LOVE
DAYLIGHT
& SUNLIGHT

Norgine House

Proposed Scheme Daylight and Sunlight Study

By Love Design Studio
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PR0800_V0

Contents

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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 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

144 adjoining habitable rooms were identified within the Proposed Development, consisting of 49 living rooms and 95 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 139 out of 144 rooms assessed within the Proposed Development meet their respective illuminance targets, achieving a pass rate of 95%.

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 34 out of 49 dwellings receive the minimum target of 1.5 hours of sunlight on March 21 in at least one habitable room. The 15 dwellings that do not meet the minimum sunlight requirement have 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 Norgine 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 Norgine 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 and large kitchens 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 scheme 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.

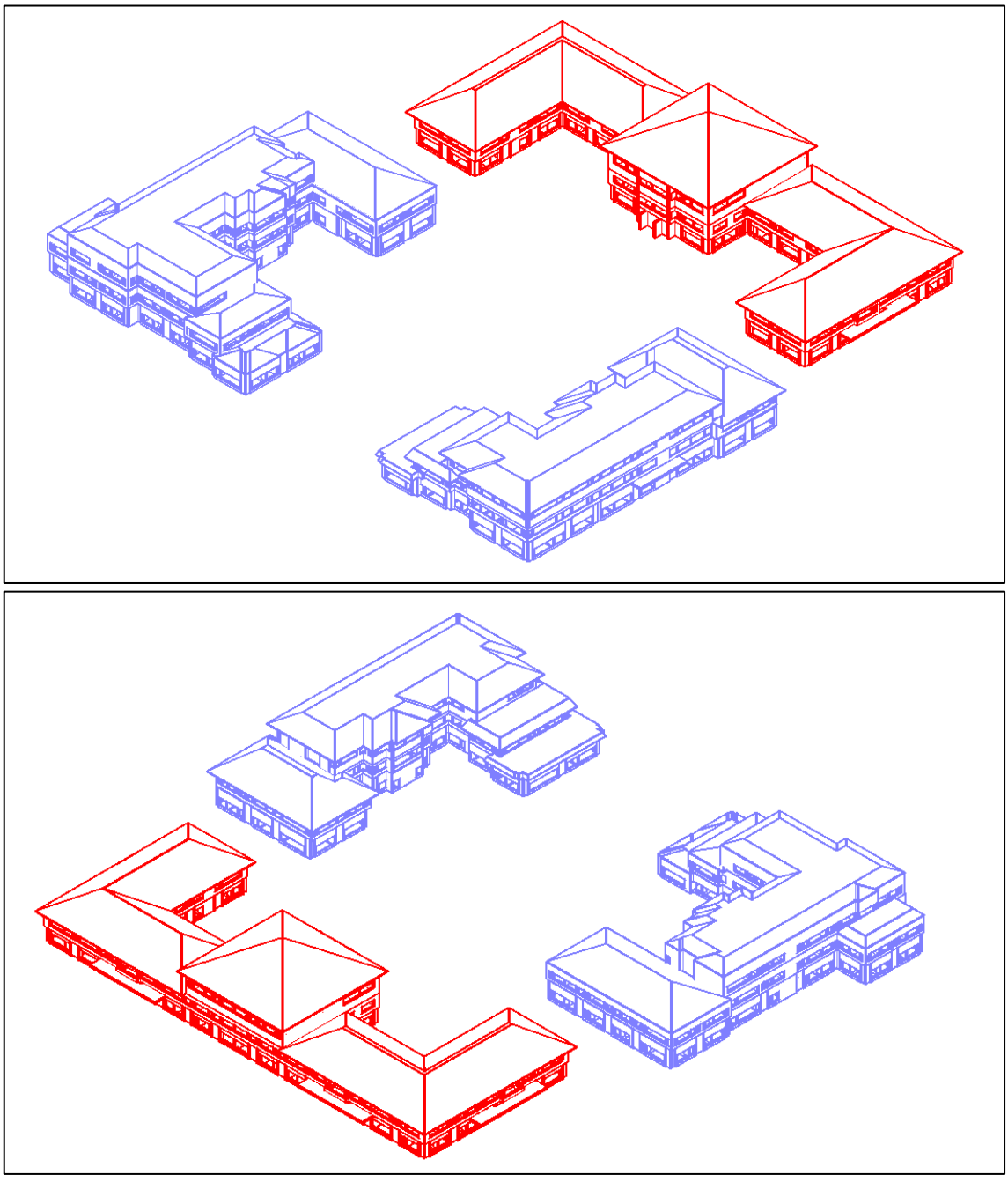


Figure 2: *Aerial images of the model illustrating Norgine House (red) and neighbouring building blocks (purple)*

Proposed Scheme Summary

144 adjoining habitable rooms were identified within the Proposed Development, consisting of 49 living rooms and 95 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 139 out of 144 rooms assessed within the Proposed Development meet their respective illuminance targets. The five rooms that fall short of meeting the daylight criteria are living rooms situated on the ground floor within Flats 2, 4, 14, 19, and 21. Three out of the five living rooms achieve their respective illuminance target across more than 40% of the reference place, which is marginally below the BRE's 50% target. Additionally, all remaining habitable rooms within the dwellings exceeds the 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 34 out of 49 dwellings receive the minimum target of 1.5 hours of sunlight on March 21 in at least one habitable room. The 15 dwellings that are unable to meet the minimum sunlight requirement, consisting of Flats 9-16, 31-36, 47, and 49, 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.

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)
FLAT8/GF/R1/Bedroom	100%	5.8
FLAT8/GF/R2/Bedroom	100%	5.8
FLAT7/GF/R3/Living Room	54%	3.8
FLAT7/GF/R4/Bedroom	100%	2
FLAT7/GF/R5/Bedroom	66%	2

FLAT6/GF/R6/Bedroom	100%	1.9
FLAT6/GF/R7/Living Room	61%	1.9
FLAT5/GF/R8/Living Room	99%	8.5
FLAT5/GF/R9/Bedroom	100%	7.8
FLAT5/GF/R10/Bedroom	97%	2.8
FLAT4/GF/R11/Bedroom	98%	2.6
FLAT4/GF/R12/Bedroom	49%	2.3
FLAT4/GF/R13/Living Room	48%	2.6
FLAT3/GF/R14/Bedroom	97%	3.7
FLAT3/GF/R15/Bedroom	98%	4.9
FLAT3/GF/R16/Living Room	92%	7.4
FLAT2/GF/R17/Bedroom	100%	6.1
FLAT2/GF/R18/Living Room	35%	5.9
FLAT1/GF/R19/Bedroom	100%	5.3
FLAT1/GF/R20/Living Room	75%	8.4
FLAT22/GF/R21/Living Room	70%	6
FLAT22/GF/R22/Bedroom	98%	2.1
FLAT21/GF/R23/Living Room	25%	3.2
FLAT21/GF/R24/Bedroom	100%	3.9
FLAT20/GF/R25/Bedroom	98%	5
FLAT20/GF/R26/Bedroom	98%	5.2
FLAT20/GF/R27/Bedroom	100%	4.8
FLAT19/GF/R28/Living Room	46%	4
FLAT19/GF/R29/Bedroom	77%	4
FLAT19/GF/R30/Bedroom	100%	4.3
FLAT18/GF/R31/Bedroom	100%	5.6
FLAT18/GF/R32/Bedroom	100%	5.6
FLAT18/GF/R33/Living Room	99%	5.5
FLAT17/GF/R34/Living Room	66%	2.6

FLAT17/GF/R35/Bedroom	100%	0.7
FLAT16/GF/R36/Bedroom	93%	0.7
FLAT16/GF/R37/Bedroom	100%	0.7
FLAT16/GF/R38/Living Room	54%	0.7
FLAT15/GF/R39/Bedroom	100%	2.6
FLAT15/GF/R40/Bedroom	100%	3.4
FLAT15/GF/R41/Bedroom	93%	0
FLAT15/GF/R42/Living Room	100%	0
FLAT14/GF/R43/Living Room	40%	0
FLAT14/GF/R44/Bedroom	66%	0
FLAT13/GF/R45/Living Room	51%	0.7
FLAT13/GF/R46/Bedroom	100%	0.8
FLAT13/GF/R47/Bedroom	100%	0.5
FLAT12/GF/R48/Bedroom	97%	0.3
FLAT12/GF/R49/Bedroom	100%	0.5
FLAT12/GF/R50/Living Room	100%	0.8
FLAT9/GF/R57/Living Room	50%	0.8
FLAT10/GF/R56/Living Room	55%	0.8
FLAT9/GF/R58/Bedroom	72%	0.3
FLAT8/GF/R60/Bedroom	100%	0
FLAT8/GF/R59/Living Room	100%	0
FLAT11/GF/R52/Bedroom	100%	0
FLAT11/GF/R51/Living Room	88%	0.5
FLAT11/GF/R53/Bedroom	99%	0.2
FLAT10/GF/R55/Bedroom	99%	0.8
FLAT10/GF/R54/Bedroom	100%	0.9
FLAT30/1F/R1/Bedroom	100%	4.7
FLAT30/1F/R2/Bedroom	100%	4.7
FLAT29/1F/R3/Bedroom	100%	4.7

FLAT29/1F/R4/Bedroom	100%	4.7
FLAT29/1F/R5/Living Room	76%	4.7
FLAT28/1F/R6/Living Room	87%	5.7
FLAT28/1F/R7/Bedroom	100%	4.7
FLAT28/1F/R8/Bedroom	100%	4.7
FLAT27/1F/R9/Bedroom	100%	4.7
FLAT27/1F/R10/Bedroom	100%	9.5
FLAT27/1F/R11/Bedroom	100%	6.6
FLAT27/1F/R12/Living Room	100%	6.6
FLAT26/1F/R13/Bedroom	100%	1.9
FLAT26/1F/R14/Bedroom	98%	1.9
FLAT26/1F/R15/Living Room	60%	1.9
FLAT25/1F/R16/Living Room	67%	5
FLAT25/1F/R17/Bedroom	99%	6.6
FLAT25/1F/R18/Bedroom	100%	6.6
FLAT24/1F/R19/Living Room	99%	5.2
FLAT24/1F/R20/Bedroom	63%	3.5
FLAT23/1F/R21/Bedroom	99%	5.4
FLAT23/1F/R22/Bedroom	100%	9.4
FLAT23/1F/R23/Bedroom	100%	8
FLAT23/1F/R24/Living Room	53%	7.4
FLAT44/1F/R25/Living Room	66%	7.7
FLAT44/1F/R26/Bedroom	100%	6.3
FLAT44/1F/R27/Bedroom	100%	7
FLAT44/1F/R28/Bedroom	88%	2.8
FLAT43/1F/R29/Bedroom	56%	3.2
FLAT43/1F/R30/Living Room	81%	5.7
FLAT42/1F/R31/Bedroom	100%	6.4
FLAT42/1F/R32/Bedroom	97%	6

FLAT42/1F/R33/Living Room	68%	4.7
FLAT41/1F/R34/Living Room	67%	3.6
FLAT41/1F/R35/Bedroom	100%	3.7
FLAT41/1F/R36/Bedroom	100%	3.8
FLAT40/1F/R37/Living Room	100%	6.3
FLAT40/1F/R38/Bedroom	72%	4.1
FLAT40/1F/R39/Bedroom	100%	5.7
FLAT40/1F/R40/Bedroom	100%	1.9
FLAT39/1F/R41/Bedroom	100%	1.9
FLAT39/1F/R42/Bedroom	100%	1.9
FLAT39/1F/R43/Living Room	73%	2.6
FLAT38/1F/R44/Living Room	65%	1.8
FLAT38/1F/R45/Bedroom	100%	1.9
FLAT38/1F/R46/Bedroom	100%	1.9
FLAT37/1F/R47/Bedroom	100%	1.9
FLAT37/1F/R48/Bedroom	100%	2.3
FLAT37/1F/R49/Bedroom	100%	0.4
FLAT37/1F/R50/Living Room	100%	0.4
FLAT32/1F/R64/Bedroom	100%	0.4
FLAT32/1F/R65/Living Room	71%	0
FLAT32/1F/R63/Bedroom	100%	0.8
FLAT33/1F/R61/Bedroom	100%	0.4
FLAT33/1F/R62/Bedroom	100%	0.8
FLAT30/1F/R69/Living Room	100%	0.9
FLAT30/1F/R70/Bedroom	100%	0.7
FLAT31/1F/R68/Bedroom	100%	0.9
FLAT31/1F/R66/Living Room	78%	0.8
FLAT31/1F/R67/Bedroom	100%	0.8
FLAT35/1F/R54/Living Room	69%	0.4

FLAT35/1F/R55/Bedroom	100%	0.4
FLAT36/1F/R53/Living Room	72%	0.4
FLAT36/1F/R51/Bedroom	100%	0.4
FLAT36/1F/R52/Bedroom	100%	0
FLAT34/1F/R59/Living Room	100%	0.8
FLAT33/1F/R60/Living Room	100%	0.4
FLAT34/1F/R58/Bedroom	100%	0.4
FLAT35/1F/R56/Bedroom	100%	0.4
FLAT34/1F/R57/Bedroom	100%	0.5
FLAT46/2F/R1/Living Room	73%	5.1
FLAT46/2F/R2/Bedroom	100%	9.5
FLAT46/2F/R3/Bedroom	100%	7.2
FLAT45/2F/R4/Bedroom	100%	7.5
FLAT45/2F/R5/Living Room	77%	8
FLAT48/2F/R6/Bedroom	100%	6.6
FLAT48/2F/R7/Bedroom	100%	7.2
FLAT48/2F/R8/Living Room	72%	2.2
FLAT47/2F/R9/Living Room	56%	0.6
FLAT47/2F/R10/Bedroom	100%	0.6
FLAT47/2F/R11/Bedroom	100%	0.6
FLAT49/2F/R12/Bedroom	100%	0.6
FLAT49/2F/R13/Bedroom	100%	0.5
FLAT49/2F/R14/Living Room	58%	0.9

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

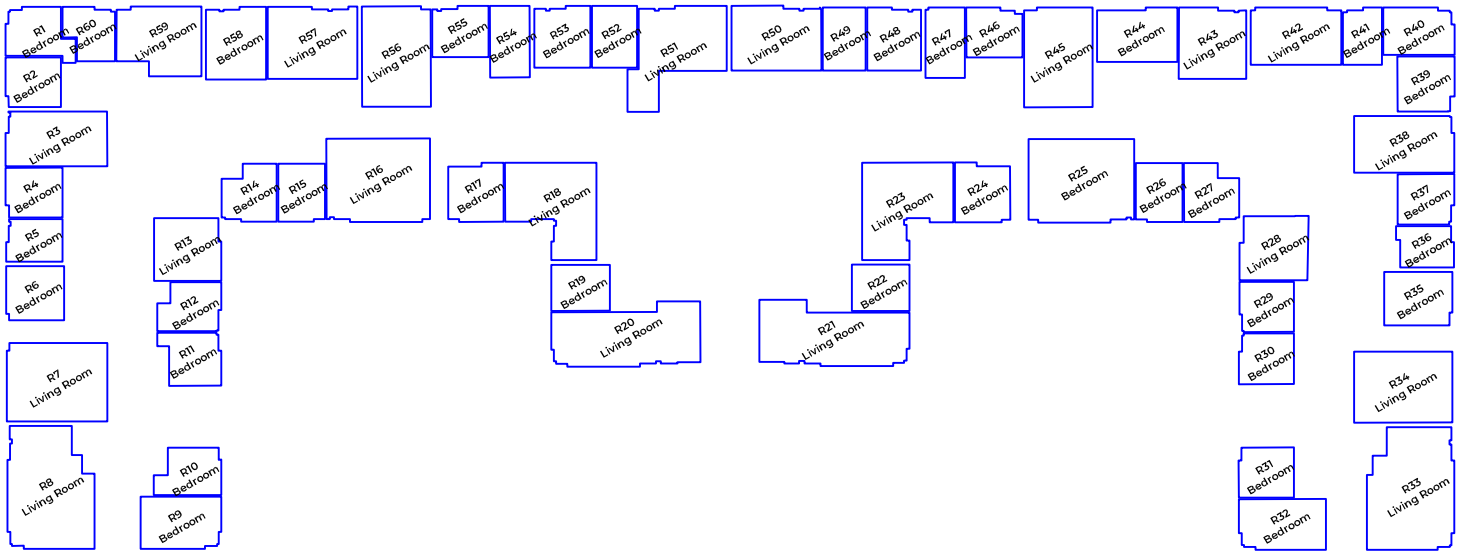
Conclusion

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

The illuminance method demonstrates that the Proposed Development achieves a 95% 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 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

Norgine House

Ground Floor
Room Reference

NOT TO SCALE
ILLUSTRATIVE ONLY

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

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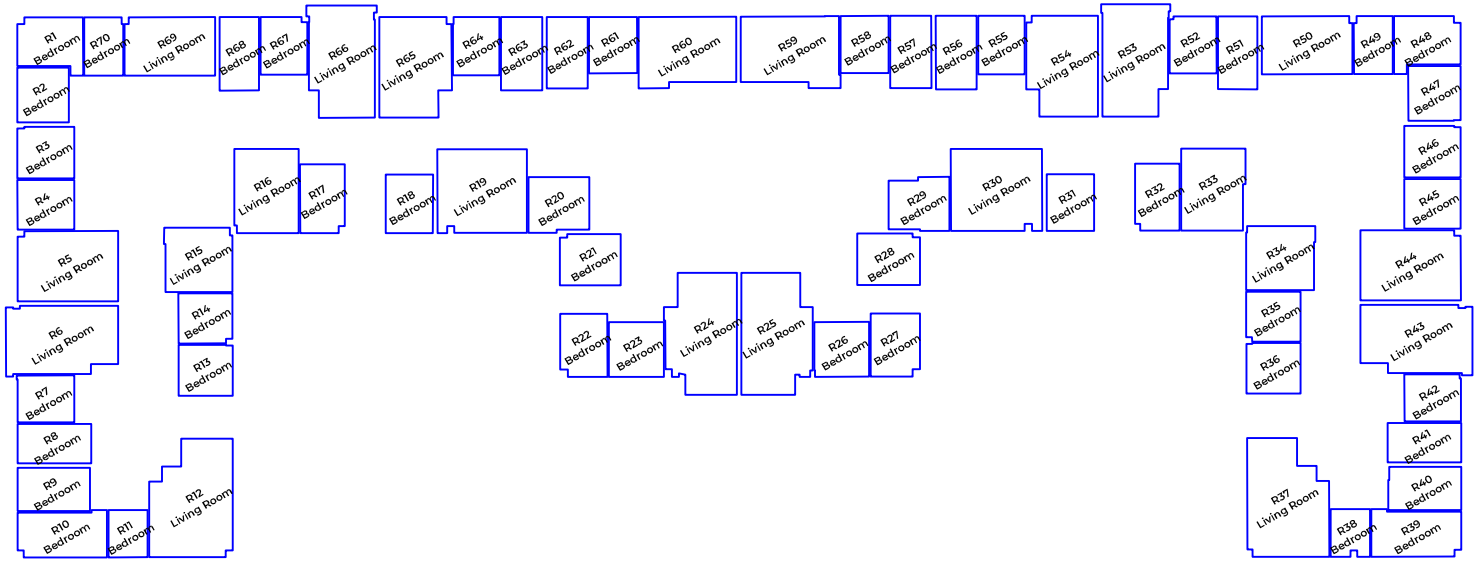

LOVE
DES/GN
STUD\O

Norgine House

First Floor
Room Reference

NOT TO SCALE
ILLUSTRATIVE ONLY

Date: 29/05/2024
Drawing: 0800-NG-RR-1F
Issue: 00A

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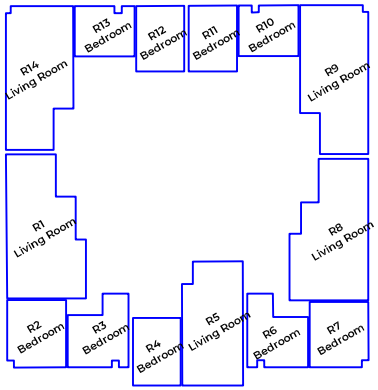

LOVE
DES/GN
STUD\O

Norgine House

Second Floor
Room Reference

NOT TO SCALE
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Date: 29/05/2024
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