LOVE
DAYLIGHT
& SUNLIGHT

Chaplin House

Proposed Scheme Daylight and Sunlight Study

By Love Design Studio
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Contents

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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, Moorhall Road, Harefield, Uxbridge. This is to assess the on-site daylight and sunlight provision to rooms deemed habitable, based on relevant industry guidance.

To ensure that this assessment has correctly considered the daylight and sunlight access experienced on-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" (2022) (the "BRE Guidelines").

Daylight and sunlight access is typically desirable for occupants within residential 'habitable' rooms; this is acknowledged within the BRE guidelines.

Please see below a concise summary of the study.

Proposed Daylight and Sunlight access

127 adjoining habitable rooms were identified within the Proposed Development, consisting of 46 living rooms and 81 bedrooms.

Assessments were made using the 'illuminance method' to measure on-site daylight provision. All habitable rooms within the Proposed Development were assessed by calculating if bedrooms and living rooms meet a target illuminance of 100 and 150, respectively, across a minimum of 50% of the reference plane, for at least 50% of the daylight hours.

The illuminance method demonstrates that 123 out of 127 rooms assessed within the Proposed Development meet their respective illuminance targets, achieving a pass rate of 97%.

Assessments were made of 'sunlight exposure' for measure of sunlight. The BRE guidelines states that a dwelling must receive a minimum of 1.5 hours of sunlight on March 21 in at least one habitable room, preferably a main living room.

The sunlight exposure test demonstrates that 36 out of 46 dwellings receive the minimum target of 1.5 hours of sunlight on March 21 in at least one habitable room. The 10 dwellings that are unable to meet the minimum sunlight requirement have northeast and northwest facing windows. It is recognised by the BRE that rooms within 90 degrees due north are unable to meet the minimum sunlight requirement.

Considering the Proposed Development consists of the refurbishment of an existing building rather than a new construction, the need for sustainable housing developments should be taken into account alongside daylight and sunlight. Therefore, it is considered

that the future occupants of the Proposed Development will receive adequate daylight and sunlight and the BRE guidelines have been achieved, where possible.

Introduction

Love Design Studio are appointed to prepare a daylight and sunlight assessment for the Proposed Development at Chaplin House, Widewater Place, Moorhall Road, Harefield, Uxbridge. This is to assess the on-site daylight and sunlight provision to rooms deemed habitable, based on relevant industry guidance.

The Proposed Development consists of the conversion of the existing building on-site from office to residential use.

Figure 1: *Aerial view of the existing site consisting of Chaplin House (red) and the surrounding buildings (purple)*

Methodology

Modelling Methodology

Using architectural drawings prepared by CH+MRP Architects (received 22nd May 2024), 3D models of the proposed scheme were created in industry accepted daylight and sunlight software.

Using a specialist computer programme, 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 (2022); 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].

Proposed Development Assessment Methodology

Assessments were made using the 'illuminance method' to measure daylight provision, set out in Appendix C of the BRE guidelines.

For interior daylight of new developments, the BRE guidelines are intended to be used with the British Standard "Daylight in buildings" (BS EN 17037) and its UK National Annex.

BS EN 17037 states that a target illuminance should be achieved across a minimum of 50% of the reference plane, for at least 50% of the daylight hours.

The document sets numerical values for the target illuminance and seeks to ensure that habitable rooms receive ample daylight access. Depending on the room type there are different guidelines on the target illuminance; with living rooms given greater weighting.

A table of the scheme's target illuminance values are set out below.

Table 1: *The Proposed Development target illuminance values*

Habitable Room	Target Lux Level	% Assessment Grid
Bedrooms	100 lux	50%
Living rooms	150 lux	50%

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

[1] https://www.brebookshop.com/details.jsp?id=328056

Table 2: *Proposed Development variables*

Item	Value	Comment
Maintenance	94%	% loss of daylight based on: 'Suburban' location Vertical glazing
Frame factor	70%	BRE Default
Floor reflectance	0.3	BRE default for light wooden floors
Ceiling reflectance	0.9	BRE default for light coloured ceilings
Internal wall reflectance	0.7	BRE default light pastel-coloured walls
External wall reflectance	0.2	BRE default

With regards to sunlight, assessments were made using 'sunlight exposure'. The BRE Guidelines seek for dwellings to receive a minimum of 1.5 hours of sunlight on 21 March in at least one habitable room, with greater emphasis on main living rooms.

Assumptions and Limitations

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.

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.

Assessment Model Images

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

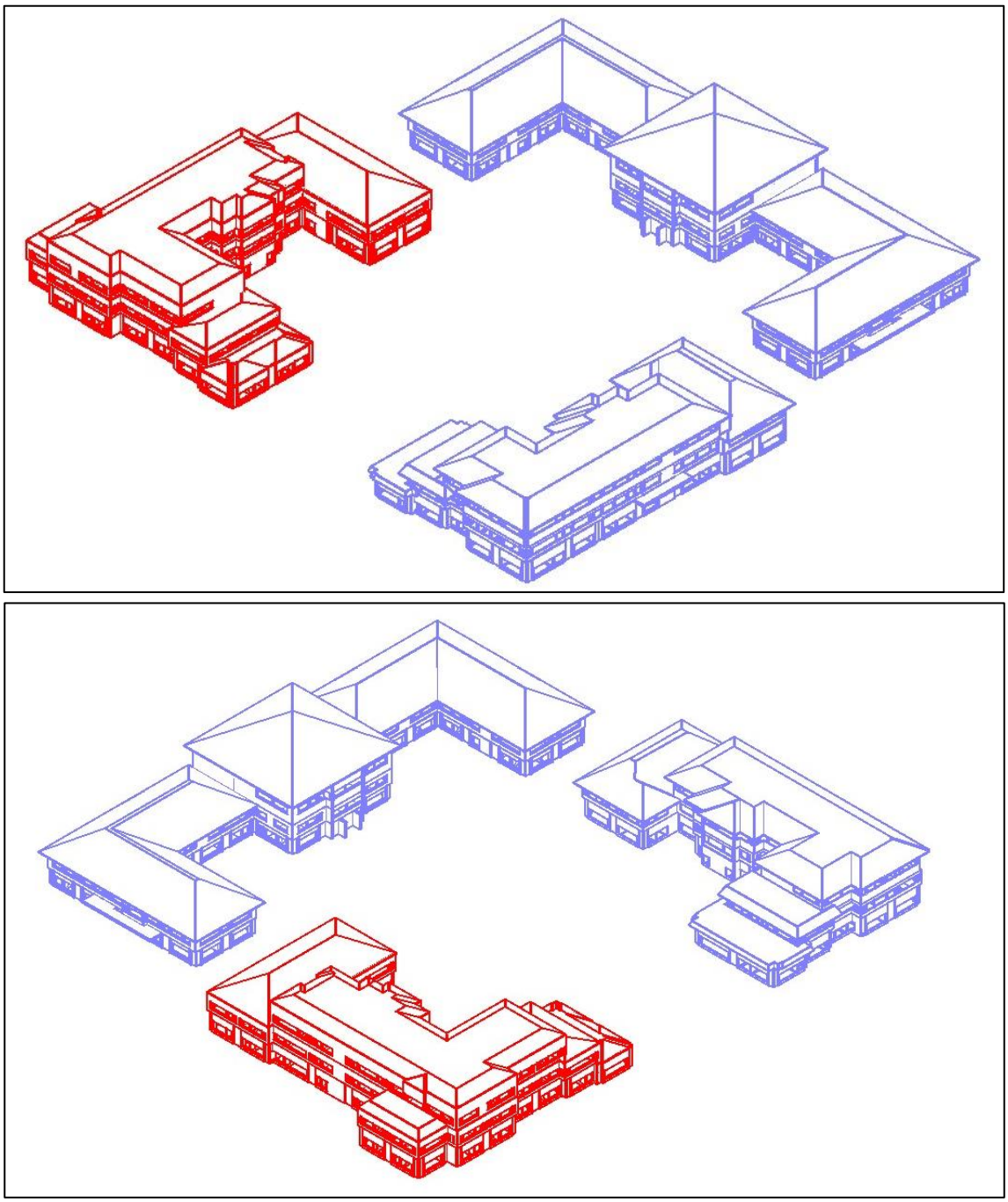


Figure 2: *Aerial images of the model illustrating Chaplin House (red) and neighbouring buildings (purple)*

Proposed Scheme Summary

127 habitable rooms were identified within the Proposed Development, consisting of 46 living rooms and 81 bedrooms.

Assessments were made using the 'illuminance method' to measure on-site daylight provision. All habitable rooms within the proposed development were assessed by calculating if bedrooms and living rooms meet a target illuminance of 100 and 150, respectively, across a minimum of 50% of the reference plane, for at least 50% of the daylight hours.

The illuminance method demonstrates that 123 out of 127 rooms assessed within the Proposed Development meet their respective illuminance targets across 50% of the reference plane, for at least 50% of the daylight hours, achieving a 97% pass rate.

The four rooms that fall short of meeting the daylight criteria are one living room within Flat 2, one living room within Flat 18, one bedroom within Flat 11, and one bedroom within Flat 12. All remaining habitable rooms within Flats 2, 11, 12, and 18 exceed the minimum daylight criteria.

Assessments were made of 'sunlight exposure' for measure of sunlight. The BRE guidelines states that a dwelling must receive a minimum of 1.5 hours of sunlight on March 21 in at least one habitable room, preferably a main living room.

The sunlight exposure test demonstrates that 36 out of 46 dwellings receive the minimum target of 1.5 hours of sunlight on March 21 in at least one habitable room. The 10 dwellings that are unable to meet the minimum sunlight requirement, consisting of Flats 1, 2, 3, 15, 19, 20, 21, 32, 38, and 45, have northeast and northwest facing windows. It is recognised by the BRE that rooms within 90 degrees due north are unable to meet the minimum sunlight requirement.

Overall, it is considered that the future occupants of the Proposed Development will receive adequate daylight and sunlight and the BRE guidelines have been achieved, where possible.

A full set of results of the daylight provision and sunlight access are set out below.

Table 3: *Full daylight and sunlight test results for the Proposed Development*

Room Reference*	% of Area Meeting Required Lux	Proposed Sunlight Exposure (Hours)
Flat 5/GF/R1/Living Room	100%	8
Flat 5/GF/R2/Bedroom	100%	2.3
Flat 5/GF/R51/Bedroom	100%	7.8

Flat 6/GF/R48/Bedroom	100%	7.2
Flat 6/GF/R49/Bedroom	100%	7.4
Flat 6/GF/R50/Living Room	100%	7.9
Flat 7/GF/R45/Living Room	100%	7.9
Flat 7/GF/R46/Bedroom	100%	5.5
Flat 7/GF/R47/Bedroom	100%	6.4
Flat 8/GF/R42/Living Room	100%	8
Flat 8/GF/R43/Bedroom	100%	7.8
Flat 8/GF/R44/Bedroom	100%	7.7
Flat 9/GF/R40/Bedroom	100%	6
Flat 9/GF/R41/Living Room	100%	9.5
Flat 10/GF/R37/Living Room	59%	0.8
Flat 10/GF/R38/Bedroom	100%	5.9
Flat 10/GF/R39/Bedroom	100%	5.9
Flat 11/GF/R34/Bedroom	24%	0.1
Flat 11/GF/R35/Bedroom	100%	1.9
Flat 11/GF/R36/Living Room	96%	2.5
Flat 12/GF/R31/Living Room	100%	1.5
Flat 12/GF/R32/Bedroom	5%	0.1
Flat 12/GF/R33/Bedroom	100%	0.1
Flat 13/GF/R28/Bedroom	100%	5.9
Flat 13/GF/R29/Living Room	100%	6.1
Flat 13/GF/R30/Bedroom	100%	6
Flat 14/GF/R25/Bedroom	86%	0.1
Flat 14/GF/R26/Living Room	100%	5.9
Flat 14/GF/R27/Bedroom	100%	5.9
Flat 15/GF/R22/Living Room	65%	0.9

Flat 15/GF/R23/Bedroom	100%	0.6
Flat 15/GF/R24/Bedroom	100%	0.8
Flat 16/GF/R19/Living Room	100%	3.6
Flat 16/GF/R20/Bedroom	100%	0.8
Flat 16/GF/R21/Bedroom	83%	0.2
Flat 17/GF/R17/Bedroom	100%	4.5
Flat 17/GF/R18/Living Room	100%	5.2
Flat 18/GF/R15/Bedroom	99%	1.5
Flat 18/GF/R16/Living Room	25%	2.6
Flat 19/GF/R13/Living Room	51%	0
Flat 19/GF/R14/Bedroom	93%	0
Flat 1/GF/R10/Bedroom	93%	0
Flat 1/GF/R12/Bedroom	100%	0
Flat 2/GF/R8/Bedroom	61%	0
Flat 2/GF/R9/Living Room	41%	0
Flat 3/GF/R6/Bedroom	100%	0
Flat 3/GF/R7/Living Room	82%	0
Flat 4/GF/R3/Bedroom	70%	2.3
Flat 4/GF/R4/Bedroom	100%	2.3
Flat 4/GF/R5/Living Room	100%	2.3
Flat 22/1F/R1/Bedroom	100%	2.1
Flat 22/1F/R2/Bedroom	100%	2.2
Flat 22/1F/R3/Living Room	100%	2.2
Flat 21/1F/R4/Bedroom	100%	0
Flat 21/1F/R5/Bedroom	100%	0
Flat 21/1F/R6/Living Room	49%	0
Flat 20/1F/R7/Living Room	64%	0

Flat 20/1F/R8/Bedroom	100%	0
Flat 20/1F/R9/Bedroom	100%	0
Flat 36/1F/R10/Living Room	88%	0.3
Flat 36/1F/R11/Bedroom	100%	2.2
Flat 36/1F/R12/Bedroom	100%	1
Flat 35/1F/R13/Bedroom	100%	0
Flat 35/1F/R15/Living Room	22%	2.7
Flat 34/1F/R16/Bedroom	100%	5.1
Flat 34/1F/R17/Living Room	100%	6.9
Flat 34/1F/R18/Bedroom	100%	2
Flat 33/1F/R19/Living Room	100%	2.6
Flat 33/1F/R20/Bedroom	100%	0.5
Flat 33/1F/R21/Bedroom	100%	0.5
Flat 32/1F/R22/Living Room	81%	0.5
Flat 32/1F/R23/Bedroom	100%	0.5
Flat 32/1F/R24/Bedroom	100%	0.5
Flat 31/1F/R25/Bedroom	100%	0.5
Flat 31/1F/R26/Living Room	100%	5.2
Flat 31/1F/R27/Bedroom	100%	5.2
Flat 30/1F/R28/Bedroom	100%	5.3
Flat 30/1F/R29/Living Room	100%	6
Flat 30/1F/R30/Bedroom	100%	5.9
Flat 29/1F/R31/Living Room	100%	5.9
Flat 29/1F/R32/Bedroom	100%	5.7
Flat 29/1F/R33/Bedroom	100%	5.9
Flat 28/1F/R34/Bedroom	100%	5.7
Flat 28/1F/R35/Bedroom	100%	5.9

Flat 28/1F/R36/Living Room	98%	2.5
Flat 27/1F/R37/Living Room	96%	0.7
Flat 27/1F/R38/Bedroom	100%	5
Flat 27/1F/R39/Bedroom	100%	5
Flat 26/1F/R40/Bedroom	100%	5
Flat 26/1F/R41/Living Room	100%	9.5
Flat 25/1F/R42/Living Room	100%	8.7
Flat 25/1F/R43/Bedroom	100%	7.7
Flat 25/1F/R44/Bedroom	100%	7.7
Flat 24/1F/R45/Living Room	100%	7.9
Flat 24/1F/R46/Bedroom	100%	5.6
Flat 24/1F/R47/Bedroom	100%	7
Flat 23/1F/R48/Bedroom	100%	7.1
Flat 23/1F/R49/Bedroom	100%	7.3
Flat 23/1F/R50/Living Room	99%	7.3
Flat 38/2F/R1/Bedroom	100%	0
Flat 38/2F/R2/Bedroom	100%	0
Flat 38/2F/R3/Living Room	58%	0
Flat 37/2F/R4/Living Room	77%	0
Flat 37/2F/R5/Bedroom	100%	0
Flat 37/2F/R6/Bedroom	100%	2.1
Flat 46/2F/R7/Living Room	100%	2.8
Flat 46/2F/R8/Bedroom	100%	2.8
Flat 46/2F/R9/Bedroom	100%	1.5
Flat 45/2F/R10/Bedroom	100%	0
Flat 45/2F/R11/Living Room	100%	1.4
Flat 44/2F/R12/Living Room	100%	5.5

Flat 44/2F/R13/Bedroom	100%	5.5
Flat 44/2F/R14/Bedroom	100%	5.5
Flat 44/2F/R15/Bedroom	100%	5.5
Flat 43/2F/R16/Bedroom	100%	5.5
Flat 43/2F/R17/Living Room	100%	5.5
Flat 42/2F/R18/Bedroom	100%	5.5
Flat 42/2F/R19/Living Room	100%	5.1
Flat 41/2F/R20/Living Room	100%	5.9
Flat 41/2F/R21/Bedroom	100%	9.5
Flat 41/2F/R22/Bedroom	100%	5.5
Flat 40/2F/R23/Bedroom	100%	7.5
Flat 40/2F/R24/Living Room	100%	7.5
Flat 40/2F/R25/Bedroom	100%	4.9
Flat 39/2F/R26/Bedroom	100%	6.7
Flat 39/2F/R27/Bedroom	100%	7.5
Flat 39/2F/R28/Living Room	100%	7.5

*XX/XX/XX/XX Flat Ref/Floor/Room Ref/Room Use

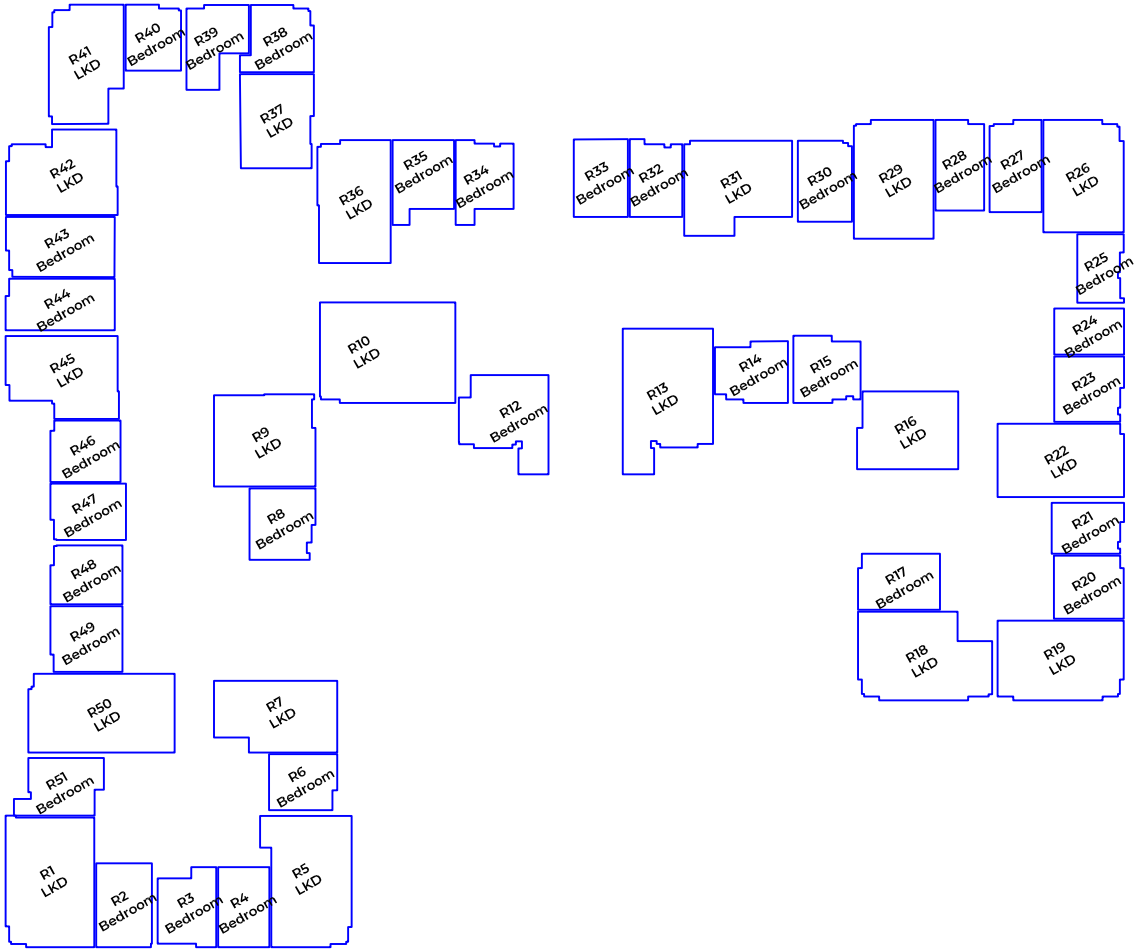
Conclusion

This study assessed the on-site daylight and sunlight provision to rooms deemed habitable at Chaplin House, based on relevant industry guidance.

The illuminance method demonstrates that the Proposed Development achieves a 97% pass rate across all habitable rooms.

Furthermore, all dwellings within 90 degrees due south achieve the minimum sunlight requirements.

Therefore, the Proposed Development has been designed to provide sufficient daylight and sunlight access to future occupants. Considering the Proposed Development consists of the refurbishment of an existing building rather than a new construction, daylight and sunlight has been maximised and the BRE guidelines have been achieved, where possible.



LOVE
DES/GN
STUD\O

Chaplin House

Ground Floor
Room Reference

NOT TO SCALE
ILLUSTRATIVE ONLY

Date: 29/05/2024
Drawing: 0800-CH-RR-GF
Issue: 00A

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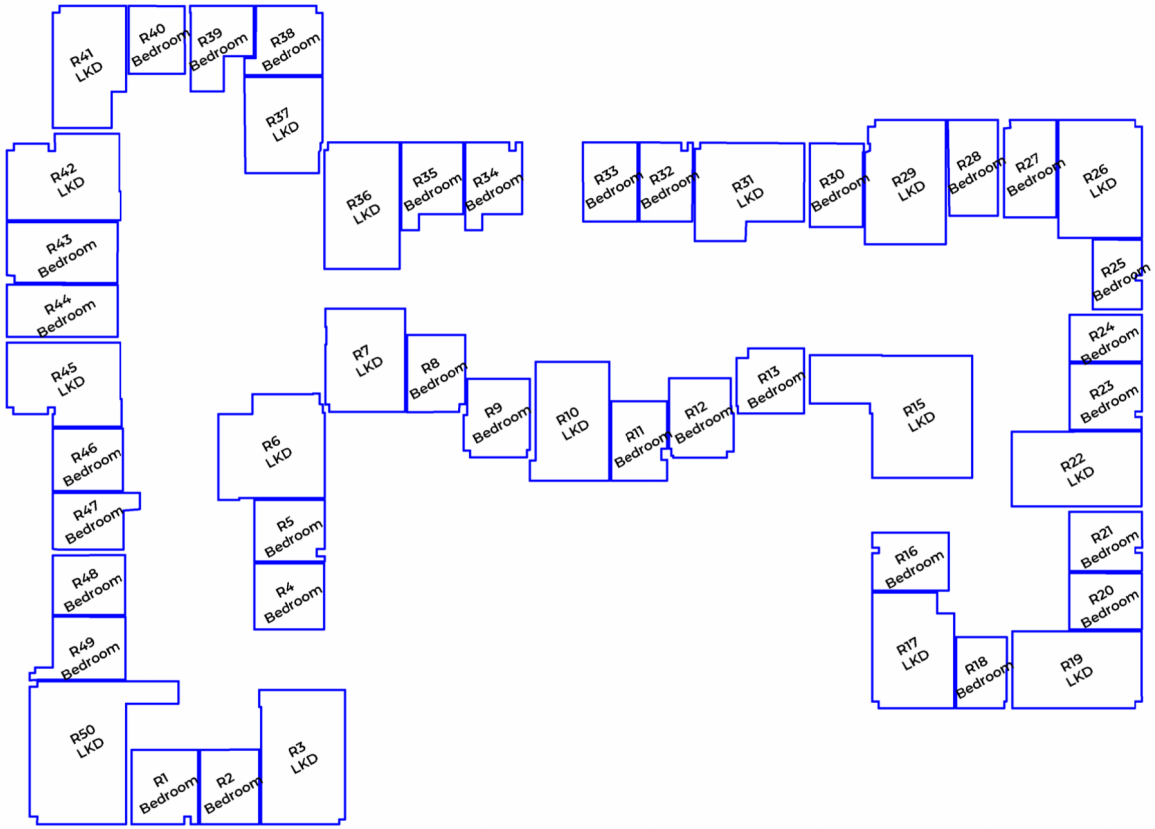

LOVE
DES/GN
STUD\O

Chaplin House

First Floor
Room Reference

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ILLUSTRATIVE ONLY

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Issue: 00A

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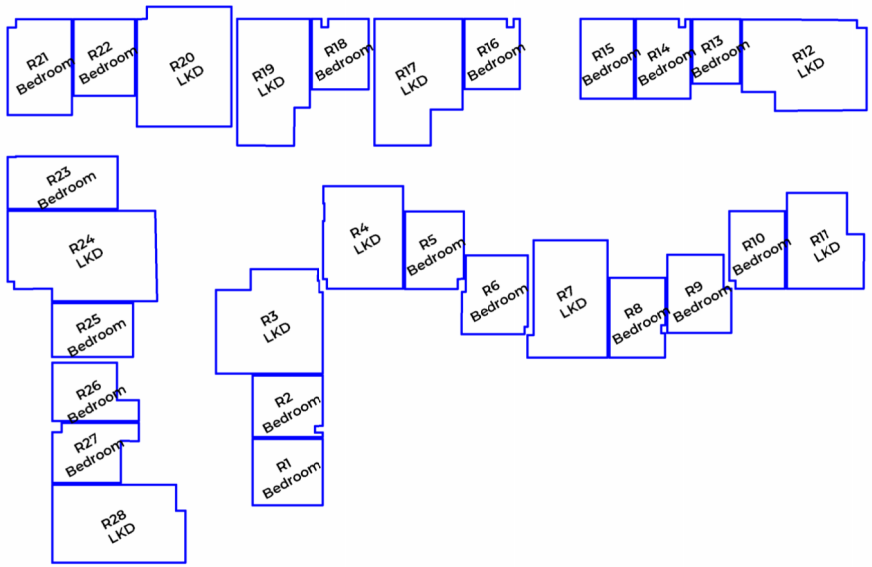

LOVE
DES/GN
STUD\O

Chaplin House

Second Floor
Room Reference

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