St. Vincent's Hospital Redevelopment Fairview, Dublin 3

Internal Daylight Analysis Report LRD Planning Amendment

Date	28/01/2026
Report Revision	01
IN2 Project Ref:	D2116

Client

Richmond Village Development Company Limited

Document Control

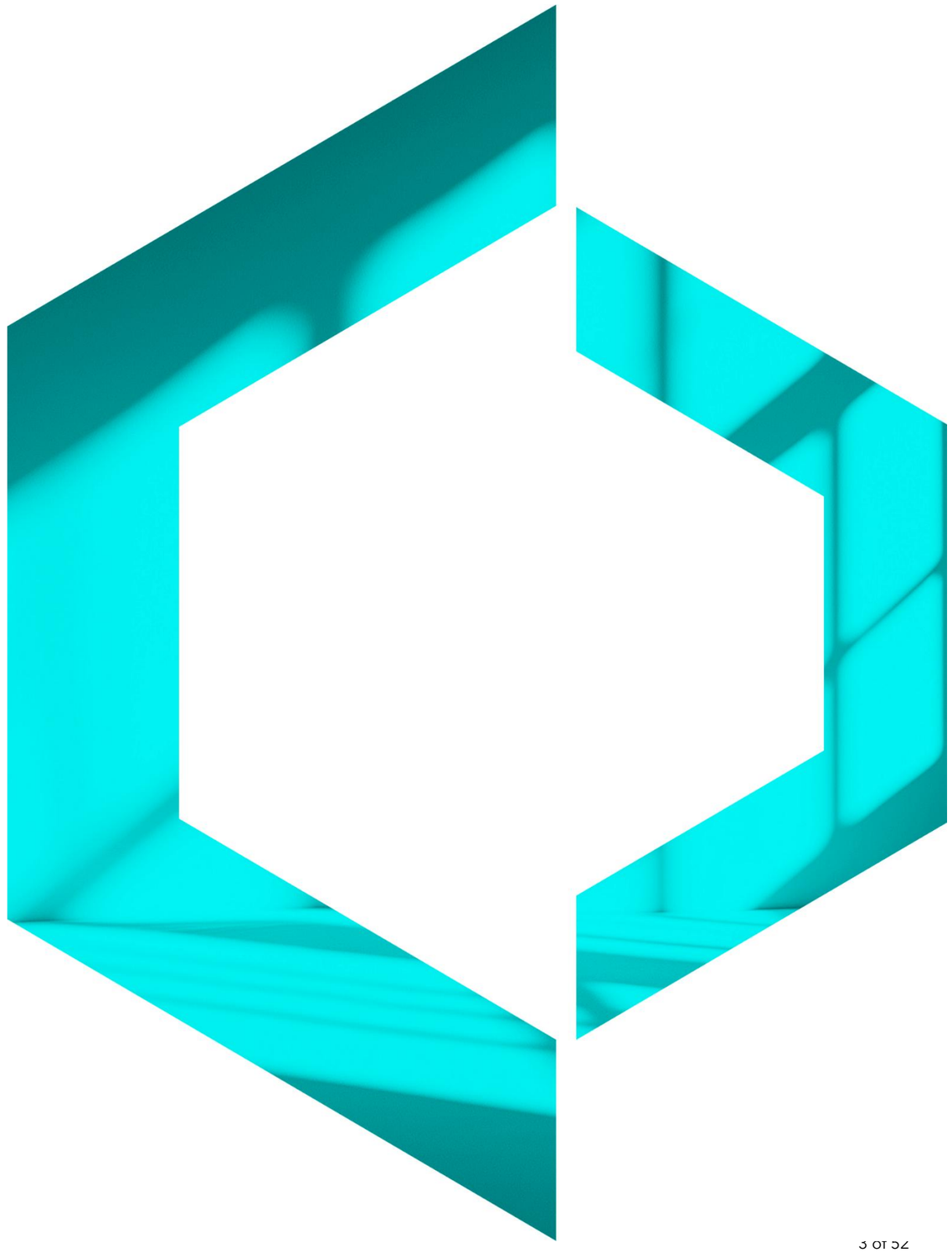
Project Name D2116 St Vincents Fairview
Client Name Richmond Village Development Company Limited
Report Title D2116 St Vincents Fairview Internal Daylight Analysis Report – LRD Amendment

Date	Revision	Status Description	Compiled By	Authorised by
28/01/26	00	Issued for review	Sol Lee	William O'Donnell
00/00/00	01	Issued for Planning	Sol Lee	William O'Donnell
00/00/00	02			
00/00/00	03			
00/00/00	04			
00/00/00	05			

This report has been prepared by IN2 Engineering ("the Consultant") exclusively for the benefit of the Client in accordance with the terms of the Client's instructions and the scope of services agreed between the parties. The report is intended solely for the Client's use for the purpose stated within it. No responsibility or liability is accepted by the Consultant to any third party who may use or rely on this report or any information contained herein, whether in whole or in part, for any purpose whatsoever. The findings, opinions, and recommendations expressed in this report are based on information available to the Consultant at the time of preparation and on specific assumptions stated herein. The Consultant has exercised reasonable skill, care, and diligence in the performance of its duties, but no warranty, express or implied, is made regarding the accuracy, completeness, or suitability of the information provided. The Client should satisfy itself as to the adequacy of the report for its intended purpose before making decisions based upon it. Conditions, parameters, or circumstances may change over time, and the Consultant shall have no obligation to update or revise this report to reflect such changes. This document and its contents remain the intellectual property of the Consultant and may not be reproduced, disclosed, or distributed without prior written consent.

Table of Contents

1. Glossary 4
2. Executive Summary & Conclusion 6
3. Standards & Guidelines 8
4. Impact on Neighbouring Buildings 14
4.1. Proposed Amendment Impacts. 14
5. Internal Daylight Analysis 16
5.1. Spatial Daylight Autonomy Methodology 16
5.2. Results – Summary of SDA 18
5.3. SDA Compensatory Measures 20
6. Sunlight Analysis 22
6.1. Exposure to Sunlight 22
6.2. Results – Summary of ETS 23



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.

Working Plane

The working plane is the notional plane where visual tasks, and on which predicted light levels would normally be undertaken. For a residential assessment, the working plane is defined by BRE Guide at 850 mm above floor level.

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 details the daylight and sunlight analysis undertaken by IN2 Engineering Design Partnership for the proposed amendment to the granted development at St Vincent's Fairview, Dublin 3. The report has been reviewed by William O'Donnell who is a 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. As the amendment application does not propose to change the external massing of the granted permission, therefore there would be no change to how the 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
Daylight	Proposed Development	Spatial Daylight Autonomy	BRE Guide BR209 (2022 Edition)	Section 5 – Internal Daylight Analysis
Sunlight	Proposed Development	Sunlight Exposure	BR 209 (2022 Edition)	Section 6 – Exposure to Sunlight
Sunlight	Proposed Development	Sunlight Hours	BR 209 (2022 Edition)	No change from granted Planning
Daylight	Existing Neighbours	Vertical Sky component	BR 209 (2022 Edition)	No change from granted Planning
Sunlight	Existing Neighbours	Sunlight Hours	BR 209 (2022 Edition)	No change from granted Planning
Sunlight	Existing Neighbours	Annual Probable Sunlight Hours	BR 209 (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, all units were assessed for the Spatial Daylight Autonomy (SDA) methodology as detailed in the BRE Guide. A very high compliance rate of **99%** was achieved for all the rooms across the scheme. As a result, of the proposed amendments the compliance rate across the scheme remains at **99%**.

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

For the granted permission, **94%** of units exceeded the minimum recommendations for Exposure to Sunlight. Section 6 details the assessment for the proposed amendment units which results in no change in the compliance rate of **94%** for the scheme.

In conclusion, this report confirms that the best practice Daylight availability has been ensured for the proposed amendment on the development at St Vincent's Fairview, Dublin 3, 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 City Development Plan 2022-2028, ("**DCC Development Plan**").
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**").
g) 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 and KLD. 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 5.1.3), the median of which was then determined the space compliance.

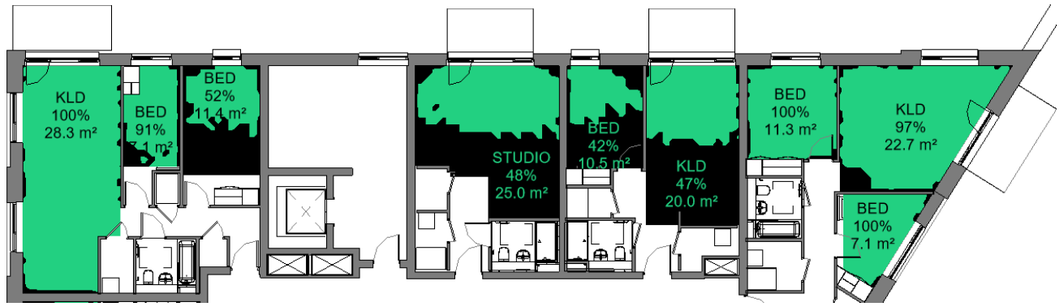


Figure 5.1.1 – Daylight Analysis Results

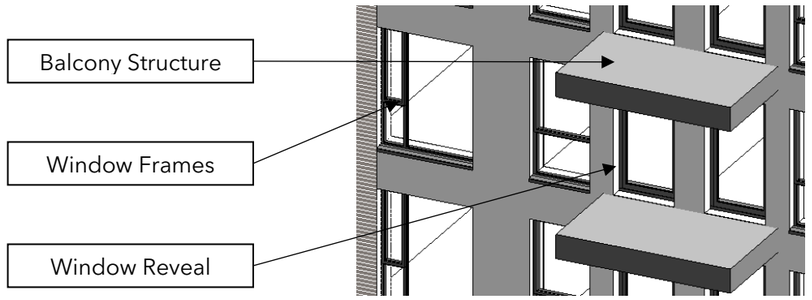


Figure 5.1.2 – Building details included within the Daylight Analysis (Sample)

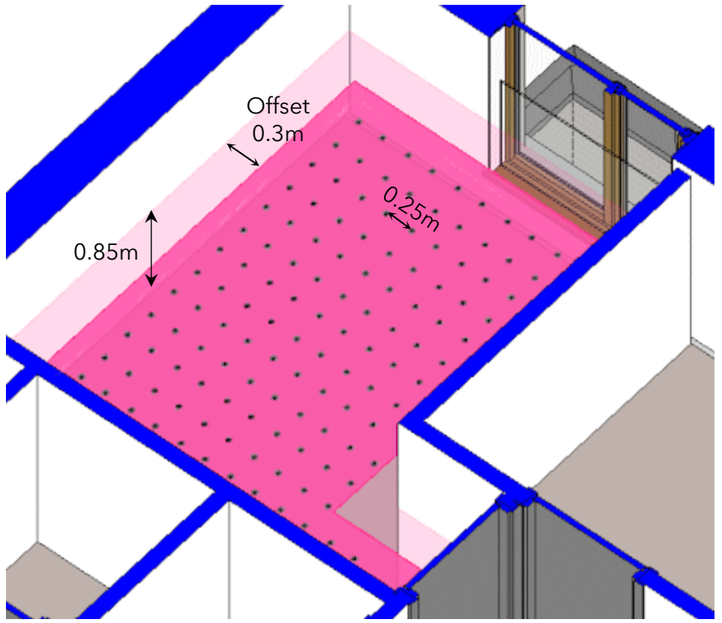


Figure 5.1.3 – Calculating Working Plan

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).

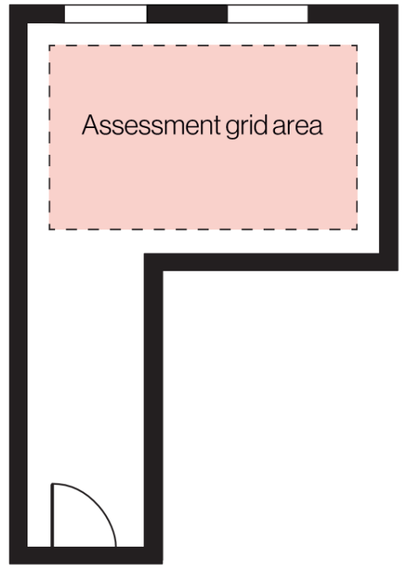


Figure 5.1.4 – BRE Guide Figure C3 – Assessment Area Excluding Corridor

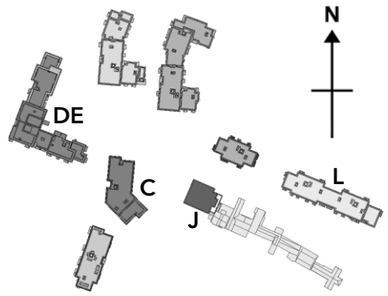
5.2. Results – Summary of SDA

The results below provide a breakdown of the compliance rate for each space for SDA and an overall SDA scheme compliance rate.

Block A	Pass	Fail	Total
Ground Floor	13	0	13
First Floor	16	0	16
Second Floor	22	0	22
Third Floor	22	0	22
Fourth Floor	22	0	22
Fifth Floor	22	0	22
Sixth Floor	22	0	22
Total	139	0	139
	100%	**0%**	

Block B	Pass	Fail	Total
Ground Floor	24	0	24
First Floor	27	0	27
Second Floor	27	0	27
Third Floor	27	0	27
Fourth Floor	27	0	27
Fifth Floor	27	0	27
Sixth Floor	27	0	27
Seventh Floor	27	0	27
Total	213	0	213
	100%	**0%**	

Block C	Pass	Fail	Total
Basement	10	0	10
Ground Floor	26	0	26
First Floor	30	0	30
Second Floor	30	0	30
Third Floor	30	0	30
Fourth Floor	30	0	30
Fifth Floor	30	0	30
Sixth Floor	20	0	20
Total	206	0	206
	100%	**0%**	



Key Plan

Block D & E	Pass	Fail	Total
Ground Floor	45	2	47
First Floor	55	0	55
Second Floor	59	1	60
Third Floor	59	1	60
Fourth Floor	59	1	60
Fifth Floor	54	1	55
Sixth Floor	34	0	34
Seventh Floor	35	0	35
Eighth Floor	35	0	35
Ninth Floor	18	0	18
Tenth Floor	18	0	18
Eleventh Floor	18	0	18
Total	489	6	495
	99%	**1%**	

Block F	Pass	Fail	Total
Ground Floor	28	2	30
First Floor	39	3	42
Second Floor	40	2	42
Third Floor	40	2	42
Fourth Floor	38	0	38
Fifth Floor	36	0	36
Sixth Floor	27	0	27
Seventh Floor	19	0	19
Eighth Floor	19	0	19
Total	286	9	295
	97%	**3%**	

Block G	Pass	Fail	Total
Ground Floor	39	2	41
First Floor	49	2	51
Second Floor	56	0	56
Third Floor	56	0	56
Fourth Floor	43	0	43
Fifth Floor	43	0	43
Sixth Floor	27	0	27
Seventh Floor	20	0	20
Eighth Floor	20	0	20
Total	353	4	357
	99%	**1%**	

Planning Grant

Block H	Pass	Fail	Total
Ground Floor	15	0	15
First Floor	16	1	17
Second Floor	17	0	17
Third Floor	17	0	17
Fourth Floor	17	0	17
Total	82	1	83
	99%	**1%**	

Block J	Pass	Fail	Total
First Floor	7	0	7
Second Floor	13	0	13
Third Floor	13	0	13
Total	33	0	33
	100%	**0%**	

Block L	Pass	Fail	Total
Ground Floor	39	1	40
First Floor	44	0	44
Second Floor	44	0	44
Third Floor	44	0	44
Fourth Floor	38	0	38
Fifth Floor	34	0	34
Total	243	1	244
	100%	**0%**	

	Pass	Fail	Total
Block A	139	0	139
Block B	213	0	213
Block C	206	0	206
Block D & E	489	6	495
Block F	286	9	295
Block G	353	4	357
Block H	82	1	83
Block L	243	1	244
Block J	33	0	33
	2044	**21**	**2065**
	99%	**1%**	

The results below provide a breakdown of the compliance rate for each space for SDA including for the amended units and an overall SDA scheme compliance rate.

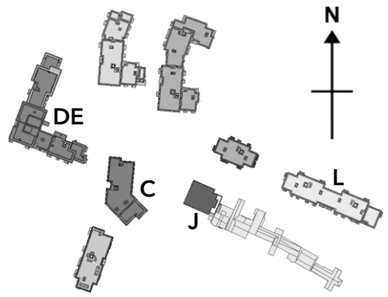
The grey shaded rows are the levels where analysis was not conducted as the rooms have not changed.

Detailed results are included in Appendix B .

Block A	Number of rooms		
	Pass	Fail	Total
Ground Floor	13	0	13
First Floor	16	0	16
Second Floor	22	0	22
Third Floor	22	0	22
Fourth Floor	22	0	22
Fifth floor	22	0	22
Sixth Floor	22	0	22
	139	0	139
	100%	0%	

Block B	Number of rooms		
	Pass	Fail	Total
Ground Floor	24	0	24
First Floor	27	0	27
Second Floor	27	0	27
Third Floor	27	0	27
Fourth Floor	27	0	27
Fifth floor	27	0	27
Sixth Floor	27	0	27
Seventh Floor	27	0	27
	213	0	213
	100.0%	0%	

Block C	Number of rooms		
	Pass	Fail	Total
Basement	10	0	10
Ground Floor	26	1	27
First Floor	30	0	30
Second Floor	30	0	30
Third Floor	30	0	30
Fourth Floor	30	0	30
Fifth floor	30	0	30
Sixth Floor	20	0	20
	206	1	207
	99.5%	0%	



Key Plan

Proposed Amendment

Block DE	Number of rooms		
	Pass	Fail	Total
Ground Floor	52	2	54
First Floor	56	1	57
Second Floor	59	1	60
Third Floor	59	1	60
Fourth Floor	59	1	60
Fifth floor	54	1	55
Sixth Floor	41	0	41
Seventh Floor	35	0	35
Eight Floor	35	0	35
Ninth Floor	18	0	18
Tenth Floor	18	0	18
Eleventh Floor	18	0	18
	504	7	511
	99%	1%	

Block F	Number of rooms		
	Pass	Fail	Total
Ground Floor	28	2	30
First Floor	39	3	42
Second Floor	40	2	42
Third Floor	40	2	42
Fourth Floor	38	0	38
Fifth floor	36	0	36
Sixth Floor	27	0	27
Seventh Floor	19	0	19
Eight Floor	19	0	19
	286	9	295
	97%	3%	

Block G	Number of rooms		
	Pass	Fail	Total
Ground Floor	39	2	41
First Floor	49	2	51
Second Floor	56	0	56
Third Floor	56	0	56
Fourth Floor	43	0	43
Fifth floor	43	0	43
Sixth Floor	27	0	27
Seventh Floor	20	0	20
Eight Floor	20	0	20
	353	4	357
	99%	1%	

Block H	Number of rooms		
	Pass	Fail	Total
Ground Floor	15	0	15
First Floor	16	1	17
Second Floor	17	0	17
Third Floor	17	0	17
Fourth Floor	17	0	17
	82	1	83
	99%	1%	

Block J	Number of rooms		
	Pass	Fail	Total
First Floor	13	0	13
Second Floor	13	0	13
Third Floor	13	0	13
	39	0	39
	100%	0%	

Block L	Number of rooms		
	Pass	Fail	Total
Ground Floor	38	1	39
First Floor	42	0	42
Second Floor	42	0	42
Third Floor	42	0	42
Fourth Floor	38	0	38
Fifth floor	36	0	36
	238	1	239
	100%	0%	

Summary	Number of rooms		
	Pass	Fail	Total
Block A	139	0	139
Block B	213	0	213
Block C	206	1	207
Block DE	504	7	511
Block F	286	9	295
Block G	353	4	357
Block H	82	1	83
Block J	39	0	39
Block L	238	1	239
	2060	23	2083
	99%	1%	

5.3. 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."*

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size

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 will 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. Dual Aspect

Some units have the added benefit of dual aspect ensuring multiple options for aspect and sunlight / daylight availability.

4. 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.

5. 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.

6. Direct Access to Courtyard

The failing room is located on the podium level and will have direct access to courtyard, providing a biophilic connection with nature.

7. Balcony Size

The unit containing this room has an enlarged balcony with more than **20%** extra area than the minimum balcony size required.

Sunlight Analysis



6. Sunlight Analysis

6.1. Exposure to Sunlight

The BRE Guide outlines that:

> *"3.1.15 In general a dwelling, or non-domestic building that has a particular requirement for sunlight, will appear reasonably sunlit provided:*
>
> - *at least one main window wall faces within 90° of due south and*
> - *at habitable room, preferably a main living room, can receive a total of a least 1.5 hours of sunlight on 21st March. This is assessed at the inside centre of the window(s); sunlight received by different windows can be added provided they occur at different times and sunlight hours are not double counted."*

As with Sunlight Amenity, the BRE Guide methodology therefore utilises the Equinox as being representative of the solar mid-position throughout the year, with the calculation of potential received sunlight during that day enabling a quantitative assessment in addition to idealised configuration of ensuring southerly aspect – preferably for living areas as described below:

> *"3.1.16 Where groups of dwellings are planned, site layout design should aim to maximise the number of dwellings with a main living room that meets the above recommendations."*

The guide further notes that:

> *"3.1.10 For interiors, access to sunlight can be quantified. BS EN 17037[1] recommends that a space should receive a minimum of 1.5 hours of direct sunlight on a selected date between 1 February and 21 March with cloudless conditions. It is suggested that 21 March (equinox) be used. The medium level of recommendation is three hours and the high level of recommendation four hours. For dwellings, at least one habitable room, preferably a main living room, should meet at least the minimum criterion."*

The analysis was undertaken for each unit of the proposed development to determine the exposure to sunlight that they will receive. It may be noted therefore that the tables and diagrams below indicate compliance for Exposure to Sunlight based on assessment of units as opposed to individual rooms, as is the case for Daylight analysis.

Figure 6.1.1 shows an example of how the results are illustrated, as presented within the report to indicate their Exposure to Sunlight classification in accordance with the BRE Guide / EN 17037 may be interpreted as follows:



FigurFigure 7.1.1 – Exposure to Sunlight Results – Example

In the example above, most of the units were determined to receive Minimum to High range of Exposure to Sunlight and identified in green. One unit was determined non-compliant and identified in pink.

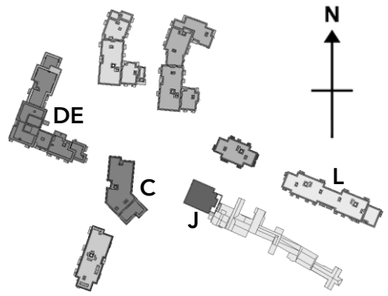
6.2. Results – Summary of ETS

The results below provide a breakdown of the compliance rate for each space for SDA and an overall SDA scheme compliance rate.

Block A	Pass	Fail	Total
Ground Floor	6	0	6
First Floor	7	0	7
Second Floor	9	0	9
Third Floor	9	0	9
Fourth Floor	9	0	9
Fifth Floor	9	0	9
Sixth Floor	9	0	9
Total	58	0	58
	100%	**0%**	

Block B	Pass	Fail	Total
Ground Floor	9	0	9
First Floor	11	0	11
Second Floor	11	0	11
Third Floor	11	0	11
Fourth Floor	11	0	11
Fifth Floor	11	0	11
Sixth Floor	11	0	11
Seventh Floor	11	0	11
Total	86	0	86
	100%	**0%**	

Block C	Pass	Fail	Total
Basement	4	0	4
Ground Floor	11	0	11
First Floor	12	0	12
Second Floor	12	0	12
Third Floor	12	0	12
Fourth Floor	12	0	12
Fifth Floor	12	0	12
Sixth Floor	8	0	8
Total	83	0	83
	100%	**0%**	



Key Plan

Block D & E	Pass	Fail	Total
Ground Floor	19	1	20
First Floor	22	0	22
Second Floor	24	0	24
Third Floor	24	0	24
Fourth Floor	24	0	24
Fifth Floor	22	0	22
Sixth Floor	14	0	14
Seventh Floor	14	0	14
Eighth Floor	14	0	14
Ninth Floor	7	0	7
Tenth Floor	7	0	7
Eleventh Floor	7	0	7
Total	198	1	199
	99%	**1%**	

Block F	Pass	Fail	Total
Ground Floor	8	6	14
First Floor	12	5	17
Second Floor	14	3	17
Third Floor	14	3	17
Fourth Floor	13	2	15
Fifth Floor	12	2	14
Sixth Floor	9	1	10
Seventh Floor	7	0	7
Eighth Floor	7	0	7
Total	96	22	118
	81%	**19%**	

Block G	Pass	Fail	Total
Ground Floor	12	4	16
First Floor	17	3	20
Second Floor	20	2	22
Third Floor	20	2	22
Fourth Floor	16	1	17
Fifth Floor	17	0	17
Sixth Floor	10	0	10
Seventh Floor	7	0	7
Eighth Floor	7	0	7
Total	126	12	138
	91%	**9%**	

Planning Grant

Block H	Pass	Fail	Total
Ground Floor	5	1	6
First Floor	5	1	6
Second Floor	5	1	6
Third Floor	5	1	6
Fourth Floor	5	1	6
Total	25	5	30
	83%	**17%**	

Block J	Pass	Fail	Total
First Floor	3	0	3
Second Floor	5	0	5
Third Floor	5	0	5
Total	13	0	13
	100%	**0%**	

Block L	Pass	Fail	Total
Ground Floor	14	2	16
First Floor	13	2	15
Second Floor	13	2	15
Third Floor	13	2	15
Fourth Floor	11	2	13
Fifth Floor	11	1	12
Total	75	11	86
	87%	**13%**	

	Pass	Fail	Total
Block A	58	0	58
Block B	86	0	86
Block C	83	0	83
Block D & E	198	1	199
Block F	96	22	118
Block G	126	12	138
Block H	25	5	30
Block L	75	11	86
Block J	13	0	13
	760	**51**	**811**
	94%	**6%**	

The results below provide a breakdown of the compliance rate for each space for SDA including for the amended units and an overall SDA scheme compliance rate.

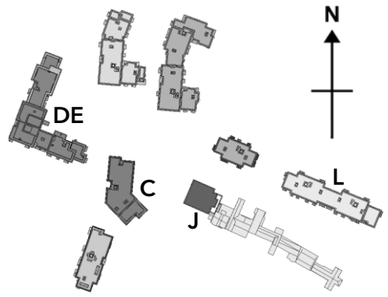
The grey shaded rows are the levels where analysis was not conducted as the rooms have not changed.

Detailed results are included in Appendix B .

Block A	Number of rooms		
	Pass	Fail	Total
Ground Floor	6	0	6
First Floor	7	0	7
Second Floor	9	0	9
Third Floor	9	0	9
Fourth Floor	9	0	9
Fifth floor	9	0	9
Sixth Floor	9	0	9
	58	0	58
	100%	0%	

Block B	Number of rooms		
	Pass	Fail	Total
Ground Floor	9	0	9
First Floor	11	0	11
Second Floor	11	0	11
Third Floor	11	0	11
Fourth Floor	11	0	11
Fifth floor	11	0	11
Sixth Floor	11	0	11
Seventh Floor	11	0	11
	86	0	86
	100%	0%	

Block C	Number of rooms		
	Pass	Fail	Total
Basement	4	0	4
Ground Floor	11	0	11
First Floor	12	0	12
Second Floor	12	0	12
Third Floor	12	0	12
Fourth Floor	12	0	12
Fifth floor	12	0	12
Sixth Floor	8	0	8
	83	0	83
	100%	0%	



Key Plan

Proposed Amendment

Block DE	Number of rooms		
	Pass	Fail	Total
Ground Floor	23	0	23
First Floor	23	0	23
Second Floor	24	0	24
Third Floor	24	0	24
Fourth Floor	24	0	24
Fifth floor	22	0	22
Sixth Floor	17	0	17
Seventh Floor	14	0	14
Eight Floor	14	0	14
Ninth Floor	7	0	7
Tenth Floor	7	0	7
Eleventh Floor	7	0	7
	206	0	206
	100%	0%	

Block F	Number of rooms		
	Pass	Fail	Total
Ground Floor	8	6	14
First Floor	12	5	17
Second Floor	14	3	17
Third Floor	14	3	17
Fourth Floor	13	2	15
Fifth floor	12	2	14
Sixth Floor	9	1	10
Seventh Floor	7	0	7
Eight Floor	7	0	7
	96	22	118
	81%	19%	

Block G	Number of rooms		
	Pass	Fail	Total
Ground Floor	12	4	16
First Floor	17	3	20
Second Floor	20	2	22
Third Floor	20	2	22
Fourth Floor	16	1	17
Fifth floor	17	0	17
Sixth Floor	10	0	10
Seventh Floor	7	0	7
Eight Floor	7	0	7
	126	12	138
	91%	9%	

Block H	Number of rooms		
	Pass	Fail	Total
Ground Floor	5	1	6
First Floor	5	1	6
Second Floor	5	1	6
Third Floor	5	1	6
Fourth Floor	5	1	6
	25	5	30
	83%	17%	

Block J	Number of rooms		
	Pass	Fail	Total
First Floor	4	0	4
Second Floor	5	0	5
Third Floor	5	0	5
	14	0	14
	100%	0%	

Block L	Number of rooms		
	Pass	Fail	Total
Ground Floor	15	2	17
First Floor	16	2	18
Second Floor	16	2	18
Third Floor	16	2	18
Fourth Floor	14	2	16
Fifth floor	11	1	12
	88	11	99
	89%	11%	

Summary	Number of rooms		
	Pass	Fail	Total
Block A	58	0	58
Block B	86	0	86
Block C	83	0	83
Block DE	206	0	206
Block F	96	22	118
Block G	126	12	138
Block H	25	5	30
Block J	14	0	14
Block L	88	11	99
	782	50	832
	94%	6%	

Appendix A – Spatial Daylight Autonomy (SDA) Results

Block C

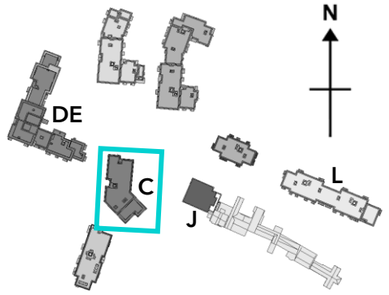
SDA – Block C Level 00

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



CM:
1, 2, 5, 7

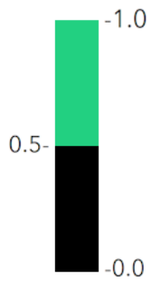


Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size

Passed-Failed



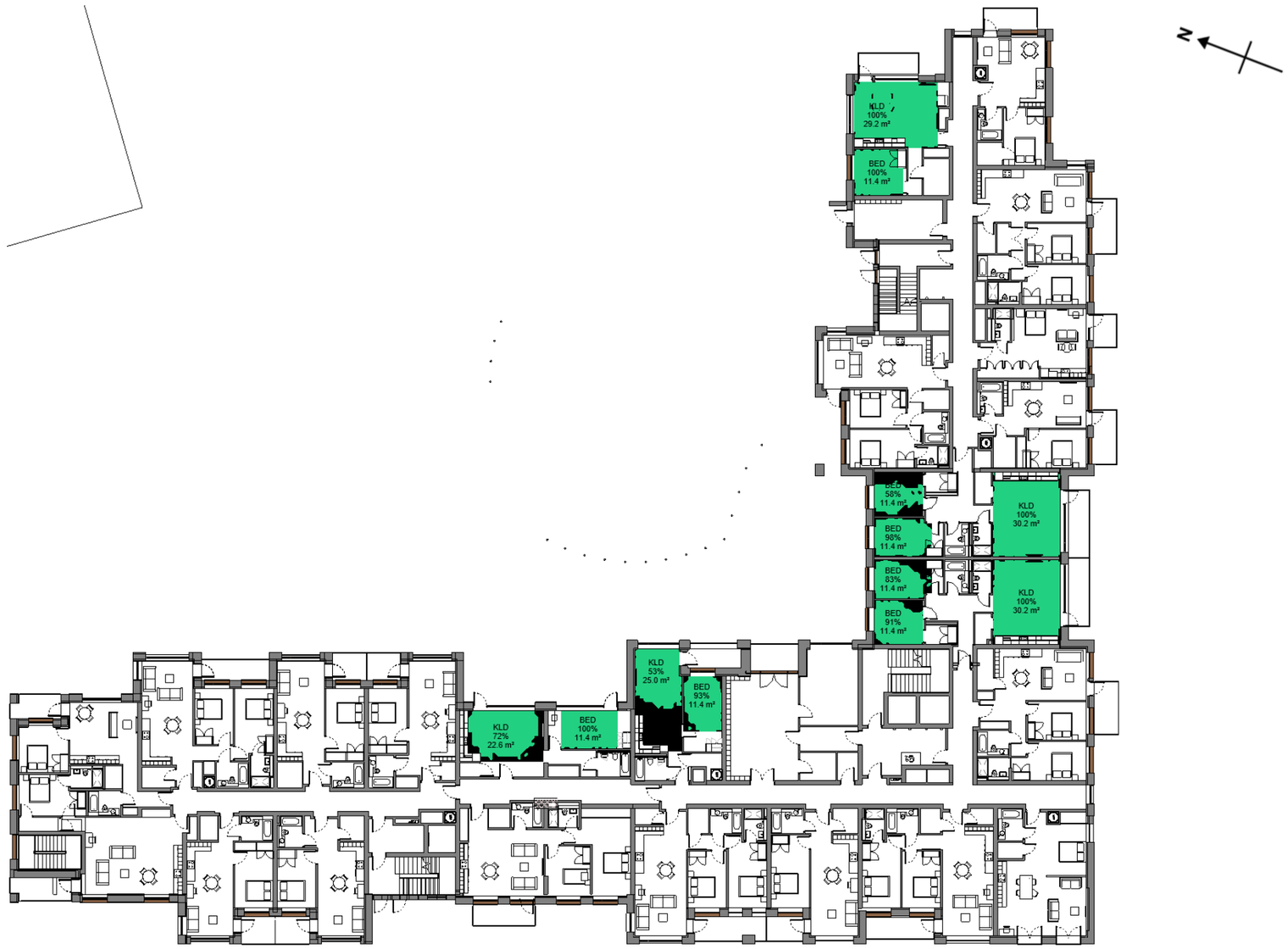
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

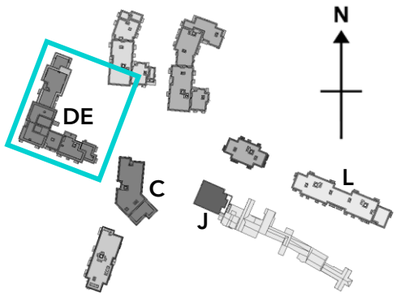
Block DE

SDA – Block DE Level 00

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



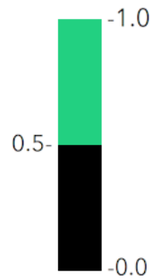


Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size

Passed-Failed



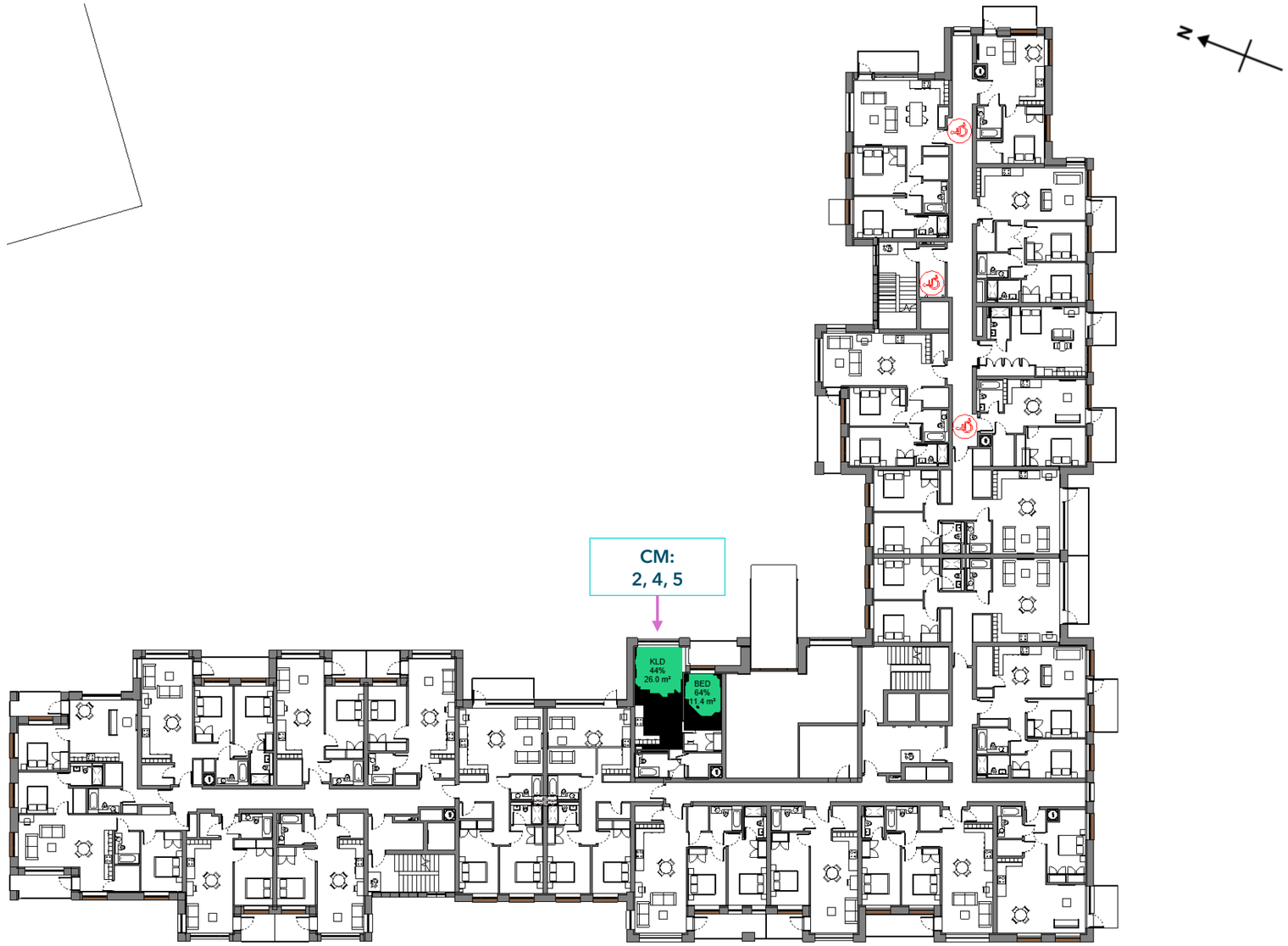
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

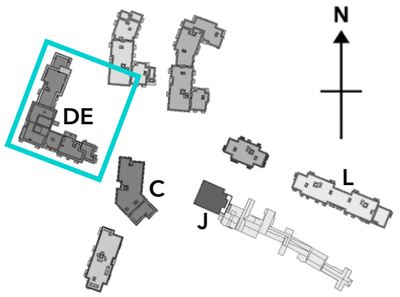
Block DE

SDA – Block DE Level 01

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

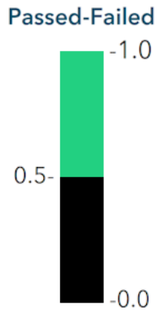




Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size



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

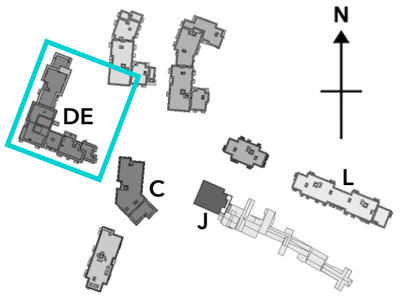
Block DE

SDA – Block DE Level 06

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

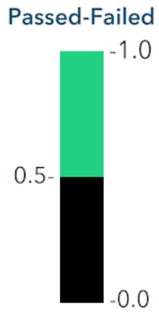




Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size



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

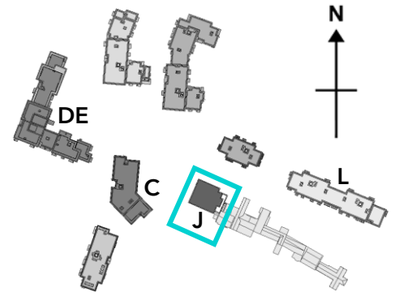
Block J

SDA – Block J Level 00

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

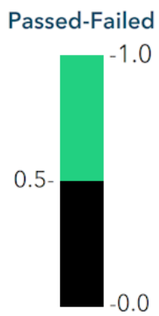




Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size



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

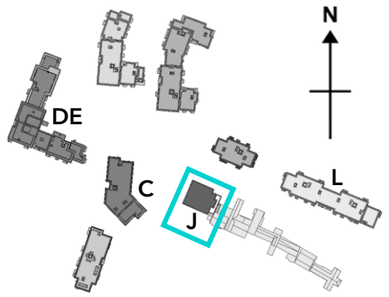
Block J

SDA – Block J Level 01

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

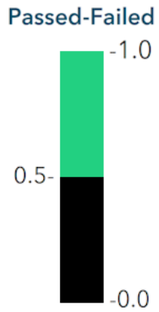




Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size



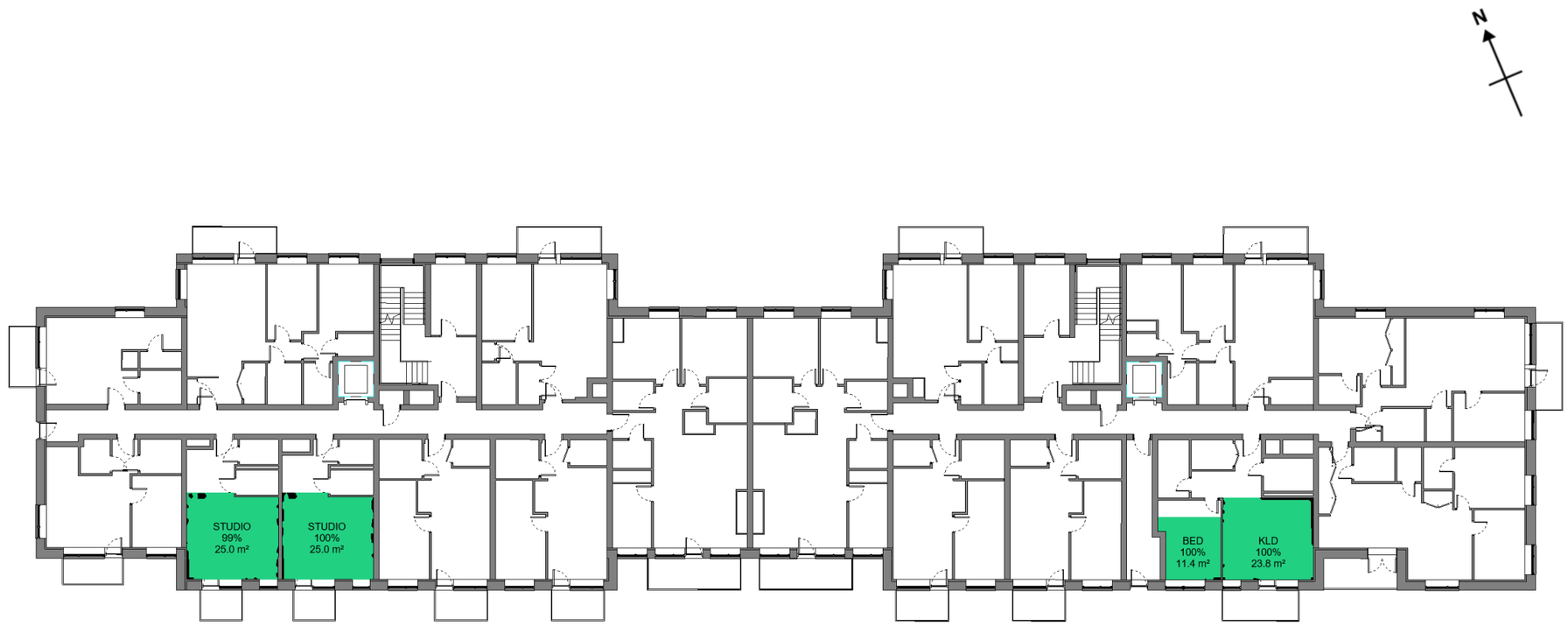
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

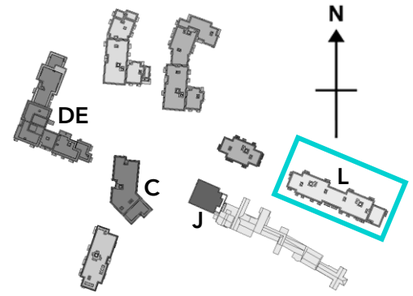
Block L

SDA – Block L Level 00

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



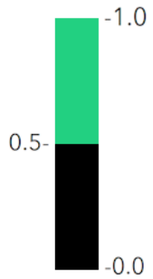


Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size

Passed-Failed



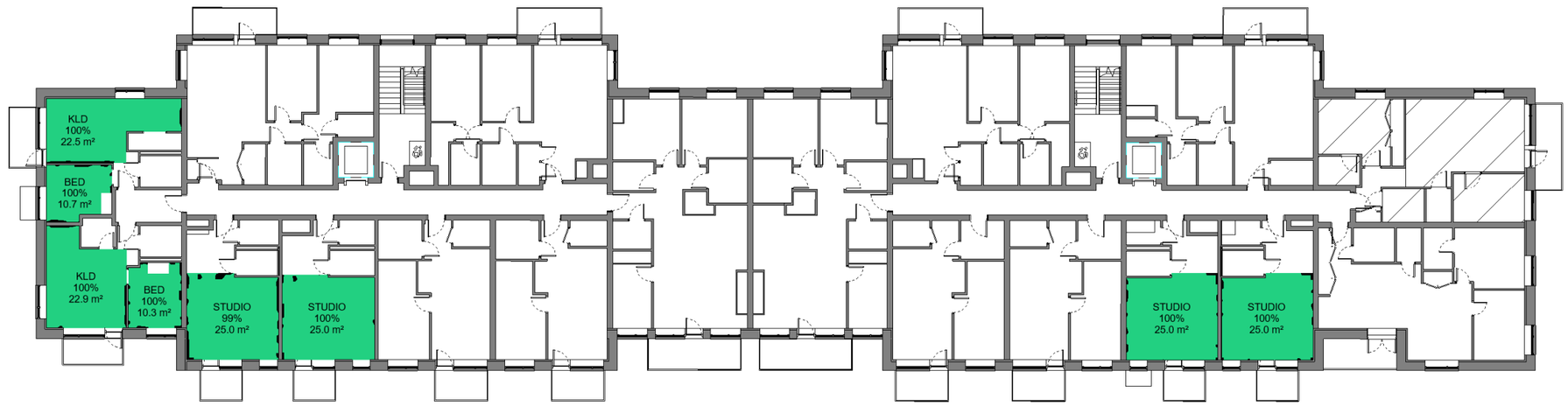
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

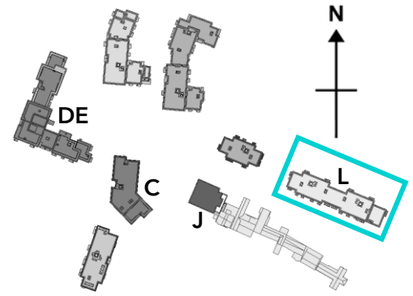
Block L

SDA – Block L Level 01

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

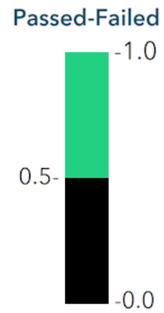




Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size



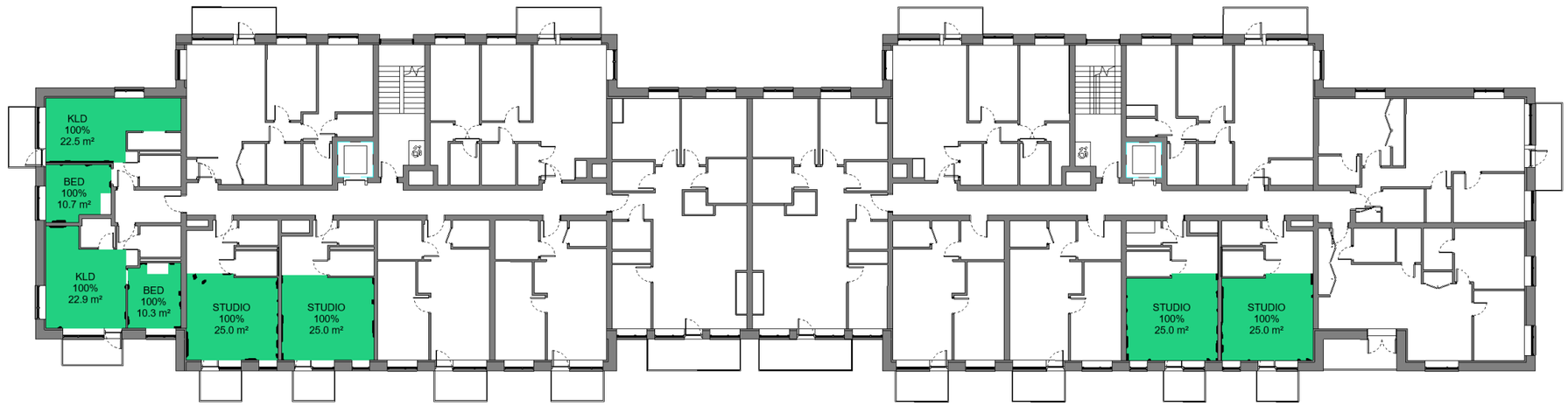
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

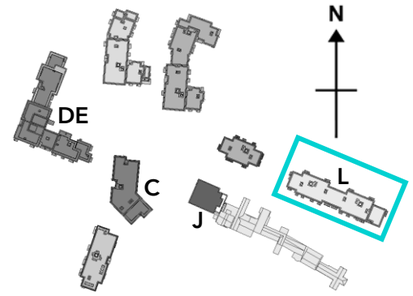
Block L

SDA – Block L Level 02

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



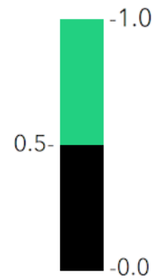


Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size

Passed-Failed



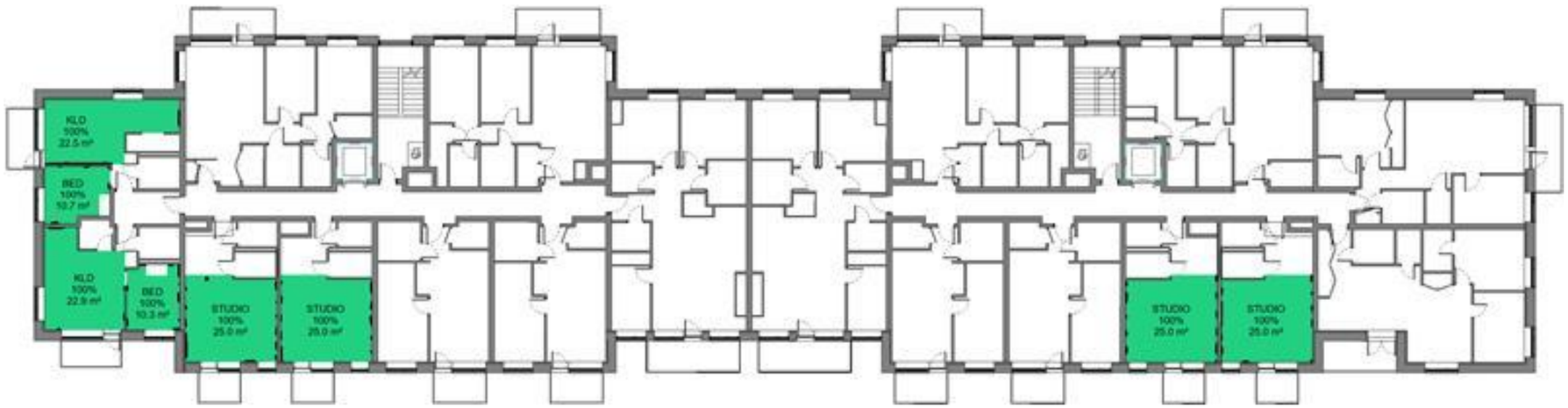
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

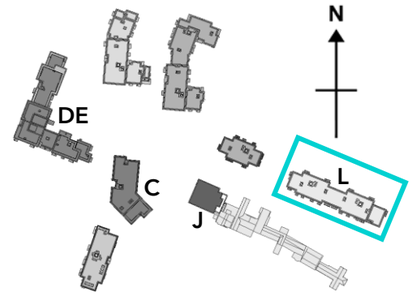
Block L

SDA – Block L Level 03

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



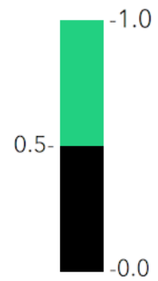


Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size

Passed-Failed



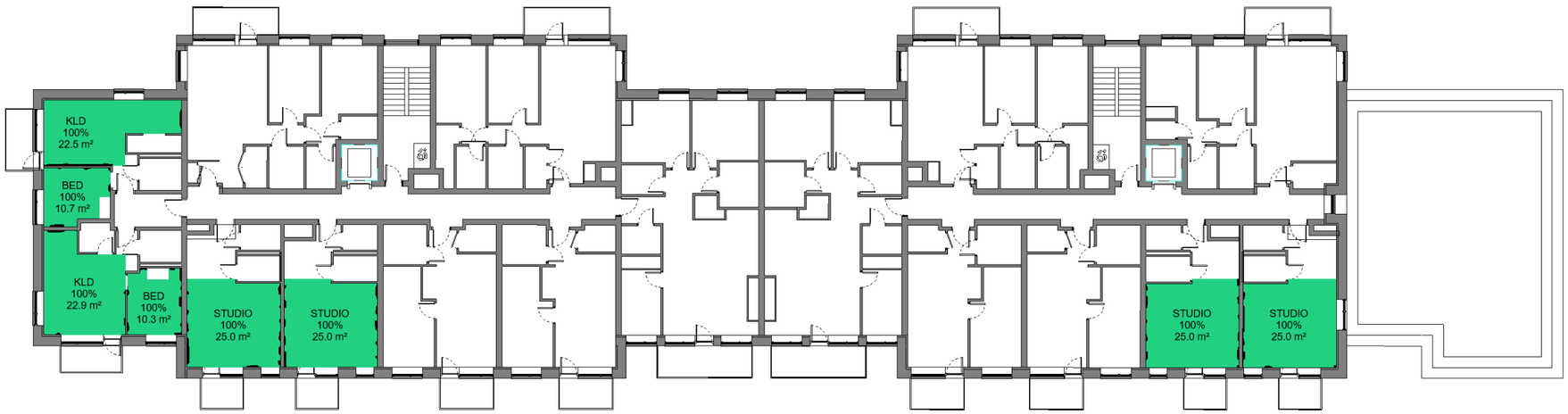
SDA Targets	> 50% at
Bedrooms	>100 Lux
Living Areas	>150 Lux
K/L/D / Kitchen	>200 Lux

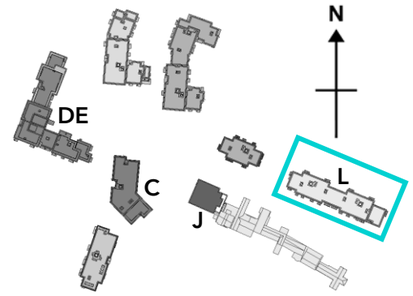
Block L

SDA – Block L Level 04

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



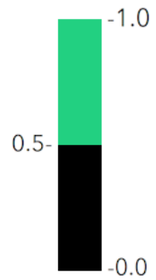


Key Plan

Compensatory Measures

1. Daylight Adjacency
2. Sunlight
3. Dual Aspect
4. Aspect
5. Open Space
6. Direct Access to Courtyard
7. Balcony Size

Passed-Failed



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

Appendix B – Exposure to Sunlight (ETS) Results

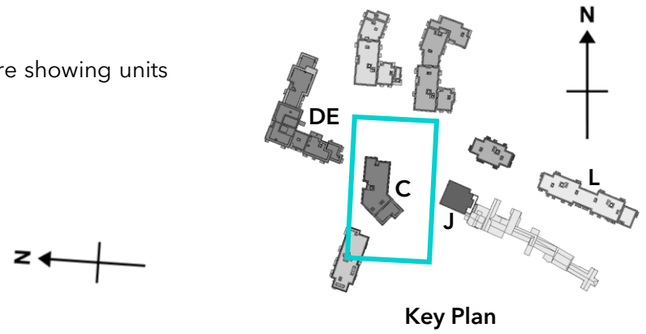
Block C

ETS – Block C Level 00

Sunlight analysis results are illustrated below with green shaded units receiving targeted number of hours, at minimum of 1.5 hours. Pink shaded areas are showing units where it's receiving less than the targeted number of hours, which is less than 1.5 hours.

A unit is deemed compliant where a minimum of 1.5 hours is achieved on the 21st of March (Equinox)





Key Plan

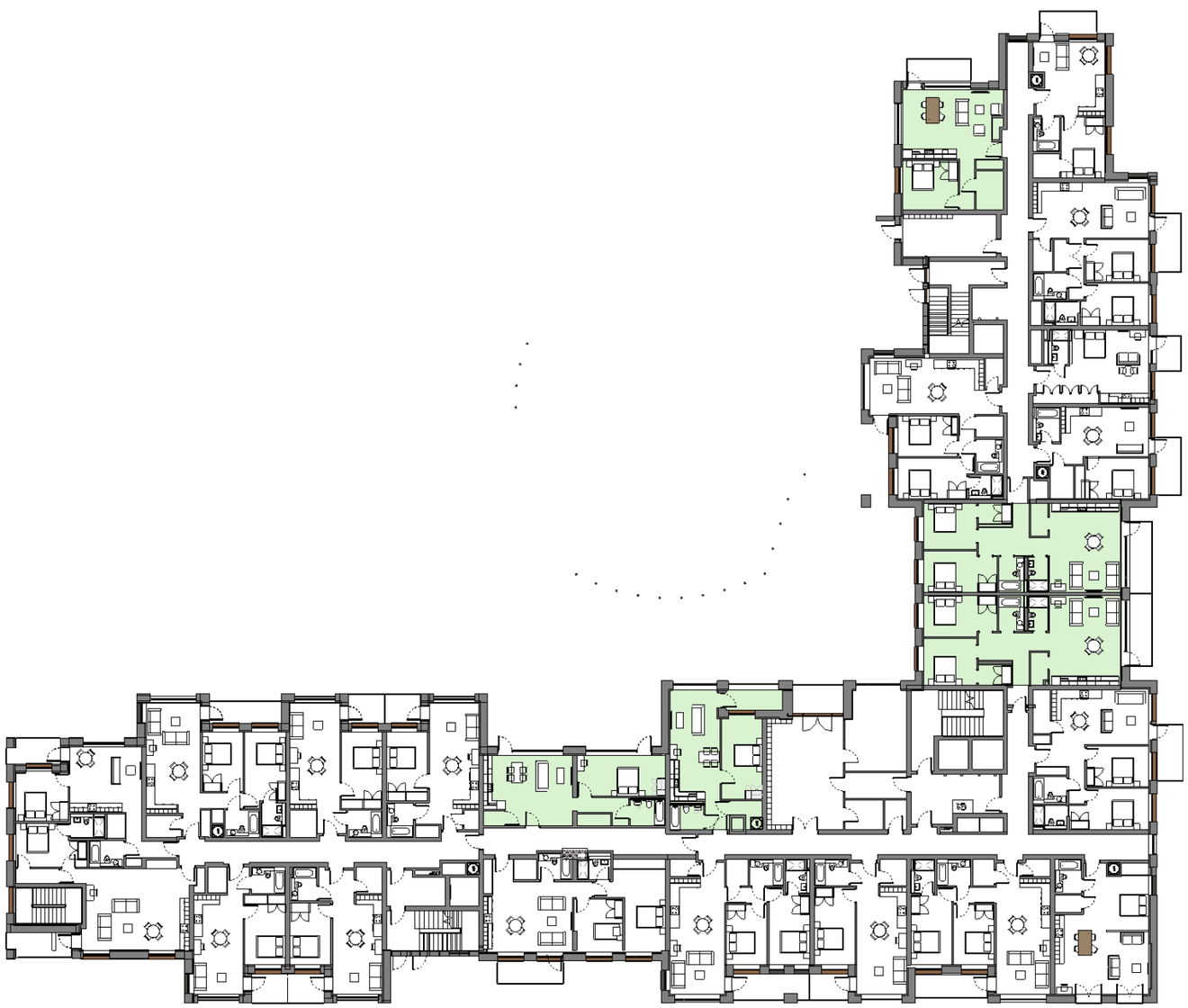
Exposure to Sunlight			
Compliant		High	≥ 4.0 hrs
		Medium	3.0 – 4.0 hrs
		Minimum	1.5 – 3.0 hrs
Non-Compliant		Low	< 1.5 hrs

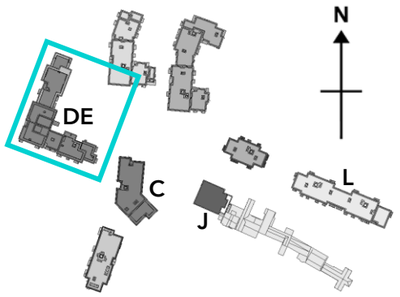
Block DE

ETS – Block DE Level 00

Sunlight analysis results are illustrated below with green shaded units receiving targeted number of hours, at minimum of 1.5 hours. Pink shaded areas are showing units where it's receiving less than the targeted number of hours, which is less than 1.5 hours.

A unit is deemed compliant where a minimum of 1.5 hours is achieved on the 21st of March (Equinox)





Key Plan

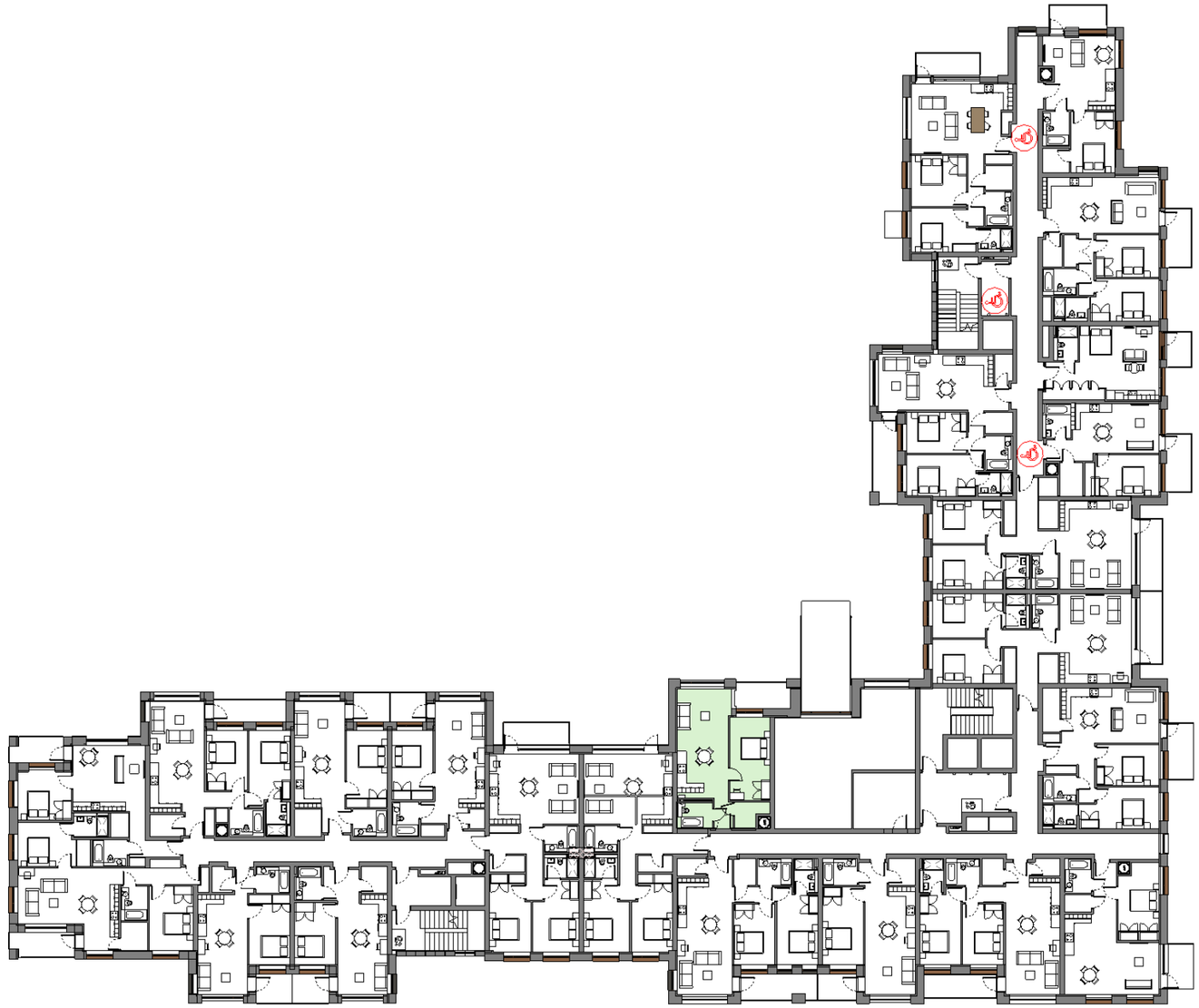
Exposure to Sunlight			
Compliant		High	≥ 4.0 hrs
		Medium	3.0 – 4.0 hrs
		Minimum	1.5 – 3.0 hrs
Non-Compliant		Low	< 1.5 hrs

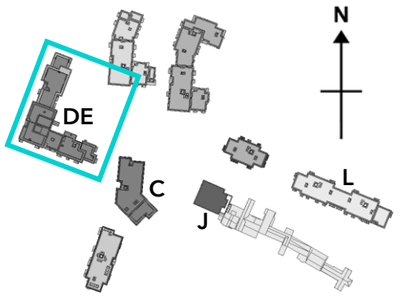
Block DE

ETS – Block DE Level 01

Sunlight analysis results are illustrated below with green shaded units receiving targeted number of hours, at minimum of 1.5 hours. Pink shaded areas are showing units where it's receiving less than the targeted number of hours, which is less than 1.5 hours.

A unit is deemed compliant where a minimum of 1.5 hours is achieved on the 21st of March (Equinox)





Key Plan

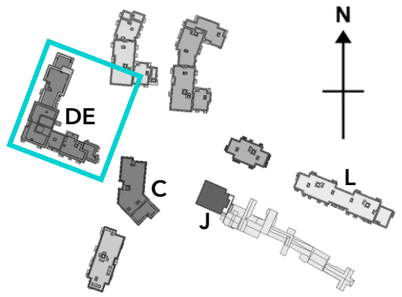
Exposure to Sunlight			
Compliant		High	≥ 4.0 hrs
		Medium	3.0 – 4.0 hrs
		Minimum	1.5 – 3.0 hrs
Non-Compliant		Low	< 1.5 hrs

Block DE

ETS – Block DE Level 06

Sunlight analysis results are illustrated below with green shaded units receiving targeted number of hours, at minimum of 1.5 hours. Pink shaded areas are showing units where it's receiving less than the targeted number of hours, which is less than 1.5 hours.

A unit is deemed compliant where a minimum of 1.5 hours is achieved on the 21st of March (Equinox)



Key Plan



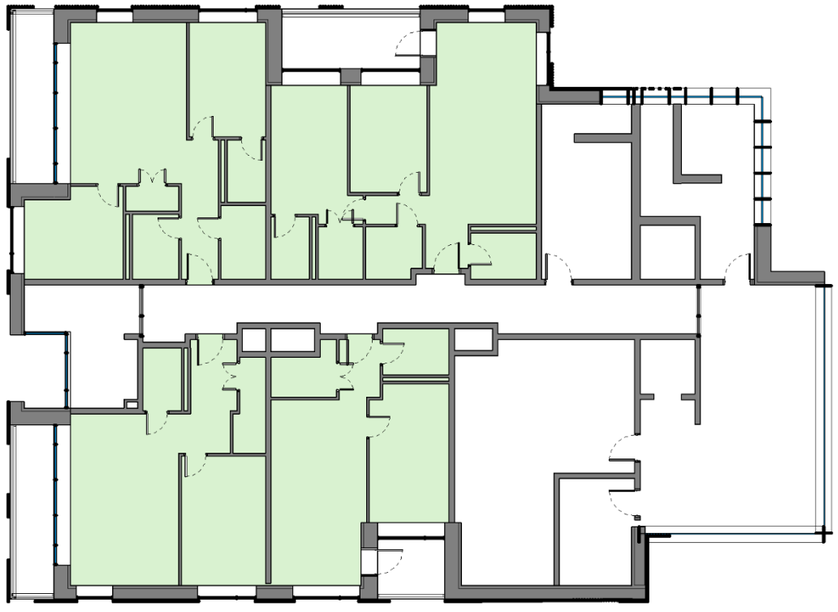
Exposure to Sunlight			
Compliant		High	≥ 4.0 hrs
		Medium	3.0 – 4.0 hrs
		Minimum	1.5 – 3.0 hrs
Non-Compliant		Low	< 1.5 hrs

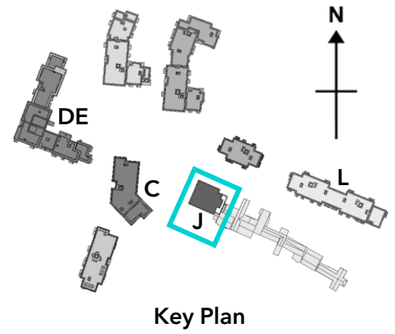
Block J

ETS – Block J Level 00

Sunlight analysis results are illustrated below with green shaded units receiving targeted number of hours, at minimum of 1.5 hours. Pink shaded areas are showing units where it's receiving less than the targeted number of hours, which is less than 1.5 hours.

A unit is deemed compliant where a minimum of 1.5 hours is achieved on the 21st of March (Equinox)





Key Plan

Exposure to Sunlight			
Compliant		High	≥ 4.0 hrs
		Medium	3.0 – 4.0 hrs
		Minimum	1.5 – 3.0 hrs
Non-Compliant		Low	< 1.5 hrs

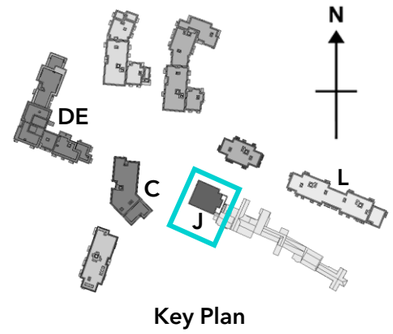
Block J

ETS – Block J Level 01

Sunlight analysis results are illustrated below with green shaded units receiving targeted number of hours, at minimum of 1.5 hours. Pink shaded areas are showing units where it's receiving less than the targeted number of hours, which is less than 1.5 hours.

A unit is deemed compliant where a minimum of 1.5 hours is achieved on the 21st of March (Equinox)





Key Plan

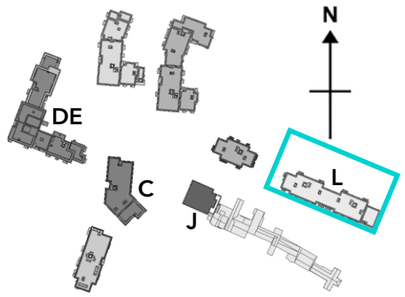
Exposure to Sunlight			
Compliant		High	≥ 4.0 hrs
		Medium	3.0 – 4.0 hrs
		Minimum	1.5 – 3.0 hrs
Non-Compliant		Low	< 1.5 hrs

Block L

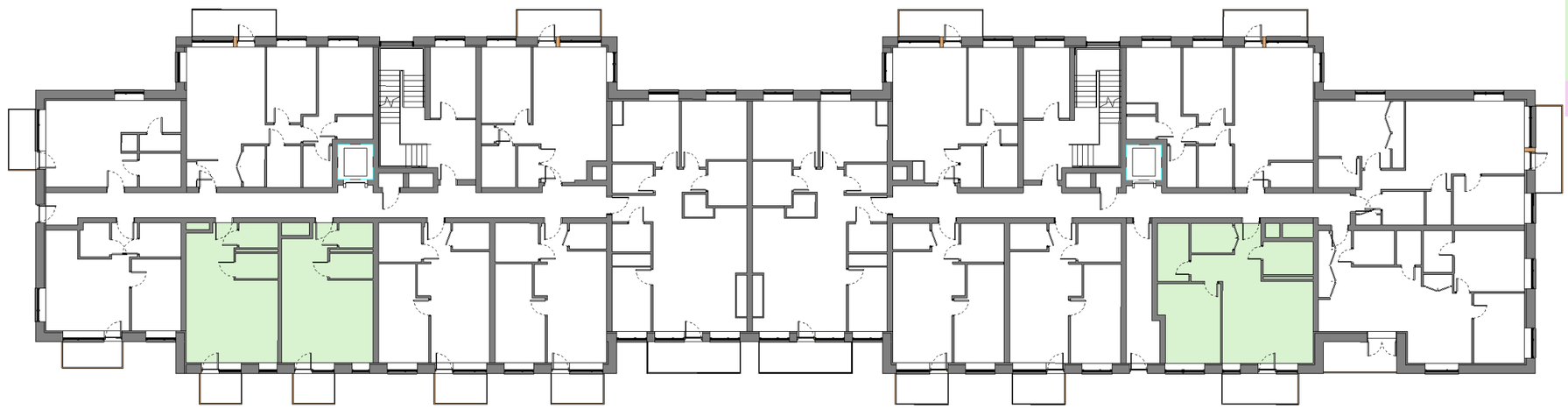
ETS – Block L Level 00

Sunlight analysis results are illustrated below with green shaded units receiving targeted number of hours, at minimum of 1.5 hours. Pink shaded areas are showing units where it's receiving less than the targeted number of hours, which is less than 1.5 hours.

A unit is deemed compliant where a minimum of 1.5 hours is achieved on the 21st of March (Equinox)



Key Plan



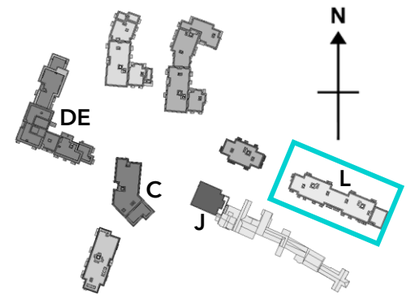
Exposure to Sunlight			
Compliant		High	≥ 4.0 hrs
		Medium	3.0 – 4.0 hrs
		Minimum	1.5 – 3.0 hrs
Non-Compliant		Low	< 1.5 hrs

Block L

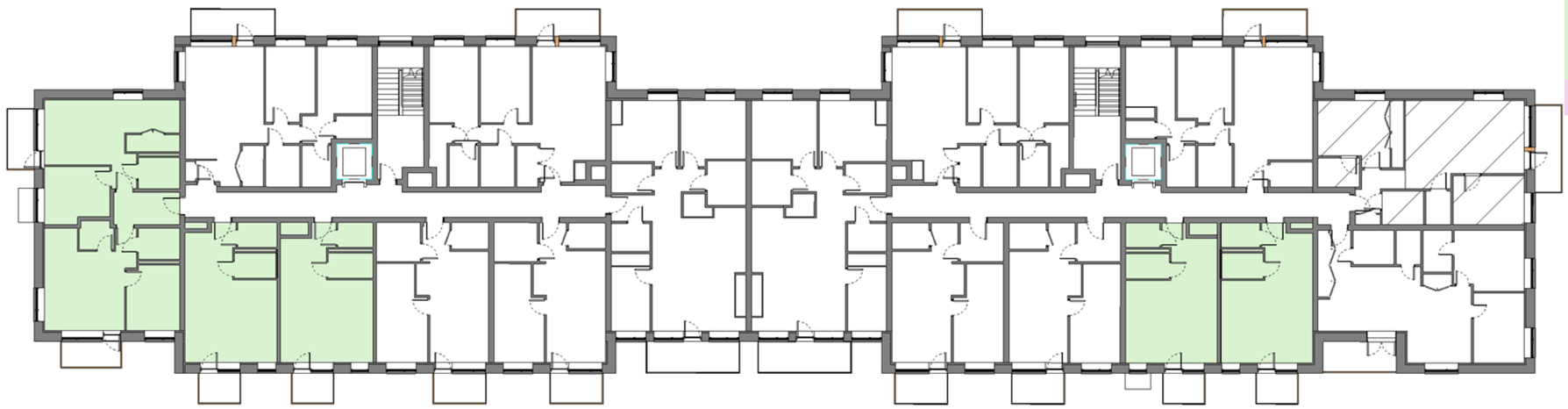
ETS – Block L Level 01

Sunlight analysis results are illustrated below with green shaded units receiving targeted number of hours, at minimum of 1.5 hours. Pink shaded areas are showing units where it's receiving less than the targeted number of hours, which is less than 1.5 hours.

A unit is deemed compliant where a minimum of 1.5 hours is achieved on the 21st of March (Equinox)



Key Plan



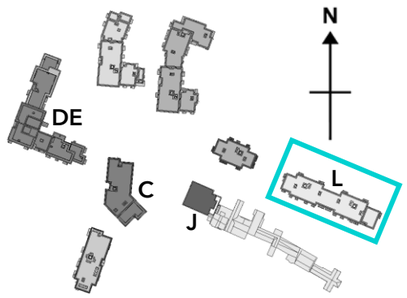
Exposure to Sunlight			
Compliant		High	≥ 4.0 hrs
		Medium	3.0 – 4.0 hrs
		Minimum	1.5 – 3.0 hrs
Non-Compliant		Low	< 1.5 hrs

Block L

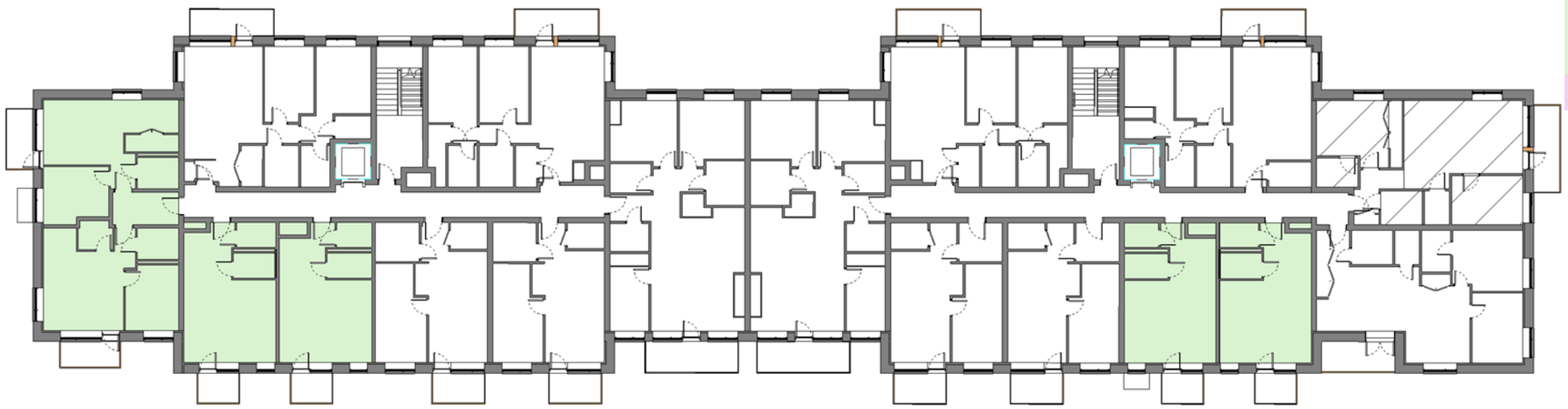
ETS – Block L Level 02

Sunlight analysis results are illustrated below with green shaded units receiving targeted number of hours, at minimum of 1.5 hours. Pink shaded areas are showing units where it's receiving less than the targeted number of hours, which is less than 1.5 hours.

A unit is deemed compliant where a minimum of 1.5 hours is achieved on the 21st of March (Equinox)



Key Plan



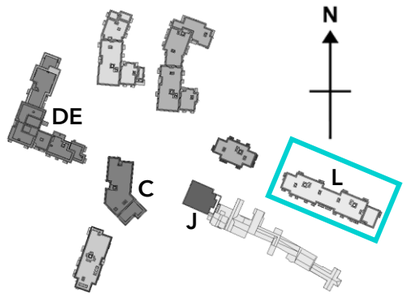
Exposure to Sunlight			
Compliant		High	≥ 4.0 hrs
		Medium	3.0 – 4.0 hrs
		Minimum	1.5 – 3.0 hrs
Non-Compliant		Low	< 1.5 hrs

Block L

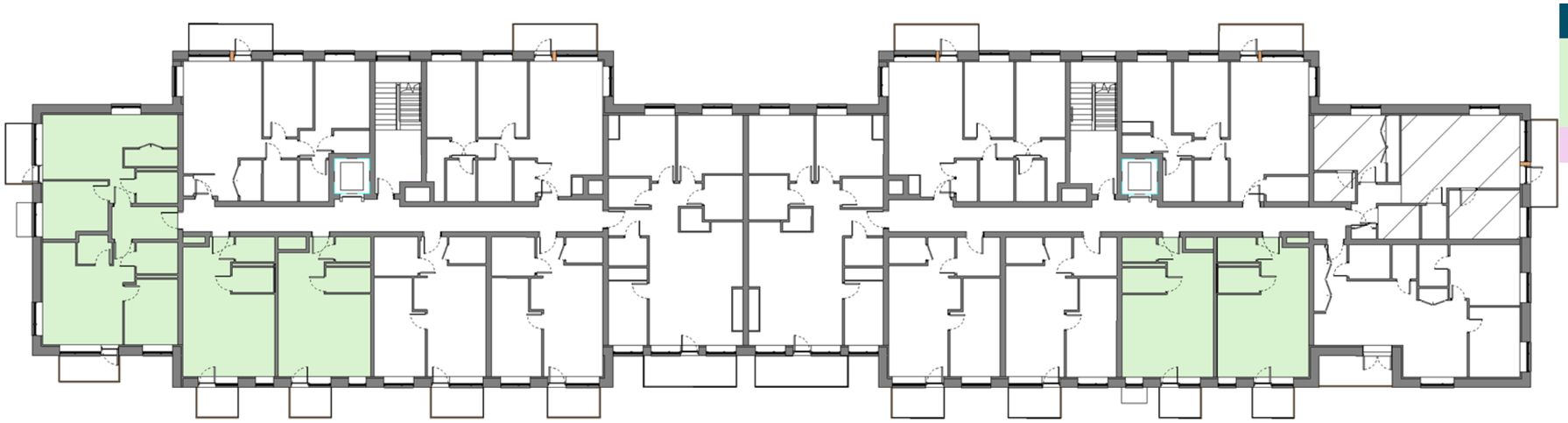
ETS – Block L Level 03

Sunlight analysis results are illustrated below with green shaded units receiving targeted number of hours, at minimum of 1.5 hours. Pink shaded areas are showing units where it's receiving less than the targeted number of hours, which is less than 1.5 hours.

A unit is deemed compliant where a minimum of 1.5 hours is achieved on the 21st of March (Equinox)



Key Plan



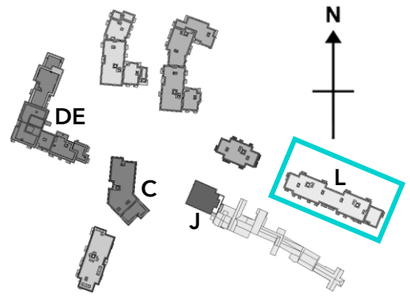
Exposure to Sunlight			
Compliant		High	≥ 4.0 hrs
		Medium	3.0 – 4.0 hrs
		Minimum	1.5 – 3.0 hrs
Non-Compliant		Low	< 1.5 hrs

Block L

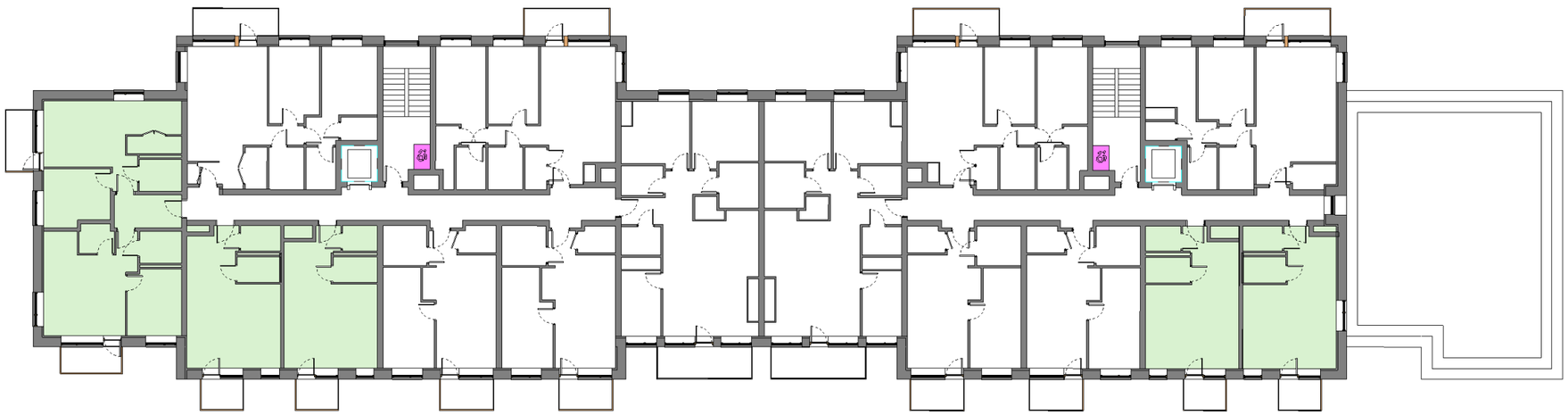
ETS – Block L Level 04

Sunlight analysis results are illustrated below with green shaded units receiving targeted number of hours, at minimum of 1.5 hours. Pink shaded areas are showing units where it's receiving less than the targeted number of hours, which is less than 1.5 hours.

A unit is deemed compliant where a minimum of 1.5 hours is achieved on the 21st of March (Equinox)



Key Plan



Exposure to Sunlight			
Compliant		High	≥ 4.0 hrs
		Medium	3.0 – 4.0 hrs
		Minimum	1.5 – 3.0 hrs
Non-Compliant		Low	< 1.5 hrs

Appendix C – 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.

IN2

Athlone / Belfast / Berlin
Dublin / London / Madrid

in2engineering.com

