

SUNLIGHT / DAYLIGHT REPORT

Project No. 20_004

Full Planning Application

New development

Land rear of 37-42

Broadway Parade

RM12 4RN

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PROJECT	Land rear of 37-42 Broadway Parade RM12 4RN
TYPE OF WORK	Construction of new no.3 floors building (GF – FF – SF)
CLIENT	Orbit London Ltd
ARCHITECT	ACArchdesign Ltd
MAIN CONTRACTOR	Orbit London Ltd
STRUCTURAL SUPERV	STROMA BUILDING CONTROL

I. INTRODUCTION

ACA have been appointed to carry out a Daylight / Sunlight study for the proposed development located at Havering Council on the land near Elm Park Station.

The aim of the study is to record and analyse the results for the following:

The expected daylight levels within the living and bedroom areas of each house type and selected apartments, to give an indication of the expected daylight levels throughout the proposed development.

The quality of amenity space, being provided as part of the development, in relation to sunlight.

Any potential overshadowing impacts the proposed development may have on properties adjacent to the site. The calculation methodology for daylight and sunlight is based on the British Research Establishments "Site Layout Planning for Daylight and Sunlight: A Good Practice Guide" by PJ Littlefair, 2011 Second Edition.

This statement has been prepared in support of the Full Planning Application for:

- Land rear of 37-42 Broadway Parade RM12 4RN.

The development proposed is described as:

- New construction of Building with no. 3 floors levels with no. 6 flats in total, (no.4 single bedroom flats for two people & no.2 double bedroom flats for three people).

The statement also is in according with the outline proposals for new residential building approved with application Ref. P1855.19 Outline and with all accurate amendment indicated on the report Ref. PE/00603/20.

II. SITE CONTEXT

The site is located in Havering Council on Land rear of 37-42 Broadway Parade RM12 4RN.

The site encompasses an L-shaped plot which is bounded to the North by a single storey outbuilding at the rear incorporating three storey pitched roof buildings facing Elm Park Avenue with retail to the ground floor and residential above, to the east by the 4no. storey flats roofed housing blocks of Diban Court and to the south by the access road serving the rear of Broadway Parade 4 storey house (from the rear side) and some garages, a road that lies off Diban Avenue. In addition, there is a single storey bin storage structure to the west and a substation.

Vehicular access to the site is in place and from Diban Avenue whilst a further pedestrian access is also available via a stairwell between two blocks on The Broadway. Both access routes are in the ownership of Havering Council.

The train line serving Elm Park Station lies at the southern boundary of the access route. The site is brownfield in nature and currently used for unauthorised parking.

III. PLANNING HISTORY

- **P1291.17** - 2 residential units and associated parking and area improvements that will go along with the development. - Approved - 23rd August 2018
- **P0269.19** - Outline planning application for eight one bedroom dwellings and associated parking with area improvements to go alongside the development - Refused - 20th February 2019
- **Appeal Reference APP/B5480/W/19/3231705** - Appeal in relation to the decision of Havering Borough Council decision P0269.19. Appeal Dismissed 5th December 2019
- **P1855.19** - Outline planning application for four one bedroom dwellings and associated parking with area improvements to go alongside the development. - Approved - 3rd April 2020
- **PE/00603/20** – Pre-application advice for 7no. residential dwellings and associated parking with area improvements to go alongside the development. - Not supported - 29th October 2020

Outline permission was granted in 2020 for a scheme comprising of a three-storey building with four self-contained units.

A further application was refused in February of 2019 for a proposal for a 5-storey unit comprising of eight one bedroom self-contained units.

This decision was upheld at appeal primarily due to the following factors:

- 1) The height and bulk of the building would erode the open space between the existing buildings at Diban Court and along the parade;
- 2) The impact of the proposed development on the amenity enjoyed from existing properties due to the likely height of the building, particularly referencing no.42 of the Broadway.
- 3) Though the inspectorate's contemplation of the scheme was not in complete agreeance with the conclusions of the Council, in essence reasons for refusal one and two were upheld.

IV. PROPOSAL

The proposal sought through this application seeks permission for a building that is generally in conformity with the scale, mass and bulk of the scheme indicated on the report via Pre-application advice PE/00603/20 and application P1855.19 also according the follow up advice report.

It is suggested that the principle of development for residential use on this site has been established and is not contested by the Council.

The indicative drawings illustrate a 3-storey building in a similar location with residential uses to the first and second floor, including the roof loft, whilst the ground floor includes refuse and cycle storage and left side of the building and another flat.

It is noted within the case officer report in relation to application reference P0269.19 that 1 bedroom 1 person units would need to have a gross internal area of at least 39sqnn (37sqnn in the case of a shower room).

The scheme submitted alongside this application illustrates:

- GROUND FLOOR
 - No.1 single bedroom flat unit (2p) of 50sqm GIA;
 - Main entrance with staircase;
 - Bin and Cycle storage;
 - No.2 undercroft car parking
- FIRST FLOOR & SECOND FLOOR
 - No.1 single bedroom flat unit (2p) of 50sqm GIA (each floor);
 - No.1 double bedroom flat unit (3p) of 62sqm GIA (each floor);
- LOFT FLOOR (set back from the boundary and calculated to be included inside the supposed roof line)
 - No.1 single bedroom flat unit (2p) of 50sqm GIA;

The site would also be able to accommodate amenity space of 5sqm balcony for each unit and a small rear garden area to act as shared amenity space. Slightly larger units are achievable, in line with the floor plans associated with P0269.19.

It is not considered that the design and layout of the floor plans was viewed unfavourably within the decision-making process of P0269.19.

The layout of the units has regard to the decisions in both applications considered on the site to date and primary living areas have been placed overlooking the stretch of land to the south of the site which is within the same ownership. The scheme is anticipated to have no further impact on the amenity of neighbouring properties than that approved in relation to P1291.17.

This new solution layout, after the last Pre-Application advice PE/00603/20, was totally reduced like the first outline on P1855.19.

The bulk and mass of the new proposed building are reduced in line with the circumstance indicated on the report with maximum height of 8.20m, set back and reduce the left side with possibility to have the minimum space standard covered.

Particular attention is made on relation to the privacy, overlooking, noise and also regarding the owner open space (as a parking) and the rear space of the adjoining properties, so why the boundary will leave open so as to give greater permeability to the space and give concession to use and access of surrounding properties as well.

V. METHOD & GUIDELINES

In order to ensure that sunlight and daylight levels are maximised for the proposed new residential development, a number of key design issues were analysed during concept design stages.

a. BUILDING MATERIAL SELECTION

The selection of materials plays an important role in ambient daylight levels. The building façades have been carefully selected to promote a sense of brightness and light. This will ensure light is reflected throughout the development.

b. GLAZING TO WALL RATIO

The primary function of the glazing to wall ratio is to maximise daylight within the space while reducing solar gains within the proposed development. The other advantage in conjunction with appropriate materials is that the lighter surfaced, reflective materials used externally, the more ambient daylight will be reflected to the surrounding areas. Extensive analysis was completed on subject development to ensure glazed openings were maximised to promote access to daylight levels. In addition, floor to ceiling heights for apartments of 2.5m further enhance the opportunity for improved daylight levels.



c. BRE GUIDELINES

In considering the development potential and the quality of amenity for the new development as well as for the surrounding properties once the scheme has been implemented, the analysis has been based on the Building Research

Establishment (BRE) guidelines on “Planning for Daylight and Sunlight” and a guide to “Good Practice (Building Research Establishment Report, 2011).”

These guidelines provide the criteria and methodology for calculations pertaining to daylight and sunlight, and is the primary reference for this matter. The guide gives simple rules for analysing sites where the geometry of the surroundings is straightforward, supplementing them with graphical methods for complex sites.

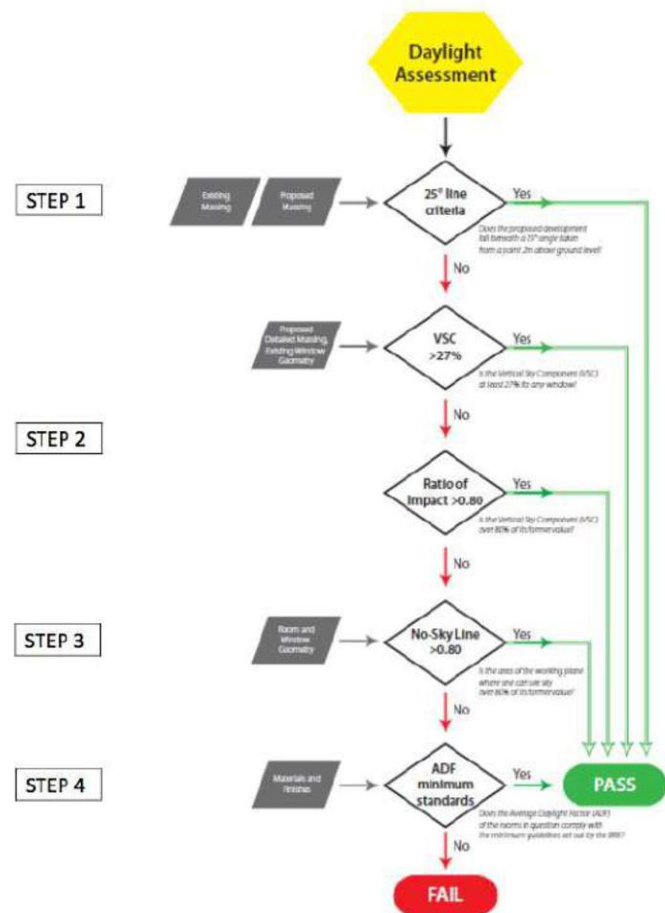
However, it is important to note that the performance targets which are included should be used with a degree of flexibility as per the extract below from the BRE Guide:

“The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the designer. Although it gives numeral guidelines these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design.”

d. IMPACT METHODOLOGY

As per the BRE Guidelines it is important to safeguard the daylight to nearby buildings, from a proposed development, where a reasonable expectation of daylight is required.

The flow matrix below outlines the criteria to be assessed, as per the BRE Guidelines, in order to ascertain any potential impact to adjacent buildings from the proposed development.



Steps on the criteria of compliance

As per the flow matrix, the BRE and BS8206 guidelines provide four main methods for assessing daylight availability.

i. 25° LINE CRITERIA

In the first instance, if a proposed development falls beneath a 25° angle taken from a point 1.6 metres above ground level from any adjacent properties, then the BRE say that no further analysis is required in relation to impact on surrounding properties as adequate skylight will still be available. In our case this method was used to analyse the daylight impact on the surrounding properties once the development is in place. The analysis has shown that all adjacent properties haven't been affected by our development.

ii. VISIBLE SKY COMPONENT

The second method is known as the Vertical Sky Component (VSC). The VSC calculation is the ratio of the direct sky illuminance falling on the outside of a window, to the simultaneous horizontal illuminance under an unobstructed sky. The BRE Guide sets out two guidelines for the VSC:

- If the VSC at the centre of the existing window exceeds 27% with the new development in place, then enough sky light should still be reaching the existing window.
- If the VSC with the new development in place is both less than 27% and less than 80% its former value, then the reduction in light to the window is likely to be noticeable.
- This means that even if the VSC is less than 27%, as long as the reduction in the VSC value is less than 20% of its former value, this would be acceptable and thus the impact would be considered negligible.

It is important to note that the VSC is a simple geometrical calculation which provides an early indication of the potential for daylight entering the space. However, it does not assess or quantify the actual daylight levels inside the rooms. If the VSC standard is not met on any window, a more detailed assessment based on the Average Daylight Factor should be undertaken.

The following scenarios are modelled to determine the impact:

- Baseline Scenario: Existing condition for the properties selected for VSC in relation to the application site;
- Impacts: Comparison between existing and proposed condition for the selected properties in relation to the application site.

iii. NO SKY LINE

The third method is the No Sky Line or Daylight Distribution Method. This method assesses the change in position of the No Sky Line between the existing and proposed situations. It does take into account the number and size of windows to a room, but still does not give any qualitative or

quantitative assessment of the light in the room, only where sky can or cannot be seen. Thus, as this method is limited, it was not used as part of the analysis.

iv. AVERAGE DAYLIGHT FACTOR

The final method of calculation is the Average Daylight Factor (ADF). This is a more detailed and thus more accurate method which considers not only the amount of sky visible from the vertical face of the window, but also the window size, room size and room use. Where dimensions for the room to be assessed are available, this is the best method of assessment, but even where they are not, it provides a very informative result. It gives guidance as to the qualitative and quantitative change in daylight and is related to the British Standard BS 8206 Part II.

This step is only utilised for assessing the impact to adjacent properties where compliance is not achieved using the VSC analysis. The properties selected for VSC have shown compliance under the VSC method and therefore this step was not required.

e. IDENTIFYING SENSITIVE RECEPTORS

In order to undertake the assessment, prior to following the flow matrix, first the key sensitive receptors around the site need to be identified. According to the BRE Guide sensitive receptors are described as:

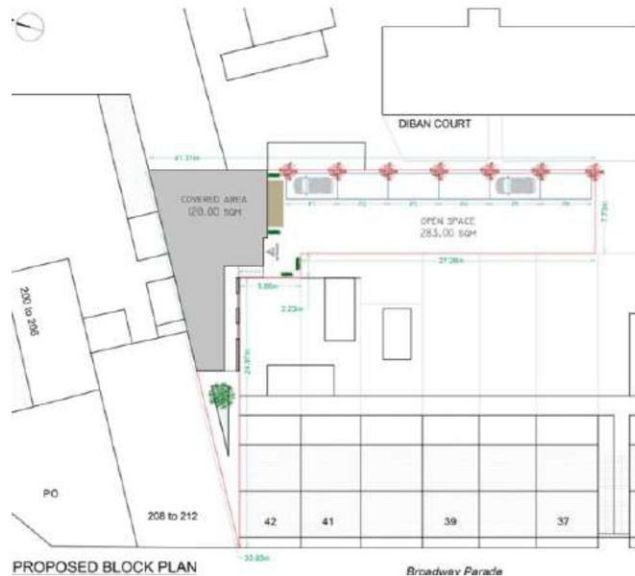
- Habitable rooms in residential buildings, where the occupants have a reasonable expectation of daylight.
- Other sensitive receptors are gardens and open spaces on adjacent properties to the new scheme, excluding public footpaths, front gardens and car parks. In accordance with the BRE Guide, windows are selected as sensitive receptors on the basis of being a habitable room facing the proposed development. Similarly, amenities and open spaces are selected on the basis of being in the immediate vicinity of the proposed development. A primary purpose of a daylight, sunlight and overshadowing assessment is to determine the likely loss of light to adjacent buildings resulting from the construction of the proposed development. Therefore, in this case, the proposed development is identified as the potential source of impact. The sensitive receptors identified for this study are windows of habitable rooms facing the site where the occupants have a reasonable expectation of daylight.

VI. SUNLIGHT, SHADOW & DAYLIGHT ASSESSMENT

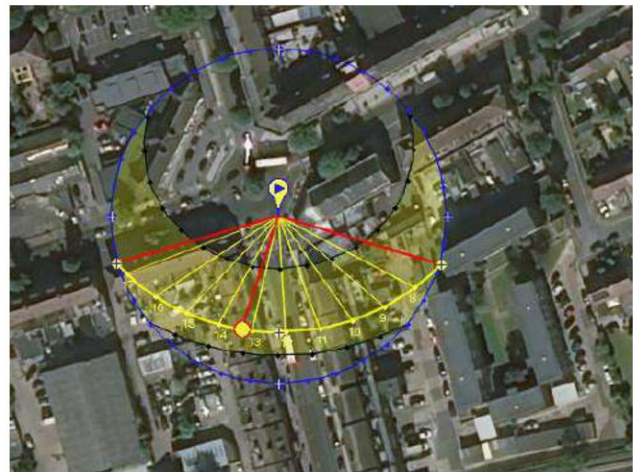
a. SUNLIGHT ANALYSIS

BRE Guidelines recommend that for external amenity spaces to appear adequately sunlight throughout the year, at least half of the garden or amenity space should receive at least two hours of sunlight on March 21st.

The image below outlines the communal amenity spaces provided to the blocks of apartments within the development, which have been analysed.



In the next series of images was analysed how sunlight will work with proposed development. It can be seen that all the surrounding area to apartment block easily achieve 2 hours of direct sunlight, and therefore the amenity spaces within the development are in line with the BRE recommendations for sunlight to amenity space.



In order to analyse the impact on sunlight for the adjacent properties, the properties have been selected for analysis as they are falling inside the 25° line criteria and they are placed to the North of the proposed development, therefore considered 'worst case'. For the property falling inside the 25° line no impact on the sunlight will be perceived from the proposed development and the apartments achieve at least two hours of sunlight on 21st March with the development in place, therefore showing compliance with BRE Guidelines.

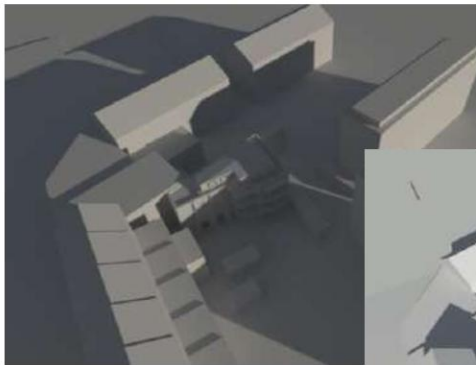
b. SHADOW ANALYSIS

As stated above, the proposed development has been selected for analysis, as they are considered the 'worst case' and therefore representative of the rest of

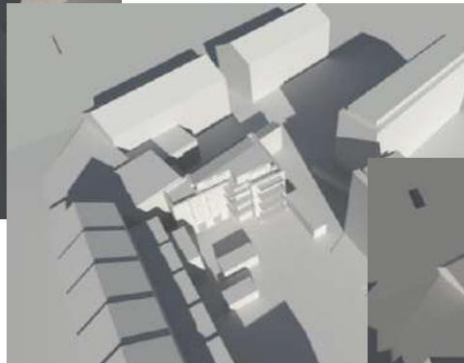
adjacent properties, the reason behind is that they fall inside the 25° line criteria and they are placed to the north of the proposal.

The following images show the expected shadow from the proposed development on base study of three months for the full year with on March 21st, for 10 a.m., 1 p.m. and 3 p.m.

December – January – February



h. 9:00 am

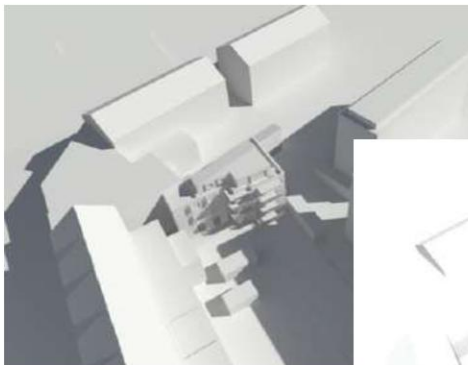


h. 12:00 am

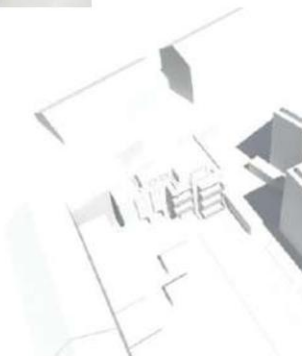


h. 4.00 pm

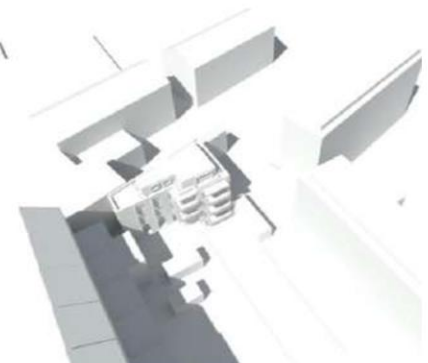
March – April – May



h. 9:00



h. 12:00 am

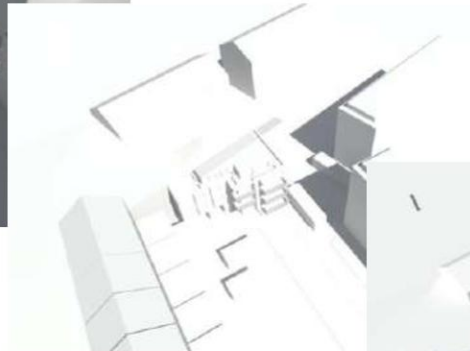


h. 4.00 pm

June – July – August



h. 9.00 am



h. 12.00 am



h. 4.00 pm

September – October - November



h. 9.00 am



h. 12.00 am



h. 4.00 pm

c. DAYLIGHT ANALYSIS

The method of calculation selected for the internal daylight analysis for this development is the Average Daylight Factor (ADF). This is the most detailed and thus most accurate method which considers not only the amount of sky visible from the vertical face of the window, but also the window size, room size and room use.

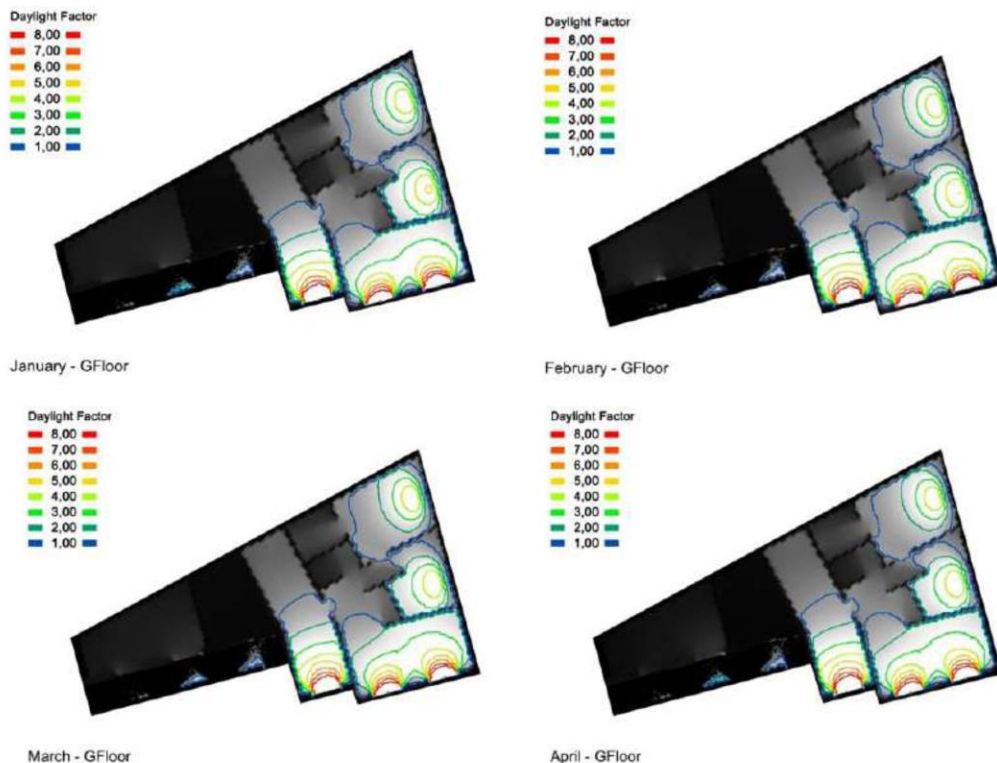
Architectural plans and elevations provided by the architect proposal formed the basis for internal daylight assessment.

In order to quantify the quality of daylight within a space as per BRE Guidelines, the British standards BS8206 sets out minimum daylight factors to be achieved in new build residential units.

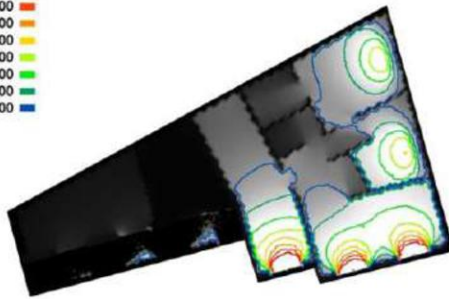
In order to analyse the ADF within the proposed residential development, simulations have been completed within the IES VE Software package.

A detailed model of the development has been constructed within the software. The model includes the proposed development as well as the surrounding buildings adjacent to the site, heights of surrounding buildings have been taken from survey data.

GROUND FLOOR ANALYSIS

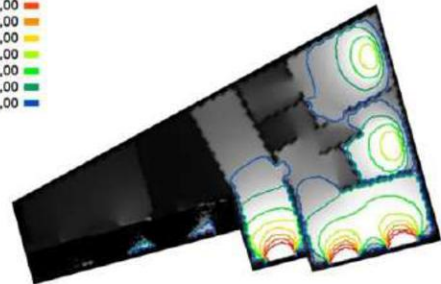


Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



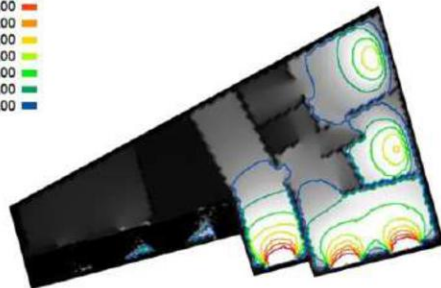
May - GFloor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



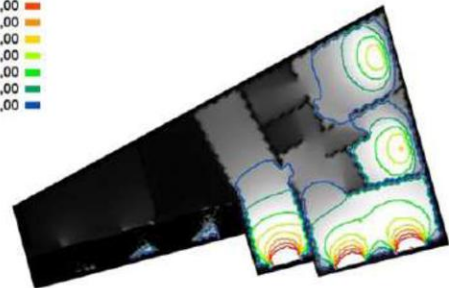
June - GFloor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



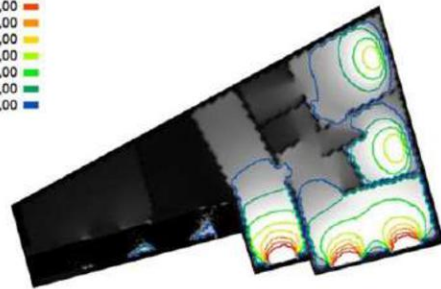
July - GFloor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



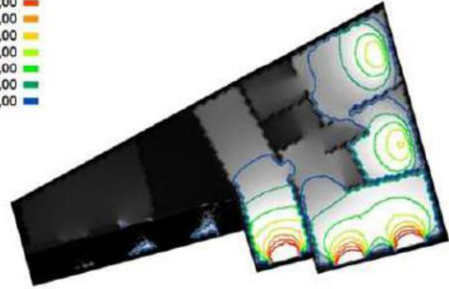
August - GFloor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
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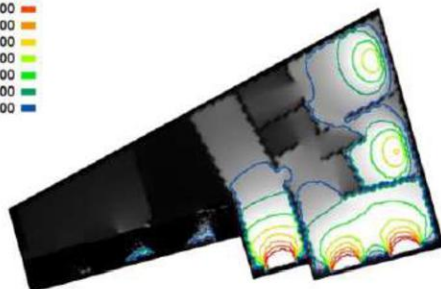
September - GFloor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



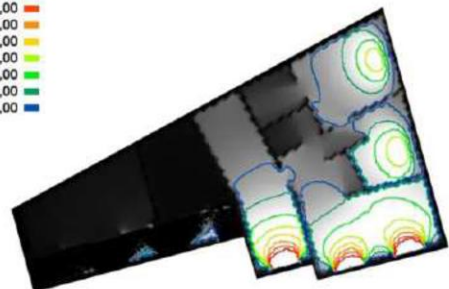
October - GFloor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00

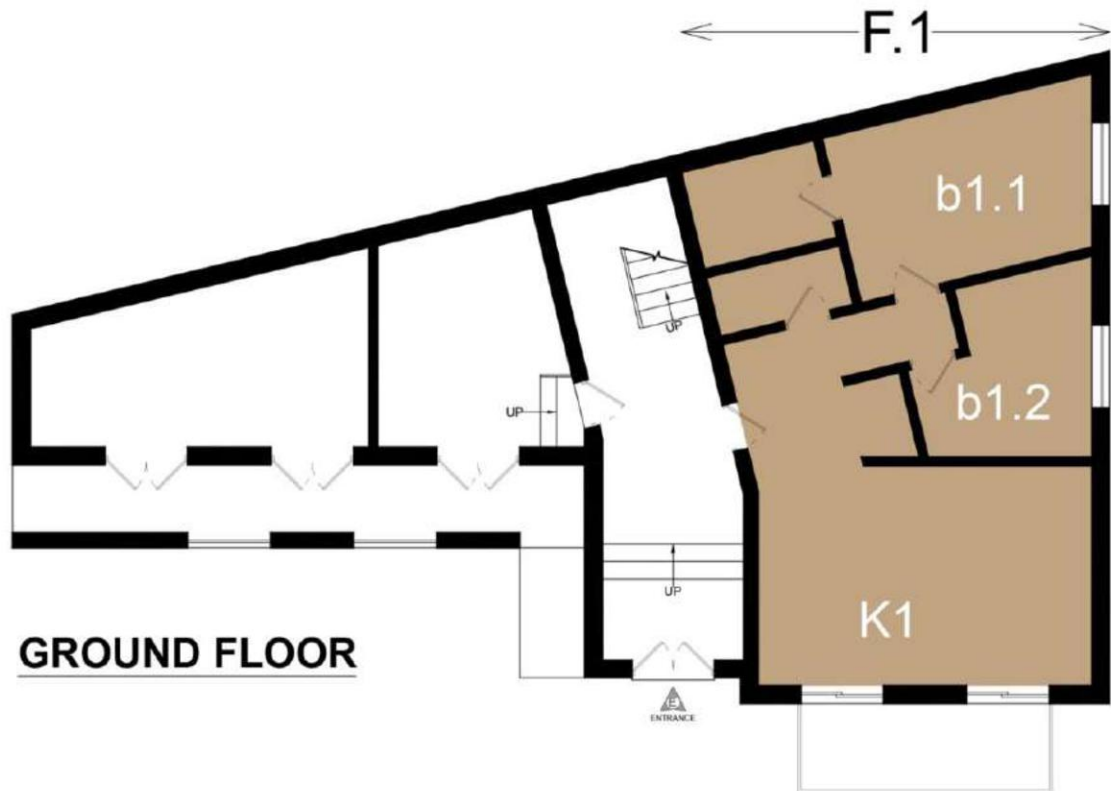


November - GFloor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



December - GFloor



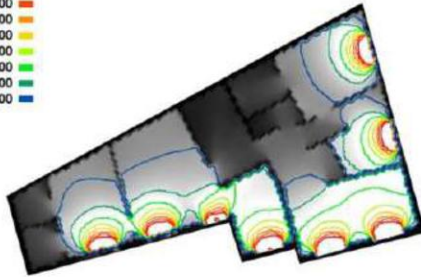
GROUND FLOOR – Double bedroom (F.1)		
K1	b1.1	b1.2
Kitchen / Living Room / Dining	Bedroom1	Bedroom2
5.20	3.5	3.6
ok	ok	ok

Minimum values to achieve compliance

Kitchen 2.0 – Living room 1.5 – Bedroom 1.0

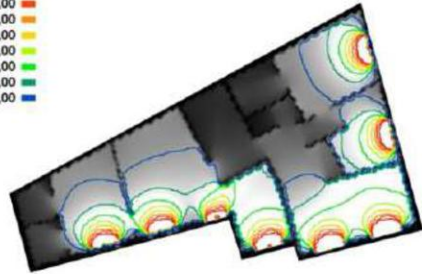
FIRST/SECOND FLOOR ANALYSIS

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



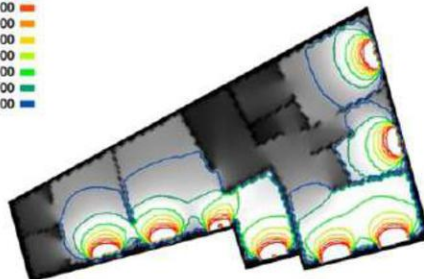
January - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



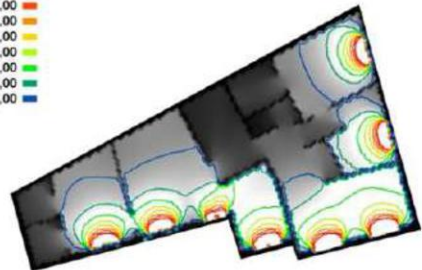
February - F&S Floor

Daylight Factor
8,00
7,00
6,00
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4,00
3,00
2,00
1,00



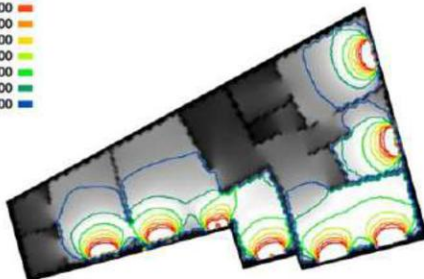
March - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



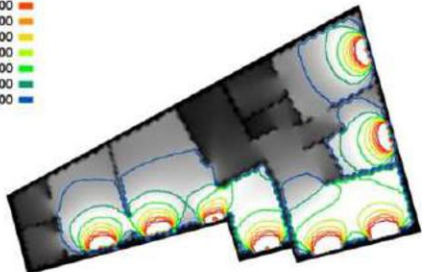
April - F&S Floor

Daylight Factor
8,00
7,00
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5,00
4,00
3,00
2,00
1,00



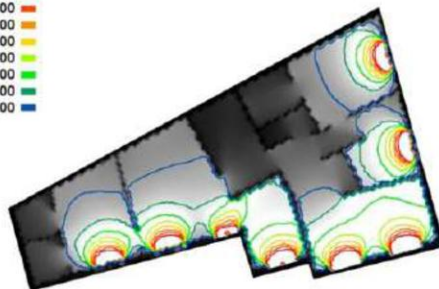
May - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



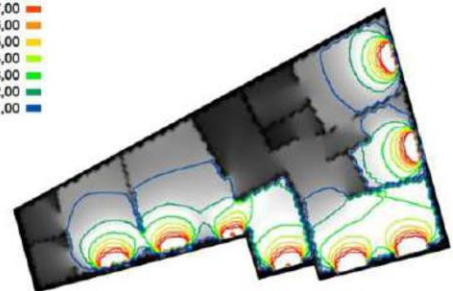
June - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



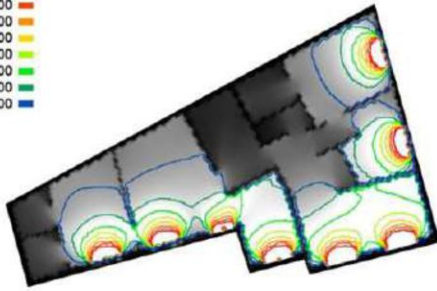
July - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



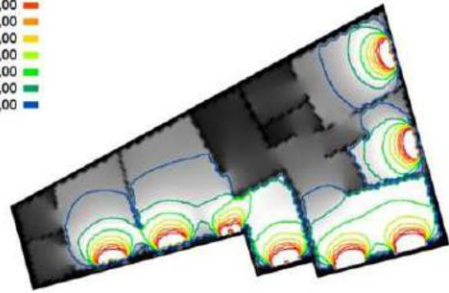
August - F&S Floor

Daylight Factor
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00



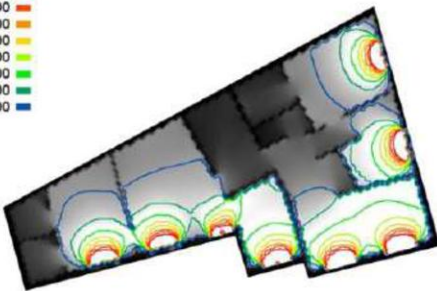
September - F&S Floor

Daylight Factor
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00



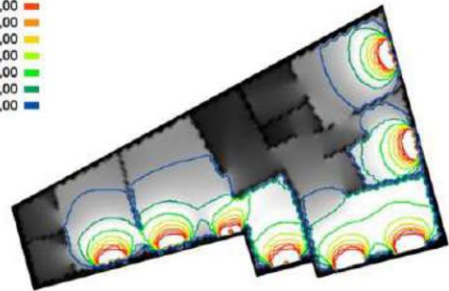
October - F&S Floor

Daylight Factor
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00



November - F&S Floor

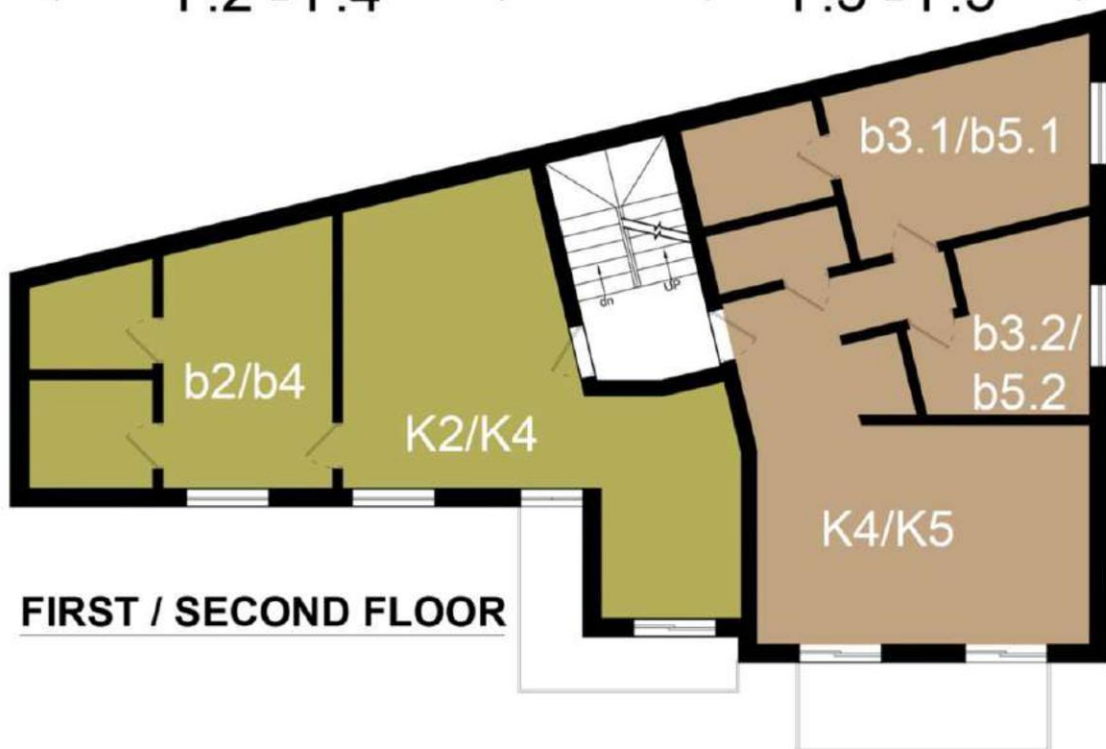
Daylight Factor
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00



December - F&S Floor

← F.2 - F.4 →

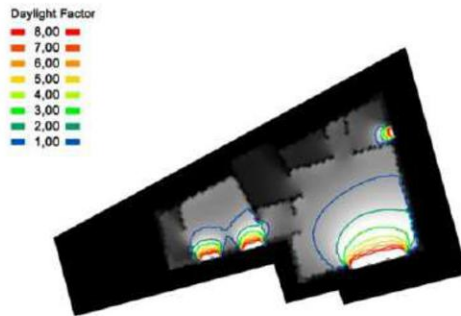
← F.3 - F.5 →



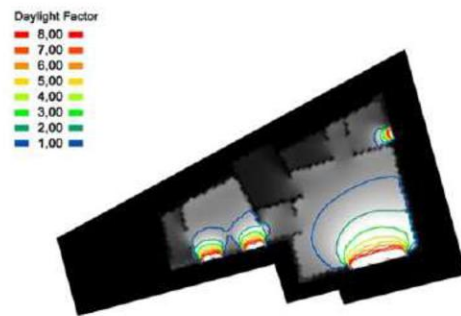
Minimum values to achieve compliance
Kitchen 2.0 – Living room 1.5 – Bedroom 1.0

FIRST / SECOND FLOOR - Single bedroom (F.2 – F.4)		
K2/K4	b2 / b4	
Kitchen / Living Room / Dining	Bedroom	
4.35	3.85	
ok	ok	
FIRST / SECOND FLOOR - Double bedroom (F.3 – F.5)		
K3/K5	b1.1	b1.2
Kitchen / Living Room / Dining	Bedroom1	Bedroom2
4.95	4.20	4.70
ok	ok	ok

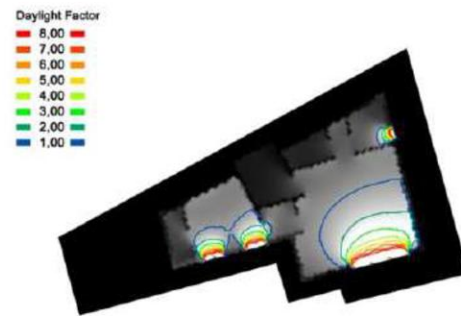
LOFT FLOOR ANALYSIS



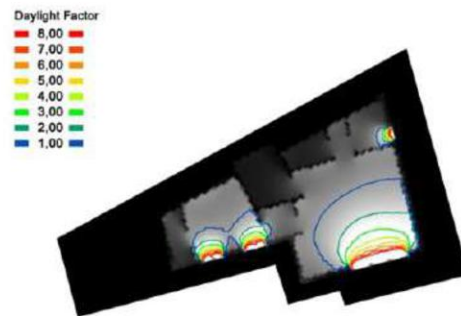
January - F&S Floor



February - F&S Floor

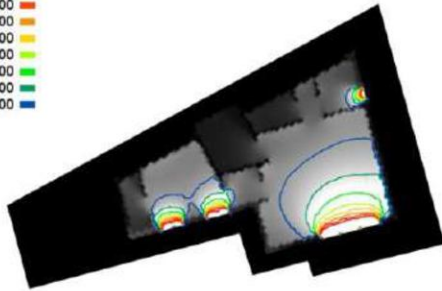


March - F&S Floor



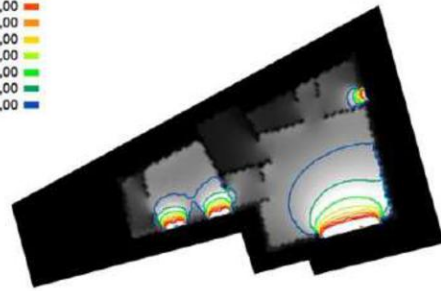
April - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



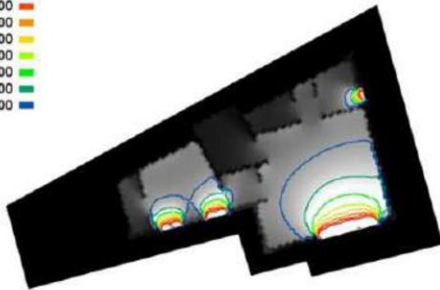
May - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



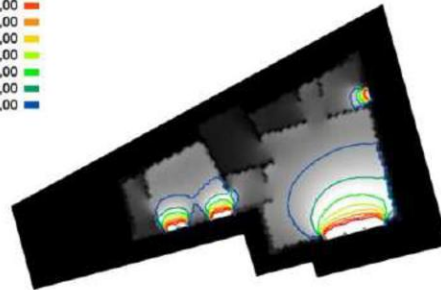
June - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



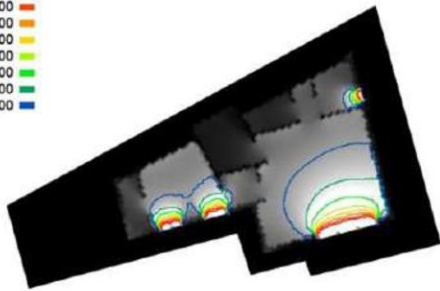
July - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



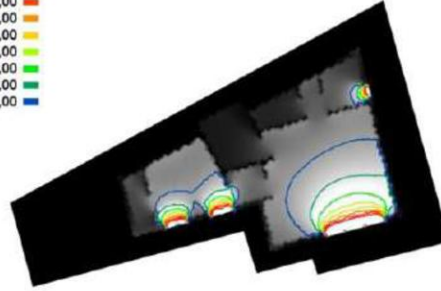
August - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



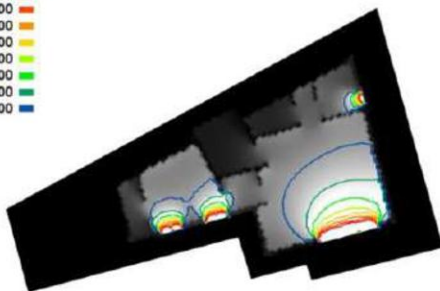
September - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



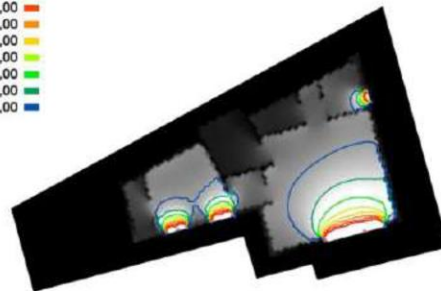
October - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00

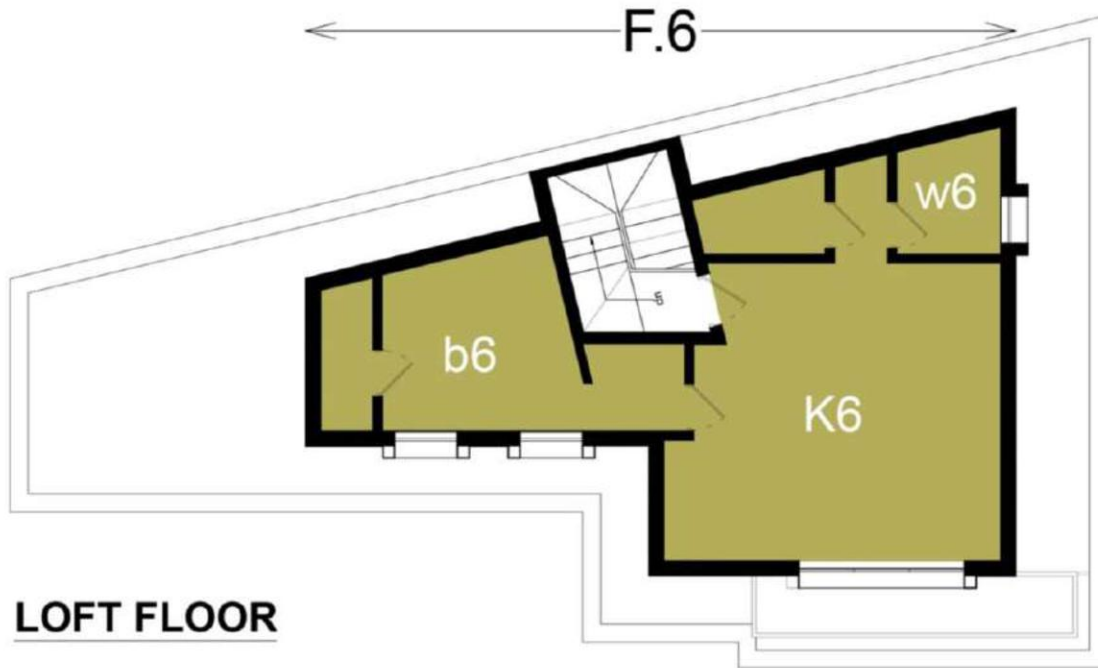


November - F&S Floor

Daylight Factor
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00



December - F&S Floor

**LOFT FLOOR**

Minimum values to achieve compliance
 Kitchen 2.0 – Living room 1.5 – Bedroom 1.0

LOFT FLOOR – Single Bedroom (F.6)		
K6	b6	w6
Kitchen / Living Room / Dining	Bedroom1	Bedroom2
5.20	3.5	3.6
ok	ok	ok

VII. CONCLUSION

The proposed development has been evaluated and analysed in order to determine the following:

- The expected daylight levels within the living and bedroom areas of selected apartments, to give an indication of the expected daylight levels throughout the proposed development.
- The quality of amenity space, being provided as part of the development, in relation to sunlight.

- Any potential overshadowing impact that the proposed development may have on properties adjacent to the site;
- Calculations and methodology used are in accordance with BRE Guidelines for daylight and sunlight and based on the British Research Establishments "Site Layout Planning for Daylight and Sunlight: A Good Practice Guide" by PJ Littlefair, 2011 Second Edition, however, the following should be reiterated as previously outlines; "The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the designer. Although it gives numeral guidelines these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design".

Internal Daylight

The analysis of the confirms the recommendations outlined within the BRE guidelines are achieved across the entire development. All analysed rooms meet and in the majority of cases greatly exceed the required internal daylight levels. In all cases generous floor to ceiling heights have been designed into the project with glazing areas being maximised to amplify the quality of daylight received. In addition, careful consideration has been given to room layout design attributing store rooms and circulation areas to the back of rooms and living spaces to the front where the highest level of daylight is experienced.

Sunlight Analysis

The analysis undertaken has shown that more than 90% of the amenity spaces receive at least two hours of sunlight on March 21st, exceeding the minimum requirement of two hours of sunlight on more than the 50% of the amenity space on March 21st and showing compliance with the BRE Guidance.

Impact to Surrounding Properties

Analysis has confirmed that the proposed development is in compliance with the BRE Guidance in relation to impact to surrounding properties, with VSC analysis confirming no impact is perceived to the adjacent selected properties.

Therefore, the assessment demonstrated that the proposed development achieves acceptable levels of daylight and sunlight levels, meeting or exceeding the values set out on the British Standard and BRE guidelines.