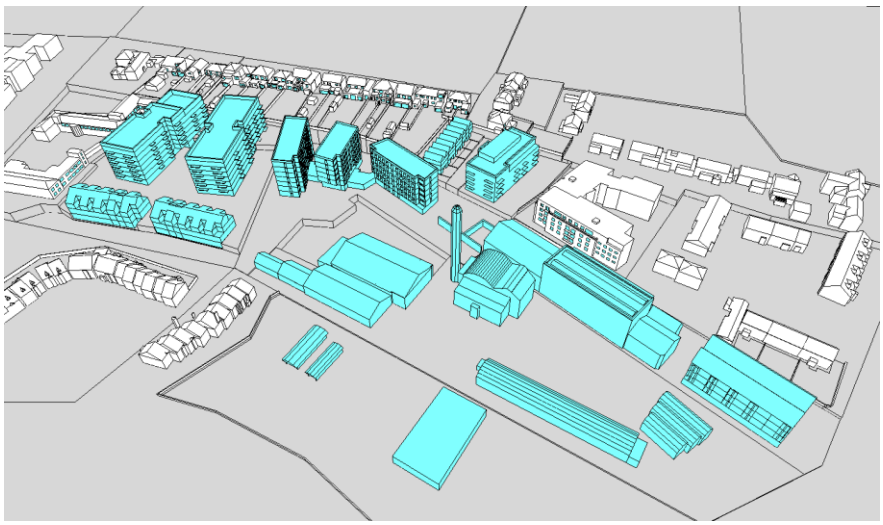
Addendum to Cleeves Site LTT

Daylight Study – Student Accommodation



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1 Introduction

This report summarises the analyses undertaken to quantify the Daylight performance of the proposed residential development at the Cleeves Riverside Quarter site located in Limerick. The report focuses on measuring the daylight performance within the proposed student accommodation solely as a result of design alterations proposed by the design team in response to the An Coimisiún Pleanala request for further information.

The design alterations proposed are limited to the windows and as such there will be no changes to overall height and massing negating any requirement for further testing the surrounding neighbours. All design changes proposed within this report will only affect the internal daylight of the proposed student accommodation and in particular the facing elevations within student Block A and B.

2 Methodology

2.1 Reference Standards & Summary of Assessments Undertaken

The daylight assessments that were undertaken using the IES VE software are based on a number of different standards which are referenced in the individual sections of this report. For clarity, the assessments that were undertaken are summarised below:

- **Daylight to Proposed Development**
  - Assessed in accordance with BS EN 17037-2018+A1-2021 National Annex Method 2 (BRE Guide 3rd Edition)
  - According to the BRE 3 Guidelines, BS EN 17037-2018+A1-2021 National Annex is the appropriate assessment methodology to satisfy minimum standards of daylight provision. For completeness, IS EN 17037 non-annex results have been included in Appendix B.
  - In all assessments above the aim is to derive how much daylight will be received within each of the apartments within the proposed development.

2.2 Orientation

The model orientation has been taken from drawings provided by the Architect with the resulting angle shown below used in the analysis.

Orientation	
	
	

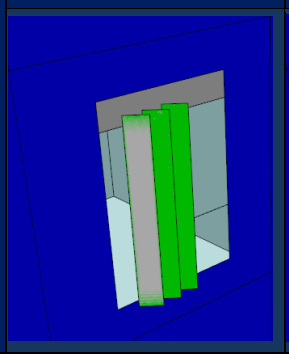
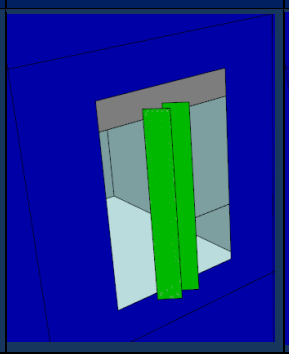
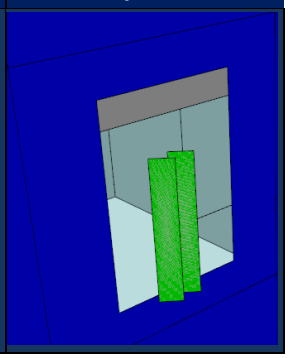
2.3 Proposed Model

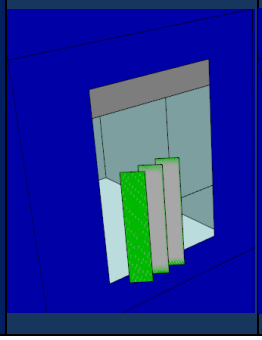
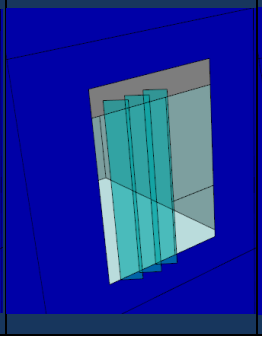
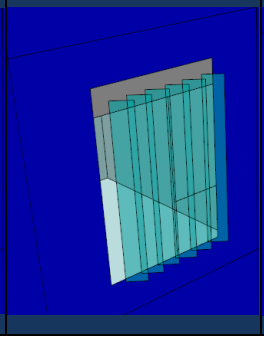
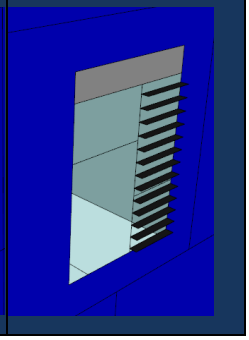
The following images illustrate the models used from the architectural information provided and the use of Google/Bing maps where information was absent. As noted previously, the design alterations proposed are limited to the windows and as such there will be no changes to overall height and massing negating any requirement for further testing the surrounding neighbours. All design changes proposed within this report will only affect the internal daylight of the proposed student accommodation highlighted in the image below and in particular the facing elevations within student Block A and B.

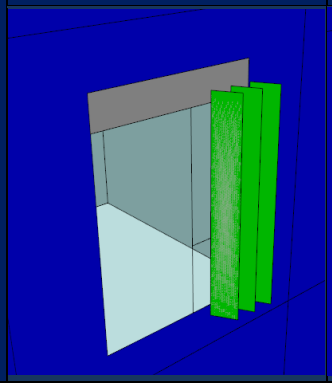
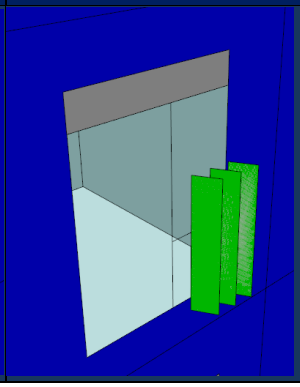
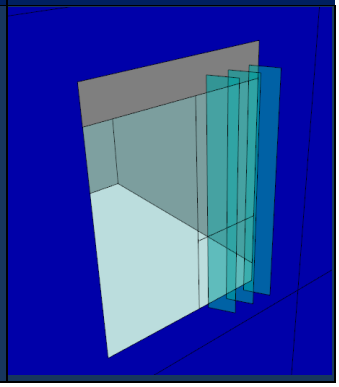
	Proposed Student Accommodation
View looking from South of Site	

2.4 Design Options Tested

Multiple design options were put forward from the design team for testing to ascertain which solution would provide the optimal daylight at the same time as providing privacy to the bedroom spaces opposing each other, on the elevations of student blocks A and B. These included options such as opaque and translucent, horizontal and vertical shading fins, combined with options of further translucent and clear glass arrangements. The images below highlight a selection of the arrangements tested.

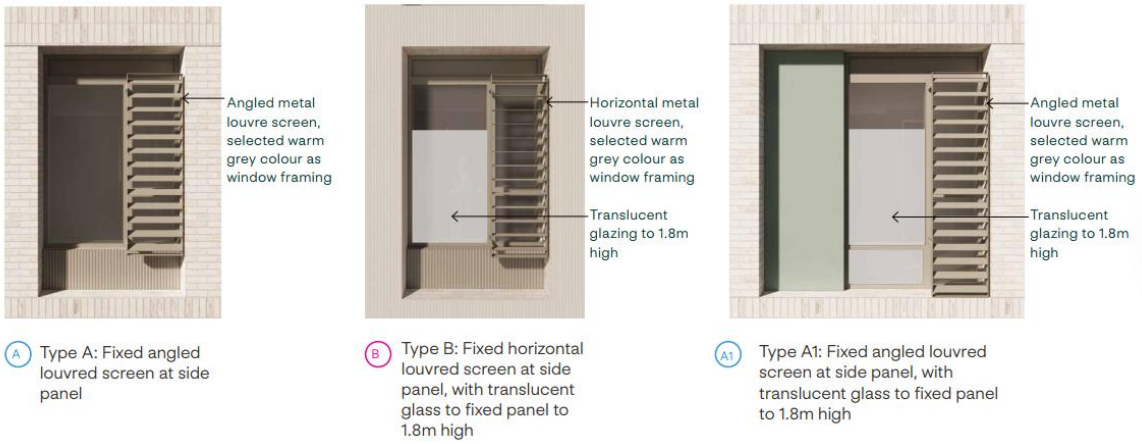
	3 Fins	2 Fins	2 Fins Shorter by 0.5m
Configuration Image			

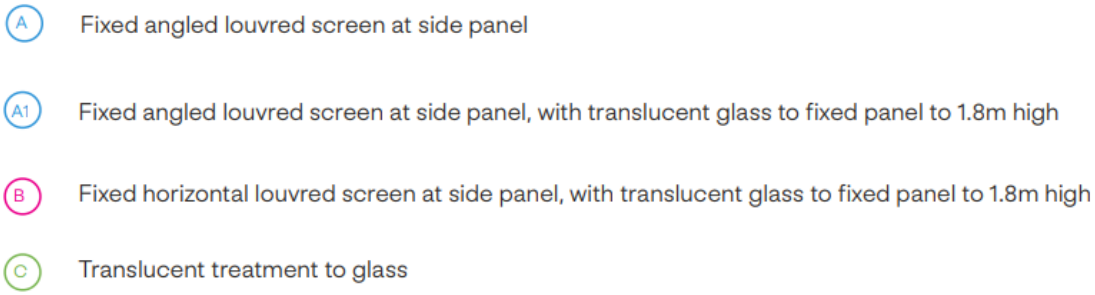
	3 Opaque Fins Shorter 1.8m from FFL	3 Transparent Fins	A3: 6 Transparent Fins	C1: Horizontal Louvres
Configuration Image				

	B1 - 3 Fins	B2 - 3 Fins Short	B3 - 3 Fins Trans Glass
Configuration Image			

2.5 Preferred Design Option

Once all the testing was complete the following design option was implemented and results for all bedroom units the mitigation measures were applied to on to the spaces opposing each other on the elevations of student block A and B were assessed.





Privacy Mitigation Design Option

Typical Floor Plan – Spaces Mitigation Applied

3 Daylight to Proposed Development

This section addresses daylight provision to the proposed student accommodations bedrooms and shared living/kitchen areas. The purpose of the calculations is to quantify an overall percentage of units which exceeds the daylight provision recommendations. Our proposed methodology is to assess the units highlighted for testing in the previous section that are opposing each other on the elevations of student block A and B on all floors. The objective of the design team is to maximise the number of units which exceed the minimum recommendations.

3.1 Reference Standards

The daylight provision to the proposed development was assessed against the following standard:

- BRE Guide (3rd Edition) / BS EN 17037-2018+A1-2021

There are two methods to assess daylight provision to the interior which are based on target values in Table A.3 of BS EN 17037-2018+A1-2021 which are summarised as follows:

Method 1: This calculation method uses the daylight factor targets on the reference plane as per Table A.3. The assessment is carried out on a representative day and time during the year, i.e. 21st September @ 12:00 under standard CIE overcast sky conditions.

Method 2: This calculation method uses the illuminance targets on the reference plane as per Table NA.1. The assessment is carried out for each hour over the course of the year (8,760 hours) using a local weather file which accounts for varying sky conditions and sun positions throughout the year.

As outlined in Section 5.1.4 of the standard, the verification of daylight provision can be determined using either an adequate software or on-site measurements. When using a software, *"a representative model of the space is required together with the key parameters (such as any significant nearby obstructions, the assigned surface reflectance values and glazing transmissivity) that are a reasonable representation of those for the actual, completed building. This can be determined using either Method 1 or Method 2."*

Based on the above criteria, the daylight provision to the proposed development has been assessed using an adequate software (i.e. IES VE), using the Method 2 climate-based approach and targeting the minimum recommended values outlined in Table NA.1 of BS EN 17037-2018+A1-2021. (see section 10.1.1 for table NA.1)

The Method 2 climate-based approach was selected as it is a far more accurate assessment method compared to Method 1. Climate based daylight modelling (CBDM) is more accurate compared to a calculation based on a single day during the year, i.e. Method 1. The amount of daylight varies throughout the year, primarily due to the sun's position, so it is essential the impact of daylight variance is properly considered. CBDM utilises an annual simulation linking location, shading, climate data (including solar intensity and cloud cover) together with the building properties. This provides a complete overview on how the daylight performance varies throughout the year due to changes in these factors.
For completeness, IS EN 17037 non-annex results have been included in Appendix B.

The following sections summarise the requirements for the BS EN 17037-2018+A1-2021 standard.

3.1.1 BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 National Annex

In the UK, EN17037-2018+A1-2021 was adopted to form "BS EN 17037-2018+A1-2021". However, a "National Annex NA" was included which states:

"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."

Whereas IS EN 17037-2018+A1-2021 does not provide different illuminance targets for different space types, the BS EN 17037:2018 National Annex provides target illuminance values for bedrooms, living rooms and kitchens within residential developments as per Table NA.1 below. It is also important to note that as the climate in Ireland is similar to the UK, the targets outlined in the BS EN National Annex could also be applied to dwellings in Ireland.

Table NA.1 — Values of target illuminance for room types in UK dwellings

Room type	Target illuminance E_T (lx)
Bedroom	100
Living room	150
Kitchen	200

The BS National Annex also states:
"Where one room in a UK dwelling serves more than a single purpose, the UK committee recommends that the target illuminance is that for the room type with the highest value – for example, in a space that combines a living room and a kitchen the target illuminance is recommended to be 200 lx."

Therefore, combined LKDs are to be assessed using a 200 lux target illuminance (E_T).

Finally, the BS National Annex also states that:

"It is the opinion of the UK committee that the recommendation in Clause A.2 – that a target illuminance level should be achieved across the entire (i.e. 95 %) fraction of the reference plane within a space – need not be applied to rooms in dwellings."

Therefore, when assessing the daylight provisions in residential dwellings in accordance with BS EN 17037-2018+A1-2021, only the target illuminance (E_T) will be assessed for Bedrooms, Living Rooms,

Kitchens (or combined LKDs) on over 50% of the floor area over 50% of the available daylight hours. The minimum target illuminance (E_{TM}) or minimum target daylight factor (D_{TM}) will not be assessed.

3.2 Daylight Model Inputs

The following inputs were used in the study:

BRE Guide (3rd Edition) / IS EN / BS EN 17037-2018+A1-2021

- Weather File: Limerick.epw (15-year average)

Common Inputs to all Standards

- Working Plane Height: 0.85m
- Glazing Light Transmittance: 70%
- Window Frame thickness: 50 mm

The following surface reflectance values are used in the study:

Material Surface	Reflectance
External Wall	0.20
Internal Partition – White Paint	0.80
Roof – Default	0.20
Ground – Default	0.20
Floor – Light Veneers	0.40
Ceiling – White Paint	0.80

3.3 Daylight Results

The following tables summarise the daylight provision results for the tested spaces within the proposed development. These include the Student Accommodation Blocks A, B, and C. The assessment has been carried out in accordance with the BRE Guide (3rd Edition) and BS EN 17037:2018+A1:2021, using Method 2 – National Annex. To note IS EN 17037:2018+A1:2021 results have been included ion Appendix B for completeness.

The objective of the design team is to maximise the number of units which exceed the recommendations. Individual room results can be viewed in Appendix A.

The results are summarised in the following tables:

3.3.1 Student Accommodation - Block A

A compliance rate of 98% is achieved under BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 Method 2 National Annex for tested spaces in Block A within the proposed development. The daylight provision results are summarised below.

Rooms Tested	Total No. Rooms
Total No. Bedrooms Tested	105
Total No. LKDs Tested	15
Total No. Studio Tested	6
Total No. Spaces Tested	**126**

BRE Guide 3rd Edition / BS EN 17037:2018+A1-2021 Method 2 National Annex Assessment				
Room Type	**Pass (No.)**	**Pass (%)**	**BR (No.)**	**BR (%)**
No. Bedrooms	104	99%	1	1%
No. LKDs	15	100%	0	0%
No. Studio	4	67%	2	33%
Total No.	**123**	**98%**	**3**	**2%**

*BR = Below Recommendations

3.3.2 Student Accommodation - Block B

A compliance rate of 95% is achieved under BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 Method 2 National Annex for tested spaces in Block B within the proposed development. The daylight provision results are summarised below.

Rooms Tested	Total No. Rooms
Total No. Bedrooms Tested	60
Total No. LKDs Tested	12
Total No. Studios Tested	6
Total No. Spaces Tested	**78**

BRE Guide 3rd Edition / BS EN 17037:2018+A1-2021 Method 2 National Annex Assessment				
Room Type	**Pass (No.)**	**Pass (%)**	**BR (No.)**	**BR (%)**
No. Bedrooms	56	93%	4	7%
No. LKDs	12	100%	0	0%
No. Studios	6	100%	0	0%
Total No.	**74**	**95%**	**4**	**5%**

*BR = Below Recommendations

3.3.3 Student Accommodation - Block C

A compliance rate of 96% is achieved under BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 Method 2 National Annex for tested spaces in Block C within the proposed development. The daylight provision results are summarised below.

Rooms Tested	Total No. Rooms
Total No. Bedrooms Tested	87
Total No. LKDs Tested	11
Total No. Studios Tested	6
Total No. Spaces Tested	**104**

BRE Guide 3rd Edition / BS EN 17037:2018+A1-2021 Method 2 National Annex Assessment				
Room Type	**Pass (No.)**	**Pass (%)**	**BR (No.)**	**BR (%)**
No. Bedrooms	83	95%	4	5%
No. LKDs	11	100%	0	0%
No. Studios	6	100%	0	0%
Total No.	**100**	**96%**	**4**	**4%**

*BR = Below Recommendations

3.3.4 Total – Student Accommodation

A compliance rate of 96% is achieved under BRE Guide 3rd Edition / BS EN 17037-2018+A1-2021 Method 2 National Annex for the tested spaces in the Student Accommodation blocks. The daylight provision results are summarised below.

Rooms Tested	Total No. Rooms
Total No. Bedrooms Tested	252
Total No. LKDs Tested	38
Total No. Studios Tested	18
Total No. Spaces Tested	**308**

BRE Guide 3rd Edition / BS EN 17037:2018+A1-2021 Method 2 National Annex Assessment				
Room Type	**Pass (No.)**	**Pass (%)**	**BR (No.)**	**BR (%)**
No. Bedrooms	243	96%	9	4%
No. LKDs	38	100%	0	0%
No. Studios	16	88%	2	12%
Total No.	**297**	**96%**	**11**	**4%**

*BR = Below Recommendations

4 Conclusion & Observations

When considering the Student Accommodation in isolation, within the original design assessed, mitigation measures had already been introduced at initial design stage to prevent overlooking including angled facades, window locations offset relative to each other minimising direct lines of sight and side panels introduced so that the main window section would not be facing another.

Within this addendum report, these mitigation measures have been further reinforced in response to the further information request with translucent / obscure glazing now proposed with angled solid metal louvres. A comprehensive rationale and explanation to the design function is detailed within the accompanied Architectural Design Response to Planning prepared by Feilden Clegg Bradley Studios and Bucholz Mc Evoy Architects.

When the results for the student accommodation blocks in isolation with these measures included are considered, 96% of the tested rooms within the proposed development are achieving the daylight provision targets in accordance with Table NA.1 of BS EN 17037-2018+A1-2021 using Method 2. This was previously 98% for the Student Accommodation highlighting that even with the mitigation measures in place the Student Accommodation maintains a high level of daylight performance overall.

4.1 Compensatory Measures

Irish Standards and Design Development

Where daylight is concerned, The Planning Design Standards for Apartments 2025 refers to the Sustainable Residential Development and Compact Settlements Guidelines 2024 Section 5.3.7 (b) Daylight, which states the following:

"(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."

Furthermore, Section 3.2 of the Urban Development and Building Heights: Guidelines for Planning Authorities December 2018, states 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."*

Having regard to the statements above and when considering the student accommodation in isolation, the commission will note that the PBSA accommodates significant external amenity communal space and it is considered that this external space will mitigate the reduced daylight provision in some of the

rooms. The dedicated external amenity space for the PBSA at grade is 730sqm (as outlined in the updated M+A landscape drawing). In addition, there is also external space provided at the 2no. first floor level terraces equating to 210sqm. Therefore, the total dedicated internal and external amenity spaces for the PBSA actually provided is 1,377sqm, at a ratio of 5.1sqm per bedspace.

It is important to note that the recommendations within the BRE Guide (3rd Edition) itself states "*although it gives numerical guidelines these should be interpreted flexibly because natural lighting is only one of many factors in site layout design"*, Although this is true appropriate and reasonable regard has still been taken to the BRE guide.

Whilst the results shown relate to the criteria as laid out in the BRE Guide (3rd Edition), it is important to note that the BRE targets are guidance only and should therefore be used with flexibility and caution when dealing with different types of sites.

In addition, BRE Guide 3rd Edition also notes:
"This report is a comprehensive revision of the 2011 edition of Site layout planning for daylight and sunlight: a guide to good practice. It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location."

Taking all of the above information into account and based on the daylight results achieved, the proposed Student Accommodation area of the development continues to performs well when compared to the recommendations in the BRE Guide 3rd Edition and BS EN 17037-2018+A1-2021 National Annex.

5 Appendix A – Daylight Provision Results

The tables in the following sections summarise the daylight provision results for the rooms that were assessed in the proposed development. Note, within the tables the code "LKD" equates to combined Living, Kitchen, Dining area.

The results for the following daylight standard are included in each table:

- BRE Guide (3rd Edition) / BS EN 17037-2018+A1-2021 National Annex

Please note, the "Comment" symbol in each of the tables represents the following:

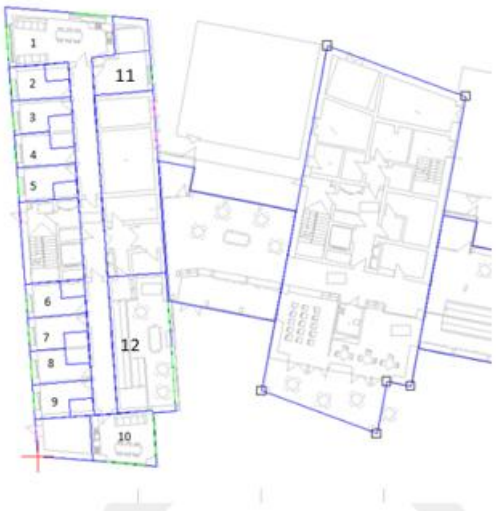
BRE Guide (3rd Edition) / BS EN 17037-2018+A1-2021 National Annex

✓ These rooms achieve the target illuminance (E_T) over the minimum floor area requirements, i.e. 100 lux for over 50% of bedroom floor areas, and 200 lux for over 50% of LKD floor areas.

x These rooms do not achieve the target illuminance (E_T) over the minimum floor area requirements.

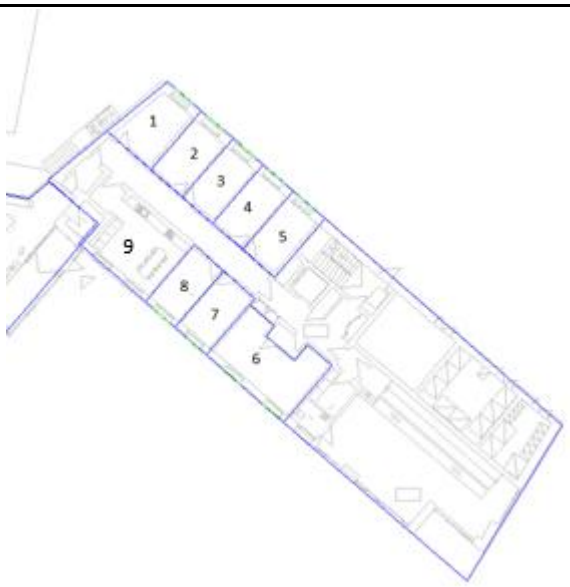
5.1 Student Accommodation Blocks

5.1.1 Block A & B - Level L00



Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	LKD	100	✓
2	Bedroom	77	✓
3	Bedroom	82	✓
4	Bedroom	80	✓
5	Bedroom	100	✓
6	Bedroom	100	✓
7	Bedroom	100	✓
8	Bedroom	100	✓
9	Bedroom	100	✓
10	LKD	100	✓
11	Bedroom	85	✓
12	LKD	100	✓

5.1.2 Block C - Level L00



Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	Bedroom	44	x
2	Bedroom	36	x
3	Bedroom	42	x
4	Bedroom	43	x
5	Bedroom	56	✓
6	Studio	100	✓
7	Bedroom	100	✓
8	Bedroom	100	✓
9	LKD	99	✓

5.1.3 Block A&B - Level L01

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	LKD	100	✓
2	Bedroom	84	✓
3	Bedroom	100	✓
4	Bedroom	100	✓
5	Bedroom	100	✓
6	Bedroom	100	✓
7	Bedroom	100	✓
8	Bedroom	100	✓
9	Bedroom	100	✓
10	LKD	100	✓
11	Bedroom	54.84	✓
12	Bedroom	76.67	✓
13	Bedroom	66.67	✓
14	Bedroom	100	✓
15	Studio	88.75	✓
16	Bedroom	90.63	✓
17	Bedroom	80	✓
18	Bedroom	83.33	✓
19	Bedroom	100	✓
20	LKD		✓
21	Bedroom	51	✓

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
22	Bedroom	86.67	✓
23	LKD	100	✓
24	Studio	95.05	✓
25	Bedroom	86	✓
26	Bedroom	88	✓
27	Bedroom	87	✓

5.1.4 Block C - Level L01

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	Bedroom	83	✓
2	Bedroom	80	✓
3	Bedroom	85	✓
4	Bedroom	78	✓
5	Bedroom	97	✓
6	Bedroom	100	✓
7	Bedroom	100	✓
8	Bedroom	100	✓
9	LKD	100	✓
10	Bedroom	100	✓
11	Bedroom	100	✓
12	Bedroom	100	✓

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
13	Bedroom	100	✓
14	Studio	100	✓
15	Bedroom	100	✓
16	Bedroom	100	✓
17	Bedroom	100	✓
18	Bedroom	100	✓
19	LKD	99.21	✓

5.1.5 Block A&B - Level L02

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	Bedroom	100	✓
2	Bedroom	86.67	✓
3	Bedroom	73.33	✓
4	Bedroom	68.75	✓
5	Studio	19.75	x
6	Bedroom	40.63	x
7	Bedroom	66.67	✓
8	Bedroom	93.33	✓
9	Bedroom	100	✓
10	LKD	100	✓
11	Bedroom	100	✓
12	Bedroom	100	✓
13	Bedroom	100	✓
14	Bedroom	100	✓
15	Bedroom	100	✓
16	Bedroom	100	✓
17	Bedroom	100	✓
18	Bedroom	100	✓
19	LKD	100	✓
20	LKD	100	✓
21	Bedroom	72.73	✓
22	Bedroom	60	✓
23	Bedroom	20.59	x
24	Bedroom	15.63	x
25	Bedroom	11.11	x
26	Bedroom	100	✓
27	Bedroom	100	✓
28	Bedroom	100	✓

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
29	Studio	100	✓
30	Bedroom	84	✓
31	Bedroom	100	✓
32	Bedroom	100	✓
33	LKD	100	✓

5.1.6 Block C - Level L02

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	Bedroom	100	✓
2	Bedroom	98	✓
3	Bedroom	93	✓
4	Bedroom	88	✓
5	Bedroom	100	✓
6	Bedroom	100	✓
7	Bedroom	100	✓
8	Bedroom	100	✓
9	LKD	100	✓
10	Bedroom	100	✓
11	Bedroom	100	✓
12	Bedroom	100	✓
13	Bedroom	100	✓
14	Studio	100	✓
15	Bedroom	100	✓
16	Bedroom	100	✓
17	Bedroom	100	✓
18	Bedroom	100	✓
19	LKD	100	✓

5.1.7 Block A&B - Level L03

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	Bedroom	100	✓
2	Bedroom	100	✓
3	Bedroom	86.67	✓
4	Bedroom	71.88	✓
5	Studio	27.39	x
6	Bedroom	56.25	✓
7	Bedroom	73.33	✓
8	Bedroom	96.67	✓
9	Bedroom	100	✓
10	LKD	100	✓
11	Bedroom	100	✓
12	Bedroom	100	✓
13	Bedroom	100	✓
14	Bedroom	100	✓
15	Bedroom	100	✓
16	Bedroom	100	✓
17	Bedroom	100	✓
18	Bedroom	100	✓
19	LKD	100	✓
20	LKD	100	✓
21	Bedroom	100	✓
22	Bedroom	69.44	✓
23	Bedroom	64.71	✓
24	Bedroom	62.5	✓
25	Bedroom	36.11	x
26	Bedroom	100	✓
27	Bedroom	100	✓
28	Bedroom	100	✓

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
29	Studio	94	✓
30	Bedroom	100	✓
31	Bedroom	100	✓
32	Bedroom	100	✓
33	LKD	100	✓

5.1.8 Block C - Level L03

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	Bedroom	100	✓
2	Bedroom	100	✓
3	Bedroom	100	✓
4	Bedroom	100	✓
5	Bedroom	100	✓
6	Bedroom	100	✓
7	Bedroom	100	✓
8	Bedroom	100	✓
9	LKD	100	✓
10	Bedroom	100	✓
11	Bedroom	100	✓
12	Bedroom	100	✓
13	Bedroom	100	✓
14	Studio	100	✓
15	Bedroom	100	✓
16	Bedroom	100	✓
17	Bedroom	100	✓
18	Bedroom	100	✓
19	LKD	100	✓

5.1.9 Block A&B - Level L04

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	Bedroom	100	✓
2	Bedroom	100	✓
3	Bedroom	96.67	✓
4	Bedroom	93.75	✓
5	Studio	60.51	✓
6	Bedroom	75	✓
7	Bedroom	86.67	✓
8	Bedroom	100	✓
9	Bedroom	100	✓
10	LKD	100	✓
11	Bedroom	100	✓
12	Bedroom	100	✓
13	Bedroom	100	✓
14	Bedroom	100	✓
15	Bedroom	100	✓
16	Bedroom	100	✓
17	Bedroom	100	✓
18	Bedroom	100	✓
19	LKD	100	✓
20	LKD	100	✓
21	Bedroom	100	✓
22	Bedroom	97.14	✓
23	Bedroom	64.71	✓
24	Bedroom	62.5	✓
25	Bedroom	61.11	✓
26	Bedroom	100	✓
27	Bedroom	100	✓
28	Bedroom	100	✓

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
29	Studio	100	✓
30	Bedroom	96	✓
31	Bedroom	100	✓
32	Bedroom	100	✓
33	LKD	100	✓

5.1.10 Block C - Level L04

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	Bedroom	100	✓
2	Bedroom	100	✓
3	Bedroom	100	✓
4	Bedroom	100	✓
5	Bedroom	100	✓
6	Bedroom	100	✓
7	Bedroom	100	✓
8	Bedroom	100	✓
9	LKD	100	✓
10	Bedroom	100	✓
11	Bedroom	100	✓
12	Bedroom	100	✓
13	Bedroom	100	✓
14	Studio	100	✓
15	Bedroom	100	✓
16	Bedroom	100	✓
17	Bedroom	100	✓
18	Bedroom	100	✓
19	LKD	100	✓

5.1.11 Block A&B - Level L05

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	Bedroom	100	✓
2	Bedroom	100	✓
3	Bedroom	100	✓
4	Bedroom	100	✓
5	Studio	100	✓
6	Bedroom	100	✓
7	Bedroom	100	✓
8	Bedroom	100	✓
9	Bedroom	100	✓
10	LKD	100	✓
11	Bedroom	100	✓
12	Bedroom	100	✓
13	Bedroom	100	✓
14	Bedroom	100	✓
15	Bedroom	100	✓
16	Bedroom	100	✓
17	Bedroom	100	✓
18	Bedroom	100	✓
19	LKD	100	✓
20	LKD	100	✓
21	Bedroom	100	✓
22	Bedroom	100	✓
23	Bedroom	100	✓
24	Bedroom	100	✓
25	Bedroom	100	✓
26	Bedroom	100	✓
27	Bedroom	100	✓
28	Bedroom	100	✓

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
29	Studio	100	✓
30	Bedroom	100	✓
31	Bedroom	100	✓
32	Bedroom	100	✓
33	LKD	96	✓

5.1.12 Block C - Level L05

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	Bedroom	100	✓
2	Bedroom	100	✓
3	Bedroom	100	✓
4	Bedroom	100	✓
5	Bedroom	100	✓
6	Bedroom	100	✓
7	Bedroom	100	✓
8	Bedroom	100	✓
9	LKD	100	✓
10	Bedroom	100	✓
11	Bedroom	100	✓
12	Bedroom	100	✓
13	Bedroom	100	✓
14	Studio	100	✓
15	Bedroom	100	✓
16	Bedroom	100	✓
17	Bedroom	100	✓
18	Bedroom	100	✓
19	LKD	100	✓

5.1.13 Block A&B - Level L06

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
1	Bedroom	100	✓
2	Bedroom	100	✓
3	Bedroom	100	✓
4	Bedroom	100	✓
5	Studio	100	✓
6	Bedroom	100	✓
7	Bedroom	100	✓
8	Bedroom	100	✓
9	Bedroom	100	✓
10	LKD	100	✓
11	Bedroom	100	✓
12	Bedroom	100	✓
13	Bedroom	100	✓
14	Bedroom	100	✓
15	Bedroom	100	✓
16	Bedroom	100	✓
17	Bedroom	100	✓
18	Bedroom	100	✓
19	LKD	100	✓
20	LKD	100	✓
21	Bedroom	100	✓
22	Bedroom	100	✓
23	Bedroom	100	✓
24	Bedroom	97	✓
25	Bedroom	100	✓
26	Bedroom	100	✓
27	Bedroom	100	✓
28	Bedroom	100	✓

Ref.	Room Activity	BRE Guide 3rd Edition BS EN 17037:2018 Method 2 National Annex	
		Floor Area > E_T (%)	Comment
29	Studio	100	✓
30	Bedroom	100	✓
31	Bedroom	100	✓
32	Bedroom	100	✓
33	LKD	100	✓

6 Appendix B – BRE Guide 3rd Edition / IS EN 17037-2018+A1 2021

6.1 Standard Requirements - IS EN 17037-2018+A1-2021

As outlined in Section 5.1.2 of the IS EN 17037-2018+A1-2021 standard:

"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. In addition, for spaces with vertical or inclined daylight openings, a minimum target illuminance level is also to be achieved across the reference plane".

Annex A of IS EN 17037-2018+A1-2021 gives three levels of recommendation for the assessment of daylight provision in interior spaces which are summarised as follows:

"The three levels are: minimum, medium and high, and the minimum recommendation should be provided."

It is important to note that IS EN 17037-2018+A1-2021 does not provide different illuminance targets for different space types. Therefore, in the case of residential developments; bedrooms, living rooms, kitchens and combined LKDs all have the same daylight provision targets.

Table A.1 of IS EN 17037-2018+A1-2021 (included below) provides recommendations for daylight provision by daylight openings in vertical and inclined surfaces. Note, Table A.2 provides similar recommendations for daylight openings in horizontal surfaces, e.g. rooflights. As there are no rooflights in the proposed development, the recommendations in Table A.2 are not followed.

To achieve the minimum level of daylight provision for vertical and inclined openings as per Table A.1, the following must be achieved:

- A target illuminance (E_T) of 300 lux must be achieved on over 50% of the floor area for over 50% of the available daylight hours, and
- A minimum target illuminance (E_{TM}) of 100 lux must be achieved on over 95% of the floor area for over 50% of the available daylight hours.
- Both targets above must be satisfied for a space to be deemed compliant with the requirements.

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

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

The recommendations in Table A.1 can also be expressed in terms of a daylight factor "D". Table A.3 provides the corresponding daylight factor (D) relative to a recommended target illuminance E_T (lx) and target minimum illuminance E_{TM} (lx) depending on the location for daylight openings in vertical and inclined surfaces. Note, Table A.4 provides similar target values for openings in horizontal surfaces, e.g. rooflights. As there are no rooflights in the proposed development, the recommendations in Table A.4 are not followed.

The extract from Table A.3 below is for Dublin with the daylight factor targets highlighted, i.e. to achieve the target illuminance (E_T) of 300 lux outlined in Table A.1, an equivalent target daylight factor is 2.0%. Furthermore, to achieve the minimum target illuminance (E_{TM}) of 100 lux outlined in Table A.1, an equivalent target daylight factor is 0.7%.

Table A.3 — Values of *D* for daylight openings to exceed an illuminance level of 100, 300, 500 or 750 lx for a fraction of daylight hours $F_{time,\%}$ = 50 % for 33 capitals of CEN national members

Nation	Capital [a]	Geographical latitude φ [°]	Median External Diffuse Illuminance $E_{v,d,med}$	*D* to exceed 100 lx	*D* to exceed 300 lx	*D* to exceed 500 lx	*D* to exceed 750 lx
Ireland	Dublin	53,43	14 900	0,7 %	2,0 %	3,4 %	5,0 %

Therefore, to achieve the minimum level of daylight provision for vertical and inclined openings as per Table A.3, the following must be achieved:

- A target daylight factor (D_T) of 2.0% must be achieved on over 50% of the floor area for over 50% of the available daylight hours, and
- A minimum target daylight factor (D_{TM}) of 0.7% must be achieved on over 95% of the floor area for over 50% of the available daylight hours.
- Both targets above must be satisfied for a space to be deemed compliant with the requirements.

There are two methods to assess daylight provision to the interior which are based on target values in either Table A.1 or Table A.3 which are summarised as follows:

Method 1: This calculation method uses the daylight factor targets on the reference plane as per Table A.3. The assessment is carried out on a representative day and time during the year, i.e. 21st September @ 12:00 under standard CIE overcast sky conditions.

Method 2: This calculation method uses the illuminance targets on the reference plane as per Table A.1. The assessment is carried out for each hour over the course of the year (8,760 hours) using a local weather file which accounts for varying sky conditions and sun positions throughout the year.

As outlined in Section 5.1.4, the verification of daylight provision can be determined using either an adequate software or on-site measurements. When using a software, *"a representative model of the space is required together with the key parameters (such as any significant nearby obstructions, the assigned surface reflectance values and glazing transmissivity) that are a reasonable representation of those for the actual, completed building. This can be determined using either Method 1 or Method 2."*

Based on the above criteria, the daylight provision to the proposed development has been assessed using an adequate software (i.e. IES VE), using the Method 2 climate-based approach and targeting the minimum recommended values outlined in Table A.1 of IS EN 17037-2018+A1-2021.

The Method 2 climate-based approach was selected as it is a far more accurate assessment method compared to Method 1. Climate based daylight modelling (CBDM) is more accurate compared to a calculation based on a single day during the year, i.e. Method 1. The amount of daylight varies throughout the year, primarily due to the sun's position, so it is essential the impact of daylight variance is properly considered. CBDM utilises an annual simulation linking location, shading, climate data (including solar intensity and cloud cover) together with the building properties. This provides a complete overview on how the daylight performance varies throughout the year due to changes in these factors.

6.2 Daylight Provision Results

The tables in the following section summarise the daylight provision results for the rooms that were assessed in the proposed development. Note, within the tables the code "LKD" equates to combined Living, Kitchen, Dining area.

The results for the following daylight standard are included in each table:

- BRE Guide (3rd Edition) / IS EN 17037-2018+A1-2021

Please note, the "Comment" symbol in each of the tables represents the following:

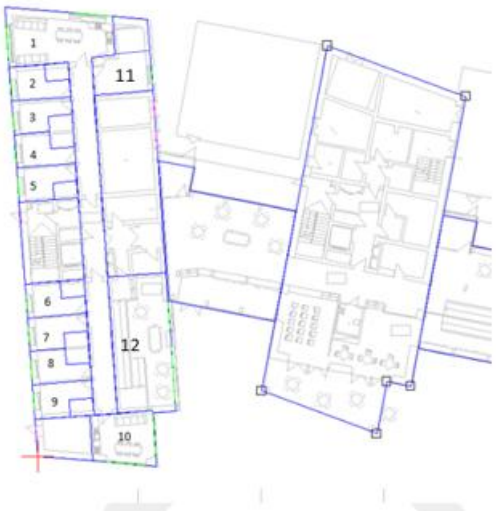
BRE Guide (3rd Edition) / IS EN 17037-2018+A1-2021

✓ These rooms achieve both the target illuminance (E_T) and minimum target illuminance (E_{TM}) over the minimum floor area requirements, i.e. 300 lux for over 50% of their floor area (E_T) and 100 lux for over 95% of their floor area (E_{TM}).

x These rooms do not achieve both the target illuminance (E_T) and minimum target illuminance (E_{TM}) over the minimum floor area requirements.

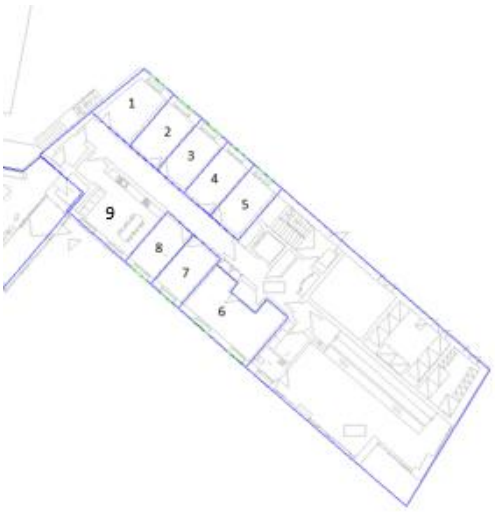
6.3 Student Accommodation Blocks

6.3.1 Block A & B - Level L00



Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	LKD	57	100	✓
2	Bedroom	25	77	x
3	Bedroom	23	82	x
4	Bedroom	34	80	x
5	Bedroom	40	100	x
6	Bedroom	37	100	x
7	Bedroom	57	100	✓
8	Bedroom	63	100	✓
9	Bedroom	92	100	✓
10	LKD	100	100	✓
11	Bedroom	17	85	x
12	LKD	99	100	✓

6.3.2 Block C - Level L00



Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	Bedroom	11	44	x
2	Bedroom	14	36	x
3	Bedroom	15	42	x
4	Bedroom	16	43	x
5	Bedroom	30	56	x
6	Studio	100	100	✓
7	Bedroom	100	100	✓
8	Bedroom	84	100	✓
9	LKD	90	100	✓

6.3.3 Block A&B - Level L01

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	LKD	93	100	✓
2	Bedroom	34	84	x
3	Bedroom	37	100	x
4	Bedroom	34	100	x
5	Bedroom	71	100	✓
6	Bedroom	43	100	x
7	Bedroom	97	100	✓
8	Bedroom	100	100	✓
9	Bedroom	97	100	✓
10	LKD	100	100	✓
11	Bedroom	26	100	x
12	Bedroom	10	77	x
13	Bedroom	0	67	x
14	Bedroom	0	100	x
15	Studio	0	89	x
16	Bedroom	0	91	x
17	Bedroom	0	80	x
18	Bedroom	7	83	x
19	Bedroom	21	100	x
20	LKD	56	100	✓
21	Bedroom	0	57	x

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
22	Bedroom	0	47	x
23	LKD	100	100	✓
24	Studio	9	96	x
25	Bedroom	45	86	x
26	Bedroom	44	88	x
27	Bedroom	51	87	x

6.3.4 Block C - Level L01

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	Bedroom	48	83	x
2	Bedroom	46	80	x
3	Bedroom	43	85	x
4	Bedroom	36	78	x
5	Bedroom	43	97	x
6	Bedroom	58	100	✓
7	Bedroom	64	100	✓
8	Bedroom	58	100	✓
9	LKD	100	100	✓
10	Bedroom	94	100	✓
11	Bedroom	96	100	✓
12	Bedroom	87	100	✓
13	Bedroom	92	100	✓
14	Studio	100	100	✓
15	Bedroom	81	100	✓
16	Bedroom	98	100	✓
17	Bedroom	76	100	✓
18	Bedroom	100	100	✓
19	LKD	68	100	✓

6.3.5 Block A&B - Level L02

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	Bedroom	29	100	x
2	Bedroom	10	100	x
3	Bedroom	0	100	x
4	Bedroom	0	100	x
5	Studio	0	100	x
6	Bedroom	0	100	x
7	Bedroom	0	100	x
8	Bedroom	10	100	x
9	Bedroom	26	100	x
10	LKD	100	100	✓
11	Bedroom	97	100	✓
12	Bedroom	100	100	✓
13	Bedroom	100	100	✓
14	Bedroom	78	100	✓
15	Bedroom	77	100	✓
16	Bedroom	42	100	x
17	Bedroom	53	100	✓
18	Bedroom	86	100	✓
19	LKD	100	100	✓
20	LKD	91	100	✓
21	Bedroom	0	60	x
22	Bedroom	0	66	x
23	Bedroom	0	63	x
24	Bedroom	0	75	x
25	Bedroom	0	65	x
26	Bedroom	82	100	✓
27	Bedroom	82	100	✓
28	Bedroom	79	100	✓

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
29	Studio	18	100	x
30	Bedroom	63	84	x
31	Bedroom	66	100	✓
32	Bedroom	71	100	✓
33	LKD	75	100	✓

6.3.6 Block C - Level L02

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	Bedroom	71	100	✓
2	Bedroom	69	98	✓
3	Bedroom	79	93	x
4	Bedroom	57	88	x
5	Bedroom	44	100	x
6	Bedroom	73	100	✓
7	Bedroom	84	100	✓
8	Bedroom	76	100	✓
9	LKD	100	100	✓
10	Bedroom	86	100	✓
11	Bedroom	95	100	✓
12	Bedroom	82	100	✓
13	Bedroom	92	100	✓
14	Studio	98	100	✓
15	Bedroom	81	100	✓
16	Bedroom	100	100	✓
17	Bedroom	76	100	✓
18	Bedroom	84	100	✓
19	LKD	80	100	✓

6.3.7 Block A&B - Level L03

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	Bedroom	36	100	x
2	Bedroom	23	100	x
3	Bedroom	13	87	x
4	Bedroom	6	72	x
5	Studio	3	27	x
6	Bedroom	0	56	x
7	Bedroom	0	73	x
8	Bedroom	10	97	x
9	Bedroom	30	100	x
10	LKD	100	100	✓
11	Bedroom	89	100	✓
12	Bedroom	98	100	✓
13	Bedroom	100	100	✓
14	Bedroom	69	100	✓
15	Bedroom	77	100	✓
16	Bedroom	93	100	✓
17	Bedroom	100	100	✓
18	Bedroom	100	100	✓
19	LKD	100	100	✓
20	LKD	100	100	✓
21	Bedroom	12	100	x
22	Bedroom	3	69	x
23	Bedroom	0	65	x
24	Bedroom	0	63	x
25	Bedroom	0	36	x
26	Bedroom	72	100	✓
27	Bedroom	86	100	✓
28	Bedroom	73	100	✓

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
29	Studio	71	94	x
30	Bedroom	77	100	✓
31	Bedroom	81	100	✓
32	Bedroom	79	100	✓
33	LKD	72	100	✓

6.3.8 Block C - Level L03

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	Bedroom	100	100	✓
2	Bedroom	89	100	✓
3	Bedroom	86	100	✓
4	Bedroom	79	100	✓
5	Bedroom	71	100	✓
6	Bedroom	81	100	✓
7	Bedroom	93	100	✓
8	Bedroom	81	100	✓
9	LKD	100	100	✓
10	Bedroom	91	100	✓
11	Bedroom	100	100	✓
12	Bedroom	92	100	✓
13	Bedroom	91	100	✓
14	Studio	100	100	✓
15	Bedroom	82	100	✓
16	Bedroom	97	100	✓
17	Bedroom	79	100	✓
18	Bedroom	85	100	✓
19	LKD	100	100	✓

6.3.9 Block A&B - Level L04

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	Bedroom	100	100	✓
2	Bedroom	40	100	x
3	Bedroom	27	97	x
4	Bedroom	22	94	x
5	Studio	8	61	x
6	Bedroom	13	75	x
7	Bedroom	13	87	x
8	Bedroom	20	100	x
9	Bedroom	33	100	x
10	LKD	100	100	✓
11	Bedroom	98	100	✓
12	Bedroom	100	100	✓
13	Bedroom	87	100	✓
14	Bedroom	100	100	✓
15	Bedroom	79	100	✓
16	Bedroom	78	100	✓
17	Bedroom	82	100	✓
18	Bedroom	79	100	✓
19	LKD	100	100	✓
20	LKD	100	100	✓
21	Bedroom	24	100	x
22	Bedroom	11	97	x
23	Bedroom	9	65	x
24	Bedroom	0	63	x
25	Bedroom	8	61	x
26	Bedroom	81	100	✓
27	Bedroom	93	100	✓
28	Bedroom	73	100	✓

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
29	Studio	27	100	x
30	Bedroom	73	96	✓
31	Bedroom	84	100	✓
32	Bedroom	91	100	✓
33	LKD	71	96	✓

6.3.10 Block C - Level L04

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	Bedroom	100	100	✓
2	Bedroom	80	100	✓
3	Bedroom	88	100	✓
4	Bedroom	88	100	✓
5	Bedroom	77	100	✓
6	Bedroom	81	100	✓
7	Bedroom	93	100	✓
8	Bedroom	79	100	✓
9	LKD	100	100	✓
10	Bedroom	89	100	✓
11	Bedroom	100	100	✓
12	Bedroom	89	100	✓
13	Bedroom	89	100	✓
14	Studio	100	100	✓
15	Bedroom	78	100	✓
16	Bedroom	89	100	✓
17	Bedroom	79	100	✓
18	Bedroom	87	100	✓
19	LKD	100	100	✓

6.3.11 Block A&B - Level L05

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	Bedroom	85	100	✓
2	Bedroom	70	100	✓
3	Bedroom	57	100	✓
4	Bedroom	53	100	✓
5	Studio	19	100	x
6	Bedroom	38	100	x
7	Bedroom	37	100	x
8	Bedroom	43	100	x
9	Bedroom	59	100	✓
10	LKD	100	100	✓
11	Bedroom	95	100	✓
12	Bedroom	100	100	✓
13	Bedroom	97	100	✓
14	Bedroom	100	100	✓
15	Bedroom	87	100	✓
16	Bedroom	86	100	✓
17	Bedroom	87	100	✓
18	Bedroom	86	100	✓
19	LKD	100	100	✓
20	LKD	100	100	✓
21	Bedroom	31	100	x
22	Bedroom	31	100	x
23	Bedroom	23	100	x
24	Bedroom	29	100	x
25	Bedroom	19	100	x
26	Bedroom	85	100	✓
27	Bedroom	87	100	✓
28	Bedroom	86	100	✓

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
29	Studio	42	100	x
30	Bedroom	81	100	✓
31	Bedroom	96	100	✓
32	Bedroom	100	100	✓
33	LKD	85	100	✓

6.3.12 Block C - Level L05

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	Bedroom	82	100	✓
2	Bedroom	85	100	✓
3	Bedroom	84	100	✓
4	Bedroom	99	100	✓
5	Bedroom	79	100	✓
6	Bedroom	81	100	✓
7	Bedroom	83	100	✓
8	Bedroom	82	100	✓
9	LKD	100	100	✓
10	Bedroom	91	100	✓
11	Bedroom	95	100	✓
12	Bedroom	87	100	✓
13	Bedroom	87	100	✓
14	Studio	99	100	✓
15	Bedroom	90	100	✓
16	Bedroom	92	100	✓
17	Bedroom	83	100	✓
18	Bedroom	100	100	✓
19	LKD	100	100	✓

6.3.13 Block A&B - Level L06

*Highlighted Rooms Reassessed Applying Design Changes

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
1	Bedroom	99	100	✓
2	Bedroom	100	100	✓
3	Bedroom	93	100	✓
4	Bedroom	88	100	✓
5	Studio	50	86	x
6	Bedroom	81	100	✓
7	Bedroom	80	100	✓
8	Bedroom	90	100	✓
9	Bedroom	74	100	✓
10	LKD	100	100	✓
11	Bedroom	100	100	✓
12	Bedroom	100	100	✓
13	Bedroom	100	100	✓
14	Bedroom	100	100	✓
15	Bedroom	94	100	✓
16	Bedroom	97	100	✓
17	Bedroom	100	100	✓
18	Bedroom	94	100	✓
19	LKD	100	100	✓
20	LKD	100	100	✓
21	Bedroom	58	100	✓
22	Bedroom	54	100	✓
23	Bedroom	47	100	x
24	Bedroom	56	97	✓
25	Bedroom	41	100	x
26	Bedroom	85	100	✓
27	Bedroom	100	100	✓
28	Bedroom	100	100	✓

Ref.	Room Activity	BRE Guide 3rd Edition IS EN 17037:2018+A1-2021 Method 2 National Annex		
		Floor Area > E_T (%)	Floor Area > E_{TM} (%)	Comment
29	Studio	65	100	✓
30	Bedroom	96	100	✓
31	Bedroom	86	100	✓
32	Bedroom	83	100	✓
33	LKD	100	100	✓

6.4 Daylight Results Tables – IS EN 17037

The following tables summarise the daylight provision results for the tested spaces within the proposed development. These include the Student Accommodation Blocks A, B, and C. The assessment has been carried out in accordance with the BRE Guide (3rd Edition) and IS EN 17037:2018+A1:2021, using Method 2.

The results are summarised in the following tables:

Student Accommodation - Block A

A compliance rate of 58% is achieved under BRE Guide 3rd Edition / IS EN 17037-2018+A1-2021 Method 2 National Annex for tested spaces in Block A within the proposed development. The daylight provision results are summarised below.

Rooms Tested	Total No. Rooms
Total No. Bedrooms Tested	105
Total No. LKDs Tested	15
Total No. Studio Tested	6
Total No. Spaces Tested	**126**

BRE Guide 3rd Edition / IS EN 17037:2018+A1-2021 Method 2 National Annex Assessment				
Room Type	**Pass (No.)**	**Pass (%)**	**BR (No.)**	**BR (%)**
No. Bedrooms	58	55%	47	45%
No. LKDs	15	100%	0	0%
No. Studio	0	0%	6	100%
Total No.	**73**	**58%**	**63**	**42%**

*BR = Below Recommendations

Student Accommodation - Block B

A compliance rate of 62% is achieved under BRE Guide 3rd Edition / IS EN 17037-2018+A1-2021 Method 2 National Annex for tested spaces in Block B within the proposed development. The daylight provision results are summarised below.

Rooms Tested	Total No. Rooms
Total No. Bedrooms Tested	60
Total No. LKDs Tested	12
Total No. Studios Tested	6
Total No. Spaces Tested	**78**

BRE Guide 3rd Edition / IS EN 17037:2018+A1-2021 Method 2 National Annex Assessment				
Room Type	**Pass (No.)**	**Pass (%)**	**BR (No.)**	**BR (%)**
No. Bedrooms	35	58%	25	42%
No. LKDs	12	100%	0	0%
No. Studios	1	20%	5	80%
Total No.	**48**	**62%**	**25**	**38%**

*BR = Below Recommendations

Student Accommodation - Block C

A compliance rate of 88% is achieved under BRE Guide 3rd Edition / IS EN 17037-2018+A1-2021 Method 2 National Annex for tested spaces in Block C within the proposed development. The daylight provision results are summarised below.

Rooms Tested	Total No. Rooms
Total No. Bedrooms Tested	87
Total No. LKDs Tested	11
Total No. Studios Tested	6
Total No. Spaces Tested	**104**

BRE Guide 3rd Edition / IS EN 17037:2018+A1-2021 Method 2 National Annex Assessment				
Room Type	**Pass (No.)**	**Pass (%)**	**BR (No.)**	**BR (%)**
No. Bedrooms	74	85%	13	15%
No. LKDs	11	100%	0	0%
No. Studios	6	100%	0	0%
Total No.	**91**	**88%**	**13**	**12%**

*BR = Below Recommendations