1.34	
R12/601	BEDROOM	W38/601	31.29	1.34	4.01
R13/601	L/K/D	W39/601	31.29	0.95	
R13/601	L/K/D	W40/601	31.20	0.94	
R13/601	L/K/D	W41/601	31.19	0.94	2.83
R14/601	BEDROOM	W42/601	31.11	1.47	
R14/601	BEDROOM	W43/601	31.07	1.47	
R14/601	BEDROOM	W44/601	8.69	1.78	4.72
R15/601	L/K/D	W45/601	12.75	2.03	
R15/601	L/K/D	W46/601	29.22	0.74	
R15/601	L/K/D	W47/601	29.09	0.73	
R15/601	L/K/D	W48/601	28.92	0.73	4.22

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R16/601	BEDROOM	W49/601	28.67	1.36	
R16/601	BEDROOM	W50/601	28.48	1.34	
R16/601	BEDROOM	W51/601	9.85	2.47	5.17
R17/601	BEDROOM	W52/601	19.35	4.95	4.95
R18/601	L/K/D	W53/601	9.61	0.54	
R18/601	L/K/D	W54/601	10.78	2.27	2.81
R19/601	BEDROOM	W55/601	5.17	0.73	
R19/601	BEDROOM	W56/601	22.84	1.09	
R19/601	BEDROOM	W57/601	21.79	1.05	2.87
R20/601	BEDROOM	W58/601	20.85	0.83	
R20/601	BEDROOM	W59/601	19.99	0.81	
R20/601	BEDROOM	W60/601	18.96	0.78	2.41
R21/601	BEDROOM	W61/601	18.12	0.81	
R21/601	BEDROOM	W62/601	17.29	0.78	
R21/601	BEDROOM	W63/601	16.57	0.75	2.34
R22/601	LIVING/DINER	W64/601	15.90	0.58	
R22/601	LIVING/DINER	W65/601	15.25	0.56	
R22/601	LIVING/DINER	W66/601	14.62	0.54	
R22/601	LIVING/DINER	W67/601	14.05	0.53	
R22/601	LIVING/DINER	W68/601	11.02	1.26	3.47
R23/601	LIVINGROOM	W69/601	5.52	0.98	
R23/601	LIVINGROOM	W70/601	17.47	0.61	
R23/601	LIVINGROOM	W71/601	17.53	0.61	
R23/601	LIVINGROOM	W72/601	17.43	0.61	2.82
R1/602	BEDROOM	W1/602	18.43	1.46	

INTERNAL DAYLIGHT ANALYSIS

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R1/602	BEDROOM	W2/602	9.12	2.91	5.85
R1/602	BEDROOM	W74/602	18.73	1.48	
R2/602	BEDROOM	W3/602	5.83	0.65	2.06
R2/602	BEDROOM	W4/602	8.36	0.75	
R2/602	BEDROOM	W5/602	7.16	0.66	
R3/602	BEDROOM	W6/602	5.27	0.40	0.97
R3/602	BEDROOM	W7/602	4.06	0.31	
R3/602	BEDROOM	W8/602	3.70	0.26	
R4/602	BEDROOM	W9/602	4.52	0.36	0.79
R4/602	BEDROOM	W10/602	5.03	0.42	
R5/602	BEDROOM	W11/602	5.67	0.58	1.23
R5/602	BEDROOM	W12/602	6.31	0.64	
R6/602	BEDROOM	W13/602	7.02	0.55	1.37
R6/602	BEDROOM	W14/602	7.81	0.60	
R6/602	BEDROOM	W15/602	0.73	0.21	
R7/602	LIVINGROOM	W16/602	1.83	1.41	1.41
R8/602	L/K/D	W17/602	7.73	1.79	1.79
R9/602	L/K/D	W18/602	4.90	0.87	2.05
R9/602	L/K/D	W19/602	0.10	0.12	
R9/602	L/K/D	W20/602	1.00	0.38	
R9/602	L/K/D	W21/602	9.46	0.34	
R9/602	L/K/D	W22/602	9.43	0.34	
R10/602	BEDROOM	W23/602	9.21	0.65	1.28
R10/602	BEDROOM	W24/602	9.09	0.63	

INTERNAL DAYLIGHT ANALYSIS

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R11/602	BEDROOM	W25/602	8.96	0.54	1.07
R11/602	BEDROOM	W26/602	8.88	0.52	
R12/602	L/K/D	W27/602	8.71	0.27	4.17
R12/602	L/K/D	W28/602	8.64	0.27	
R12/602	L/K/D	W29/602	8.92	0.27	
R12/602	L/K/D	W30/602	7.75	0.86	
R12/602	L/K/D	W31/602	7.94	1.22	
R12/602	L/K/D	W32/602	32.41	0.64	
R12/602	L/K/D	W33/602	32.57	0.65	3.44
R13/602	BEDROOM	W34/602	32.71	1.72	
R13/602	BEDROOM	W35/602	32.78	1.72	4.16
R14/602	BEDROOM	W36/602	32.83	1.39	
R14/602	BEDROOM	W37/602	32.90	1.39	
R14/602	BEDROOM	W38/602	32.86	1.39	2.94
R15/602	L/K/D	W39/602	32.84	0.98	
R15/602	L/K/D	W40/602	32.75	0.98	
R15/602	L/K/D	W41/602	32.73	0.98	4.91
R16/602	BEDROOM	W42/602	32.66	1.52	
R16/602	BEDROOM	W43/602	32.63	1.52	
R16/602	BEDROOM	W44/602	9.49	1.87	4.42
R17/602	L/K/D	W45/602	13.88	2.13	
R17/602	L/K/D	W46/602	30.92	0.77	
R17/602	L/K/D	W47/602	30.79	0.76	
R17/602	L/K/D	W48/602	30.64	0.76	2.61
R18/602	BEDROOM	W51/602	10.85	2.61	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R19/602	BEDROOM	W52/602	20.69	5.17	5.17
R20/602	LIVINGROOM	W53/602	10.02	1.09	5.95
R20/602	LIVINGROOM	W54/602	12.48	4.86	
R21/602	BEDROOM	W55/602	5.65	1.01	4.05
R21/602	BEDROOM	W56/602	25.40	1.54	
R21/602	BEDROOM	W57/602	24.59	1.50	
R22/602	BEDROOM	W58/602	23.79	1.25	2.47
R22/602	BEDROOM	W59/602	22.98	1.22	
R23/602	BEDROOM	W60/602	22.01	1.04	2.05
R23/602	BEDROOM	W61/602	21.17	1.01	
R24/602	BEDROOM	W62/602	20.26	1.19	2.33
R24/602	BEDROOM	W63/602	19.43	1.14	
R25/602	BEDROOM	W64/602	18.61	0.94	1.85
R25/602	BEDROOM	W65/602	17.82	0.91	
R26/602	BEDROOM	W66/602	17.05	0.93	3.84
R26/602	BEDROOM	W67/602	16.34	0.90	
R26/602	BEDROOM	W68/602	11.73	2.01	
R27/602	BEDROOM	W69/602	6.34	2.10	4.65
R27/602	BEDROOM	W70/602	19.04	1.27	
R27/602	BEDROOM	W71/602	19.13	1.27	
R28/602	BEDROOM	W72/602	19.02	1.07	2.14
R28/602	BEDROOM	W73/602	18.94	1.07	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R1/603	BEDROOM	W1/603	20.07	1.47	
R1/603	BEDROOM	W2/603	10.00	2.94	
R1/603	BEDROOM	W74/603	20.39	1.49	5.89
R2/603	L/K/D	W3/603	6.71	0.32	
R2/603	L/K/D	W4/603	9.29	0.36	
R2/603	L/K/D	W5/603	8.04	0.32	
R2/603	L/K/D	W6/603	6.07	0.26	
R2/603	L/K/D	W7/603	4.80	0.21	
R2/603	L/K/D	W8/603	4.39	0.18	1.65
R3/603	BEDROOM	W9/603	5.26	0.40	
R3/603	BEDROOM	W10/603	5.81	0.46	0.87
R4/603	BEDROOM	W11/603	6.51	0.63	
R4/603	BEDROOM	W12/603	7.21	0.70	1.33
R5/603	BEDROOM	W13/603	7.99	0.60	
R5/603	BEDROOM	W14/603	8.86	0.64	
R5/603	BEDROOM	W15/603	0.99	0.25	1.48
R6/603	LIVINGROOM	W16/603	2.35	1.61	1.61
R7/603	L/K/D	W17/603	8.71	1.91	1.91
R8/603	L/K/D	W18/603	5.65	0.94	
R8/603	L/K/D	W19/603	0.14	0.14	
R8/603	L/K/D	W20/603	1.22	0.42	
R8/603	L/K/D	W21/603	10.91	0.37	
R8/603	L/K/D	W22/603	10.88	0.36	2.24
R9/603	BEDROOM	W23/603	10.65	0.70	
R9/603	BEDROOM	W24/603	10.49	0.69	1.39

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R10/603	BEDROOM	W25/603	10.32	0.59	
R10/603	BEDROOM	W26/603	10.20	0.57	1.16
R11/603	L/K/D	W27/603	9.99	0.29	
R11/603	L/K/D	W28/603	9.87	0.29	
R11/603	L/K/D	W29/603	10.12	0.29	
R11/603	L/K/D	W30/603	8.81	0.92	
R11/603	L/K/D	W31/603	8.61	1.28	
R11/603	L/K/D	W32/603	33.84	0.66	
R11/603	L/K/D	W33/603	33.88	0.67	4.40
R12/603	BEDROOM	W34/603	33.92	1.77	
R12/603	BEDROOM	W35/603	33.94	1.77	3.53
R13/603	BEDROOM	W36/603	33.96	1.42	
R13/603	BEDROOM	W37/603	34.01	1.42	
R13/603	BEDROOM	W38/603	34.00	1.42	4.27
R14/603	BEDROOM	W39/603	34.00	1.59	
R14/603	BEDROOM	W40/603	33.93	1.59	3.18
R15/603	BEDROOM	W41/603	33.94	1.36	
R15/603	BEDROOM	W42/603	33.89	1.36	
R15/603	BEDROOM	W43/603	33.88	1.36	
R15/603	BEDROOM	W44/603	10.22	1.68	5.76
R16/603	L/K/D	W45/603	14.74	2.19	
R16/603	L/K/D	W46/603	32.35	0.78	
R16/603	L/K/D	W47/603	32.21	0.78	3.75
R17/603	BEDROOM	W49/603	31.88	1.24	
R17/603	BEDROOM	W50/603	31.75	1.23	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R17/603	BEDROOM	W51/603	11.71	2.31	4.77
R18/603	BEDROOM	W52/603	21.79	5.55	5.55
R19/603	LIVINGROOM	W53/603	10.36	1.11	6.29
R19/603	LIVINGROOM	W54/603	13.91	5.18	
R20/603	BEDROOM	W55/603	6.07	1.05	4.29
R20/603	BEDROOM	W56/603	27.69	1.63	
R20/603	BEDROOM	W57/603	27.08	1.60	
R21/603	BEDROOM	W58/603	26.32	1.34	2.65
R21/603	BEDROOM	W59/603	25.52	1.31	
R22/603	BEDROOM	W60/603	24.69	1.13	2.23
R22/603	BEDROOM	W61/603	23.93	1.10	
R23/603	L/K/D	W62/603	22.98	0.69	1.99
R23/603	L/K/D	W63/603	22.09	0.66	
R23/603	L/K/D	W65/603	20.34	0.63	
R24/603	BEDROOM	W66/603	19.45	0.95	3.79
R24/603	BEDROOM	W67/603	18.66	0.92	
R24/603	BEDROOM	W68/603	12.44	1.92	
R25/603	BEDROOM	W69/603	7.32	2.03	4.43
R25/603	BEDROOM	W70/603	20.75	1.20	
R25/603	BEDROOM	W71/603	20.85	1.20	
R26/603	BEDROOM	W72/603	20.73	1.11	2.22
R26/603	BEDROOM	W73/603	20.64	1.11	
R1/604	BEDROOM	W1/604	21.91	1.54	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R1/604	BEDROOM	W2/604	11.08	3.11	6.22
R1/604	BEDROOM	W74/604	22.24	1.56	
R2/604	L/K/D	W3/604	7.76	0.34	1.80
R2/604	L/K/D	W4/604	10.44	0.39	
R2/604	L/K/D	W5/604	9.11	0.35	
R2/604	L/K/D	W6/604	7.05	0.29	
R2/604	L/K/D	W7/604	5.73	0.24	
R2/604	L/K/D	W8/604	5.24	0.21	0.96
R3/604	BEDROOM	W9/604	6.16	0.45	
R3/604	BEDROOM	W10/604	6.75	0.51	1.44
R4/604	BEDROOM	W11/604	7.50	0.69	
R4/604	BEDROOM	W12/604	8.27	0.75	1.62
R5/604	BEDROOM	W13/604	9.14	0.64	
R5/604	BEDROOM	W14/604	10.10	0.69	
R5/604	BEDROOM	W15/604	1.38	0.29	1.84
R6/604	LIVINGROOM	W16/604	3.02	1.84	
R7/604	L/K/D	W17/604	9.80	2.04	2.57
R8/604	L/K/D	W18/604	6.53	1.02	
R8/604	L/K/D	W19/604	0.58	0.29	
R8/604	L/K/D	W20/604	1.45	0.46	
R8/604	L/K/D	W21/604	12.66	0.40	
R8/604	L/K/D	W22/604	12.63	0.40	1.52
R9/604	BEDROOM	W23/604	12.40	0.77	
R9/604	BEDROOM	W24/604	12.20	0.75	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R10/604	BEDROOM	W25/604	11.99	0.65	
R10/604	BEDROOM	W26/604	11.83	0.63	1.28
R11/604	L/K/D	W27/604	11.57	0.32	
R11/604	L/K/D	W28/604	11.40	0.32	
R11/604	L/K/D	W29/604	11.59	0.32	
R11/604	L/K/D	W30/604	9.59	0.97	
R11/604	L/K/D	W31/604	9.19	1.33	
R11/604	L/K/D	W32/604	34.83	0.68	
R11/604	L/K/D	W33/604	34.87	0.68	4.61
R12/604	BEDROOM	W34/604	34.90	1.80	
R12/604	BEDROOM	W35/604	34.92	1.80	3.61
R13/604	BEDROOM	W36/604	34.95	1.45	
R13/604	BEDROOM	W37/604	34.97	1.45	
R13/604	BEDROOM	W38/604	34.98	1.45	4.36
R14/604	BEDROOM	W39/604	34.98	1.62	
R14/604	BEDROOM	W40/604	34.95	1.62	3.25
R15/604	BEDROOM	W41/604	34.95	1.39	
R15/604	BEDROOM	W42/604	34.93	1.39	
R15/604	BEDROOM	W43/604	34.93	1.39	
R15/604	BEDROOM	W44/604	10.84	1.74	5.91
R16/604	L/K/D	W45/604	15.43	2.25	
R16/604	L/K/D	W46/604	33.50	0.80	
R16/604	L/K/D	W47/604	33.36	0.80	
R16/604	L/K/D	W48/604	33.26	0.80	4.65
R17/604	BEDROOM	W49/604	33.06	1.27	
R17/604	BEDROOM	W50/604	32.95	1.26	

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Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R17/604	BEDROOM	W51/604	12.40	2.39	4.92
R18/604	BEDROOM	W52/604	22.61	5.68	5.68
R19/604	LIVINGROOM	W53/604	10.67	1.13	6.53
R19/604	LIVINGROOM	W54/604	14.98	5.40	
R20/604	BEDROOM	W55/604	6.40	1.08	4.44
R20/604	BEDROOM	W56/604	29.20	1.70	
R20/604	BEDROOM	W57/604	28.69	1.67	
R21/604	BEDROOM	W58/604	28.00	1.40	2.77
R21/604	BEDROOM	W59/604	27.31	1.37	
R22/604	BEDROOM	W60/604	26.57	1.19	2.35
R22/604	BEDROOM	W61/604	25.86	1.16	
R23/604	L/K/D	W62/604	24.95	0.73	2.80
R23/604	L/K/D	W63/604	24.12	0.71	
R23/604	L/K/D	W64/604	23.15	0.69	
R23/604	L/K/D	W65/604	22.28	0.67	
R24/604	BEDROOM	W66/604	21.44	1.01	3.98
R24/604	BEDROOM	W67/604	20.67	0.99	
R24/604	BEDROOM	W68/604	13.17	1.99	
R25/604	BEDROOM	W69/604	8.50	2.21	4.72
R25/604	BEDROOM	W70/604	22.61	1.26	
R25/604	BEDROOM	W71/604	22.73	1.26	
R26/604	BEDROOM	W72/604	22.62	1.17	2.33
R26/604	BEDROOM	W73/604	22.51	1.16	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R1/605	L/K/D	W3/605	9.01	0.31	
R1/605	L/K/D	W4/605	11.85	0.35	
R1/605	L/K/D	W5/605	10.43	0.31	
R1/605	L/K/D	W6/605	8.26	0.26	
R1/605	L/K/D	W7/605	6.88	0.22	
R1/605	L/K/D	W8/605	6.31	0.20	1.65
R2/605	LIVINGROOM	W9/605	7.26	0.33	
R2/605	LIVINGROOM	W10/605	7.88	0.37	
R2/605	LIVINGROOM	W11/605	8.69	0.40	1.11
R3/605	LIVING/DINER	W12/605	9.53	0.41	
R3/605	LIVING/DINER	W13/605	10.48	0.45	
R3/605	LIVING/DINER	W14/605	11.52	0.48	
R3/605	LIVING/DINER	W15/605	1.94	0.22	1.55
R4/605	L/K/D	W16/605	3.89	1.50	1.50
R5/605	BEDROOM	W17/605	11.23	3.86	3.86
R6/605	L/K/D	W18/605	7.55	1.10	
R6/605	L/K/D	W19/605	1.07	0.42	
R6/605	L/K/D	W20/605	1.73	0.51	
R6/605	L/K/D	W21/605	14.75	0.44	
R6/605	L/K/D	W22/605	14.73	0.44	2.90
R7/605	BEDROOM	W23/605	14.50	0.84	
R7/605	BEDROOM	W24/605	14.30	0.83	1.67
R8/605	BEDROOM	W25/605	14.07	0.71	
R8/605	BEDROOM	W26/605	13.86	0.70	1.41
R9/605	L/K/D	W27/605	13.57	0.36	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R9/605	L/K/D	W28/605	13.34	0.35	
R9/605	L/K/D	W29/605	13.45	0.35	
R9/605	L/K/D	W30/605	10.35	1.01	
R9/605	L/K/D	W31/605	9.76	1.37	
R9/605	L/K/D	W32/605	35.75	0.69	
R9/605	L/K/D	W33/605	35.78	0.69	4.82
R10/605	BEDROOM	W34/605	35.81	1.84	
R10/605	BEDROOM	W35/605	35.83	1.84	3.68
R11/605	BEDROOM	W36/605	35.86	1.48	
R11/605	BEDROOM	W37/605	35.86	1.48	
R11/605	BEDROOM	W38/605	35.88	1.48	4.45
R12/605	L/K/D	W39/605	35.89	1.05	
R12/605	L/K/D	W40/605	35.86	1.05	
R12/605	L/K/D	W41/605	35.86	1.05	3.15
R13/605	BEDROOM	W42/605	35.84	1.64	
R13/605	BEDROOM	W43/605	35.86	1.64	
R13/605	BEDROOM	W44/605	11.34	2.06	5.33
R14/605	L/K/D	W45/605	15.99	2.32	
R14/605	L/K/D	W46/605	34.38	0.83	
R14/605	L/K/D	W47/605	34.20	0.82	
R14/605	L/K/D	W48/605	34.12	0.82	4.80
R15/605	BEDROOM	W49/605	33.91	1.53	
R15/605	BEDROOM	W50/605	33.80	1.52	
R15/605	BEDROOM	W51/605	12.92	2.88	5.93
R16/605	BEDROOM	W52/605	23.22	6.84	6.84

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R17/605	L/K/D	W53/605	10.98	0.60	
R17/605	L/K/D	W54/605	15.80	2.95	3.55
R18/605	BEDROOM	W55/605	6.64	0.77	
R18/605	BEDROOM	W56/605	30.40	1.22	
R18/605	BEDROOM	W57/605	29.93	1.21	3.20
R19/605	BEDROOM	W58/605	29.29	1.34	
R19/605	BEDROOM	W59/605	28.68	1.32	2.66
R20/605	L/K/D	W60/605	27.98	0.64	
R20/605	L/K/D	W61/605	27.38	0.63	
R20/605	L/K/D	W62/605	26.56	0.61	
R20/605	L/K/D	W63/605	25.83	0.59	2.46
R21/605	BEDROOM	W64/605	24.92	1.12	
R21/605	BEDROOM	W65/605	24.15	1.10	2.22
R22/605	BEDROOM	W66/605	23.38	0.86	
R22/605	BEDROOM	W67/605	22.69	0.84	
R22/605	BEDROOM	W68/605	13.90	1.63	3.33
R23/605	BEDROOM	W69/605	9.89	1.98	
R23/605	BEDROOM	W70/605	24.63	1.08	
R23/605	BEDROOM	W71/605	24.76	1.09	
R23/605	BEDROOM	W72/605	24.67	1.08	5.23
R24/605	BEDROOM	W1/605	23.97	1.10	
R24/605	BEDROOM	W2/605	12.41	2.24	
R24/605	BEDROOM	W73/605	24.57	1.12	
R24/605	BEDROOM	W74/605	24.29	1.11	5.58
R1/606	L/K/D	W3/606	10.46	0.33	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R1/606	L/K/D	W4/606	13.57	0.37	
R1/606	L/K/D	W5/606	12.03	0.34	
R1/606	L/K/D	W6/606	9.77	0.29	
R1/606	L/K/D	W7/606	8.33	0.25	
R1/606	L/K/D	W8/606	7.66	0.23	1.82
R2/606	LIVINGROOM	W9/606	8.62	0.38	
R2/606	LIVINGROOM	W10/606	9.26	0.41	
R2/606	LIVINGROOM	W11/606	10.13	0.44	1.23
R3/606	LIVING/DINER	W12/606	11.03	0.45	
R3/606	LIVING/DINER	W13/606	12.06	0.48	
R3/606	LIVING/DINER	W14/606	13.18	0.52	
R3/606	LIVING/DINER	W15/606	2.58	0.26	1.70
R4/606	L/K/D	W16/606	4.92	1.70	1.70
R5/606	BEDROOM	W17/606	12.93	4.18	4.18
R6/606	L/K/D	W18/606	8.75	1.19	
R6/606	L/K/D	W19/606	1.65	0.54	
R6/606	L/K/D	W20/606	2.10	0.56	
R6/606	L/K/D	W21/606	17.19	0.48	
R6/606	L/K/D	W22/606	17.20	0.48	3.25
R7/606	BEDROOM	W23/606	17.04	0.93	
R7/606	BEDROOM	W24/606	16.86	0.92	1.85
R8/606	BEDROOM	W25/606	16.65	0.79	
R8/606	BEDROOM	W26/606	16.42	0.78	1.57
R9/606	L/K/D	W27/606	16.12	0.40	
R9/606	L/K/D	W28/606	15.85	0.39	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R9/606	L/K/D	W29/606	15.85	0.39	
R9/606	L/K/D	W30/606	11.13	1.05	
R9/606	L/K/D	W31/606	10.29	1.41	
R9/606	L/K/D	W32/606	36.58	0.71	
R9/606	L/K/D	W33/606	36.60	0.71	5.05
R10/606	BEDROOM	W34/606	36.62	1.87	
R10/606	BEDROOM	W35/606	36.65	1.87	3.75
R11/606	BEDROOM	W36/606	36.66	1.51	
R11/606	BEDROOM	W37/606	36.66	1.51	
R11/606	BEDROOM	W38/606	36.68	1.51	4.53
R12/606	L/K/D	W39/606	36.69	1.07	
R12/606	L/K/D	W40/606	36.67	1.07	
R12/606	L/K/D	W41/606	36.66	1.07	3.20
R13/606	BEDROOM	W42/606	36.65	1.67	
R13/606	BEDROOM	W43/606	36.67	1.67	
R13/606	BEDROOM	W44/606	11.66	2.09	5.42
R14/606	L/K/D	W45/606	16.47	2.36	
R14/606	L/K/D	W46/606	35.06	0.84	
R14/606	L/K/D	W47/606	34.87	0.84	
R14/606	L/K/D	W48/606	34.79	0.83	4.87
R15/606	BEDROOM	W49/606	34.58	1.55	
R15/606	BEDROOM	W50/606	34.48	1.54	
R15/606	BEDROOM	W51/606	13.52	2.96	6.04
R16/606	BEDROOM	W52/606	23.72	6.94	6.94
R17/606	L/K/D	W53/606	11.29	0.61	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R17/606	L/K/D	W54/606	16.49	3.03	3.64
R18/606	BEDROOM	W55/606	6.83	0.78	
R18/606	BEDROOM	W56/606	31.48	1.25	
R18/606	BEDROOM	W57/606	31.07	1.24	3.28
R19/606	BEDROOM	W58/606	30.50	1.38	
R19/606	BEDROOM	W59/606	29.98	1.36	2.74
R20/606	L/K/D	W60/606	29.36	0.66	
R20/606	L/K/D	W61/606	28.89	0.65	
R20/606	L/K/D	W62/606	28.18	0.64	
R20/606	L/K/D	W63/606	27.58	0.62	2.56
R21/606	BEDROOM	W64/606	26.80	1.18	
R21/606	BEDROOM	W65/606	26.16	1.16	2.34
R22/606	BEDROOM	W66/606	25.49	0.91	
R22/606	BEDROOM	W67/606	24.91	0.90	
R22/606	BEDROOM	W68/606	14.64	1.68	3.49
R23/606	BEDROOM	W69/606	11.47	2.15	
R23/606	BEDROOM	W70/606	26.76	1.14	
R23/606	BEDROOM	W71/606	26.92	1.14	
R23/606	BEDROOM	W72/606	26.86	1.14	5.56
R24/606	BEDROOM	W1/606	26.25	1.16	
R24/606	BEDROOM	W2/606	14.00	2.40	
R24/606	BEDROOM	W73/606	26.77	1.18	
R24/606	BEDROOM	W74/606	26.53	1.17	5.92
R1/607	L/K/D	W3/607	12.08	0.36	
R1/607	L/K/D	W4/607	15.64	0.41	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R1/607	L/K/D	W5/607	13.95	0.37	
R1/607	L/K/D	W6/607	11.65	0.32	
R1/607	L/K/D	W7/607	10.16	0.29	
R1/607	L/K/D	W8/607	9.38	0.27	2.01
R2/607	LIVINGROOM	W9/607	10.31	0.42	
R2/607	LIVINGROOM	W10/607	10.96	0.46	
R2/607	LIVINGROOM	W11/607	11.86	0.49	1.37
R3/607	LIVING/DINER	W12/607	12.81	0.49	
R3/607	LIVING/DINER	W13/607	13.91	0.52	
R3/607	LIVING/DINER	W14/607	15.10	0.56	
R3/607	LIVING/DINER	W15/607	3.24	0.29	1.86
R4/607	L/K/D	W16/607	6.03	1.90	1.90
R5/607	BEDROOM	W17/607	14.93	4.53	4.53
R6/607	L/K/D	W18/607	10.14	1.29	
R6/607	L/K/D	W19/607	2.39	0.66	
R6/607	L/K/D	W20/607	2.60	0.62	
R6/607	L/K/D	W21/607	20.01	0.53	
R6/607	L/K/D	W22/607	20.12	0.53	3.63
R7/607	BEDROOM	W23/607	20.10	1.03	
R7/607	BEDROOM	W24/607	20.00	1.02	2.05
R8/607	BEDROOM	W25/607	19.85	0.89	
R8/607	BEDROOM	W26/607	19.66	0.87	1.76
R9/607	L/K/D	W27/607	19.40	0.45	
R9/607	L/K/D	W28/607	19.11	0.44	
R9/607	L/K/D	W29/607	19.03	0.44	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R9/607	L/K/D	W30/607	10.81	1.03	
R9/607	L/K/D	W31/607	9.96	1.39	
R9/607	L/K/D	W32/607	37.31	0.72	
R9/607	L/K/D	W33/607	37.33	0.72	5.18
R10/607	BEDROOM	W34/607	37.35	1.90	
R10/607	BEDROOM	W35/607	37.36	1.90	3.81
R11/607	BEDROOM	W36/607	37.37	1.53	
R11/607	BEDROOM	W37/607	37.36	1.53	
R11/607	BEDROOM	W38/607	37.39	1.53	4.60
R12/607	L/K/D	W39/607	37.38	1.08	
R12/607	L/K/D	W40/607	37.38	1.08	
R12/607	L/K/D	W41/607	37.36	1.09	3.25
R13/607	BEDROOM	W42/607	37.35	1.69	
R13/607	BEDROOM	W43/607	37.36	1.69	
R13/607	BEDROOM	W44/607	11.83	2.10	5.49
R14/607	L/K/D	W45/607	16.84	2.40	
R14/607	L/K/D	W46/607	35.56	0.85	
R14/607	L/K/D	W47/607	35.35	0.84	
R14/607	L/K/D	W48/607	35.31	0.84	4.93
R15/607	BEDROOM	W49/607	35.09	1.56	
R15/607	BEDROOM	W50/607	35.00	1.55	
R15/607	BEDROOM	W51/607	14.14	3.04	6.15
R16/607	BEDROOM	W52/607	24.12	7.01	7.01
R17/607	L/K/D	W53/607	11.69	0.63	
R17/607	L/K/D	W54/607	17.09	3.09	3.72

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R18/607	BEDROOM	W55/607	6.99	0.80	
R18/607	BEDROOM	W56/607	32.50	1.28	
R18/607	BEDROOM	W57/607	32.17	1.27	3.35
R19/607	BEDROOM	W58/607	31.70	1.42	
R19/607	BEDROOM	W59/607	31.30	1.40	2.82
R20/607	L/K/D	W60/607	30.79	0.68	
R20/607	L/K/D	W61/607	30.48	0.68	
R20/607	L/K/D	W62/607	29.91	0.67	
R20/607	L/K/D	W63/607	29.46	0.65	2.67
R21/607	BEDROOM	W64/607	28.83	1.25	
R21/607	BEDROOM	W65/607	28.35	1.23	2.48
R22/607	BEDROOM	W66/607	27.79	0.97	
R22/607	BEDROOM	W67/607	27.35	0.96	
R22/607	BEDROOM	W68/607	15.37	1.73	3.66
R23/607	BEDROOM	W69/607	13.19	2.33	
R23/607	BEDROOM	W70/607	28.94	1.19	
R23/607	BEDROOM	W71/607	29.13	1.20	
R23/607	BEDROOM	W72/607	29.12	1.20	5.91
R24/607	BEDROOM	W1/607	28.71	1.23	
R24/607	BEDROOM	W2/607	15.84	2.58	
R24/607	BEDROOM	W73/607	29.08	1.25	
R24/607	BEDROOM	W74/607	28.89	1.24	6.29
R1/608	L/K/D	W3/608	13.75	0.39	
R1/608	L/K/D	W4/608	18.11	0.44	
R1/608	L/K/D	W5/608	16.27	0.41	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R1/608	L/K/D	W6/608	13.95	0.36	
R1/608	L/K/D	W7/608	12.43	0.33	
R1/608	L/K/D	W8/608	11.56	0.31	2.24
R2/608	LIVINGROOM	W9/608	12.40	0.48	
R2/608	LIVINGROOM	W10/608	13.05	0.52	
R2/608	LIVINGROOM	W11/608	13.96	0.55	1.54
R3/608	LIVING/DINER	W12/608	14.96	0.54	
R3/608	LIVING/DINER	W13/608	16.12	0.57	
R3/608	LIVING/DINER	W14/608	17.35	0.61	
R3/608	LIVING/DINER	W15/608	3.89	0.32	2.04
R4/608	L/K/D	W16/608	7.21	2.10	2.10
R5/608	BEDROOM	W17/608	17.15	4.92	4.92
R6/608	L/K/D	W18/608	11.73	1.40	
R6/608	L/K/D	W19/608	3.38	0.79	
R6/608	L/K/D	W20/608	3.32	0.71	
R6/608	L/K/D	W21/608	23.10	0.58	
R6/608	L/K/D	W22/608	23.33	0.58	4.06
R7/608	BEDROOM	W23/608	23.45	1.13	
R7/608	BEDROOM	W24/608	23.51	1.13	2.27
R8/608	BEDROOM	W25/608	23.51	0.99	
R8/608	BEDROOM	W26/608	23.46	0.98	1.97
R9/608	L/K/D	W27/608	23.32	0.51	
R9/608	L/K/D	W28/608	23.12	0.50	
R9/608	L/K/D	W29/608	23.07	0.50	
R9/608	L/K/D	W30/608	13.22	1.16	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R9/608	L/K/D	W31/608	11.58	1.51	
R9/608	L/K/D	W32/608	37.92	0.73	
R9/608	L/K/D	W33/608	37.93	0.73	5.63
R10/608	BEDROOM	W34/608	37.94	1.93	
R10/608	BEDROOM	W35/608	37.94	1.93	3.85
R11/608	BEDROOM	W36/608	37.94	1.55	
R11/608	BEDROOM	W37/608	37.93	1.55	
R11/608	BEDROOM	W38/608	37.95	1.55	4.65
R12/608	L/K/D	W39/608	37.94	1.10	
R12/608	L/K/D	W40/608	37.94	1.10	
R12/608	L/K/D	W41/608	37.92	1.10	3.29
R13/608	BEDROOM	W42/608	37.90	1.71	
R13/608	BEDROOM	W43/608	37.91	1.71	
R13/608	BEDROOM	W44/608	11.95	2.11	5.54
R14/608	L/K/D	W45/608	17.11	2.42	
R14/608	L/K/D	W46/608	35.92	0.85	
R14/608	L/K/D	W47/608	35.72	0.85	
R14/608	L/K/D	W48/608	35.69	0.85	4.97
R15/608	BEDROOM	W49/608	35.50	1.57	
R15/608	BEDROOM	W50/608	35.41	1.57	
R15/608	BEDROOM	W51/608	14.70	3.11	6.25
R16/608	BEDROOM	W52/608	24.52	7.09	7.09
R17/608	L/K/D	W53/608	12.40	0.65	
R17/608	L/K/D	W54/608	17.61	3.15	3.80

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R18/608	BEDROOM	W55/608	7.11	0.80	
R18/608	BEDROOM	W56/608	33.46	1.31	
R18/608	BEDROOM	W57/608	33.23	1.30	3.42
R19/608	BEDROOM	W58/608	32.87	1.46	
R19/608	BEDROOM	W59/608	32.60	1.44	2.90
R20/608	L/K/D	W60/608	32.20	0.70	
R20/608	L/K/D	W61/608	32.07	0.70	
R20/608	L/K/D	W62/608	31.65	0.69	
R20/608	L/K/D	W63/608	31.36	0.68	2.78
R21/608	BEDROOM	W64/608	30.89	1.32	
R21/608	BEDROOM	W65/608	30.57	1.31	2.62
R22/608	BEDROOM	W66/608	30.14	1.03	
R22/608	BEDROOM	W67/608	29.85	1.03	
R22/608	BEDROOM	W68/608	16.09	1.78	3.83
R23/608	BEDROOM	W69/608	14.96	2.50	
R23/608	BEDROOM	W70/608	31.05	1.25	
R23/608	BEDROOM	W71/608	31.28	1.25	
R23/608	BEDROOM	W72/608	31.32	1.25	6.25
R24/608	BEDROOM	W1/608	31.18	1.30	
R24/608	BEDROOM	W2/608	17.94	2.78	
R24/608	BEDROOM	W73/608	31.34	1.31	
R24/608	BEDROOM	W74/608	31.24	1.30	6.69
R1/609	L/K/D	W3/609	15.25	0.41	
R1/609	L/K/D	W4/609	20.85	0.49	
R1/609	L/K/D	W5/609	18.91	0.45	
R1/609	L/K/D	W6/609	16.66	0.41	

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Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R1/609	L/K/D	W7/609	15.19	0.38	
R1/609	L/K/D	W8/609	14.32	0.36	2.50
R2/609	LIVINGROOM	W9/609	15.15	0.56	
R2/609	LIVINGROOM	W10/609	15.79	0.59	
R2/609	LIVINGROOM	W11/609	16.68	0.61	1.76
R3/609	LIVING/DINER	W12/609	17.70	0.62	
R3/609	LIVING/DINER	W13/609	18.87	0.65	
R3/609	LIVING/DINER	W14/609	20.08	0.68	
R3/609	LIVING/DINER	W15/609	4.49	0.35	2.31
R4/609	L/K/D	W16/609	8.75	2.34	2.34
R5/609	BEDROOM	W17/609	19.51	5.32	5.32
R6/609	L/K/D	W18/609	13.53	1.52	
R6/609	L/K/D	W19/609	4.76	0.95	
R6/609	L/K/D	W20/609	4.23	0.81	
R6/609	L/K/D	W21/609	26.29	0.63	
R6/609	L/K/D	W22/609	26.67	0.63	4.54
R7/609	BEDROOM	W23/609	26.96	1.24	
R7/609	BEDROOM	W24/609	27.19	1.25	2.49
R8/609	BEDROOM	W25/609	27.37	1.10	
R8/609	BEDROOM	W26/609	27.53	1.10	2.19
R9/609	L/K/D	W27/609	27.61	0.57	
R9/609	L/K/D	W28/609	27.64	0.57	
R9/609	L/K/D	W29/609	27.75	0.57	
R9/609	L/K/D	W30/609	14.35	1.21	
R9/609	L/K/D	W31/609	13.96	1.67	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R9/609	L/K/D	W32/609	38.39	0.73	6.06
R9/609	L/K/D	W33/609	38.39	0.73	
R10/609	BEDROOM	W34/609	38.39	1.95	3.89
R10/609	BEDROOM	W35/609	38.39	1.95	
R11/609	BEDROOM	W36/609	38.38	1.57	4.70
R11/609	BEDROOM	W37/609	38.37	1.57	
R11/609	BEDROOM	W38/609	38.37	1.57	
R12/609	L/K/D	W39/609	38.36	1.11	3.32
R12/609	L/K/D	W40/609	38.36	1.11	
R12/609	L/K/D	W41/609	38.34	1.11	
R13/609	BEDROOM	W42/609	38.33	1.73	5.58
R13/609	BEDROOM	W43/609	38.32	1.73	
R13/609	BEDROOM	W44/609	12.03	2.12	
R14/609	L/K/D	W45/609	17.32	2.44	5.00
R14/609	L/K/D	W46/609	36.20	0.86	
R14/609	L/K/D	W47/609	35.99	0.85	
R14/609	L/K/D	W48/609	35.97	0.85	
R15/609	BEDROOM	W49/609	35.80	1.58	6.31
R15/609	BEDROOM	W50/609	35.71	1.58	
R15/609	BEDROOM	W51/609	15.09	3.16	
R16/609	BEDROOM	W52/609	25.13	7.22	7.22
R17/609	L/K/D	W53/609	14.15	0.70	3.90
R17/609	L/K/D	W54/609	18.06	3.20	
R18/609	BEDROOM	W55/609	7.22	0.81	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R18/609	BEDROOM	W56/609	34.26	1.34	
R18/609	BEDROOM	W57/609	34.12	1.33	3.48
R19/609	BEDROOM	W58/609	33.86	1.49	
R19/609	BEDROOM	W59/609	33.72	1.48	2.97
R20/609	L/K/D	W60/609	33.44	0.73	
R20/609	L/K/D	W61/609	33.47	0.73	
R20/609	L/K/D	W62/609	33.18	0.72	
R20/609	L/K/D	W63/609	33.05	0.71	2.88
R21/609	BEDROOM	W64/609	32.72	1.38	
R21/609	BEDROOM	W65/609	32.57	1.37	2.75
R22/609	BEDROOM	W66/609	32.26	1.09	
R22/609	BEDROOM	W67/609	32.11	1.09	
R22/609	BEDROOM	W68/609	16.73	1.82	3.99
R23/609	BEDROOM	W69/609	16.62	2.66	
R23/609	BEDROOM	W70/609	32.80	1.29	
R23/609	BEDROOM	W71/609	33.05	1.30	
R23/609	BEDROOM	W72/609	33.14	1.30	6.55
R24/609	BEDROOM	W1/609	33.32	1.36	
R24/609	BEDROOM	W2/609	20.11	2.98	
R24/609	BEDROOM	W73/609	33.23	1.36	
R24/609	BEDROOM	W74/609	33.23	1.36	7.06
R1/610	BEDROOM	W1/610	34.19	2.05	
R1/610	BEDROOM	W2/610	22.62	4.75	
R1/610	BEDROOM	W74/610	34.07	2.04	8.84
R2/610	L/K/D	W3/610	16.68	0.53	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R2/610	L/K/D	W4/610	24.02	0.65	
R2/610	L/K/D	W5/610	22.20	0.61	
R2/610	L/K/D	W6/610	20.19	0.57	
R2/610	L/K/D	W7/610	18.89	0.55	
R2/610	L/K/D	W8/610	18.11	0.52	3.44
R3/610	BEDROOM	W9/610	18.84	0.99	
R3/610	BEDROOM	W10/610	19.45	1.02	2.01
R4/610	LIVING/DINER	W11/610	20.25	0.55	
R4/610	LIVING/DINER	W12/610	21.25	0.57	
R4/610	LIVING/DINER	W13/610	22.38	0.60	
R4/610	LIVING/DINER	W14/610	23.44	0.62	
R4/610	LIVING/DINER	W15/610	5.74	0.33	2.68
R5/610	L/K/D	W16/610	10.81	2.62	2.62
R6/610	BEDROOM	W17/610	22.48	5.82	5.82
R7/610	L/K/D	W18/610	15.67	1.66	
R7/610	L/K/D	W19/610	18.80	2.09	
R7/610	L/K/D	W20/610	15.56	1.69	
R7/610	L/K/D	W21/610	29.11	0.67	
R7/610	L/K/D	W22/610	29.54	0.68	6.77
R8/610	BEDROOM	W23/610	29.91	1.33	
R8/610	BEDROOM	W24/610	30.25	1.34	2.68
R9/610	BEDROOM	W25/610	30.54	1.18	
R9/610	BEDROOM	W26/610	30.84	1.19	2.38
R10/610	L/K/D	W28/610	31.29	0.63	
R10/610	L/K/D	W29/610	31.53	0.63	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R10/610	L/K/D	W30/610	30.60	1.99	
R10/610	L/K/D	W31/610	30.76	2.83	
R10/610	L/K/D	W32/610	38.63	0.74	
R10/610	L/K/D	W33/610	38.63	0.74	7.55
R11/610	BEDROOM	W34/610	38.63	1.96	
R11/610	BEDROOM	W35/610	38.62	1.96	3.91
R12/610	BEDROOM	W36/610	38.62	1.58	
R12/610	BEDROOM	W37/610	38.60	1.57	
R12/610	BEDROOM	W38/610	38.61	1.57	4.72
R13/610	L/K/D	W39/610	38.59	1.11	
R13/610	L/K/D	W40/610	38.59	1.11	
R13/610	L/K/D	W41/610	38.58	1.11	3.34
R14/610	BEDROOM	W42/610	38.57	1.74	
R14/610	BEDROOM	W43/610	38.57	1.74	
R14/610	BEDROOM	W44/610	22.18	3.09	6.56
R15/610	L/K/D	W45/610	27.95	3.38	
R15/610	L/K/D	W46/610	36.42	0.86	
R15/610	L/K/D	W47/610	36.21	0.86	
R15/610	L/K/D	W48/610	36.19	0.86	5.95
R16/610	BEDROOM	W49/610	36.04	1.59	
R16/610	BEDROOM	W50/610	35.94	1.58	
R16/610	BEDROOM	W51/610	15.60	3.23	6.40
R17/610	BEDROOM	W52/610	27.54	7.71	7.71
R18/610	L/K/D	W53/610	19.02	0.84	
R18/610	L/K/D	W54/610	17.89	3.24	4.08

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R19/610	L/K/D	W55/610	7.49	0.46	
R19/610	L/K/D	W56/610	34.78	0.75	
R19/610	L/K/D	W57/610	34.69	0.75	
R19/610	L/K/D	W58/610	34.46	0.74	2.70
R20/610	BEDROOM	W59/610	34.37	1.61	
R20/610	BEDROOM	W60/610	34.14	1.60	3.21
R21/610	LIVING/DINER	W61/610	34.24	0.76	
R21/610	LIVING/DINER	W62/610	34.00	0.75	
R21/610	LIVING/DINER	W63/610	33.92	0.74	
R21/610	LIVING/DINER	W64/610	33.67	0.75	
R21/610	LIVING/DINER	W65/610	33.56	0.74	3.74
R22/610	BEDROOM	W66/610	33.31	1.40	
R22/610	BEDROOM	W67/610	33.20	1.40	
R22/610	BEDROOM	W68/610	17.74	2.37	5.17
R23/610	BEDROOM	W69/610	18.19	3.41	
R23/610	BEDROOM	W70/610	33.59	1.59	
R23/610	BEDROOM	W71/610	33.84	1.60	6.61
R24/610	BEDROOM	W72/610	33.95	1.50	
R24/610	BEDROOM	W73/610	34.06	1.51	3.01
R1/611	L/K/D	W3/611	20.01	0.61	
R1/611	L/K/D	W4/611	28.34	0.65	
R1/611	L/K/D	W5/611	26.84	0.62	
R1/611	L/K/D	W6/611	25.15	0.59	
R1/611	L/K/D	W7/611	23.98	0.58	
R1/611	L/K/D	W8/611	23.25	0.56	3.61

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R2/611	BEDROOM	W9/611	23.45	0.88	
R2/611	BEDROOM	W10/611	23.96	0.91	
R2/611	BEDROOM	W11/611	24.59	0.93	2.72
R3/611	BEDROOM	W12/611	25.51	0.96	
R3/611	BEDROOM	W13/611	26.49	0.99	
R3/611	BEDROOM	W14/611	27.29	1.01	
R3/611	BEDROOM	W15/611	8.94	0.63	3.58
R4/611	LIVNG/DINER	W16/611	14.00	2.95	2.95
R5/611	L/K/D	W17/611	27.25	1.14	
R5/611	L/K/D	W18/611	18.03	3.52	4.66
R6/611	BEDROOM	W19/611	10.14	1.07	
R6/611	BEDROOM	W20/611	34.93	1.46	
R6/611	BEDROOM	W21/611	34.84	1.46	4.00
R7/611	BEDROOM	W22/611	34.62	1.64	
R7/611	BEDROOM	W23/611	34.52	1.64	3.28
R8/611	L/K/D	W24/611	34.30	0.97	
R8/611	L/K/D	W25/611	34.39	0.97	
R8/611	L/K/D	W26/611	34.16	0.96	
R8/611	L/K/D	W27/611	34.07	0.95	3.85
R9/611	L/K/D	W28/611	33.82	0.86	
R9/611	L/K/D	W29/611	33.72	0.86	
R9/611	L/K/D	W30/611	33.48	0.85	
R9/611	L/K/D	W31/611	33.37	0.85	
R9/611	L/K/D	W32/611	18.41	1.29	4.72
R10/611	BEDROOM	W33/611	18.88	2.15	

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Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R10/611	BEDROOM	W34/611	33.84	1.14	
R10/611	BEDROOM	W35/611	34.09	1.15	
R10/611	BEDROOM	W36/611	34.19	1.15	5.59
R11/611	BEDROOM	W11/611	34.44	1.18	
R11/611	BEDROOM	W21/611	24.91	2.61	
R11/611	BEDROOM	W37/611	34.30	1.18	
R11/611	BEDROOM	W38/611	34.33	1.18	6.15
R1/612	L/K/D	W3/612	20.07	0.61	
R1/612	L/K/D	W4/612	32.08	0.72	
R1/612	L/K/D	W5/612	31.29	0.70	
R1/612	L/K/D	W6/612	30.33	0.69	
R1/612	L/K/D	W7/612	29.57	0.68	
R1/612	L/K/D	W8/612	28.85	0.66	4.05
R2/612	BEDROOM	W9/612	28.23	1.02	
R2/612	BEDROOM	W10/612	28.46	1.03	
R2/612	BEDROOM	W11/612	28.79	1.04	3.09
R3/612	BEDROOM	W12/612	29.40	1.07	
R3/612	BEDROOM	W13/612	30.07	1.09	
R3/612	BEDROOM	W14/612	30.61	1.10	
R3/612	BEDROOM	W15/612	10.05	0.67	3.92
R4/612	L/K/D	W16/612	16.60	3.27	3.27
R5/612	L/K/D	W17/612	36.55	1.45	
R5/612	L/K/D	W18/612	18.07	3.52	4.97
R6/612	BEDROOM	W19/612	10.20	1.07	
R6/612	BEDROOM	W20/612	35.07	1.47	
R6/612	BEDROOM	W21/612	34.98	1.47	4.01

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R7/612	BEDROOM	W22/612	34.77	1.65	3.29
R7/612	BEDROOM	W23/612	34.67	1.64	
R8/612	L/K/D	W24/612	34.45	0.97	3.87
R8/612	L/K/D	W25/612	34.54	0.97	
R8/612	L/K/D	W26/612	34.31	0.97	
R8/612	L/K/D	W27/612	34.22	0.96	
R9/612	L/K/D	W28/612	33.98	0.87	4.74
R9/612	L/K/D	W29/612	33.88	0.86	
R9/612	L/K/D	W30/612	33.64	0.86	
R9/612	L/K/D	W31/612	33.53	0.86	
R9/612	L/K/D	W32/612	18.62	1.30	
R10/612	BEDROOM	W33/612	19.09	2.17	5.62
R10/612	BEDROOM	W34/612	34.00	1.15	
R10/612	BEDROOM	W35/612	34.25	1.15	
R10/612	BEDROOM	W36/612	34.35	1.16	
R11/612	BEDROOM	W1/612	34.60	1.19	6.25
R11/612	BEDROOM	W2/612	26.13	2.70	
R11/612	BEDROOM	W37/612	34.46	1.18	
R11/612	BEDROOM	W38/612	34.49	1.18	
R1/613	L/K/D	W3/613	20.30	0.61	4.38
R1/613	L/K/D	W4/613	34.94	0.77	
R1/613	L/K/D	W5/613	34.46	0.76	
R1/613	L/K/D	W6/613	33.88	0.75	
R1/613	L/K/D	W7/613	33.42	0.75	
R1/613	L/K/D	W8/613	32.98	0.74	
R2/613	BEDROOM	W9/613	32.62	1.15	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R2/613	BEDROOM	W10/613	32.74	1.15	
R2/613	BEDROOM	W11/613	32.92	1.16	3.46
R3/613	BEDROOM	W12/613	33.25	1.18	
R3/613	BEDROOM	W13/613	33.62	1.19	
R3/613	BEDROOM	W14/613	33.93	1.20	
R3/613	BEDROOM	W15/613	10.32	0.68	4.25
R4/613	L/K/D	W16/613	19.14	3.57	3.57
R5/613	L/K/D	W17/613	39.52	1.58	
R5/613	L/K/D	W18/613	18.09	3.52	5.10
R6/613	BEDROOM	W19/613	10.30	1.08	
R6/613	BEDROOM	W20/613	35.20	1.47	
R6/613	BEDROOM	W21/613	35.11	1.47	4.02
R7/613	BEDROOM	W22/613	34.90	1.65	
R7/613	BEDROOM	W23/613	34.81	1.65	3.30
R8/613	L/K/D	W24/613	34.59	0.97	
R8/613	L/K/D	W25/613	34.68	0.98	
R8/613	L/K/D	W26/613	34.45	0.97	
R8/613	L/K/D	W27/613	34.37	0.96	3.88
R9/613	L/K/D	W28/613	34.13	0.87	
R9/613	L/K/D	W29/613	34.03	0.87	
R9/613	L/K/D	W30/613	33.79	0.86	
R9/613	L/K/D	W31/613	33.69	0.86	
R9/613	L/K/D	W32/613	19.07	1.32	4.77
R10/613	BEDROOM	W33/613	19.51	2.20	
R10/613	BEDROOM	W34/613	34.16	1.15	

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R10/613	BEDROOM	W35/613	34.40	1.16	
R10/613	BEDROOM	W36/613	34.50	1.16	5.66
R11/613	BEDROOM	W1/613	34.75	1.19	
R11/613	BEDROOM	W2/613	27.27	2.78	
R11/613	BEDROOM	W37/613	34.61	1.19	
R11/613	BEDROOM	W38/613	34.64	1.19	6.34
R1/614	L/K/D	W3/614	21.95	0.64	
R1/614	L/K/D	W4/614	37.75	0.83	
R1/614	L/K/D	W5/614	37.62	0.83	
R1/614	L/K/D	W6/614	37.47	0.82	
R1/614	L/K/D	W7/614	37.34	0.82	
R1/614	L/K/D	W8/614	37.22	0.82	4.76
R2/614	BEDROOM	W9/614	37.07	1.22	
R2/614	BEDROOM	W10/614	37.06	1.23	
R2/614	BEDROOM	W11/614	37.06	1.23	3.68
R3/614	BEDROOM	W12/614	37.09	1.50	
R3/614	BEDROOM	W13/614	37.13	1.50	
R3/614	BEDROOM	W14/614	37.17	1.50	
R3/614	BEDROOM	W15/614	20.84	1.18	5.69
R4/614	L/K/D	W16/614	34.80	7.19	7.19
R5/614	L/K/D	W17/614	39.57	2.18	
R5/614	L/K/D	W18/614	33.34	7.57	9.75
R6/614	BEDROOM	W19/614	22.19	1.70	
R6/614	BEDROOM	W20/614	35.34	1.48	
R6/614	BEDROOM	W21/614	35.25	1.47	4.65

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R7/614	BEDROOM	W22/614	35.04	1.66	
R7/614	BEDROOM	W23/614	34.95	1.65	3.31
R8/614	L/K/D	W24/614	34.73	0.98	
R8/614	L/K/D	W25/614	34.82	0.98	
R8/614	L/K/D	W26/614	34.60	0.97	
R8/614	L/K/D	W27/614	34.51	0.96	3.89
R9/614	L/K/D	W28/614	34.28	0.87	
R9/614	L/K/D	W29/614	34.18	0.87	
R9/614	L/K/D	W30/614	33.95	0.86	
R9/614	L/K/D	W31/614	33.85	0.86	
R9/614	L/K/D	W32/614	21.56	1.43	4.89
R10/614	BEDROOM	W33/614	21.93	2.37	
R10/614	BEDROOM	W34/614	34.33	1.16	
R10/614	BEDROOM	W35/614	34.56	1.16	
R10/614	BEDROOM	W36/614	34.66	1.17	5.85
R11/614	BEDROOM	W1/614	34.90	1.19	
R11/614	BEDROOM	W2/614	29.36	2.94	
R11/614	BEDROOM	W37/614	34.77	1.19	
R11/614	BEDROOM	W38/614	34.80	1.19	6.51
R1/6111	BEDROOM	W1/6111	27.94	5.53	5.53
R2/6111	BEDROOM	W2/6111	17.10	1.57	
R2/6111	BEDROOM	W3/6111	20.45	1.32	
R2/6111	BEDROOM	W4/6111	32.31	1.89	
R2/6111	BEDROOM	W5/6111	32.69	2.34	
R2/6111	BEDROOM	W6/6111	32.93	2.72	
R2/6111	BEDROOM	W7/6111	33.20	1.62	11.46

Room	Roomuse	Window	VSC(%)	ADF(%)	TOTAL ADF(%)
R3/6111	L/K/D	W9/6111	33.82	1.28	
R3/6111	L/K/D	W10/6111	34.05	1.29	
R3/6111	L/K/D	W11/6111	34.26	1.29	
R3/6111	L/K/D	W12/6111	34.48	1.30	
R3/6111	L/K/D	W13/6111	34.66	1.31	
R3/6111	L/K/D	W14/6111	34.77	0.39	
R3/6111	L/K/D	W15/6111	39.33	1.01	
R3/6111	L/K/D	W16/6111	39.33	1.50	
R3/6111	L/K/D	W17/6111	39.51	1.49	
R3/6111	L/K/D	W18/6111	39.51	1.52	
R3/6111	L/K/D	W19/6111	39.51	1.52	
R3/6111	L/K/D	W20/6111	39.50	1.52	15.41
R4/6111	BEDROOM	W21/6111	39.50	2.06	
R4/6111	BEDROOM	W22/6111	39.50	3.56	
R4/6111	BEDROOM	W23/6111	39.50	3.31	8.93
R5/6111	LIVING/DINER	W24/6111	39.49	2.25	
R5/6111	LIVING/DINER	W25/6111	39.49	2.45	
R5/6111	LIVING/DINER	W26/6111	39.48	2.45	
R5/6111	LIVING/DINER	W27/6111	39.49	1.24	
R5/6111	LIVING/DINER	W28/6111	37.05	1.24	
R5/6111	LIVING/DINER	W29/6111	37.07	2.28	
R5/6111	LIVING/DINER	W30/6111	36.84	2.27	14.18
R6/6111	LIVINGROOM	W31/6111	36.52	2.18	
R6/6111	LIVINGROOM	W32/6111	36.38	2.17	
R6/6111	LIVINGROOM	W33/6111	35.83	2.14	
R6/6111	LIVINGROOM	W34/6111	35.34	1.25	7.73
R7/6111	BEDROOM	W35/6111	34.69	0.67	
R7/6111	BEDROOM	W36/6111	33.85	2.84	
R7/6111	BEDROOM	W37/6111	31.33	2.74	6.26

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Window	Room Use	Summer %	Winter %	Total %
PROPOSED SCHEME				
W15/601	BEDROOM	0	0	0
W30/601	L/K/D	7	6	13
W31/601	L/K/D	16	4	20
W32/601	L/K/D	37	18	55
W33/601	L/K/D	37	19	56
W34/601	BEDROOM	37	21	58
W35/601	BEDROOM	37	21	58
W36/601	BEDROOM	36	21	57
W37/601	BEDROOM	37	22	59
W38/601	BEDROOM	37	22	59
W39/601	L/K/D	37	23	60
W40/601	L/K/D	37	23	60
W41/601	L/K/D	37	23	60
W42/601	BEDROOM	37	23	60
W43/601	BEDROOM	37	23	60
W44/601	BEDROOM	14	5	19
W45/601	L/K/D	10	17	27
W46/601	L/K/D	32	12	44
W47/601	L/K/D	31	12	43
W48/601	L/K/D	31	11	42
W49/601	BEDROOM	31	10	41
W50/601	BEDROOM	30	11	41
W52/601	BEDROOM	19	4	23
W53/601	L/K/D	18	10	28
W54/601	L/K/D	9	11	20
W55/601	BEDROOM	2	7	9
W56/601	BEDROOM	19	8	27
W57/601	BEDROOM	19	8	27
W58/601	BEDROOM	18	8	26
W59/601	BEDROOM	18	6	24

Window	Room Use	Summer %	Winter %	Total %
W60/601	BEDROOM	18	5	23
W61/601	BEDROOM	16	5	21
W62/601	BEDROOM	16	5	21
W63/601	BEDROOM	15	5	20
W64/601	LIVING/DINER	14	5	19
W65/601	LIVING/DINER	13	4	17
W66/601	LIVING/DINER	11	4	15
W67/601	LIVING/DINER	10	4	14
W69/601	LIVINGROOM	0	0	0
W15/602	BEDROOM	0	0	0
W30/602	L/K/D	7	8	15
W31/602	L/K/D	16	6	22
W32/602	L/K/D	37	24	61
W33/602	L/K/D	37	23	60
W34/602	BEDROOM	37	24	61
W35/602	BEDROOM	37	24	61
W36/602	BEDROOM	37	23	60
W37/602	BEDROOM	37	23	60
W38/602	BEDROOM	37	24	61
W39/602	L/K/D	37	24	61
W40/602	L/K/D	37	24	61
W41/602	L/K/D	37	23	60
W42/602	BEDROOM	37	23	60
W43/602	BEDROOM	37	24	61
W44/602	BEDROOM	15	5	20
W45/602	L/K/D	10	17	27
W46/602	L/K/D	33	12	45
W47/602	L/K/D	32	12	44
W48/602	L/K/D	32	12	44
W52/602	BEDROOM	19	6	25
W53/602	LIVINGROOM	18	11	29

Window	Room Use	Summer %	Winter %	Total %
W54/602	LIVINGROOM	9	13	22
W55/602	BEDROOM	2	7	9
W56/602	BEDROOM	22	9	31
W57/602	BEDROOM	22	9	31
W58/602	BEDROOM	20	9	29
W59/602	BEDROOM	19	9	28
W60/602	BEDROOM	19	9	28
W61/602	BEDROOM	17	8	25
W62/602	BEDROOM	17	8	25
W63/602	BEDROOM	15	8	23
W64/602	BEDROOM	14	7	21
W65/602	BEDROOM	14	7	21
W66/602	BEDROOM	12	7	19
W67/602	BEDROOM	10	6	16
W69/602	BEDROOM	0	0	0
W15/603	BEDROOM	2	0	2
W30/603	L/K/D	7	8	15
W31/603	L/K/D	17	6	23
W32/603	L/K/D	37	24	61
W33/603	L/K/D	37	23	60
W34/603	BEDROOM	37	24	61
W35/603	BEDROOM	37	24	61
W36/603	BEDROOM	37	23	60
W37/603	BEDROOM	37	23	60
W38/603	BEDROOM	37	24	61
W39/603	BEDROOM	37	24	61
W40/603	BEDROOM	37	24	61
W41/603	BEDROOM	37	23	60
W42/603	BEDROOM	37	23	60
W43/603	BEDROOM	37	24	61
W44/603	BEDROOM	15	5	20

Window	Room Use	Summer %	Winter %	Total %
W45/603	L/K/D	10	18	28
W46/603	L/K/D	33	13	46
W47/603	L/K/D	32	12	44
W49/603	BEDROOM	32	13	45
W50/603	BEDROOM	32	14	46
W52/603	BEDROOM	20	6	26
W53/603	LIVINGROOM	18	11	29
W54/603	LIVINGROOM	10	13	23
W55/603	BEDROOM	2	8	10
W56/603	BEDROOM	22	10	32
W57/603	BEDROOM	22	10	32
W58/603	BEDROOM	21	10	31
W59/603	BEDROOM	20	10	30
W60/603	BEDROOM	20	10	30
W61/603	BEDROOM	18	10	28
W62/603	L/K/D	17	9	26
W63/603	L/K/D	15	9	24
W65/603	L/K/D	14	9	23
W66/603	BEDROOM	12	9	21
W67/603	BEDROOM	11	8	19
W69/603	BEDROOM	1	0	1
W15/604	BEDROOM	4	0	4
W30/604	L/K/D	7	8	15
W31/604	L/K/D	17	6	23
W32/604	L/K/D	37	25	62
W33/604	L/K/D	37	24	61
W34/604	BEDROOM	37	24	61
W35/604	BEDROOM	37	24	61
W36/604	BEDROOM	37	24	61
W37/604	BEDROOM	37	23	60
W38/604	BEDROOM	37	24	61

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W39/604	BEDROOM	37	24	61
W40/604	BEDROOM	37	24	61
W41/604	BEDROOM	37	24	61
W42/604	BEDROOM	37	25	62
W43/604	BEDROOM	37	25	62
W44/604	BEDROOM	15	8	23
W45/604	L/K/D	10	20	30
W46/604	L/K/D	33	14	47
W47/604	L/K/D	32	14	46
W48/604	L/K/D	32	15	47
W49/604	BEDROOM	32	15	47
W50/604	BEDROOM	32	15	47
W52/604	BEDROOM	20	7	27
W53/604	LIVINGROOM	18	11	29
W54/604	LIVINGROOM	10	14	24
W55/604	BEDROOM	2	8	10
W56/604	BEDROOM	22	12	34
W57/604	BEDROOM	22	12	34
W58/604	BEDROOM	22	11	33
W59/604	BEDROOM	20	12	32
W60/604	BEDROOM	20	12	32
W61/604	BEDROOM	19	12	31
W62/604	L/K/D	18	10	28
W63/604	L/K/D	17	10	27
W64/604	L/K/D	16	10	26
W65/604	L/K/D	15	10	25
W66/604	BEDROOM	14	9	23
W67/604	BEDROOM	13	8	21
W69/604	BEDROOM	2	0	2
W15/605	LIVING/DINER	6	0	6
W30/605	L/K/D	7	9	16

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Window	Room Use	Summer %	Winter %	Total %
W31/605	L/K/D	17	7	24
W32/605	L/K/D	37	25	62
W33/605	L/K/D	37	25	62
W34/605	BEDROOM	37	25	62
W35/605	BEDROOM	37	24	61
W36/605	BEDROOM	37	24	61
W37/605	BEDROOM	37	24	61
W38/605	BEDROOM	37	24	61
W39/605	L/K/D	37	24	61
W40/605	L/K/D	37	24	61
W41/605	L/K/D	37	24	61
W42/605	BEDROOM	37	25	62
W43/605	BEDROOM	37	25	62
W44/605	BEDROOM	15	8	23
W45/605	L/K/D	10	20	30
W46/605	L/K/D	33	14	47
W47/605	L/K/D	32	14	46
W48/605	L/K/D	32	15	47
W49/605	BEDROOM	32	15	47
W50/605	BEDROOM	32	15	47
W52/605	BEDROOM	20	7	27
W53/605	L/K/D	18	11	29
W54/605	L/K/D	11	14	25
W55/605	BEDROOM	2	8	10
W56/605	BEDROOM	23	12	35
W57/605	BEDROOM	22	12	34
W58/605	BEDROOM	22	12	34
W59/605	BEDROOM	22	12	34
W60/605	L/K/D	20	12	32
W61/605	L/K/D	20	12	32
W62/605	L/K/D	19	10	29
W63/605	L/K/D	18	10	28

Window	Room Use	Summer %	Winter %	Total %
W64/605	BEDROOM	18	10	28
W65/605	BEDROOM	18	10	28
W66/605	BEDROOM	17	10	27
W67/605	BEDROOM	17	8	25
W69/605	BEDROOM	4	0	4
W15/606	LIVING/DINER	6	0	6
W30/606	L/K/D	7	9	16
W31/606	L/K/D	17	7	24
W32/606	L/K/D	37	25	62
W33/606	L/K/D	37	25	62
W34/606	BEDROOM	37	25	62
W35/606	BEDROOM	37	24	61
W36/606	BEDROOM	37	25	62
W37/606	BEDROOM	37	25	62
W38/606	BEDROOM	37	24	61
W39/606	L/K/D	37	24	61
W40/606	L/K/D	37	24	61
W41/606	L/K/D	37	24	61
W42/606	BEDROOM	37	25	62
W43/606	BEDROOM	37	25	62
W44/606	BEDROOM	15	8	23
W45/606	L/K/D	10	21	31
W46/606	L/K/D	33	14	47
W47/606	L/K/D	33	15	48
W48/606	L/K/D	32	15	47
W49/606	BEDROOM	32	15	47
W50/606	BEDROOM	32	15	47
W52/606	BEDROOM	22	7	29
W53/606	L/K/D	18	12	30
W54/606	L/K/D	11	14	25
W55/606	BEDROOM	2	8	10

Window	Room Use	Summer %	Winter %	Total %
W56/606	BEDROOM	24	12	36
W57/606	BEDROOM	23	12	35
W58/606	BEDROOM	23	12	35
W59/606	BEDROOM	24	12	36
W60/606	L/K/D	22	12	34
W61/606	L/K/D	22	12	34
W62/606	L/K/D	21	10	31
W63/606	L/K/D	20	10	30
W64/606	BEDROOM	20	10	30
W65/606	BEDROOM	20	10	30
W66/606	BEDROOM	20	10	30
W67/606	BEDROOM	20	8	28
W69/606	BEDROOM	7	0	7
W15/607	LIVING/DINER	7	0	7
W30/607	L/K/D	6	11	17
W31/607	L/K/D	12	9	21
W32/607	L/K/D	37	25	62
W33/607	L/K/D	37	25	62
W34/607	BEDROOM	37	25	62
W35/607	BEDROOM	37	24	61
W36/607	BEDROOM	37	25	62
W37/607	BEDROOM	37	25	62
W38/607	BEDROOM	37	24	61
W39/607	L/K/D	37	24	61
W40/607	L/K/D	37	24	61
W41/607	L/K/D	37	25	62
W42/607	BEDROOM	37	26	63
W43/607	BEDROOM	37	26	63
W44/607	BEDROOM	15	8	23
W45/607	L/K/D	10	21	31
W46/607	L/K/D	33	14	47

Window	Room Use	Summer %	Winter %	Total %
W47/607	L/K/D	33	15	48
W48/607	L/K/D	33	15	48
W49/607	BEDROOM	32	15	47
W50/607	BEDROOM	32	15	47
W52/607	BEDROOM	23	7	30
W53/607	L/K/D	18	12	30
W54/607	L/K/D	12	15	27
W55/607	BEDROOM	2	8	10
W56/607	BEDROOM	24	12	36
W57/607	BEDROOM	24	12	36
W58/607	BEDROOM	24	12	36
W59/607	BEDROOM	24	12	36
W60/607	L/K/D	24	12	36
W61/607	L/K/D	24	12	36
W62/607	L/K/D	23	10	33
W63/607	L/K/D	23	10	33
W64/607	BEDROOM	23	10	33
W65/607	BEDROOM	23	10	33
W66/607	BEDROOM	23	10	33
W67/607	BEDROOM	23	9	32
W69/607	BEDROOM	8	0	8
W15/608	LIVING/DINER	8	1	9
W30/608	L/K/D	8	11	19
W31/608	L/K/D	17	9	26
W32/608	L/K/D	37	26	63
W33/608	L/K/D	37	26	63
W34/608	BEDROOM	37	26	63
W35/608	BEDROOM	37	25	62
W36/608	BEDROOM	37	26	63
W37/608	BEDROOM	37	26	63
W38/608	BEDROOM	37	26	63

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W39/608	L/K/D	37	25	62
W40/608	L/K/D	37	25	62
W41/608	L/K/D	37	26	63
W42/608	BEDROOM	37	26	63
W43/608	BEDROOM	37	26	63
W44/608	BEDROOM	15	8	23
W45/608	L/K/D	10	21	31
W46/608	L/K/D	33	14	47
W47/608	L/K/D	33	15	48
W48/608	L/K/D	33	15	48
W49/608	BEDROOM	32	15	47
W50/608	BEDROOM	32	15	47
W52/608	BEDROOM	23	7	30
W53/608	L/K/D	19	13	32
W54/608	L/K/D	15	15	30
W55/608	BEDROOM	2	8	10
W56/608	BEDROOM	26	12	38
W57/608	BEDROOM	26	12	38
W58/608	BEDROOM	26	12	38
W59/608	BEDROOM	26	12	38
W60/608	L/K/D	26	12	38
W61/608	L/K/D	26	12	38
W62/608	L/K/D	25	10	35
W63/608	L/K/D	24	10	34
W64/608	BEDROOM	24	10	34
W65/608	BEDROOM	24	10	34
W66/608	BEDROOM	24	10	34
W67/608	BEDROOM	24	9	33
W69/608	BEDROOM	9	1	10
W15/609	LIVING/DINER	8	2	10
W30/609	L/K/D	12	11	23

Window	Room Use	Summer %	Winter %	Total %
W31/609	L/K/D	18	9	27
W32/609	L/K/D	37	26	63
W33/609	L/K/D	37	26	63
W34/609	BEDROOM	37	26	63
W35/609	BEDROOM	37	26	63
W36/609	BEDROOM	37	26	63
W37/609	BEDROOM	37	26	63
W38/609	BEDROOM	37	26	63
W39/609	L/K/D	37	25	62
W40/609	L/K/D	37	26	63
W41/609	L/K/D	37	26	63
W42/609	BEDROOM	37	26	63
W43/609	BEDROOM	37	26	63
W44/609	BEDROOM	15	8	23
W45/609	L/K/D	10	21	31
W46/609	L/K/D	33	15	48
W47/609	L/K/D	33	15	48
W48/609	L/K/D	33	15	48
W49/609	BEDROOM	32	15	47
W50/609	BEDROOM	32	15	47
W52/609	BEDROOM	25	7	32
W53/609	L/K/D	23	13	36
W54/609	L/K/D	15	15	30
W55/609	BEDROOM	2	8	10
W56/609	BEDROOM	27	12	39
W57/609	BEDROOM	27	12	39
W58/609	BEDROOM	27	12	39
W59/609	BEDROOM	27	12	39
W60/609	L/K/D	27	12	39
W61/609	L/K/D	27	12	39
W62/609	L/K/D	26	11	37
W63/609	L/K/D	25	11	36

Window	Room Use	Summer %	Winter %	Total %
W64/609	BEDROOM	25	11	36
W65/609	BEDROOM	25	12	37
W66/609	BEDROOM	24	12	36
W67/609	BEDROOM	24	11	35
W69/609	BEDROOM	9	2	11
W15/610	LIVING/DINER	8	3	11
W30/610	L/K/D	37	15	52
W31/610	L/K/D	31	9	40
W32/610	L/K/D	37	26	63
W33/610	L/K/D	37	26	63
W34/610	BEDROOM	37	26	63
W35/610	BEDROOM	37	26	63
W36/610	BEDROOM	37	26	63
W37/610	BEDROOM	37	26	63
W38/610	BEDROOM	37	26	63
W39/610	L/K/D	37	25	62
W40/610	L/K/D	37	26	63
W41/610	L/K/D	37	26	63
W42/610	BEDROOM	37	26	63
W43/610	BEDROOM	37	26	63
W44/610	BEDROOM	21	8	29
W45/610	L/K/D	30	21	51
W46/610	L/K/D	33	15	48
W47/610	L/K/D	33	15	48
W48/610	L/K/D	33	15	48
W49/610	BEDROOM	32	15	47
W50/610	BEDROOM	32	15	47
W52/610	BEDROOM	34	7	41
W53/610	L/K/D	28	16	44
W54/610	L/K/D	15	16	31
W55/610	L/K/D	2	8	10

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W56/610	L/K/D	27	12	39
W57/610	L/K/D	27	12	39
W58/610	L/K/D	27	12	39
W59/610	BEDROOM	27	12	39
W60/610	BEDROOM	27	12	39
W61/610	LIVING/DINER	27	12	39
W62/610	LIVING/DINER	26	12	38
W63/610	LIVING/DINER	25	12	37
W64/610	LIVING/DINER	25	12	37
W65/610	LIVING/DINER	25	12	37
W66/610	BEDROOM	24	12	36
W67/610	BEDROOM	24	12	36
W69/610	BEDROOM	11	2	13
W15/611	BEDROOM	12	4	16
W17/611	L/K/D	32	22	54
W18/611	L/K/D	15	17	32
W19/611	BEDROOM	6	11	17
W20/611	BEDROOM	27	12	39
W21/611	BEDROOM	27	12	39
W22/611	BEDROOM	27	12	39
W23/611	BEDROOM	27	12	39
W24/611	L/K/D	27	12	39
W25/611	L/K/D	27	12	39
W26/611	L/K/D	26	12	38
W27/611	L/K/D	25	12	37
W28/611	L/K/D	25	12	37
W29/611	L/K/D	25	12	37
W30/611	L/K/D	24	12	36
W31/611	L/K/D	24	12	36
W33/611	BEDROOM	10	2	12

Window	Room Use	Summer %	Winter %	Total %
W15/612		12	4	16
W17/612	L/K/D	48	25	73
W18/612	L/K/D	15	17	32
W19/612	BEDROOM	6	11	17
W20/612	BEDROOM	27	12	39
W21/612	BEDROOM	27	12	39
W22/612	BEDROOM	27	12	39
W23/612	BEDROOM	27	12	39
W24/612	L/K/D	27	12	39
W25/612	L/K/D	27	12	39
W26/612	L/K/D	26	12	38
W27/612	L/K/D	25	12	37
W28/612	L/K/D	25	12	37
W29/612	L/K/D	25	12	37
W30/612	L/K/D	24	12	36
W31/612	L/K/D	24	12	36
W33/612	BEDROOM	10	2	12
W15/613		12	4	16
W17/613	L/K/D	52	28	80
W18/613	L/K/D	15	17	32
W19/613	BEDROOM	7	11	18
W20/613	BEDROOM	27	12	39
W21/613	BEDROOM	27	12	39
W22/613	BEDROOM	27	12	39
W23/613	BEDROOM	27	12	39
W24/613	L/K/D	27	12	39
W25/613	L/K/D	27	12	39
W26/613	L/K/D	26	12	38
W27/613	L/K/D	25	12	37
W28/613	L/K/D	25	12	37
W29/613	L/K/D	25	12	37

Window	Room Use	Summer %	Winter %	Total %
W30/613	L/K/D	24	12	36
W31/613	L/K/D	24	12	36
W33/613	BEDROOM	10	2	12
W15/614	BEDROOM	27	7	34
W17/614	L/K/D	52	28	80
W18/614	L/K/D	36	20	56
W19/614	BEDROOM	22	18	40
W20/614	BEDROOM	27	12	39
W21/614	BEDROOM	27	12	39
W22/614	BEDROOM	27	12	39
W23/614	BEDROOM	27	12	39
W24/614	L/K/D	27	12	39
W25/614	L/K/D	27	12	39
W26/614	L/K/D	26	12	38
W27/614	L/K/D	25	12	37
W28/614	L/K/D	25	12	37
W29/614	L/K/D	25	12	37
W30/614	L/K/D	24	12	36
W31/614	L/K/D	24	12	36
W33/614	BEDROOM	15	2	17
W15/6111	L/K/D	50	28	78
W16/6111	L/K/D	53	28	81
W17/6111	L/K/D	56	30	86
W18/6111	L/K/D	56	30	86
W19/6111	L/K/D	56	30	86
W20/6111	L/K/D	56	30	86
W21/6111	BEDROOM	53	30	83
W22/6111	BEDROOM	56	30	86
W23/6111	BEDROOM	56	30	86
W24/6111	LIVING/DINER	56	30	86

Project No: 1325
Existing v Proposed

St Giles Court
PRP Scheme Dated 14/02/07
INTERNAL SUNLIGHT ANALYSIS

MAR 2007

Window	Room Use	Summer %	Winter %	Total %
W25/6111	LIVING/DINER	56	30	86
W26/6111	LIVING/DINER	56	30	86
W27/6111	LIVING/DINER	50	30	80
W28/6111	LIVING/DINER	37	20	57
W29/6111	LIVING/DINER	38	21	59
W30/6111	LIVING/DINER	37	21	58
W31/6111	LIVINGROOM	37	21	58
W32/6111	LIVINGROOM	37	21	58
W33/6111	LIVINGROOM	37	21	58
W34/6111	LIVINGROOM	36	20	56
W35/6111	BEDROOM	33	16	49
W36/6111	BEDROOM	37	21	58
W37/6111	BEDROOM	35	21	56

Room/Floor	Room Use	Base Area Sq ft	Net Sky Line Sq ft	% Of Room Area
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PROPOSED SCHEME

R1/601	LIVINGROOM	263.1	260.7	99.1
R2/601	LIVING/DINER	210.4	119.9	57.0
R3/601	BEDROOM	185.9	51.5	27.7
R4/601	BEDROOM	130.5	85.7	65.7
R5/601	L/K/D	331.8	70.5	21.2
R6/601	L/K/D	314.7	98.1	31.2
R7/601	L/K/D	319.4	227.9	71.4
R8/601	BEDROOM	135.4	51.9	38.3
R9/601	BEDROOM	156.0	23.3	14.9
R10/601	L/K/D	371.8	367.1	98.7
R11/601	BEDROOM	104.2	101.8	97.7
R12/601	BEDROOM	139.5	137.5	98.6
R13/601	L/K/D	230.1	229.3	99.7
R14/601	BEDROOM	123.8	122.2	98.7
R15/601	L/K/D	298.4	292.2	97.9
R16/601	BEDROOM	129.7	127.1	98.0
R17/601	BEDROOM	159.4	159.4	100.0
R18/601	L/K/D	357.7	328.7	91.9
R19/601	BEDROOM	139.6	127.1	91.0
R20/601	BEDROOM	182.9	162.6	88.9
R21/601	BEDROOM	162.8	145.9	89.6
R22/601	LIVING/DINER	222.7	221.0	99.2
R23/601	LIVINGROOM	225.8	216.1	95.7
R1/602	BEDROOM	80.1	79.0	98.6
R2/602	BEDROOM	94.1	80.3	85.3
R3/602	BEDROOM	142.9	65.8	46.0
R4/602	BEDROOM	125.6	37.3	29.7
R5/602	BEDROOM	90.8	42.0	46.3
R6/602	BEDROOM	132.6	69.9	52.7
R7/602	LIVINGROOM	216.5	82.0	37.9
R8/602	L/K/D	314.7	106.6	33.9
R9/602	L/K/D	319.4	249.8	78.2
R10/602	BEDROOM	135.4	57.9	42.8
R11/602	BEDROOM	156.0	50.6	32.4
R12/602	L/K/D	371.8	367.2	98.8
R13/602	BEDROOM	104.2	101.8	97.7
R14/602	BEDROOM	139.5	137.5	98.6
R15/602	L/K/D	230.1	229.3	99.7
R16/602	BEDROOM	123.8	122.2	98.7
R17/602	L/K/D	298.4	292.2	97.9
R18/602	BEDROOM	129.7	113.4	87.4
R19/602	BEDROOM	159.4	159.4	100.0
R20/602	LIVINGROOM	161.7	161.6	99.9
R21/602	BEDROOM	90.8	88.4	97.4
R22/602	BEDROOM	121.3	116.2	95.8
R23/602	BEDROOM	140.2	133.6	95.3
R24/602	BEDROOM	109.1	101.4	92.9
R25/602	BEDROOM	136.0	104.5	76.8
R26/602	BEDROOM	127.3	120.6	94.7
R27/602	BEDROOM	94.6	93.7	99.0
R28/602	BEDROOM	131.1	128.9	98.3
R1/603	BEDROOM	85.0	84.2	99.1

Room/Floor	Room Use	Room Area sq ft	No-Sky Line sq ft	% of Room Area
R2/603	L/K/D	275.7	221.2	80.2
R3/603	BEDROOM	125.6	45.2	36.0
R4/603	BEDROOM	90.8	48.3	53.2
R5/603	BEDROOM	132.6	77.2	58.2
R6/603	LIVINGROOM	216.5	97.1	44.8
R7/603	L/K/D	314.7	116.6	37.1
R8/603	L/K/D	319.4	270.4	84.7
R9/603	BEDROOM	135.4	64.2	47.4
R10/603	BEDROOM	156.0	56.0	35.9
R11/603	L/K/D	371.8	367.2	98.8
R12/603	BEDROOM	104.2	101.8	97.7
R13/603	BEDROOM	139.5	137.5	98.6
R14/603	BEDROOM	125.0	122.8	98.2
R15/603	BEDROOM	138.1	136.1	98.6
R16/603	L/K/D	305.4	303.6	99.4
R17/603	BEDROOM	169.9	167.4	98.5
R18/603	BEDROOM	143.5	143.4	99.9
R19/603	LIVINGROOM	161.7	161.7	100.0
R20/603	BEDROOM	90.8	88.4	97.4
R21/603	BEDROOM	121.3	116.9	96.4
R22/603	BEDROOM	140.2	137.7	98.2
R23/603	L/K/D	243.1	226.2	93.0
R24/603	BEDROOM	135.9	113.5	83.5
R25/603	BEDROOM	114.2	112.8	98.8
R26/603	BEDROOM	132.1	131.3	99.4
R1/604	BEDROOM	85.0	84.2	99.1
R2/604	L/K/D	275.7	234.1	84.9
R3/604	BEDROOM	125.6	53.6	42.7
R4/604	BEDROOM	90.8	55.9	61.6
R5/604	BEDROOM	132.6	88.5	66.7
R6/604	LIVINGROOM	216.5	113.7	52.5
R7/604	L/K/D	314.7	128.9	41.0
R8/604	L/K/D	319.4	285.6	89.4
R9/604	BEDROOM	135.4	71.8	53.0
R10/604	BEDROOM	156.0	62.4	40.0
R11/604	L/K/D	371.8	367.2	98.8
R12/604	BEDROOM	104.2	101.8	97.7
R13/604	BEDROOM	139.5	137.5	98.6
R14/604	BEDROOM	125.0	122.8	98.2
R15/604	BEDROOM	138.1	136.1	98.6
R16/604	L/K/D	305.4	303.6	99.4
R17/604	BEDROOM	169.9	167.4	98.5
R18/604	BEDROOM	143.5	143.4	99.9
R19/604	LIVINGROOM	161.7	161.7	100.0
R20/604	BEDROOM	90.8	88.4	97.4
R21/604	BEDROOM	121.3	118.1	97.4
R22/604	BEDROOM	140.2	137.7	98.2
R23/604	L/K/D	243.1	233.3	96.0
R24/604	BEDROOM	135.9	116.8	85.9
R25/604	BEDROOM	114.2	112.8	98.8
R26/604	BEDROOM	132.1	131.4	99.5
R1/605	L/K/D	349.7	282.5	80.8
R2/605	LIVINGROOM	219.8	104.4	47.5
R3/605	LIVING/DINER	230.8	128.8	55.8

Room Floor	Room Use	Room Area sq ft	No-Sky Line sq ft	Of Room Area
R4/605	L/K/D	313.8	133.2	42.4
R5/605	BEDROOM	145.0	129.6	89.4
R6/605	L/K/D	319.4	300.6	94.1
R7/605	BEDROOM	135.4	80.3	59.3
R8/605	BEDROOM	156.0	69.6	44.6
R9/605	L/K/D	371.8	367.2	98.8
R10/605	BEDROOM	104.2	101.8	97.7
R11/605	BEDROOM	139.5	137.5	98.6
R12/605	L/K/D	230.1	229.4	99.7
R13/605	BEDROOM	123.8	122.2	98.7
R14/605	L/K/D	297.2	293.7	98.8
R15/605	BEDROOM	129.7	127.1	98.0
R16/605	BEDROOM	114.2	114.2	100.0
R17/605	L/K/D	344.9	336.7	97.6
R18/605	BEDROOM	148.0	146.6	99.1
R19/605	BEDROOM	130.3	126.6	97.2
R20/605	L/K/D	296.4	0.0	0.0
R21/605	BEDROOM	137.5	119.7	87.1
R22/605	BEDROOM	172.5	141.6	82.1
R23/605	BEDROOM	146.2	144.0	98.5
R24/605	BEDROOM	142.0	141.0	99.3
R1/606	L/K/D	349.7	297.1	85.0
R2/606	LIVINGROOM	219.8	125.9	57.3
R3/606	LIVING/DINER	230.8	143.7	62.3
R4/606	L/K/D	313.8	158.7	50.6
R5/606	BEDROOM	145.0	144.0	99.3
R6/606	L/K/D	319.4	307.6	96.3
R7/606	BEDROOM	135.4	91.3	67.4
R8/606	BEDROOM	156.0	78.0	50.0
R9/606	L/K/D	371.8	367.3	98.8
R10/606	BEDROOM	104.2	101.8	97.7
R11/606	BEDROOM	139.5	137.5	98.6
R12/606	L/K/D	230.1	229.4	99.7
R13/606	BEDROOM	123.8	122.2	98.7
R14/606	L/K/D	297.2	293.7	98.8
R15/606	BEDROOM	129.7	127.2	98.1
R16/606	BEDROOM	114.2	114.2	100.0
R17/606	L/K/D	344.9	336.7	97.6
R18/606	BEDROOM	148.0	146.6	99.1
R19/606	BEDROOM	130.3	126.6	97.2
R20/606	L/K/D	296.4	0.0	0.0
R21/606	BEDROOM	137.5	123.5	89.8
R22/606	BEDROOM	172.5	142.8	82.8
R23/606	BEDROOM	146.2	144.3	98.7
R24/606	BEDROOM	142.0	141.0	99.3
R1/607	L/K/D	349.7	300.9	86.0
R2/607	LIVINGROOM	219.8	137.3	62.5
R3/607	LIVING/DINER	230.8	168.6	73.1
R4/607	L/K/D	313.8	195.8	62.4
R5/607	BEDROOM	145.0	145.0	100.0
R6/607	L/K/D	319.4	312.3	97.8
R7/607	BEDROOM	135.4	104.4	77.1
R8/607	BEDROOM	156.0	91.0	58.3
R9/607	L/K/D	371.8	367.7	98.9

INTERNAL DAYLIGHT DISTRIBUTION ANALYSIS

Room Floor	Room Use	Room Area sq ft	Net Sky Line sq ft	% Of Room Area
R10/607	BEDROOM	104.2	101.8	97.7
R11/607	BEDROOM	139.5	137.5	98.6
R12/607	L/K/D	230.1	229.4	99.7
R13/607	BEDROOM	123.8	122.2	98.7
R14/607	L/K/D	297.2	293.7	98.8
R15/607	BEDROOM	129.7	127.3	98.1
R16/607	BEDROOM	114.2	114.2	100.0
R17/607	L/K/D	344.9	336.7	97.6
R18/607	BEDROOM	148.0	146.6	99.1
R19/607	BEDROOM	130.3	126.6	97.2
R20/607	L/K/D	296.4	0.0	0.0
R21/607	BEDROOM	137.5	135.3	98.4
R22/607	BEDROOM	172.5	147.2	85.3
R23/607	BEDROOM	146.2	144.3	98.7
R24/607	BEDROOM	142.0	141.0	99.3
R1/608	L/K/D	349.7	315.6	90.2
R2/608	LIVINGROOM	219.8	141.0	64.1
R3/608	LIVING/DINER	230.8	181.5	78.6
R4/608	L/K/D	313.8	230.8	73.6
R5/608	BEDROOM	145.0	145.0	100.0
R6/608	L/K/D	319.4	316.1	99.0
R7/608	BEDROOM	135.4	121.6	89.8
R8/608	BEDROOM	156.0	105.4	67.6
R9/608	L/K/D	371.8	367.8	98.9
R10/608	BEDROOM	104.2	101.8	97.7
R11/608	BEDROOM	139.5	137.5	98.6
R12/608	L/K/D	230.1	229.4	99.7
R13/608	BEDROOM	123.8	122.2	98.7
R14/608	L/K/D	297.2	293.7	98.8
R15/608	BEDROOM	129.7	127.3	98.1
R16/608	BEDROOM	114.2	114.2	100.0
R17/608	L/K/D	344.9	336.7	97.6
R18/608	BEDROOM	148.0	146.6	99.1
R19/608	BEDROOM	130.3	126.6	97.2
R20/608	L/K/D	296.4	0.0	0.0
R21/608	BEDROOM	137.5	136.6	99.3
R22/608	BEDROOM	172.5	167.8	97.3
R23/608	BEDROOM	146.2	144.3	98.7
R24/608	BEDROOM	142.0	141.0	99.3
R1/609	L/K/D	349.7	318.5	91.1
R2/609	LIVINGROOM	219.8	145.8	66.3
R3/609	LIVING/DINER	222.7	188.9	84.8
R4/609	L/K/D	313.8	265.0	84.4
R5/609	BEDROOM	145.0	145.0	100.0
R6/609	L/K/D	319.4	316.8	99.2
R7/609	BEDROOM	135.4	133.6	98.7
R8/609	BEDROOM	156.0	138.3	88.7
R9/609	L/K/D	371.8	368.6	99.1
R10/609	BEDROOM	104.2	101.8	97.7
R11/609	BEDROOM	139.5	137.5	98.6
R12/609	L/K/D	230.1	229.4	99.7
R13/609	BEDROOM	123.8	122.2	98.7
R14/609	L/K/D	297.2	293.7	98.8
R15/609	BEDROOM	129.7	127.3	98.1

Room/Floor	Room Use	Room Area sq ft	No-Sky Light sq ft	Daylight Area
R16/609	BEDROOM	114.2	114.2	100.0
R17/609	L/K/D	344.9	336.7	97.6
R18/609	BEDROOM	148.0	146.6	99.1
R19/609	BEDROOM	130.3	126.6	97.2
R20/609	L/K/D	296.4	0.0	0.0
R21/609	BEDROOM	137.5	136.6	99.3
R22/609	BEDROOM	172.5	167.8	97.3
R23/609	BEDROOM	146.2	144.3	98.7
R24/609	BEDROOM	142.0	141.2	99.4
R1/610	BEDROOM	85.2	84.8	99.5
R2/610	L/K/D	279.1	272.6	97.7
R3/610	BEDROOM	125.6	90.8	72.3
R4/610	LIVING/DINER	282.3	262.5	93.0
R5/610	L/K/D	313.8	285.7	91.0
R6/610	BEDROOM	145.0	145.0	100.0
R7/610	L/K/D	319.4	317.1	99.3
R8/610	BEDROOM	135.4	133.9	98.9
R9/610	BEDROOM	156.0	150.6	96.5
R10/610	L/K/D	371.8	371.5	99.9
R11/610	BEDROOM	104.2	101.8	97.7
R12/610	BEDROOM	139.5	137.5	98.6
R13/610	L/K/D	230.1	229.4	99.7
R14/610	BEDROOM	123.8	123.1	99.4
R15/610	L/K/D	297.2	295.5	99.4
R16/610	BEDROOM	129.7	127.3	98.1
R17/610	BEDROOM	114.2	114.2	100.0
R18/610	L/K/D	344.3	338.2	98.2
R19/610	L/K/D	313.6	312.0	99.5
R20/610	BEDROOM	123.4	120.6	97.7
R21/610	LIVING/DINER	314.0	311.1	99.1
R22/610	BEDROOM	136.0	135.5	99.6
R23/610	BEDROOM	114.1	113.4	99.4
R24/610	BEDROOM	132.1	130.4	98.7
R1/611	L/K/D	311.9	311.0	99.7
R2/611	BEDROOM	168.1	164.8	98.0
R3/611	BEDROOM	180.8	176.2	97.5
R4/611	LIVING/DINER	332.3	328.5	98.9
R5/611	L/K/D	325.2	324.9	99.9
R6/611	BEDROOM	140.6	139.8	99.4
R7/611	BEDROOM	117.4	116.9	99.6
R8/611	L/K/D	220.4	218.0	98.9
R9/611	L/K/D	268.8	267.8	99.6
R10/611	BEDROOM	178.3	175.8	98.6
R11/611	BEDROOM	169.2	168.3	99.5
R1/612	L/K/D	311.9	311.0	99.7
R2/612	BEDROOM	168.1	164.8	98.0
R3/612	BEDROOM	180.8	177.2	98.0
R4/612	L/K/D	332.3	325.8	98.0
R5/612	L/K/D	325.2	322.8	99.3
R6/612	BEDROOM	140.6	139.8	99.4
R7/612	BEDROOM	117.4	116.9	99.6
R8/612	L/K/D	220.4	218.0	98.9
R9/612	L/K/D	268.8	267.8	99.6
R10/612	BEDROOM	178.3	175.8	98.6

Project No: 1325
Existing v Proposed

St Giles Court
PRP Scheme Dated 14/02/07
INTERNAL DAYLIGHT DISTRIBUTION ANALYSIS

MAR 2007

Room Floor	Room Use	Room Area sq ft	Net Sky Line sq ft	% of Room Area
R11/612	BEDROOM	169.2	168.4	99.5
R1/613	L/K/D	311.9	311.0	99.7
R2/613	BEDROOM	168.1	167.0	99.3
R3/613	BEDROOM	180.8	177.2	98.0
R4/613	L/K/D	332.3	325.8	98.0
R5/613	L/K/D	325.2	322.8	99.3
R6/613	BEDROOM	140.6	139.8	99.4
R7/613	BEDROOM	117.4	116.9	99.6
R8/613	L/K/D	220.4	218.0	98.9
R9/613	L/K/D	268.8	267.8	99.6
R10/613	BEDROOM	178.3	176.6	99.0
R11/613	BEDROOM	169.2	168.6	99.6
R1/614	L/K/D	311.9	311.5	99.9
R2/614	BEDROOM	180.1	178.3	99.0
R3/614	BEDROOM	142.7	142.4	99.8
R4/614	L/K/D	247.1	247.1	100.0
R5/614	L/K/D	218.3	216.8	99.3
R6/614	BEDROOM	140.6	140.3	99.8
R7/614	BEDROOM	117.4	116.9	99.6
R8/614	L/K/D	220.4	218.0	98.9
R9/614	L/K/D	268.8	267.8	99.6
R10/614	BEDROOM	178.3	177.7	99.7
R11/614	BEDROOM	169.2	168.6	99.6
R1/6111	BEDROOM	189.7	189.2	99.7
R2/6111	BEDROOM	142.6	142.6	100.0
R3/6111	L/K/D	426.9	426.8	100.0
R4/6111	BEDROOM	150.1	149.1	99.3
R5/6111	LIVING/DINER	258.7	258.6	100.0
R6/6111	LIVINGROOM	247.6	247.6	100.0
R7/6111	BEDROOM	129.3	129.2	99.9

PRINCIPLES OF DAYLIGHT AND SUNLIGHT

BACKGROUND

The quality of amenity for buildings and open spaces is increasingly becoming the subject of concern and attention for many interested parties.

Historically the Department of Environment provided guidance of these issues and, in this country, this role has now been taken on by the Building Research Establishment (BRE), the British Standards Institution (BSI) and the Chartered Institute of Building Services Engineers (CIBSE). Fortunately they have collaborated in many areas to provide as much unified advice as possible in these areas.

Further emphasis has been placed on these issues through the European directive that Environmental Impact Assessments (EIA's) are required for large projects. Part of these assessments includes the consideration of the micro-climate around and within a proposal. The EIA requires a developer to advise upon, amongst other matters, the quality of and impact to daylight, sunlight, overshadowing, solar glare and light pollution.

It is also clear, particularly through either adopted or emerging Unitary Development Plans (UDP's), that local Authorities take this matter far more seriously than they previously did. There are many instances of planning applications being refused due to impact on daylight and sunlight to neighbouring properties and proportionately more of these refusals are appealed by applicants.

Where developers are seeking to maximise their development value, it is often in the area of daylight and sunlight issues that they may seek to 'push the boundaries'. Local Authorities vary in their attitude of how flexible they can be with worsening the impact on the amenity enjoyed by neighbouring owners. In city centres, where there is high density, it can be the subject of hot debate as to whether further loss of amenity is material or not. There are many factors that need to be taken into account and therefore each case has to be considered on its own merits. Clearly, though, there are governing principles which direct and inform on the approach that is taken.

These principles are effectively embodied within the UDP's and the guidance they expressly rely upon. For example, in central London, practically all of the Local Authorities expressly state they will not permit or encourage developments which create a material impact to neighbouring buildings or amenity areas. Often the basis on what is constituted as 'material' will be derived specifically from the BRE Guidelines. Their guidelines were produced in 1991, as a direct commission from the Department of the Environment, and entitled 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice'.

These guidelines are normally the only official document used by local Authorities and consequently they are referred to extensively by designers, consultants and planners. Whilst they are expressly not mandatory and state that they should not be used as an instrument of planning policy, they are heavily relied upon as they advise on the approach, methodology evaluation of impact in daylight and sunlight matters.

THE BRE GUIDELINES

The BRE give criteria and methods for calculating daylight, and sunlight and to some degree overshadowing and through that approach define what they consider as a material impact. As these different methods of calculation vary in their depth of analysis, it is often arguable as to whether the BRE definition of 'material' is applicable in all locations and furthermore if it holds under the different methods of calculation.

As the majority of the controversial daylight and sunlight issues occur within city centres these explanatory notes focus on the relevant criteria and parts of the Handbook which are applicable in such locations.

In the Introduction of 'Site Layout Planning for Daylight and Sunlight' it states that:-

*"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and 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 many factors in site layout design (see Section 5). In special circumstances the developer or Planning Authority may wish to use different target values. For example, in an historic city centre a higher degree of
Obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings".*

Again, the second paragraph of Chapter 2.2 of the document states:-

The reason for including these statements in the Report is to appreciate that when quoting the criteria suggested by the BRE, they should not necessarily be considered as appropriate. However, rather than suggest alternative values, consultants in this field often remind local Authorities that this approach is supportable and thus flexibility applied.

MEASUREMENT AND CRITERIA FOR DAYLIGHT & SUNLIGHT

The BRE handbook provides two main methods of measurement of calculating daylight which we use for the assessment in our Reports. In addition, in conjunction with the BSI and CIBSE it provides a further method in Appendix C of the Handbook. In relation to sunlight only one method is offered for calculating sunlight availability for buildings. There is an overshadowing test offered in connection with open spaces.

DAYLIGHT

In the first instance, if a proposed development falls beneath a 25° angle taken from a point two metres above ground level, then the BRE say that no further analysis is required as there will be adequate skylight (i.e. sky visibility) availability.

The three methods for calculating daylight are as follows:

- (a) Vertical Sky Component (VSC)
- (b) No Sky Contours (NSC)
- (c) Average Daylight Factor (ADF)

Each are briefly described below.

(a) Vertical Sky Component

Methodology

This is defined in the Handbook as:-

Ratio of that part of luminance, at a point on a given vertical plane, that is received directly from a CIE Standard Overcast Sky, to illuminate on a horizontal plane due to an unobstructed hemisphere of this sky.

"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".

The ratio referred to in the above definition is the percentage of the total unobstructed view that is available, once obstructions, in the form of buildings (trees are excluded) are placed in front of the point of view. The view is always taken from the centre of the outward face of a window.

This statement means, in practice that if one had a totally unobstructed view of the sky, looking in a single direction, then just under 40% of the complete hemisphere would be visible.

The measurement of this vertical sky component is undertaken using two indicators, namely a skylight indicator and a transparent direction finder. Alternatively a further method of measuring the vertical sky component, which is easier to understand both in concept and analysis, is often more precise and can deal with more complex instructions, is that of the Waldram diagram.

The point of reference is the same as for the skylight indicator. Effectively a snap shot is taken from that point of the sky in front of the window, together with all the relevant obstructions to it, i.e. the buildings.

An unobstructed sky from that point of reference would give a vertical sky component of 39.6%, corresponding to 50% of the hemisphere, and therefore the purpose of the diagram is to discover how much sky remains once obstructions exist in front of that point.

The diagram comes on an A4 sheet (landscape) and this sheet represents the unobstructed sky, which in one direction equates to a vertical sky component of 39.6%. The obstructions in front of a point of reference are then plotted onto the diagram and the resultant area remaining is proportional to the vertical sky component from that point.

Criteria

The BRE Handbook provides criteria for:

- (a) New Development
- (b) Existing Buildings

A summary of the criteria for each of these elements is given and these are repeated below:-

New Development

Summary

In general, a building will retain the potential for good interior diffuse daylighting provided that on all its main faces:-

- (a) no obstruction, measured in a vertical section perpendicular to the main face, from a point 2m above ground level, subtends an angle of more than 25 degrees to the horizontal;*
- (b) If (a) is not satisfied, then all points on the main face on a line 2m above ground level are within 4m (measured sideways) of a point which has a vertical sky component of 27% or more.*

Existing Buildings

Summary

If any part of a new building or extension measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25 degree to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if either:

- (a) the vertical sky component measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value;*
- or*
- (b) the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value.*

The VSC calculation has, like the other two methods, both advantages and disadvantages. In fact they are tied together. It is a quick simple test which looks to give an early indication of the potential for light. However, it does not, in any fashion, indicate the quality of actual light within a space. It does not take into account the window size, the room size or room use. It helps by indicating that if there is an appreciable amount of sky visible from a given point there will be a reasonable potential for daylighting.

(b) No Sky Contours

This is the part (b) of the alternative method of analysis which is given under the Vertical Sky Component heading in this Appendix. It is similar to the VSC approach in that a reduction of 0.8 times in the area of sky visibility at the working plane may be deemed to adversely affect daylight. It is however, very dependent upon knowing the actual room layouts or having a reasonable understanding of the likely layouts. The contours are also known as daylight distribution contours. They assist in helping to understand the way the daylight is distributed within a room and the comparisons of existing and limitations of proposed circumstances within neighbouring properties. Like the VSC method, it relates to the amount of visible sky but does not consider the room use in its criteria, it is simply a test to assess the change in position of the No Sky Line, between the existing and proposed situation. It does take into account the number and size of windows to a room, but does not give any quantitative or qualitative assessment of the light in the rooms, only where sky can or cannot be seen.

(c) Average Daylight Factor

This is defined in Appendix H of the BRE Document as:

Ratio of total daylight flux incident on the working plane, expressed as a percentage of the outdoor illuminance on a horizontal plane due to an unobstructed CIE Standard Overcast Sky.

This factor considers interior daylighting to a room and therefore is a more accurate indication of available light in a given room, if details of the room size and use are available.

Criteria

The British Standard, BS8206 Part II gives the following recommendations for the average daylight factor (ADF) in dwellings.

The BRE Handbook provides the formula for calculating the average daylight factor. If the necessary information can be obtained to use the formula then this criteria would be more useful.

Summary

The VSC (which forms part of the ADF formula) is helpful as an initial first guide, especially where access to the rooms in question is not available. Where the room layouts and uses are established or can be reasonably estimated we consider it appropriate to analyse the average daylight factor as well as the vertical sky component.

SUNLIGHT

(a) Annual Probable Sunlight Hours (APSH) method

Sunlight is measured in the Handbook in a similar manner to the first method given for measuring the VSC.

A separate indicator is used which contains 100 spots, each representing 1% of annual probable sunlight hours.

The BRE calculated that where no obstructions exist, the total annual probable sunlight hours would amount to 1486. Therefore, each dot on the indicator equates to 14.86 hours of the total annual probable sunlight. Again, to use this indicator the obstructions need to be scaled down and overlaid onto the sunlight indicator.

Those spots which remain uncovered by the scaled obstructions are counted and this gives the percentage of total annual probable sunlight hours for that particular reference point. Again, like the VSC, the reference point is taken to be the centre of the window.

Criteria

Again, the BRE Handbook gives criteria for:

- (a) New Development
- (b) Existing Buildings

A summary is given in the handbook on page 12 and this is as follows:-

New Development

Summary

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

- (a) at least one main window wall faces within 90 degrees of due south;*
- and*
- (b) on this window wall, all points on a line 2m above ground level are within 4m (measured sideways) of a point which receives at least a quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months, between 21 September and 21 March.*

Existing Buildings

Summary

If a living room of an existing dwelling has a main window facing within 90 degrees of due south, and any part of a new development subtends an angle of more than 25 degrees to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if a point at the centre of the window, in the plane of the inner window wall, receives in the year less than one quarter of annual probable sunlight hours including at least 5% of annual probable sunlight hours between 21 September and 21 March and less than 0.8 times its former sunlight hours during either period.

It will be noted that the BRE clearly separate summer from winter and indicate that a 20% reduction for either may be material. The Handbook also states that "To find out whether an existing building still receives enough sunlight, the British Standard can be used. It is suggested that all main living rooms of dwellings and conservatories, should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun The British Standard recommends that a 'window reference point', at the centre of each window on the plane of the inside surface of the wall, should be used for the calculations" and thus this practice gives greater consideration to the effect on the main window of a living room.

(b) Area of Permanent Shadow

The BRE Handbook, 'Site Layout Planning for Daylight and Sunlight' also provides criteria for open spaces.

In particular it gives guidance for calculating any areas of open space that may be in permanent shadow on 21 March. There is no criteria for the overshadowing of buildings.

In summary the BRE document states the following:-

"It is suggested that, for it to appear adequately sunlit throughout the year, no more than two-fifths and preferably no more than a quarter of any garden or amenity area should be prevented by buildings from receiving any sun at all on 21 March. If, as a result of new development, an existing garden or amenity area does not meet these guidelines, and the area which can receive some sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable".

In relation to general overshadowing we often provide, where appropriate, an hourly record for existing and proposed situations, the effect of overshadowing on December 21st, March 21st and June 21st.

For open spaces the permanent shadow criteria is naturally adopted but this offers limited understanding of how a space will feel or appear generally.

CITY CENTRES

The introduction of the BRE document gives the example of 'historic city centres' being a case where there is the need for flexibility and altering the target values for criteria when appropriate, to reflect other site and layout constraints.

To explain why it is appropriate to alter these values, one needs to go further into the BRE Handbook to examine how the criteria for the vertical sky component criteria was determined and the reason therefore for varying the criteria in City Centres.

Appendix G of the document is dedicated to the use of alternative values and, it also demonstrates the manner in which the criteria for skylight was determined for the Summary given above, i.e. the need for 27% vertical sky component for adequate daylighting.

This figure of 27% was achieved in the following manner:

A theoretical road was created with two storey terraced houses upon either side, approximately twelve metres apart. The houses have windows at ground and first floor level, and a pitched roof with a central ridge.

Thereafter, a reference point was taken at the centre of a ground floor window of one of the properties and a line was drawn from this point to the central ridge of the property on the other side of the road. The angle of this line equated to 25 degrees (the 25 degrees referred to in the summaries given with reference to the criteria for skylight).

This 25 degrees line obstructs 13% of the totally unobstructed sky available, leaving a resultant figure of 27% which is deemed to give adequate daylighting. This figure of 27% is the recommended criteria referred to earlier in this report. It will be readily appreciated that in a City Centre, this kind of urban form is unlikely and is impractical. It would therefore be inappropriate to consider values for two storey terraced housing in a City Centre.

It is therefore sometimes necessary to apply different target criteria or at least acknowledge that the recommendations in the BRE cannot be achieved.

In addition, it is often the case that residential buildings within city centres are served by balconies. Balconies restrict lighting levels even more and thus if they were to be rigidly taken into account, a neighbouring proposal would be artificially and inappropriately constrained. This view is supported by the BRE and is equally another reason for flexible and sensible interpretation of the guidelines.