Parkgate Street Residential,

Internal Daylight Analysis Report Amendment 1

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1. Glossary

BRE Guide

The Building Research Establishment's (BRE) Site Layout Planning for Daylight and Sunlight. A guide to good practice (BRE 209) 3rd edition/ 2022 edition, (the "BRE Guide"). This document is specifically designed to facilitate good building design within the planning context. The BRE Guide clarifies and expands on the methodologies contained in IS EN 17037 and BS EN 17037 with specific relevance to residential buildings, and as such has been deemed to take precedence over these other documents.

Probable Sunlight Hours

Annual probable sunlight hours and winter probable sunlight hours, also referred to as APSH and WPSH, are used for the assessment of impact on neighbouring buildings by a proposed development. APSH and WPSH are a measure of probable direct sunlight to a window or surface and therefore are only relevant to windows within 90 degrees of south for buildings in the northern hemisphere. Therefore, any window with a northerly aspect (i.e. orientated between North of due East, and North of due West) is therefore not assessed within the methodology.

Vertical Sky Component

Vertical Sky Component, also referred to as VSC, is used for the assessment of impact on neighbouring buildings by a proposed development with respect to daylight availability. VSC is a measure of percentage of illuminance that a point can receive from the CIE Overcast Sky as a percentage of that received at unobstructed horizontal locations. In simple terms, how much of the sky that can be seen for a given point. VSC assessments do not include reflected light. VSC is calculated for compliance with BRE Guide.

Amenity Sunlight

Amenity sunlight is a measure of direct daylight received on an area over the duration of 21st March based on the sun's solar position for a geographical location. As the 21st of March is the solar equinox, the sun is at its mid-point of travel position through the year, therefore representing an average condition throughout the year of how well sunlit an amenity space will be. It may be noted that in the Northern Hemisphere, the sun rises due east and sets due west. Amenity sunlight is calculated for compliance with BRE Guide.

Climate Based Daylight Modelling – Spatial Daylight Autonomy

Climate based daylight modelling, also referred to as CBDM, involves the use of a detailed daylight calculation methods where hourly (or sub-hourly) internal daylight illuminance values for a typical year are computed using hourly (or sub-hourly) sky and sun conditions derived from climate data appropriate to the site. CBDM assessments are therefore orientation dependent: i.e. a south facing window would be expected to receive more daylight than north facing etc.

This calculation method determines daylight provision directly from simulated illuminance values on the working plane with results determined in lux (a measure of light). CBDM is utilised for compliance with EN 17037 method 2 Spatial Daylight Autonomy (SDA).

Sunlight Exposure

Sunlight exposure is assessed on a window of at least one habitable room per dwelling (preferably a living room) for the number of hours of direct sunlight exposure on the 21st of March.

Executive Summary & Conclusion

2. Executive Summary & Conclusion

This report identifies the daylight and sunlight analysis undertaken by IN2 Engineering Design Partnership for the proposed development at Parkgate Street, Dublin. The report has been reviewed by William O'Donnell who is an Associate Director in IN2 Engineering, and a chartered engineer. This report has been prepared as a desktop exercise, with 3D massing and survey information provided by other members of the design team. No site visits took place, as the provided information included all the relevant required data, and our understanding is that any survey information or 3D models provided were carried out by suitably qualified professionals.

Various software programs were utilised in the analysis of the proposed development. These included:

- Radiance Lighting Software
- TAS by EDSL

Daylight and sunlight assessments will generally consist of two parts, being (a) how the proposed development performs and (b) how the proposed development impacts levels of daylight and sunlight availability in surrounding existing buildings. The specific methodology for each relevant topic is detailed in the corresponding section in the body of this report, as identified below.

Analysis Type	Relevance	Assessment Methodology	Compliance Guidelines Targets	Reference section of this report
Sunlight	Existing Neighbouring Amenity Spaces	Sunlight Hours	BRE Guide BR209 (2022 Edition)	No change from granted Planning
Sunlight	Existing Neighbouring Buildings	Vertical Sky Component	BRE Guide BR209 (2022 Edition)	No change from granted Planning
Daylight	Existing Neighbouring Buildings	Annual Probable Sunlight Hours	BRE Guide BR209 (2022 Edition)	No change from granted Planning
Sunlight	Proposed Development Amenity Spaces	Sunlight Hours	BRE Guide BR209 (2022 Edition)	No change from granted Planning
Daylight	Proposed Development	Spatial Daylight Autonomy	BRE Guide BR209 (2022 Edition)	Section 6 – Internal Daylight Analysis
Sunlight	Proposed Development	Sunlight Exposure	BRE Guide BR209 (2022 Edition)	No change from granted Planning

Section 3 introduces the various Standards and Guidelines utilised throughout the Daylight / Sunlight analysis. The specific methodology for each relevant topic is detailed in the corresponding section in the body of this report, as identified below.

Section 4 notes that as the massing of the permitted buildings is not proposed to be changed as part of the amendments, then the impact on neighbours' assessment contained within the grated permission is still applicable.

Section 5 includes daylight analysis that has been undertaken for the kitchen/living/dining (KLD) and bedroom spaces in the proposed amended units.

For the granted permission, and subsequent amendments, all units were assessed for the Spatial Daylight Autonomy (SDA) methodology as detailed in the BRE Guide. A high compliance rate of **88%** was achieved for all the rooms across the scheme. As a result, of the proposed amendment's the compliance rate across the scheme remains at **88%**.

For any rooms not achieving minimum compliance for SDA, these have been identified, and compensatory measures have been provided in Section 5.3.

Exposure to Sunlight analysis was not conducted as there are no changes in the massing and glazing.

In conclusion, this report confirms that the best practice Daylight availability has been ensured for the proposed amendment on the development at Parkgate Street, Dublin, with no impact on the existing neighbouring environment.

Standards & Guidelines

3. Standards & Guidelines

The following standards & guidance documents have been consulted when compiling this report to ensure compliance with the various daylight & sunlight requirements as applicable and relevant:

a) Planning Design Standards for Apartments: Guidelines for Planning Authorities, 2025 (the "**Apartment Guidelines**"). These are guidelines issued under Section 28 of the 2000 Planning and Development Act (as amended).
b) Urban Development and Building Height Guidelines, 2018 (the "**UDBHG**")
c) Sustainable Residential Development and Compact Settlements: Guidelines for Planning Authorities, Section 5.3.7 (the "**SRDCSG**")
d) Dublin County Council Development Plan 2022-2028 (the "**DCCDP**")
e) The Building Research Establishment's (BRE) Site Layout Planning for Daylight and Sunlight: A guide to good practice (BRE 209) 3rd edition/ 2022 edition, (the "**BRE Guide**").
f) British Standard BS EN 17037:2018 – Daylight in Buildings (+A1:2021) (Incorporating corrigendum October 2021) (the "**British EN Standard**"). Irish Standard IS EN 17037:2018 &AC:2021 (the "**Irish EN Standard**").

It should be noted at the outset that the 2008 British Standard has been superseded by the 2018 British Standard, and BRE Guide 2nd Edition has been superseded by the BRE Guide 2022 edition. Both previous revisions have now been withdrawn.

European Standard EN 17037:2018, which was approved by the Comité Européen de Normalisation (CEN) on 29 July 2018 has been adopted in the UK as BS EN 17037:2018, and in Ireland as IS EN 17037:2018. The texts of the 2018 British Standard and the 2018 Irish Standard are the same, with one exception. The exception is that the 2018 British Standard contains an additional "National Annex" which specifically sets out requirements within dwellings, to ensure some similarity to the now superseded 2008 British Standard.

This report has been therefore carried out based on the guidance contained within the Building Research Establishment's (BRE) Site Layout Planning for Daylight and Sunlight: A guide to good practice (BRE 209) 3rd edition/ 2022 edition, (the "BRE Guide"). This document is specifically designed to facilitate good building design within the planning context and is referenced in the Apartment Guidelines. The BRE Guide clarifies and expands on the methodologies contained in IS EN 17037 and BS EN 17037 with specific relevance to residential buildings, and as such has been deemed to take precedence over these other documents.

The key daylight concerns from each of these relevant documents is set out of the following pages. The intent is not to provide a comprehensive reprint of these documents, but a summary of highlight of some relevant text.

The key considerations in the 2025 Apartment Guidelines are:

Section 3.1 of the 2025 Apartment Guidelines states:

> *"Building heights are the subject of separate guidance to planning authorities contained within the Urban Development and Building Heights Guidelines, issued in December 2018. The SRDCSGs (2024) also set out minimum separation distances for housing, duplexes and apartments. Separation distances for apartments will also need to be based on achieving satisfactory levels of daylight/sunlight for future occupiers of the apartments and for neighbouring occupiers (see also Section 6.1 below), and where there is a need to accommodate centralised areas of communal open space within a perimeter block."*

Section 6.1 of the 2025 Apartment Guidelines states:

> *"The provision of acceptable levels of natural light in new apartment developments is an important planning consideration as it contributes to the liveability and amenity enjoyed by apartment residents. It is also important to safeguard against a detrimental impact on the amenity of other sensitive occupiers of adjacent properties. Section 5.3.7 of the SRDCSGs outlines requirements for the provision of acceptable levels of daylight in new residential developments and adjoining properties.*
>
> *Planning authorities are requested to practically and flexibly apply the general requirements of these Guidelines in relation to refurbishment schemes, particularly in historic buildings, some urban townscapes and 'over the shop' type or other existing building conversion or refurbishment projects, where property owners must work with existing building fabric and dimensions. Ultimately, Building Regulations must be complied with and planning authorities must prioritise the objective of more effective usage of existing underutilised accommodation, including empty buildings and vacant upper floors."*

The key considerations in the 2018 Urban Development and Building Heights Guidelines are:

Section 3.2 of the UDBHG notes the following in relation to daylight and compensatory measures. Note the BRE Guide 2nd edition has been superseded and replaced by the 3rd edition as discussed above.

"At the scale of the site/building:

(a) The form, massing and height of proposed developments should be carefully modulated so as to maximise access to natural daylight, ventilation and views and minimise overshadowing and loss of light.

(b) Appropriate and reasonable regard should be taken of quantitative performance approaches to daylight provision outlined in guides like the Building Research Establishment's 'Site Layout Planning for Daylight and Sunlight' (2nd edition) or BS 8206-2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting'.

(c) Where a proposal may not be able to fully meet all the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, in respect of which the planning authority or An Bord Pleanála should apply their discretion, having regard to local factors including specific site constraints and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution."

The key considerations in the Sustainable Residential and Compact Settlement Guideline for Planning Authorities 2024 are:

"The provision of acceptable levels of daylight in new residential developments is an important planning consideration, in the interests of ensuring a high quality living environment for future residents. It is also important to safeguard against a detrimental impact on the amenity of other sensitive occupiers of adjacent properties.

(a) The potential for poor daylight performance in a proposed development or for a material impact on neighbouring properties will generally arise in cases where the buildings are close together, where higher buildings are involved, or where there are other obstructions to daylight. Planning authorities do not need to undertake a detailed technical assessment in relation to daylight performance in all cases. It should be clear from the assessment of architectural drawings (including sections) in the case of low-rise housing with good separation from existing and proposed buildings that undue impact would not arise, and planning authorities may apply a level of discretion in this regard.

(b) In cases where a technical assessment of daylight performance is considered by the planning authority to be necessary regard should be had to quantitative performance approaches to daylight provision outlined in guides like A New European Standard for Daylighting in Buildings IS EN17037:2018, UK National Annex BS EN17037:2019 and the associated BRE Guide 209 2022 Edition (June 2022), or any relevant future standards or guidance specific to the Irish context.

In drawing conclusions in relation to daylight performance, planning authorities must weigh up the overall quality of the design and layout of the scheme and the measures proposed to maximise daylight provision, against the location of the site and the general presumption in favour of increased scales of urban residential development. Poor performance may arise due to design constraints associated with the site or location and there is a need to balance that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution."

The key considerations in the DCCDP are:

The Development Plan, Volume 2: Appendices 16: Sunlight and Daylight notes:

3.6 Understanding and Expectations

> *The planning authority understand that, at present, there is some ambiguity in what may be considered the appropriate standard to apply for daylight and sunlight assessments. There is a period of transition at present, during which BS 8206-2 has been superseded, but the relevant guidance within BR 209 has not yet been updated. Thus, both BS 8206-2 and BS EN 17037 have relevance.*
>
> *As such, both for clarity and as an interim measure during this transition period, the planning authority will look to receive relevant metrics from BR 209, BS 8206-2 and BS EN 17037.* ***If, over the coming years, a revised version of BR 209 is to be issued, the guidance within this new version will take precedence. (EMPHASIS ADDED)***

The Document notes in 4.0 Relevant Metrics that "Where the text below is unclear or where there is ambiguity over a particular piece of information, the relevant standard and guidance document shall always take precedence." Therefore, "Section 5.0 Assessment Methodologies" for proposed development included in the plan have been superseded and correct methodologies are noted in the table.

Daylight and sunlight assessments will generally consist of two parts, being (a) how the proposed development performs and (b) how the proposed development impacts levels of daylight and sunlight availability in surrounding existing buildings. The methodologies for impact on surrounding existing buildings remain unchanged in the newer BRE Guide.

The performance of the proposed development assessments have been updated from the text within the DCCDP which noted:

5.1 Performance of the Proposed Development

- Annual Probable Sunlight Hours on all relevant windows
- Winter Sunlight Hours on all relevant windows
- Sunlight on Ground in all amenity spaces
- Average Daylight Factor in all habitable rooms
- No Sky Line in all habitable rooms

Target illuminance in all habitable rooms

DCCDP Text	Applicability of Metric Based on Updated BRE Guide	Correct Methodology as per BRE Guide
Annual Probable Sunlight Hours on all relevant windows	Not an applicable metric for the proposed development as per BRE Guide. Instead, Exposure to Sunlight assessment should be utilised.	Exposure to Sunlight for each dwelling
Winter Sunlight Hours on all relevant windows	Not an applicable metric for the proposed development as per BRE Guide. Instead, Exposure to Sunlight assessment should be utilised.	Exposure to Sunlight for each dwelling
Sunlight on Ground in all amenity spaces	Correct Methodology	Sunlight on Ground in all amenity spaces
Average Daylight Factor in all habitable rooms	Not an applicable metric for the proposed development as per BRE Guide	Spatial Daylight Autonomy (SDA) (to achieve Target Illuminance) or Median Daylight Factor in all habitable rooms.
No Sky Line in all habitable rooms	Not an applicable metric for the proposed development as per BRE Guide	No replacement
Target illuminance in all habitable rooms	Spatial Daylight Autonomy (SDA) (to achieve Target Illuminance) or Median Daylight Factor in all habitable rooms.	Assessed as per SDA above.

The key considerations in the BRE Guide are:

The BRE Guide describes its purpose in the following terms in the "Summary" section (v):

> *"This guide gives advice on site layout planning to achieve good sunlighting and daylighting, both within buildings and in the open spaces between them. It is intended to be used in conjunction with the interior daylight recommendations for new buildings in the British Standard Daylight in buildings, BS EN 17037. It contains guidance on site layout to provide good natural lighting within a new development; safeguarding of daylight and sunlight within existing buildings nearby; and the protection of daylighting of adjoining land for future development."*

The BRE Guide also notes that:

> *"1.6 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 (see Section 5). In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high-rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings. Alternatively, where natural light is of special importance, less obstruction and hence more sunlight and daylight may be deemed necessary. The calculation methods in Appendices A and B are entirely flexible in this respect. Appendix F gives advice on how to develop a consistent set of target values for skylight under such circumstances."*

> *"1.7 The guidance here is intended for use in the United Kingdom and in the Republic of Ireland, though recommendations in the Irish Standard IS EN 17037 may vary from those in BS EN 17037. Many of the principles outlined will apply to other temperate climates. More specific guidance for other locations and climate types is given in BRE Report Environmental site layout planning."*

Therefore, if the situation arises where the targets identified within the Guide are not achieved, these should be highlighted and either justified in the context of the development/site, or where relevant and applicable, compensatory measures will be proposed. However, the Guide does not impose absolute standards that must be achieved under all circumstances, note section 1.6 above. In the context of this report, any deviations from the Guide's recommendations have therefore been identified, with an approach throughout to ensure that good quality daylight/sunlight is achieved through analysis and design improvements as far as practicable and viable, as detailed in the report as relevant.

The main sections in the guide that the assessments within this report will reference (as applicable) are:

1. Light from the Sky (Daylight)
   1.1. New Development – Within Appendix C of the BRE Guide, the targets for internal daylight are provided for both optional methodologies, Climate Based Daylight Modelling (CBDM) with targets provided for Lux levels as determined through Spatial Daylight Autonomy (SDA), and Daylight Sky analysis with targets provided for Median Daylight Factor (MDF), please refer to internal daylight methodology section for detailed explanation of the methods utilised in this report.
   1.2. Existing Buildings – The guide sets a quantitative assessment method for determining the impact of new developments on light from the sky (VSC) on existing neighbouring buildings.
2. Sunlighting – Based on site location, longitude and latitude, and solar azimuths. i.e. buildings south of a site will not be impacted for sunlight in the northern hemisphere.
   2.1. New Development – The guide sets a quantitative method for determining sunlight to a habitable room within a dwelling.
   2.2. Existing Buildings – The guide sets a quantitative assessment method for determining the impact of new developments on sunlight, annual probable sunlight hours (APSH) and winter probable sunlight hours (WPSH), on existing neighbouring buildings.
   2.3. Gardens and open spaces – The amenity criteria set out is used for both proposed new amenity and the impact on existing neighbouring amenities.

The specific methodology for each topic (as relevant) is detailed in the relevant section in the body of this report.

The key considerations in the 2018 British and Irish Versions of the EN Standards are:

The EN 17037:2018 standard—which is the basis of both the 2018 British EN Standard and the 2018 Irish EN Standard considers a metric based on median daylight, in order to ensure both extent and a degree of uniformity of daylight.

"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."

The BS EN 17037 (+A1:2021) (Incorporating corrigendum October 2021) standard varies from the IS EN 17037 &AC:2021 standard as it contains a national annex developed by the Building Research Establishment (BRE) to specifically address daylight requirements in domestic dwellings. These requirements are further clarified in the BRE Guide, e.g.: the correct delineation of spaces allowing for the removal of corridor spaces attached to a room; the mandatory inclusion of kitchen spaces in combined living spaces; revised rational upper limits for surface reflectances; default framing factors; maintenance factors. None of which are specified in IS EN 17037, instead requiring, for example, daylight assessment on the ambiguously worded "at least on the required area of the space". Therefore, for domestic applications, the BRE Guide remains the most applicable document to utilise for daylight assessments.

The National Annex

As is noted above, the 2018 British Standard includes a "National Annex", containing "Further recommendations and data for daylight provision in the UK and Channel Islands". This is referenced further in the appendix of this report. As there is no equivalent in the 2018 Irish Standard, the 2018 British Standard National Annex will be referenced, which states:

"NA.1 Introduction: The UK committee supports the recommendations for daylight in buildings given in BS EN 17037:2018; however, it is the opinion of the UK committee that the recommendations for daylight provision in a space (see Clause A.2) may not be achievable for some buildings, particularly dwellings. The UK committee believes this could be the case for dwellings with basement rooms or those with significant external obstructions (for example, dwellings situated in a dense urban area or with tall trees outside), or for existing buildings being refurbished or converted into dwellings. This National Annex therefore provides the UK committee's guidance on minimum daylight provision in all UK dwellings."

NA.2 addresses minimum daylight provision in UK dwellings. It contains a table, in which target illuminance, ET (lx), levels are recommended for different room types. These are: bedroom at 100 lx; living room at 150 lx; and kitchen at 200 lx, which may be compared to EN 17037 (European standard including both BS EN 17037:2018 and IS EN 17037:2018)'s recommendation of 300 lux (irrespective of room application). The commentary is as follows:

"Even if a predominantly daylit appearance is not achievable for a room in a UK dwelling, the UK committee recommends that the target illuminance values given in Table NA.1 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."

Impact on Neighbouring Buildings

4. Impact on Neighbouring Buildings

4.1. Proposed Amendment Impacts

The proposed amendments are internal to the granted buildings and therefore will not have any further impact on the existing neighbouring buildings.

Internal Daylight Analysis

5. Internal Daylight Analysis

5.1. Spatial Daylight Autonomy Methodology

As described in the Housing (Miscellaneous Provisions) Act 2009, Part 4, 50, *"apartment " means a separate and self-contained dwelling in an apartment complex which requires arrangements for the upkeep and management of all or any part of the common areas, structures, works or services other than by the owner of the apartment;"*

Spatial Daylight Autonomy (SDA), method 2 EN17037, has been utilised for the assessment of internal daylight for the proposed development as it determines a more accurate result for building orientation and location as detailed in BRE Guide. These guidelines and standards have been outlined in Section 3.0.

The methodology utilises historic climate data (Dublin IWEC file 039690 was used for this assessment) predicting internal illumination due to natural light on an hour-by-hour basis, accounting for not only diffuse skylight but also the direct sunlight element. SDA results will differ for façade orientation, with those elevations with southerly aspect (correctly) being deemed to receive more daylight.

Figure 5.1.1 indicates overall compliance comparison, with green contours illustrating where daylight was predicted to achieve 100 Lux for bedroom 150 Lux for living room and 200 Lux for kitchen, KLD, and studio. These are the illuminance recommendations for dwellings included in Section C16 of the BRE Guide 2022 edition, based on BS.EN.17037:2018. Compliance for a room is then defined in the BRE Guide if at least 50% of the room achieves this target.

The daylighting models were calculated based on the following assumptions regarding transmittance and reflectance (as prescribed in the BRE Guide):

- Glazing Transmission = 68% with maintenance factor of 96%
- Ceilings: 80% reflectance
- Walls: 70% reflectance
- Floors: 40% reflectance

The daylight analysis accounted for all aspects that can potentially restrict natural light availability including any adjacent/opposing buildings, along with explicitly modelling typical building details as exampled in Figure 5.1.2 such as balcony structures, window frames, reveal and cill depth in accordance with the architectural design. As the window frames have been explicitly modelled, there is no requirement to include framing factors as prescribed in the BRE Guide.

Daylight illuminance for each spaces were then calculated for a working plane height of 0.85m on a 0.25 x 0.25m grid basis and a wall offset of 0.3m (as defined in the BRE Guide) to enable a detailed calculation within each room (Figure 4.1.3), the median of which was then determined the space compliance.

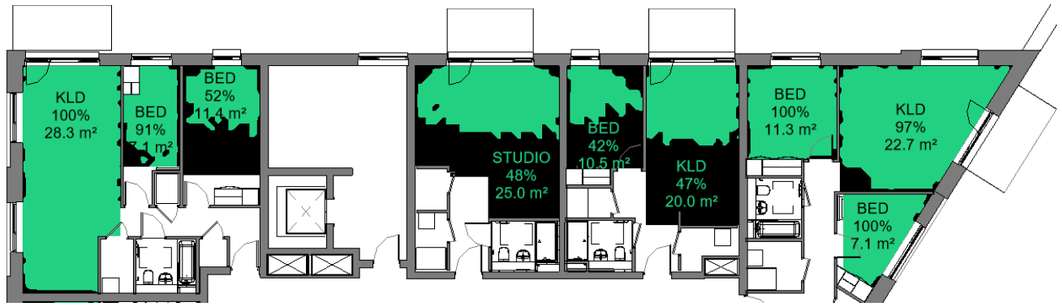


Figure 5.1.1 – Daylight Analysis Results

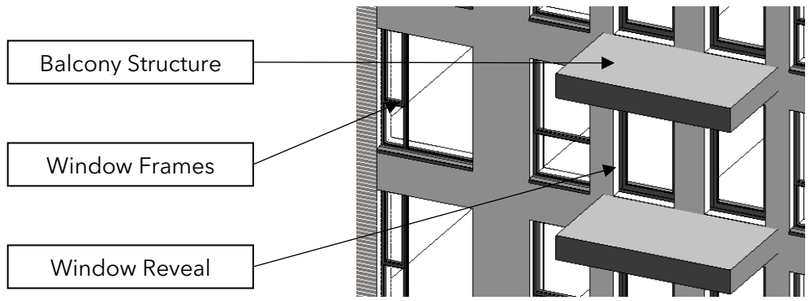


Figure 5.1.2 – Building details included within the Daylight Analysis (Sample)

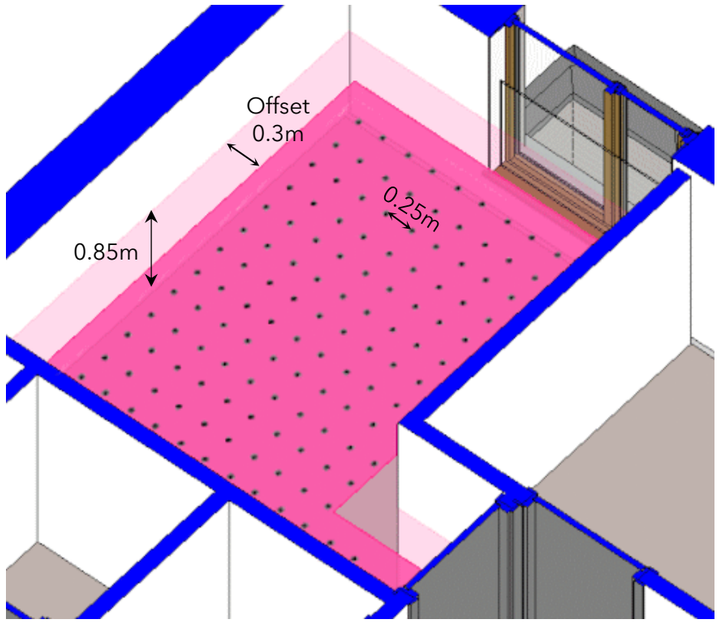


Figure 5.1.3 – Calculating Working Plan

5.1. Spatial Daylight Autonomy Methodology (Cont'd)

The rooms have been assessed to take into consideration for the notes in the BRE Guide which stipulate:

> *"Where a room has a shared use, the highest target should apply. For example in a bed sitting room in student accommodation, the value for a living room should be used if students would often spend time in their rooms during the day. Local authorities could use discretion here. For example, the target for a living room could be used for a combined living/dining/kitchen area if the kitchens are not treated as habitable spaces, as it may avoid small separate kitchens in a design.* ***The kitchen space would still need to be included in the assessment area" (Emphasis added)***

BRE Guide provides additional guidance on room definitions, identifying that corridors/annexed entrances can be excluded from the assessment area as illustrated in Figure 5.1.4.

- Inclusion of kitchen area within KLD (i.e. assessment to rear of room).
- Exclusion of circulation/annexed entrances (i.e., adjacent to doors illustrated).

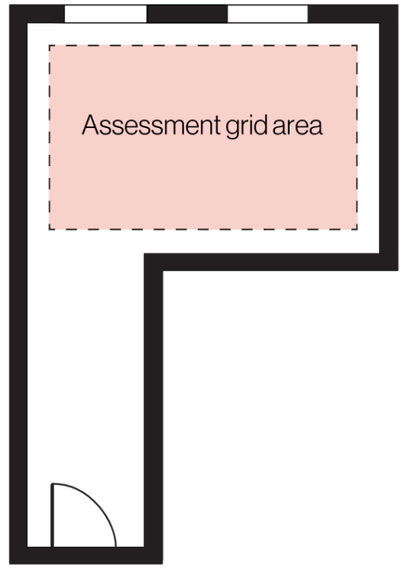


Figure 5.1.4 – BRE Guide Figure C3 – Assessment Area Excluding Corridor

5.2. Results – Summary of SDA [Planning Grant]

The tables below provide a breakdown of the compliance rates for each room based on Spatial Daylight Autonomy (SDA) and an overall SDA. **88%** of the analysed rooms were determined to be compliant with the methodology utilised.

Detailed results are included in Appendix A.

Block A	Number of rooms		
	Pass	Fail	Total
Level 1	15	1	16
Level 2	15	1	16
Level 3	15	1	16
Level 4	15	1	16
Level 5	15	1	16
Level 6	15	1	16
Level 7	15	1	16
Level 8	15	1	16
Level 9	15	0	15
Level 10	17	0	17
Level 11	17	0	17
Level 12	17	0	17
Level 13	17	0	17
Level 14	17	0	17
Level 15	17	0	17
Level 16	17	0	17
Level 17	17	0	17
Level 18	17	0	17
Level 19	17	0	17
Level 20	17	0	17
Level 21	17	0	17
Level 22	17	0	17
Level 23	17	0	17
Level 24	17	0	17
Level 25	17	0	17
Level 26	17	0	17
Level 27	17	0	17
	441	8	449
	98%	2%	

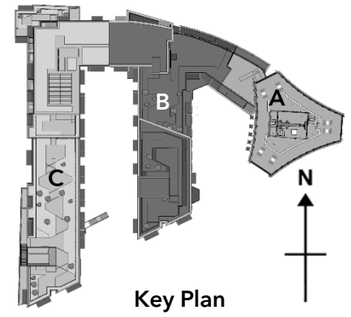
Figure 5.2.1 – SDA for Block A

Block B	Number of rooms		
	Pass	Fail	Total
Level 0	7	2	9
Level Mezz	16	5	21
Level 1	27	11	38
Level 2	31	9	40
Level 3	31	9	40
Level 4	31	9	40
Level 5	31	9	40
Level 6	31	9	40
Level 7	31	9	40
Level 8	39	0	39
Level 9	21	0	21
Level 10	15	0	15
Level 11	15	0	15
	326	72	398
	82%	18%	

Figure 5.2.2 – SDA for Block B

Block C	Number of rooms		
	Pass	Fail	Total
Level 0	11	6	17
Level Mezz	31	13	44
Level 1	33	14	47
Level 2	40	10	50
Level 3	43	7	50
Level 4	44	6	50
Level 5	43	7	50
Level 6	44	6	50
Level 7	42	3	45
Level 8	20	1	21
Level 9	16	0	16
	367	73	440
	83%	17%	

Figure 5.2.3 – SDA for Block C



Key Plan

Summary	Number of rooms		
	Pass	Fail	Total
Block A	441	8	449
Block B	326	72	398
Block C	367	73	440
	1134	153	1287
	88%	12%	

Figure 5.2.4 – Overall SDA for Blocks A, B, C

5.3. Results – Summary of SDA [Amendment 1]

The tables below provide a breakdown of the compliance rates for each room based on Spatial Daylight Autonomy (SDA) and an overall SDA. **88%** of the analysed rooms were determined to be compliant with the methodology utilised.

Detailed results are included in Appendix A.

Block A	Number of rooms		
	Pass	Fail	Total
Level 1	15	1	16
Level 2	15	1	16
Level 3	15	1	16
Level 4	15	1	16
Level 5	15	1	16
Level 6	15	1	16
Level 7	15	1	16
Level 8	15	1	16
Level 9	15	0	15
Level 10	17	0	17
Level 11	17	0	17
Level 12	17	0	17
Level 13	17	0	17
Level 14	17	0	17
Level 15	17	0	17
Level 16	17	0	17
Level 17	17	0	17
Level 18	17	0	17
Level 19	17	0	17
Level 20	17	0	17
Level 21	17	0	17
Level 22	17	0	17
Level 23	17	0	17
Level 24	17	0	17
Level 25	17	0	17
Level 26	17	0	17
Level 27	17	0	17
	441	**8**	**449**
	98%	**2%**	

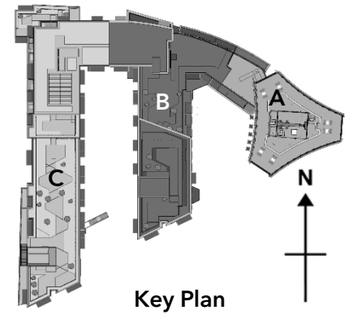
Figure 5.3.1 – SDA for Block A

Block B	Number of rooms		
	Pass	Fail	Total
Level 0	7	2	9
Level Mezz	16	5	21
Level 1	27	11	38
Level 2	31	9	40
Level 3	31	9	40
Level 4	31	9	40
Level 5	31	9	40
Level 6	31	9	40
Level 7	31	9	40
Level 8	38	1	39
Level 9	21	0	21
Level 10	15	0	15
Level 11	15	0	15
	325	**73**	**398**
	82%	**18%**	

Figure 5.3.2 – SDA for Block B

Block C	Number of rooms		
	Pass	Fail	Total
Level 0	11	6	17
Level Mezz	31	13	44
Level 1	33	14	47
Level 2	39	11	50
Level 3	43	7	50
Level 4	44	6	50
Level 5	43	7	50
Level 6	44	6	50
Level 7	42	3	45
Level 8	20	1	21
Level 9	16	0	16
	366	**74**	**440**
	83%	**17%**	

Figure 5.3.3 – SDA for Block C



Summary	Number of rooms		
	Pass	Fail	Total
Block A	**441**	**8**	**449**
Block B	**325**	**73**	**398**
Block C	**366**	**74**	**440**
	1132	**155**	**1287**
	88%	**12%**	

Figure 5.3.4 – Overall SDA for Blocks A, B, C

5.4. SDA Compensatory Measures

The Building Height Guidelines state the following:

> *"Where a proposal may not be able to fully meet all the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, in respect of which the planning authority or An Bord Pleanála should apply their discretion, having regard to local factors including specific site constraints and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution."*

The Apartment Guidelines state the following:

Minimum overall apartment floor areas

Studio	*32 sq.m*	*(n/a)*
One bedroom	*45 sq.m*	*(38 sq.m)*
Two bedrooms (3 person)	*63 sq.m*	*(55 sq.m)*
Two bedrooms (4 person)	*73 sq.m*	
Three bedrooms (4 person)	*76 sq.m*	*(70 sq.m)*
Three bedrooms (5 person)	*90 sq.m*	

Minimum recommended floor areas for private amenity space, where provided

Studio	*4 sq.m*
One bedroom	*5 sq.m*
Two bedrooms (3 person)	*6 sq.m*
Two bedrooms (4 person)	*7 sq.m*
Three bedrooms (4 person)	*7 sq.m*
Three bedrooms (5 person)	*9 sq.m*

Compensatory Design Solutions

Where units are determined to not achieve the quantitative assessment for daylight, they are identified, and compensatory measures are provided. The compensatory measures look to determine a balance between the spaces with reduced daylight by identifying how other metrics for daylight and/or the unit's aspects or development design can compensate for this reduction in daylight.

It is proposed that the following compensatory measures are applied in accordance with the requirements of the Building Height Guidelines and the Apartment Guidelines.

1. Daylight Adjacency

In cases where a room is below target, there are adjacent room/rooms within the apartment which were found to be comfortably compliant. Therefore, these units each have a room/rooms that are well daylit, despite the assessed room being slightly below target.

2. Sunlight

Where a room is below the SDA target, the units have the benefit of receiving over 3 hours of sunlight (medium exposure). Therefore, whilst the room will be found to be non-compliant for daylight, the apartment unit will achieve above the requisite sunlight availability.

3. Open Space

Compensatory measures have been provided outside of the individual units with a large portion of the site being landscaped for communal open space. The proposed development includes the provision of a large quantum of communal open space.

4. Winter Garden

Some KLD's with below target SDA values have the compensatory measure of a winter garden. These winter gardens were determined to be full daylit and have the added advantage of being a sheltered space that can capture the aspect over the Phoenix Park.

5. Aspect

In addition to their private amenity space, the failing rooms have direct aspect out onto a well-lit landscaped communal or public open space providing an excellent view from the KLD space.

6. Location

The scheme location is of high benefit due to both it's proximity to the Pheonix Park and it's location a major transport node at Heuston Station.

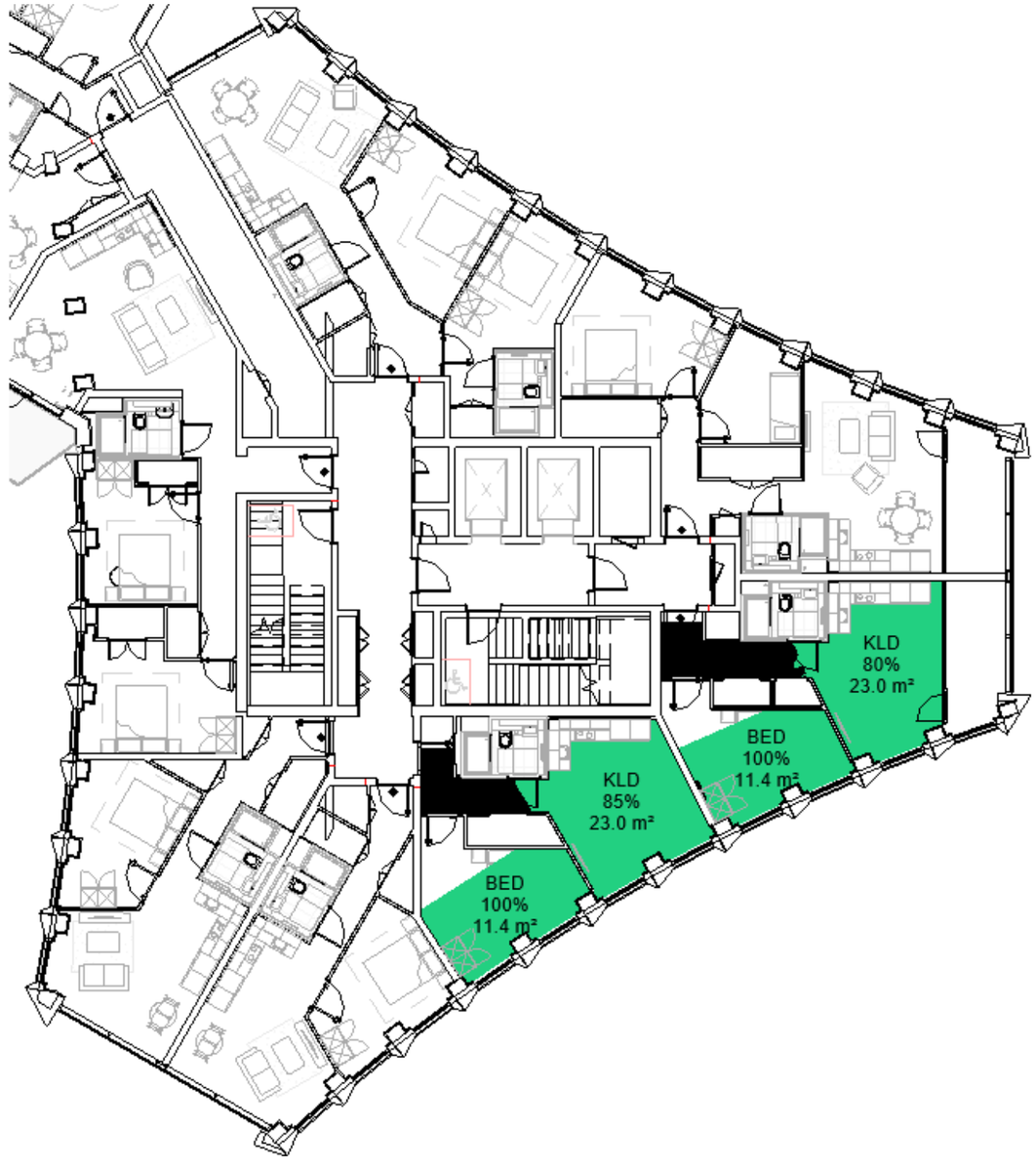
Appendix A – Spatial Daylight Autonomy (SDA) Results

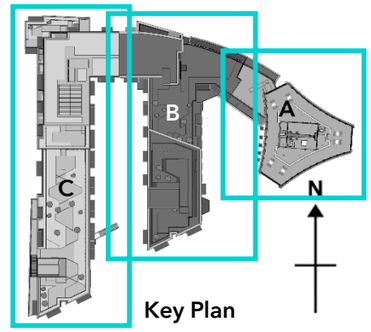
Block A

SDA – Block A Level 01

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

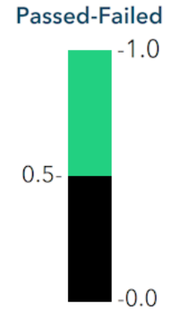
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

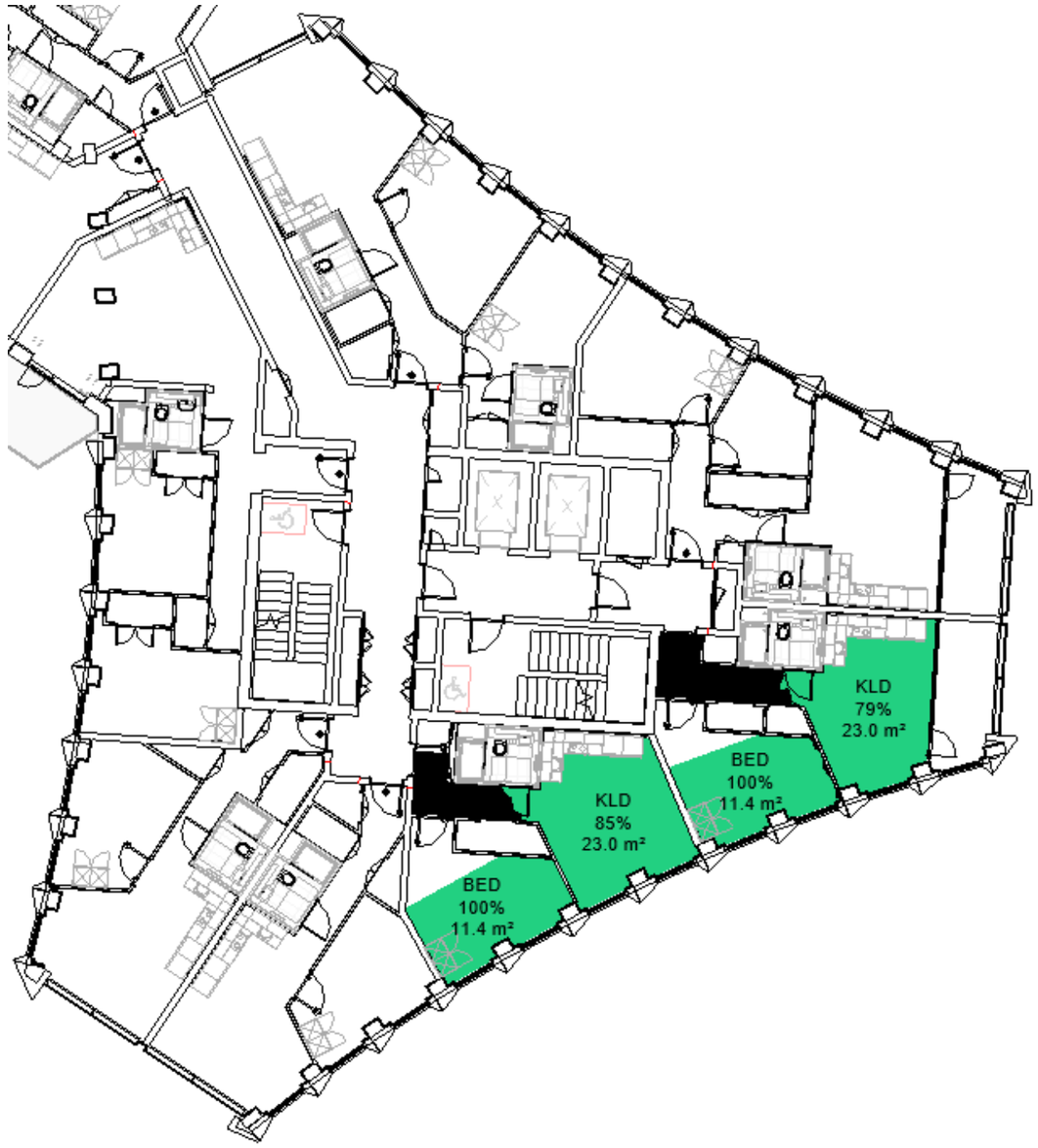


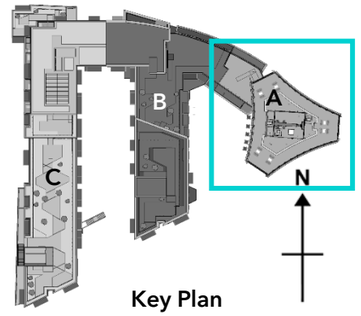
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 02

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

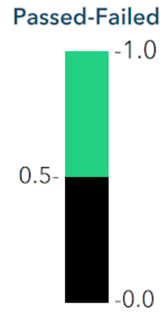
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

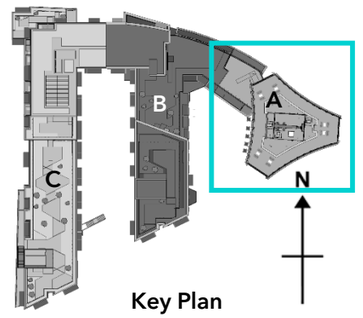


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 03

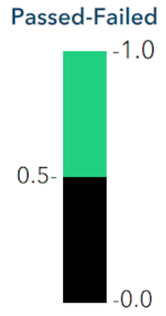
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

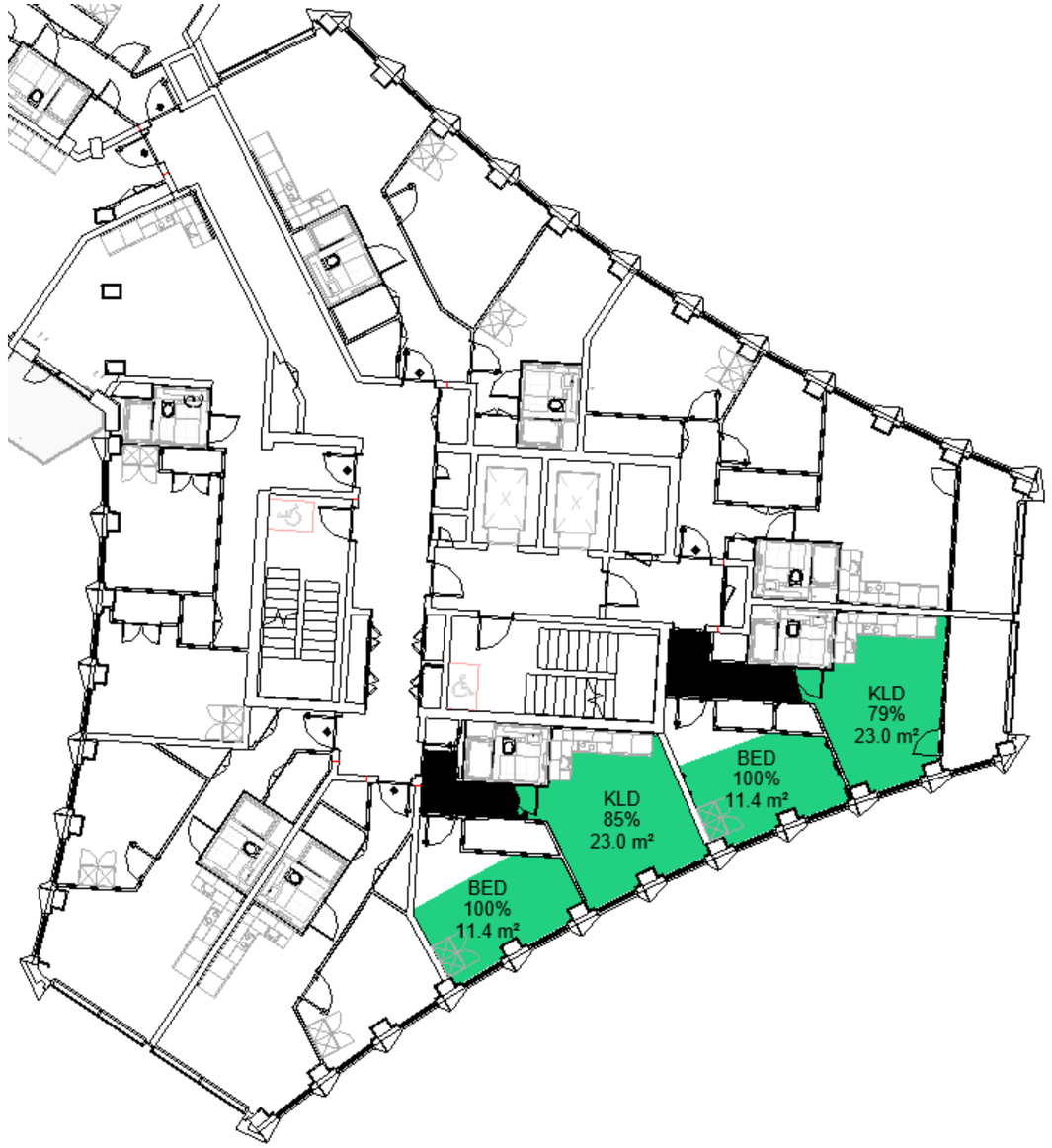


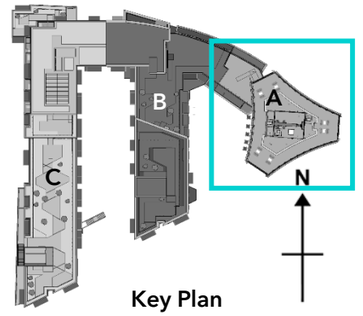
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 04

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

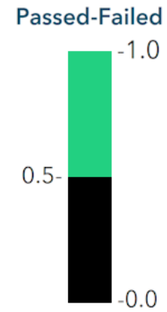
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

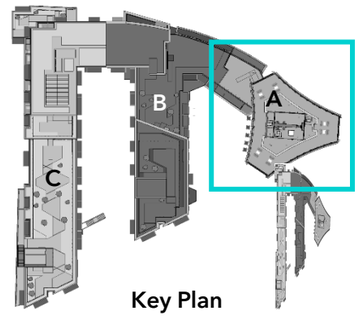


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 05

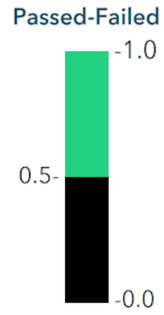
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

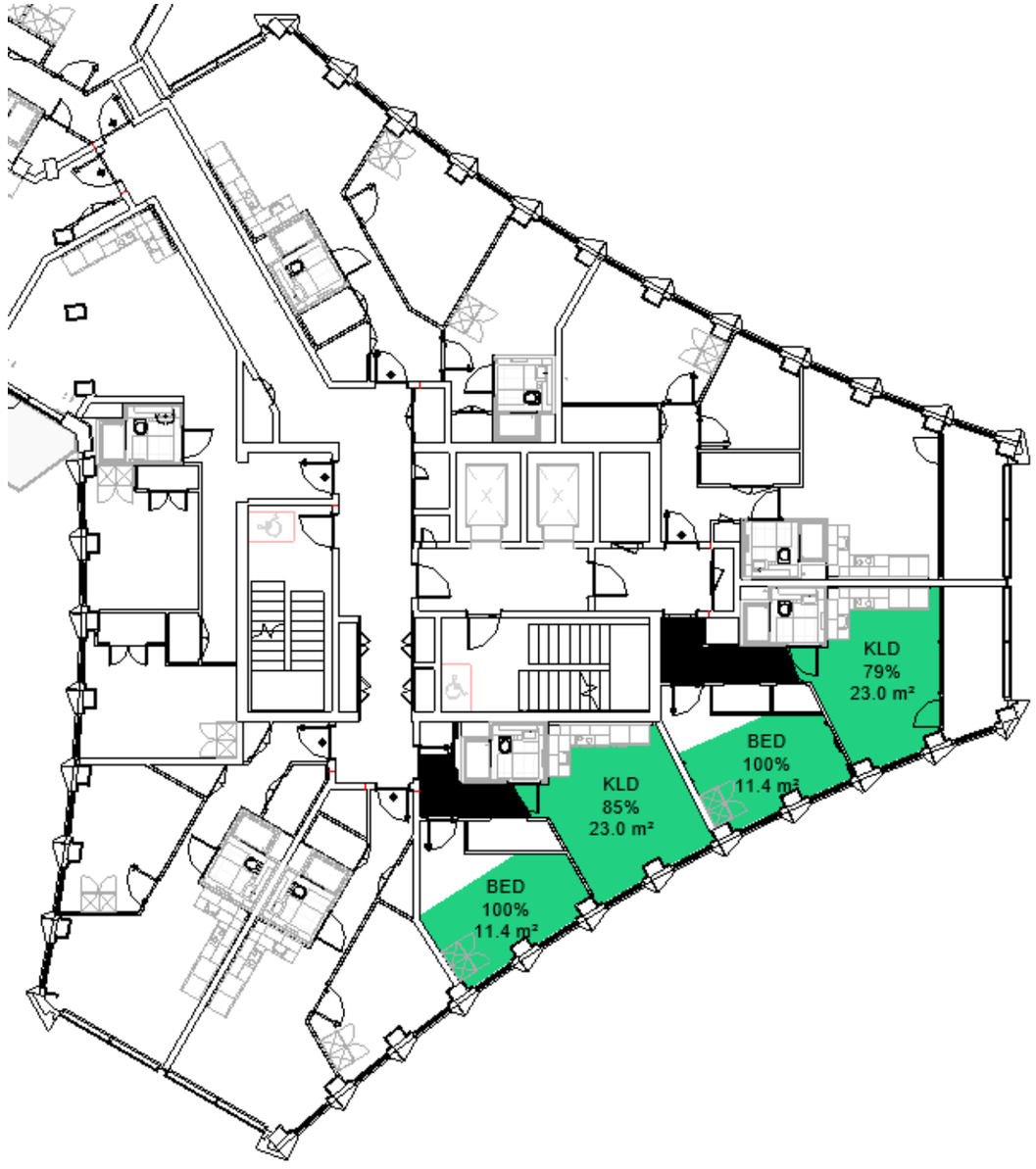


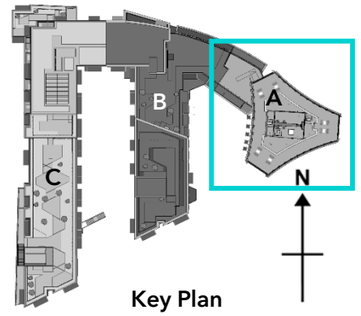
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 06

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

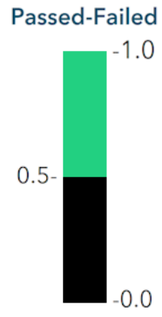
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

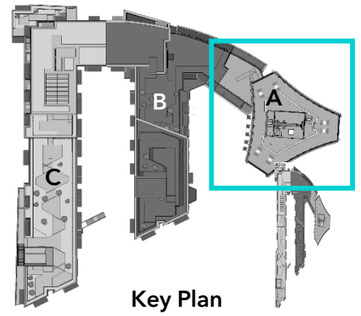


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 07

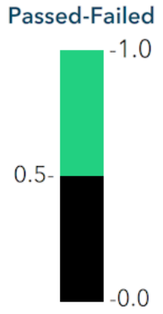
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

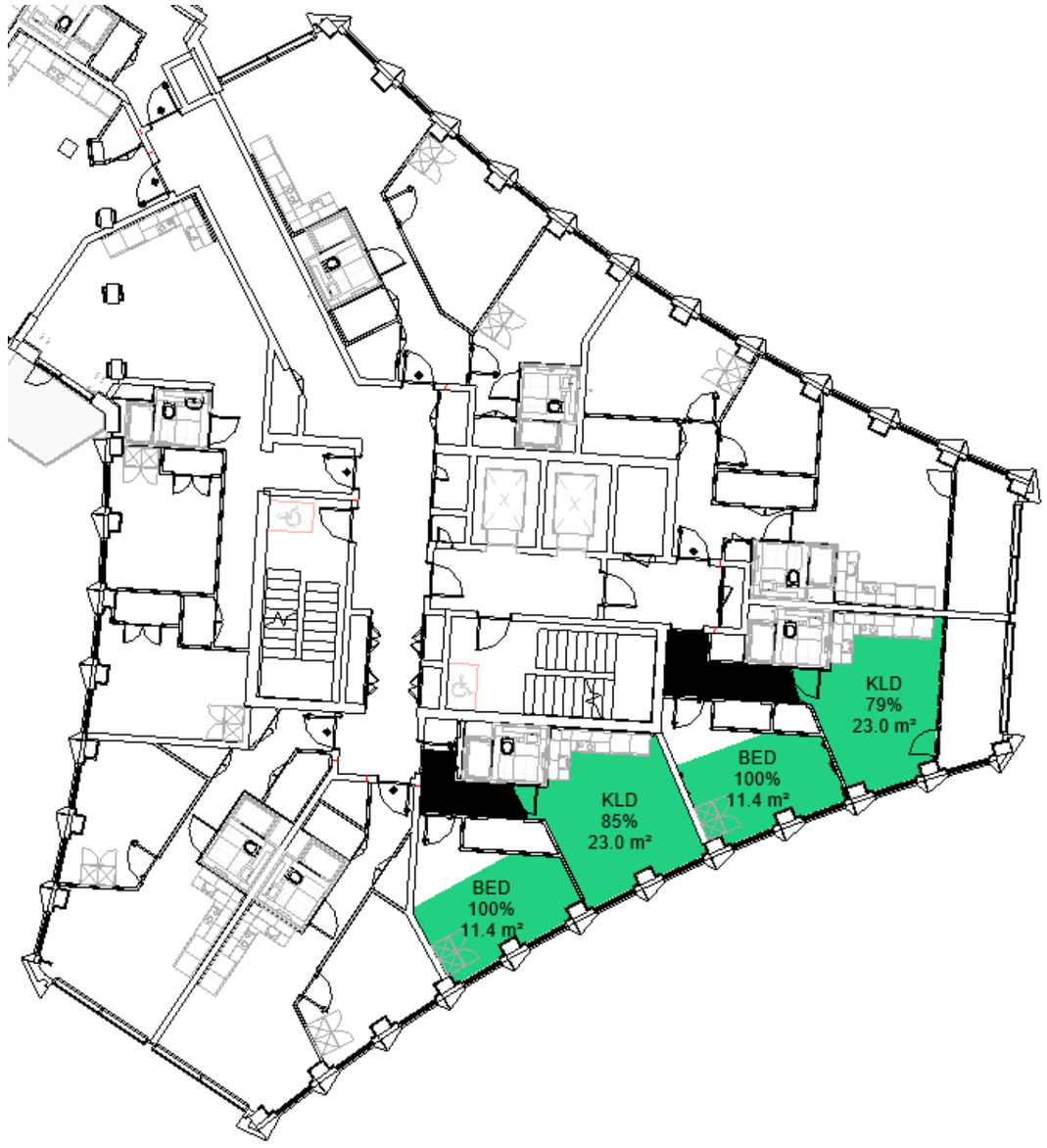


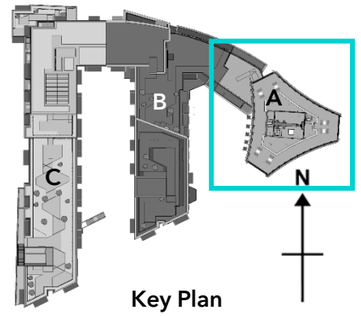
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 08

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

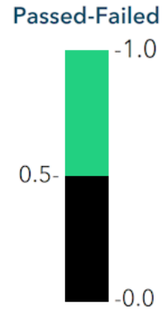
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

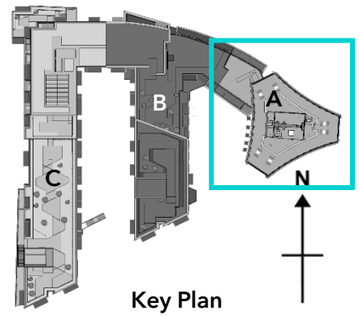


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 09

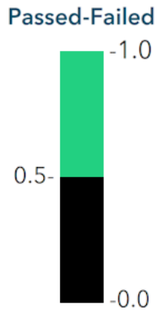
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

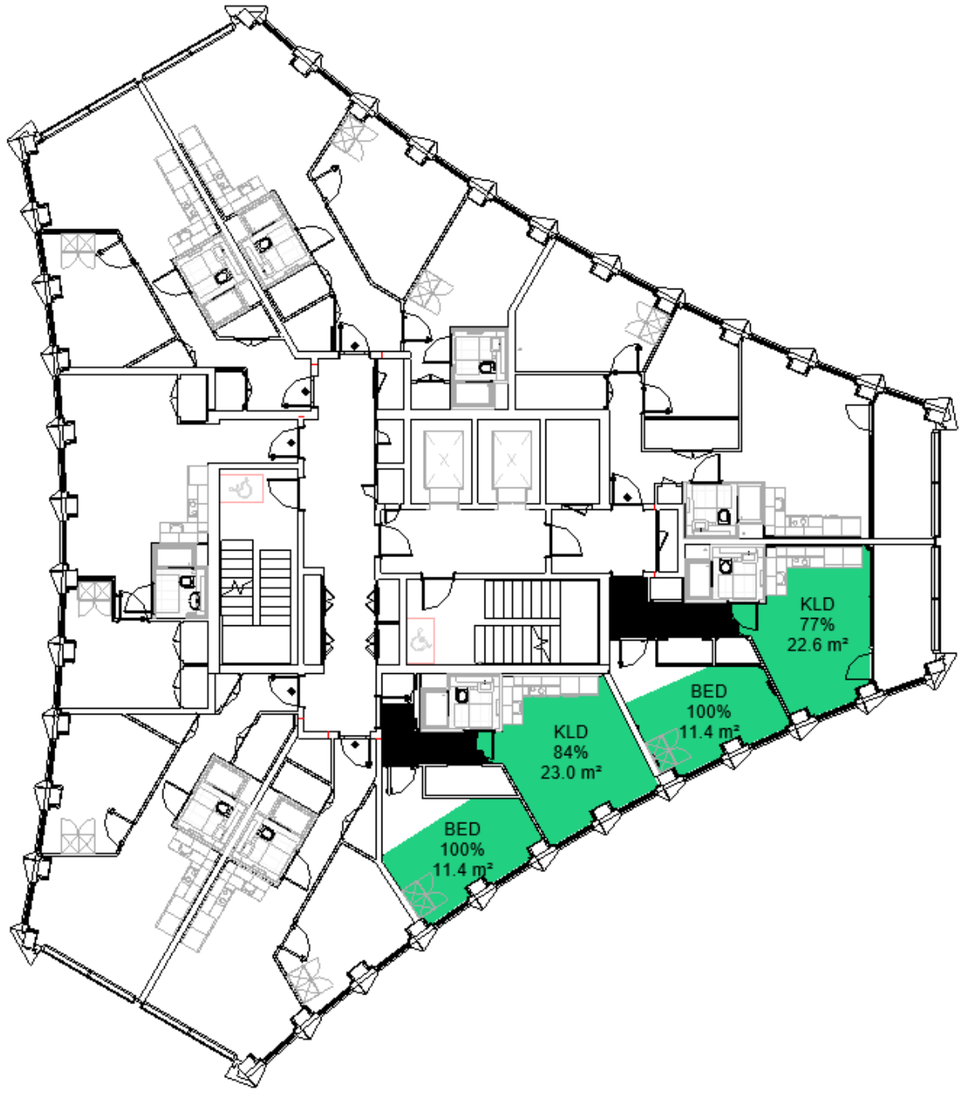


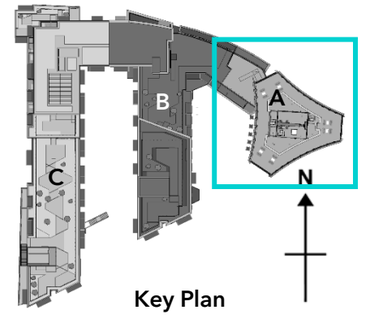
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 10

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

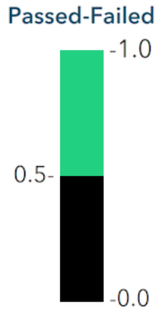
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

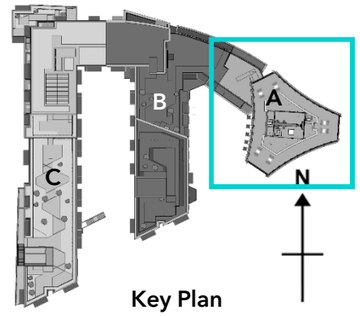


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 11

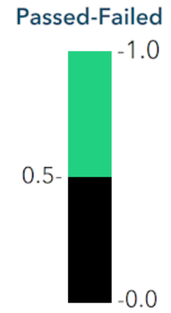
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

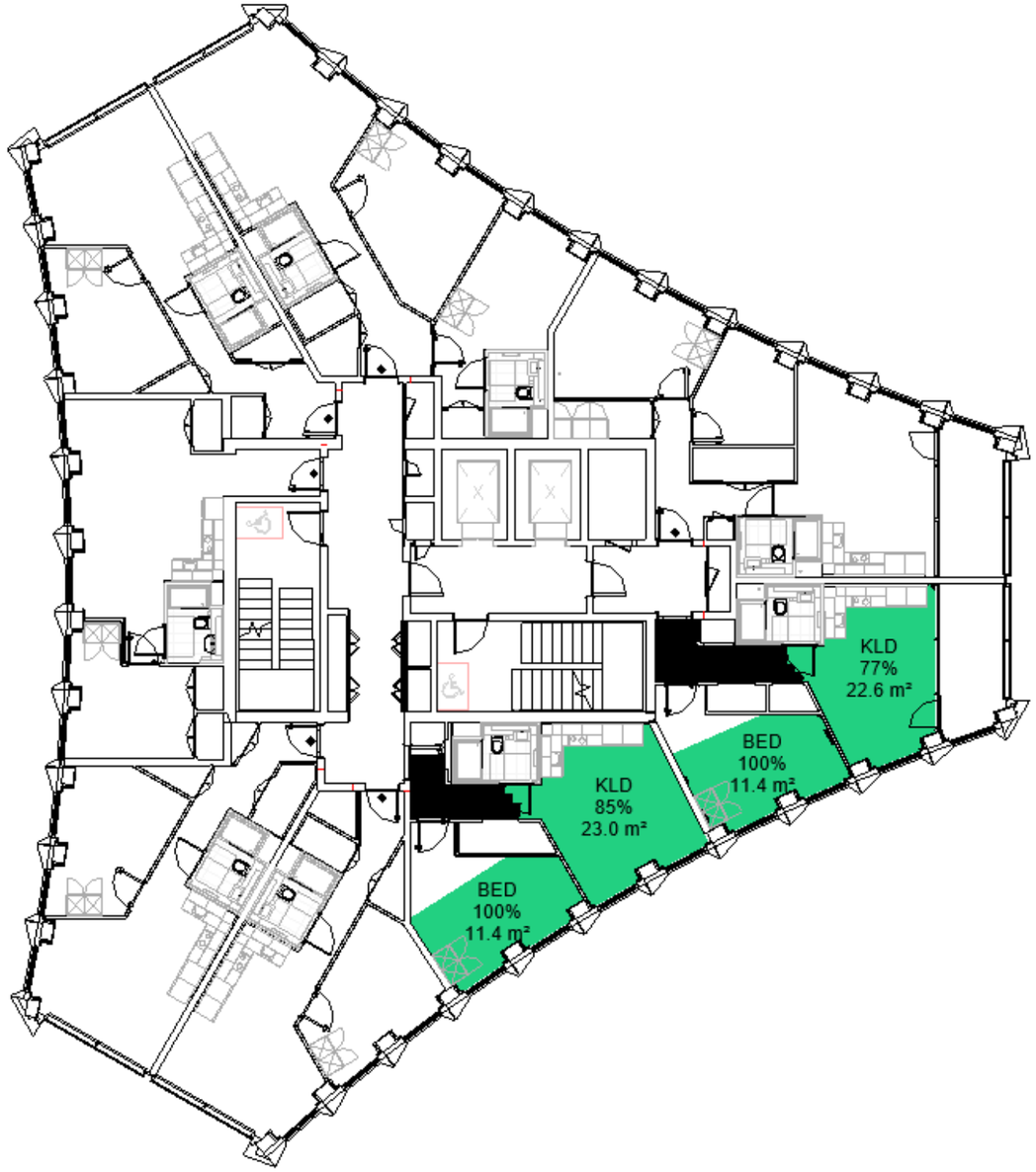


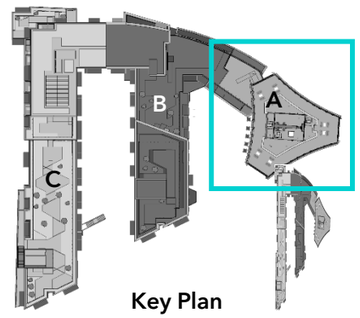
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 12

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.

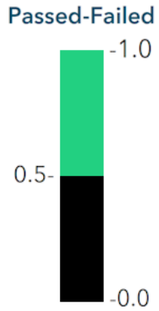




Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

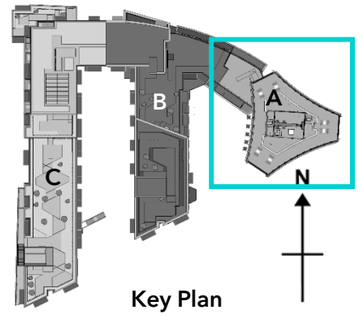


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 13

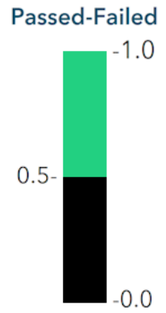
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

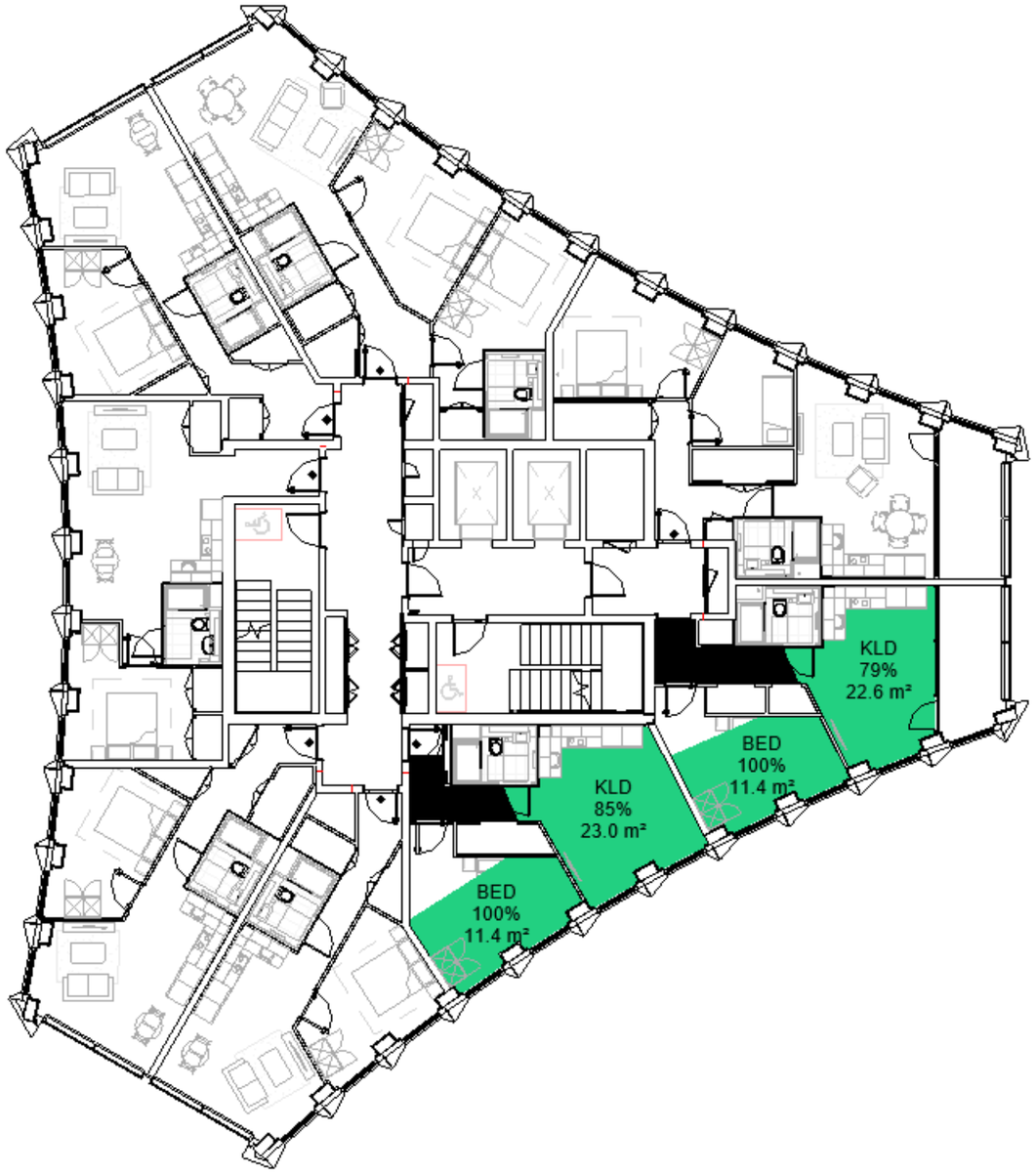


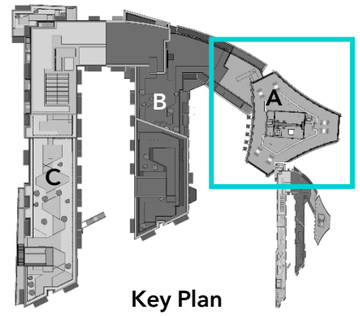
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 14

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.

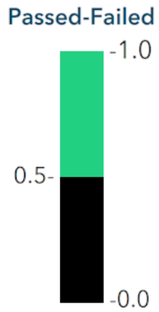




Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

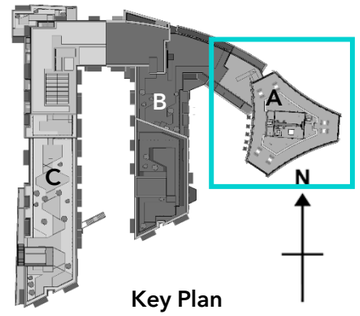


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 15

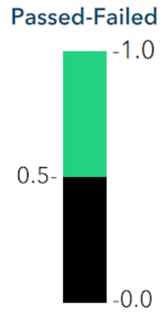
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

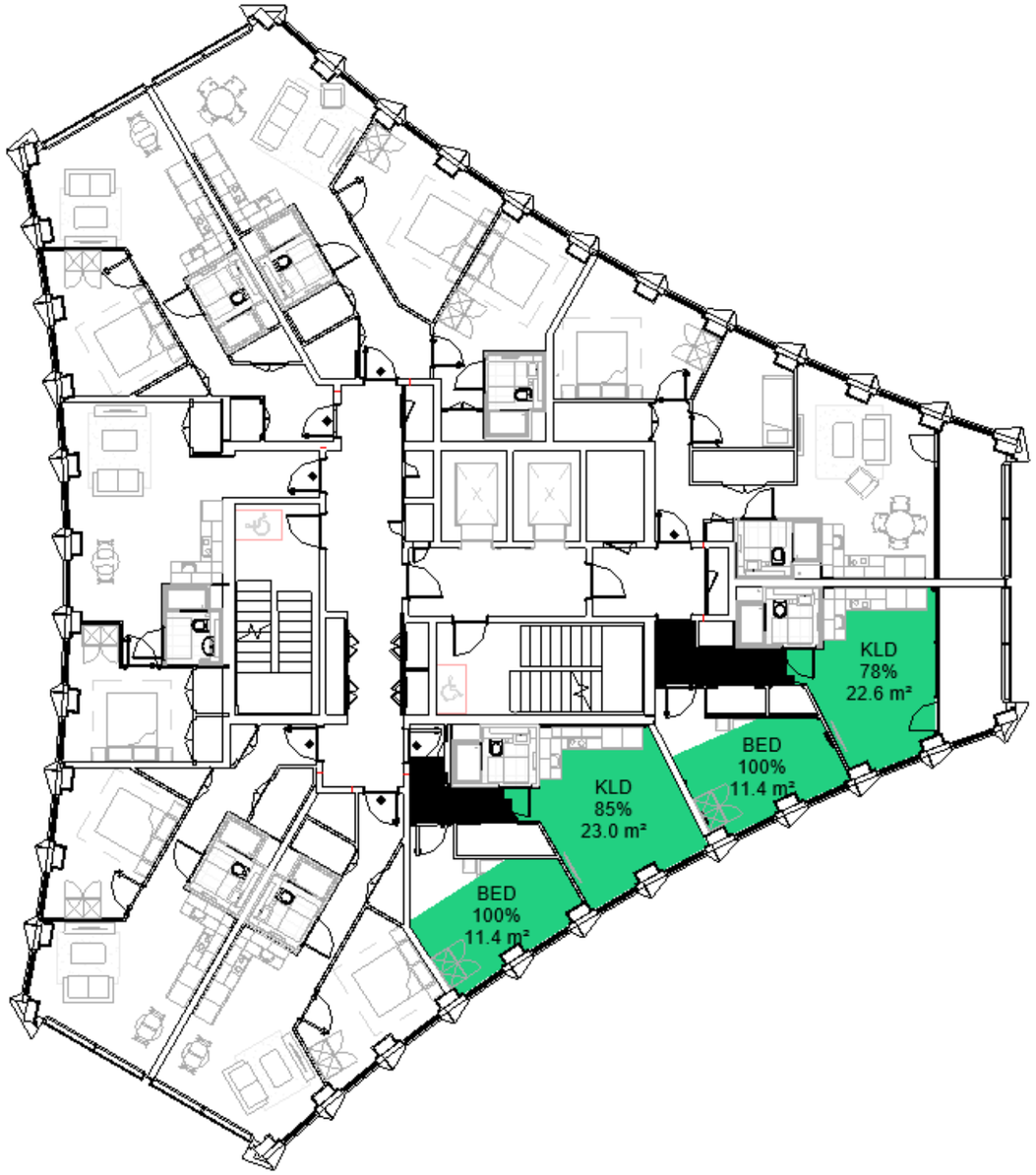


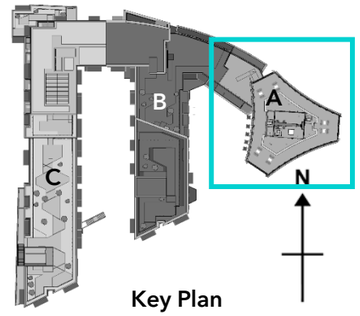
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 16

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

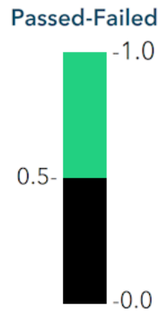
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

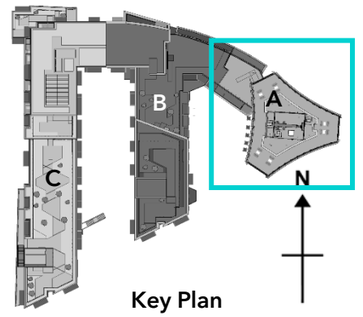


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 17

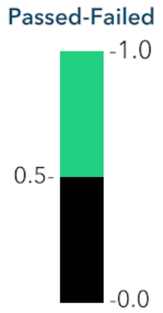
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

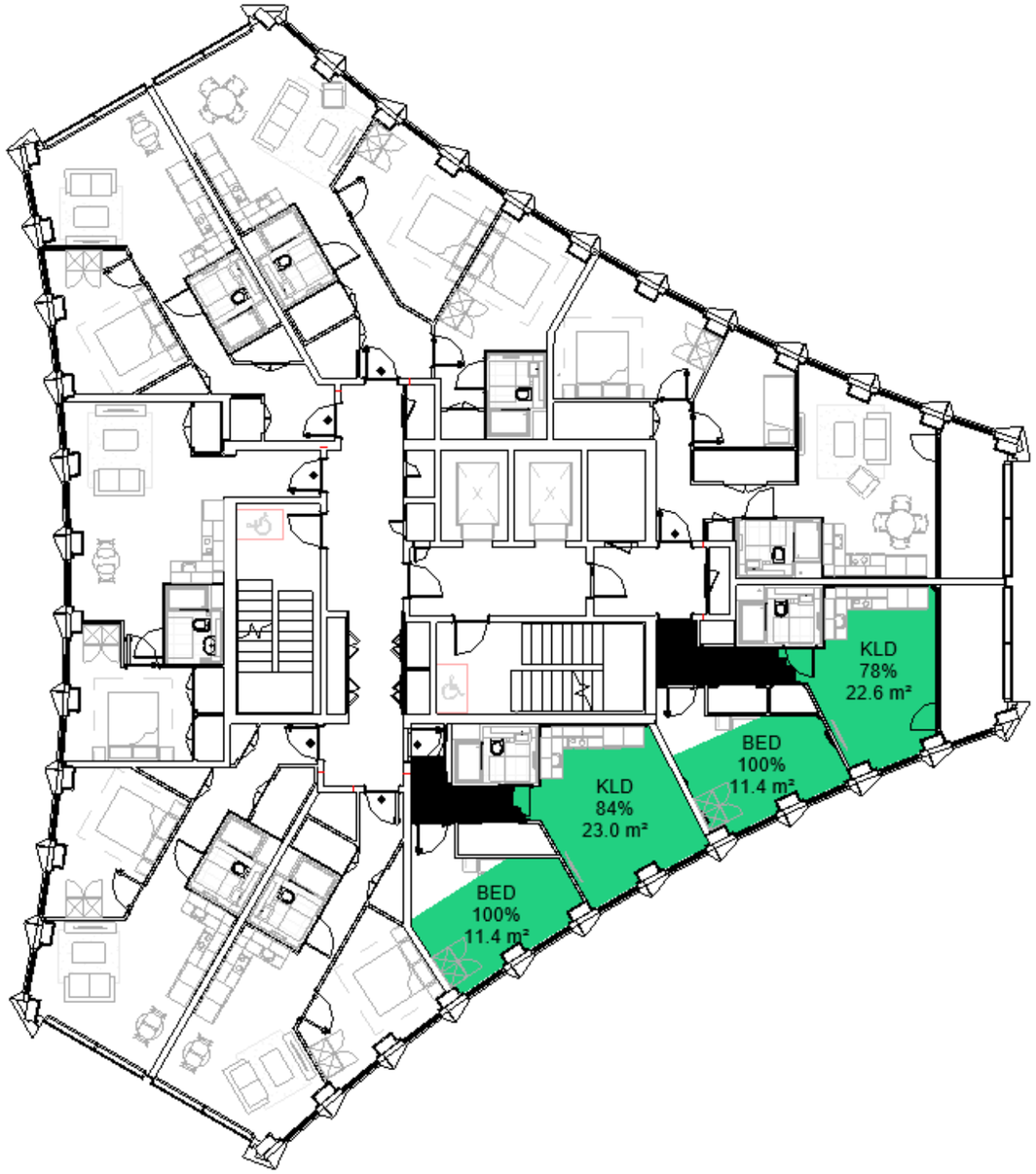


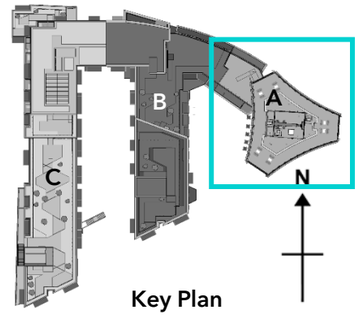
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 18

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

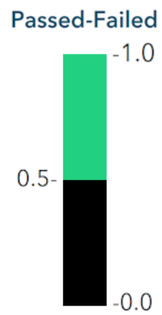
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

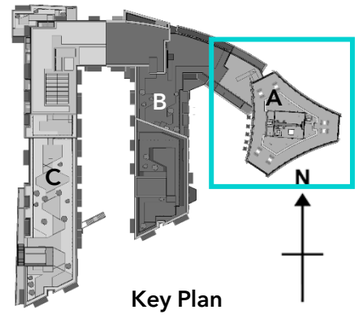


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 19

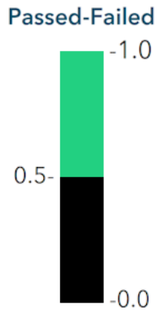
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

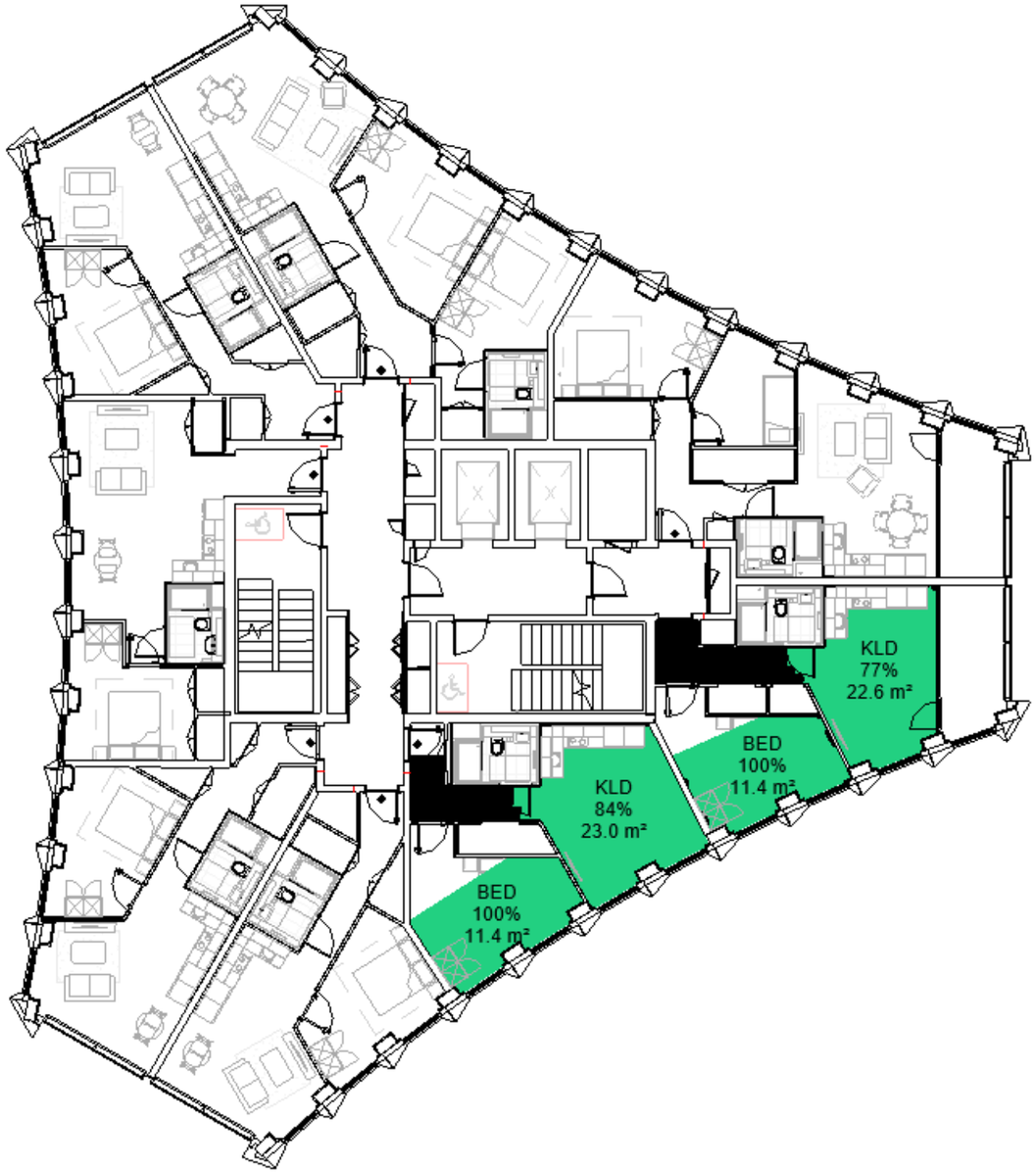


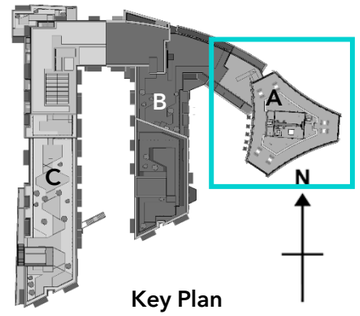
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 20

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

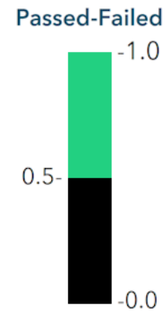
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

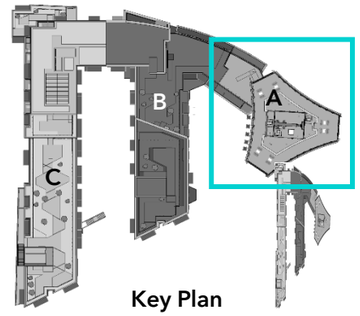


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 21

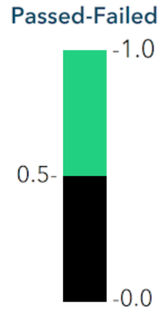
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

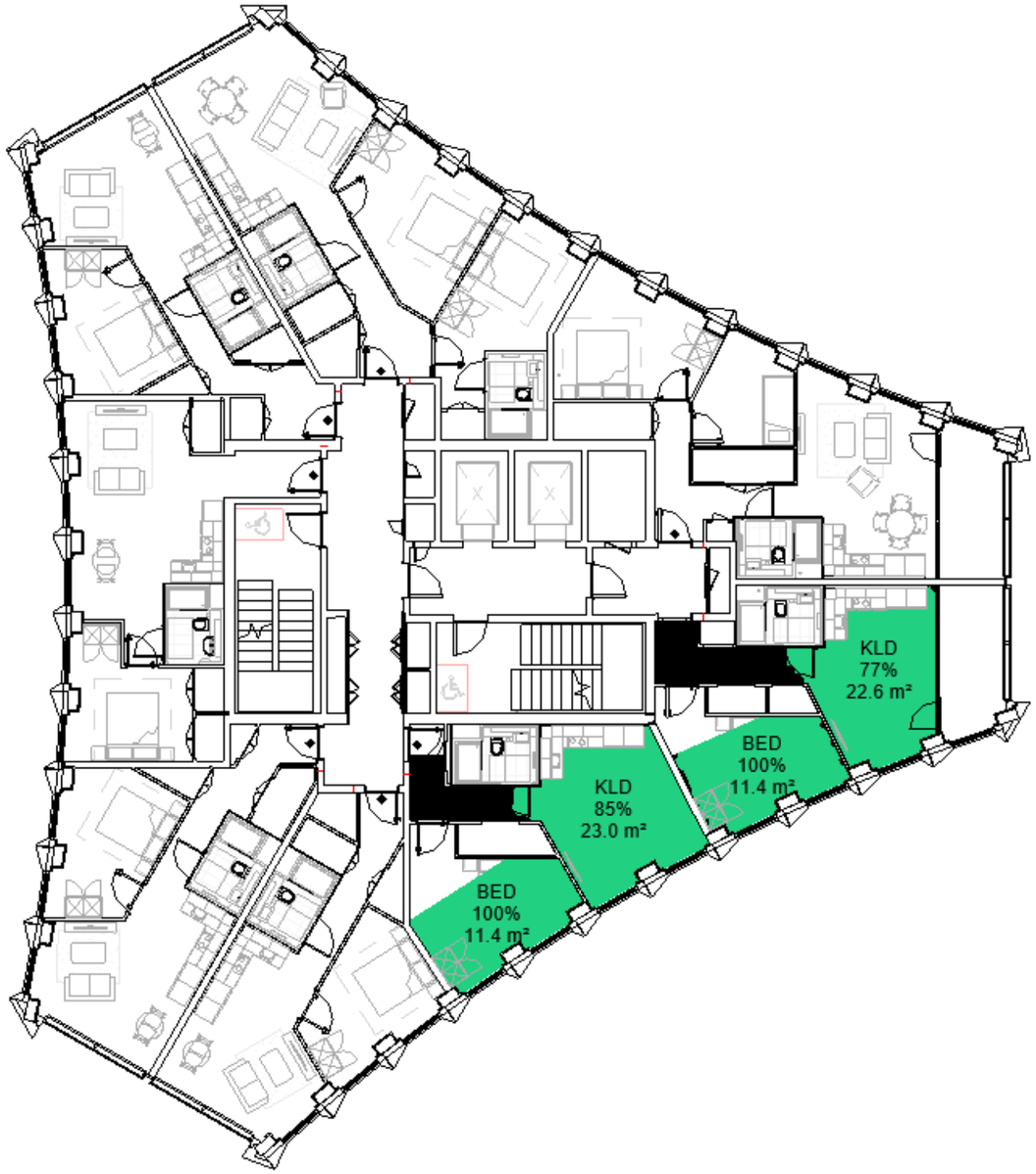


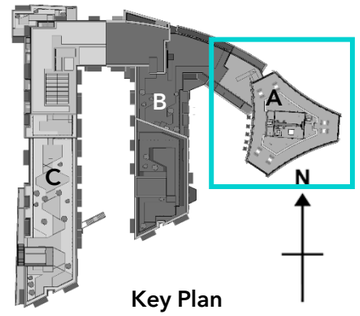
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 22

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

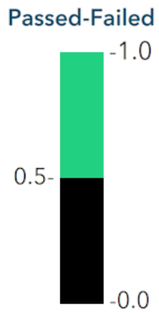
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

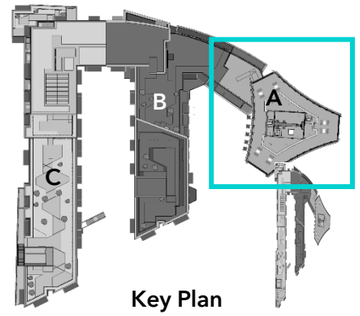


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 23

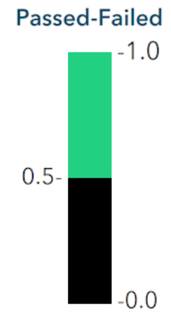
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

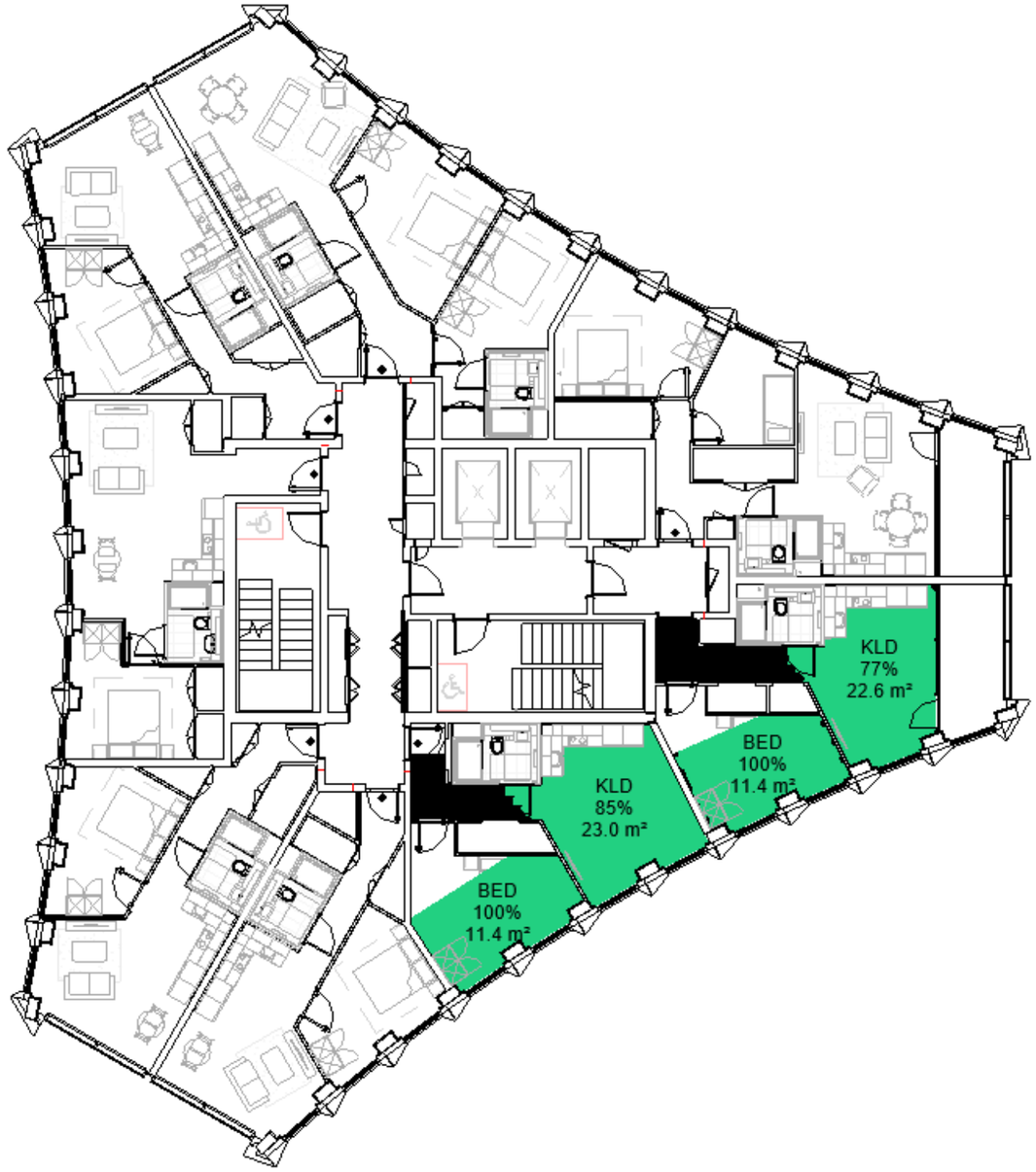


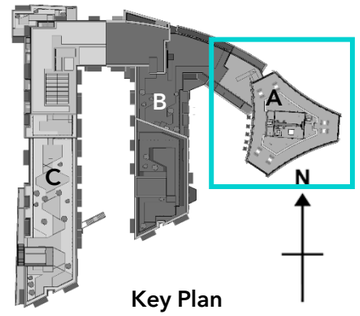
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 24

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

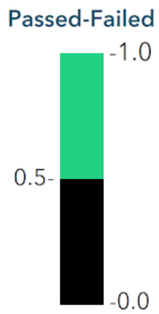
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

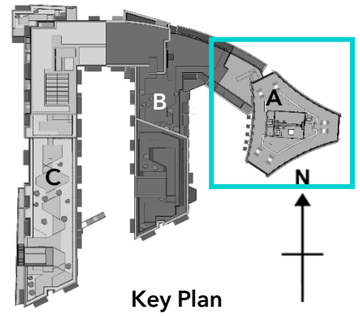


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 25

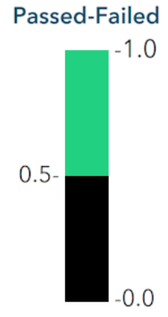
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

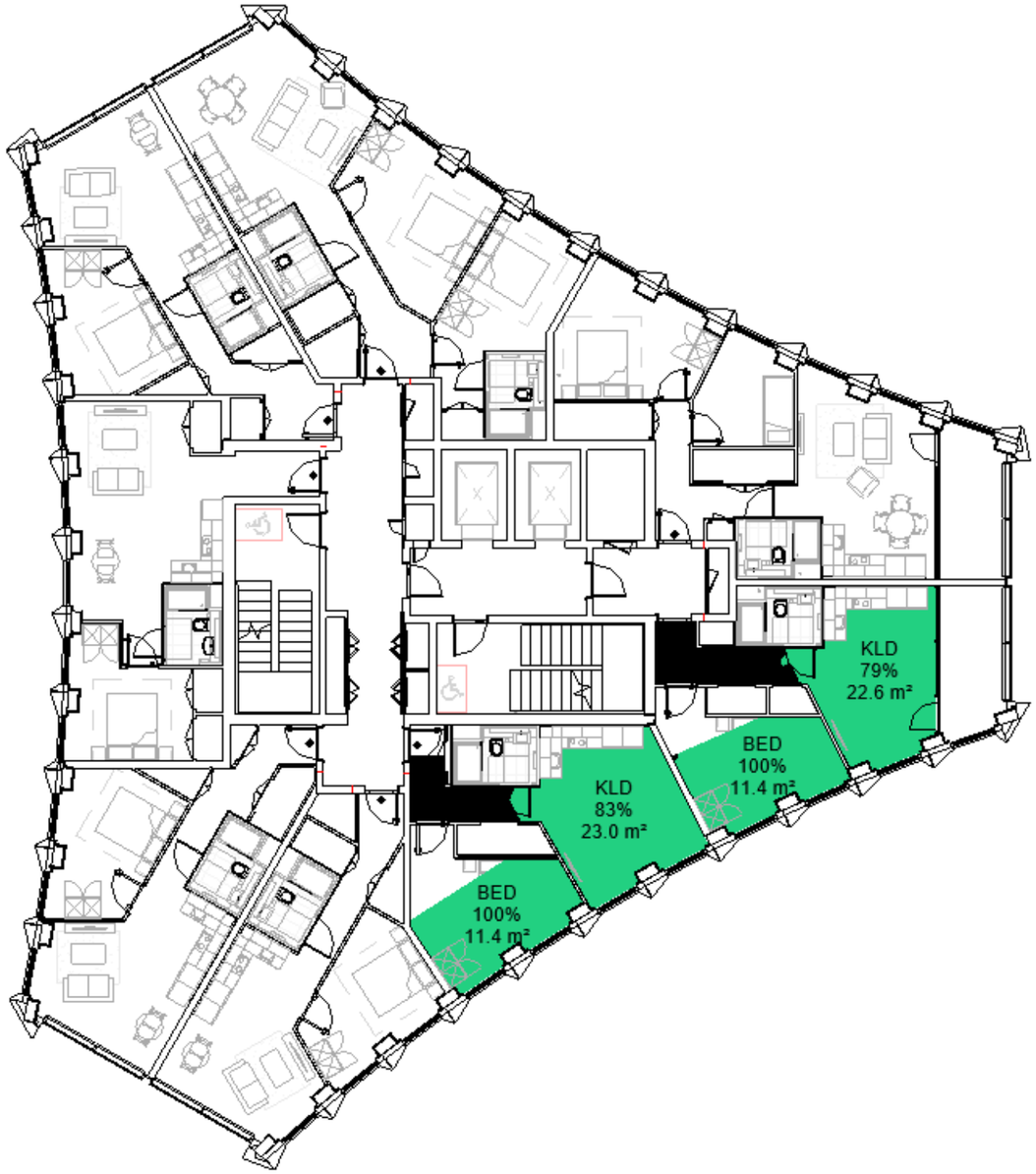


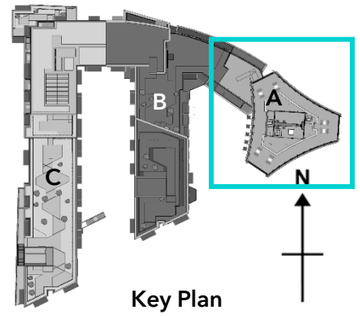
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 26

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

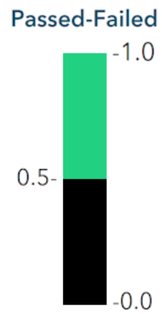
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

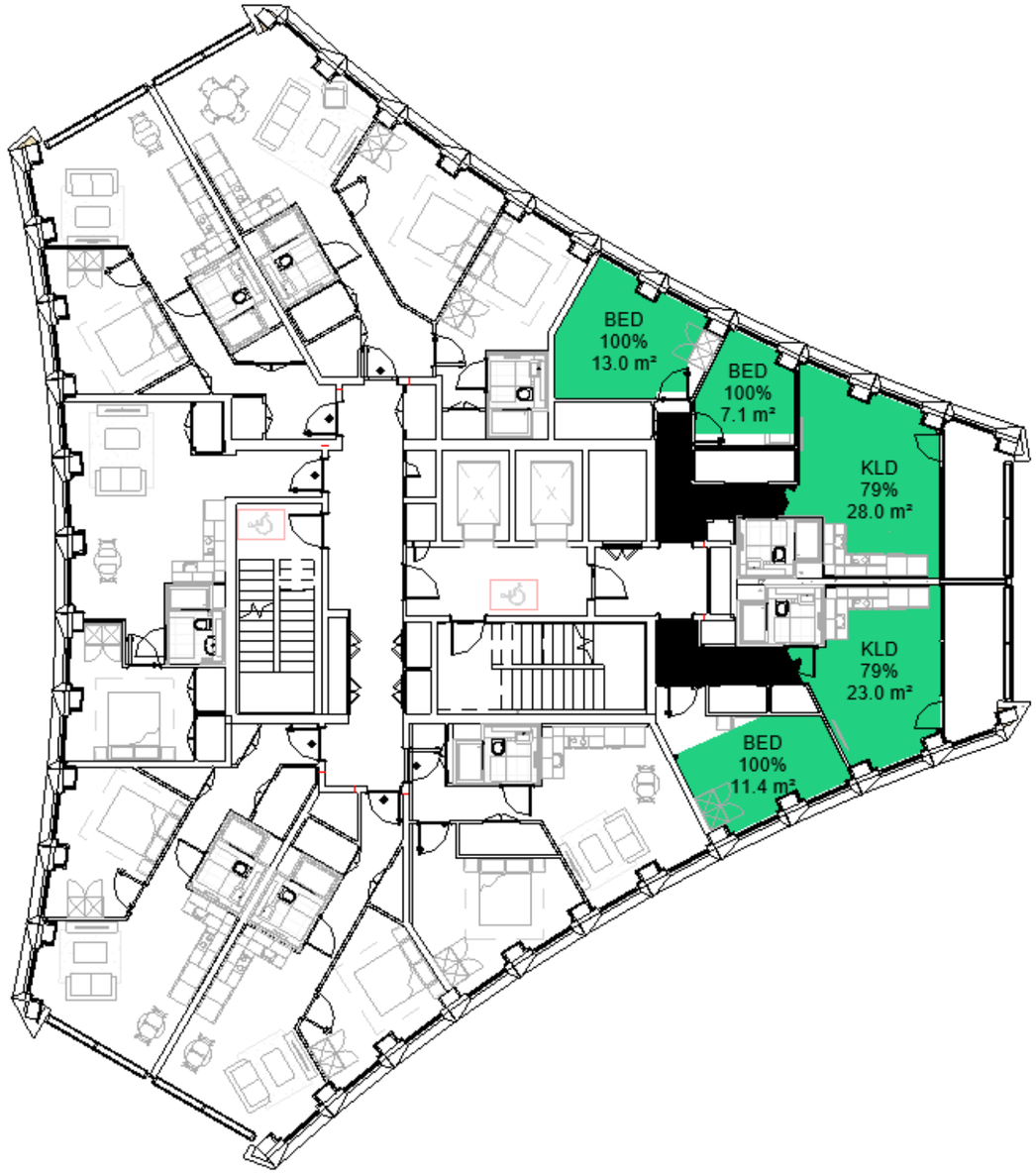


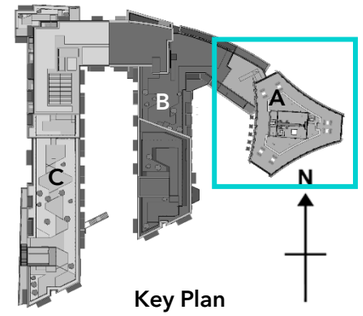
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block A Level 27

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

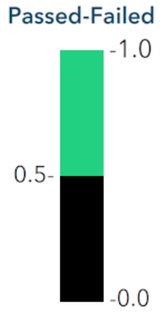
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location



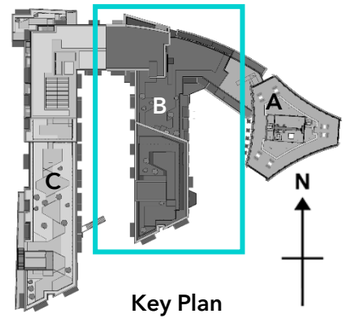
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

Block B

SDA – Block B Level 01

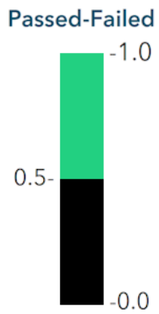
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

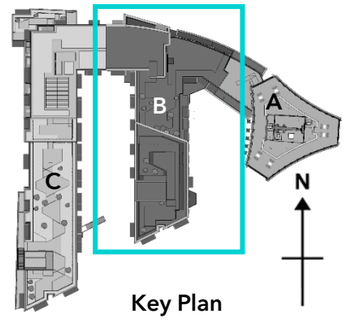


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block B Level 02

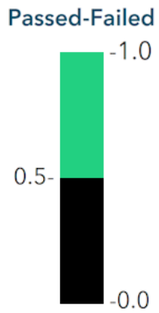
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

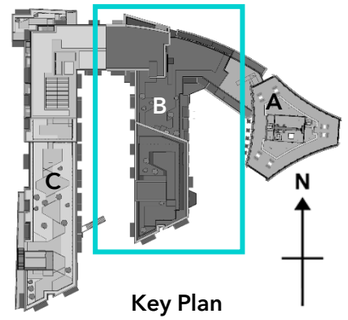


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block B Level 03

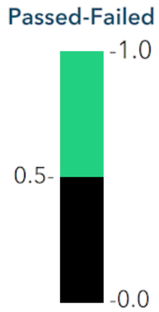
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

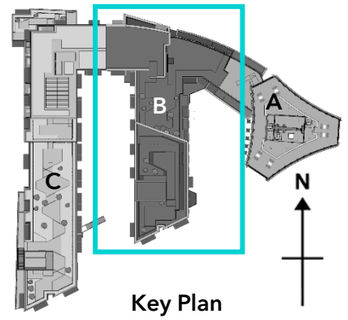


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block B Level 04

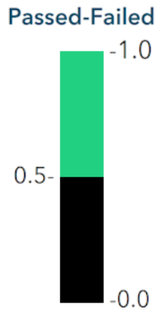
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

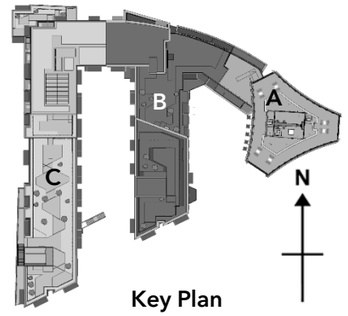


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block B Level 05

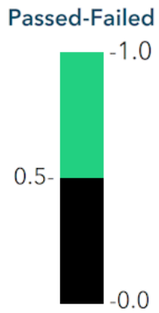
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

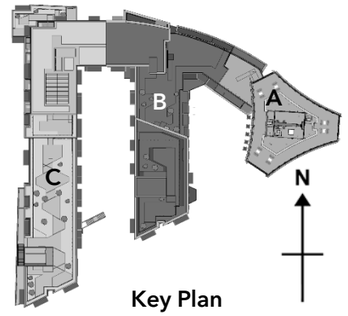


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block B Level 06

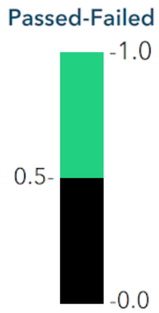
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

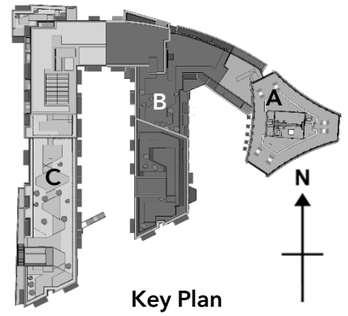


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block B Level 07

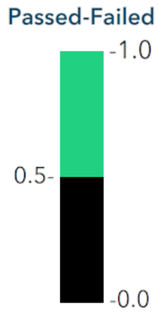
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

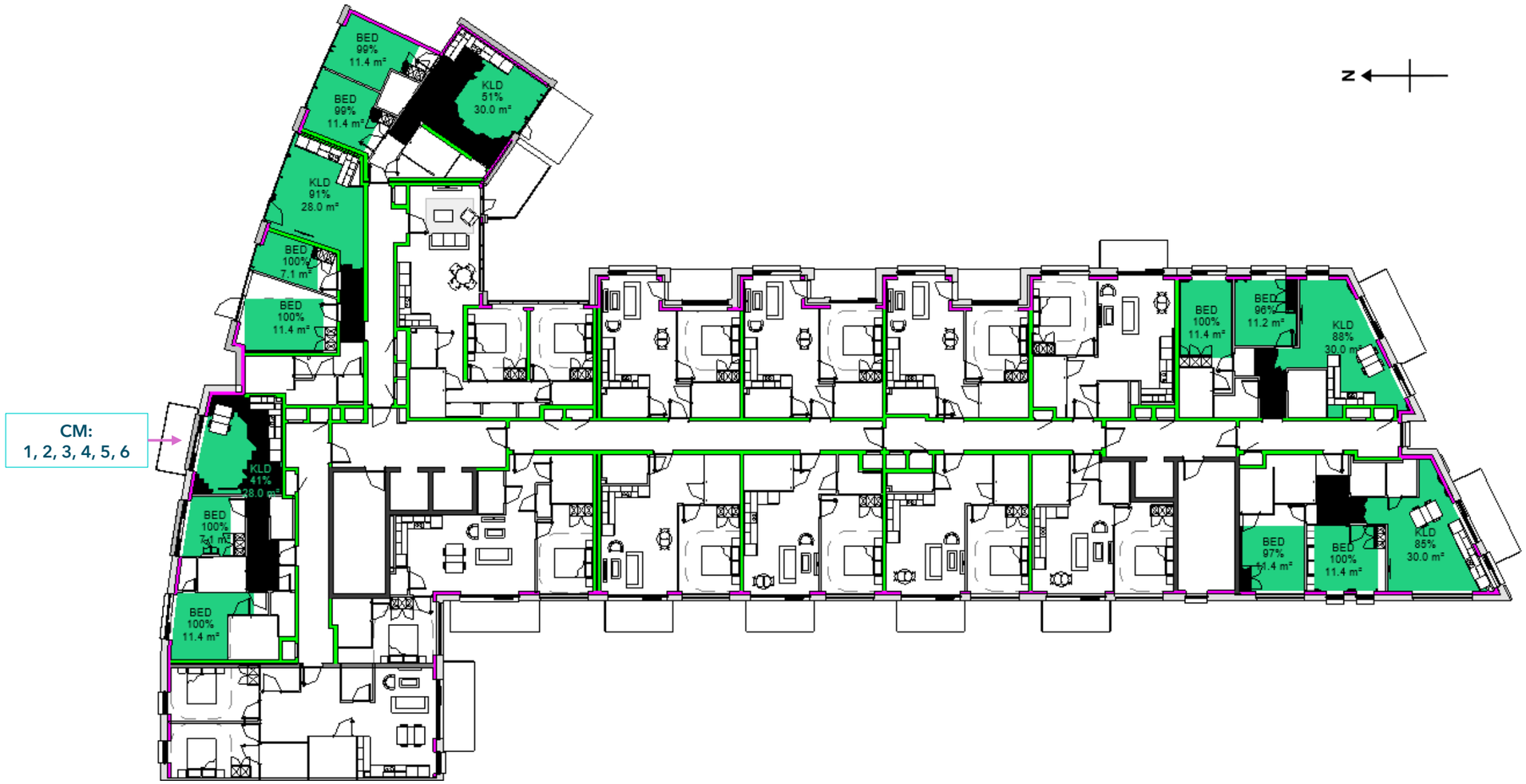


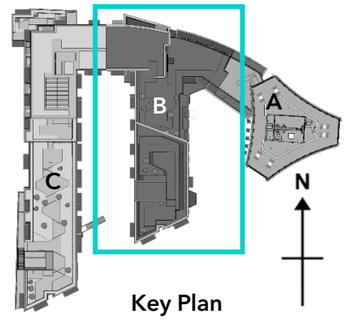
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block B Level 08

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.

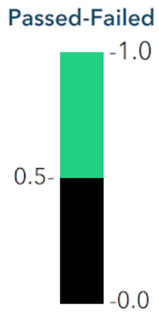




Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

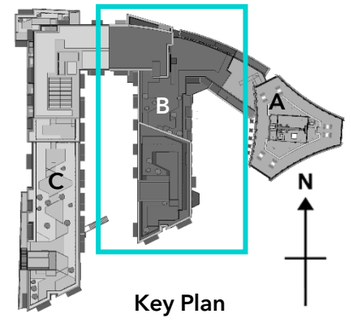


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block B Level 09

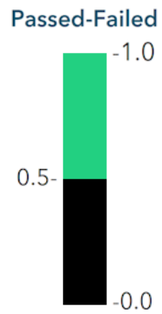
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

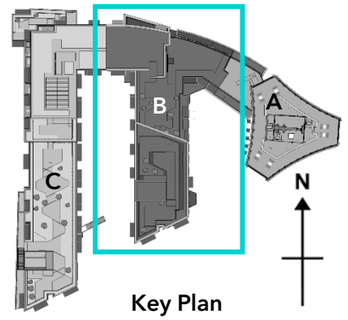


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

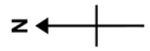
SDA – Block B Level 10

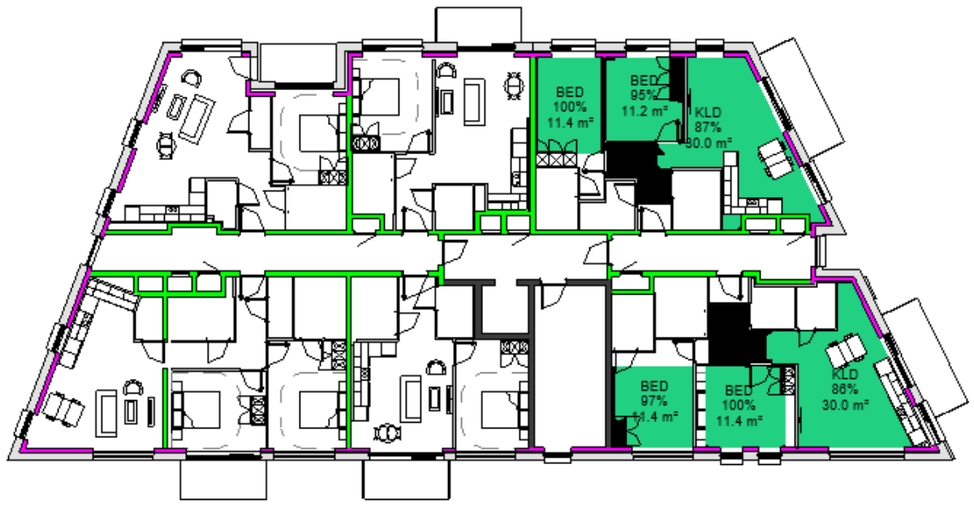
Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



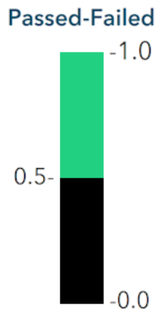
Key Plan





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

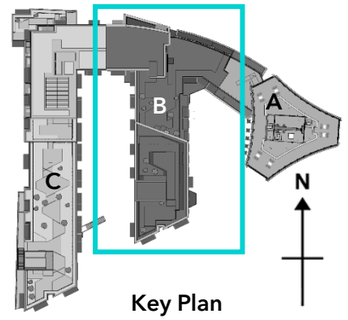


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block B Level 11

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

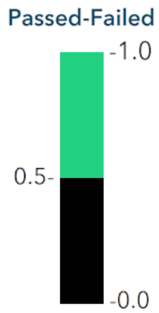
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location



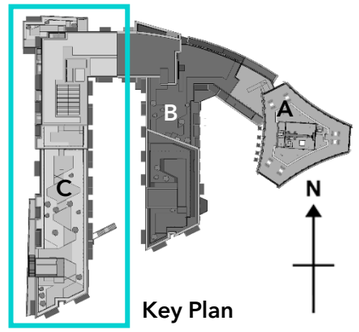
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

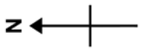
Block C

SDA – Block C Level 00

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

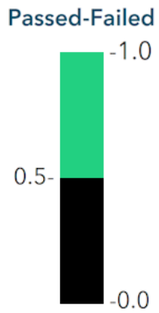
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

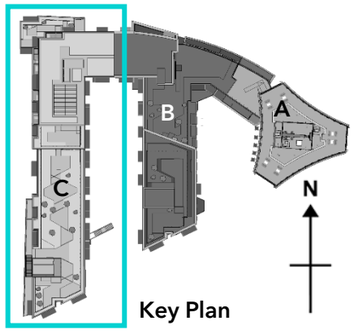


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

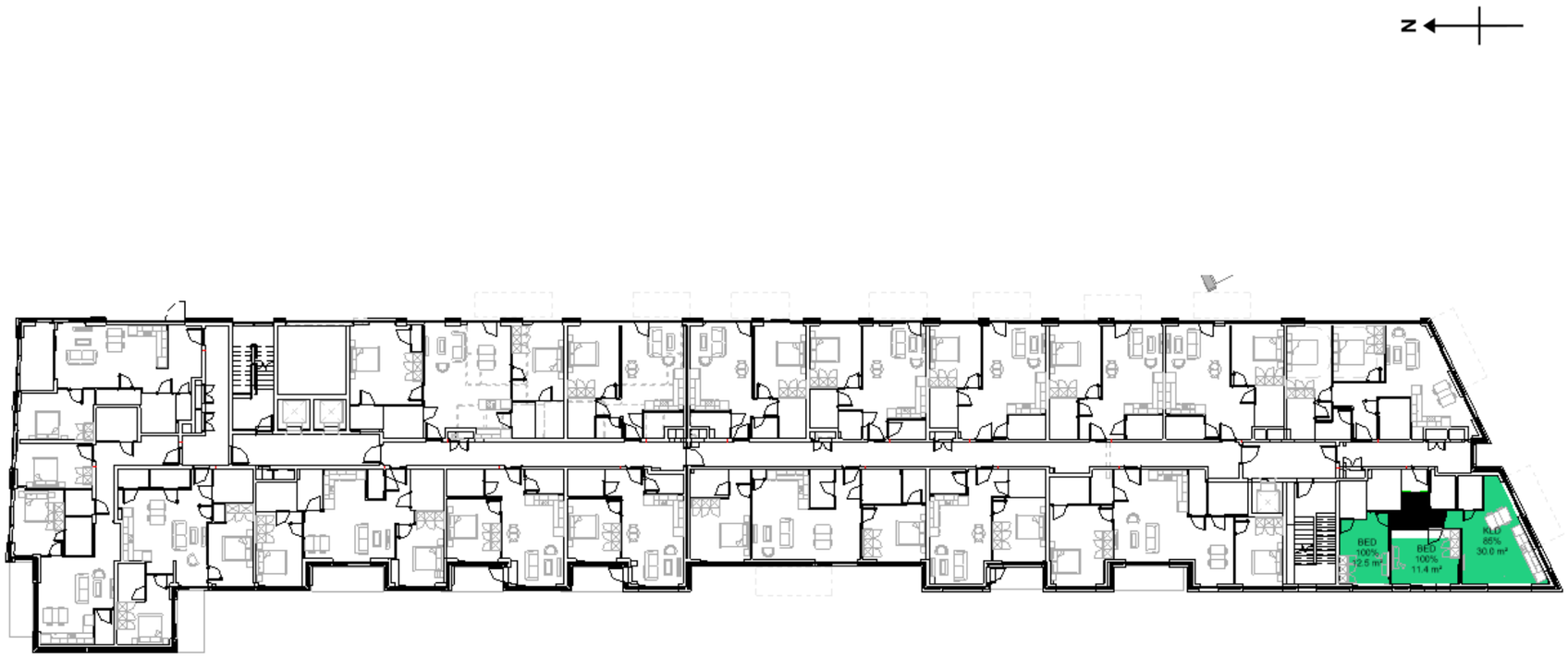
SDA – Block C Level Mezzanine

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.

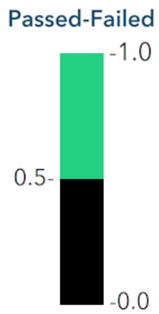


Key Plan



Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

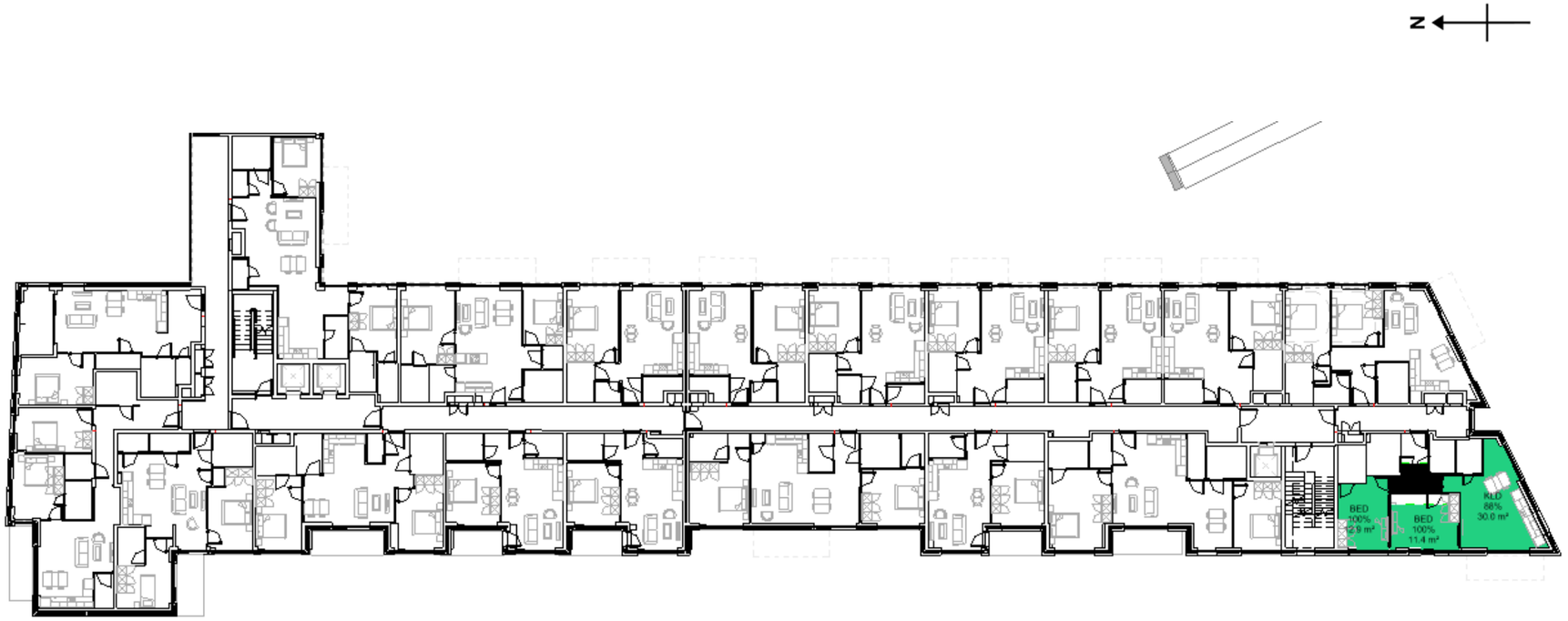


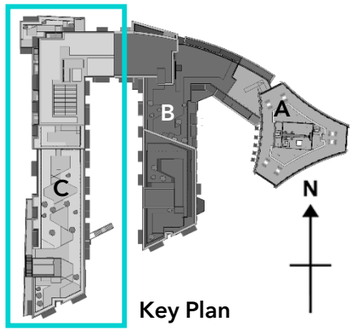
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block C Level 01

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

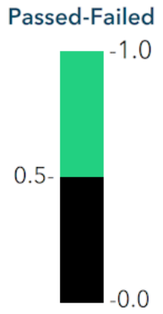
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

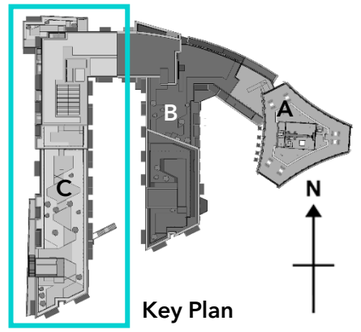


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block C Level 02

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

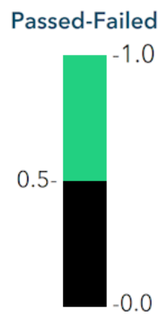
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

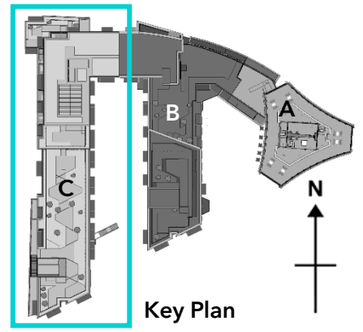


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block C Level 03

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

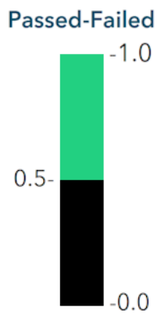
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

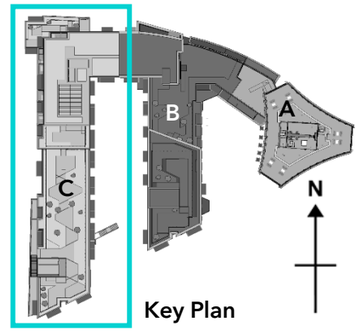


SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block C Level 04

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

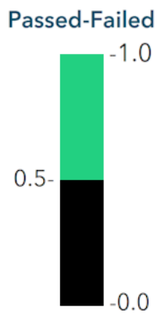
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.



Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

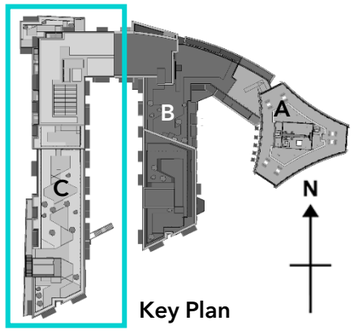


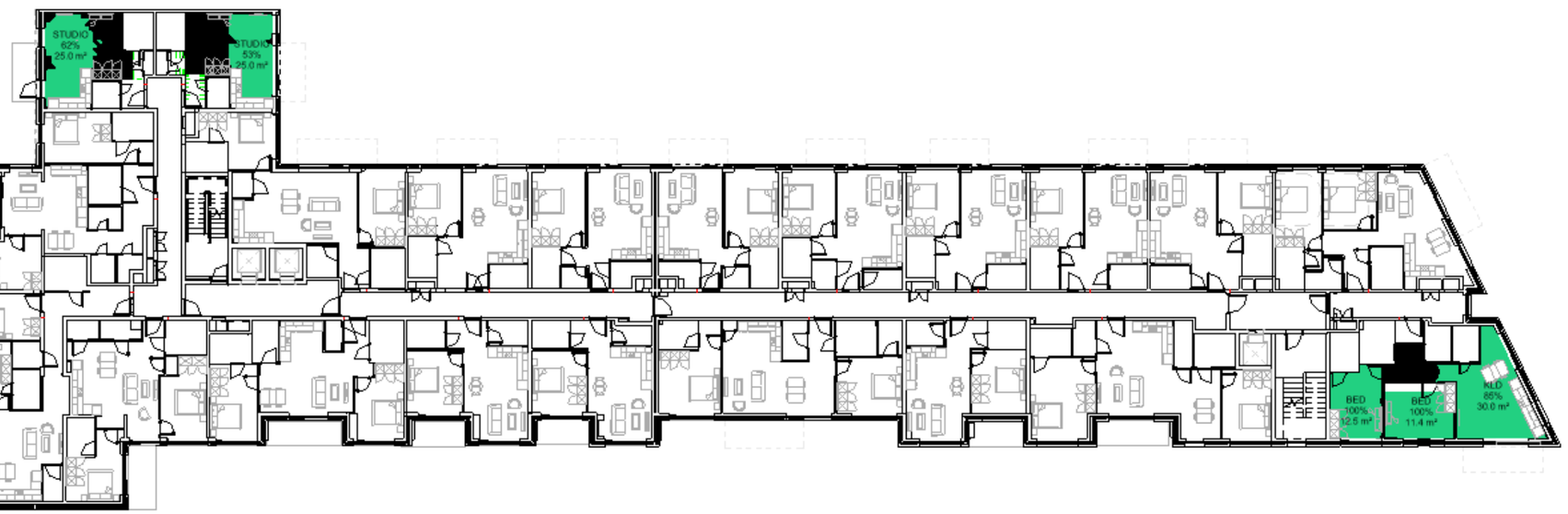
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block C Level 05

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

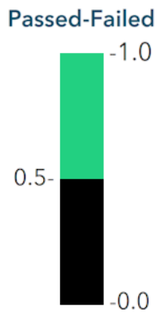
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

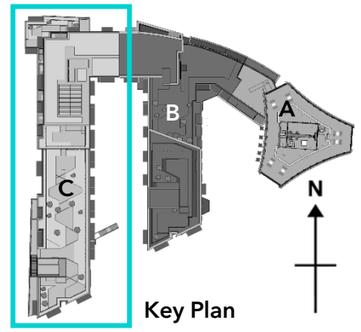


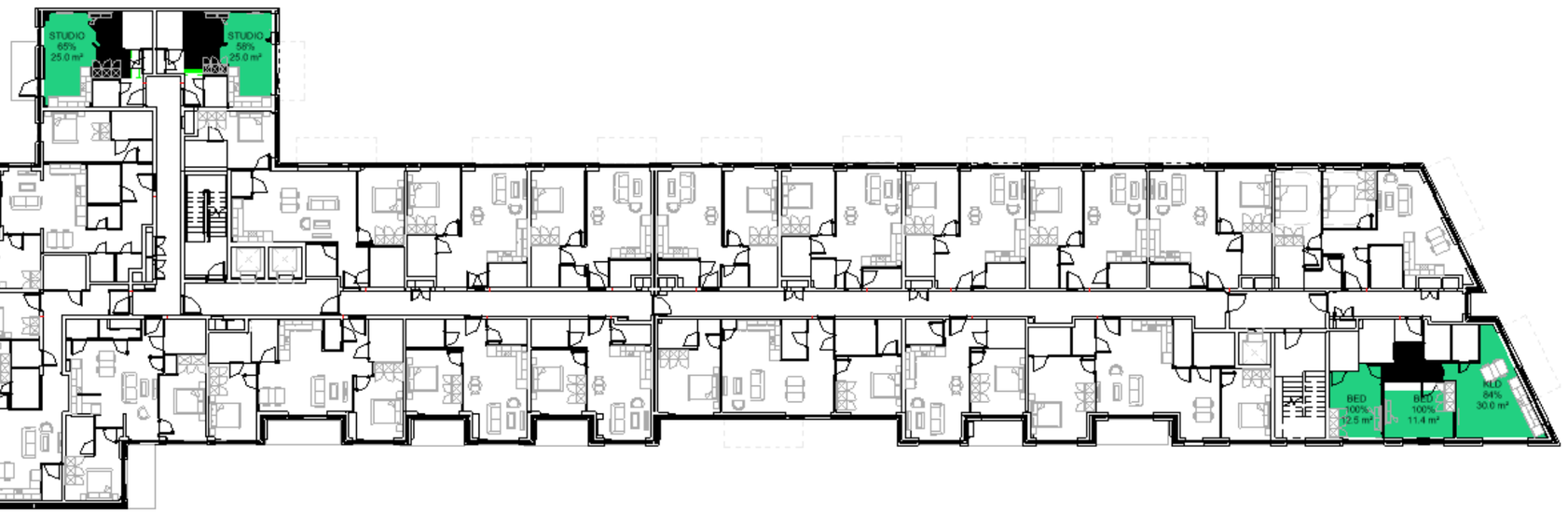
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block C Level 06

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

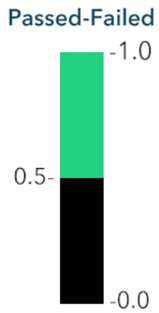
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location

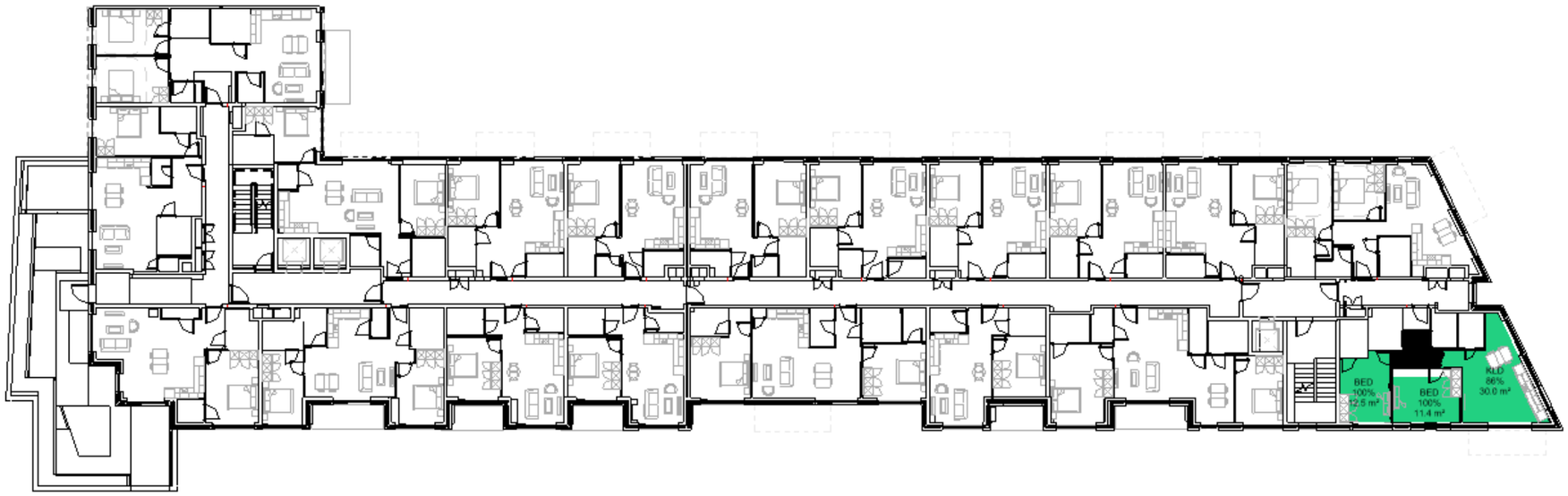


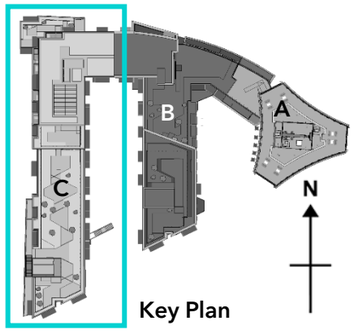
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

SDA – Block C Level 07

Daylight analysis results are illustrated below with the green shaded area receiving target illuminance, 200 Lux for KLDs & studios, and 100 Lux for bedrooms.

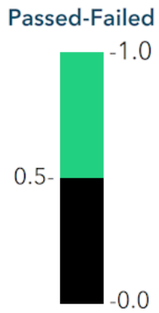
Black shaded areas illustrate parts of the rooms receiving less than the targeted illuminance. A space is deemed compliant where greater than 50% of areas achieve target illuminance.





Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Open Space
4. Winter Garden
5. Aspect
6. Location



SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

Appendix B – Clarifications

Clarifications

Impact of Trees

The BRE Guide provides the following guidance in relation to the impact of trees:

> *"G1.1 Trees and hedges vary in their effects on skylight and sunlight. Most tree species will cast a partial shade[G¹,G²]; for deciduous trees this will vary with time of year. However very little light can penetrate dense belts of evergreen trees, and the shade they cause will be more like that of a building or wall.*
>
> *G1.2 It is generally more difficult to calculate the effects of trees on daylight because of their irregular shapes and because some light will generally penetrate through the tree crown. Where the effect of a new building on existing buildings nearby is being analysed, it is usual to ignore the effect of existing trees. This is because daylight is at its scarcest and most valuable in winter when most trees will not be in leaf."*

The guide goes on to further note:

> *"G2 Skylight in new dwellings obstructed by trees*
>
> *G2.1 Sometimes, however, trees should be taken into account, for example where a new dwelling is proposed near to large existing trees. "*
>
> *"G3 Sunlight in new dwellings obstructed by trees*
>
> *G3.1 To assess sunlight provision to new dwellings, BS EN 17037 recommends the calculation of hours of sunlight received on a single day, assuming clear skies; 21 March is the suggested date. …. At this time of the year deciduous trees will not be in full leaf and therefore some sun will be expected to penetrate. However, it would be impossible to accurately simulate how the fragmented obstruction of a tree would obstruct direct sunlight to a point at a particular time."*
>
> *"G4 Sunlight in gardens with trees*
>
> *G4.1 In assessing the impact of buildings on sunlight in gardens (see section 3.3), trees and shrubs are not normally included in the calculation unless a dense belt or group of evergreens is specifically planned as a windbreak or for privacy purposes. This is partly because the dappled shade of a tree is more pleasant than the deep shadow of a building (this applies especially to deciduous trees)."*

BRE have also clarified directly to IN2 that large existing belts of trees should be including and that:

> *"For proposed landscaping, trees and vegetation would usually need not be included if they would not impact daylight/sunlight to proposed areas, for example if they were low level (below sill height) or would not obstruct a room. Deciduous trees need not be included in assessment of sunlight to open spaces. Where a dense belt or group of trees is specifically planned as a windbreak or for privacy purposes, it is better to include these if they could obstruct daylight/sunlight. The growth of trees and their likely final size should be allowed for. In other situations professional judgement should be used. For example, if plans suggest a proposed tree would be likely to significantly obstruct a room then an account for it could be included."*

View Out

Whilst the metric to assess View Out is included in the BRE Guide, the following clarification is noted for housing:

> *"The method is most applicable to spaces with fixed seating locations such as offices and schools; it is less relevant to housing where people can move about in order to see out."*

Therefore, no assessment was determined to be required for this development.

Protection Against Glare

The EN 17037 standard does include a metric for determining glare, the standard clarifies that the applicability is:

> *"A glare assessment is suggested in spaces, where the expected activities are comparable to reading, writing or using display devices and the user is not able to choose freely his position and viewing direction. For glare protection, a movable or retractable solar protection device can individually be adjusted while fixed devices may need additional shading devices to support individual needs."*

The BRE Guide notes:

> *"Sunlight is also valued in non-domestic buildings. However, the requirement for sunlight will vary according to the type of non-domestic building, the aims of the designer and the extent to which the occupants can control their environment. People appreciate sunlight more if they can choose whether to be exposed to it, either by changing their positions in the room or using adjustable shading. Where prolonged access to sunlight is available, shading devices will also be needed to avoid overheating and unwanted glare from the sun. This can apply to housing as well."*

Therefore, as the assessments within this report are for the residential sections of the development, where occupants can choose their locations and viewing direction, no assessment was determined to be required for this development.

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