

INTERNAL DAYLIGHT

105-109 MONTAGUE STREET

WORTHING

VERSION 02

FEBRUARY 2026



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PROJECT NAME: 105-109 Montague Street, Worthing

PROJECT REFERENCE: X327

Version	Date	Description of changes	Author	Checked by
01	16.01.2026	First issue	DP	DB
02	11.02.2026	Updated layout	DP	DB

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1.0 INTRODUCTION

XDA Consulting Ltd has been appointed to prepare this daylight report to assess the internal daylight levels for the proposed development of 105-109 Montague Street, Worthing. The design proposals are for the conversion scheme to create 13no. flats over the 1st and 2nd floors.

2.0 ASSESSMENT CRITERIA

The criteria used for assessment of daylight in a new dwelling is taken from the BRE Guidance document “Site Layout Planning for Daylight and Sunlight, a Guide to Good Practice, 2022”.

The BRE guidance document refers to the British Standard ‘Daylight in Buildings’ EN 17037:2018 which contains advice and guidance on interior daylighting. It states a space is considered to provide adequate daylight if a target illuminance level is achieved across a fraction of the reference plane within a space for at least half of the daylight hours. For spaces with vertical or inclined daylight openings, a minimum target illuminance level is also to be achieved across the reference plane. The reference plane of the space is located 0.85m above floor level.

BS EN 17037 gives three levels of recommendation for daylight provision in interior spaces: minimum, medium and high, see Table 2.1. For compliance with the standard, a daylit space should achieve the minimum level of recommendation.

Level of recommendation	Target Illuminance E_T lux for 50% assessment grid	Target Illuminance E_{TM} lux for 95% assessment grid
Minimum	300	100
Medium	500	300
High	750	500

Table 2.1 Values of target illuminance from daylight over at least half of the daylight hours

The UK National Annex of BS EN 17037 gives specific recommendations for habitable rooms in dwellings in the UK. These are intended for ‘hard to light’ dwellings, for example in basements or with significant external obstructions such as a dense urban area or with tall trees outside. They could also apply to existing buildings being refurbished or converted into dwellings. The National Annex NA.2 recommends that the target illuminances in Table 2.2 are exceeded over at least 50 % of the points on a reference plane 0.85 m above the floor, for at least half of the daylight hours.

Room Type	Target Illuminance E_T lux for 50% assessment grid
Kitchen	200
Living Room	150
Bedroom	100

Table 2.2 Values of target illuminance for room types in UK dwellings required in BS EN 17037:2018 NA.2

3.0 METHODOLOGY

The Radiance module in the IES Virtual Environment (VE) software is used to undertake the climate-based daylight modelling to calculate the spatial daylight autonomy (sDA) to determine the illuminance results.

4.0 MODEL SETTINGS

4.1 3D MODELS

A 3D model of the proposed development site has been constructed based on the following drawings provided by Turner Associates:

- TA 1591-1016.12.2025-Block & site location plans
- TA 1591-12A-27.01.2026-proposed floor plans
- TA 1591-13-16.12.2025-proposed floor plan
- TA 1591-14-16.12.2025-proposed elevation
- TA 1591-15-16.12.2025-proposed elevation
- TA 1591-16-16.12.2025-proposed elevation
- TA 1591-16A-16.12.2025-proposed elevation
- TA 1591-17-16.12.2025-proposed elevation
- TA 1591-18-16.12.2025-proposed section BB
- TA 1591-19-16.12.2025-proposed section CC

Axonometric images of the model are presented in Figure 4.1 to Figure 4.4 with the site orientation presented in Figure 4.5. Flat layouts can be seen in Appendix A.

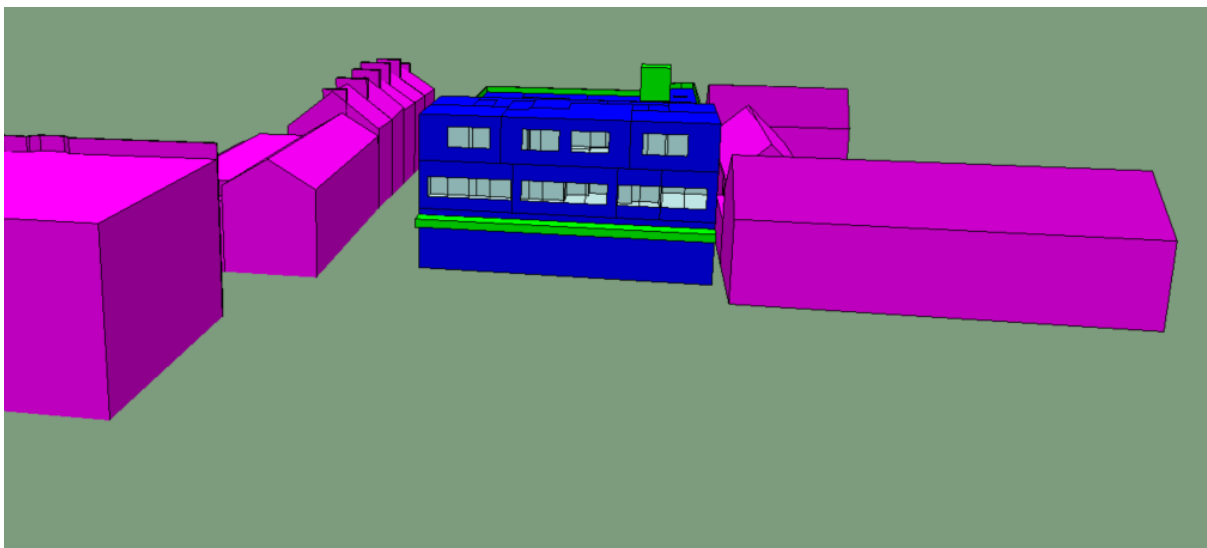


Figure 4.1 3D view of proposed development – view of North elevation

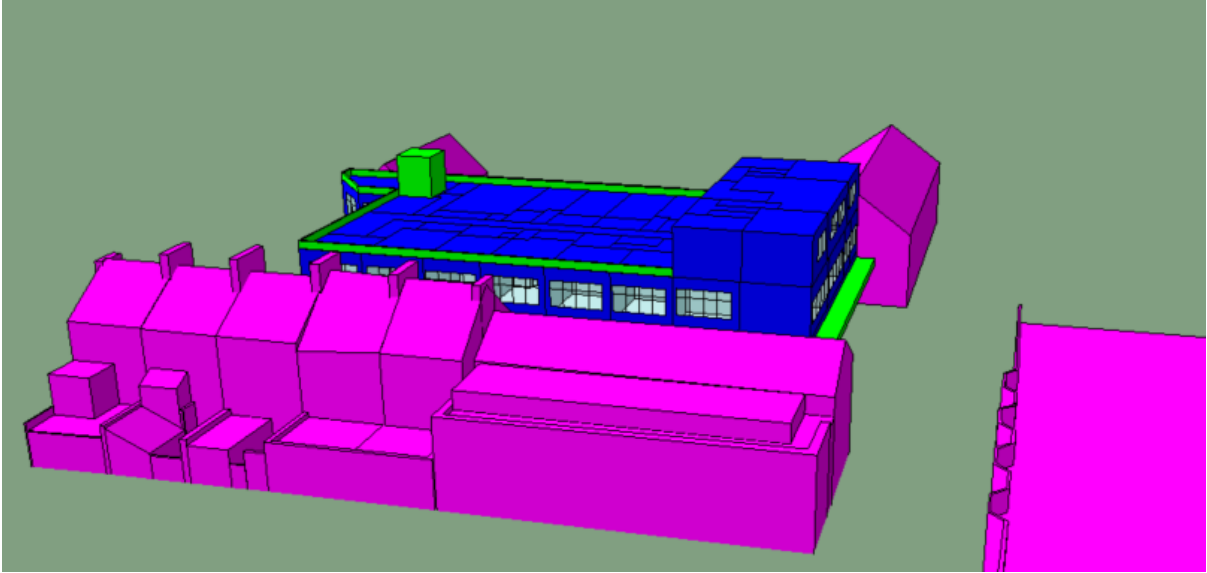


Figure 4.2 3D view of proposed development – view of East elevation

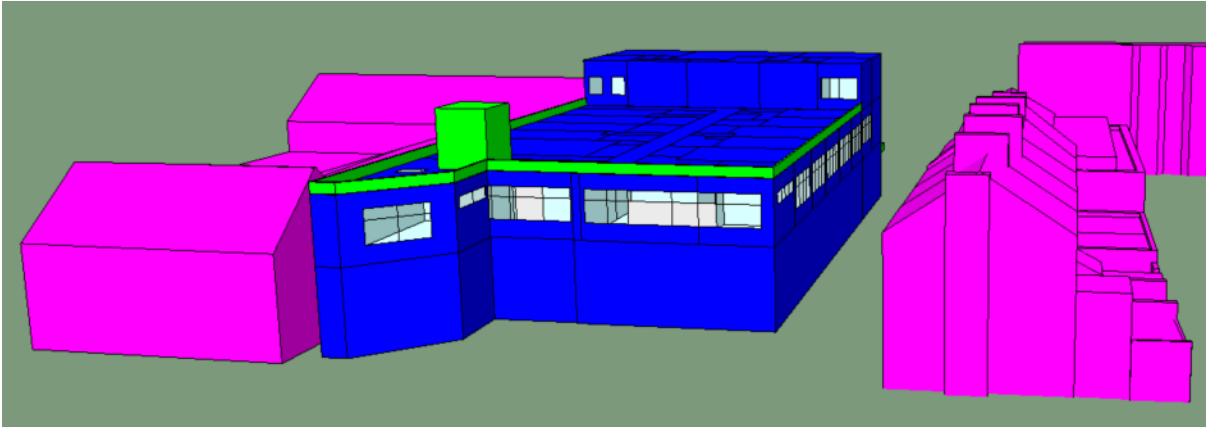


Figure 4.3 3D view of proposed development – view of South elevation

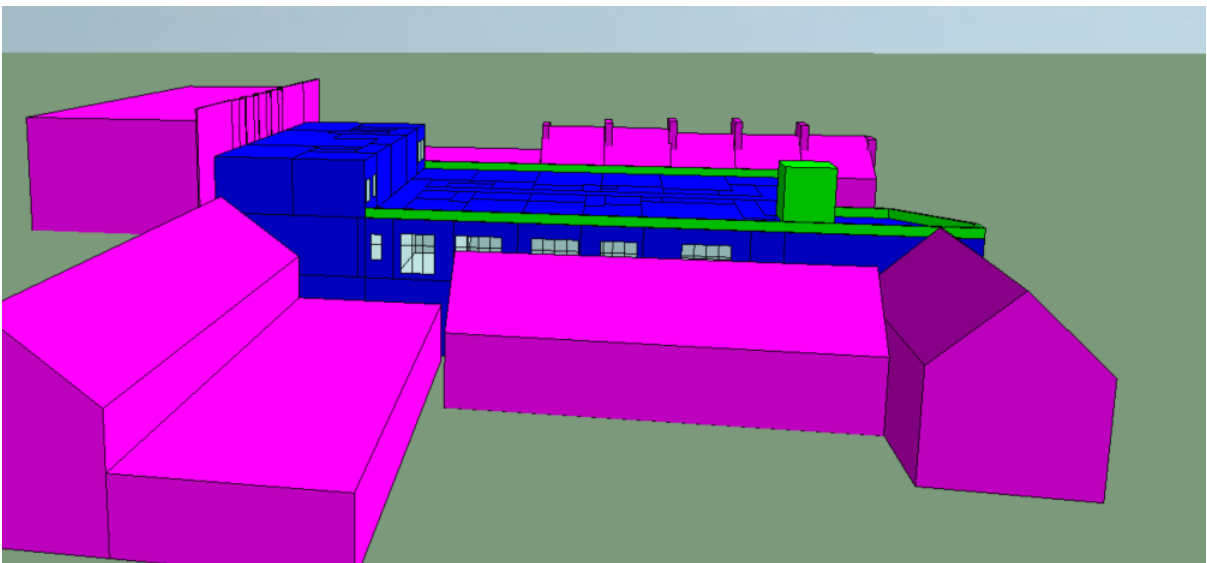


Figure 4.4 3D view of proposed development – view of West elevation

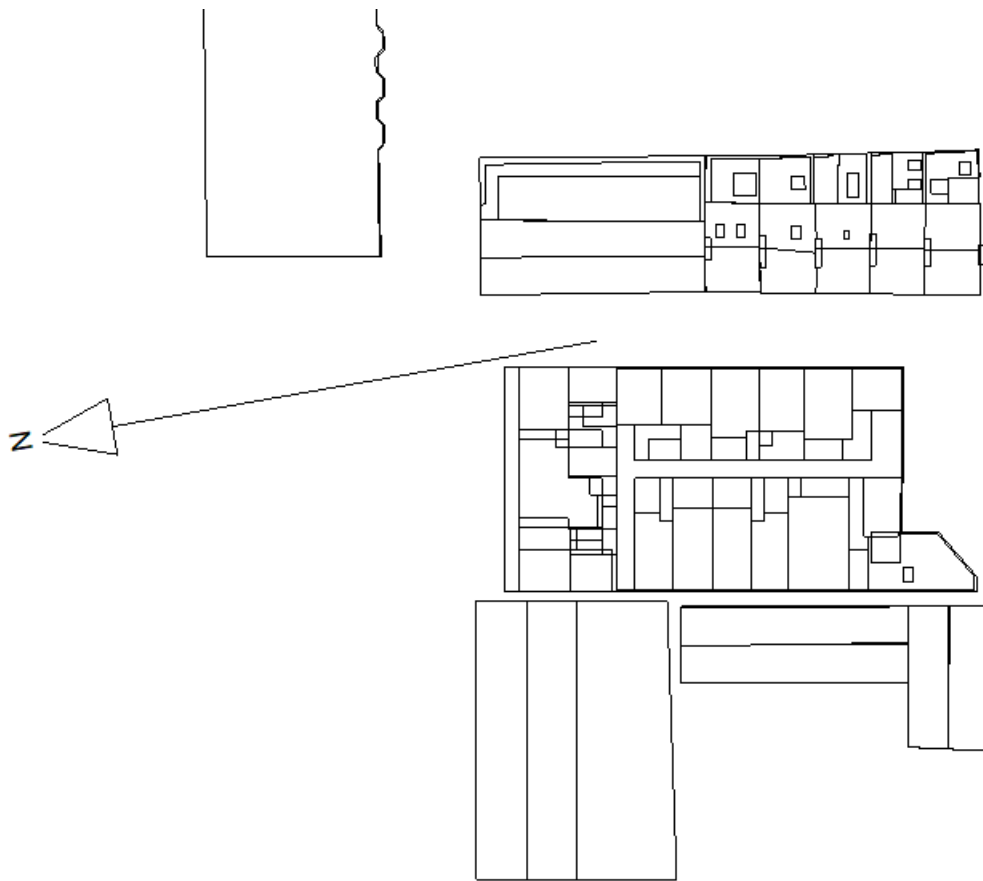


Figure 4.5 Site view showing the site orientation of the building

4.2 MODEL PROPERTIES

Table 4.1 details the reflectance values of the building materials in the daylight calculations. These are based in accordance with BRE guidance Clause C24.

Building Element	Colour	Reflectance
External Walls	As per BRE	0.2
Internal walls	As per BRE	0.5
Ceiling	As per BRE	0.7
Carpet	As per BRE	0.2

Table 4.1 Construction material settings

The windows are set to have a frame of 15% applied and the overall light transmittance for the spatial daylight autonomy (sDA) calculation is 40%. This is because the calculation is required to include blinds which are considered closed for part of the day.

The internal daylight has been determined for the proposed flats. The results are presented in Table 5.1 which are presented against the BS EN 17037 minimum recommendations along with the UK National Annex minimum requirements for dwellings.

5.0 RESULTS & DISCUSSION

The internal daylight has been determined for the 13no. proposed flats. The results are presented in Table 5.1 which are presented against the BS EN 17037 minimum recommendations along with the UK National Annex minimum requirements for dwellings. Due to the nature of the proposed development being a conversion, it is the National Annex NA.2 targets that the building needs to meet.

Several of the proposed flats have separate internal kitchen spaces, these have not been included within the analysis as they do not have any windows to allow daylight into the spaces.

Flat No.	Room	BS EN 17037 Minimum Target Illuminance		National Annex NA.2 Minimum Target Illuminance for Dwellings		Guidance met?
		E_T lux 300 lux for 50% assessment grid	E_{TM} lux 100 lux for 95% assessment grid	E_T lux for 50% assessment grid	% of reference plane	
FLAT 1	Bedroom 1	100%	100%	100	100%	✓
FLAT 1	KLD	51%	95%	200	61%	✓
FLAT 2	Living / Dining	57%	100%	150	69%	✓
FLAT 2	Bedroom 1	53%	97%	100	97%	✓
FLAT 3	Living / Dining	67%	100%	150	91%	✓
FLAT 3	Bedroom 1	78%	100%	100	100%	✓
FLAT 4	Bedroom 1	100%	100%	100	100%	✓
FLAT 4	KLD	100%	100%	200	100%	✓
FLAT 5	Studio	71%	98%	200	84%	✓
FLAT 6	Bedroom 1	84%	100%	100	100%	✓
FLAT 6	KLD	46%	100%	200	60%	✓
FLAT 7	Bedroom 1	54%	100%	100	100%	✓
FLAT 7	Living / Dining	48%	100%	150	75%	✓
FLAT 8	Living / Dining	44%	79%	150	65%	✓
FLAT 8	Bedroom 1	42%	77%	100	77%	✓
FLAT 9	Living / Bedroom	44%	100%	150	89%	✓
FLAT 10	Bedroom 1	99%	100%	100	100%	✓
FLAT 10	KLD	98%	100%	200	100%	✓
FLAT 11	Bedroom 1	100%	100%	100	100%	✓
FLAT 11	KLD	83%	100%	200	98%	✓
FLAT 12	Studio	65%	100%	200	75%	✓
FLAT 13	Bedroom 1	97%	100%	100	100%	✓
FLAT 13	KLD	81%	100%	200	98%	✓

Table 5.1 Internal daylight results

The results show that the habitable rooms assessed for all of the 13no. flats meet the National Annex NA.2 minimum target illuminance for dwellings and will therefore achieve good daylighting. All 13no. proposed flats are therefore BRE compliant.

6.0 CONCLUSIONS

This report has assessed the internal daylight levels for the proposed 13no. flats at 105-109 Montague Street, Worthing.

All assessed habitable rooms, demonstrate compliance when using the standard reflectance values for internal surfaces as dictated by the BRE guidance.

Therefore, all of the proposed flats in 105-109 Montague Street Worthing are able to achieve good internal daylight levels in accordance with the BRE Guidance document "Site Layout Planning for Daylight and Sunlight, a Guide to Good Practice, 2022 and BS EN 17037 National Annex".

7.0 APPENDIX A

Flat layouts with room references used in calculations.



Figure 7.1 Internal Layout of the proposed Flats 1, 2, 3, 4, 5, 6, 7, 8, 9 & 10.

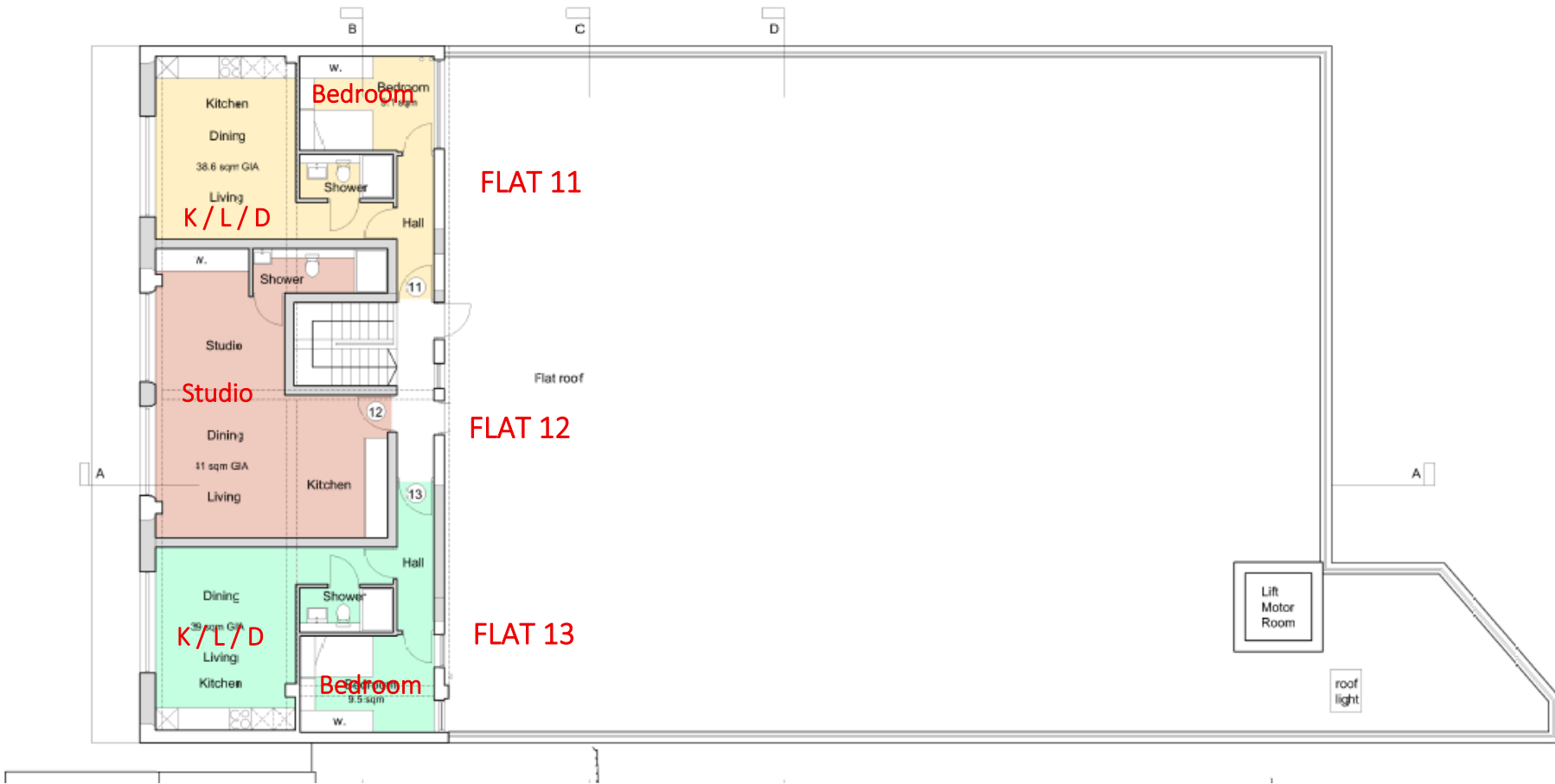


Figure 7.2 Internal Layout of the proposed Flats 11, 12 & 13.