RIGHT OF LIGHT CONSULTING
Chartered Surveyors

Daylight and Sunlight Report

(Within Development)

27 April 2021

Elleray Hall and East Car Park, London TW11 0HN

RICS
Regulated by RICS

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APPENDICES

1 EXECUTIVE SUMMARY

1.1 Overview

1.1.1 Right of Light Consulting has been commissioned by the London Borough of Richmond upon Thames to undertake a daylight and sunlight study in connection with the development at Elleray Hall and East Car Park, London TW11 0HN. The aim of the study is to check whether the proposed accommodation will provide its future occupiers with adequate levels of natural light.

1.1.2 The study is based on the numerical tests laid down in the Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a good practice guide, 2nd Edition' by P J Littlefair 2011.

1.1.3 Appendix 1 identifies the windows analysed in this study. The no sky line contours for the habitable rooms are also presented in Appendix 1. The numerical results of the BRE daylight and sunlight tests are provided in Appendix 2. Overshadowing to gardens and opens spaces contour drawings are provided in Appendix 3.

1.1.4 The numerical results demonstrate that the proposed development design achieves a very high level of compliance with the BRE recommendations. Whilst a small number of rooms and outdoor amenity areas do not meet the recommendations, the results are not unusual in the context of an urban location. In our professional opinion, the proposed design will provide the development's future occupiers with adequate levels of natural light.

2 INFORMATION SOURCES

2.1 Documents Considered

2.1.1 This report is based on the following drawings:

Clive Chapman Architects

EHT-01	Location Plan	Rev
EHT-02	Master Plan - Proposed Site Layout & Roof Plans	Rev
EHT-03	Proposed Ground and First Floor Plans	Rev
EHT-04	Proposed Elevations & Sections	Rev
ERH-01	Proposed Ground and First Floor Plans	Rev
ERH-02	Proposed Elevations & Sections	Rev

3 METHODOLOGY OF THE STUDY

3.1 Local Planning Policy

3.1.1 We understand that the Local Authority takes the conventional approach of considering daylight and sunlight amenity with reference to the various numerical tests laid down in the Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a guide to good practice, 2nd Edition' by P J Littlefair 2011. A new European standard BS EN 17037 'Daylight in Buildings' was published in May 2019. An update to the BRE guide to take into account the European standard is expected sometime in 2021. It is not yet clear how, and to what extent, the European recommendations will be adopted by the BRE and Local Authorities.

3.1.2 The standards set out in the BRE guide are intended to be used flexibly. The BRE guide states:

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and the guide 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, since natural lighting is only one of many factors in site layout design."

3.2 National Planning Policy Framework

3.2.1 The BRE numerical guidelines should be considered in the context of the National Planning Policy Framework (NPPF), which stipulates that local planning authorities should take a flexible approach to daylight and sunlight to ensure the efficient use of land. The NPPF states:

"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 (as long as the resulting scheme would provide acceptable living standards)."

3.3 Interior Daylighting

3.3.1 The interior daylighting recommendations set out in the BRE guide are based on British Standard BS 8206 Part 2 and the Chartered Institute of Building Services Engineers Applications Manual on window design. Collectively, the guides set out three main criteria for interior daylighting. These are summarised as follows:

Test 1 - Average Daylight Factor

3.3.2 The Average Daylight Factor (ADF) can be calculated using the following formula:

$$df = \frac{T\ Aw\ \theta}{A\ (1-R^2)}\ \%$$

where

T is the diffuse visible transmittance of the glazing
Aw is the net glazed area of the window (m^2)
A is the total area of the room surfaces (m^2)
R is their average reflectance
Θ is the angle of visible sky in degrees

3.3.3 The ADF test is applied to habitable rooms within domestic properties. A kitchen is generally deemed to be a habitable room if it is large enough to accommodate a dining area. If the kitchen is small, or if the property has a separate dining area, then the accepted practice is to treat the kitchen as a non-habitable room.

3.3.4 For the purpose of this study, we have assumed BRE internal reflectance values pertaining to medium wooden floors (coefficient value of 0.4), light painted walls (0.8) and matt white painted ceilings (0.85).

3.3.5 For the purpose of this study, we have assumed the windows consist of modern double-glazed units with a frame to glazing ratio of 0.8. A maintenance factor has been applied to allow for the effect of dirt and grime on the glazing. On this basis, the glazing transmittance value used within this study is 0.68.

3.3.6 To achieve a predominately daylit appearance, the guide recommends an ADF of 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary lighting is provided. The guide also gives minimum recommendations for dwellings of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. The minimum targets have been adopted for the purpose of this study.

3.3.7 The BRE guide does not give guidance on how to apply the ADF test to spaces which contain a mix of room uses e.g. open plan living, dining and kitchen areas. For this assessment we have set a target of 2% with the aim of reaching the predominately daylit benchmark.

3.3.8 A special procedure is required for floor to ceiling windows such as patio doors. If part of a window is below the height of the working plane (a horizontal plane 0.85m above the floor in housing), this portion should be treated as a separate window. The ADF for this window has an extra factor applied to it, to take account of the reduced effectiveness of low level glazing in lighting the room. A value equal to the floor reflectance may be taken for this factor. The ADF for the portion of the window above the working plane is calculated in the normal way without this additional factor, and the ADFs for the two portions are added together.

3.3.9 Reflected light can be factored into the ADF calculation. For example, where a window has a large obstruction in front of it, the angle of visible sky can be increased by around 6°, assuming the obstruction is painted a light colour.

Test 2 - Room Depth

3.3.10 If a daylit room is lit by windows in one wall only, the depth of the room L should not exceed the limiting value given by:

$$\frac{L}{W} + \frac{L}{H} \leq \frac{2}{1-R_b}$$

where

W is the room width
H is the window-head height above floor level
R_b is the average reflectance of the surfaces in the rear half of the room

Test 3 - Position of the no sky line (Daylight Distribution)

3.3.11 If a significant area of the working plane lies beyond the no sky line (i.e. it receives no direct skylight), then the distribution of daylight in the room will look poor and supplementary electric lighting will be required.

3.3.12 The no sky line assessment is not applicable where a room derives its daylight solely from a light well or atrium. In these situations the room relies on borrowed light instead of direct skylight.

3.4 Sunlight to Windows

3.4.1 The BRE guide states that, in general, a dwelling or non-domestic building which has a particular requirement for sunlight, will appear reasonably sunlit if:

- at least one main window wall faces within 90 degrees of due south, and
- the centre of at least one window to a main living room can receive 25% of annual probable sunlight hours, including at least 5% of the annual probable sunlight hours during the winter months between 21st September and 21st March.

3.4.2 The guide states that, where groups of dwellings are planned, site layout design should aim to maximise the number of dwellings with a main living room that meets the above recommendations.

3.4.3 The guide states that sunlight is viewed as less important in kitchens and bedrooms.

3.5 Overshadowing to Gardens and Open Spaces

3.5.1 The availability of sunlight should be checked for all open spaces where sunlight is required. This would normally include:

- Gardens, usually the main back garden of a house
- Parks and playing fields
- Children's playgrounds
- Outdoor swimming pools and paddling pools
- Sitting out areas, such as those between non-domestic buildings and in public squares
- Focal points for views such as a group of monuments or fountains.

3.5.2 The BRE guide recommends that, for an open space to appear adequately lit throughout the year, at least 50% of its area should receive two hours of sunlight on 21st March.

4 RESULTS OF THE STUDY

4.1 Window Reference Points and No Sky Line Contours

4.1.1 Appendix 1 identifies the positions of the windows analysed in this study. The no skyline contours for the habitable rooms are also presented in Appendix 1.

4.2 Daylight & Sunlight Data

4.2.1 The numerical results of the BRE daylight and sunlight tests are provided in Appendix 2. Overshadowing to gardens and opens spaces contour drawings are provided in Appendix 3.

4.3 Interior Daylighting

4.3.1 Around 90% of all rooms achieve or surpass their Average Daylight Factor (ADF) targets. Only 4 out of the 34 rooms fall short of the targets. However, as explained in paragraphs 3.3.6 and 3.3.7 of this report, whilst the BRE guide gives minimum targets for living rooms, bedrooms and kitchens, no equivalent target is given for open plan rooms comprising two or more uses. Therefore, we have adopted the more onerous 2% target for these rooms. The rooms that do not achieve an ADF of 2%, achieve an ADF of 1.6% or above. The rooms therefore achieve the minimum recommended target applicable to living rooms. In overall terms, the ADF scores represent a high level of compliance with the BRE recommendations.

4.3.2 All rooms pass the room depth test.

4.3.3 The BRE guide does not give fixed numerical pass/fail criteria for the No Sky Line test when applied to new dwellings. However, for completeness, we have illustrated the no sky line contours in Appendix 1. The contours illustrate good access to direct skylight over a significant part of the working plane.

4.4 Sunlight to Windows

4.4.1 All dwellings have a main window which faces within 90 degrees of due south. All living rooms also have a main window which meets the annual and winter sunlight hours numerical targets. The proposed development therefore satisfies the BRE direct sunlight to windows requirements.

4.5 Overshadowing to Gardens and Open Spaces

4.5.1 The results show that some of the gardens do achieve ideal levels of sunlight (results confirm that 4 of the 9 gardens tested meet the BRE numerical recommendation). However, we note that the gardens at Elleray Hall are relatively small. It is quite often not practical for small gardens to meet the 21 March 2 hour sunlight recommendation. This is because small gardens, by their nature, tend to be fairly enclosed. For example, every part of a small garden is often close to a building or boundary fence, which casts shadows over a significant proportion of the area, at ground level.

4.5.2 Further to the above, we also note that the BRE test is applied on 21 March since this gives the average level of overshadowing throughout the year. Overshadowing will be less during the summer months when gardens tend to be used more. Conversely, there will be more overshadowing during the winter months when gardens tend to be used less. The calculations show that 3 of the 5 gardens which fall short on 21 March do so by a marginal degree (gardens 2, 5 & 7 achieve 43%, 42% & 30% which is fairly close to the BRE recommendation of 50%). Therefore, the aforementioned gardens are likely to achieve a reasonable level of sunlight amenity, during the summer months, when they will be used more.

4.6 Conclusion

4.6.1 The numerical results demonstrate that the proposed development design achieves a very high level of compliance with the BRE recommendations. Whilst a small number of rooms and outdoor amenity areas do not meet the recommendations, the results are not unusual in the context of an urban location. In our professional opinion, the proposed design will provide the development's future occupiers with adequate levels of natural light.

5 CLARIFICATIONS

5.1 General

5.1.1 The report provided is solely for the use of the client and no liability to anyone else is accepted.

5.1.2 The study is limited to assessing daylight, sunlight and overshadowing of the proposed development as set out in section 2.1, 3.1 and 3.3 of the BRE Guide.

5.1.3 The study is based on the information listed in section 2 of this report and a site visit undertaken on 23 February 2021.

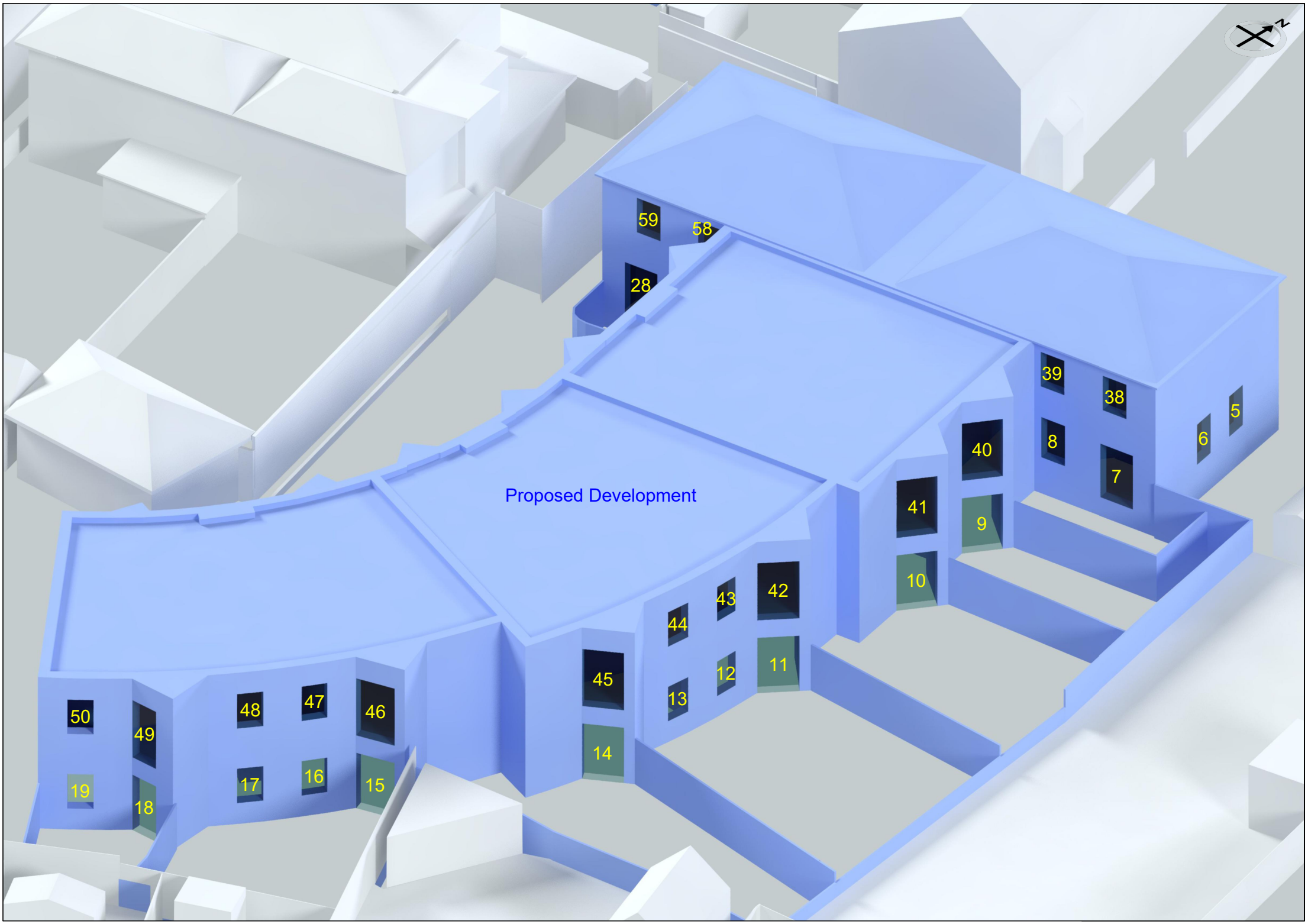
5.1.4 We have undertaken the survey following the guidelines of the RICS publication “Surveying Safely”. Where limited access is available, assumptions will have been made.

5.1.5 This report is based upon and subject to the scope of work set out in Right of Light Consulting’s quotation and standard terms and conditions.

APPENDICES

APPENDIX 1

WINDOW KEY & NO SKY LINE CONTOURS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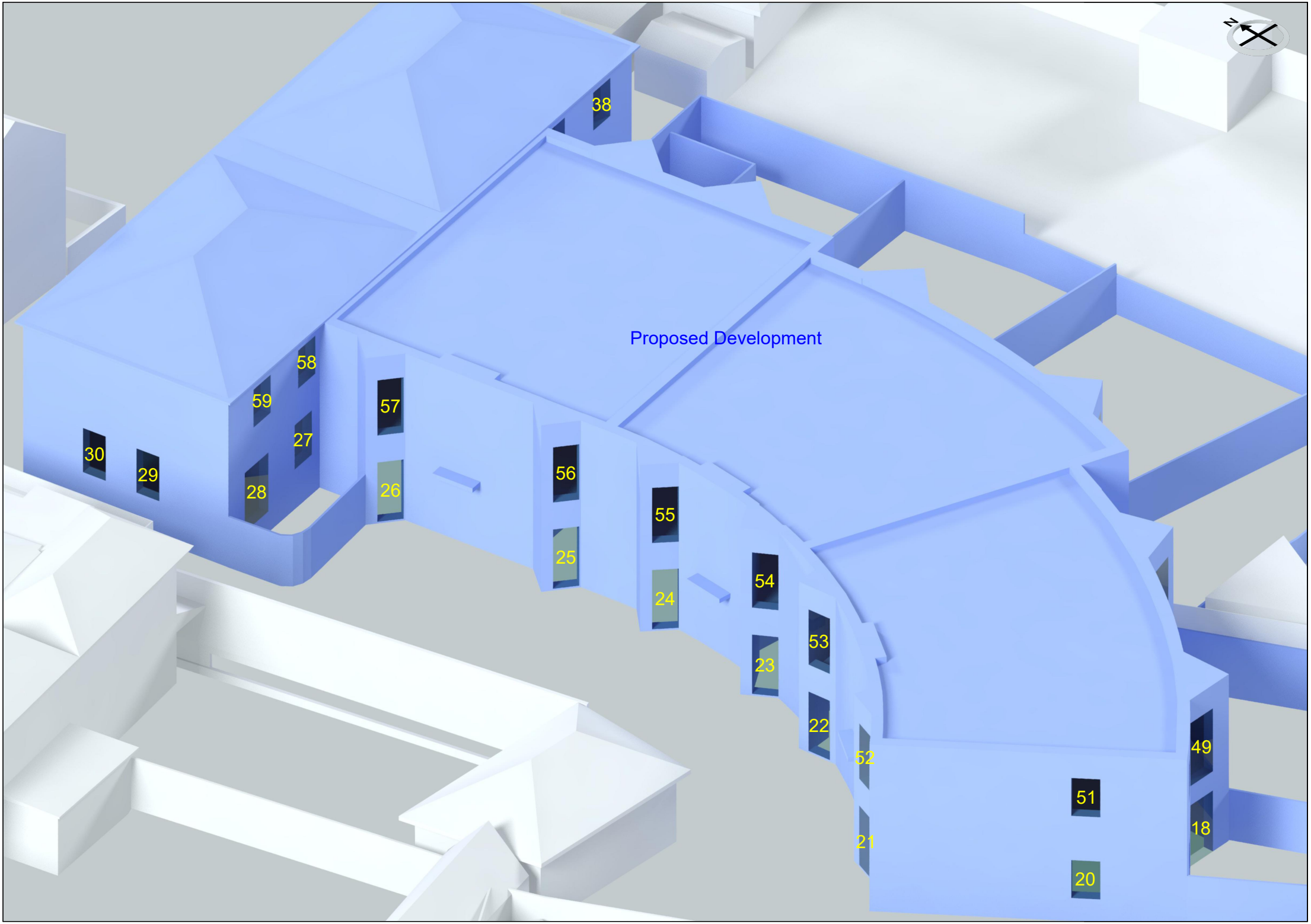
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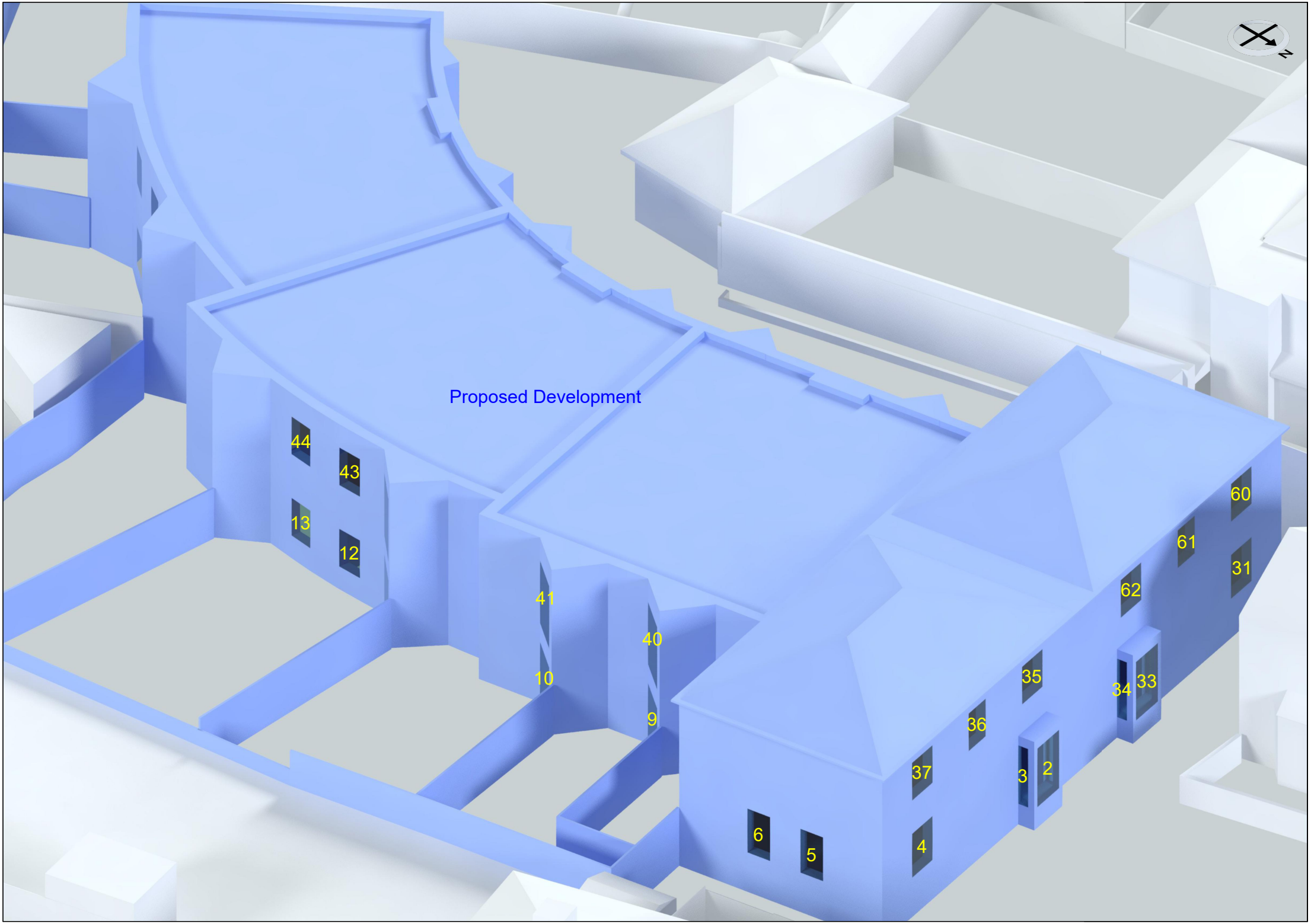
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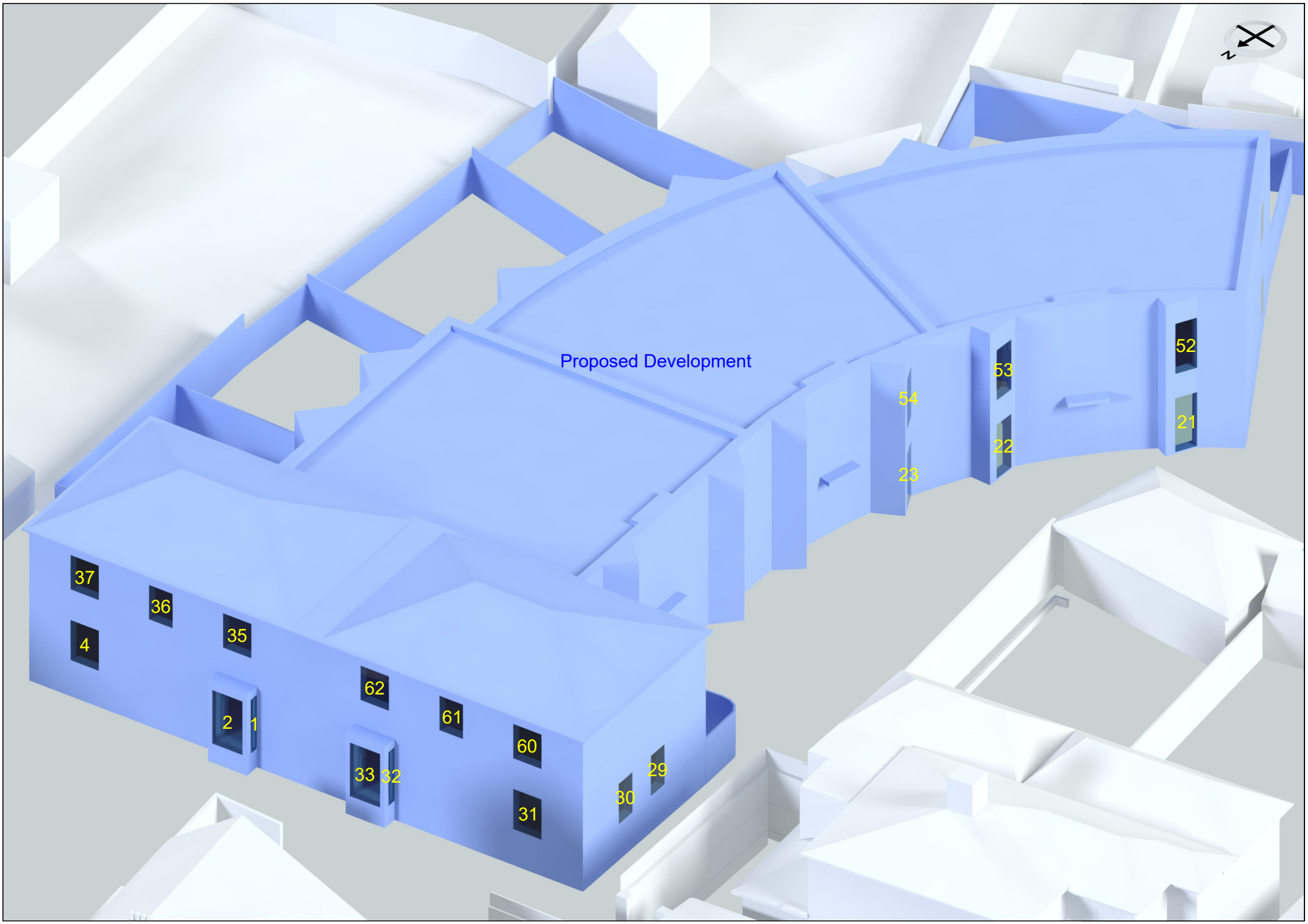
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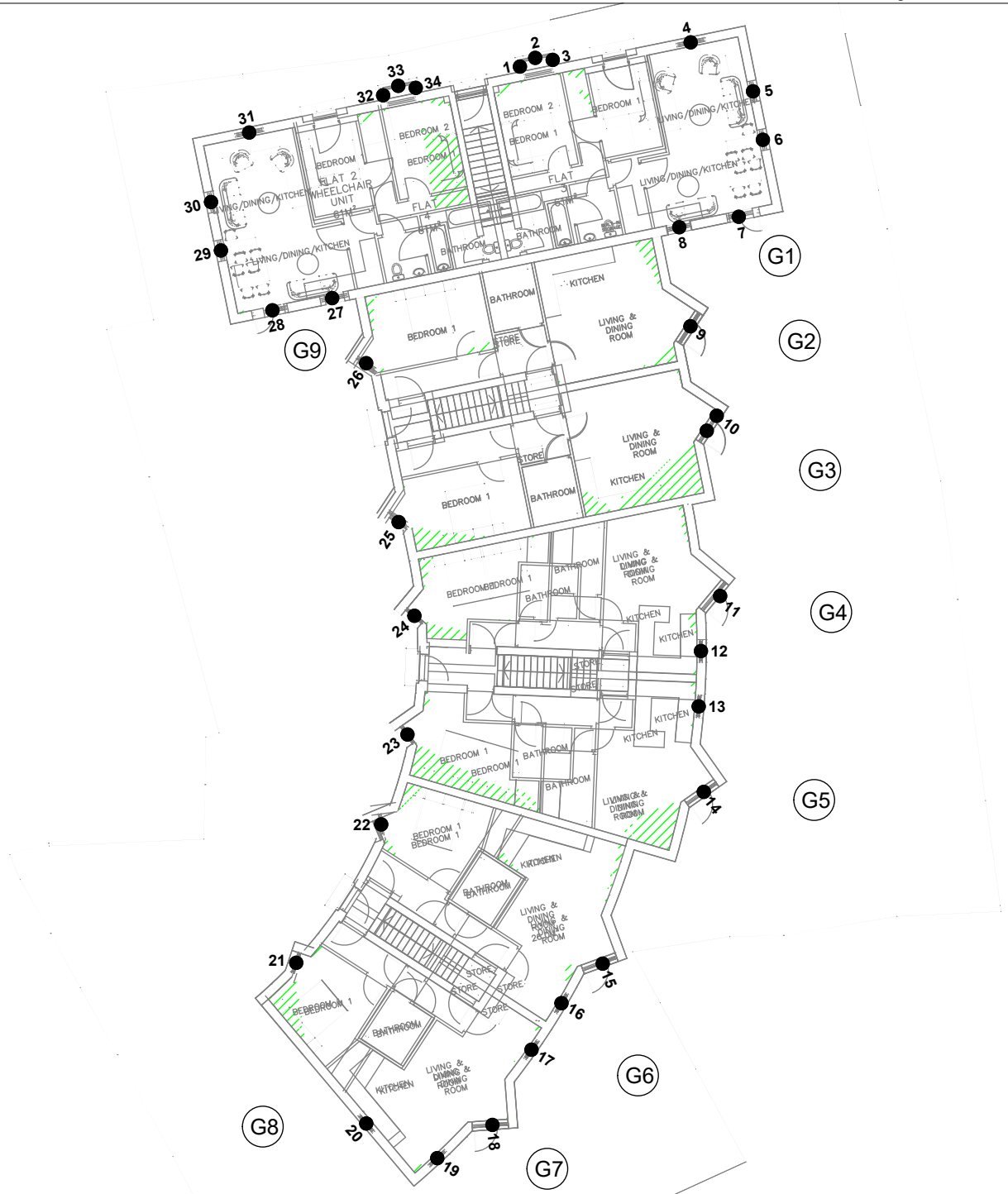
Proposed Ground Floor

Window Key and No Sky Line Contours



Key:

- Window reference
- G1 — Gardens and Amenity Areas
- Area receives no direct sky light (applied to habitable rooms)
- Area does receive direct sky light.
- Light aperture.

Project Name: Elleray Hall and East Car Park, London TW11 0HN

Drawing Title: Window Key and No Sky Line Contours

Scale: Do not scale

Drawing No: 1 of 2 | Rev. -

Rev	Date	Details of revision

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Proposed First Floor

Window Key and No Sky Line Contours

Key:

- Window reference
- G1 — Gardens and Amenity Areas
- Area receives no direct sky light (applied to habitable rooms)
- Area does receive direct sky light.
- Light aperture.

Project Name: Elleray Hall and East Car Park, London TW11 0HN

Drawing Title: Window Key and No Sky Line Contours

Scale: Do not scale

Drawing No: 2 of 2 | Rev. -

Rev	Date	Details of revision

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APPENDIX 2

DAYLIGHT & SUNLIGHT DATA

Appendix 2 - Average Daylight Factor (ADF)
Elleray Hall and East Car Park, London TW11 0HN

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					ADF
	Primary room use	ADF	T	Aw	A	R	θ	
Elleray Hall								
Ground Floor								
Window 1 (lower)			0.68	0.24	72.16	0.7	37.6	0.1%
Window 1 (upper)			0.68	0.35	72.16	0.7	40.5	0.3%
Window 2 (lower)			0.68	0.79	72.16	0.7	69.7	0.4%
Window 2 (upper)			0.68	1.16	72.16	0.7	72.9	1.5%
Window 3 (lower)			0.68	0.24	72.16	0.7	45.7	0.1%
Window 3 (upper)			0.68	0.35	72.16	0.7	46.8	0.3%
Total ADF for room	Bedroom	1.0%						**2.7%**
Window 4 (lower)			0.68	0.15	104.58	0.67	73.2	0.1%
Window 4 (upper)			0.68	1.22	104.58	0.67	75.5	1.1%
Window 5 (lower)			0.68	0.11	104.58	0.67	67.1	0.0%
Window 5 (upper)			0.68	0.89	104.58	0.67	72.5	0.8%
Window 6 (lower)			0.68	0.11	104.58	0.67	68.4	0.0%
Window 6 (upper)			0.68	0.89	104.58	0.67	73.5	0.8%
Window 7 (lower)			0.68	0.85	104.58	0.67	60.5	0.2%
Window 7 (upper)			0.68	1.25	104.58	0.67	65.8	1.0%
Window 8 (lower)			0.68	0.13	104.58	0.67	45.9	0.0%
Window 8 (upper)			0.68	1.02	104.58	0.67	47.4	0.6%
Total ADF for room	Living/Dining/Kitchen	2.0%						**4.6%**
Window 9 (lower)			0.68	0.91	94.11	0.7	55.7	0.3%
Window 9 (upper)			0.68	1.41	94.11	0.7	64.3	1.3%
Total ADF for room	Living/Dining/Kitchen	2.0%						**1.6%**
Window 10 (lower)			0.68	0.91	94.18	0.7	65.0	0.3%
Window 10 (upper)			0.68	1.42	94.18	0.7	71.5	1.4%
Total ADF for room	Living/Dining/Kitchen	2.0%						**1.7%**
Window 11 (lower)			0.68	0.92	91.6	0.69	65.7	0.3%
Window 11 (upper)			0.68	1.43	91.6	0.69	71.4	1.5%
Window 12 (lower)			0.68	0.02	91.6	0.69	74.1	0.0%
Window 12 (upper)			0.68	0.9	91.6	0.69	76.4	1.0%
Total ADF for room	Living/Dining/Kitchen	2.0%						**2.8%**
Window 13 (lower)			0.68	0.02	91.63	0.69	73.7	0.0%

Appendix 2 - Average Daylight Factor (ADF)
Elleray Hall and East Car Park, London TW11 0HN

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					ADF
	Primary room use	ADF	T	Aw	A	R	θ	
Window 13 (upper)			0.68	0.9	91.63	0.69	76.3	1.0%
Window 14 (lower)			0.68	0.92	91.63	0.69	62.6	0.3%
Window 14 (upper)			0.68	1.43	91.63	0.69	70.7	1.5%
Total ADF for room	Living/Dining/Kitchen	2.0%						**2.8%**
Window 15 (lower)			0.68	0.92	114.49	0.7	54.9	0.2%
Window 15 (upper)			0.68	1.43	114.49	0.7	61.7	1.0%
Window 16 (lower)			0.68	0.02	114.49	0.7	62.2	0.0%
Window 16 (upper)			0.68	0.9	114.49	0.7	68.0	0.7%
Total ADF for room	Living/Dining/Kitchen	2.0%						**1.9%**
Window 17 (lower)			0.68	0.02	114.21	0.69	66.6	0.0%
Window 17 (upper)			0.68	0.9	114.21	0.69	71.4	0.7%
Window 18 (lower)			0.68	0.68	114.21	0.69	56.0	0.2%
Window 18 (upper)			0.68	1.06	114.21	0.69	66.1	0.8%
Window 19 (lower)			0.68	0.02	114.21	0.69	62.6	0.0%
Window 19 (upper)			0.68	0.9	114.21	0.69	70.9	0.7%
Window 20 (lower)			0.68	0.02	114.21	0.69	63.7	0.0%
Window 20 (upper)			0.68	0.9	114.21	0.69	65.9	0.7%
Total ADF for room	Living/Dining/Kitchen	2.0%						**3.1%**
Window 21 (lower)			0.68	0.5	56.29	0.72	63.8	0.3%
Window 21 (upper)			0.68	0.83	56.29	0.72	68.5	1.4%
Total ADF for room	Bedroom	1.0%						**1.7%**
Window 22 (lower)			0.68	0.49	55.19	0.72	60.5	0.3%
Window 22 (upper)			0.68	0.82	55.19	0.72	65.1	1.4%
Total ADF for room	Bedroom	1.0%						**1.7%**
Window 23 (lower)			0.68	0.49	74.48	0.72	54.4	0.2%
Window 23 (upper)			0.68	0.82	74.48	0.72	58.4	0.9%
Total ADF for room	Bedroom	1.0%						**1.1%**
Window 24 (lower)			0.68	0.49	73.37	0.72	55.4	0.2%
Window 24 (upper)			0.68	0.82	73.37	0.72	59.4	0.9%
Total ADF for room	Bedroom	1.0%						**1.1%**
Window 25 (lower)			0.68	0.49	62.64	0.71	57.2	0.3%
Window 25 (upper)			0.68	0.82	62.64	0.71	60.9	1.1%

Appendix 2 - Average Daylight Factor (ADF)
Elleray Hall and East Car Park, London TW11 0HN

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					ADF
	Primary room use	ADF	T	Aw	A	R	θ	
Total ADF for room	Bedroom	1.0%						**1.4%**
Window 26 (lower)			0.68	0.49	64.63	0.71	58.4	0.2%
Window 26 (upper)			0.68	0.82	64.63	0.71	64.0	1.1%
Total ADF for room	Bedroom	1.0%						**1.3%**
Window 27 (lower)			0.68	0.13	104.74	0.67	47.7	0.0%
Window 27 (upper)			0.68	1.02	104.74	0.67	49.2	0.6%
Window 28 (lower)			0.68	0.85	104.74	0.67	57.3	0.2%
Window 28 (upper)			0.68	1.25	104.74	0.67	64.3	1.0%
Window 29 (lower)			0.68	0.11	104.74	0.67	60.0	0.0%
Window 29 (upper)			0.68	0.89	104.74	0.67	66.7	0.7%
Window 30 (lower)			0.68	0.11	104.74	0.67	60.1	0.0%
Window 30 (upper)			0.68	0.89	104.74	0.67	67.9	0.7%
Window 31 (lower)			0.68	0.15	104.74	0.67	55.1	0.0%
Window 31 (upper)			0.68	1.22	104.74	0.67	60.3	0.9%
Total ADF for room	Living/Dining/Kitchen	2.0%						**4.1%**
Window 32 (lower)			0.68	0.24	72.15	0.7	39.4	0.1%
Window 32 (upper)			0.68	0.35	72.15	0.7	41.6	0.3%
Window 33 (lower)			0.68	0.79	72.15	0.7	52.3	0.3%
Window 33 (upper)			0.68	1.16	72.15	0.7	56.3	1.2%
Window 34 (lower)			0.68	0.24	72.15	0.7	45.3	0.1%
Window 34 (upper)			0.68	0.35	72.15	0.7	46.7	0.3%
Total ADF for room	Bedroom	1.0%						**2.3%**
First Floor								
Window 35 (lower)			0.68	0.09	48.31	0.72	78.4	0.1%
Window 35 (upper)			0.68	1.09	48.31	0.72	78.4	2.5%
Total ADF for room	Bedroom	1.0%						**2.6%**
Window 36 (lower)			0.68	0.07	55.19	0.72	79.4	0.1%
Window 36 (upper)			0.68	0.91	55.19	0.72	79.2	1.8%
Total ADF for room	Bedroom	1.0%						**1.9%**
Window 37 (lower)			0.68	0.09	117.69	0.7	79.8	0.0%
Window 37 (upper)			0.68	1.09	117.69	0.7	79.6	1.0%

Appendix 2 - Average Daylight Factor (ADF)

Elleray Hall and East Car Park, London TW11 0HN

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					ADF
	Primary room use	ADF	T	Aw	A	R	θ	
Window 38 (lower)			0.68	0.07	117.69	0.7	74.8	0.0%
Window 38 (upper)			0.68	0.91	117.69	0.7	77.5	0.8%
Window 39 (lower)			0.68	0.07	117.69	0.7	54.6	0.0%
Window 39 (upper)			0.68	0.91	117.69	0.7	60.8	0.6%
Total ADF for room	Living/Dining/Kitchen	2.0%						**2.4%**
Window 40 (lower)			0.68	0.91	93.59	0.7	68.9	0.4%
Window 40 (upper)			0.68	1.49	93.59	0.7	73.3	1.5%
Total ADF for room	Living/Dining/Kitchen	2.0%						**1.9%**
Window 41 (lower)			0.68	0.91	93.94	0.7	75.5	0.4%
Window 41 (upper)			0.68	1.49	93.94	0.7	78.1	1.6%
Total ADF for room	Living/Dining/Kitchen	2.0%						**2.0%**
Window 42 (lower)			0.68	0.92	99.63	0.7	75.8	0.4%
Window 42 (upper)			0.68	1.51	99.63	0.7	78.6	1.6%
Window 43			0.68	0.92	99.63	0.7	82.7	1.0%
Total ADF for room	Living/Dining/Kitchen	2.0%						**3.0%**
Window 44			0.68	0.92	100.56	0.7	82.7	1.0%
Window 45 (lower)			0.68	0.92	100.56	0.7	76.3	0.4%
Window 45 (upper)			0.68	1.51	100.56	0.7	78.5	1.6%
Total ADF for room	Living/Dining/Kitchen	2.0%						**3.0%**
Window 46 (lower)			0.68	0.92	109.41	0.7	73.4	0.3%
Window 46 (upper)			0.68	1.51	109.41	0.7	76.7	1.4%
Window 47			0.68	0.92	109.41	0.7	81.1	0.9%
Total ADF for room	Living/Dining/Kitchen	2.0%						**2.6%**
Window 48			0.68	0.92	109.72	0.69	80.9	0.9%
Window 49 (lower)			0.68	0.68	109.72	0.69	71.2	0.2%
Window 49 (upper)			0.68	1.11	109.72	0.69	74.1	1.0%
Window 50			0.68	0.92	109.72	0.69	79.8	0.9%
Window 51			0.68	0.92	109.72	0.69	74.7	0.8%
Total ADF for room	Living/Dining/Kitchen	2.0%						**3.8%**
Window 52 (lower)			0.68	0.36	73.9	0.72	75.6	0.2%
Window 52 (upper)			0.68	0.87	73.9	0.72	78.1	1.3%
Total ADF for room	Bedroom	1.0%						**1.5%**

Appendix 2 - Average Daylight Factor (ADF)
Elleray Hall and East Car Park, London TW11 0HN

Reference	Target ADF based on room use		Average Daylight Factor Coefficients					ADF
	Primary room use	ADF	T	Aw	A	R	θ	
Window 53 (lower)			0.68	0.36	75.39	0.72	73.0	0.2%
Window 53 (upper)			0.68	0.87	75.39	0.72	76.4	1.2%
Total ADF for room	Bedroom	1.0%						**1.4%**
Window 54 (lower)			0.68	0.36	80.71	0.72	65.2	0.2%
Window 54 (upper)			0.68	0.87	80.71	0.72	69.1	1.0%
Total ADF for room	Bedroom	1.0%						**1.2%**
Window 55 (lower)			0.68	0.36	80.2	0.72	65.8	0.2%
Window 55 (upper)			0.68	0.87	80.2	0.72	69.7	1.1%
Total ADF for room	Bedroom	1.0%						**1.3%**
Window 56 (lower)			0.68	0.36	85.88	0.71	67.0	0.2%
Window 56 (upper)			0.68	0.87	85.88	0.71	71.0	1.0%
Total ADF for room	Bedroom	1.0%						**1.2%**
Window 57 (lower)			0.68	0.36	85.44	0.71	70.6	0.2%
Window 57 (upper)			0.68	0.87	85.44	0.71	73.9	1.0%
Total ADF for room	Bedroom	1.0%						**1.2%**
Window 58 (lower)			0.68	0.07	117.77	0.7	53.6	0.0%
Window 58 (upper)			0.68	0.91	117.77	0.7	59.3	0.6%
Window 59 (lower)			0.68	0.07	117.77	0.7	73.6	0.0%
Window 59 (upper)			0.68	0.91	117.77	0.7	76.8	0.8%
Window 60 (lower)			0.68	0.09	117.77	0.7	71.9	0.0%
Window 60 (upper)			0.68	1.09	117.77	0.7	74.8	0.9%
Total ADF for room	Living/Dining/Kitchen	2.0%						**2.3%**
Window 61 (lower)			0.68	0.07	55.19	0.72	64.3	0.0%
Window 61 (upper)			0.68	0.91	55.19	0.72	68.2	1.6%
Total ADF for room	Bedroom	1.0%						**1.6%**
Window 62 (lower)			0.68	0.09	48.33	0.72	68.4	0.1%
Window 62 (upper)			0.68	1.09	48.33	0.72	71.2	2.3%
Total ADF for room	Bedroom	1.0%						**2.4%**

Appendix 2 - Room Depth Calculation

Elleray Hall and East Car Park, London TW11 0HN

Reference	Room Depth Coefficients				Room Depth Calculation		
	L	W	H	Rb	L/W + L/H	<=	2/1-Rb
Elleray Hall							
Ground Floor							
Window 9	6.1	6.4	2.2	0.7	3.73	<=	6.63
Window 10	5.2	6.4	2.2	0.7	3.18	<=	6.63
Window 21	3.5	4.0	2.2	0.72	2.47	<=	7.02
Window 22	4.5	3.8	2.2	0.72	3.23	<=	7.04
Window 23	4.1	5.3	2.2	0.72	2.64	<=	7.07
Window 24	5.1	4.2	2.2	0.72	3.53	<=	7.05
Window 25	3.9	3.9	2.2	0.71	2.77	<=	7.01
Window 26	4.1	4.1	2.2	0.71	2.86	<=	6.99
First Floor							
Window 35	3.5	2.6	2.1	0.72	3.01	<=	7.09
Window 36	3.5	3.2	2.1	0.72	2.76	<=	7.09
Window 40	6.0	6.1	2.2	0.7	3.71	<=	6.63
Window 41	5.0	6.4	2.2	0.7	3.05	<=	6.63
Window 52	3.7	5.8	2.2	0.72	2.32	<=	7.03
Window 53	4.2	5.3	2.2	0.72	2.7	<=	7.02
Window 54	4.0	6.4	2.2	0.72	2.44	<=	7.1
Window 55	5.3	4.7	2.2	0.72	3.54	<=	7.1
Window 56	5.3	6.1	2.2	0.71	3.28	<=	6.94
Window 57	5.1	5.6	2.2	0.71	3.23	<=	6.94
Window 61	3.5	3.2	2.1	0.72	2.76	<=	7.09
Window 62	3.5	2.6	2.1	0.72	3.01	<=	7.09

Appendix 2 - Sunlight to Windows

Elleray Hall and East Car Park, London TW11 0HN

Reference	Room Use	APSH	
		Total	Winter
Elleray Hall			
Ground Floor			
Window 4	Living/Dining/Kitchen	0%	0%
Window 5	Living/Dining/Kitchen	19%	2%
Window 6	Living/Dining/Kitchen	19%	2%
Window 7	Living/Dining/Kitchen	37%	16%
Window 8	Living/Dining/Kitchen	23%	6%
Window 9	Living/Dining/Kitchen	33%	6%
Window 10	Living/Dining/Kitchen	40%	10%
Window 11	Living/Dining/Kitchen	43%	12%
Window 12	Living/Dining/Kitchen	29%	3%
Window 13	Living/Dining/Kitchen	31%	4%
Window 14	Living/Dining/Kitchen	48%	18%
Window 15	Living/Dining/Kitchen	43%	18%
Window 16	Living/Dining/Kitchen	38%	11%
Window 17	Living/Dining/Kitchen	42%	12%
Window 18	Living/Dining/Kitchen	41%	19%
Window 19	Living/Dining/Kitchen	42%	13%
Window 20	Living/Dining/Kitchen	33%	7%
Window 27	Living/Dining/Kitchen	26%	12%
Window 28	Living/Dining/Kitchen	40%	20%
Window 29	Living/Dining/Kitchen	22%	1%
Window 30	Living/Dining/Kitchen	22%	1%
Window 31	Living/Dining/Kitchen	0%	0%
First Floor			
Window 37	Living/Dining/Kitchen	0%	0%
Window 38	Living/Dining/Kitchen	49%	21%
Window 39	Living/Dining/Kitchen	39%	12%
Window 40	Living/Dining/Kitchen	41%	9%
Window 41	Living/Dining/Kitchen	45%	13%
Window 42	Living/Dining/Kitchen	47%	14%
Window 43	Living/Dining/Kitchen	30%	4%

Appendix 2 - Sunlight to Windows

Elleray Hall and East Car Park, London TW11 0HN

Reference	Room Use	APSH	
		Total	Winter
Window 44	Living/Dining/Kitchen	32%	5%
Window 45	Living/Dining/Kitchen	52%	20%
Window 46	Living/Dining/Kitchen	56%	23%
Window 47	Living/Dining/Kitchen	45%	13%
Window 48	Living/Dining/Kitchen	45%	14%
Window 49	Living/Dining/Kitchen	48%	23%
Window 50	Living/Dining/Kitchen	44%	15%
Window 51	Living/Dining/Kitchen	39%	11%
Window 58	Living/Dining/Kitchen	36%	14%
Window 59	Living/Dining/Kitchen	50%	21%
Window 60	Living/Dining/Kitchen	1%	0%

Appendix 2 - Overshadowing to Gardens and Open Spaces
Elleray Hall and East Car Park, London TW11 0HN

Reference	Total Area	Area receiving at least 2 hours of sunlight on 21 March	
Elleray Hall			
Ground Floor			
Garden 1	15.9 m2	1.73 m2	11%
Garden 2	31.52 m2	13.45 m2	43%
Garden 3	54.66 m2	36.02 m2	66%
Garden 4	74.38 m2	54.66 m2	73%
Garden 5	61.74 m2	25.86 m2	42%
Garden 6	49.34 m2	31.82 m2	64%
Garden 7	18.46 m2	5.5 m2	30%
Garden 8	139.3 m2	112.92 m2	81%
Garden 9	7.92 m2	0.06 m2	1%

APPENDIX 3

OVERSHADOWING TO GARDENS & OPEN SPACES

Key

Receives under two hours sunlight on 21st March before and after the development.

Receives at least two hours sunlight on 21st March before and after the development.

Project Name: Elleray Hall and East Car Park, London TW11 0HN

Drawing Title: Appendix 3 - Overshadowing to Gardens and Open Spaces

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