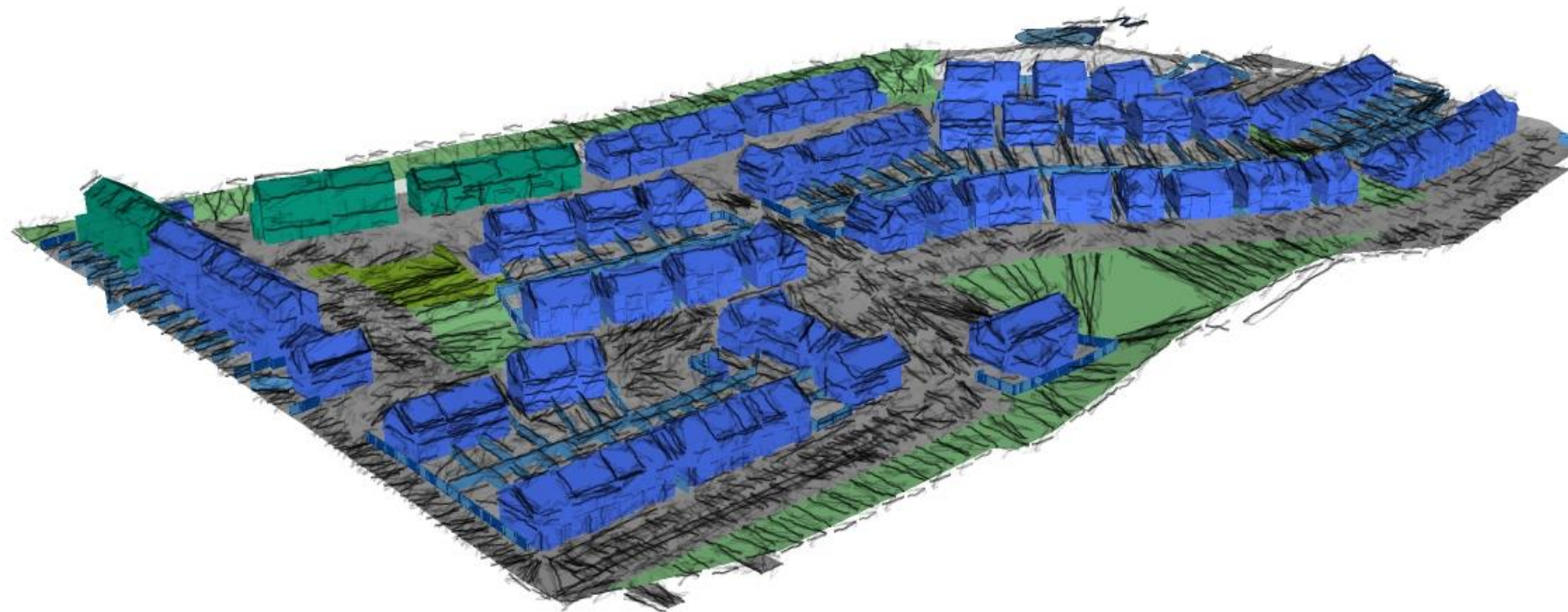


DRUMLARK

Sunlight, Daylight & Shadow Assessment (Development Performance)

V1



Executive Summary

This report examines how the proposed development performs in terms of light. The report is, in accordance with Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice - Third Edition - 2022.

It should be noted at the outset that the BRE document sets out in its introduction that:

"Summary Page . . . It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location."

" 1.6 . . . 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. . . . "

Impact on Neighbours

We are advised that there are no neighbours in proximity to the proposed development.

Performance of the proposed design

- **Target Illuminance E_r**
 - **100%** of rooms comply with the BS/EN 17037 Annex NA room targets for 50% of the floor area tested.
 - The average compliant areas achieving the relevant target Lx for
 - all bedrooms is **100%** and
 - all Living/Kitchen spaces **87%**
 - both are well in excess of the required 50%
- **Sunlight to rooms:**
 - **100%** of Living rooms receive 1.5hrs of sunlight on the test day of the 21st March
All are in the high quality range.
- **Sunlight on the Ground SOG (Shadow)**
 - **100%** of Shared & Public Amenity spaces pass the relevant requirements.

The application complies with the recommendations and guidelines of Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (BR209 - 2022).

This development has been successfully designed to maximise the occupant's access to light. As such the design has used the guidelines in the spirit they have been written and balanced the requirements of this report with other constraints to arrive at this design.

Introduction

Chris Shackleton Consulting (CSC) have been asked to examine the impact that the proposed development performs in term of light. The proposed residential development consists of housing, duplex apartments and a creche.

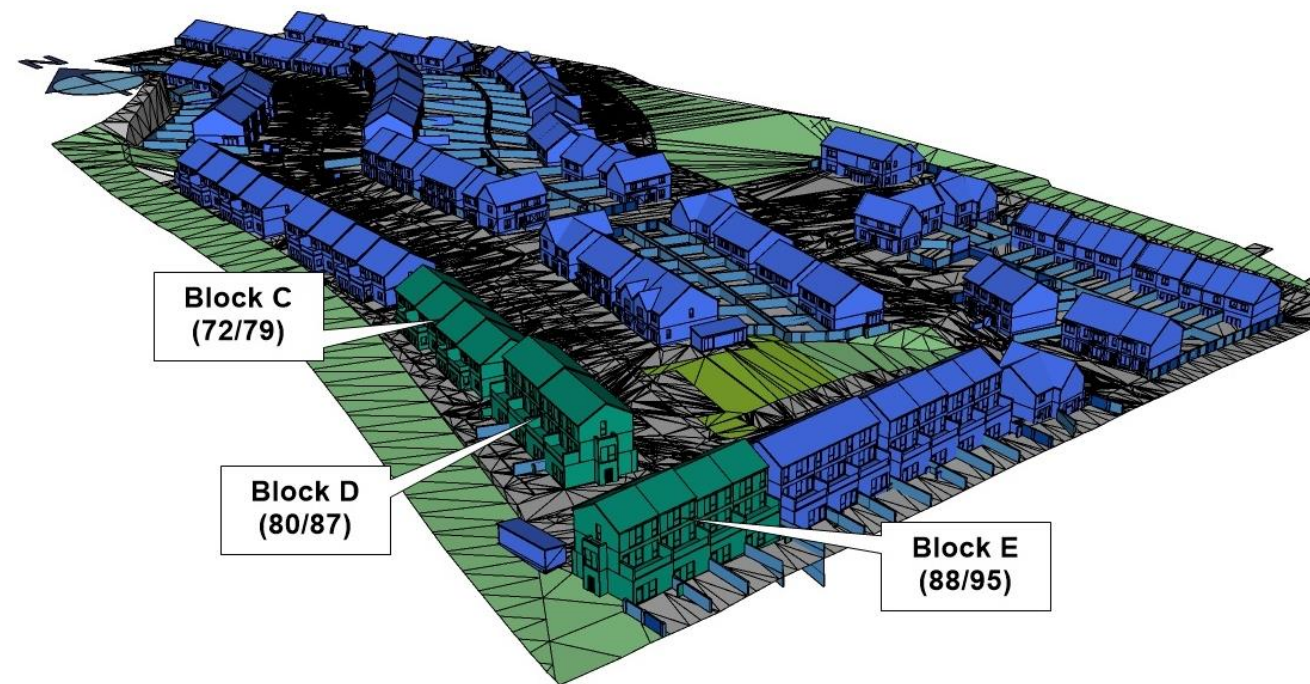
This analysis has been carried out in accordance with the recommendations of Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice - Third Edition (BRE 2022).

All references quoted in this report are from BRE document "Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice – Third Edition – 2022 (BR 209) by Paul Littlefair et al." unless specifically noted otherwise.

Design Model

A 3D model of the proposed development and the surrounding neighbouring properties was provided by the Architect. These had been modelled from survey information and drawings provided in plan, elevation and section formats. The model was geo-referenced to its correct location and an accurate solar daylight system was introduced. Here "Blue" this proposal, Green the representative apartment blocks selected for assessment.

The analysis is based on the information provided.



Proposed Model

Scope of this Report

We have been asked to address the following specific items in this report and our scope is limited to the same:

Impact on Neighbours

We are advised that there are no neighbours in proximity to the proposed development.

Development Performance

For the proposed development we will examine the performance of the development under the following headings:

- Target Illuminance – E_T – All habitable rooms
- Sunlight to rooms – A room preferably a living space.
- Sunlight on the Ground SOG (Shadow) - Proposed Public & Shared amenity spaces.

When examining the internal performance of the development the Architect selected 3 typical apartment blocks for assessment. Blocks C, D & E. These were selected in a congested corner and represent all of the apartment types being proposed.

For the selected blocks all rooms on all floors were tested and it provides a good representative of the overall development performance.

Development Performance

Development Performance - Target Illuminance E_T Metric

National Standards Authority of Ireland have adopted EN 17037 to directly become IS/EN 17037. There are no amendments made to this document and no national Annex localising the same was developed as can be found in BS/EN 17037. The standard document provides only a single target for rooms of new buildings and does not include specific usage targets for spaces for commercial, office and residential (living, bedroom, Kitchen).

The UK variant referenced is more suitable to use in temperate climates where the median external diffuse illuminance is low. We would concur with the UK committee that the recommendations for daylight provision in a space may not be achievable for some buildings, particularly dwellings, which are the subject of this report.

We note the reasoning put forward by the UK committee and concur with their conclusions that different room usage should be assigned different light requirements/targets. Design in Ireland quite often follows the practice and precedent set in the UK. With similar climates, light and receiving environments it is reasonable to adopt BS/EN 17037 / Annex NA which itself was derived from the now withdrawn BS 8206-2:2008 Lighting for buildings – Part 2: Code of practice for daylighting, Subclause 5.6. This provides alignment between the new and old standards and with the levels of light we are used to and deemed acceptable in new developments.

*Target illuminance (E_T) :
Illuminance from daylight that should be achieved for at least half of annual daylight hours across a specified fraction of the reference plane in a daylit space*

NA.2 - Minimum daylight provision in UK dwellings

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.

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

Derived from BS 8206-2:2008 Lighting for buildings – Part 2: Code of practice for daylighting

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

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.

This is echoed in The BRE Guidelines

C16 The UK National Annex gives illuminance recommendations of 100 lux in bedrooms, 150 lux in living rooms and 200 lux in kitchens. These are the median illuminances, to be exceeded over at least 50% of the assessment points in the room for at least half of the daylight hours. The recommended levels over 95% of a reference plane need not apply to dwellings in the UK.

C17 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 ... in rooms with a particular requirement for daylight, such as bed sitting rooms in homes for the elderly, higher values ... may be taken.

Analysis parameters are as per Annex B (and/or as revised by Annex NA), analysis method 1 was used. The following Parameters were used which are within the recommended ranges and reflect the materials/finishes specified in this application. The Median External Diffuse Illuminance used is noted in the relevant results tables.

Surface	Description	Reflectance
External Plane	Earth	0.2
External Walls	Grey Render / Concrete	0.4
Floor	Light wood/ cream Carpet	0.4
Internal Wall	Cream	0.7
Ceiling	White	0.8
Frames	Medium Grey	0.5
	Transmittance	
Glazing clear	0.63 (incl. Maintenance Factor)	
Glazing Translucent	0.4 (incl. Maintenance Factor)	

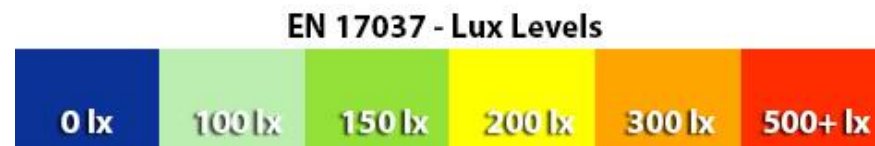
Light distribution was computed by modelling the internal configuration of rooms and windows placed within the existing topography and the adjacent buildings and then running an analysis on the same. This analysis was based on a standard working plane for in this case residential of 0.850m.

Reference plane or working plane

Horizontal, vertical, or inclined plane in which a visual task lies. Normally the working plane may be taken to be horizontal, 0.85 m above the floor in houses and factories, 0.7 m above the floor in offices.

Legend for Radiance Plots

In the radiances plots provided below we shall use the following demarcation of Lx results which is compatible with the target values from Annex NA



Assessment Areas

Where rooms have small annexed entrances or corridors they need not be included in the assessment grid area, (unless it is wide enough to be part of the usable space in a room, typically over 1.5m wide).

Fig C3 details what area may be excluded.

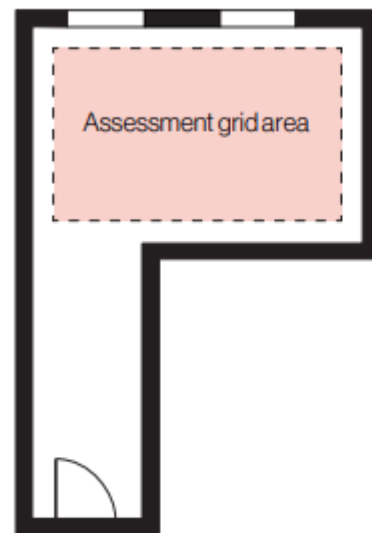


Figure C3: In a room with a corridor, or annexed entrance, the corridor need not be included in the assessment grid area (unless it is wide enough to be part of the usable space in a room, typically over 1.5m wide). The room layout and surfaces, including the corridor would still need to be included in the calculation model.

Fig C2 also notes that: Fixed floor to ceiling cupboards can be excluded from the room area, but not kitchen units incorporating a worktop. And also The BRE guidelines note the following in relation to the assessment grid.

The standard states that the assessment grid should exclude a band of 0.5m from the walls, unless otherwise specified. In dwellings it is recommended that a band of 0.3m should be excluded, to avoid excluding parts of the room that are used by the occupants. Professional judgement should be used in cases with irregular shaped spaces or rooms with corridor or annex areas.

Room referencing

- Rooms tested are referenced specifically for this report.
- This referencing is used to identify rooms rather than apartments.
- Numbering is generally sequential but may vary to keep similar room types on different floors consistent.
- Graphics are provided on a floor-by-floor basis to show the referencing for this project.
- Room numbers are coloured orange = Living/Kitchen/Dining room and Blue = Bedroom.
- Where Living and Kitchens are separated Green = Living room and yellow = Kitchens.

In the result tables the following referencing is used.

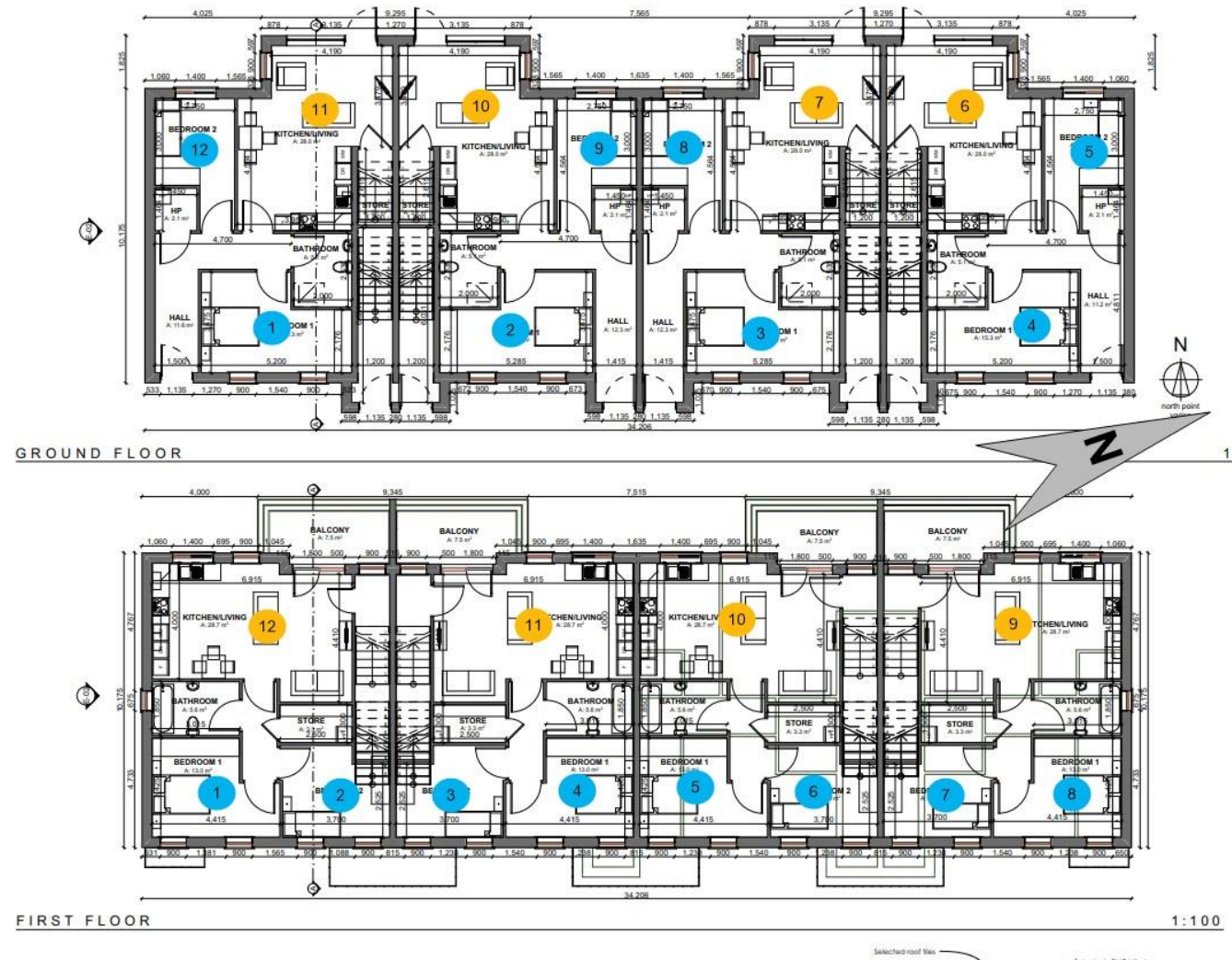
- Two-digit Floor reference 00=GFL, 01=1st Floor
- A single letter block reference
- Two-digit room reference (as per layout naming in the plans below
Combined Living/Kitchen/Dining rooms have the suffix "c" added to the name
This would also be the reference for a Studio apartment.

Typical Example of the naming, not specifically project related:

01C09c = 1st Floor, Block C, room 9 which is an LKD (Living/Kitchen/Dining room).
00C04 = Ground Floor, Block C, room 4 which is a bedroom.

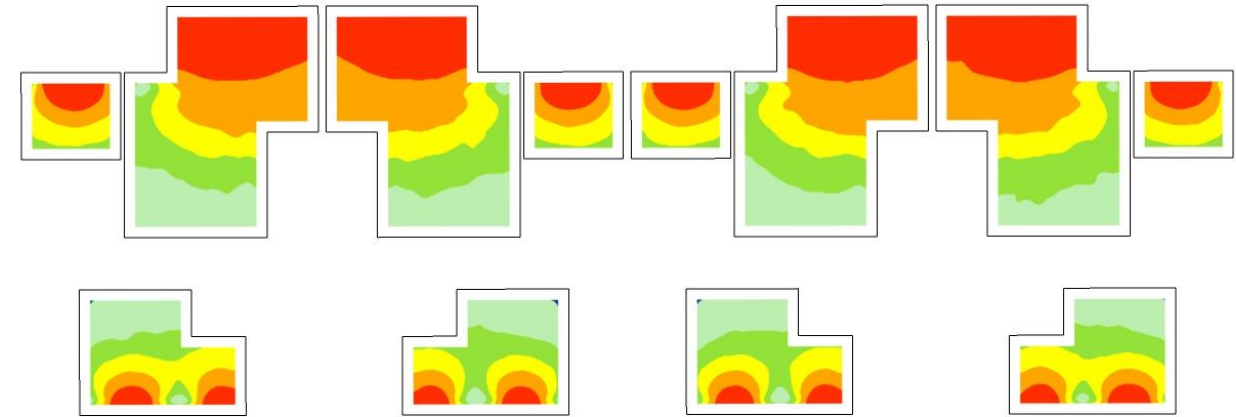
Block C (72/79) - Target Illuminance E_T

Floor Layout - Naming Convention

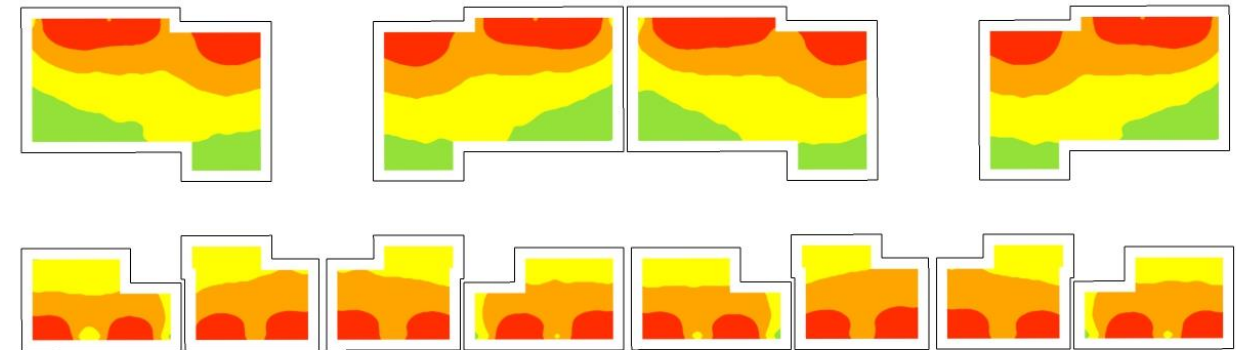


Radiance Plots

GFL

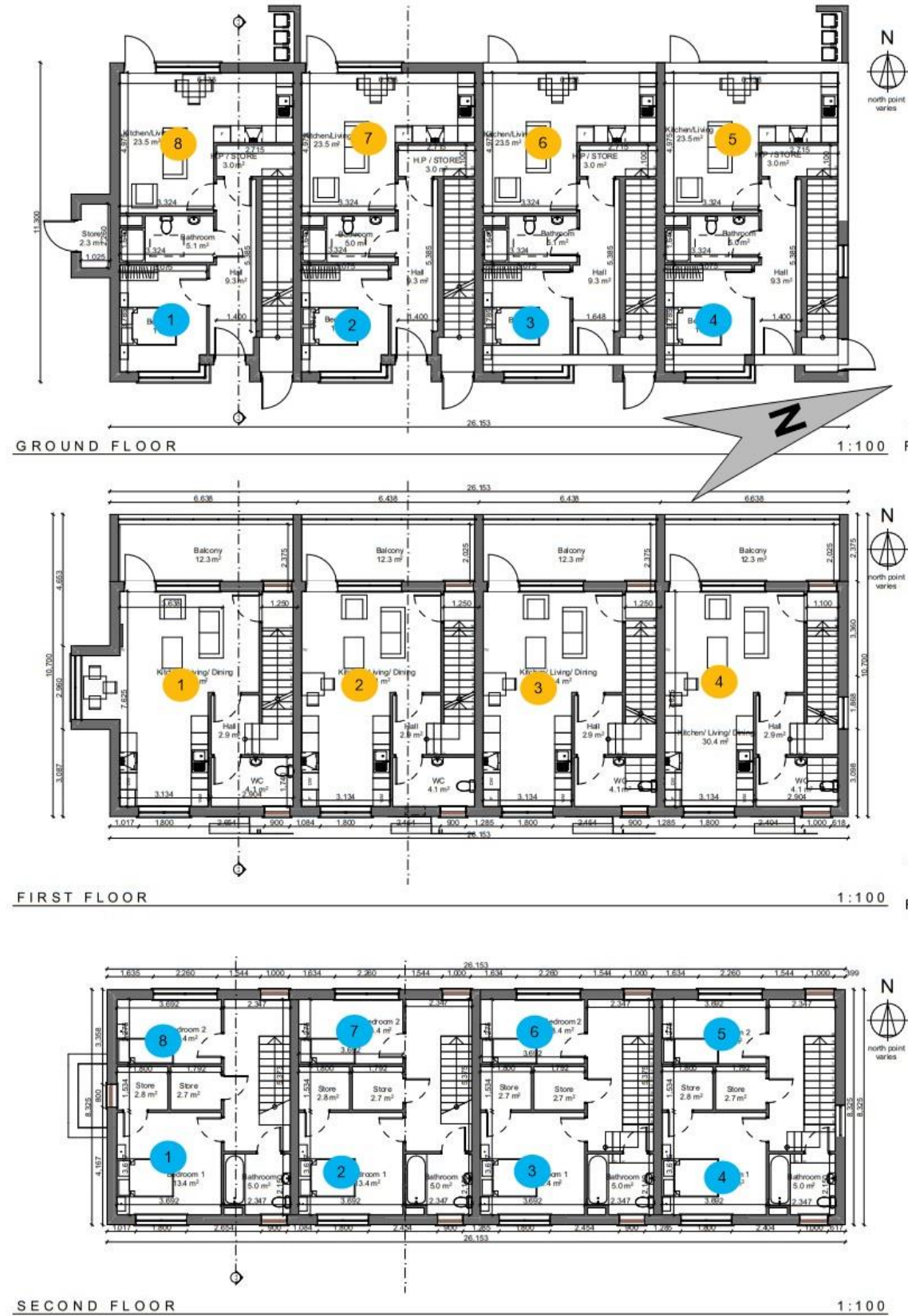


1st Floor



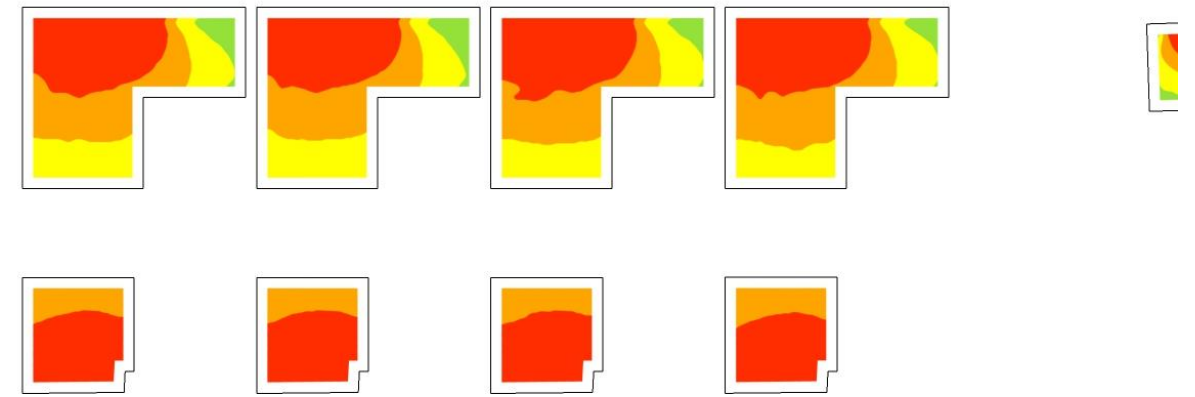
Block D (80/87) - Target Illuminance E_T

Floor Layout - Naming Convention

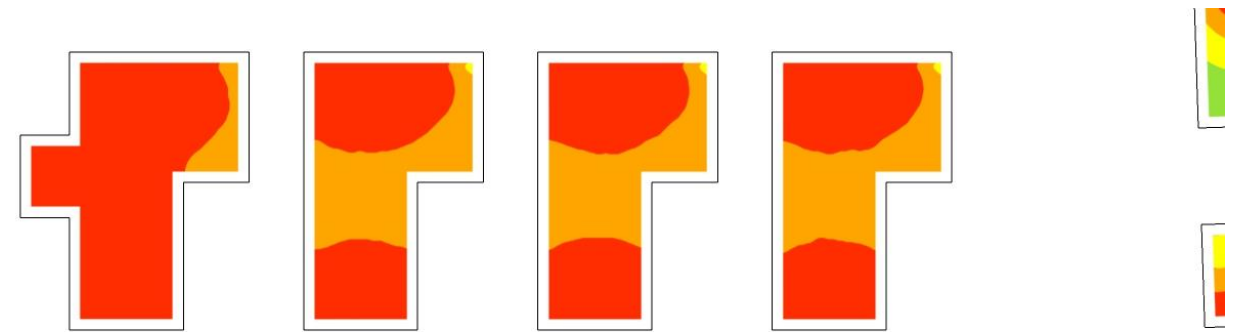


Radiance Plots

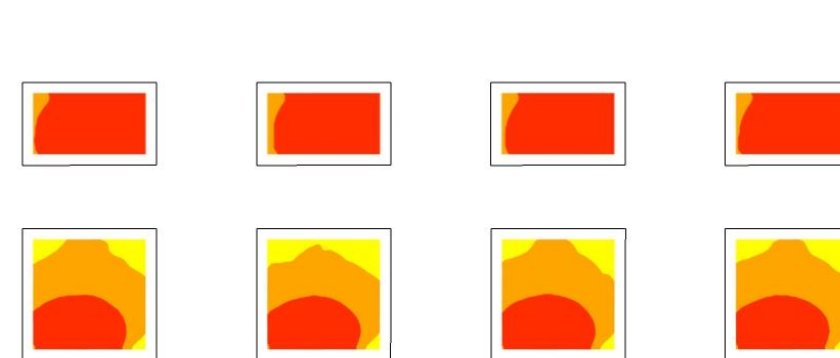
GFL



1st Floor

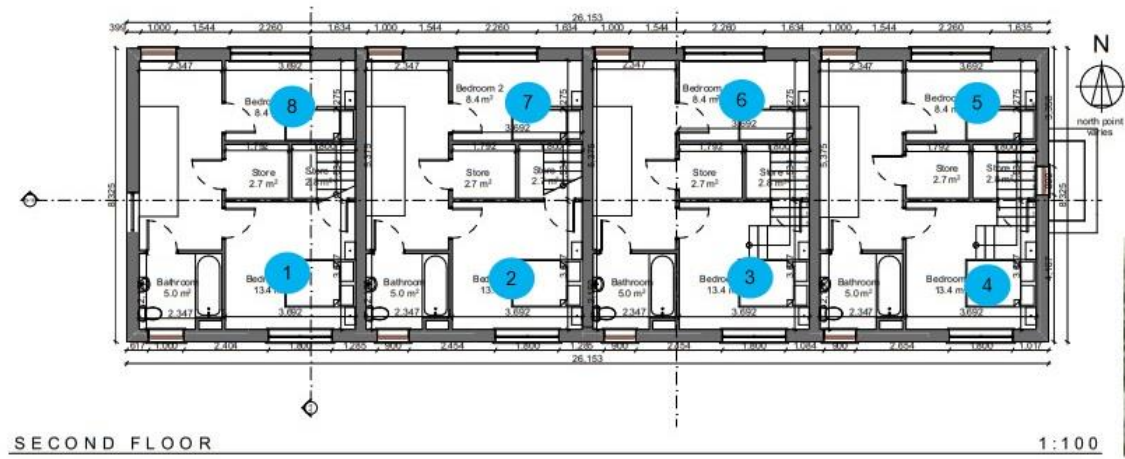
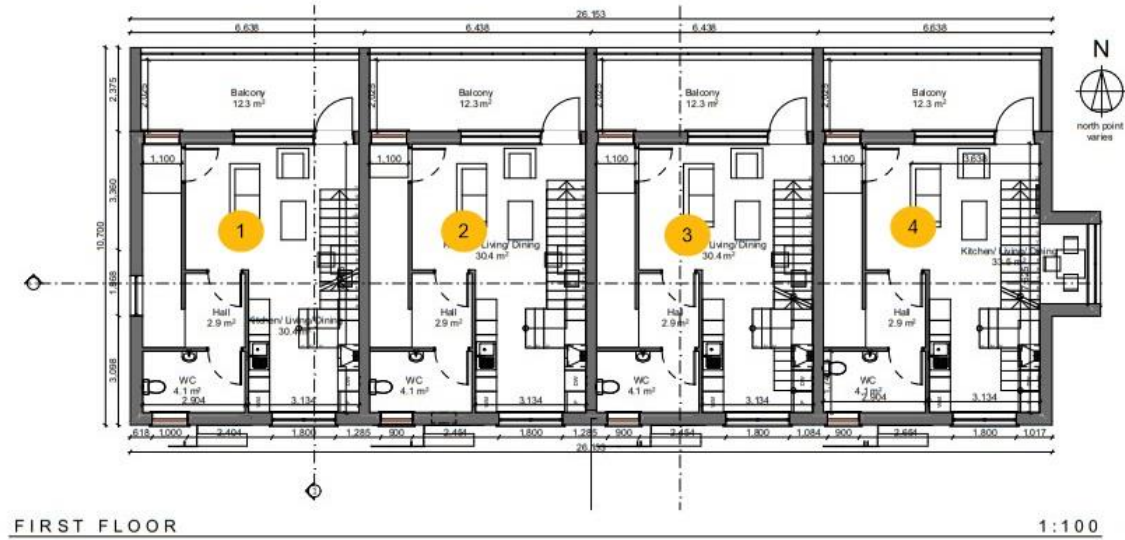
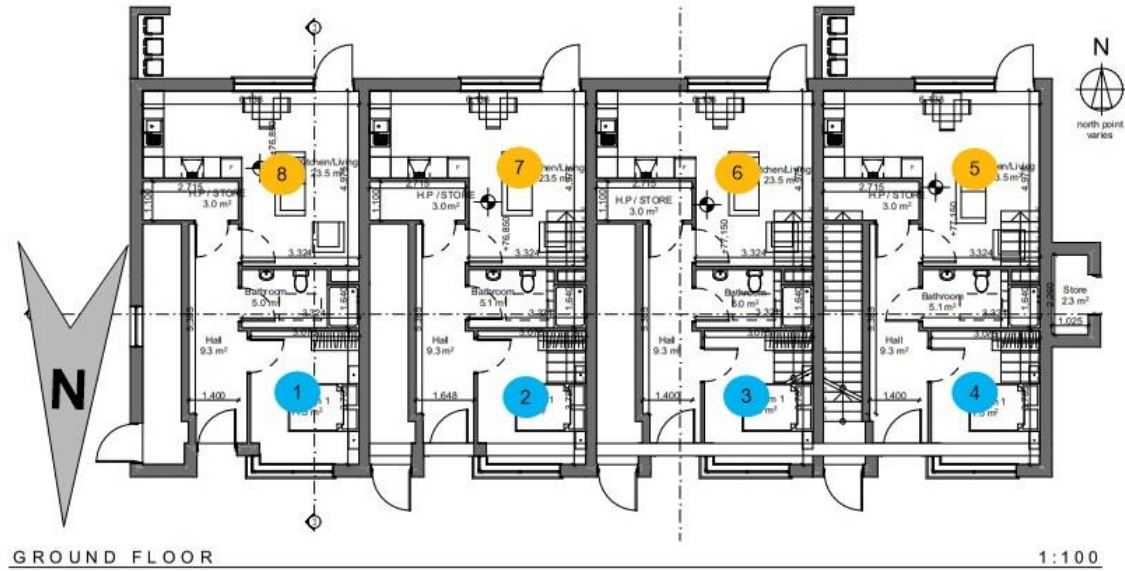


2nd Floor



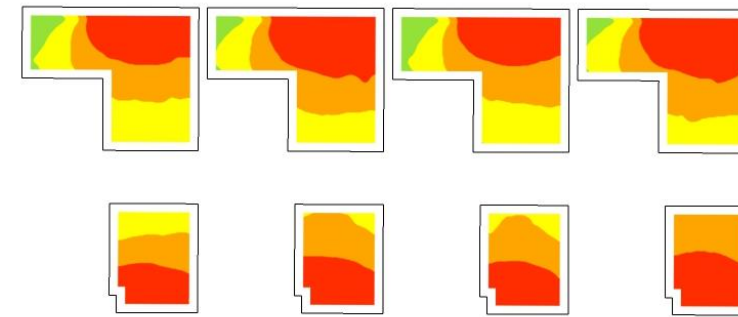
Block E (88/95) - Target Illuminance E_T

Floor Layout - Naming Convention

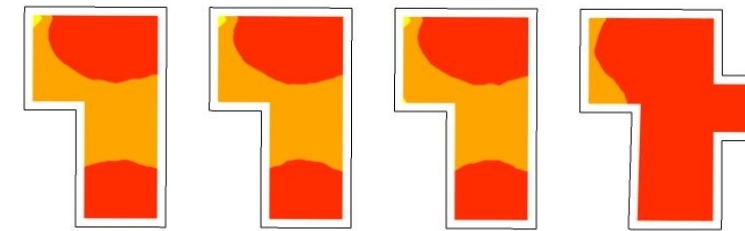


Radiance Plots

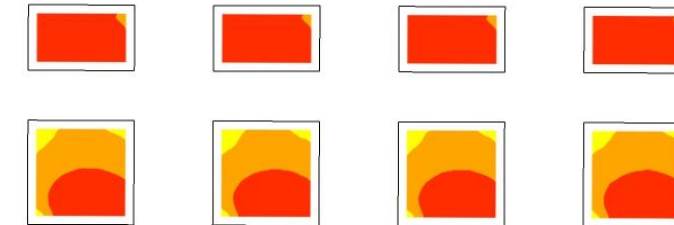
GFL



1st Floor



2nd Floor



Results are Tabulated Below

NA.2 Minimum daylight provision				
For all habitable rooms				
Median External Diffuse Illuminance		14,200 lx		
>50 % of the points on a reference plane to exceed				
C-v1	Type	Percentage within Target Lux	BS/EN17037 Annex AN Target Lux	Check
00C01	Bedroom	100	100	Pass
00C02	Bedroom	100	100	Pass
00C03	Bedroom	100	100	Pass
00C04	Bedroom	100	100	Pass
00C05	Bedroom	100	100	Pass
00C06c	Living/Kitchen	61	200	Pass
00C07c	Living/Kitchen	60	200	Pass
00C08	Bedroom	100	100	Pass
00C09	Bedroom	100	100	Pass
00C10c	Living/Kitchen	61	200	Pass
00C11c	Living/Kitchen	59	200	Pass
00C12	Bedroom	100	100	Pass
01C01	Bedroom	100	100	Pass
01C02	Bedroom	100	100	Pass
01C03	Bedroom	100	100	Pass
01C04	Bedroom	100	100	Pass
01C05	Bedroom	100	100	Pass
01C06	Bedroom	100	100	Pass
01C07	Bedroom	100	100	Pass
01C08	Bedroom	100	100	Pass
01C09c	Living/Kitchen	78	200	Pass
01C10c	Living/Kitchen	76	200	Pass
01C11c	Living/Kitchen	76	200	Pass
01C12c	Living/Kitchen	74	200	Pass

NA.2 Minimum daylight provision				
For all habitable rooms				
Median External Diffuse Illuminance		14,200 lx		
>50 % of the points on a reference plane to exceed				
D-v1	Type	Percentage within Target Lux	BS/EN17037 Annex AN Target Lux	Check
00D01	Bedroom	100	100	Pass
00D02	Bedroom	100	100	Pass
00D03	Bedroom	100	100	Pass
00D04	Bedroom	100	100	Pass
00D05c	Living/Kitchen	95	200	Pass
00D06c	Living/Kitchen	95	200	Pass
00D07c	Living/Kitchen	93	200	Pass
00D08c	Living/Kitchen	94	200	Pass
01D01c	Living/Kitchen	100	200	Pass
01D02c	Living/Kitchen	100	200	Pass
01D03c	Living/Kitchen	100	200	Pass
01D04c	Living/Kitchen	100	200	Pass
02D01	Bedroom	100	100	Pass
02D02	Bedroom	100	100	Pass
02D03	Bedroom	100	100	Pass
02D04	Bedroom	100	100	Pass
02D05	Bedroom	100	100	Pass
02D06	Bedroom	100	100	Pass
02D07	Bedroom	100	100	Pass
02D08	Bedroom	100	100	Pass

NA.2 Minimum daylight provision				
For all habitable rooms				
Median External Diffuse Illuminance		14,200 lx		
>50 % of the points on a reference plane to exceed				
E-v1	Type	Percentage within	BS/EN17037 Annex AN	Check
Ref	Type	Target Lux	Target Lux	Check
00E01	Bedroom	100	100	Pass
00E02	Bedroom	100	100	Pass
00E03	Bedroom	100	100	Pass
00E04	Bedroom	100	100	Pass
00E05c	Living/Kitchen	95	200	Pass
00E06c	Living/Kitchen	89	200	Pass
00E07c	Living/Kitchen	94	200	Pass
00E08c	Living/Kitchen	93	200	Pass
01E01c	Living/Kitchen	100	200	Pass
01E02c	Living/Kitchen	100	200	Pass
01E03c	Living/Kitchen	100	200	Pass
01E04c	Living/Kitchen	100	200	Pass
02E01	Bedroom	100	100	Pass
02E02	Bedroom	100	100	Pass
02E03	Bedroom	100	100	Pass
02E04	Bedroom	100	100	Pass
02E05	Bedroom	100	100	Pass
02E06	Bedroom	100	100	Pass
02E07	Bedroom	100	100	Pass
02E08	Bedroom	100	100	Pass

Summary

All rooms comply with requirements.

Annex NA		
E _T % Pass		
	BRE v3	Incl Marginal
	Pass %	Pass %
C (72/79)	100%	100%
D (80/87)	100%	100%
E (88/95)	100%	100%
Total	100%	100%

100% of rooms comply with the BS/EN 17037 Annex NA room targets for 50% of the floor area tested.

The average compliant areas achieving the relevant target Lx for all bedrooms is 100% and all Living/Kitchen spaces 87% both are well in excess of the required 50%

Development Performance - Sunlight to rooms (living spaces)

Clause 3.1.2 of the guidance document BRE indicates that special checks should be applied to living rooms to ensure that these core rooms receive the necessary sunlight.

In Housing, the main requirement for sunlight is in living rooms. where it is valued at any time of day but especially in the afternoon.

Check Clauses

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*
- *a habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 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.*

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 guidelines accept the difficulty imposed by this requirement and that it will not always be possible to achieve this requirement for ALL living spaces. While it is preferred to have sunlight the guidelines are pragmatic in this regard. The guidelines note that:

3.1.8..... For larger developments of flats, especially those with site constraints, it may not be possible to have every living room facing within 90° of south.....

A view or similar may be considered a compensating factor to North facing windows

3.1.7 compensating factor such as an appealing view to the north.

It then follows with an example of a careful layout for a relatively small block where 4/5 flats have south facing living rooms, and one North which would receive no sunlight at all. From this layout and results we can conclude that an 80% pass rate is considered careful layout design.



Figure 26: Careful layout design means that four out of the five flats shown have a south-facing living room

Quality of light minimum/medium/high is defined in clause 3.1.10

3.1.10 ... For interiors, access to sunlight can be quantified. BS EN 17037 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.

Results are Tabulated Below

Sunlight to living rooms						
Receives 1.5 hours of sunlight on 21st March						
Block	Floor	Window/Room	Ref	Hrs of Sun	Pass	Quality
C	F0	R06	00.C.06	5.0	Pass	High
C	F0	R07	00.C.07	5.0	Pass	High
C	F0	R10	00.C.10	4.8	Pass	High
C	F0	R11	00.C.11	4.3	Pass	High
C	F1	R09	01.C.09	4.3	Pass	High
C	F1	R10	01.C.10	4.3	Pass	High
C	F1	R11	01.C.11	4.3	Pass	High
C	F1	R12	01.C.12	4.3	Pass	High
D	F0	R05	00.D.05	4.8	Pass	High
D	F0	R06	00.D.06	4.8	Pass	High
D	F0	R07	00.D.07	4.8	Pass	High
D	F0	R08	00.D.08	4.8	Pass	High
D	F1	R01	01.D.01	4.8	Pass	High
D	F1	R02	01.D.02	4.8	Pass	High
D	F1	R03	01.D.03	4.8	Pass	High
D	F1	R04	01.D.04	4.8	Pass	High
E	F0	R05	00.E.05	11.2	Pass	High
E	F0	R06	00.E.06	10.2	Pass	High
E	F0	R07	00.E.07	11.2	Pass	High
E	F0	R08	00.E.08	11.0	Pass	High
E	F1	R01	01.E.01	8.8	Pass	High
E	F1	R02	01.E.02	8.0	Pass	High
E	F1	R03	01.E.03	8.8	Pass	High
E	F1	R04	01.E.04	9.0	Pass	High

Summary

Sunlight to living rooms:

100% of all Living rooms at least receive 1.5hrs of sunlight on the test day of the 21st March
All are in the High Quality range.

Development Performance - Sunlight on the Ground SOG (Shadow)
Shared and Public Open spaces

Tests for the availability of sunlight in amenity areas.

3.3.17 It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area that can receive two hours of sun on 21 March is less than 0.80 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March

3.3.3 The availability of sunlight should be checked for all open spaces where it will be required. This would normally include:

- *gardens, such as the main back garden of a house or communal gardens including courtyards and roof terraces*
- *parks and playing fields*
- *children’s playgrounds*
- *outdoor swimming pools and paddling pools, and other areas of recreational water such as marinas and boating lakes*
- *sitting out areas such as those between non-domestic buildings and in public squares*
- *nature reserves (which may have special requirements for sunlight if rare plants are growing there).*

3.3.9 ... Normally trees and shrubs need not be included, partly because their shapes are almost impossible to predict, and partly because the dappled shade of a tree is more pleasant than the deep shadow of a building (this applies especially to deciduous trees). ...

The amenities of the following were tested.

- Communal / Public Spaces should be tested.

BRE 2-hour Shadow Plots

The graphic below indicates the areas which receive 2 hours of sunlight on the 21st March in accordance with the BRE guidelines.

- **Green** represents areas which exceed the 2-hour requirement - pass
- **Red** is less than the 2-hour requirement - fail
- **Orange** are marginal or borderline - just below the 2-hour requirement

The results are tabulated below:

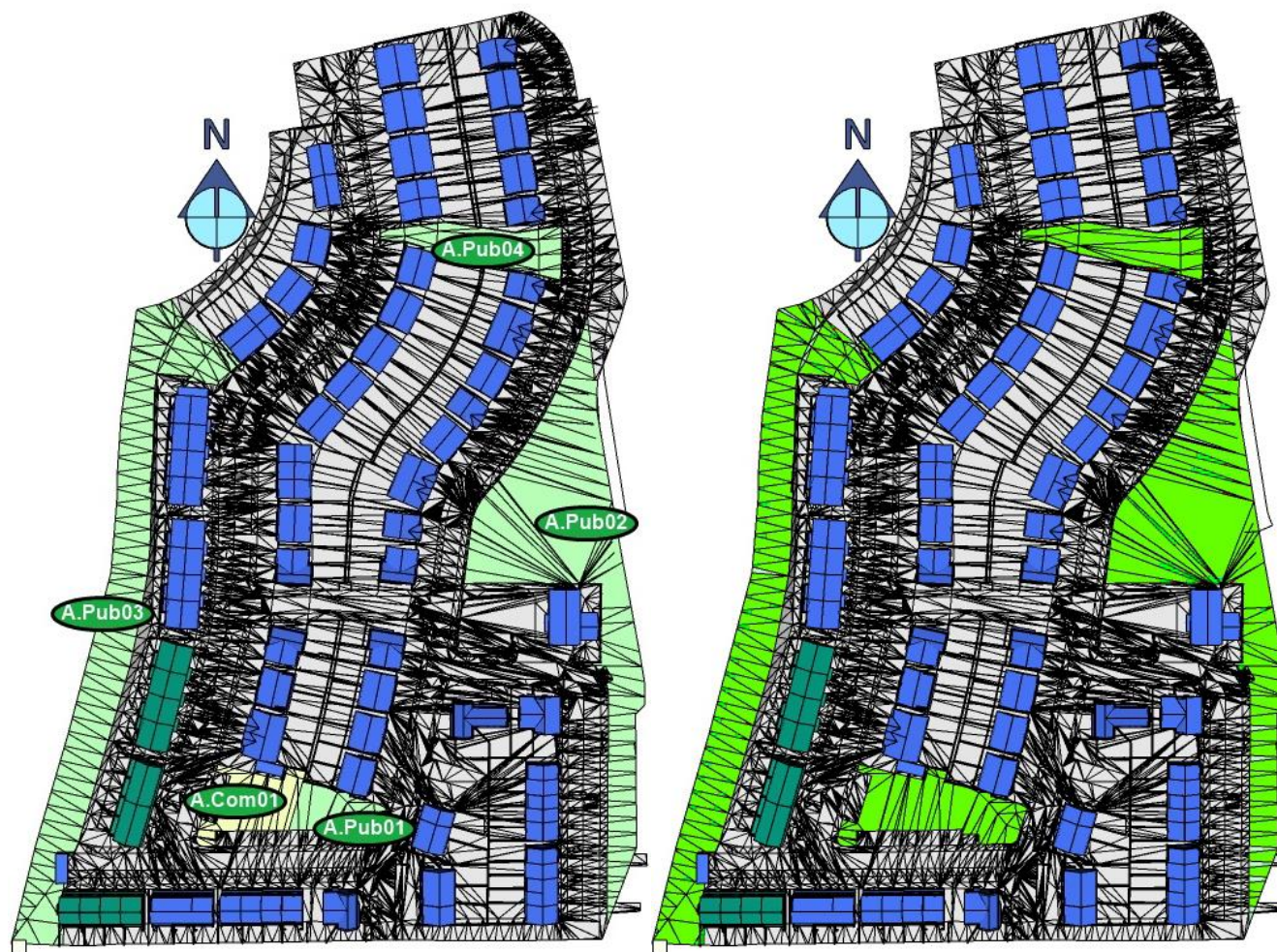
Shadow / Sunlight Amenity				
>50% receives 2 hours of sunlight on 21st March)				
Type	Ref	Ref	% 2hr Sunlight	Check
Communal	Com01	A.Com01	100%	Pass
Public	Pub01	A.Pub01	100%	Pass
Public	Pub02	A.Pub02	100%	Pass
Public	Pub03	A.Pub03	100%	Pass
Public	Pub04	A.Pub04	100%	Pass

Please note that passing the BRE requirements does not imply that shadows will not be cast over an amenity space at all. Shadows which are transient by nature may not impact on the percentage of the space which receives 2 hours of sunlight on the 21st of March.

Conclusion

100% of Shared & Public Amenity spaces pass the BRE requirement.

The tested spaces generally comply with the requirements of the BRE guidelines



Zone References

Bre 2hr Plot

Summary – Development Performance

This report is in compliance with: "Site layout planning for daylight and sunlight a guide to good practice" - BR209". It also references EN 17037 and Annex NA (BS/EN 17037) as and where called for in the above BRE guidance document.

Performance of the proposed design

- **Target Illuminance E_r**
 - **100%** of rooms comply with the BS/EN 17037 Annex NA room targets for 50% of the floor area tested.
 - The average compliant areas achieving the relevant target Lx for
 - all bedrooms is **100%** and
 - all Living/Kitchen spaces **87%**
 - both are well in excess of the required 50%
- **Sunlight to rooms:**
 - **100%** of Living rooms receive 1.5hrs of sunlight on the test day of the 21st March
All are in the high quality range.
- **Sunlight on the Ground SOG (Shadow)**
 - **100%** of Shared & Public Amenity spaces pass the relevant requirements.

The application complies with the recommendations and guidelines of Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice – BR209.

Appendix 1

Light Distribution

Alternative Target Illuminance ET Metric

Non-Annex Analysis

Comparison between the Annex and non-Annex results

And reasoning behind adoption and applicability of the BS/EN Annex

This is a supplementary analysis which does not reflect the performance of the proposed design in temperate climates such as Ireland / UK. There should be no expectation that the design would comply with these requirements.

The NA-annex results in the main body of this report reflect design in such conditions. This is as defined by the UK committee and directly referenced in Irish Department publications such “Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities” July 2023, the Draft consultation document “Sustainable and Compact Settlements: Guidelines for Planning Authorities 2023” and many Development Plans.

**Design Standards / Guidelines
Light Distribution.**

BRE v2 – 2011 / BS 8206-2

The original BRE guidelines “Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice – Second Edition - 2011” was cross-referenced to and from the now withdrawn BS 8206-2 : 2008.

It looked at light distribution within a room based on Average Daylight Factor ADF (an average over the entire room surface) and was based off the CIE overcast sky and results of rooms were based on obstructions, room geometry, ope sizes, radiance and transmittance but was constant from location to location on the globe.

The guidelines and BS standard took into account room usage placing higher degrees of importance on living spaces than to bedrooms, which is a reasonable consideration, given that bedrooms are typically used more at night.

Given that these Standard and Guidelines are withdrawn tests such as ADF are no longer relevant.

BRE v3 – 2022 / EN 17037

The new BRE guidelines “Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice – Third Edition - 2022” provides best guidelines for analysing development while referencing relevant elements of EN 17037 similar to how the withdrawn BRE v2 – 2011 provided best guidelines for analysing development referencing relevant elements of withdrawn BS 8206- 2.

This best practice guideline has been considered the de-facto standard since 1991 and details how to apply EN 17037.

Impact on neighbours and shadow elements are handled only within the BRE guidelines but the EN standard covers some elements of development performance.

EN 17037 also looks at internal light distribution/daylight but in terms of target illuminance over a specific percentage of a room. Target illuminance is driven by the available external light which varies by location on the globe. However, the internal room lux targets Lx we strive to achieve remain unchanged.

There are various tables of requirements (minimum, medium and high), and these are defined for all rooms and do not consider the rooms usage. The minimum targets are:

Rooms	300lx over 50% of room area
AND	100lx over 95% of room area

Localisation

The EN 17037 is designed to be localised and a blank National Annex is provided in for that purpose.

This is an acknowledgement that design will vary in different countries and that adjustment will be needed to take into account available external light which itself drives the internal lux results and other design constraints / objectives. The Irish version of this standard IS EN17037 currently has no specific National Annex

The UK committee, in their examination of this provided recommendations which are pulled through to the National Annex in the UK variant of this document BS EN 17037

Given the similarity of weather, light and design patterns between Ireland and the UK in many areas and the absence of specific localisation Annex information in the IS version it is not unreasonable to apply the BS recommendations at this time. There is considerable precedence in the adoption of such technical recommendations in the engineering and indeed legal professions.

The UK committee acknowledged the difficulty of achieving the primary lux targets outlined in the main body of the report particularly in dwellings in our climates. The Annex recommendations are focused on dwellings which is the subject of the vast majority of our reports. The committee again re-affirmed their commitment that room usage should be considered and set lower target illuminance values accordingly for dwellings based on the same.

Bedroom	100lx over 50% of room area
Living Rooms	150lx over 50% of room area
Kitchens	200lx over 50% of room area

Dual usage rooms use the higher value.

These targets were derived from BS 8206-2:2008 Lighting for buildings – Part 2: Code of practice for daylighting, targets have served us well in the past and which have been the staple for design for years. We have dual run multiple projects BRE v2 (ADF) vs BRE v3 Annex (Et) and as expected they show very similar compliance rates.

Furthermore, the UK committee decided that the target illuminance across the entire (i.e. 95 %) **need not** be applied to rooms in dwellings.

Analysis

We concur with the UK committees’ recommendations for daylight provision in a space may not be achievable for some buildings, particularly dwellings and 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.

The targets defined in the National Annex are linked to the targets have served us well in the past and have been the staple for design for years. The primary results have thus been compiled based on the UK Annex NA targets, tabulated in the report main body.

We have for the avoidance of doubt also provided results based on the non-annex Standard, in Appendix 1. The results for which show that the conclusions of the UK committee were justified and that the standard (non-Annex) targets are unlikely to be achieved in a more densely developed residential sites.

This is in accordance with the Departments “Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities” July 2023 and clause 6.6 which directly references the UK National Annex BS EN17037:2019.

Summary – Light Distribution all habitable rooms for all blocks.

A summary for pass results for all blocks is detailed below.
 And compared with the analysis from Light Distribution – Target Illuminance (Annex NA)

	Annex NA E _T % Pass			Non-Annex 300lx @ 50%			Non-Annex 100lx @ 95%	
	BRE v3	Incl Marginal			Incl Marginal			Incl Marginal
	Pass %	Pass %		Pass %	Pass %		Pass %	Pass %
C (72/79)	100%	100%	C (72/79)	38%	83%	C (72/79)	100%	100%
D (80/87)	100%	100%	D (80/87)	100%	100%	D (80/87)	100%	100%
E (88/95)	100%	100%	E (88/95)	100%	100%	E (88/95)	100%	100%
Total	100%	100%	Total	77%	94%	Total	100%	100%

While the results in this case are extremely good as the Architect has provided excellent fenestration, however, it is our opinion that this concurs with the UK committees’ position that the non-annex targets are too stringent for use for residential buildings and that (in the absence of an Irish National Annex) that the targets provided in the UK Annex NA are reasonable to apply to residential housing in this case.

The above is further endorsed in the Departments “Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities” July 2023 and clause 6.6 which directly references the UK National Annex BS EN17037:2019

This is a supplementary analysis which does not reflect the performance of the proposed design in temperate climates such as Ireland / UK. There should be no expectation that the design would comply with these requirements.

The NA-annex results in the main body of this report reflect design in such conditions. This is as defined by the UK committee and directly referenced in Irish Department publications such “Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities” July 2023, the Draft consultation document “Sustainable and Compact Settlements: Guidelines for Planning Authorities 2023” and many Development Plans.