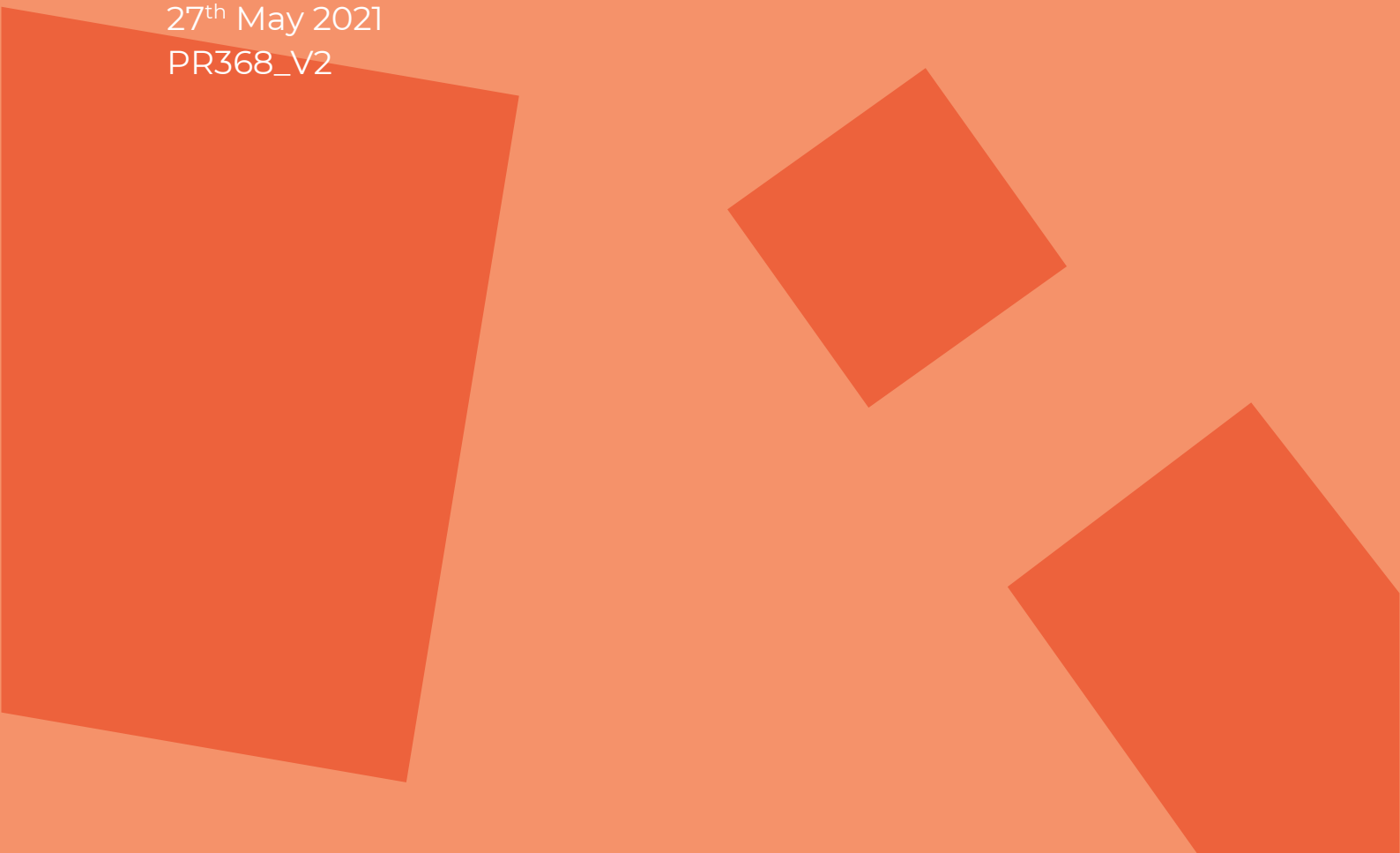


LOVE DESIGN STUD/O

PROPOSED SCHEME DAYLIGHT AND SUNLIGHT STUDY

Chaplin House, Widewater Place, Uxbridge
by Love Design Studio

27th May 2021
PR368_V2

Abstract geometric shapes in the bottom left corner, including a large orange trapezoid, a smaller orange square, and a large orange triangle.

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EXECUTIVE SUMMARY

Love Design Studio are appointed to prepare a daylight and sunlight assessment for the proposed development at Chaplin House, Widewater Place, Denham, 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.

250 windows and 127 adjoining habitable rooms were identified at the proposed scheme as part of habitable spaces. 46 Living/kitchen/dining (LKD) rooms and 81 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

Nearly 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 Chaplin House, Widewater Place, Denham, 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 BOROUGHES. THERE IS NO STATUTORY SIZE THRESHOLD. MANY BOROUGHES, 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 document¹.

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.

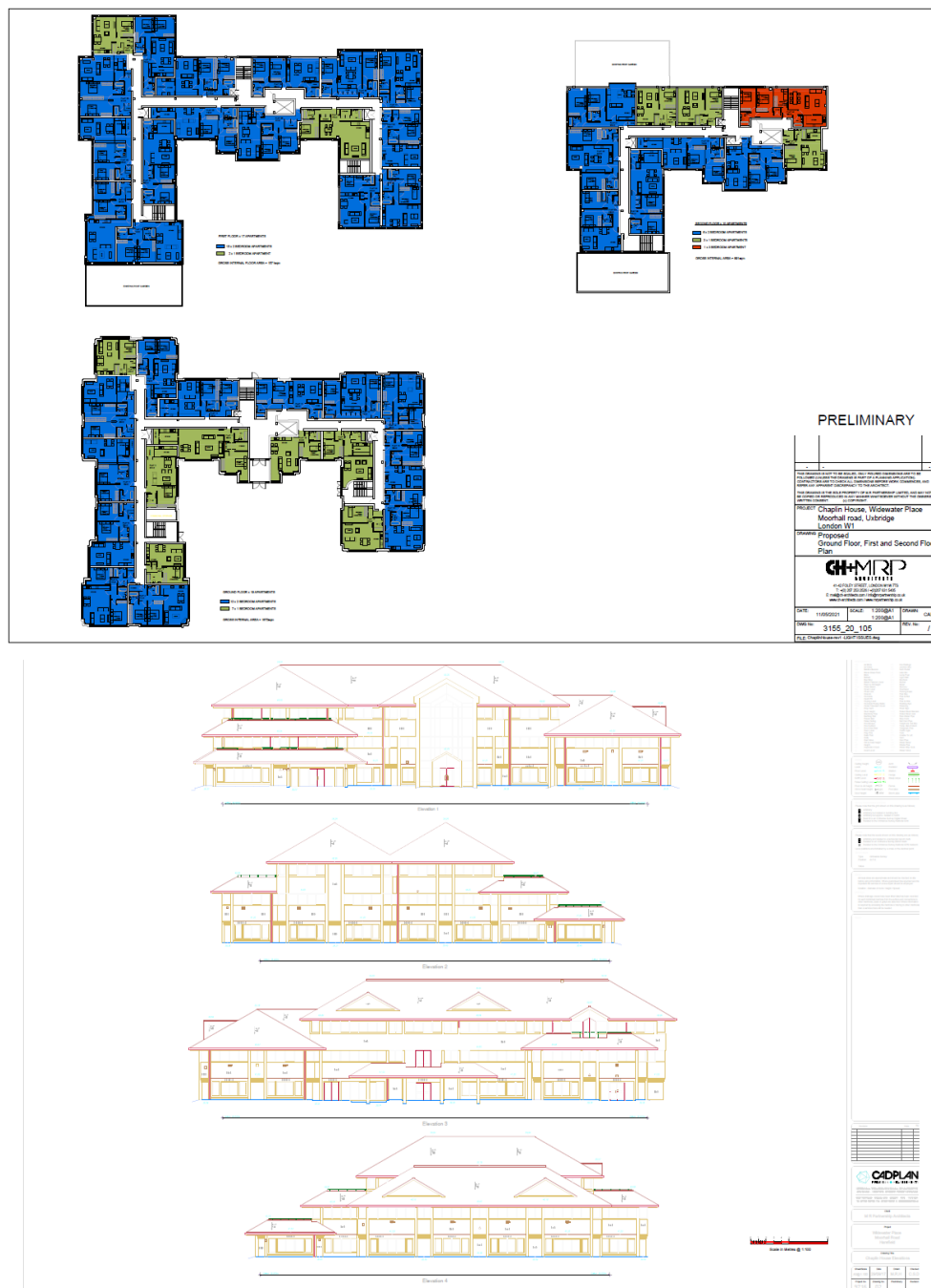
A 3D model file was produced from these 2D drawings; this file was used for placement of neighbouring properties, where possible, and desktop research, where required.

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.



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).

250 windows and 127 adjoining habitable rooms were identified at the proposed scheme as part of habitable spaces. 46 Living/kitchen/dining (LKD) rooms and 81 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.

Nearly 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/Living Room/R1/W1	32.9			8.3	1.5
GF/Living Room/R1/W60	38.6	78.0	28.0		
GF/Bedroom/R2/W2	32.6			4.4	1.0
GF/Bedroom/R3/W3	32.0			1.7	1.0
GF/Bedroom/R4/W4	32.5			4.5	1.0
GF/Living Room/R5/W5	32.4			7.3	1.5
GF/Living Room/R5/W6	33.2				
GF/Bedroom/R6/W7	28.3			3.2	1.0
GF/Living Room/R7/W8	31.0			3.6	1.5
GF/Bedroom/R8/W9	22.1			2.3	1.0
GF/Living Room/R9/W10	17.8			1.9	1.5
GF/Living Room/R10/W11	19.0			2.0	1.5
GF/Living Room/R10/W12	17.7				
GF/Bedroom/R11/W13	21.2			3.1	1.0
GF/Bedroom/R11/W14	29.8				
GF/Living Room/R12/W15	31.0			2.3	1.5
GF/Living Room/R12/W16	23.5				
GF/Bedroom/R13/W17	21.2			2.8	1.0
GF/Bedroom/R14/W18	19.7			2.3	1.0
GF/Living Room/R15/W19	16.9	32.0	4.0	2.2	1.5
GF/Bedroom/R16/W20	25.4	54.0	9.0	2.9	1.0
GF/Living Room/R17/W21	27.7	58.0	11.0	6.6	1.5
GF/Living Room/R17/W22	34.4				
GF/Living Room/R18/W23	34.2			6.9	1.5
GF/Living Room/R18/W24	30.2				
GF/Bedroom/R19/W25	29.5			4.0	1.0
GF/Bedroom/R20/W26	28.0			1.7	1.0
GF/Living Room/R21/W27	28.8			2.8	1.5
GF/Bedroom/R22/W28	30.4			2.5	1.0

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
GF/Bedroom/R23/W29	31.6			4.7	1.0
GF/Bedroom/R24/W30	32.4			1.9	1.0
GF/Living Room/R25/W31	34.3			8.4	1.5
GF/Living Room/R25/W32	39.0	63.0	23.0		
GF/Bedroom/R26/W33	38.7	60.0	21.0	2.6	1.0
GF/Bedroom/R27/W34	38.8	60.0	21.0	3.2	1.0
GF/Living Room/R28/W35	39.0	63.0	23.0	3.6	1.5
GF/Bedroom/R29/W36	35.2	60.0	22.0	4.6	1.0
GF/Living Room/R30/W37	38.3	60.0	22.0	5.8	1.5
GF/Bedroom/R31/W38	37.9	57.0	19.0	1.5	1.0
GF/Bedroom/R32/W39	38.4	60.0	19.0	3.3	1.0
GF/Bedroom/R33/W40	35.0	50.0	13.0	1.7	1.0
GF/Bedroom/R34/W41	33.5	44.0	9.0	5.0	1.0
GF/Living Room/R35/W42	27.4	30.0	6.0	2.2	1.5
GF/Living Room/R36/W43	22.1			2.0	1.5
GF/Bedroom/R37/W44	25.7			7.5	1.0
GF/Bedroom/R37/W45	39.0	62.0	22.0		
GF/Bedroom/R38/W46	39.0	62.0	22.0	4.3	1.0
GF/Bedroom/R39/W47	38.9	61.0	21.0	3.9	1.0
GF/Living Room/R40/W48	39.0	63.0	23.0	8.5	1.5
GF/Living Room/R40/W49	35.8	74.0	28.0		
GF/Living Room/R41/W50	39.0	80.0	28.0	3.2	1.5
GF/Bedroom/R42/W51	38.9	78.0	28.0	2.5	1.0
GF/Bedroom/R43/W52	38.7	78.0	28.0	2.8	1.0
GF/Living Room/R44/W53	38.8	79.0	28.0	3.0	1.5
GF/Bedroom/R45/W54	33.6	59.0	20.0	4.6	1.0
GF/Bedroom/R46/W55	36.9	68.0	24.0	3.5	1.0
GF/Bedroom/R47/W56	37.6	74.0	25.0	3.9	1.0
GF/Bedroom/R48/W57	35.6	72.0	26.0	4.2	1.0
GF/Living Room/R49/W58	38.6	80.0	28.0	3.1	1.5
GF/Bedroom/R50/W59	33.7	68.0	28.0	2.8	1.0
1F/Bedroom/R1/W1	33.9			3.6	1.0
1F/Bedroom/R1/W2	29.6				
1F/Bedroom/R1/W125	35.2				

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
1F/Bedroom/R2/W3	29.4			3.9	1.0
1F/Bedroom/R2/W7	35.6				
1F/Living Room/R3/W4	32.0			7.3	1.5
1F/Living Room/R3/W5	32.7				
1F/Living Room/R3/W6	35.5				
1F/Living Room/R3/W8	35.0				
1F/Living Room/R3/W9	33.2				
1F/Living Room/R3/W10	13.1	8.0	0.0		
1F/Bedroom/R4/W11	29.7			3.8	1.0
1F/Bedroom/R4/W12	23.6				
1F/Bedroom/R5/W13	21.1			2.8	1.0
1F/Bedroom/R5/W14	26.4				
1F/Bedroom/R5/W15	25.1				
1F/Living Room/R6/W16	20.9			2.0	1.5
1F/Living Room/R6/W17	14.9				
1F/Living Room/R7/W18	17.5			2.3	1.5
1F/Living Room/R7/W19	22.0				
1F/Bedroom/R8/W20	21.7			2.3	1.0
1F/Bedroom/R8/W21	15.0				
1F/Bedroom/R9/W22	7.3	14.0	0.0	3.0	1.0
1F/Bedroom/R9/W23	8.7	16.0	0.0		
1F/Bedroom/R9/W24	29.0				
1F/Bedroom/R9/W25	25.6				
1F/Living Room/R10/W26	33.2			3.3	1.5
1F/Bedroom/R11/W27	33.8			4.0	1.0
1F/Bedroom/R12/W28	28.1			3.7	1.0
1F/Bedroom/R12/W29	30.0				
1F/Bedroom/R12/W30	17.1				
1F/Bedroom/R12/W31	15.9				
1F/Bedroom/R13/W32	17.9			3.5	1.0
1F/Bedroom/R13/W33	27.4				
1F/Living Room/R14/W34	27.2			2.0	1.5
1F/Living Room/R14/W35	20.0				
1F/Living Room/R14/W36	15.3	28.0	3.0		

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
1F/Living Room/R14/W37	20.4	41.0	6.0		
1F/Bedroom/R15/W38	27.9	60.0	12.0	3.2	1.0
1F/Bedroom/R15/W39	29.2	64.0	16.0		
1F/Living Room/R16/W40	31.8	71.0	20.0	7.2	1.5
1F/Living Room/R16/W41	28.4	55.0	18.0		
1F/Living Room/R16/W42	32.0				
1F/Living Room/R16/W43	35.9				
1F/Bedroom/R17/W44	35.7			3.7	1.0
1F/Bedroom/R17/W45	34.2				
1F/Living Room/R18/W46	33.6			7.1	1.5
1F/Living Room/R18/W47	35.8				
1F/Living Room/R18/W48	31.3				
1F/Living Room/R18/W49	29.4				
1F/Living Room/R18/W50	34.3				
1F/Bedroom/R19/W51	34.0			4.3	1.0
1F/Bedroom/R20/W52	33.1			3.5	1.0
1F/Bedroom/R20/W53	31.9				
1F/Living Room/R21/W54	33.1			2.8	1.5
1F/Bedroom/R22/W55	33.4			4.0	1.0
1F/Bedroom/R22/W56	33.5				
1F/Bedroom/R23/W57	34.7			4.1	1.0
1F/Bedroom/R24/W58	29.9			5.0	1.0
1F/Bedroom/R24/W59	35.3				
1F/Bedroom/R24/W60	34.5				
1F/Living Room/R25/W61	36.4			7.7	1.5
1F/Living Room/R25/W62	32.6				
1F/Living Room/R25/W63	33.3	50.0	15.0		
1F/Living Room/R25/W64	38.7	61.0	23.0		
1F/Bedroom/R26/W65	38.4	59.0	21.0	2.9	1.0
1F/Bedroom/R26/W66	37.0	54.0	18.0		
1F/Bedroom/R27/W67	33.6	50.0	15.0	3.4	1.0
1F/Bedroom/R27/W68	38.6	59.0	21.0		
1F/Living Room/R28/W69	38.7	61.0	23.0	2.9	1.5
1F/Living Room/R28/W70	33.8	50.0	15.0		

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
1F/Bedroom/R29/W71	31.6	54.0	21.0	3.5	1.0
1F/Living Room/R30/W72	35.4	56.0	21.0	4.1	1.5
1F/Bedroom/R31/W73	27.3	40.0	12.0	3.0	1.0
1F/Bedroom/R31/W74	34.8	54.0	19.0		
1F/Bedroom/R31/W75	35.3	55.0	20.0		
1F/Bedroom/R32/W76	35.5	56.0	21.0	4.2	1.0
1F/Bedroom/R33/W77	29.9	46.0	14.0	3.0	1.0
1F/Bedroom/R33/W78	34.3	54.0	19.0		
1F/Bedroom/R33/W79	34.4	54.0	19.0		
1F/Bedroom/R34/W80	33.5	52.0	17.0	4.1	1.0
1F/Living Room/R35/W81	29.1	40.0	6.0	2.2	1.5
1F/Living Room/R35/W82	19.9	20.0	2.0		
1F/Living Room/R36/W83	18.2			2.1	1.5
1F/Living Room/R36/W84	23.7				
1F/Bedroom/R37/W85	28.5			7.3	1.0
1F/Bedroom/R37/W86	28.0				
1F/Bedroom/R37/W87	34.3	50.0	15.0		
1F/Bedroom/R37/W88	38.5	60.0	22.0		
1F/Bedroom/R38/W89	38.6	59.0	21.0	4.4	1.0
1F/Bedroom/R38/W90	36.9	54.0	18.0		
1F/Bedroom/R39/W91	37.0	54.0	18.0	4.6	1.0
1F/Bedroom/R39/W92	38.5	59.0	21.0		
1F/Living Room/R40/W93	38.6	60.0	22.0	7.7	1.5
1F/Living Room/R40/W94	33.6	50.0	15.0		
1F/Living Room/R40/W95	34.3	63.0	23.0		
1F/Living Room/R40/W96	35.5	74.0	28.0		
1F/Living Room/R40/W97	20.4	37.0	19.0		
1F/Living Room/R41/W98	17.1	38.0	21.0	3.8	1.5
1F/Living Room/R41/W99	19.1	37.0	18.0		
1F/Living Room/R41/W100	24.3	42.0	15.0		
1F/Living Room/R41/W101	33.8	63.0	23.0		
1F/Living Room/R41/W102	38.4	79.0	28.0		
1F/Bedroom/R42/W103	38.3	78.0	28.0	2.8	1.0
1F/Bedroom/R42/W104	37.2	69.0	25.0		

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
1F/Bedroom/R43/W105	36.4	66.0	24.0	3.0	1.0
1F/Bedroom/R43/W106	38.4	78.0	28.0		
1F/Living Room/R44/W107	38.5	79.0	28.0	3.7	1.5
1F/Living Room/R44/W108	34.1	63.0	23.0		
1F/Living Room/R44/W109	21.3				
1F/Living Room/R44/W110	20.3				
1F/Living Room/R44/W111	20.8	33.0	7.0		
1F/Bedroom/R45/W112	23.4	39.0	10.0	4.0	1.0
1F/Bedroom/R45/W113	33.8	60.0	18.0		
1F/Bedroom/R46/W114	37.1	69.0	23.0	3.9	1.0
1F/Bedroom/R46/W115	37.1	68.0	24.0		
1F/Bedroom/R47/W116	37.3	70.0	25.0	4.4	1.0
1F/Bedroom/R47/W117	37.6	73.0	26.0		
1F/Bedroom/R48/W118	32.6	65.0	27.0	3.6	1.0
1F/Bedroom/R48/W120	30.1	50.0	20.0		
1F/Living Room/R49/W119	18.9	37.0	15.0	6.3	1.5
1F/Living Room/R49/W121	38.4	79.0	28.0		
1F/Living Room/R49/W122	32.5	58.0	21.0		
1F/Living Room/R49/W123	30.4				
1F/Living Room/R49/W124	35.6				
2F/Bedroom/R1/W1	35.1			4.5	1.0
2F/Bedroom/R1/W2	30.1				
2F/Bedroom/R2/W3	33.2			4.0	1.0
2F/Bedroom/R2/W4	31.5				
2F/Living Room/R3/W5	27.0			2.4	1.5
2F/Living Room/R3/W6	17.5				
2F/Living Room/R4/W7	19.5			2.6	1.5
2F/Living Room/R4/W8	26.8				
2F/Bedroom/R5/W9	26.2			2.6	1.0
2F/Bedroom/R5/W10	18.1				
2F/Bedroom/R6/W11	14.1	29.0	2.0	4.5	1.0
2F/Bedroom/R6/W12	18.9	37.0	3.0		
2F/Bedroom/R6/W13	32.8				
2F/Bedroom/R6/W14	27.8				

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
2F/Living Room/R7/W15	36.0			3.7	1.5
2F/Bedroom/R8/W16	36.3			4.3	1.0
2F/Bedroom/R9/W17	29.9			5.1	1.0
2F/Bedroom/R9/W18	34.8				
2F/Bedroom/R9/W19	26.1				
2F/Bedroom/R9/W20	20.4				
2F/Bedroom/R10/W21	21.6			2.7	1.0
2F/Bedroom/R10/W22	30.8				
2F/Living Room/R11/W23	35.7			4.8	1.5
2F/Living Room/R11/W24	36.0				
2F/Living Room/R11/W25	36.7				
2F/Living Room/R12/W26	38.8	61.0	23.0	5.1	1.5
2F/Bedroom/R13/W27	38.7	59.0	21.0	4.6	1.0
2F/Bedroom/R13/W28	33.8	50.0	15.0		
2F/Bedroom/R14/W29	30.5	41.0	12.0	3.4	1.0
2F/Bedroom/R14/W30	37.7	57.0	20.0		
2F/Bedroom/R14/W31	38.5	59.0	21.0		
2F/Bedroom/R15/W32	38.9	61.0	23.0	4.7	1.0
2F/Bedroom/R16/W33	32.9	49.0	15.0	3.8	1.0
2F/Bedroom/R16/W34	37.8	57.0	20.0		
2F/Bedroom/R16/W35	38.4	59.0	21.0		
2F/Living Room/R17/W36	38.8	61.0	23.0	4.1	1.5
2F/Bedroom/R18/W37	38.2	58.0	20.0	3.9	1.0
2F/Bedroom/R18/W38	37.6	57.0	20.0		
2F/Bedroom/R18/W39	36.4	53.0	17.0		
2F/Living Room/R19/W40	37.6	52.0	16.0	3.2	1.5
2F/Living Room/R20/W41	17.8			4.3	1.5
2F/Living Room/R20/W42	38.7	61.0	23.0		
2F/Living Room/R20/W45	20.2	50.0	22.0		
2F/Living Room/R20/W46	27.5	56.0	23.0		
2F/Bedroom/R21/W43	38.7	60.0	22.0	8.0	1.0
2F/Bedroom/R21/W47	27.7	49.0	20.0		
2F/Bedroom/R21/W48	38.5	79.0	28.0		
2F/Bedroom/R22/W44	37.9	61.0	23.0	4.8	1.0

Reference	VSC %	APSH %	WPSH %	ADF %	ADF Target %
2F/Bedroom/R23/W49	37.2	69.0	25.0	3.1	1.0
2F/Bedroom/R23/W50	38.3	78.0	28.0		
2F/Living Room/R24/W51	38.5	79.0	28.0	3.2	1.5
2F/Living Room/R24/W52	33.5	62.0	23.0		
2F/Living Room/R24/W53	23.2				
2F/Living Room/R24/W54	20.4				
2F/Living Room/R24/W56	21.4	35.0	7.0		
2F/Bedroom/R25/W55	23.5	37.0	10.0	3.4	1.0
2F/Bedroom/R25/W57	33.4	59.0	18.0		
2F/Bedroom/R26/W58	37.4	73.0	23.0	4.1	1.0
2F/Bedroom/R26/W59	35.9	64.0	24.0		
2F/Bedroom/R27/W60	36.6	67.0	24.0	3.5	1.0
2F/Bedroom/R27/W61	38.3	77.0	27.0		
2F/Living Room/R28/W62	38.6	78.0	27.0	8.6	1.5
2F/Living Room/R28/W63	37.8	74.0	25.0		
2F/Living Room/R28/W64	35.2				
2F/Living Room/R28/W65	37.0				

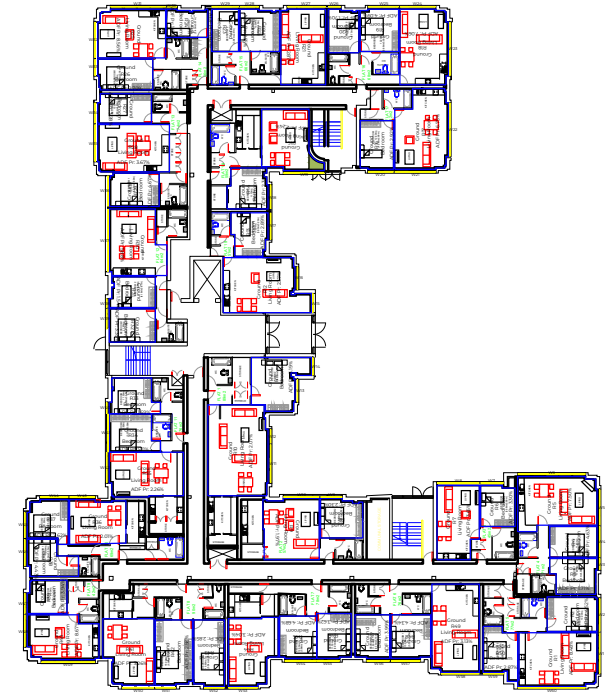
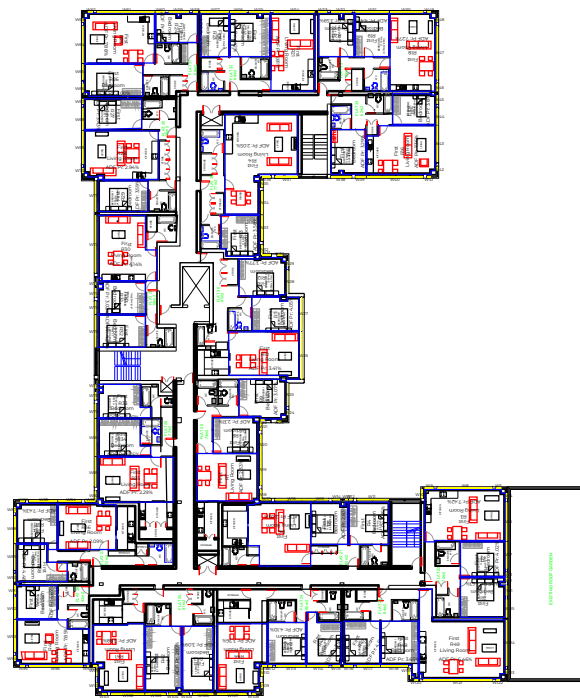
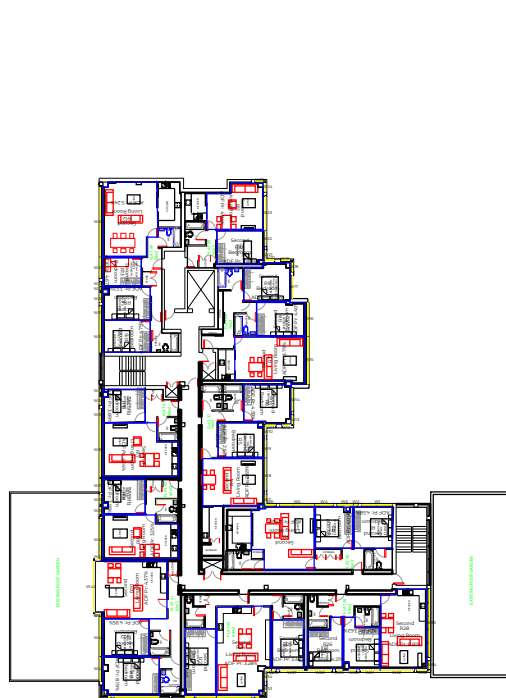
*X/XX(X)/XX/XX – Floor/Room Use/Room Ref/Window Ref

APPENDICES

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

LOVE DESIGN STUDIO

Chaplin House
Floor plans model overlays



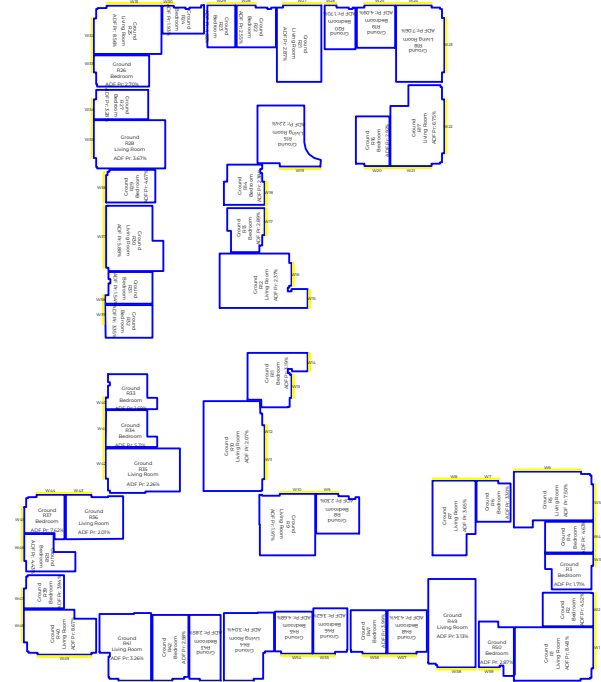
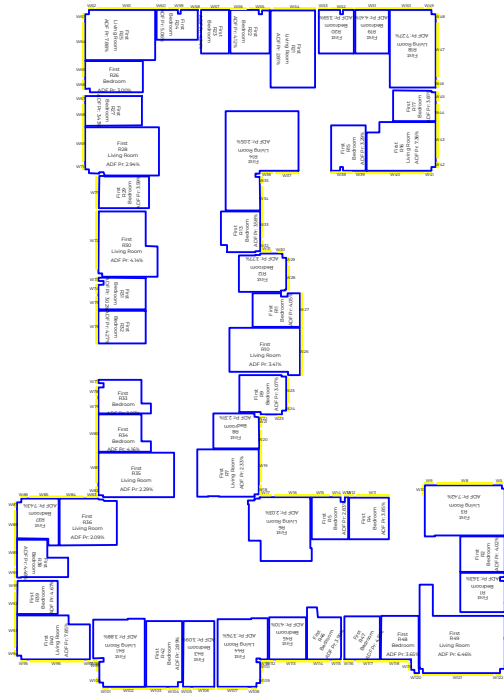
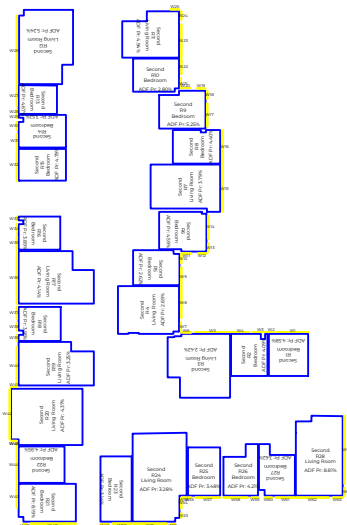
NOT TO SCALE
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Date: 27/05/2021
Drawing: 386-CH-O
Issue: 00B

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LOVE DESIGN STUDIO

Chaplin House
Floor plans
Window Reference
Room Reference



NOT TO SCALE
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Date: 27/05/2021
Drawing: 386-CH-L
Issue: 00B

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The background is a solid light orange color. In the center, there is a large white number '10'. Below the number, there are three abstract geometric shapes in a darker shade of orange. On the left, there is a large parallelogram. In the middle, there is a square rotated 45 degrees. On the right, there is a triangle pointing downwards.

10

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