LOVE
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PROPOSED SCHEME DAYLIGHT AND SUNLIGHT STUDY

Norgine House, Widewater Place, Uxbridge
by Love Design Studio

27th May 2021
PR368_V2

CONTENTS

EXECUTIVE SUMMARY

Love Design Studio are appointed to prepare a daylight and sunlight assessment for the proposed development at Norgine House, Widewater Place Moorhall Road, Harefield, Uxbridge; this is to assess the on-site daylight and sunlight ingress to rooms deemed habitable, based on relevant industry guidance.

To ensure that this assessment has correctly considered the daylight and sunlight access experienced of the site, it has been instigated in accordance with the Building Research Establishment's publication "Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice" (2011) (the "BRE Guidelines").

Daylight and sunlight access is typically desirable for occupants within 'habitable' rooms within residential buildings. This is acknowledged within the BRE guidelines, which place the most emphasis on these uses; mainly living rooms.

232 windows and 144 adjoining habitable rooms were identified at the proposed scheme as part of habitable spaces. 48 Living/kitchen/dining (LKD) rooms and 96 bedrooms were identified.

Please see below a concise summary of the study:

DAYLIGHT SUMMARY

All LKD rooms meet or exceed the recommended ADF levels.

All bedrooms meet or exceed the recommended ADF levels.

SUNLIGHT SUMMARY

All south-facing LKD spaces, receive APSH and WPSH levels above that of the recommended targets.

GENERAL COMMENTS

The internal layouts of the development have been thoroughly designed to maximum daylight and sunlight access to habitants. There is emphasis within the National Planning Policy Framework (June 2019) for developers "to make efficient use of land"; the Applicant has done this for the scheme.

It is therefore considered that the proposed development design is in line with the objectives of the National, Regional and Local policy context and the

guidelines on daylight and sunlight set by BRE whilst simultaneously considering other environmental factors.

INTRODUCTION

Love Design Studio are appointed to prepare a daylight and sunlight assessment for the proposed development at Norgine House, Widewater Place Moorhall Road, Harefield, Uxbridge; this is to assess the on-site daylight and sunlight access to rooms deemed habitable, based on relevant industry guidance.

All neighbouring properties shown in the below image were included within the surrounding massing model where relevant; the scheme's site is indicated within the red line boundary.

Figure 1: Site plan aerial view with the proposed development (red boundary) and neighbouring buildings

PLANNING POLICY

There are various National, Regional and Local planning policy documents and supplementary design guides available to help steer designers and assessors in maximising daylight and sunlight to rooms within new development. The overarching national guidance sits within the Revised National Planning Policy Framework (2019); regional and local policy supplements set out further detailed/technical guidance, often quoting relevant industry guidance, such as British Standards and the 'BRE Guidance' as tools for implementing a methodology to help define daylight and sunlight targets.

The various policy documents are set out below:

NATIONAL PLANNING POLICY

The National Planning Policy Framework (June 2019) – paragraph 123 (c):

LOCAL PLANNING AUTHORITIES SHOULD REFUSE APPLICATIONS WHICH THEY CONSIDER FAIL TO MAKE EFFICIENT USE OF LAND, TAKING INTO ACCOUNT THE POLICIES IN THIS FRAMEWORK. IN THIS CONTEXT, WHEN CONSIDERING APPLICATIONS FOR HOUSING, AUTHORITIES SHOULD TAKE A FLEXIBLE APPROACH IN APPLYING POLICIES OR GUIDANCE RELATING TO DAYLIGHT AND SUNLIGHT, WHERE THEY WOULD OTHERWISE INHIBIT MAKING EFFICIENT USE OF A SITE.

REGIONAL PLANNING POLICY

Paragraph 1.3.19 from the London Plan's Housing SPG states:

FOR PLANNING PURPOSES A HABITABLE ROOM IS USUALLY DEFINED AS ANY ROOM USED OR INTENDED TO BE USED FOR SLEEPING, COOKING, LIVING OR EATING PURPOSES. ENCLOSED SPACES SUCH AS THE BATH OR TOILET FACILITIES, SERVICE ROOMS, CORRIDORS, LAUNDRIES, HALLWAYS, UTILITY ROOMS OR SIMILAR SPACES ARE EXCLUDED FROM THIS DEFINITION. IN SOME CIRCUMSTANCES, A LARGE KITCHEN OR KITCHEN DINING ROOM MAY BE COUNTED AS A HABITABLE ROOM, BUT THE APPROACH VARIES BETWEEN BOROUGHS. THERE IS NO STATUTORY SIZE THRESHOLD. MANY BOROUGHS, HOWEVER, INCLUDE A FIGURE OF BETWEEN 13 AND 15 SQUARE METERS IN LDFS: ANY KITCHEN ABOVE THAT MINIMUM IS USUALLY COUNTED AS A HABITABLE ROOM. GENERALLY, A KITCHEN WITH A SMALL TABLE AND CHAIRS IN ONE CORNER, OR A KITCHEN 'BAR', WOULD NOT BE COUNTED AS A HABITABLE ROOM. A ROOM WITH A CLEARLY DEFINED KITCHEN AT ONE END AND A CLEARLY DEFINED DINING AREA AT THE OTHER (WITH A DINING TABLE AND CHAIRS) WOULD BE COUNTED AS A HABITABLE ROOM (SEE ALSO PART 2 ON QUALITY).

A Greater London Authority (GLA) hearing, referenced as 'representation hearing report D&P/3067/03 – Appendix 1 (18th November 2013) noted:

BRE GUIDELINES CONFIRM THAT THE ACCEPTABLE MINIMUM ADF TARGET VALUE DEPENDS ON THE ROOM USE. THAT IS 1% FOR A BEDROOM, 1.5% FOR A LIVING ROOM AND 2% FOR A FAMILY KITCHEN. IN CASES WHERE ONE ROOM SERVES MORE THAN ONE PURPOSE, THE MINIMUM ADF SHOULD BE THAT FOR THE ROOM TYPE WITH THE HIGHER VALUE.

NOTWITHSTANDING THIS, THE INDEPENDENT DAYLIGHT AND SUNLIGHT REVIEW STATES THAT, IN PRACTICE, THE PRINCIPAL USE OF ROOMS DESIGNED AS A 'LIVING ROOM/KITCHEN/DINING ROOM' IS AS A LIVING ROOM. ACCORDINGLY, IT WOULD BE REASONABLE TO APPLY A TARGET OF 1.5% TO SUCH ROOMS.

LOCAL PLANNING POLICY

The various references, within documents of the Local Authority's (Hillingdon), related to daylight and sunlight are as follows:

THE COUNCIL WILL ALSO SEEK TO ENSURE THAT THE DESIGN OF NEW DEVELOPMENT OPTIMISES THE LEVELS OF DAYLIGHT AND SUNLIGHT. THE COUNCIL WILL EXPECT THE IMPACT OF THE DEVELOPMENT TO BE ASSESSED FOLLOWING THE METHODOLOGY SET OUT IN THE MOST RECENT VERSION OF THE BUILDING RESEARCH ESTABLISHMENTS (BRE) "SITE LAYOUT PLANNING FOR DAYLIGHT AND SUNLIGHT: A GUIDE TO GOOD PRACTICE".

Local Plan development management policies - Policy DMHB 11: Design of New Development:

III) ENSURING THAT THE INTERNAL DESIGN AND LAYOUT OF DEVELOPMENT MAXIMISES SUSTAINABILITY AND IS ADAPTABLE TO DIFFERENT ACTIVITIES;

METHODOLOGY

Using CHMRP drawings, online research and onsite observations, we have produced a 3D computer model of the proposed development and the neighbouring residential properties to the site as indicated in the previous sections; the 3D model includes the window locations and internal configurations of the proposed development.

Using a specialist computer programme, we have undertaken the analysis set out in the BRE Guidelines for the proposed scenario only. There is no requirement to consider the implications of reduction to daylight and sunlight access during the development and construction process as these will only be short term – should the dwellings be occupied in a phased approach.

MODELLING METHODOLOGY

3D models were created in industry accepted daylight and sunlight software; these included:

- The proposed development, and
- The neighbouring properties and other existing obstructions affecting access to daylight and sunlight.

Assessments were made of the Vertical Sky Component (VSC) & Average Daylight Factor (ADF) tests to measure daylight access and probable sunlight hours (APSH/WPSH) to measure annual sunlight and winter sunlight exposure, respectively.

The guidelines for modelling and testing the scheme's daylight and sunlight access were provided by the BRE's "Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice" by PJ Littlefair (2011); accepted as good practice by Planning Authorities when assessing the applications for new schemes. For further guidance on the methodology please see the BRE's document[1].

[1] https://www.bregroup.com/services/testing/indoor-environment-testing/natural-light/

ASSESSMENT METHODOLOGY

The numerical values contained within the BRE Guidelines to establish whether the proposals will have sufficient daylight access are based primarily on the ADF tests rather than the individual VSC results.

In relation to daylight factor, the BRE Guidelines set out numerical values for the internal daylight factor and seeks to ensure that habitable rooms receive ample daylight access. Depending on the room type there are different guidelines on the ADF target; with living rooms and large kitchens given greater weighting.

A table of the scheme's target ADF values are set out below:

Table 1: The proposed scheme target ADF values

Item	Target ADF	Comment
Living Rooms	1.5%	As per the BRE Guidelines
Living, Kitchen & Dining Rooms	1.5%	As per the GLA hearing report D&P/3067/03
Bedrooms	1%	As per the BRE Guidelines

*Usually, if a kitchen is less than 13sqm, it is considered to be a non-habitable room and the daylight tests need not be applied.

ADFs, unlike VSCs are reliant on a combination of the internal layout arrangement, window placement, window solar transmittance and internal/external reflectance. It is often found at the planning stage that reflectance and maintenance factors are not quite specified and therefore assumptions are taken from the British Standards BS 8206-2:2008 document.

Assumptions of the reflectance and other modelling variables are set out below:

Table 2: The proposed scheme ADF variables.

Item	Value	Comment
Window light transmittance	0.68	Clear glass
Maintenance factor	96%	% loss of daylight based on:
		'suburban'[2]
		vertical glazing
		rain
Frame factor	80%	-
Floor reflectance	0.3	-
Wall reflectance	0.6	-
Ceiling reflectance	0.9	-

With regards to sunlight, the BRE Guidelines seek that windows within 90 degrees of due south should look to achieve 25% of the Average Probable Sunlight Hours (APSH) with at least 5% during the winter months, where feasible.

[2] CIBSE Guide A Table 1.13, Calculation of maintenance factor for daylight factor

ASSUMPTIONS & LIMITATIONS

Drawings used to model the scheme are based on pdf and cad files received by CHMRP on 26th May 2021.

A 3D model file was produced from these 2D drawings; this file was used for placement of neighbouring properties, where possible, and desktop research, where required.

This study does not calculate the effects of trees and hedges on daylight and sunlight. The BRE guide states that it is usual to ignore the effect of existing trees and shrubs.

Where limited access or information is available, assumptions will have been made which may affect the conclusions reached in this report. Therefore, the report may need to be updated if room uses are confirmed by the local authority or by the consultation responses. The report provided is solely for the use of the client and no liability to anyone else is accepted and this report is based upon and subject to the scope of work set out in Love Design Studio's terms and conditions

PROPOSED SCHEME DRAWINGS

For reference, please see below images of the drawings used to construct the model from the relevant software; this is for illustrative purposes only.

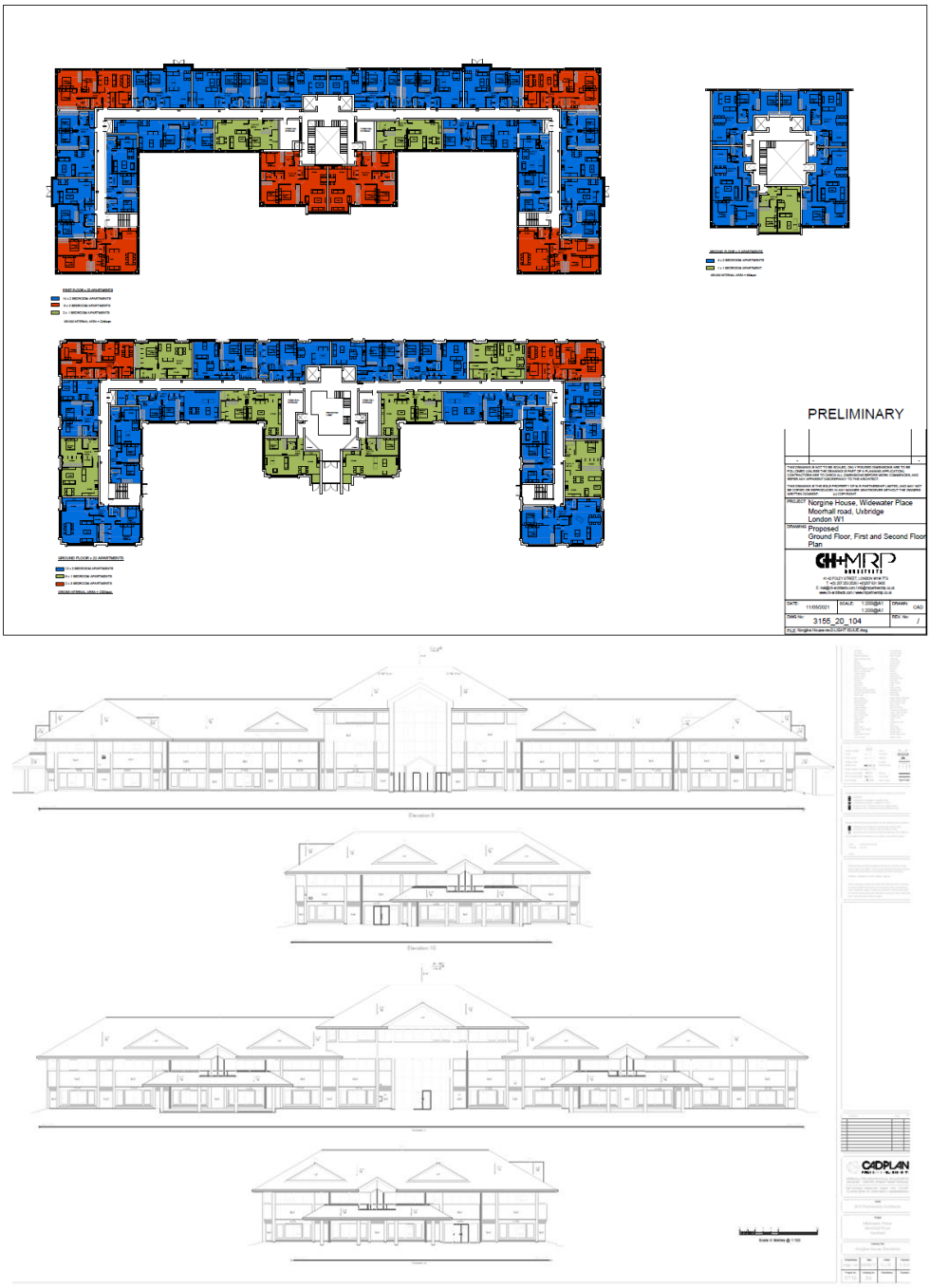


Figure 2: Plan drawings of the scheme (top) and elevations of the scheme (bottom)

DAYLIGHT AND SUNLIGHT SUMMARY

Assessments were made of the Vertical Sky Component (VSC) and Average Daylight Factor (ADF) for measure of daylight; and probable sunlight hours (APSH/WPSH) for measure of sunlight, annually and in winter, respectively.

All habitable rooms within the proposed development have been assessed for their ADFs. In addition, all living areas with a southerly aspect have been assessed for sunlight availability both over the whole year (Annual Probable Sunlight Hours or APSH) and in winter (Winter Probable Sunlight Hours or WPSH).

232 windows and 144 adjoining habitable rooms were identified at the proposed scheme as part of habitable spaces. 48 Living/kitchen/dining (LKD) rooms and 96 bedrooms were identified.

The layouts have been designed to maximise daylight and sunlight access to future occupiers whilst considering other environmental factors.

All LKD rooms meet or exceed the recommended ADF levels.

All bedrooms meet or exceed the recommended ADF levels.

All south-facing LKD spaces, receive APSH and WPSH levels above that of the recommended targets.

It is therefore considered that the proposed development design is in line with the objectives of the National, Regional and Local policy context and the guidelines on daylight and sunlight set by BRE.

FULL DETAILED DAYLIGHT AND SUNLIGHT RESULTS

A full set of calculations of the daylight and sunlight access are set out in the table below.

Table 3: Full Daylight and Sunlight Test results for the proposed development

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
GF/Bedroom/R1/W1	38.6	61.0	21.0	7.64	1.0
GF/Bedroom/R1/W79	38.8				
GF/Bedroom/R2/W2	38.6	58.0	19.0	4.82	1.0
GF/Living Room/R3/W3	34.9	47.0	10.0	2.21	1.5
GF/Bedroom/R4/W4	19.6	20.0	9.0	2.62	1.0
GF/Bedroom/R5/W5	13.3	18.0	9.0	1.20	1.0
GF/Bedroom/R6/W6	15.2	17.0	9.0	2.56	1.0
GF/Bedroom/R6/W7	10.4	12.0	7.0		
GF/Living Room/R7/W8	11.4	13.0	8.0	1.75	1.5
GF/Living Room/R7/W9	13.5	20.0	14.0		
GF/Living Room/R8/W10	37.6	60.0	20.0	5.87	1.5
GF/Living Room/R8/W11	28.7	67.0	17.0		
GF/Bedroom/R9/W12	29.2	70.0	19.0	6.93	1.0
GF/Bedroom/R9/W13	32.3				
GF/Bedroom/R10/W14	31.8			3.47	1.0
GF/Bedroom/R11/W15	29.7			3.18	1.0
GF/Bedroom/R12/W16	25.3			2.33	1.0
GF/Living Room/R13/W17	21.4			2.31	1.5
GF/Bedroom/R14/W18	22.8	41.0	9.0	2.76	1.0
GF/Bedroom/R15/W19	26.6	51.0	10.0	3.30	1.0
GF/Living Room/R16/W20	29.4	60.0	18.0	3.05	1.5
GF/Bedroom/R17/W21	25.1	53.0	21.0	3.52	1.0
GF/Living Room/R18/W22	20.7	45.0	19.0	1.60	1.5
GF/Living Room/R18/W23	19.8	43.0	15.0		
GF/Bedroom/R19/W24	25.1	50.0	17.0	4.09	1.0
GF/Living Room/R20/W25	28.0	48.0	15.0	4.70	1.5
GF/Living Room/R20/W26	33.7	72.0	23.0		
GF/Living Room/R21/W27	33.3	66.0	21.0	4.57	1.5
GF/Living Room/R21/W28	28.1				

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
GF/Bedroom/R22/W29	25.4			4.20	1.0
GF/Living Room/R23/W30	20.2			1.51	1.5
GF/Living Room/R23/W31	19.9	36.0	6.0		
GF/Bedroom/R24/W32	24.6	46.0	11.0	3.61	1.0
GF/Bedroom/R25/W33	29.8	57.0	16.0	3.02	1.0
GF/Bedroom/R26/W34	27.5	55.0	19.0	2.96	1.0
GF/Bedroom/R27/W35	23.0	48.0	16.0	2.44	1.0
GF/Living Room/R28/W36	22.3	47.0	18.0	2.21	1.5
GF/Bedroom/R29/W37	26.5	48.0	17.0	3.04	1.0
GF/Bedroom/R30/W38	30.1	52.0	18.0	3.22	1.0
GF/Bedroom/R31/W39	32.4	54.0	19.0	3.94	1.0
GF/Bedroom/R32/W40	32.9	54.0	20.0	6.30	1.0
GF/Bedroom/R32/W41	22.6	53.0	13.0		
GF/Bedroom/R32/W42	21.2	53.0	13.0		
GF/Living Room/R33/W43	22.5	55.0	10.0	5.56	1.5
GF/Living Room/R33/W44	38.1				
GF/Living Room/R34/W45	14.3			1.98	1.5
GF/Living Room/R34/W46	12.4				
GF/Bedroom/R35/W47	15.0			2.04	1.0
GF/Bedroom/R36/W48	13.9			1.64	1.0
GF/Bedroom/R37/W49	19.7			2.17	1.0
GF/Living Room/R38/W50	35.0			2.60	1.5
GF/Bedroom/R39/W51	38.7			4.58	1.0
GF/Bedroom/R40/W52	38.6			9.16	1.0
GF/Bedroom/R40/W53	38.6				
GF/Bedroom/R41/W54	37.5			2.62	1.0
GF/Living Room/R42/W55	37.4			5.46	1.5
GF/Living Room/R43/W56	13.4			1.50	1.5
GF/Bedroom/R44/W57	12.8			1.72	1.0
GF/Bedroom/R44/W58	12.9				
GF/Living Room/R45/W59	12.8			1.54	1.5
GF/Bedroom/R46/W60	30.2			3.39	1.0
GF/Bedroom/R47/W61	37.5			4.29	1.0
GF/Bedroom/R48/W62	36.6			1.64	1.0

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
GF/Bedroom/R49/W63	38.5			6.40	1.0
GF/Bedroom/R49/W64	30.8				
GF/Living Room/R50/W65	39.0			3.76	1.5
GF/Living Room/R51/W66	39.0			2.98	1.5
GF/Bedroom/R52/W67	34.8			4.55	1.0
GF/Bedroom/R52/W68	38.9				
GF/Bedroom/R53/W69	38.7			2.89	1.0
GF/Bedroom/R54/W70	38.3			4.67	1.0
GF/Bedroom/R55/W71	35.8			3.50	1.0
GF/Living Room/R56/W72	13.4			1.66	1.5
GF/Living Room/R57/W73	12.1			1.50	1.5
GF/Living Room/R57/W74	13.2				
GF/Living Room/R57/W75	13.6				
GF/Bedroom/R58/W76	13.0			1.16	1.0
GF/Living Room/R59/W77	35.9			4.90	1.5
GF/Bedroom/R60/W78	38.4			3.02	1.0
1F/Bedroom/R1/W1	38.7	60.0	22.0	8.60	1.0
1F/Bedroom/R1/W131	38.7				
1F/Bedroom/R2/W2	38.7	60.0	22.0	5.71	1.0
1F/Bedroom/R2/W3	36.9	54.0	18.0		
1F/Bedroom/R3/W4	36.6	54.0	18.0	5.04	1.0
1F/Bedroom/R3/W5	38.7	60.0	22.0		
1F/Bedroom/R4/W6	38.6	60.0	22.0	5.12	1.0
1F/Bedroom/R4/W7	36.8	54.0	18.0		
1F/Living Room/R5/W8	36.6	54.0	18.0	3.35	1.5
1F/Living Room/R5/W9	37.1	52.0	15.0		
1F/Living Room/R6/W10	19.7			3.42	1.5
1F/Living Room/R6/W11	19.0	49.0	22.0		
1F/Bedroom/R7/W12	36.3	60.0	22.0	4.78	1.0
1F/Bedroom/R8/W13	34.8	50.0	15.0	3.63	1.0
1F/Bedroom/R8/W14	38.3	59.0	21.0		
1F/Bedroom/R9/W15	38.4	61.0	23.0	4.49	1.0
1F/Bedroom/R10/W16	38.3	60.0	22.0	8.31	1.0
1F/Bedroom/R10/W17	33.8	77.0	26.0		

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
1F/Bedroom/R11/W18	33.6	76.0	26.0	4.18	1.0
1F/Bedroom/R11/W19	27.0	55.0	19.0		
1F/Living Room/R12/W20	33.9	78.0	27.0	7.26	1.5
1F/Living Room/R12/W21	34.8				
1F/Living Room/R12/W22	34.3				
1F/Bedroom/R13/W23	33.6			4.59	1.0
1F/Bedroom/R13/W24	31.7				
1F/Bedroom/R14/W25	31.1			4.06	1.0
1F/Bedroom/R14/W26	32.0				
1F/Living Room/R15/W27	29.2			3.18	1.5
1F/Living Room/R15/W28	17.7				
1F/Living Room/R16/W29	20.3	37.0	7.0	3.12	1.5
1F/Living Room/R16/W30	29.9	61.0	14.0		
1F/Bedroom/R17/W31	32.0	66.0	20.0	3.03	1.0
1F/Bedroom/R17/W32	30.8	59.0	18.0		
1F/Bedroom/R18/W33	32.6	68.0	23.0	4.66	1.0
1F/Living Room/R19/W34	28.9	60.0	25.0	3.82	1.5
1F/Bedroom/R20/W35	21.1	43.0	19.0	1.45	1.0
1F/Bedroom/R20/W36	17.6	37.0	17.0		
1F/Bedroom/R21/W37	19.7	41.0	17.0	3.51	1.0
1F/Bedroom/R21/W38	29.8	52.0	20.0		
1F/Bedroom/R22/W39	34.2	58.0	21.0	8.30	1.0
1F/Bedroom/R22/W40	35.5	76.0	25.0		
1F/Bedroom/R23/W41	34.6	71.0	24.0	4.86	1.0
1F/Bedroom/R23/W42	29.9	56.0	22.0		
1F/Living Room/R24/W43	35.7	75.0	25.0	2.42	1.5
1F/Living Room/R25/W44	35.5	76.0	25.0	2.85	1.5
1F/Living Room/R25/W45	20.8	37.0	8.0		
1F/Bedroom/R26/W46	29.4	53.0	16.0	4.71	1.0
1F/Bedroom/R26/W47	34.3	65.0	21.0		
1F/Bedroom/R27/W48	35.1	72.0	23.0	8.26	1.0
1F/Bedroom/R27/W49	34.5				
1F/Bedroom/R28/W50	30.3			3.48	1.0
1F/Bedroom/R28/W51	20.5				

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
1F/Bedroom/R29/W52	17.1	30.0	4.0	1.37	1.0
1F/Bedroom/R29/W53	20.2	36.0	7.0		
1F/Living Room/R30/W54	26.7	51.0	11.0	3.28	1.5
1F/Living Room/R30/W55	29.4	55.0	14.0		
1F/Living Room/R30/W56	30.5	59.0	16.0		
1F/Bedroom/R31/W57	32.8	69.0	19.0	4.80	1.0
1F/Bedroom/R32/W58	32.1	64.0	22.0	3.27	1.0
1F/Bedroom/R32/W59	33.1	69.0	22.0		
1F/Living Room/R33/W60	31.0	65.0	22.0	3.28	1.5
1F/Living Room/R33/W61	20.1	44.0	20.0		
1F/Living Room/R34/W62	18.8	42.0	18.0	3.27	1.5
1F/Living Room/R34/W63	29.6	51.0	19.0		
1F/Bedroom/R35/W64	32.4	54.0	18.0	4.09	1.0
1F/Bedroom/R35/W65	30.9	49.0	15.0		
1F/Bedroom/R36/W66	31.6	50.0	16.0	4.54	1.0
1F/Bedroom/R36/W67	33.7	56.0	19.0		
1F/Living Room/R37/W68	34.5	56.0	19.0	6.79	1.5
1F/Living Room/R37/W69	35.1	56.0	20.0		
1F/Living Room/R37/W70	25.7	61.0	14.0		
1F/Bedroom/R38/W71	18.2	40.0	7.0	3.19	1.0
1F/Bedroom/R38/W72	25.0	60.0	13.0		
1F/Bedroom/R39/W73	25.8	62.0	13.0	7.25	1.0
1F/Bedroom/R39/W74	38.4				
1F/Bedroom/R40/W75	38.6			4.50	1.0
1F/Bedroom/R41/W76	38.6			3.71	1.0
1F/Bedroom/R41/W77	35.0				
1F/Bedroom/R42/W78	36.3			4.83	1.0
1F/Living Room/R43/W79	19.8	34.0	6.0	3.94	1.5
1F/Living Room/R43/W80	17.7				
1F/Living Room/R44/W81	37.2			3.34	1.5
1F/Living Room/R44/W82	36.5				
1F/Bedroom/R45/W83	36.4			5.13	1.0
1F/Bedroom/R45/W84	38.6				
1F/Bedroom/R46/W85	38.6			5.06	1.0

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
1F/Bedroom/R46/W86	36.5				
1F/Bedroom/R47/W87	36.6			5.59	1.0
1F/Bedroom/R47/W88	38.7				
1F/Bedroom/R48/W89	38.7			8.72	1.0
1F/Bedroom/R48/W90	21.0				
1F/Bedroom/R48/W91	38.5				
1F/Bedroom/R49/W92	38.3			4.77	1.0
1F/Living Room/R50/W93	35.4			5.88	1.5
1F/Living Room/R50/W94	38.2				
1F/Bedroom/R51/W95	37.8			3.69	1.0
1F/Bedroom/R51/W96	34.6				
1F/Bedroom/R52/W97	36.0			4.67	1.0
1F/Living Room/R53/W98	20.9			4.11	1.5
1F/Living Room/R53/W99	19.5	19.0	2.0		
1F/Living Room/R54/W100	37.6			3.37	1.5
1F/Living Room/R54/W101	36.7				
1F/Bedroom/R55/W102	36.9			4.87	1.0
1F/Bedroom/R55/W103	38.7				
1F/Bedroom/R56/W104	38.8			4.42	1.0
1F/Bedroom/R57/W105	38.8			3.92	1.0
1F/Bedroom/R57/W106	37.1				
1F/Bedroom/R58/W107	38.9			5.65	1.0
1F/Living Room/R59/W108	38.4			5.27	1.5
1F/Living Room/R59/W109	38.5				
1F/Living Room/R59/W110	38.2				
1F/Living Room/R60/W111	38.3			5.27	1.5
1F/Living Room/R60/W112	38.1				
1F/Living Room/R60/W113	37.0				
1F/Bedroom/R61/W114	38.4			5.63	1.0
1F/Bedroom/R62/W115	35.7			3.88	1.0
1F/Bedroom/R62/W116	38.3				
1F/Bedroom/R63/W117	38.5			4.4	1.0
1F/Bedroom/R64/W118	38.5			4.8	1.0
1F/Bedroom/R64/W119	36.1				

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
1F/Living Room/R65/W120	36.4			3.5	1.5
1F/Living Room/R65/W121	37.1				
1F/Living Room/R66/W122	21.3			3.4	1.5
1F/Living Room/R66/W123	19.7	19.0	2.0		
1F/Bedroom/R67/W124	36.5			4.6	1.0
1F/Bedroom/R68/W125	35.3			3.7	1.0
1F/Bedroom/R68/W126	38.5				
1F/Living Room/R69/W127	38.7			5.9	1.5
1F/Living Room/R69/W128	36.5				
1F/Bedroom/R70/W129	36.6			4.2	1.0
1F/Bedroom/R70/W130	38.5				
2F/Living Room/R1/W1	38.2	61.0	23.0	2.8	1.5
2F/Bedroom/R2/W2	38.1	61.0	23.0	9.0	1.0
2F/Bedroom/R2/W3	37.3	79.0	28.0		
2F/Bedroom/R3/W4	36.4	74.0	28.0	4.4	1.0
2F/Bedroom/R3/W5	29.2	60.0	26.0		
2F/Bedroom/R4/W6	37.1	77.0	27.0	4.9	1.0
2F/Living Room/R5/W7	37.1	79.0	28.0	3.3	1.5
2F/Bedroom/R6/W8	28.7	49.0	14.0	4.3	1.0
2F/Bedroom/R6/W9	36.0	69.0	21.0		
2F/Bedroom/R7/W10	36.9	75.0	24.0	9.0	1.0
2F/Bedroom/R7/W11	37.9				
2F/Living Room/R8/W12	38.2			2.9	1.5
2F/Living Room/R9/W13	36.8			2.7	1.5
2F/Living Room/R9/W14	38.8				
2F/Bedroom/R10/W15	38.7			5.7	1.0
2F/Bedroom/R10/W16	38.5				
2F/Bedroom/R11/W17	38.2			5.2	1.0
2F/Bedroom/R12/W18	38.3			5.2	1.0
2F/Bedroom/R13/W19	38.2			5.7	1.0
2F/Bedroom/R13/W20	38.3				
2F/Living Room/R14/W21	38.6			2.8	1.5
2F/Living Room/R14/W22	36.3				

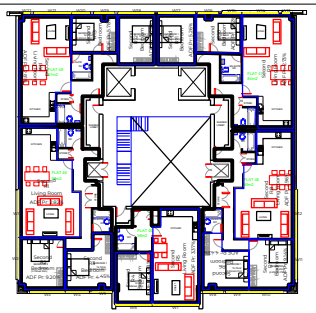
*X/XX(X)/XX/XX – Floor/Room Use/Room Ref/Window Ref

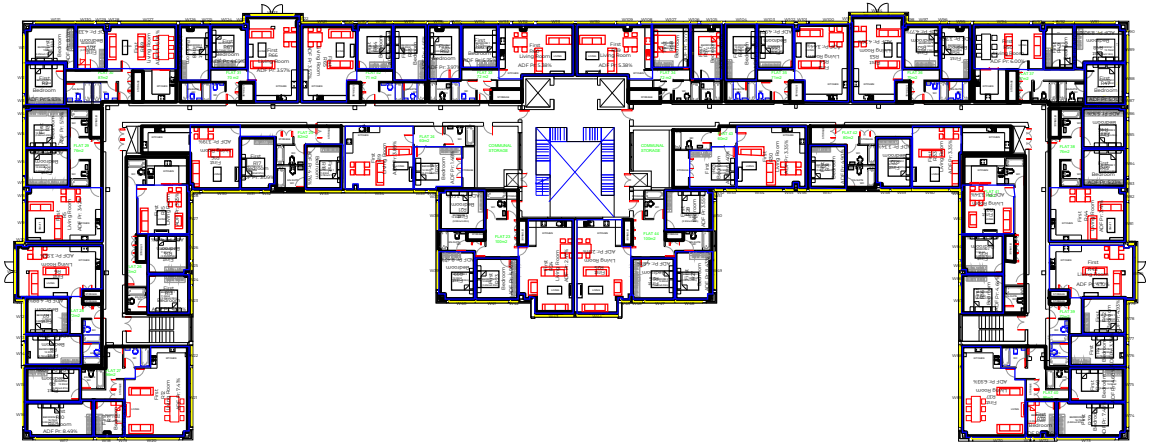
APPENDICES

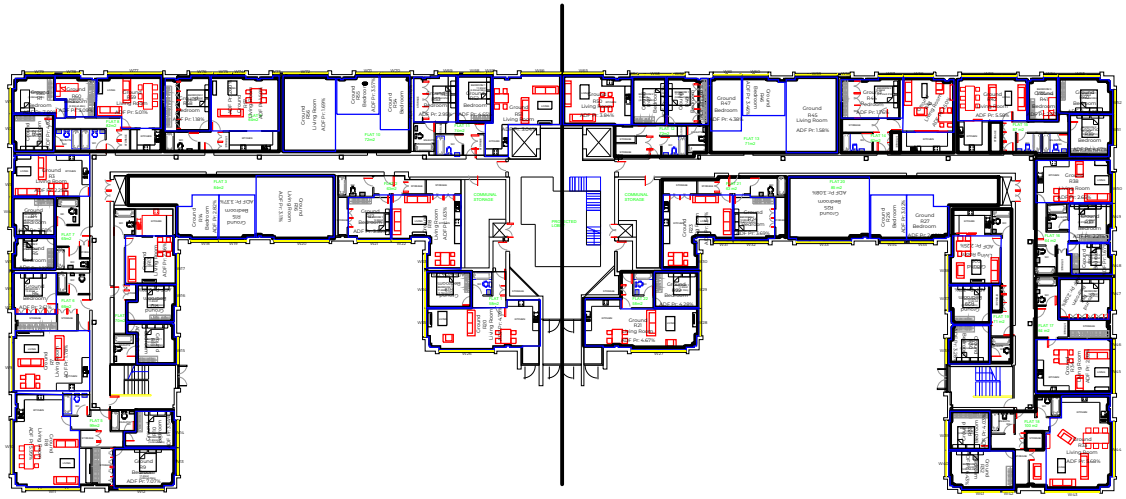
The following images reference the window and room locations as per the results tables from earlier sections.

LOVE DESIGN STUD/O

Norgine House
Floor plans model overlays







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Drawing: 386-NH-O
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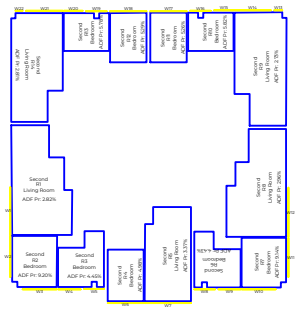
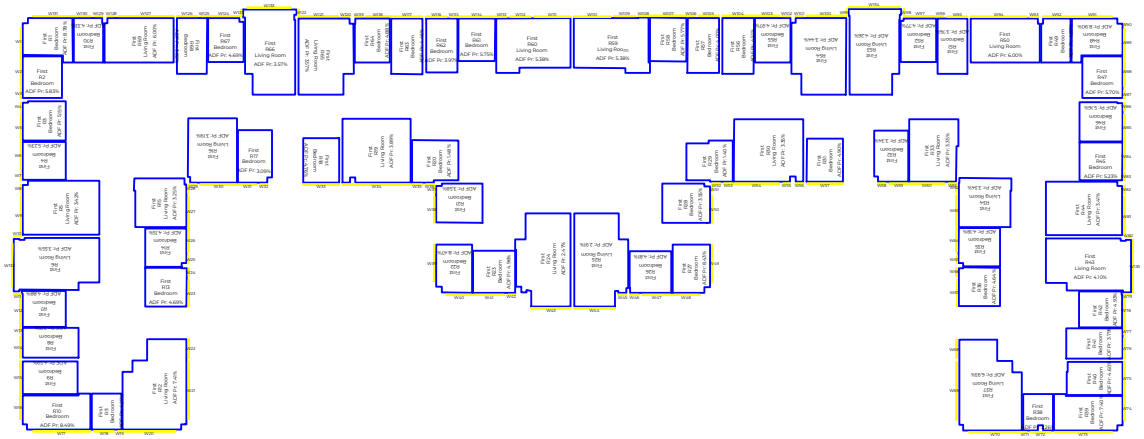
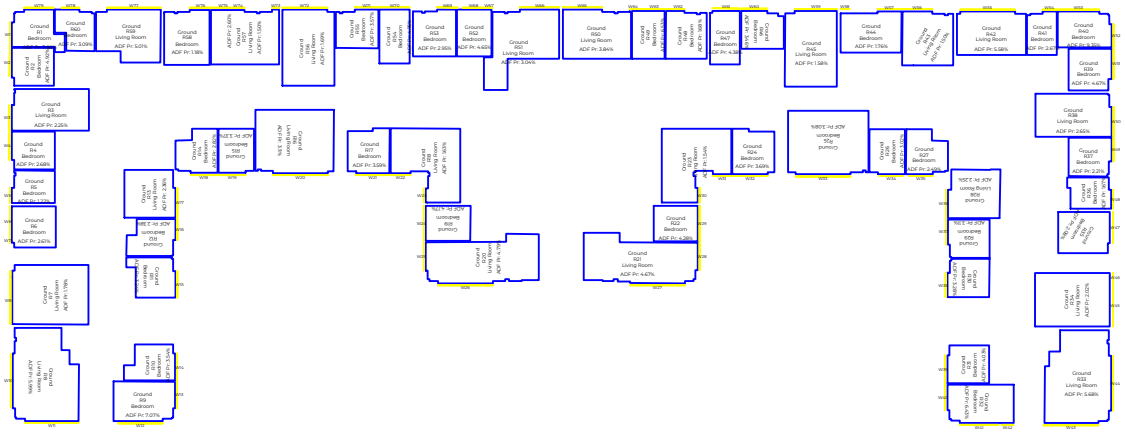
LOVE DESIGN STUD/O

Norgine House
Floor plans
Window Reference
Room Reference







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