Internal Daylight, Sunlight and Overshadowing Report
November 2023

ABERFELDY VILLAGE MASTERPLAN

DAYLIGHT & SUNLIGHT

INTERNAL DAYLIGHT, SUNLIGHT AND OVERSHADOWING REPORT

Aberfeldy Village Masterplan

06 November 2023

GIA No: **15382**

PROJECT DATA:

Client	**Ecoworld**
Architect	**Morris and Co. & Levitt Bernstein**
Project Title	**Aberfeldy Village Masterplan**
Project Number	**15382**

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Prepared by	**FC/PDA**
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Rev. A	1	06-04-2022	Assessment of Jolly's Green and the strip of land to the north of it. Correction of one typo in the stats for Block J in section 5.2	PCA
Rev. B	2	19-10-2022	Removal of Block A3 and re-assessment of the daylight, sunlight and overshadowing based on the new version of the BRE guidelines released in June 2022	PCA
Rev. C	3	30-01-2023	Re-assessment of daylight and sunlight within Phase A Blocks F and I following the introduction of additional staircases to improve fire safety	PCA
Rev. D	4	06-11-2023	Re-assessment of daylight and sunlight within Phase A Block H1-H2 and within all Outline Proposals following the introduction of additional staircases in all buildings over 18m in height. Update of floor plans on pages 69, 81, 83 and 97-103 to reflect primarily labelling changes, and some minor internal adjustments not impacting daylight and sunlight results.	PCA

SOURCES OF INFORMATION:

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CONTENTS

1 EXECUTIVE SUMMARY

This report supersedes the Internal Daylight, Sunlight and Overshadowing Report dated January 2023 previously submitted in support of the Hybrid Application (LBTH Ref: PA/21/02377/A1 and GLA Ref: 2023/0300/S3) and should therefore be read on a standalone basis.

Following a resolution to refuse planning permission by the London Borough of Tower Hamlets (LBTH) Strategic Development Committee (SDC) in February 2023, and the subsequent direction that the Mayor of London will act as the local planning authority for the purposes of determining the Hybrid Application, the design of the scheme has been amended to accommodate second staircases in all buildings over 18m in height.

For the sake of completeness only it should be noted that the above referenced amendments follow previous amendments to the Hybrid Application, made prior to its consideration by the LBTH SDC, the assessments of which were set out within previous revisions of this Internal Daylight, Sunlight and Overshadowing Report. In summary the previously assessed charges were: the incorporation of Jolly's Green within the red line boundary, the removal of the previously proposed Block A3 and associated increase in open space and play space, an increase in the number of affordable rented family homes, and the inclusion of second staircases in Plots F & I.

Further information is set out within the accompanying Covering Letter (as prepared by DP9 Ltd, dated November 2023) and the updated Planning Statement (as prepared by DP9 Ltd, dated November 2023).

This report presents the final assessments for all the proposed habitable rooms within the Detailed Proposals according to the methodology and criteria set out in the BRE guidance 'Site Layout Planning for Daylight and Sunlight a Guide to Good Practice (2022)' and the BS EN 17037:2018 and relative UK National Annex.

In addition, this report includes a daylight and sunlight assessment for the Outline Proposals, and the assessment of the overshadowing on all proposed open spaces. Both the overshadowing and the internal daylight and sunlight analyses have been carried out in the cumulative scenario to portray the worst-case conditions of all neighbouring consented schemes considered as built.

GIA have worked alongside the design team throughout the design process in order to maximise the daylight and sunlight amenity within the Proposed Development. To this end, a number of preliminary assessments have been undertaken and design strategies incorporated to enhance the quality of light within the proposed accommodation and sunlight amenity in the proposed open spaces. Further details can be found in section 5.1 of this report.

For daylight, overall 681 (78.9%) out of all 863 habitable rooms meet or exceed the recommended levels of spatial Daylight Autonomy (sDA) within the UK National Annex. This figure considers the higher recommendation of 200 lux for combined Living/Kitchen/Dining spaces and studios.

In addition, a further 67 (7.7%) rooms would only fall slightly short of recommendation and so a total of 748 (86.7%) rooms are considered to offer good daylight levels in the context of this urban regeneration. More details can be found in section 5.2.

As is to be expected of any urban environment, lower levels of daylight are seen typically on the lowest floors and where rooms are located beneath a balcony. The design has incorporated strategies to make the best use of the available daylight within these areas of the scheme.

For sunlight, 223 (80.5%) out of all 277 proposed dwellings meet the criterion of at least one habitable room receiving at least 1.5 hours of sunlight on 21st March.

As is to be expected in any urban environment, especially in areas of large scale regeneration such as Aberfeldy, lower levels of daylight and sunlight are seen typically on the lowest floors and where rooms are located beneath a balcony.

A VSC façade study has been undertaken for the Outline Proposals to gauge the daylight potential of these blocks. Overall, with 66% of all facades seeing VSC levels in excess of 27% and a further 23% (a total of 89%) seeing VSC levels above 15%, it is considered that the Outline Proposals have very good daylight potential. In the remaining few areas (11% of all facades) where lower levels of VSC are seen, as it is typical of any masterplan, acceptable levels of light can still be achieved in future RMAs adopting a few mitigating design solutions such as larger windows, shallow layouts, lighter internal finishes and an optimised balcony strategy.

Similarly, 82% of all facades would see at least 90 minutes of sunlight on 21st March and so the units that will be designed at RMA stage have potential to exceed the recommendation of at least 1.5 hours of sunlight in one habitable room at the equinox.

With regard to overshadowing within Phase A, all but one of the proposed communal spaces exceed the recommendation by BRE, providing excellent sunlight amenity outdoors. The only area falling short of recommendation is the northern rooftop terrace of Block H3 which, however, sees good levels of sunlit throughout all summer months and can still be considered adequately sunlit overall.

In addition, Jolly's Green, the strip of land to the north of Jolly's Green, Braithwaite Park and Leven Road Green too exceed BRE's recommendation and will be well sunlit throughout the year.

All outdoor spaces within the Outline Proposals have also been tested. The ground floor public realm including the Allotments, Highland Place, Nairn Square, the Square and Culloden Green would see very good levels of sunlight, exceeding BRE's recommendation and being well sunlit throughout the year. The four proposed courtyards would fall short of recommendation on 21st March. This is a typical occurrence in courtyard shaped blocks which are enclosed from all sides. The vast majority of these areas would see in excess of three hours of sunlight in June. Three of the four courtyard blocks are provided with rooftop amenity spaces, all of which far exceed recommendation and will be excellently sunlit throughout the year. Further details can be found in section 5.3.

Millennium Green is located outside the Site's boundary and so it is not included in this report, but it is assessed in Chapter 14 of the Environmental Statement "Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare" and relative Annex 5. Within this document, this area is identified as Overshadowing Sensitive Receptor n. 44 and sees no impacts by the Masterplan, with 100% of its space retaining in excess of two hours of sunlight on 21st March, far in excess of BRE's recommendation.

In conclusion, the Proposed Development has been optimised to provide future residents with good daylight and sunlight amenity.

The vast majority of units and open spaces will have access to good levels of natural light, with only a relative small number of spaces seeing levels marginally below recommendation or less. This is a typical occurrence in areas of large-scale regeneration. Overall it is considered that good daylight and sunlight amenity is provided across the masterplan.

The conclusions within this report do not materially alter those in the superseded January 2023 report.

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2 INTRODUCTION

GIA has been instructed to provide a report upon the potential availability of Daylight and Sunlight to the residential accommodation within the Detailed Proposals prepared by Morris and Co. Architects, and to the overshadowing within the Outline Proposals designed by Levitt Bernstein. GIA was specifically instructed to carry out the following:

- To create a 3D computer model of the proposal based upon drawings prepared by Morris and Co Architects and Levitt Bernstein of Blocks: F, H, I and J.
- Carry out a daylight assessment for the above blocks using the methodologies set out in the BRE guidance for Spatial Daylight Autonomy (sDA),
- Carry out a sunlight assessment for the above blocks using the methodologies set out in the BRE guidance for Sunlight Exposure,
- Carry out a daylight and sunlight potential assessment on the Outline Proposals of the Masterplan,
- Carry out an overshadowing assessment using the methodology set out in the BRE guidance for Sun Hours On Ground (SHOG) for all relevant amenity areas.
- Prepare a report setting out the analysis and our findings.

3 RELEVANT GUIDANCE

The Building Research Establishment (BRE) have set out in their handbook 'Site Layout Planning for Daylight and Sunlight a Guide to Good Practice (BR 209 2022)', guidelines and methodology for the measurement and assessment of daylight and sunlight within proposed buildings.

BRE's guidance BR209 (2022 edition) 'Site layout planning for daylight and sunlight: a guide to good practice' is to be read in conjunction with BS EN 17037:2018 "Daylight in buildings", the UK National Annex of the British Standard and the CIBSE publication LG 10 'Daylighting – a guide for designers'.

BR 209 aims to *"to help rather than constrain the designer"* as stated in Paragraph 1.6 of the new guidance. The document provides advice, but also clearly states that it *"is not mandatory and the guide should not be seen as an instrument of planning policy."* The guidance also acknowledges in its introduction that *"Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design (see Section 5). In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high-rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings."* (Paragraph 1.6)

3.1 BS EN 17037:2018 AND THE UK ANNEX

Following a review of the European Standard BS EN 17037:2018 "Daylight in buildings" by a dedicated commission of UK experts, the British Standard Institution concluded that the targets suggested *"may not be achievable for some buildings, particularly dwellings"*. In particular, the UK committee believed 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"*

As a consequence, a UK National Annex was appended to BS EN 17037:2018 which suggested alternative targets, in line with those of the former BS8206-2:2008 and the previous BR209 (2011 edition). These lower targets were then incorporated into the 2022 publication of BR209.

With this site being set for large scale regeneration and delivering a high-density environment, the relevant targets are considered to be those contained within the UK National Annex as outlined and discussed further in Section 3.2 adjacent. It is important here to re-emphasise though that these UK targets were designed to be in line with those from the previous British Standard and BR209 publications and so utilising them does not represent a weakening of standards, rather it enables continuity in the understanding of daylight levels within residential developments.

The BS EN 17037 includes four criteria: daylighting, views, sunlight access and glare. However, daylighting and sunlight access are the only criteria considered relevant for residential buildings and therefore discussed within this report.

View out and Glare are mostly relevant in offices and schools, where occupants are more fixed to a certain location within a room. In residential habitable rooms, occupants tend to move more freely and therefore view out and glare are not assessed within residential buildings.

3.2 DAYLIGHT

The BRE set out the methods for assessing daylight within a proposed building within section 2.1 and Appendix C of the handbook. This is based on the methods detailed in the BS EN 17037.

BS EN 17037 suggests two possible methodologies for appraising daylight:

- Illuminance Method
- Daylight Factor Method

These methodologies are discussed in more detail below.

Whilst Vertical Sky Component (VSC) is no longer directly used to calculate the levels of daylight indoors, this is still referenced within the BRE guidance as a metric to appraise the level of obstruction faced by a building and the potential for good daylight indoors.

This method of assessment may also be used to appraise the daylight quality in the early stages of the design, when room layouts or window locations are still undecided.

Vertical Sky Component (VSC)

This method of assessment can be undertaken using a skylight indicator or a Waldram diagram. It measures from a single point, at the centre of the window (if known at the early design stage), the quantum of sky visible taking into account all external obstructions. Whilst these obstructions can be either other buildings or the general landscape, trees are usually ignored unless they form a continuous or dense belt of obstruction.

The VSC method is a useful 'rule of thumb' but has some significant limitations in determining the true quality of daylight within a proposed building. It does not take into account the size of the window, any reflected light off external obstructions, any reflected light within the room, or the use to which that room is put.

Illuminance method

Climate Based Daylight Modelling (CBDM) is used to predict daylight illuminance using sun and sky conditions derived from standard meteorological data (often referred to as climate or weather data). This analytical method allows the prediction of absolute daylight illuminance based on the location and building orientation, in addition to the building's daylight systems (shading systems, for example). Annex A within the BS EN 17037 proposes values of target illuminances and minimum target illuminances to exceed 50 % of daylight hours.

This is considered to be the most accurate approach when using climate data, however, it provides a very large amount of data for each assessed room, which then needs to be interrogated. One of the methodologies that can be used to interrogate this data is Spatial Daylight Autonomy (sDA).

Spatial Daylight Autonomy (sDA)

The sDA assessment is designed to understand how often each point of the room's task area sees illuminance levels at or above a specific threshold.

BS EN 17037 sets out minimum illuminance levels (300lx) that should be exceeded over 50% of the space for more than half of the daylight hours in the year. It also includes recommendations for medium and high daylighting levels within a space (500lx and 700lx respectively). It should be noted here, however, that these targets are specified irrespective of a space's use or design.

As discussed within Section 4.1, the National Annex suggests that these targets can be challenging to achieve within residential settings, particularly in areas of higher density and so suggests lower targets can be considered in this situation. It should be noted here that the reduced targets suggested within the BS EN 17037:2018 National Annex are provided so as to be comparable with the previous BR209's recommendations for ADF. These targets, considered relevant for this application, are:

- 100 lux for bedrooms
- 150 lux for living rooms
- 200 lux for living/kitchen/diners, kitchens, and studios.

It is however stated in paragraph C17 of the BRE that: *"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".

Daylight Factor method

This method involves calculating the median daylight factor on a reference plane (assessment grid).

"The daylight factor is the illuminance at a point on the reference plane in a space, divided by the illuminance on an unobstructed horizontal surface outdoors. The CIE standard overcast sky is used, and the ratio is usually expressed as a percentage."

This method of assessments considers an overcast sky, and therefore the orientation and location of buildings is not relevant. In order to account for different climatic conditions, Annex A within the BS EN 17037 sets equivalent daylight factor targets (D) for various locations in Europe.

The median daylight factor (MDF) should meet or exceed the target daylight factor relative to a given illuminance for more than half of daylight hours, over 50% of the reference plane.

3.3 SUNLIGHT

The BRE provide guidance in respect of sunlight quality for new developments within section 3.1 of the handbook. It is generally acknowledged that the presence of sunlight is more significant in residential accommodation than it is in commercial properties, and this is reflected in the BRE document.

It states, *"in housing, the main requirement for sunlight is in living rooms, where it is valued at any time of the day, but especially in the afternoon. Sunlight is also required in conservatories. It is viewed as less important in bedrooms and in kitchens where people prefer it in the morning rather than the afternoon."*

The BRE guide considers the critical aspects of orientation and overshadowing in determining the availability of sunlight at a proposed development site.

The guide proposes minimising the number of dwellings whose living room face solely north unless there is some compensating factor such as an appealing view to the north, and it suggests a number of techniques to do so. Furthermore, it discusses massing solutions with a sensitive approach to overshadowing, so as to maximize access to sunlight.

At the same time, it acknowledges that the site's existing urban environment may impose orientation or overshadowing constraints which may not be possible to overcome.

To quantify sunlight access for interiors where sunlight is expected, it refers to the BS EN 17037 criterion that the minimum duration of sunlight exposure in at least one habitable room of a dwelling should be 1.5 h on March 21st. Table A.5 also establishes medium and high sunlight targets (3 and 4 hours).

This is to be checked at a reference point located centrally to the window's width and at the inner surface of the aperture (façade and/or roof). For multiple apertures in different facades it is possible to cumulate the time of sunlight availability if not occurring at the same time. The reference point is minimum 1.2 m above the floor and 0.3 m above the window sill if present.

The summary of section 3.1 of the guide states as follows:

"In general, a dwelling or non-domestic building which has a particular requirement for sunlight, will appear reasonably sunlit provided that:

- *At least one main window faces within 90 degrees 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.. "*

3.4 OVERSHADOWING

The BRE guidance in respect of overshadowing of amenity spaces is set out in section 3.3 of the handbook. Here it states as follows:

"Sunlight in the spaces between and around buildings has an important impact on the overall appearance and ambience of a development. It is valuable for a number of reasons, to:

- *provide attractive sunlit views (all year)*
- *make outdoor activities like sitting out and children's play more pleasant (mainly warmer months)*
- *encourage plant growth (mainly spring and summer)*
- *dry out the ground, reducing moss and slime (mainly in colder months)*
- *melt frost, ice and snow (in winter)*
- *dry clothes (all year).*

Again, it must be acknowledged that in urban areas the availability of sunlight on the ground is a factor which is significantly controlled by the existing urban fabric around the site in question and so may have very little to do with the form of the development itself. Likewise, there may be many other urban design, planning and site constraints which determine and run contrary to the best form, siting and location of a proposed development in terms of availability of sun on the ground.

The summary of section 3.3 of the guide states as follows:

"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.."

3.5 FURTHER RELEVANT INFORMATION

CIBSE LG 10 'Daylighting – a guide for designers'.

This guide details the process of designing for daylighting. It outlines considerations of form, orientation, and other aspects involved in designing the building envelope to optimise natural light.

The guidance in this document is written primarily for buildings located within the UK, and will be most applicable to projects in northern hemisphere. However, the principles are universal, and can be applied to other locations if the appropriate weather data is used and local standards and regulations are respected

4 SIMULATION ASSUMPTIONS

In order to undertake the daylight and sunlight assessments set out in the previous pages, we have prepared a three dimensional computer model and used specialist lighting simulation software.

Calculation model

The three dimensional representation of the proposed development has been modelled using the scheme drawings provided to us by Morris and Co. & Levitt Bernstein in August 2023. This has been placed in the context of its surrounding buildings which have been modelled from survey information, photogrammetry, OS and site photographs. This allows for a precise model, which in turn ensures that analysis accurately represents the amount of daylight and sunlight available to the building façades, internal and external spaces, considering all of the surrounding obstructions and orientation.

The weather file recorded at Gatwick Airport was considered the most relevant for this assessment.

Surfaces reflectance

In general, reflectance value to be applied to surfaces in the computational modelling follows the BR 209 Annex C, unless specified by the design team. Assumptions applied are:

- Interior walls - 0.7
- Ceilings - 0.8
- Floors - 0.4
- Exterior ground and external obstructions - 0.2

Assessment Grids

For the daylight assessments, an analysis 'grid' is located within each room at working plane height (850 mm from FFL) and offset by 0.3m from the walls as recommended by BR 209.

Grid points are spaced by 0.2m .

Assessment Resolution

The climate-based daylight assessments have been undertaken on an hourly basis whilst the sunlight exposure assessment has been undertaken for every minute on the relevant days.

Glazing transmittance

A glazing visible light transmittance (VLT) of 75% has been used as in agreement with the wider design team. A framing factor has been taken from the elevations supplied. Maintenance factors have been applied as per BR209 with 0.92 for windows not beneath an overhang and 0.76 for windows beneath an overhang.

The final transmittance values are shown in the table below.

GLAZING TYPE AND MAINTENANCE FACTORS		TV (Normal)	FRAMING FACTOR	MAINTENANCE FACTOR	TV (Total)
TYPE 1	NOT SHELTERED	0.75	0.75	0.92	0.52
TYPE 2	NOT SHELTERED	0.75	0.80	0.92	0.55
TYPE 3	SHELTERED	0.75	0.80	0.76	0.46
TYPE 4	NOT SHELTERED	0.75	0.85	0.92	0.59
TYPE 5	SHELTERED	0.75	0.85	0.76	0.48
TYPE 6	NOT SHELTERED	0.75	0.90	0.92	0.62
TYPE 7	SHELTERED	0.75	0.90	0.76	0.51

Table 01: Transmittance and maintenance factors

4.1 GLASS TRANSMITTANCE - WINDOW MAPS

Fig. 01: North-west view - Block_F

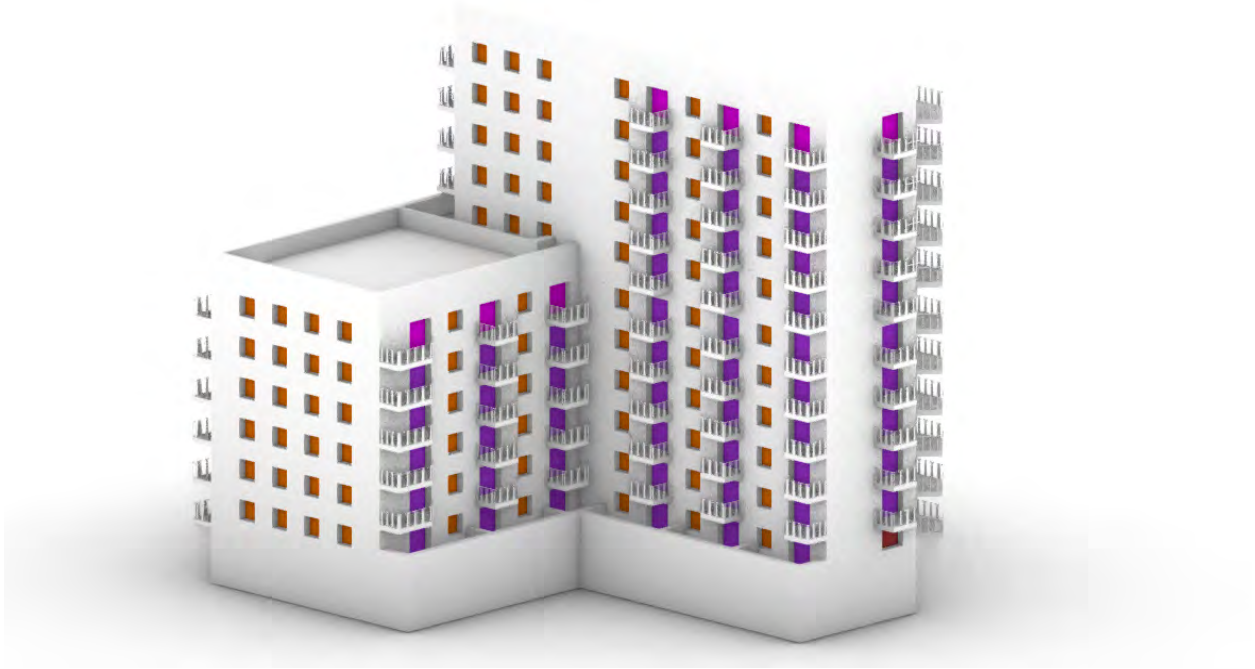


Fig. 02: South-east view - Block_F

4.2 GLASS TRANSMITTANCE - WINDOW MAPS

Fig. 04: North-east view - Block_H1-H2

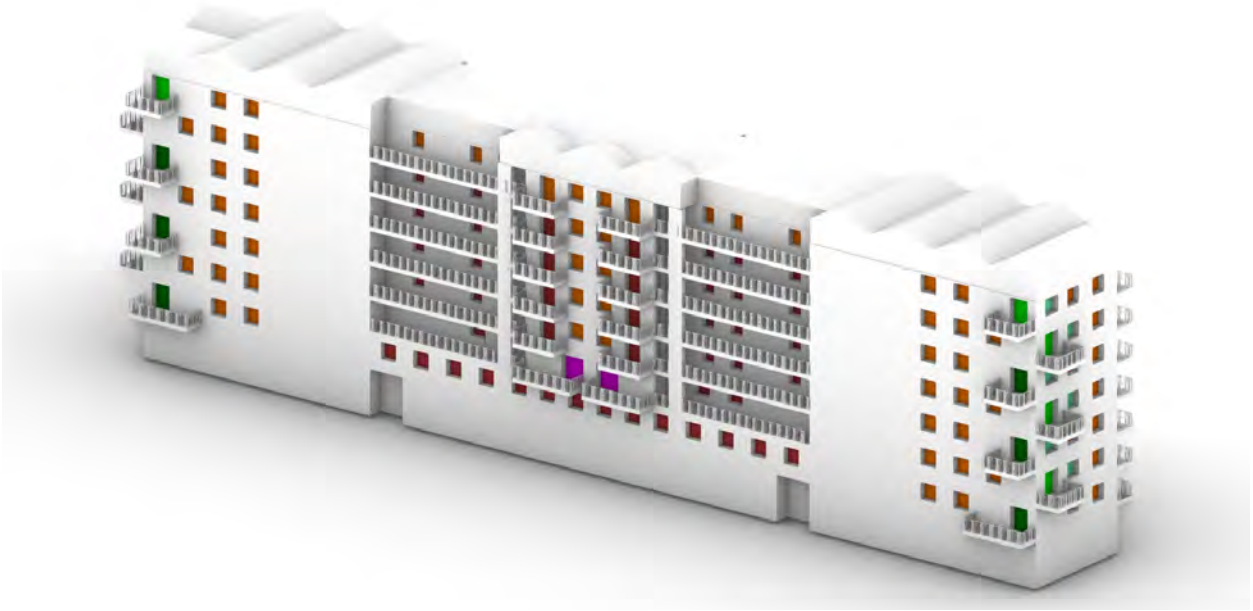


Fig. 03: South-west view - Block_H1-H2

4.3 GLASS TRANSMITTANCE - WINDOW MAPS

Fig. 05: North-east view - Block_H

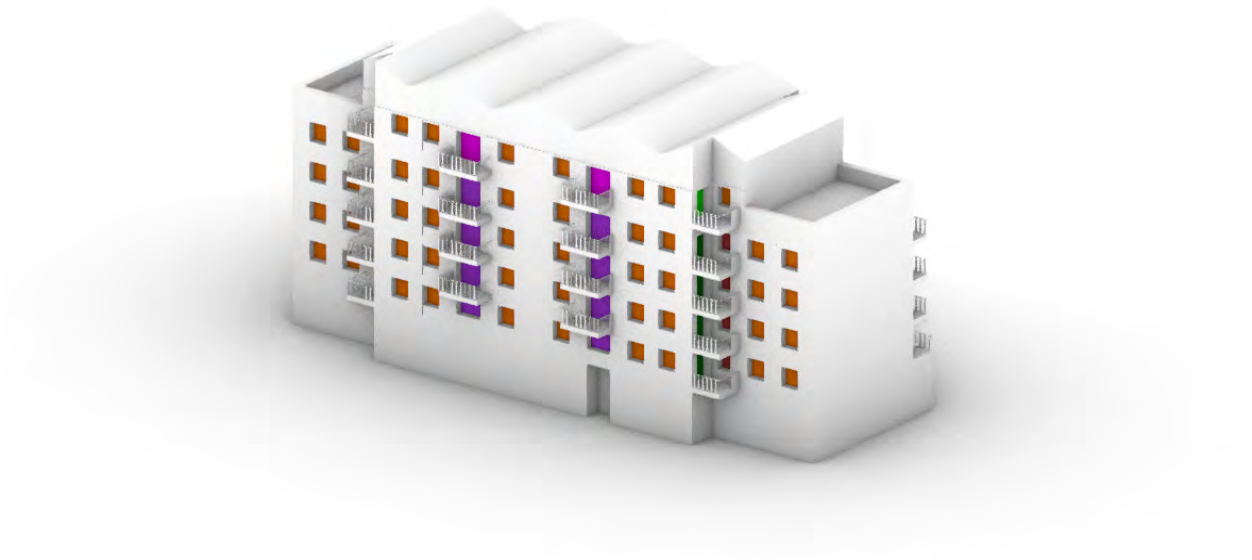


Fig. 06: South-west view - Block_H

4.4 GLASS TRANSMITTANCE - WINDOW MAPS

Fig. 08: North-west view - Block_I

Fig. 07: South-east view - Block_I

4.5 GLASS TRANSMITTANCE - WINDOW MAPS

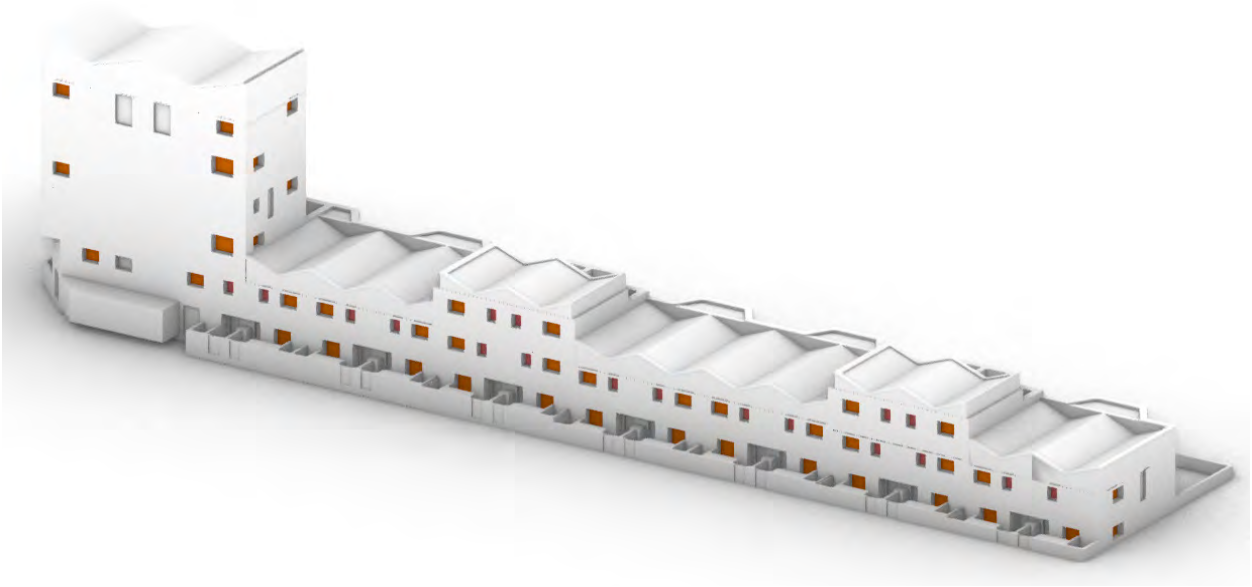


Fig. 10: North-west view - Block_J

Fig. 09: South-east view - Block_J

5 CONCLUSIONS

5.1 DESIGN EVOLUTION

GIA has worked alongside Levitt Bernstein Architects and Morris and Co. Architects to deliver a scheme that makes the most of the available daylight and sunlight. This was achieved through an iterative review of the massing, internal layouts and façade details throughout the design process.

Preliminary assessments have been undertaken at the early stages of design to understand the daylight potential within the proposed massing and the sunlight availability in the proposed open spaces. Further detailed internal assessments have been carried out once the interim internal arrangements were set out, and advice on a room-by-room basis has been provided to optimise daylight and sunlight across all the proposed habitable rooms.

Strategies that have been implemented include:

- Reducing the massing in some areas to increase daylight and sunlight availability in the proposed accommodation and open spaces, whilst contextually preserving acceptable levels of light to the neighbouring properties;
- Reconfiguring some of the internal layouts to enhance the daylit appearance of spaces according to room use;
- Prioritising daylight in living areas where it is typically most valued by occupants, for example by providing dual aspect where possible, or by locating them in the most daylit areas of the façades;
- Resizing the fenestration for all units in response to the interim technical tests' results;
- Balancing the provision of private amenity, in the form of balconies, with the internal daylight and sunlight levels. The balcony strategy was a key consideration throughout the development of the scheme. Whilst providing a valuable form of amenity, these also introduce additional obstructions for the windows directly below, therefore reducing the light ingress within rooms further; and
- adopting a lighter floor finish to improve the diffusion of light within all rooms.

As a result of the above, it is considered that the Proposed Development makes the most of the daylight and sunlight available and will provide future residents with acceptable daylight and sunlight amenity overall. More detail on each of the Detailed Proposals and their daylight and sunlight performance is provided in the next section.

5.2 CONCLUSIONS ON DAYLIGHT AND SUNLIGHT

In order to ascertain the levels of daylight and sunlight within the Detailed Proposals of Phase A, technical assessments have been undertaken within all habitable rooms (i.e. living rooms, L/K/Ds, kitchens, studio-flats and bedrooms). This exercise has been undertaken in the cumulative scenario to portray a worst-case condition where all neighbouring consents have been considered as built.

All proposed habitable rooms have been assessed for spatial Daylight Autonomy (sDA) according to the targets set out in the UK National Annex of the BS EN 17037, which sets illuminance targets (measured in lux) to be achieved for over 50% of the space for more than half of the daylight hours in the year. For sunlight, all rooms have been assessed for solar exposure, for which the recommendation is for each dwelling to have at least one habitable room (preferably a living room) receiving a total of at least 1.5 hours of sunlight on 21st March. The internal daylight and sunlight assessments can be found on pages 22 to 103 of this report.

For daylight, overall 681 (78.9%) out of all 863 habitable rooms meet or exceed the recommended levels of spatial Daylight Autonomy (sDA) within the UK National Annex. This figure considers the higher recommendation of 200 lux for combined Living/Kitchen/Dining spaces and studios.

In addition to the above, 27 (3.1%) LKDs or studios achieve the recommendation of 150 lux for living rooms. A further two (0.2%) kitchens, 12 (1.4%) living spaces (LKDs, living rooms or studios) and 26 (3.0%) bedrooms fall slightly below guidelines (i.e. seeing 200 lux, 150 lux and 100 lux respectively on more than 40% of their space for half the daylight hours in the year. Therefore, a total of 748 rooms (86.7% of the total) are considered to offer adequate daylight levels in the context of this urban regeneration.

Of the rooms seeing lower levels of light, 9 (1.0%) LKDs, three (3.4%) studios and three (3.4%) living spaces would achieve 150 lux on more than 30% of their space for half the daylight hours in the year. 18 (2.1%) bedrooms would achieve 100 lux on more than 30% of their space for half the daylight hours in the year. The remaining rooms seeing lower levels of light are 35 (4.1%) living spaces (LKDs, Living rooms or studios) and 47 (5.4%) bedrooms or kitchens.

A breakdown per plot is provided in Table 02 below.

As it is typical of an urban environment, the rooms falling short of recommendation are located on the lowest floors, and the majority of them are located beneath or behind a balcony, which inherently reduces access to daylight whilst providing valuable private outdoor amenity spaces. This is a typical trade-off of amenities in the urban environment. In addition, these rooms are generously sized and, whilst the rear sees lower levels of light (which reduces sDA for the entire room), their front portions will see higher levels of daylight.

Plot	Total rooms tested	Compliance for sDA (LKDs Living Rooms Kitchens Bedrooms Studies)	LKDs or Studios achieving target for Living Rooms (sDA/150)	LKDs, Studios or Living rooms slightly below target for Living Rooms (sDA/150>40%)	Kitchens slightly below target (sDA/200>40%)	Bedrooms slightly below target (sDA/100>40%)
F	247	191 (77.3%)	12 (4.9%)	7 (2.8%)	- (-)	7 (2.8%)
H	366	292 (79.8%)	9 (2.5%)	5 (1.4%)	2 (0.5%)	8 (2.2%)
I	134	125 (93.3%)	6 (4.5%)	0 (0.0%)	- (-)	2 (1.5%)
J	116	73 (62.9%)	- (-)	0 (0.0%)	0 (0.0%)	9 (7.8%)
All blocks	863	681 (78.9%)	27 (3.1%)	12 (1.4%)	2 (0.2%)	26 (3.0%)

Plot	LKDs, Studios or Living rooms moderately below target for Living Rooms (sDA/150>30%)	Kitchens moderately below target for Living Rooms (sDA/200>30%)	Bedrooms moderately below target (sDA/100>30%)	Other LKDs, Studios or living rooms	Other Bedrooms or Kitchens
F	9 (3.6%)	- (-)	5 (2.0%)	13 (5.3%)	3 (1.2%)
H	6 (1.6%)	0 (0.0%)	7 (1.9%)	10 (2.7%)	27 (7.4%)
I	0 (0.0%)	- (-)	1 (0.7%)	0 (0.0%)	0 (0.0%)
J	0 (0.0%)	0 (0.0%)	5 (4.3%)	12 (10.3%)	17 (14.7%)
All blocks	15 (1.7%)	0 (0.0%)	18 (2.1%)	35 (4.1%)	47 (5.4%)

Table 02: Daylight results

For sunlight, 223 (80.5%) out of all 277 proposed dwellings meet the criterion of at least one habitable room receiving at least 1.5 hours of sunlight on 21st March. The occurrence of sunlight levels lower than recommendation in a small number of units is typical of an urban environment, especially for rooms on the lowest floors, which are provided with balconies. Whilst providing a valuable form of amenity, balconies also intercept sun rays acting as shading devices, therefore reducing sunlight ingress within the rooms. In addition, the main facades of block H effectively face due west or east and can only naturally see a limited portion of the sunpath, resulting in lower exposure levels.

Overall, as a result of the design optimisation carried out throughout the design process and the design solutions adopted, the Detailed Proposals will provide good or acceptable levels of daylight and sunlight to future residents.

A further breakdown of the results is provided in Table 03 below.

Plot	Total dwellings tested	Dwellings with the living space meeting recommendation	Dwellings with a secondary room meeting recommendation	Dwellings with at least one habitable room meeting recommendation
F	102	69 (67.6%)	4 (3.9%)	73 (71.6%)
H	104	74 (71.2%)	14 (13.5%)	88 (84.6%)
I	52	36 (69.2%)	7 (13.5%)	43 (82.7%)
J	19	7 (36.8%)	12 (63.2%)	19 (100.0%)
All blocks	277	186 (67.1%)	37 (13.4%)	223 (80.5%)

Table 03: Sunlight results

Outline Proposals

A Vertical Sky Component (VSC) façade study has been undertaken for the Outline Proposals to gauge the daylight potential of these blocks. Overall, the results show that 66 % of all facades would see VSC levels in excess of 27%, which is considered excellent and would allow for typical façade design to deliver good internal levels of light for future RMAs. A further 23% of all facades (89% in total) would see levels of VSC in excess of 15%, which would allow for good internal levels of light with wider windows and consideration of balcony locations. The remaining 11% of the facades would see levels of VSC below 15%, 1% of which is below 5% VSC. In these areas acceptable levels of light can still be achieved adopting mitigating design strategies such as larger windows, shallow layouts, lighter internal finishes and an optimised balcony strategy.

Overall, with 89% of all facades seeing levels of VSC above 15%, the scheme sees very good daylight potential. In the few areas where lower levels of VSC are seen, as is typical of any masterplan, acceptable levels of light can still be achieved in future RMAs adopting a few mitigating design solutions.

82% of all facades would also see at least 90 minutes of sunlight on 21st March and so the units that will be designed at RMA stage have potential to exceed the recommendation of at least 1.5 hours of sunlight in one habitable room at the equinox.

We can therefore conclude that these blocks will provide future resident with good daylight and sunlight amenity overall.

5.3 CONCLUSIONS ON OVERSHADOWING

As suggested by BRE, all proposed public and communal outdoor areas have been assessed for Sun Hours on Ground (SHOG).

The assessments on pages 108-113 illustrate the overshadowing for the communal spaces proposed within the Detailed Proposals, whilst those on pages 116-128 present the results for the wider masterplan.

With the exception of the northern terrace in Block H3, all proposed open spaces within the Detailed Proposals far exceed BRE's recommendation and will be well sunlit throughout the year.

Jolly's Green, the strip of land to the north of Jolly's Green, Braithwaite Park and Leven Road Green exceed BRE's recommendation and will be excellently sunlit throughout the year.

The northern terrace falls short of recommendation on 21st March, however, as demonstrated by the diagram on page 101 and the sun exposure assessment on page 104, this area will be well sunlit from the beginning of April to the end of August, seeing far in excess of six hours of sunlight in June. As such, despite falling short of recommendation at the equinox, this area is also considered to be adequately sunlit throughout the summer months, when it is most likely to be used.

The image on pages 108-109 provides an overview of the overshadowing on all outdoor spaces within the Illustrative massing of the Outline Proposals, which shows that overall the vast majority of the proposed spaces would meet BRE's recommendation. The following pages present a detailed breakdown of the public realm, the proposed podiums and rooftop terraces.

The proposed ground floor public realm would see very good levels of sunlight, with all areas including the Allotments, Highland Place, Nairn Square, the Square and Culloden Green far exceeding BRE's recommendation and being well sunlit throughout the year.

The four proposed courtyards would fall short of recommendation on 21st March. This is a typical occurrence in courtyard shaped blocks which are enclosed from all sides. The vast majority of these areas would see in excess of three hours of sunlight in June. Three of the four courtyard blocks are provided with rooftop amenity spaces, all of which far exceed recommendation and will be excellently sunlit throughout the year.

Overall, the design has carefully considered access to sunlight across the masterplan and, as a result, excellent sunlight amenity can be enjoyed in most of the proposed open spaces. The only areas seeing lower levels of sunlight are the four proposed courtyards which would see in excess of three hours of sunlight in summer. On balance, the masterplan is considered to provide good sunlight amenity.

The conclusions within this report do not materially alter those in the superseded January 2023 report.

6 SITE OVERVIEW

Fig. 11: Top view - cumulative scenario with the Illustrative scheme - Phase A highlighted in orange

Fig. 12: Perspective view - cumulative scenario with the Illustrative scheme - Phase A highlighted in orange

7 INTERNAL DAYLIGHT AND SUNLIGHT ASSESSMENTS

Block F - First Floor

		DAYLIGHT					SUNLIGHT
ROOM REF.	ROOM USE	EN SPATIAL DAYLIGHT AUTONOMY percentage of room achieving target illuminance for 2190 hrs (50% of daylit hours) - Weather File: GBR_Gatwick					HOURS:MIN
		100	150	200	TARGET	RELEVANT ENSDA	21 MAR
BLOCK F - LEVEL 01							
2	L/K/D	49.8	24.1	8.5	200	8.5	00:00
3	BEDROOM	21.0	7.7	4.8	100	21.0	00:00
4	BEDROOM	27.4	12.2	6.5	100	27.4	00:00
5	BEDROOM	41.7	20.3	11.5	100	41.7	00:00
6	L/K/D	100.0	81.3	41.6	200	41.6	00:00
7	L/K/D	100.0	94.4	73.6	200	73.6	01:34
8	BEDROOM	100.0	100.0	97.5	100	100.0	04:22
9	BEDROOM	100.0	95.3	78.1	100	100.0	05:59
10	L/K/D	57.7	38.9	26.5	200	26.5	02:19
11	BEDROOM	96.8	63.6	43.5	100	96.8	04:35
12	L/K/D	46.8	27.5	17.8	200	17.8	02:19
13	BEDROOM	68.8	38.7	27.3	100	68.8	03:36
14	STUDIO	32.5	17.9	9.7	200	9.7	03:17
15	BEDROOM	94.1	55.1	37.5	100	94.1	02:14
16	L/K/D	50.0	28.9	17.2	200	17.2	02:27
17	BEDROOM	100.0	90.8	57.1	100	100.0	02:14
18	L/K/D	100.0	98.7	85.9	200	85.9	05:52
19	BEDROOM	100.0	100.0	100.0	100	100.0	04:39
20	BEDROOM	100.0	100.0	99.4	100	100.0	04:52
21	L/K/D	100.0	99.1	91.1	200	91.1	05:46
22	BEDROOM	80.6	52.0	37.2	100	80.6	01:50
23	L/K/D	36.3	20.4	9.3	200	9.3	00:29
24	BEDROOM	40.6	23.8	16.8	100	40.6	00:38
25	L/K/D	63.6	36.9	23.3	200	23.3	00:00
26	BEDROOM	31.3	20.5	15.3	100	31.3	00:00
27	L/K/D	13.9	6.4	2.3	200	2.3	00:00
28	BEDROOM	48.1	30.0	20.5	100	48.1	00:00

Table 04: Assessment Data

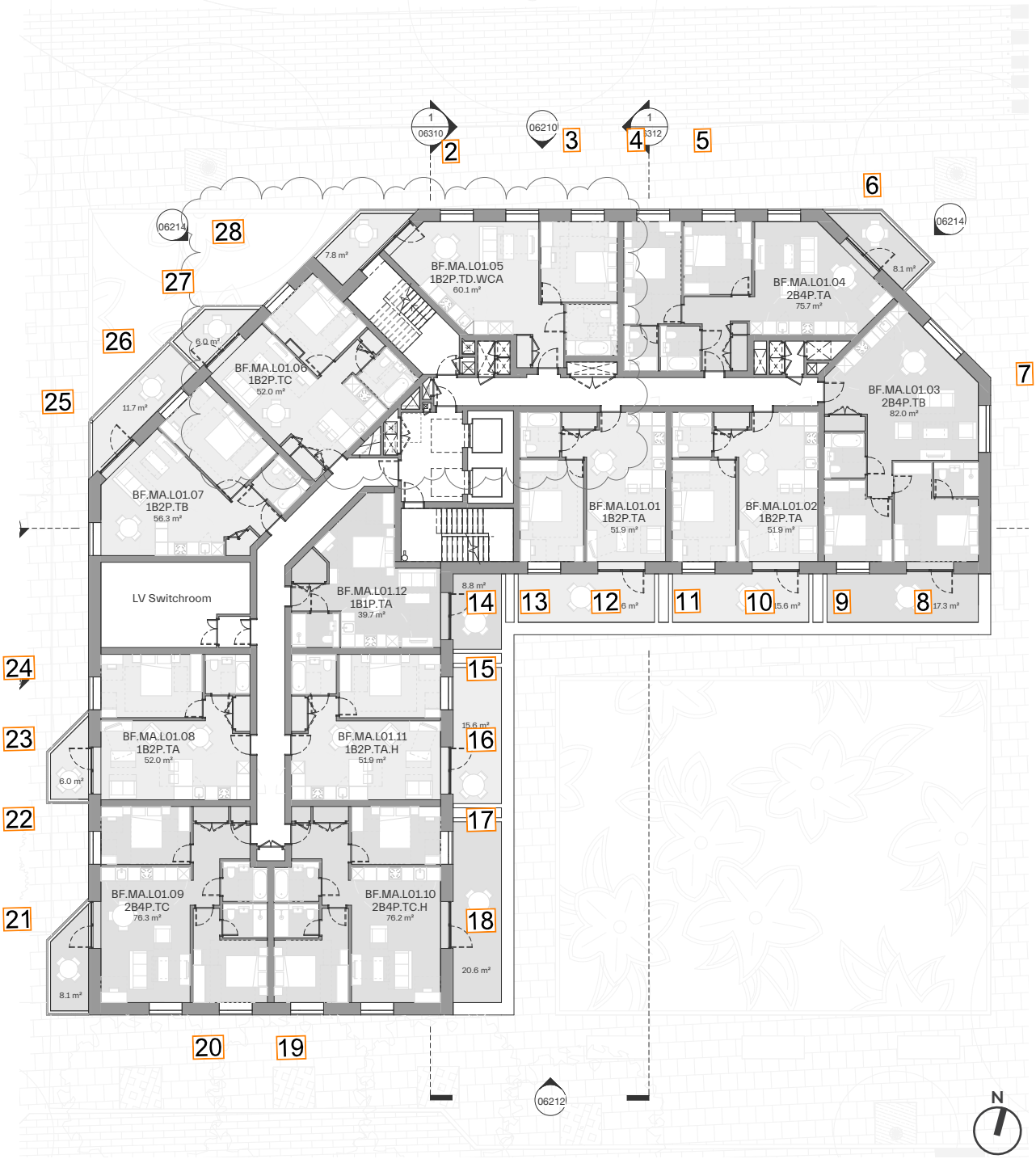


Fig. 13: Floor Plan

Block F - Second Floor

ROOM REF.	ROOM USE	DAYLIGHT					SUNLIGHT
		EN SPATIAL DAYLIGHT AUTONOMY percentage of room achieving target illuminance for 2190 hrs (50% of daylit hours) - Weather File: GBR_Gatwick					HOURS:MIN
		100	150	200	TARGET	RELEVANT ENSDA	21 MAR
BLOCK F - LEVEL 02							
30	L/K/D	56.4	30.8	13.8	200	13.8	00:00
31	BEDROOM	25.4	11.3	6.9	100	25.4	00:00
32	BEDROOM	30.4	15.2	10.4	100	30.4	00:00
33	BEDROOM	49.0	24.5	15.6	100	49.0	00:00
34	L/K/D	100.0	85.9	51.3	200	51.3	00:00
35	L/K/D	100.0	100.0	90.4	200	90.4	02:28
36	BEDROOM	100.0	100.0	100.0	100	100.0	04:49
37	BEDROOM	100.0	100.0	88.5	100	100.0	06:21
38	L/K/D	75.5	53.6	39.7	200	39.7	02:19
39	BEDROOM	100.0	82.2	54.9	100	100.0	04:53
40	L/K/D	68.4	43.3	28.5	200	28.5	02:19
41	BEDROOM	95.3	48.2	34.4	100	95.3	03:42
42	STUDIO	58.1	32.5	20.5	200	20.5	03:22
43	BEDROOM	100.0	69.9	48.8	100	100.0	02:19
44	L/K/D	72.3	46.9	29.7	200	29.7	02:38
45	BEDROOM	100.0	100.0	71.9	100	100.0	02:19
46	L/K/D	100.0	100.0	97.5	200	97.5	06:37
47	BEDROOM	100.0	100.0	100.0	100	100.0	04:54
48	BEDROOM	100.0	100.0	100.0	100	100.0	05:03
49	L/K/D	100.0	99.3	93.3	200	93.3	05:55
50	BEDROOM	85.7	55.6	40.8	100	85.7	01:50
51	L/K/D	39.4	23.7	11.7	200	11.7	00:29
52	BEDROOM	45.3	29.7	22.3	100	45.3	00:42
53	BEDROOM	71.9	42.7	32.7	100	71.9	00:57
54	L/K/D	47.2	28.0	15.6	200	15.6	00:00
55	BEDROOM	51.5	34.0	26.8	100	51.5	00:00
56	L/K/D	17.1	8.5	4.5	200	4.5	00:00
57	BEDROOM	56.2	35.2	26.7	100	56.2	00:00

Table 05: Assessment Data

BF typical plan (L02-L06)

Fig. 14: Floor Plan

Block F - Third Floor

ROOM REF.	ROOM USE	DAYLIGHT						SUNLIGHT
		EN SPATIAL DAYLIGHT AUTONOMY percentage of room achieving target illuminance for 2190 hrs (50% of daylit hours) - Weather File: GBR_Gatwick						HOURS:MIN
		100	150	200	TARGET	RELEVANT ENSDA		21 MAR
BLOCK F - LEVEL 03								
59	L/K/D	65.2	38.1	22.9	200	22.9		00:00
60	BEDROOM	33.1	16.5	11.3	100	33.1		00:00
61	BEDROOM	34.8	20.0	13.9	100	34.8		00:00
62	BEDROOM	57.8	31.8	20.8	100	57.8		00:00
63	L/K/D	100.0	89.7	59.5	200	59.5		00:00
64	L/K/D	100.0	100.0	96.5	200	96.5		02:41
65	BEDROOM	100.0	100.0	100.0	100	100.0		04:58
66	BEDROOM	100.0	100.0	94.8	100	100.0		06:21
67	L/K/D	81.2	55.7	42.7	200	42.7		02:19
68	BEDROOM	100.0	89.3	61.7	100	100.0		05:18
69	L/K/D	75.7	48.6	32.2	200	32.2		02:19
70	BEDROOM	97.2	57.7	38.3	100	97.2		03:48
71	STUDIO	62.5	36.0	23.4	200	23.4		03:26
72	BEDROOM	100.0	78.1	52.3	100	100.0		02:22
73	L/K/D	80.6	51.4	34.3	200	34.3		03:26
74	BEDROOM	100.0	100.0	82.7	100	100.0		02:25
75	L/K/D	100.0	100.0	98.4	200	98.4		06:52
76	BEDROOM	100.0	100.0	100.0	100	100.0		05:04
77	BEDROOM	100.0	100.0	100.0	100	100.0		05:19
78	L/K/D	100.0	99.8	96.7	200	96.7		06:13
79	BEDROOM	97.4	62.2	44.9	100	97.4		01:50
80	L/K/D	43.9	28.0	16.3	200	16.3		00:29
81	BEDROOM	52.7	37.9	29.7	100	52.7		01:11
82	BEDROOM	90.0	53.0	43.4	100	90.0		01:26
83	L/K/D	55.5	36.7	24.0	200	24.0		00:15
84	BEDROOM	63.9	45.4	32.5	100	63.9		00:00
85	L/K/D	22.8	12.4	7.7	200	7.7		00:26
86	BEDROOM	68.1	43.8	31.9	100	68.1		00:00

Table 06: Assessment Data

BF typical plan (L02-L06)

Fig. 15: Floor Plan

Block F - Fourth Floor

ROOM REF.	ROOM USE	DAYLIGHT					SUNLIGHT
		EN SPATIAL DAYLIGHT AUTONOMY percentage of room achieving target illuminance for 2190 hrs (50% of daylit hours) - Weather File: GBR_Gatwick					HOURS:MIN
		100	150	200	TARGET	RELEVANT ENSDA	21 MAR
BLOCK F - LEVEL 04							
88	L/K/D	74.2	47.3	32.7	200	32.7	00:00
89	BEDROOM	39.9	23.0	17.3	100	39.9	00:00
90	BEDROOM	41.3	25.2	19.6	100	41.3	00:00
91	BEDROOM	70.3	40.1	29.2	100	70.3	00:00
92	L/K/D	100.0	93.4	70.3	200	70.3	00:00
93	L/K/D	100.0	100.0	99.9	200	99.9	03:10
94	BEDROOM	100.0	100.0	100.0	100	100.0	04:58
95	BEDROOM	100.0	100.0	99.5	100	100.0	06:21
96	L/K/D	91.1	60.5	45.8	200	45.8	02:19
97	BEDROOM	100.0	95.3	68.0	100	100.0	05:52
98	L/K/D	84.6	53.8	35.4	200	35.4	02:19
99	BEDROOM	100.0	71.5	45.5	100	100.0	04:09
100	STUDIO	65.3	39.3	26.1	200	26.1	03:26
101	BEDROOM	100.0	92.6	56.3	100	100.0	02:22
102	L/K/D	94.8	54.7	38.0	200	38.0	03:26
103	BEDROOM	100.0	100.0	91.3	100	100.0	02:49
104	L/K/D	100.0	100.0	99.1	200	99.1	07:17
105	BEDROOM	100.0	100.0	100.0	100	100.0	05:30
106	BEDROOM	100.0	100.0	100.0	100	100.0	05:43
107	L/K/D	100.0	100.0	98.4	200	98.4	06:33
108	BEDROOM	100.0	69.4	52.0	100	100.0	02:01
109	L/K/D	49.9	33.4	23.1	200	23.1	00:35
110	BEDROOM	66.0	47.7	39.1	100	66.0	01:48
111	BEDROOM	100.0	70.5	56.6	100	100.0	02:51
112	L/K/D	66.2	47.5	35.8	200	35.8	01:01
113	BEDROOM	74.7	53.6	39.7	100	74.7	00:02
114	L/K/D	30.1	16.8	10.9	200	10.9	00:43
115	BEDROOM	82.9	53.8	38.1	100	82.9	00:00

Table 07: Assessment Data

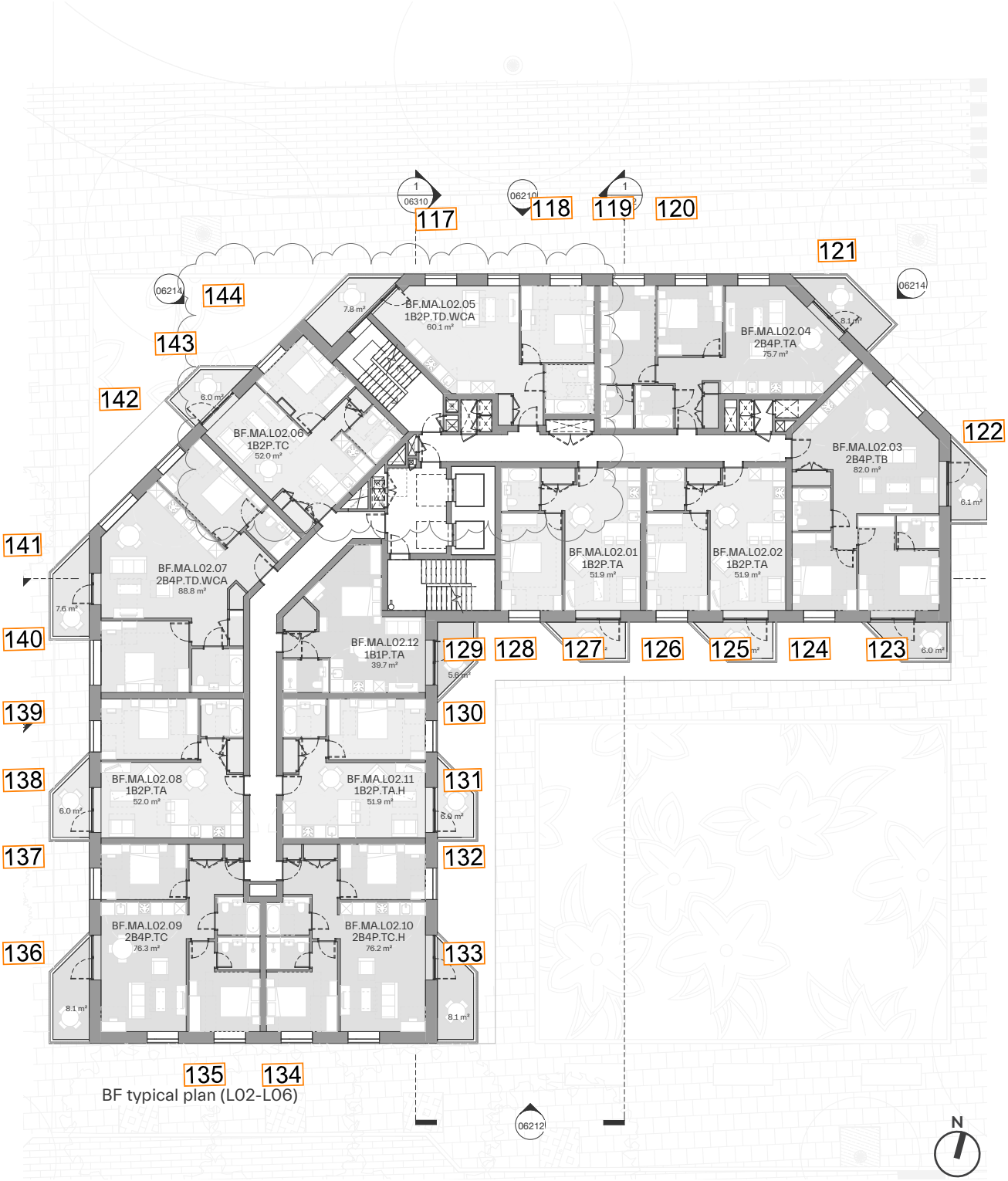
BF typical plan (L02-L06)

Fig. 16: Floor Plan

Block F - Fifth Floor

ROOM REF.	ROOM USE	DAYLIGHT					SUNLIGHT
		EN SPATIAL DAYLIGHT AUTONOMY percentage of room achieving target illuminance for 2190 hrs (50% of daylit hours) - Weather File: GBR_Gatwick					HOURS:MIN
		100	150	200	TARGET	RELEVANT ENSDA	21 MAR
BLOCK F - LEVEL 05							
117	L/K/D	85.9	58.5	45.1	200	45.1	00:00
118	BEDROOM	55.6	34.3	24.6	100	55.6	00:00
119	BEDROOM	48.7	35.2	26.5	100	48.7	00:00
120	BEDROOM	85.4	51.0	39.1	100	85.4	00:00
121	L/K/D	100.0	97.8	78.2	200	78.2	00:00
122	L/K/D	100.0	100.0	100.0	200	100.0	03:26
123	BEDROOM	100.0	100.0	100.0	100	100.0	04:58
124	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
125	L/K/D	97.8	65.2	50.8	200	50.8	02:19
126	BEDROOM	100.0	99.6	73.9	100	100.0	05:52
127	L/K/D	95.8	58.5	41.9	200	41.9	02:19
128	BEDROOM	100.0	85.8	54.2	100	100.0	04:41
129	STUDIO	69.1	43.0	29.4	200	29.4	03:26
130	BEDROOM	100.0	97.7	59.8	100	100.0	02:22
131	L/K/D	100.0	58.5	41.1	200	41.1	03:26
132	BEDROOM	100.0	100.0	98.0	100	100.0	02:49
133	L/K/D	100.0	100.0	99.5	200	99.5	07:54
134	BEDROOM	100.0	100.0	100.0	100	100.0	05:55
135	BEDROOM	100.0	100.0	100.0	100	100.0	06:06
136	L/K/D	100.0	100.0	99.5	200	99.5	07:06
137	BEDROOM	100.0	83.7	64.8	100	100.0	02:46
138	L/K/D	56.3	40.4	29.9	200	29.9	01:20
139	BEDROOM	75.0	57.4	45.7	100	75.0	02:43
140	BEDROOM	100.0	85.8	67.3	100	100.0	02:58
141	L/K/D	76.0	58.7	45.3	200	45.3	01:08
142	BEDROOM	89.2	64.4	47.9	100	89.2	00:09
143	L/K/D	36.9	23.2	15.3	200	15.3	00:49
144	BEDROOM	97.1	63.8	44.3	100	97.1	00:00

Table 08: Assessment Data



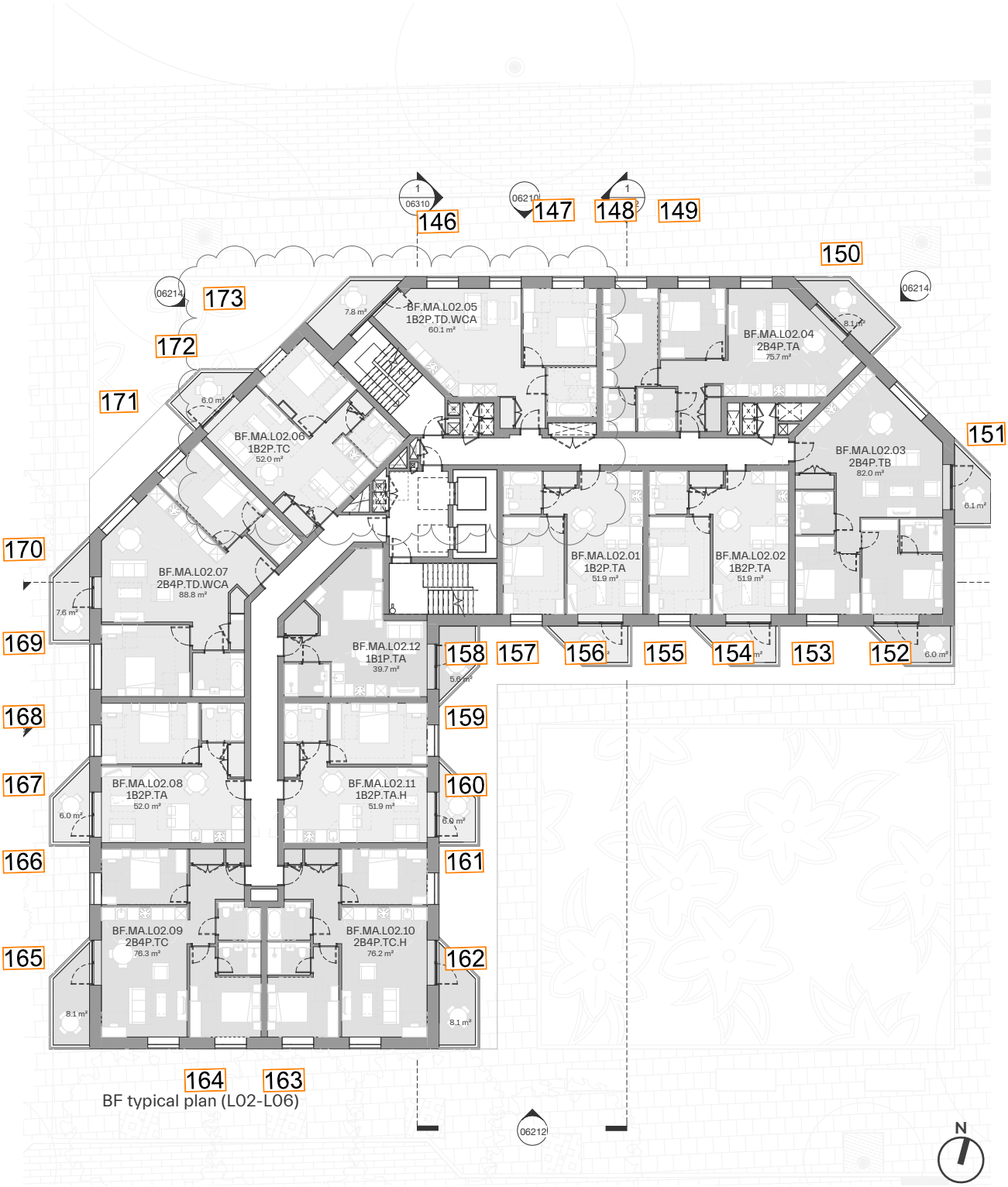
BF typical plan (L02-L06)

Fig. 17: Floor Plan

Block F - Sixth Floor

ROOM REF.	ROOM USE	DAYLIGHT					SUNLIGHT
		EN SPATIAL DAYLIGHT AUTONOMY percentage of room achieving target illuminance for 2190 hrs (50% of daylit hours) - Weather File: GBR_Gatwick					HOURS:MIN
		100	150	200	TARGET	RELEVANT ENSDA	21 MAR
BLOCK F - LEVEL 06							
146	L/K/D	97.1	77.5	62.4	200	62.4	00:10
147	BEDROOM	77.8	50.4	34.7	100	77.8	00:00
148	BEDROOM	60.9	45.2	35.7	100	60.9	00:00
149	BEDROOM	100.0	68.8	53.1	100	100.0	00:00
150	L/K/D	100.0	100.0	91.2	200	91.2	00:00
151	L/K/D	100.0	100.0	100.0	200	100.0	03:26
152	BEDROOM	100.0	100.0	100.0	100	100.0	07:40
153	BEDROOM	100.0	100.0	100.0	100	100.0	06:09
154	L/K/D	100.0	78.9	62.6	200	62.6	05:37
155	BEDROOM	100.0	100.0	85.0	100	100.0	06:09
156	L/K/D	100.0	75.5	58.1	200	58.1	05:37
157	BEDROOM	100.0	98.8	68.8	100	100.0	06:21
158	STUDIO	83.5	71.3	57.4	200	57.4	03:26
159	BEDROOM	100.0	100.0	65.6	100	100.0	02:49
160	L/K/D	100.0	99.4	68.6	200	68.6	03:26
161	BEDROOM	100.0	100.0	100.0	100	100.0	02:49
162	L/K/D	100.0	100.0	100.0	200	100.0	07:54
163	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
164	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
165	L/K/D	100.0	100.0	100.0	200	100.0	08:19
166	BEDROOM	100.0	96.9	77.0	100	100.0	03:02
167	L/K/D	97.9	68.7	56.5	200	56.5	03:30
168	BEDROOM	98.0	68.4	55.5	100	98.0	03:02
169	BEDROOM	100.0	100.0	86.5	100	100.0	03:04
170	L/K/D	96.6	80.1	68.6	200	68.6	03:03
171	BEDROOM	100.0	74.7	57.2	100	100.0	00:15
172	L/K/D	60.6	50.3	41.2	200	41.2	00:56
173	BEDROOM	100.0	80.0	56.7	100	100.0	00:22

Table 09: Assessment Data



BF typical plan (L02-L06)

Fig. 18: Floor Plan

Block F - Seventh Floor

ROOM REF.	ROOM USE	DAYLIGHT					SUNLIGHT
		EN SPATIAL DAYLIGHT AUTONOMY percentage of room achieving target illuminance for 2190 hrs (50% of daylit hours) - Weather File: GBR_Gatwick					HOURS:MIN
		100	150	200	TARGET	RELEVANT ENSDA	21 MAR
BLOCK F - LEVEL 07							
175	L/K/D	99.5	83.6	65.5	200	65.5	01:42
176	BEDROOM	100.0	77.8	49.2	100	100.0	00:00
177	BEDROOM	86.1	60.4	47.0	100	86.1	00:00
178	BEDROOM	100.0	98.4	74.0	100	100.0	00:00
179	L/K/D	100.0	100.0	93.4	200	93.4	00:00
180	L/K/D	100.0	100.0	100.0	200	100.0	03:26
181	BEDROOM	100.0	100.0	100.0	100	100.0	04:58
182	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
183	L/K/D	100.0	79.8	61.5	200	61.5	02:19
184	BEDROOM	100.0	100.0	98.0	100	100.0	05:52
185	L/K/D	100.0	82.6	61.1	200	61.1	02:19
186	BEDROOM	100.0	100.0	100.0	100	100.0	05:52
187	BEDROOM	100.0	100.0	97.5	100	100.0	06:21
188	L/K/D	100.0	100.0	100.0	200	100.0	07:57
189	BEDROOM	100.0	100.0	95.2	100	100.0	01:25
190	BEDROOM	98.2	81.4	52.1	100	98.2	00:58

Table 10: Assessment Data

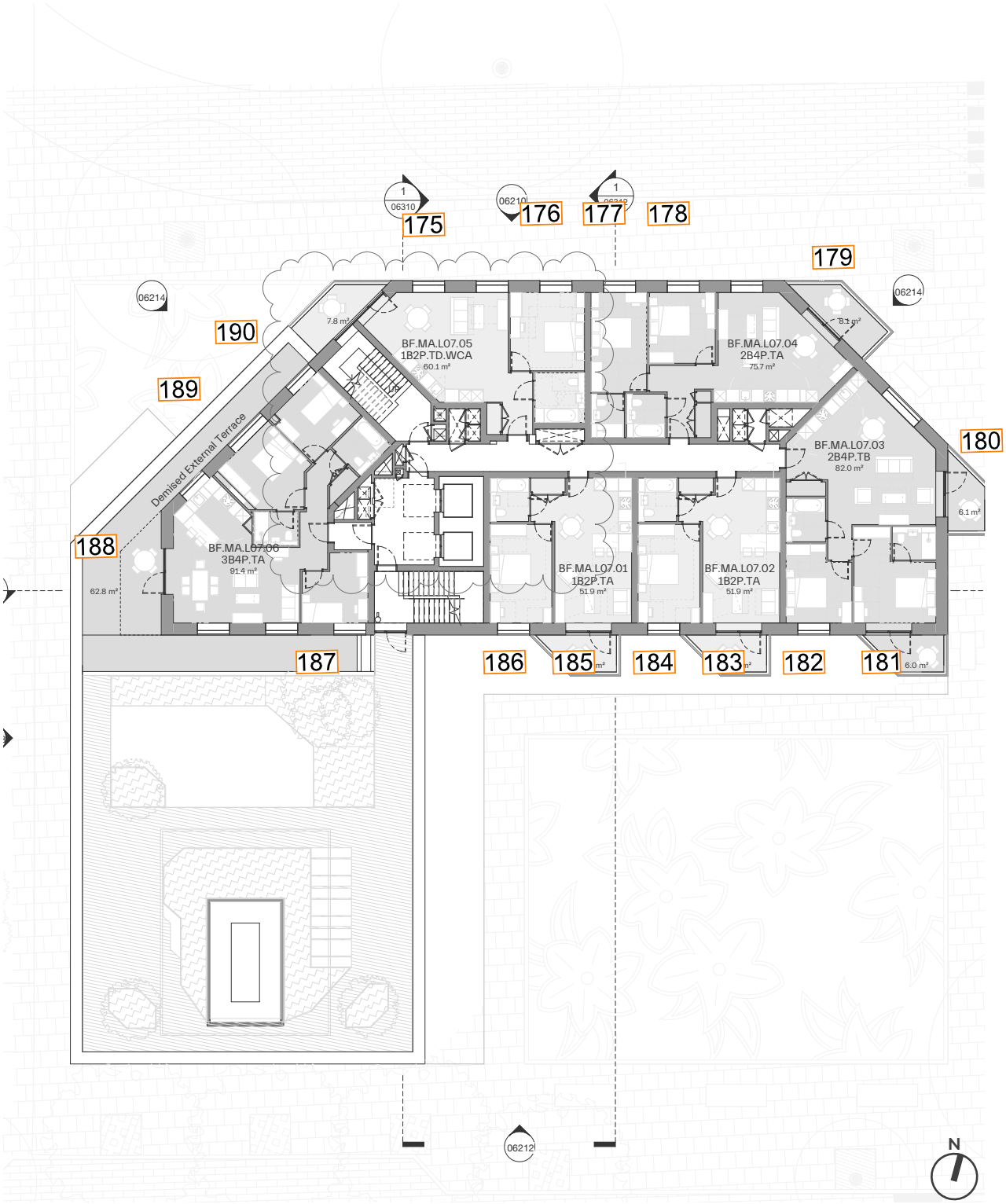


Fig. 19: Floor Plan

Block F - Eighth Floor

ROOM REF.	ROOM USE	DAYLIGHT					SUNLIGHT
		EN SPATIAL DAYLIGHT AUTONOMY percentage of room achieving target illuminance for 2190 hrs (50% of daylit hours) - Weather File: GBR_Gatwick					HOURS:MIN
		100	150	200	TARGET	RELEVANT ENSDA	21 MAR
BLOCK F - LEVEL 08							
192	L/K/D	100.0	98.2	80.9	200	80.9	02:00
193	BEDROOM	100.0	97.6	69.8	100	100.0	00:00
194	BEDROOM	100.0	77.0	57.8	100	100.0	00:00
195	BEDROOM	100.0	100.0	98.4	100	100.0	00:00
196	L/K/D	100.0	100.0	99.1	200	99.1	00:00
197	L/K/D	100.0	100.0	100.0	200	100.0	03:26
198	BEDROOM	100.0	100.0	100.0	100	100.0	04:58
199	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
200	L/K/D	100.0	88.9	64.0	200	64.0	02:19
201	BEDROOM	100.0	100.0	100.0	100	100.0	05:52
202	L/K/D	100.0	93.9	65.6	200	65.6	02:19
203	BEDROOM	100.0	100.0	100.0	100	100.0	05:52
204	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
205	L/K/D	100.0	100.0	100.0	200	100.0	08:28
206	BEDROOM	100.0	100.0	100.0	100	100.0	01:53
207	BEDROOM	100.0	95.8	82.0	100	100.0	01:17

Table 11: Assessment Data

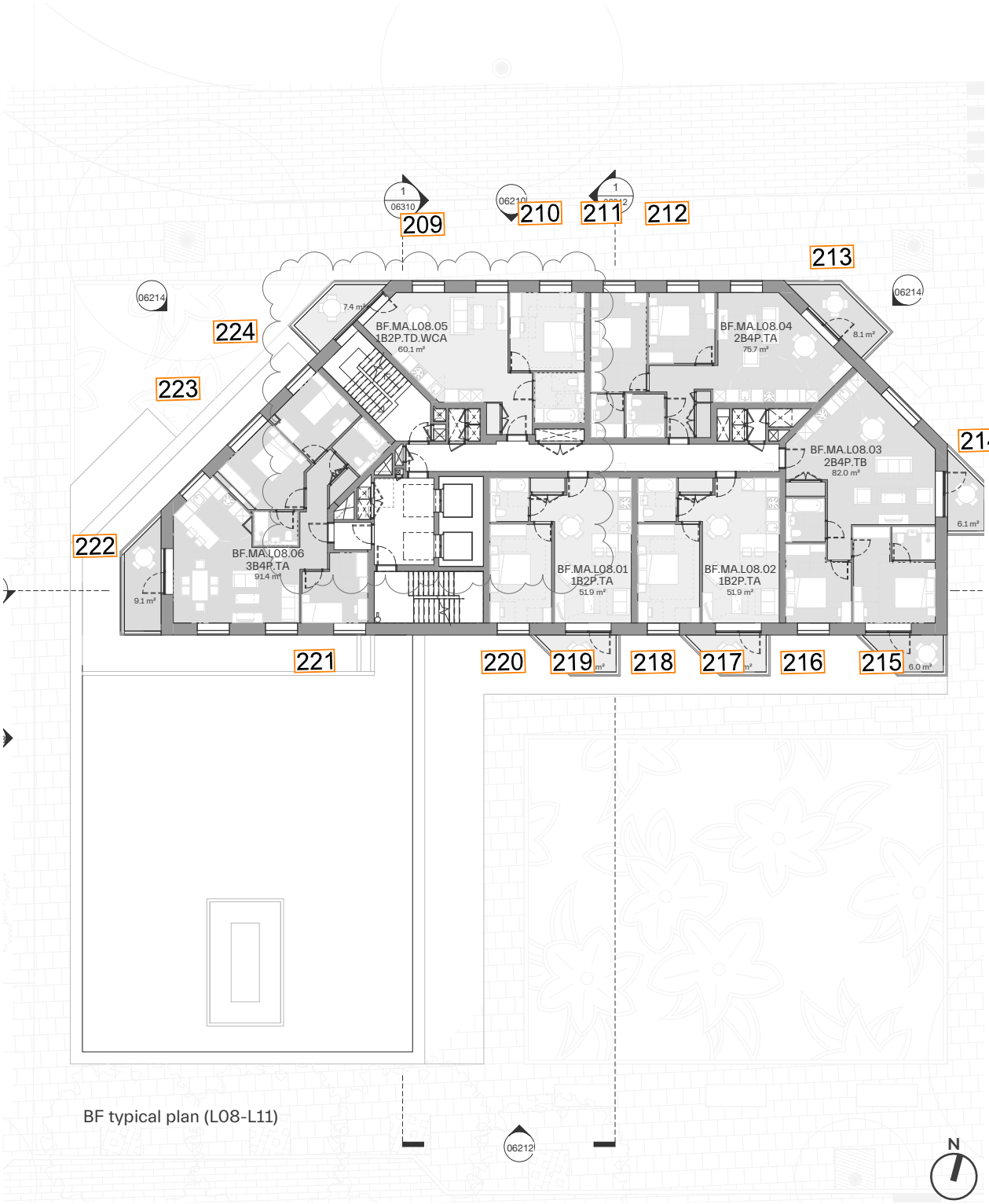
BF typical plan (L08-L11)

Fig. 20: Floor Plan

Block F - Ninth Floor

		DAYLIGHT					SUNLIGHT
ROOM REF.	ROOM USE	EN SPATIAL DAYLIGHT AUTONOMY percentage of room achieving target illuminance for 2190 hrs (50% of daylit hours) - Weather File: GBR_Gatwick					HOURS:MIN
		100	150	200	TARGET	RELEVANT ENSDA	21 MAR
BLOCK F - LEVEL 09							
209	L/K/D	100.0	99.7	92.1	200	92.1	02:22
210	BEDROOM	100.0	99.2	87.9	100	100.0	00:00
211	BEDROOM	100.0	99.1	66.1	100	100.0	00:00
212	BEDROOM	100.0	100.0	100.0	100	100.0	00:00
213	L/K/D	100.0	100.0	100.0	200	100.0	00:00
214	L/K/D	100.0	100.0	100.0	200	100.0	03:26
215	BEDROOM	100.0	100.0	100.0	100	100.0	04:58
216	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
217	L/K/D	100.0	94.1	65.8	200	65.8	02:19
218	BEDROOM	100.0	100.0	100.0	100	100.0	05:52
219	L/K/D	100.0	97.6	67.4	200	67.4	02:19
220	BEDROOM	100.0	100.0	100.0	100	100.0	05:52
221	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
222	L/K/D	100.0	100.0	100.0	200	100.0	08:56
223	BEDROOM	100.0	100.0	100.0	100	100.0	02:12
224	BEDROOM	100.0	97.6	88.0	100	100.0	01:34

Table 12: Assessment Data



BF typical plan (L08-L11)

Fig. 21: Floor Plan

Block F - Tenth Floor

ROOM REF.	ROOM USE	DAYLIGHT					SUNLIGHT
		EN SPATIAL DAYLIGHT AUTONOMY percentage of room achieving target illuminance for 2190 hrs (50% of daylit hours) - Weather File: GBR_Gatwick					HOURS:MIN
		100	150	200	TARGET	RELEVANT ENSDA	21 MAR
BLOCK F - LEVEL 10							
226	L/K/D	100.0	100.0	95.9	200	95.9	02:31
227	BEDROOM	100.0	99.2	96.4	100	100.0	00:00
228	BEDROOM	100.0	100.0	70.9	100	100.0	00:00
229	BEDROOM	100.0	100.0	100.0	100	100.0	00:00
230	L/K/D	100.0	100.0	100.0	200	100.0	00:00
231	L/K/D	100.0	100.0	100.0	200	100.0	03:26
232	BEDROOM	100.0	100.0	100.0	100	100.0	04:58
233	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
234	L/K/D	100.0	98.4	66.2	200	66.2	02:19
235	BEDROOM	100.0	100.0	100.0	100	100.0	05:52
236	L/K/D	100.0	99.2	68.6	200	68.6	02:19
237	BEDROOM	100.0	100.0	100.0	100	100.0	05:52
238	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
239	L/K/D	100.0	100.0	100.0	200	100.0	09:18
240	BEDROOM	100.0	100.0	100.0	100	100.0	02:28
241	BEDROOM	100.0	98.8	91.6	100	100.0	01:52

Table 13: Assessment Data

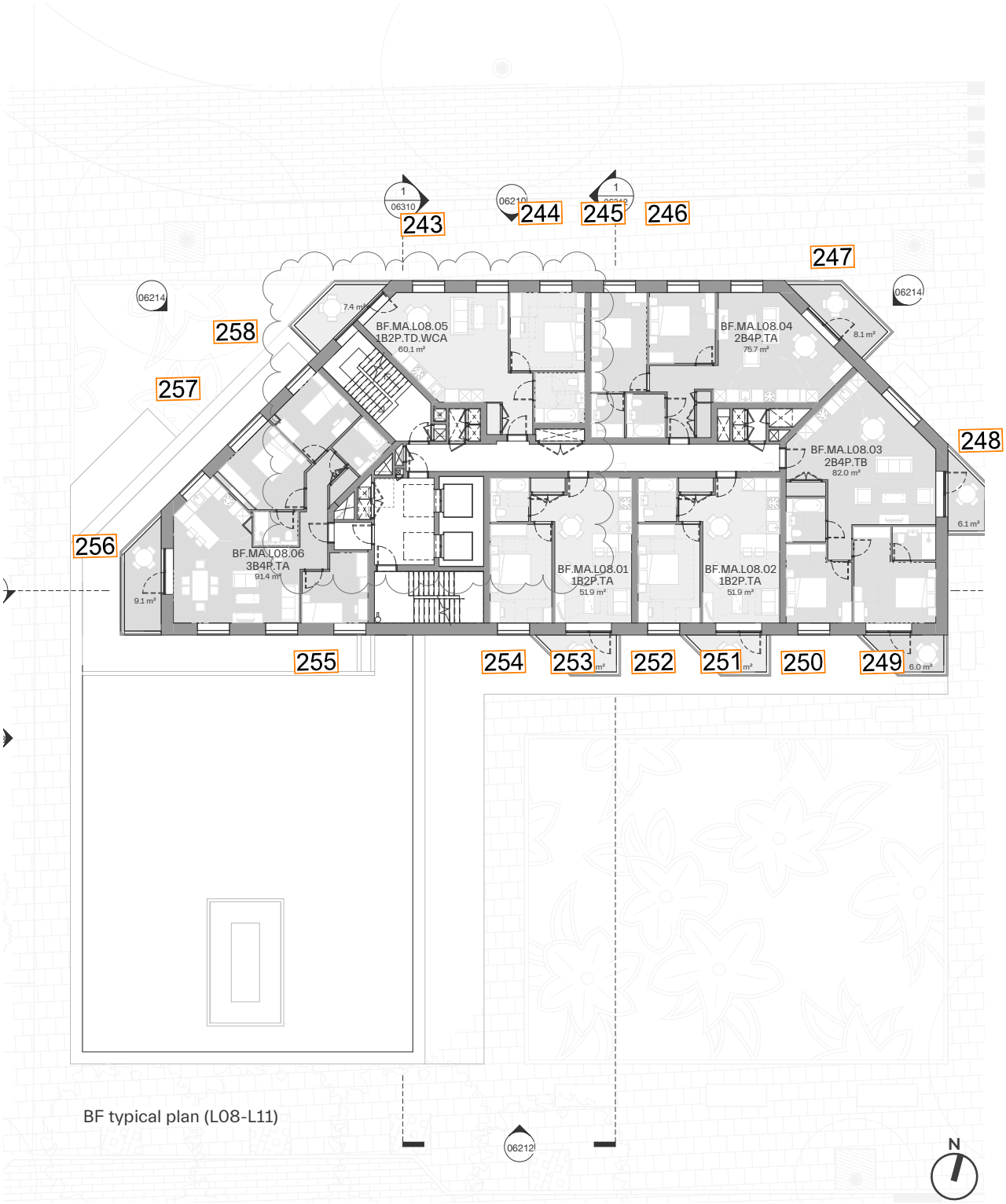
BF typical plan (L08-L11)

Fig. 22: Floor Plan

Block F - Eleventh Floor

ROOM REF.	ROOM USE	DAYLIGHT					SUNLIGHT
		EN SPATIAL DAYLIGHT AUTONOMY percentage of room achieving target illuminance for 2190 hrs (50% of daylit hours) - Weather File: GBR_Gatwick					HOURS:MIN
		100	150	200	TARGET	RELEVANT ENSDA	21 MAR
BLOCK F - LEVEL 11							
243	L/K/D	100.0	100.0	98.9	200	98.9	02:38
244	BEDROOM	100.0	99.6	98.0	100	100.0	00:00
245	BEDROOM	100.0	100.0	76.1	100	100.0	00:00
246	BEDROOM	100.0	100.0	100.0	100	100.0	00:00
247	L/K/D	100.0	100.0	100.0	200	100.0	00:00
248	L/K/D	100.0	100.0	100.0	200	100.0	03:26
249	BEDROOM	100.0	100.0	100.0	100	100.0	07:40
250	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
251	L/K/D	100.0	100.0	100.0	200	100.0	07:40
252	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
253	L/K/D	100.0	100.0	100.0	200	100.0	07:40
254	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
255	BEDROOM	100.0	100.0	100.0	100	100.0	06:21
256	L/K/D	100.0	100.0	100.0	200	100.0	10:17
257	BEDROOM	100.0	100.0	100.0	100	100.0	02:36
258	BEDROOM	100.0	100.0	97.0	100	100.0	01:57

Table 14: Assessment Data



BF typical plan (L08-L11)

Fig. 23: Floor Plan