164 Harefield Road, Uxbridge UB8 1PP

Daylight and sunlight report

Daylight and sunlight report
Sept 2025

Revision Schedule

Daylight and sunlight report

Sept 2025

Rev	Date	Details	Prepared by	Reviewed by	Approved by
1	June 2025	Draft	P Giesberg	Dr S. Bamford	P Giesberg
2	Sept 2025	Final	P Giesberg	Dr S. Bamford	P. Giesberg

Planning for Sustainability
124 City Road
London
EC1V 2NX

Tel. +44(0)207 112 7590
www.planningforsustainability.co.uk

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1 Introduction

It is proposed to erect a pair of semi-detached three-bedroom houses to the rear of 164 Harefield Road, Uxbridge UB8 1PP. The proposed new houses have the potential to affect the daylight and sunlight availability of the neighbouring properties and gardens. In addition the amenity quality with regards to daylight and sunlight of habitable rooms and garden space in the new houses was examined. This report has been prepared in support of the planning application for the proposed development.

The proposed development is situated in a sub-urban residential neighbourhood in Uxbridge. (Fig. 1).

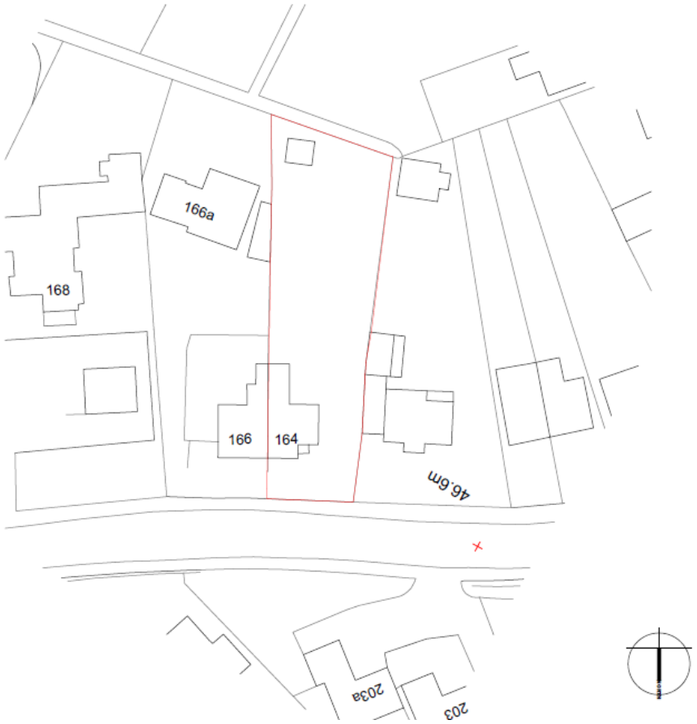


Figure 1. Site overview

2 Methodology and assessment criteria

2.1 Planning policy

The London Plan and Daylight and Sunlight Impacts

The London Plan 2021 includes a policy with regards to the daylight and sunlight impacts on neighbouring properties in "Chapter 3 Designs". Policy 6 Housing Quality and Standards states in clause D:

"*The design of development should provide sufficient daylight and sunlight to new and surrounding housing that is appropriate for its context, whilst avoiding overheating, minimising overshadowing and maximising the usability of outside amenity space."*

At this moment there are no revised guidelines in the London Plan on how to address this issue and the London Plan 2021 refers to the 2016 Housing SDP in this regard. In paragraph 1.3.45 it states:

"*An appropriate degree of flexibility needs to be applied when using BRE guidelines to assess the daylight and sunlight impacts of new development on surrounding properties, as well as within new developments themselves. Guidelines should be applied sensitively to higher density development, especially in opportunity areas, town centres, large sites and accessible locations, where BRE advice suggests considering the use of alternative targets. This should take into account local circumstances; the need to optimise housing capacity;*

2.2 Input data

A 3D model of the proposed new building and neighbouring properties was created using information provided by the client for the proposed development site, the planning portal for the neighbouring properties and a site visit to add further detail. The architectural drawings are shown in Appendix 1 and an overview of the 3D model in appendix 2.

2.3 Effects on existing buildings

The effects of the proposed buildings on the availability of daylight on the existing buildings have been considered. The appraisal has been carried out using the methodology set out by Paul Littlefair and colleagues in BR209 "*Site layout planning for daylight and sunlight: a guide to good practice*" (2022) (BRE Trust)

Diffuse light from the sky

It is important to safeguard the daylight that is available for nearby buildings in living rooms, kitchens and bedrooms. The Vertical Sky Component (VSC) is a measure of available daylight on a particular surface or window. The guidelines in the BRE209 document state that where a window has a VSC of 27 % or more daylighting is unlikely to be affected. In cases where the VSC is less than 27%, it is unlikely that a change in daylighting will be noticeable if a reduction in VSC is not less than 0.8 times the original value. Where information about internal layout is available a further test is the reduction in the area with a view of the sky is not more than 20%.

Where a room has more than 1 window the average weighted VSC could be used under certain circumstances, although care should be taken to use an average in extreme cases and where the windows are too far apart to be considered to provide daylight to the same habitable area.

Sunlight Availability

If a living room of an existing dwelling has a window facing with 90 degrees of due south and any part of a new development subtends an angle of more than 25 degrees to the horizontal measured from the centre of the window in a vertical section perpendicular to the window then the sun lighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window meets all of the following three criteria:

- It receives less than 25% of annual probable sunlight hours (ASHP) or less than 5% of the annual probable sunlight hours between 21 September and 21 March
- It receives less than 0.8 times its former sunlight hours during either period
- It has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours

Sunlight and Gardens and open space

The BRE guidance recommends that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then loss of sunlight is likely to be noticeable.

2.4 Daylight Provision Calculations

BS EN 17037:2018+A1:2021 recognises two methods to assess daylight provision to the interior. Both should be determine using specific software.

Method 1: Calculation method using daylight factors on the reference plane

Method 2 Calculation method of illuminance levels on the reference plane using climatic data for the given site and an adequate time step.

The central requirement of the standard is set out in table 1 below.

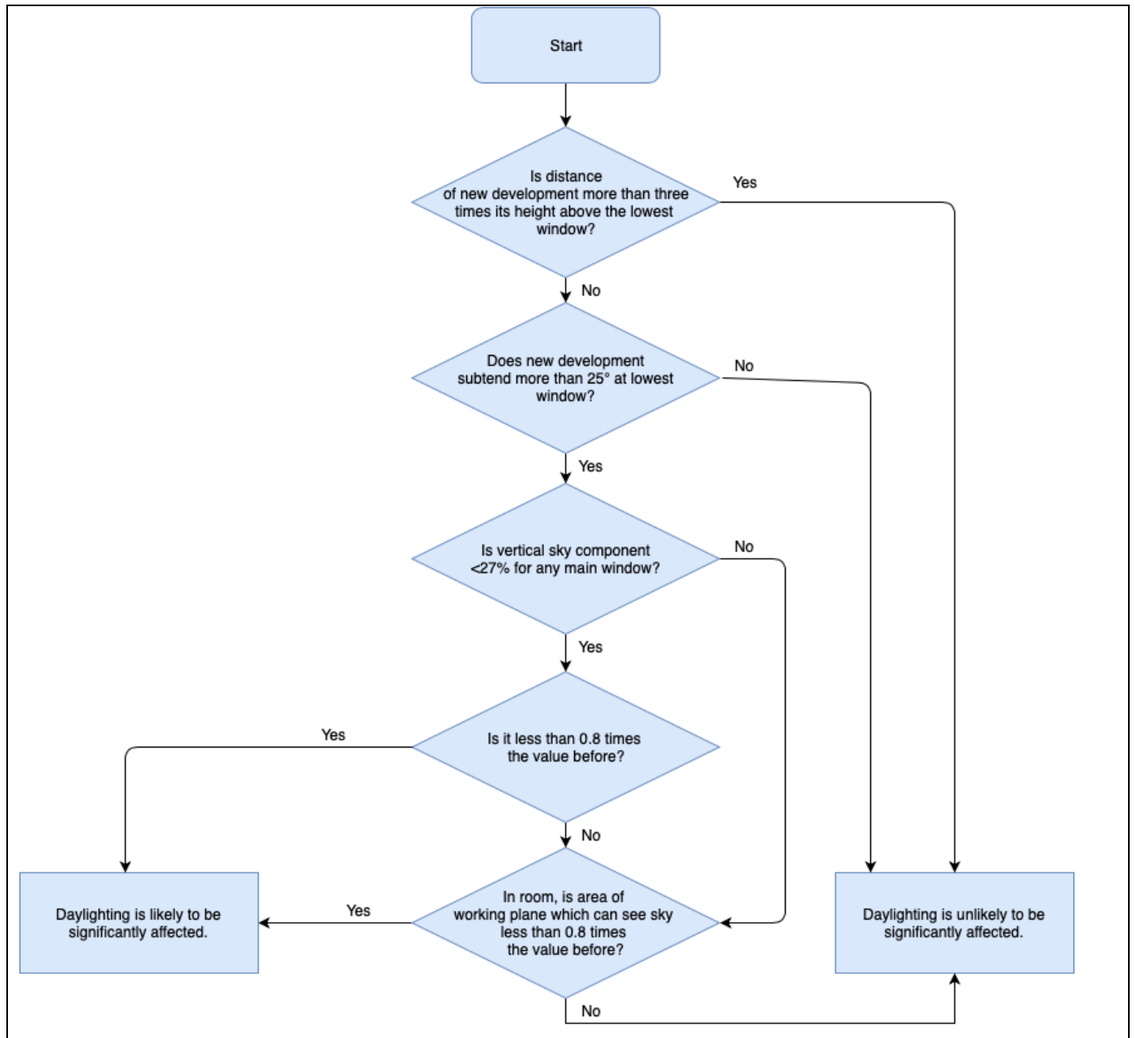


Figure 3. Decision chart daylight in existing buildings.

Table 1: Recommendations of daylight provision by daylight openings in vertical and inclined surface.

Level of recommendation for vertical and inclined daylight opening	Target illuminance E_T lx	Fraction of space for target level $F_{plane,\%}$	Minimum target illuminance E_{TM} lx	Fraction of space for minimum target level $F_{plane,\%}$	Fraction of daylight hours $F_{time,\%}$
Minimum	300	50 %	100	95 %	50 %
Medium	500	50 %	300	95 %	50 %
High	750	50 %	500	95 %	50 %
NOTE Table A.3 gives target daylight factor (D_T) and minimum target daylight factor (D_{TM}) corresponding to target illuminance level and minimum target illuminance, respectively, for the CEN capital cities.					

Using method 2 will directly provide these values. The daylight factor is a measure of the amount of daylight relative to the external daylight available. When using method 1, the requirement for the daylight factor will vary with the geographical location of the development site. So for instance to achieve a target of 300 Lux in Athens a Daylight Factor of 1.5% is required, whereas the same 300 Lux target would require a Daylight Factor of 2.6 in Reykjavik, Iceland.

There are some specific recommendations for dwellings in the UK. These are set out in the UK National Annex to the standard. The UK committee on BS EN 17037: 2018 believes that the recommendations as stated in the table 1 are not always achievable in all rooms of a dwelling. This could be the case for instance for rooms in basements, dwellings in dense urban areas or where existing buildings are being converted into dwellings.

The UK National Annex gives guidance on minimum daylight provision in all UK dwellings. The recommendations are 100 lux for bedrooms, 150 lux for living rooms and 200 lux for kitchens to be achieved in 50% of the time that daylight is available for 50 % of the assessment grid. The recommendations for 95% of the assessment grid do not apply for to dwellings in the UK.

2.5 Building parameters

The analysis that is described in this report was carried out using the Radiance module of the IES VE software suite, which is widely used internationally to analyse daylight in buildings. For this study the Annual Dynamic Illuminance analysis was used, which is a Climate Based Daylight Modelling approach.

The daylight in a room is determined by a wide range of factors. These factors can be external, such as nearby objects that provide both blocking of daylight and reflections. Other factors are internal and include size and shape of rooms as well as the light reflecting characteristics of walls, ceilings and floors. Finally, the light transmittance of the glazing is a determinant of the daylight levels in a building.

BRE209 provides guidance on the transmittance values of glazing as well as the light reflectance of internal and external surfaces.

For the light reflectance of the internal surfaces, values consistent with a contemporary light finishes of the interior were used: interior walls, 0.8, ceilings, 0.8, floors 0.4. External surfaces were assumed to have a reflectance value of 0.2. Standard double glazing was assumed with a diffuse transmittance value of 0.68 and maintenance factor of 0.96 for windows.

As recommended in the BRE209 guidance document, an “Area of Interest” was defined as the internal room space offset by 30 cm from the inside of the walls. The working plane was set at 0.85 m and the distance between points in the assessment grid was 0.25 m.

3 Results

3.1 Impact on Neighbouring Properties

Scope of the assessment

Not all neighbouring properties need to be assessed in detail. A first step to screen the need for a detailed computerised analysis is applying two basic sets of rules to the neighbouring buildings. For windows that are opposite a new building, the 25 degree rule would apply. For this it is required to measure the angle to the horizontal subtended by the new development at the level of the centre of the lowest window. If this angle is less than 25° for the whole of the development then it is unlikely to have a substantial effect on the diffuse skylight enjoyed by the existing building. If, for any part of the new development, this angle is more than 25°, a more detailed check is needed to find the loss of skylight to the existing building. The lowest window opposite the development in the house at 162 Harefield Road has an angle to the top of the proposed development that is less than 25 degrees.

The second test it the 45 degree rule. For this a line is draws diagonally down at an angle of 45° away from the near top corner of the extension. Next take the plan and draw diagonally back at an angle of 45° towards the window wall from the end of the extension. Only if the centre of a main window of the next-door property lies on the extension side of both these 45° lines then the extension may well cause a significant reduction in the skylight received by the window. Alternatively, a line from the centre of the neighbouring window towards the proposed development can be drawn to test the need for a detailed analysis. The 45 degree rule is not breached in plan and therefore no further analysis is required to conclude that there is no material impact to be expected. There is no need to further consider the 45 degree line in elevation, as both lines need to be breached for the need of a detailed analysis to be triggered.

Overshadowing and sunlight availability neighbouring gardens

Three garden areas were identified as having potential to be affected by the proposed development: the rear garden at 162 Harefield Road, the existing 164 Harefield Road and 166A Harefield Road. The results are shown in table 2 below and in Appendix 3 and show that there is no material increase in overshadowing of the neighbouring gardens.

Building Name	Area	Lit area Ex	Lit Area Pr	Ex %	Prop %	Ratio	Meets BRE Target
162 Back Garden	431	405	405	94%	94%	1.00	Yes
164 Back Garden	97	96	96	99%	99%	1.00	Yes
166A Back Garden	493	376	368	76%	75%	0.98	Yes
Proposed development							
Flat 1	80	-	40	50%	-	-	Yes
Flat 2	75	-	48	65%	-	-	Yes

3.2 Daylight and Sunlight Within Proposed Development

Illumination levels habitable rooms

Appendix 4 shows the results of the illumination test for the habitable rooms in the proposed new development using method 1. With the current design all the rooms meet the target values that are set out in the BRE guidance document. Distribution graphs are shown in Appendix 5.

Solar exposure

The proposed development has a living room that faces within 90 degrees of due north. It also has a large dining room and kitchen facing within 90 degrees due south. This satisfies the requirement of having at least main window wall facing within 90 degrees due south. Appendix 6 shows the exposure to direct sunlight on 21 March of each of the windows in the living room and dining room. All of the windows receive at least 1.5 hours of direct sunlight on that day.

Amenity Space

Both a front and rear garden are provided for use by the future residents of the proposed development. The BRE guidance suggests that only rear gardens should be considered as private space. The results in table 2 and appendix 7 includes an entry for the sunlight availability in the proposed rear garden and shows that 50% and 65% of the respective garden spaces will receive at least 2 hours of direct sunlight on 21 March. This meets the BRE criteria on amenity space.

4 Discussion and conclusion

A daylight and sunlight assessment was carried out analysing the effects of the proposed development on neighbouring properties.

There were no windows in the neighbouring properties that were likely to be affected by the proposed development. The garden space in the adjacent properties were examined in detail. None of these are predicted to be affected materially by overshadowing caused by the proposed new dwelling.

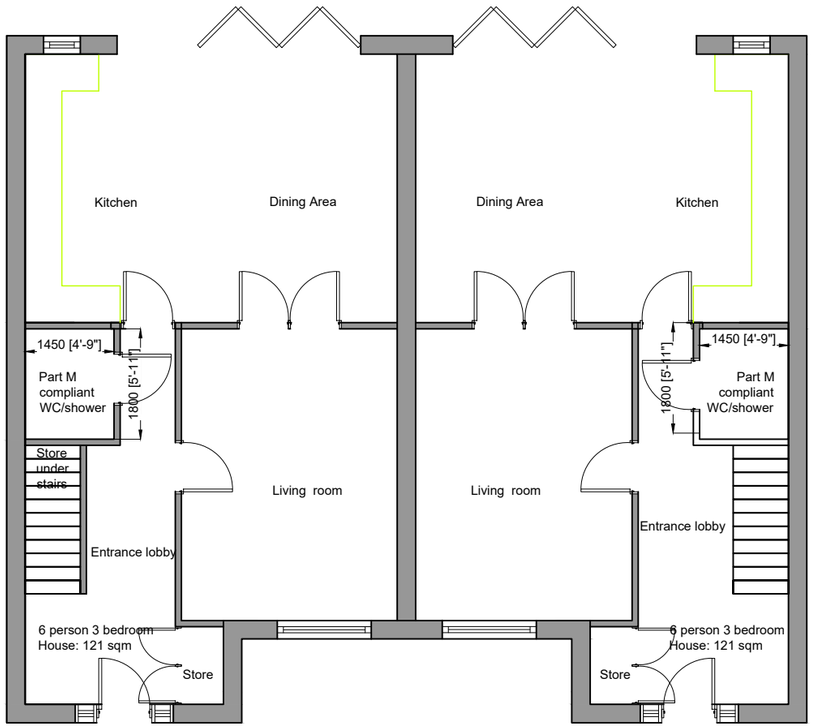
An analysis of the available daylight and sunlight for the proposed new development shows that all of the spaces will receive sufficient levels of internal daylight when considering a contemporary light finish.

The living areas in the proposed new development will meet the minimum 1.5 hours of direct sunlight on 21 March.

50% of the proposed rear gardens receives more than 2 hours of direct sunlight on 21 March in compliance with the BRE guidelines.

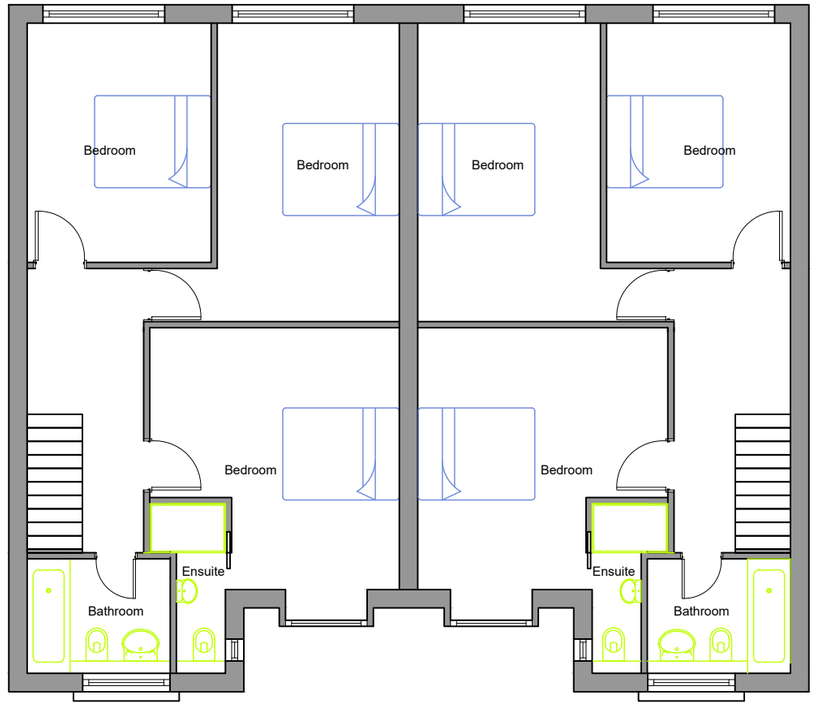
It is therefore concluded that the proposed development complies with the BRE guideline published in "*Site layout planning for daylight and sunlight: a guide to good practice*" (2022) (BRE Trust), as well as with the planning requirements in the London Plan.

Appendix 1. Proposed Drawings



Proposed Ground Floor

Proposed plans to be in accordance with M4(2) as set out in Approved Document M to the Building Regulations (2015 edition)



Proposed First Floor

Client

Project

Rear of 164 Harefield Rd, UB8 1PP

Drawing title

Proposed Ground & First Floor

Revisions

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London Fields Studios
11-17 Exmouth Place
London E8 3RW
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RP	14/5/25

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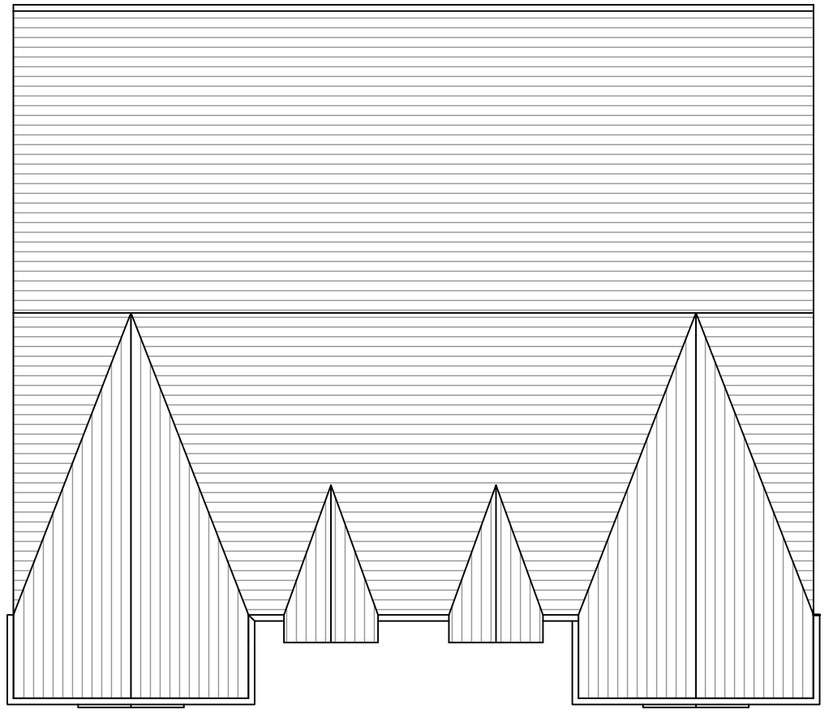

Proposed Roof Plan

Client

Project

Rear of 164 Harefield Rd, UB8 1PP

Drawing title

Proposed Roof Plan

Revisions

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Proposed Front Elevation

Client

Project

Rear of 164 Harefield Rd, UB8 1PP

Drawing title

Proposed front elevation

Revisions

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Proposed Rear Elevation

Client

Project

Rear of 164 Harefield Rd, UB8 1PP

Drawing title

Proposed rear elevation

Revisions

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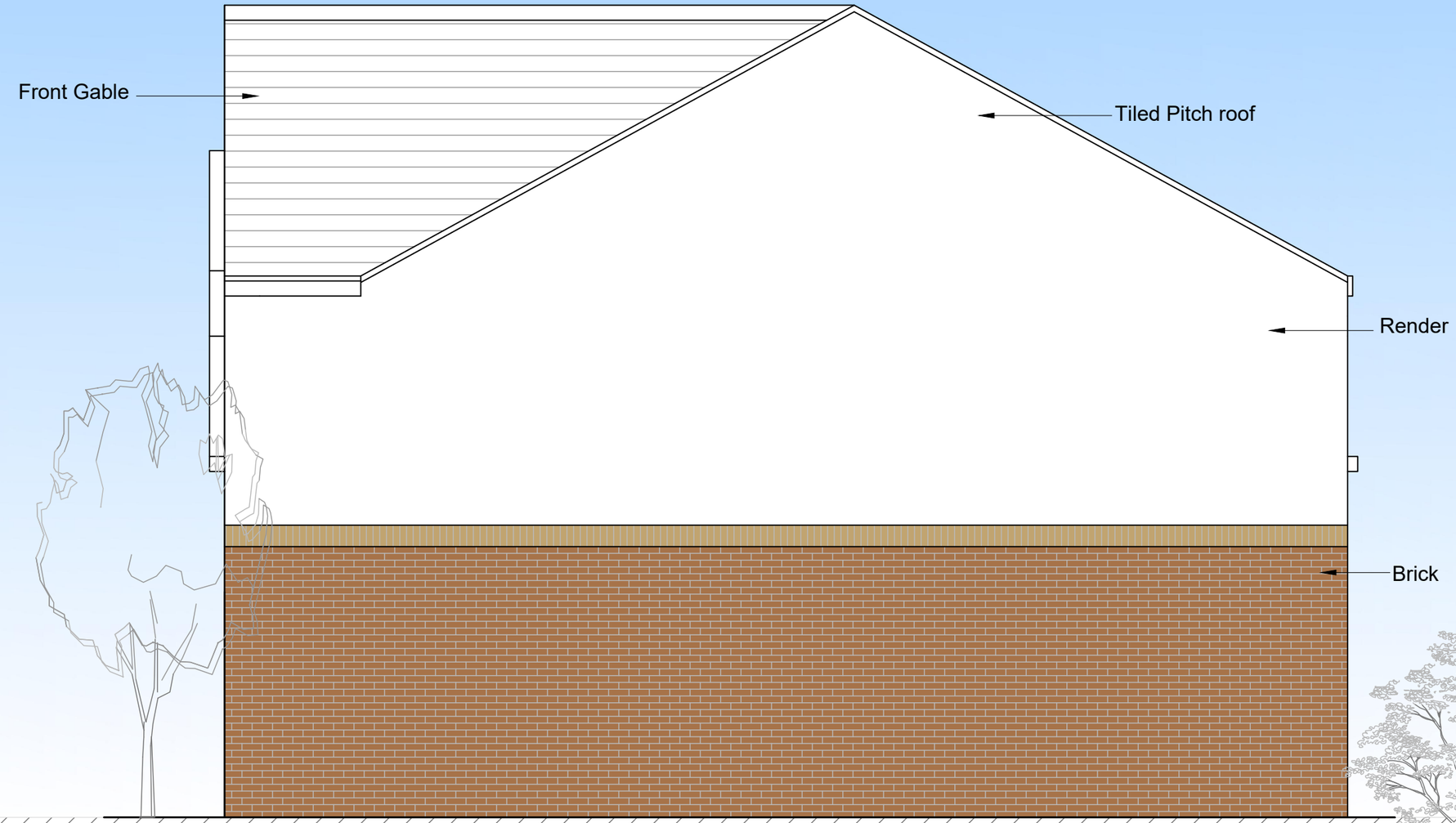

Proposed Side Elevation

Client

Project

Rear of 164 Harefield Rd, UB8 1PP

Drawing title

Proposed side elevation

Revisions

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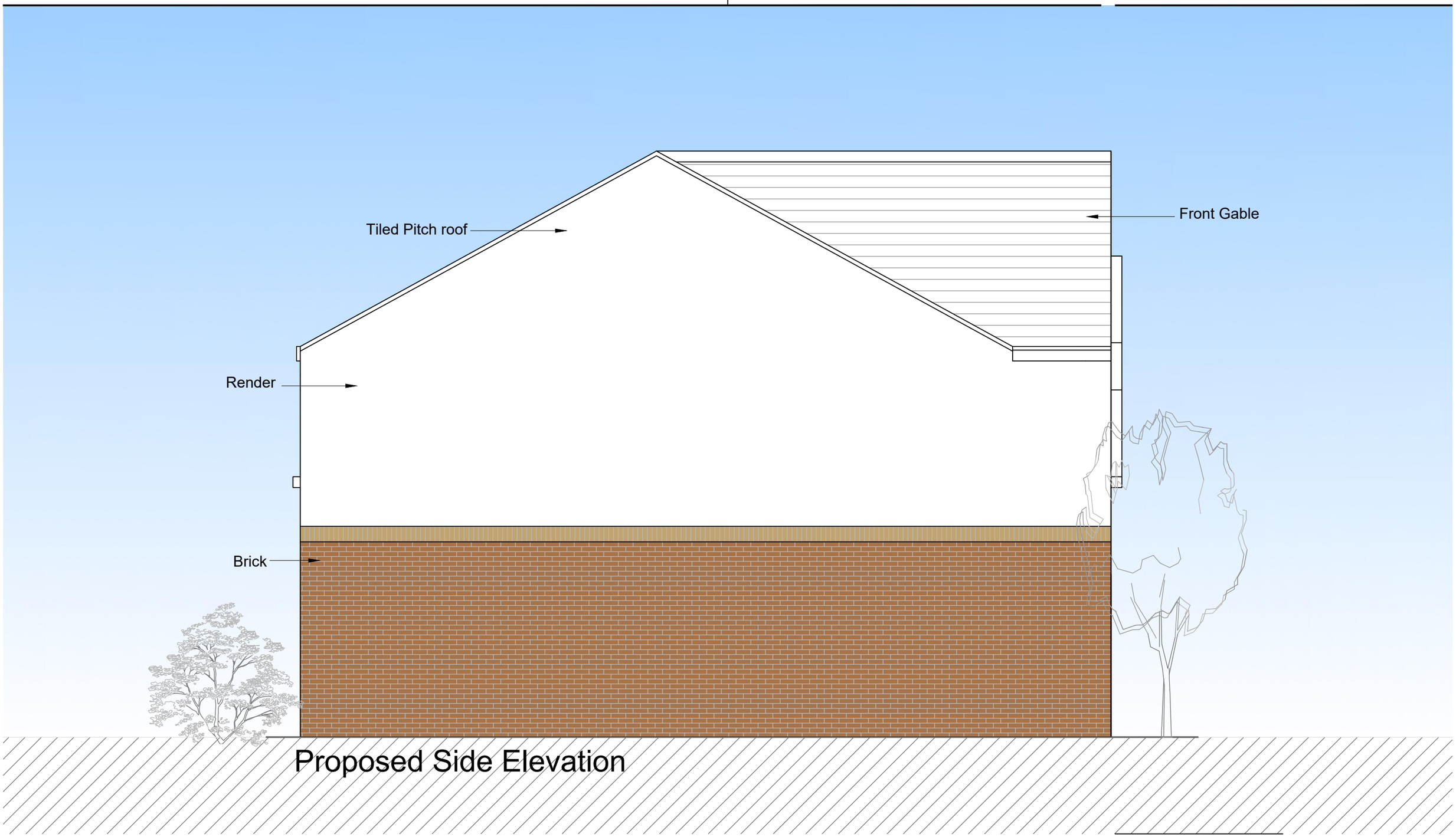

Proposed Side Elevation

Client

Project

Rear of 164 Harefield Rd, UB8 1PP

Drawing title

Proposed side elevation

Revisions

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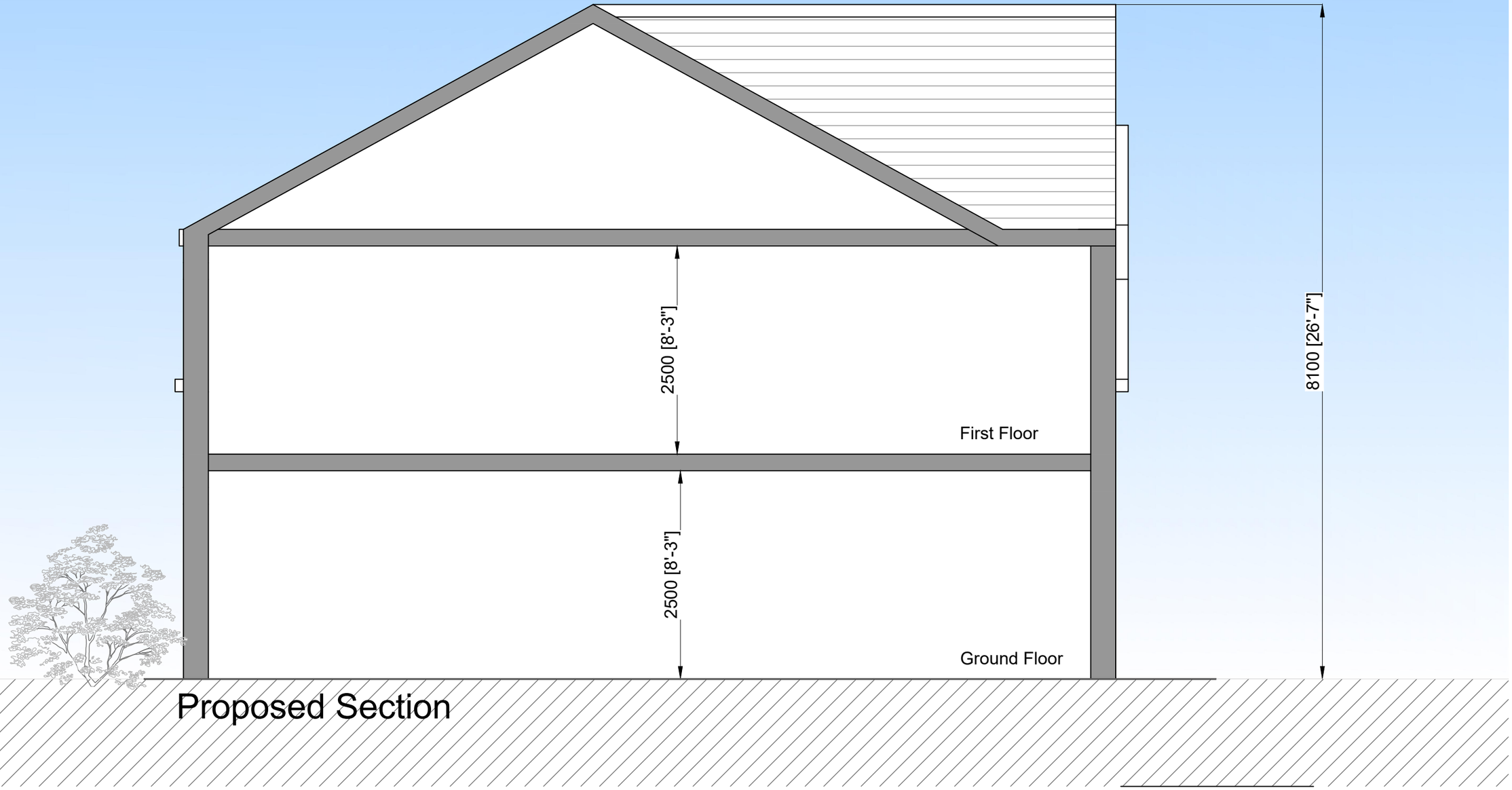

Proposed Section

Client

Project

Rear of 164 Harefield Rd, UB8 1PP

Drawing title

Proposed Section

Revisions

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Appendix 2 Model Overview

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Model Overview#

Land to rear of 164 Harefield Road, Uxbridge, UB8 1PP

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Appendix 3 Overshadowing gardens

AMENITY Ratio

Gain

Loss

>= 120

< 120

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Impact on Sun Exposure Neighbouring Gardens

Land to rear of 164 Harefield Road, Uxbridge, UB8 1PP

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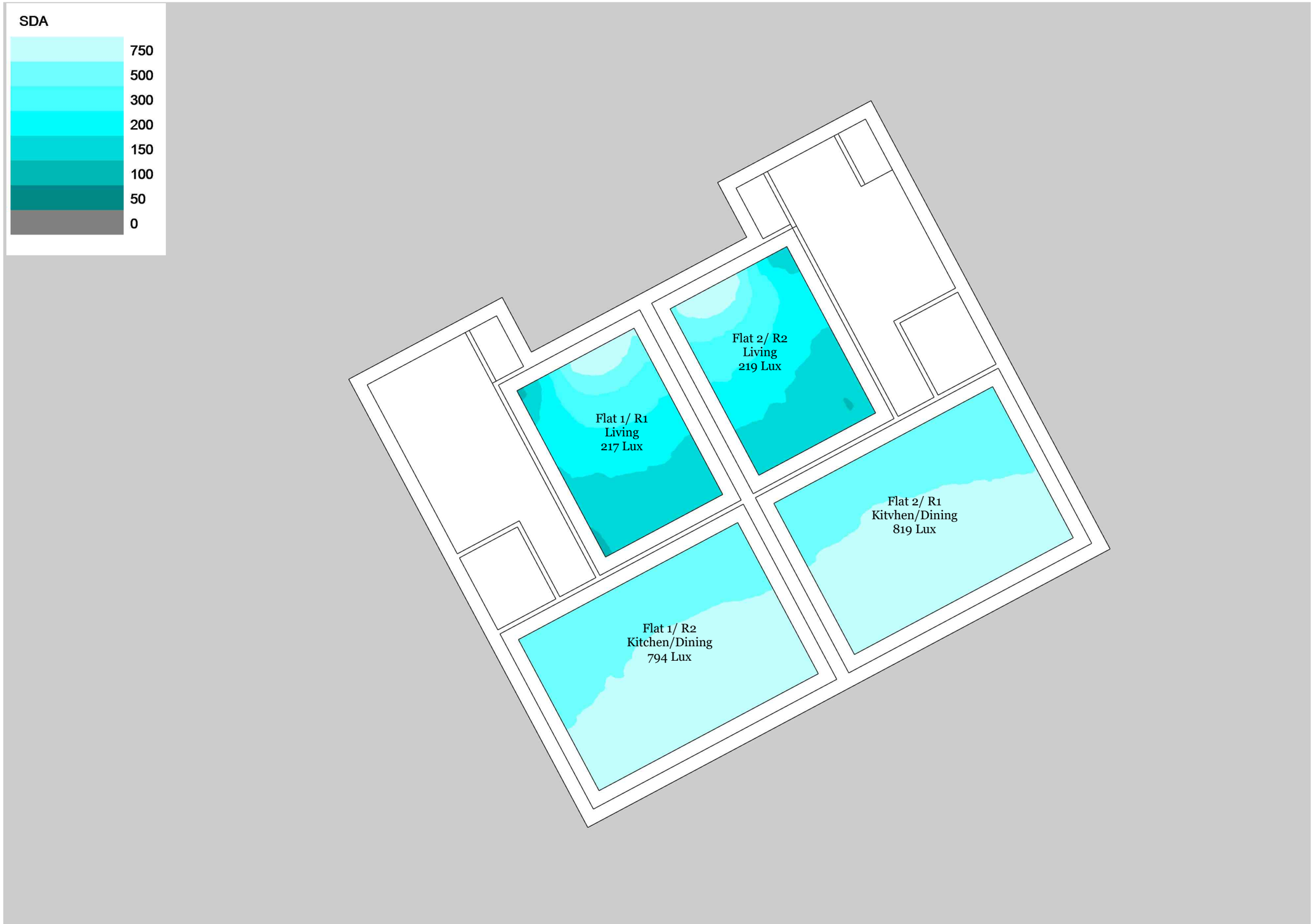
Appendix 4 Illumination levels proposed development

Building Ref	Floor Ref	Room Ref	Room Use	Room Area	Effective Area	Median Lux	Area Meeting Req Lux	% of Area Meeting Req Lux	Req Lux	Req % of Space	Req % of Hours	Occupied Hours	Test
Flat 1	First	R1	Bedroom	15.41	10.75	270	10.75	100%	100	50%	50%	4380	YES
Flat 1	First	R2	Bedroom	17.42	12.43	463	12.43	100%	100	50%	50%	4380	YES
Flat 1	First	R3	Bedroom	9.75	6.26	842	6.26	100%	100	50%	50%	4380	YES
Flat 1	Ground	R1	Living Room	16.79	12.17	217	11.82	97%	150	50%	50%	4380	YES
Flat 1	Ground	R2	LKD	26.61	20.69	794	20.69	100%	200	50%	50%	4380	YES
Flat 2	First	R1	Bedroom	15.41	10.75	296	10.75	100%	100	50%	50%	4380	YES
Flat 2	First	R2	Bedroom	17.42	12.42	474	12.42	100%	100	50%	50%	4380	YES
Flat 2	First	R3	Bedroom	9.75	6.26	938	6.26	100%	100	50%	50%	4380	YES
Flat 2	Ground	R1	LKD	26.57	20.65	819	20.65	100%	200	50%	50%	4380	YES
Flat 2	Ground	R2	Living Room	16.75	12.13	219	12.05	99%	150	50%	50%	4380	YES

Appendix 5 Internal Daylight Distribution



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Daylight Distribution Ground Floor

Land to rear of 164 Harefield Road, Uxbridge, UB8 1PP

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PLANNING FOR SUSTAINABILITY

Daylight Distribution First Floor

Land to rear of 164 Harefield Road, Uxbridge, UB8 1PP

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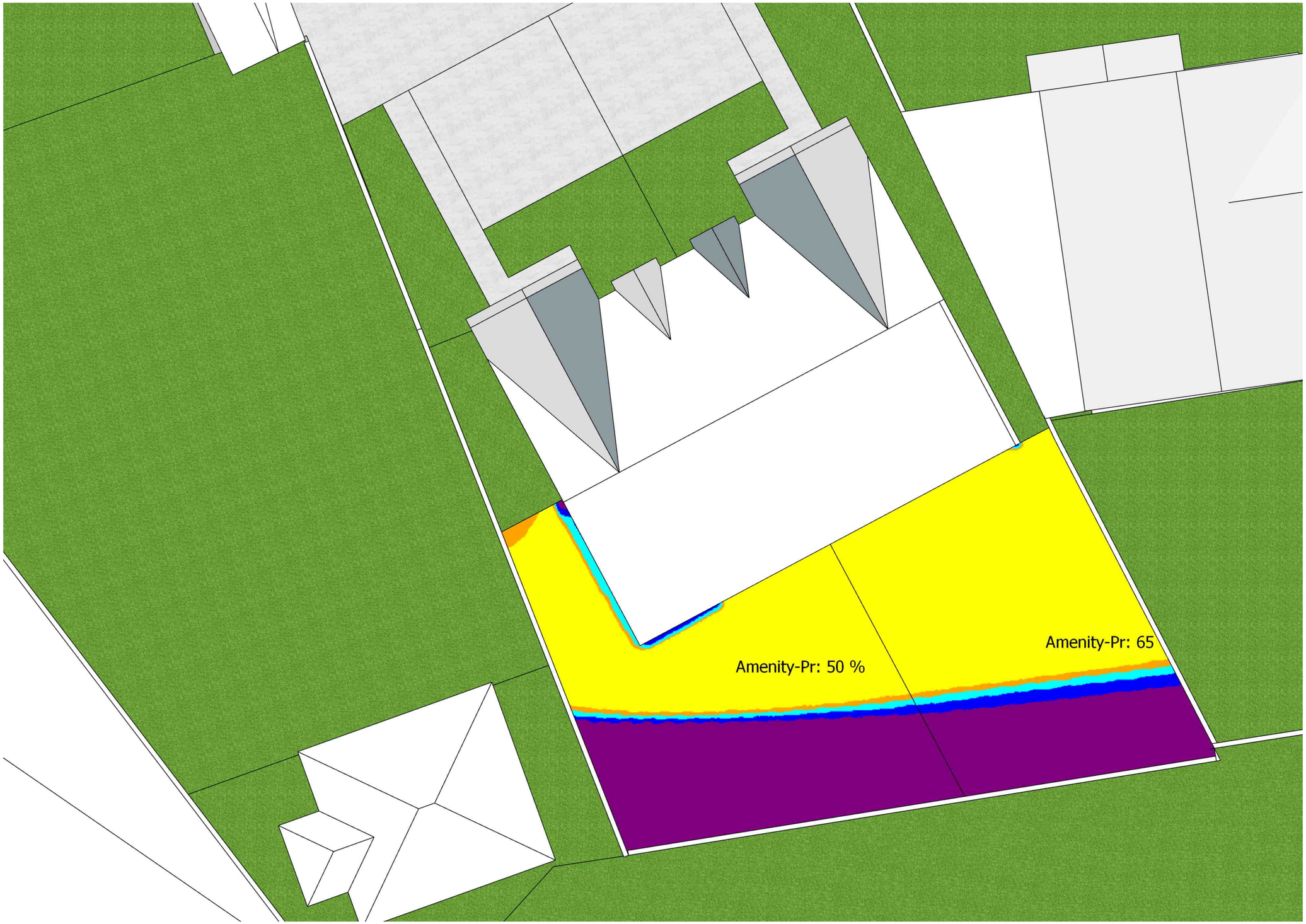
Appendix 6 Sunlight Exposure Habitable Rooms

Building Ref	Floor Ref	Room Ref	Room Use	Window Ref	Window Orientation	Proposed SE (Hours)	Rating
Flat 1	Ground	R2	LKD	Flat 1_Ground_W2	152°	8.1	
				Flat 1_Ground_W1	152°	6.7	
					Total	**8.1**	**High**
Flat 2	Ground	R1	LKD	Flat 2_Ground_W1	152°	8	
				Flat 2_Ground_W2	152°	5.4	
					Total	**8**	**High**

Appendix 7 Sunlight Exposure Amenity Space



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Sun Exposure Private Amenity Space

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