

Daylight & Sunlight Assessments of Social Housing Bundle 4, Development at Church of the Annunciation, Finglas

Client **Dublin City Council**

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1. Introduction

This development of the construction of 110 residential dwellings at a site c.0.77 ha at the site of the former Church of Annunciation on Cardiffsbridge Road, Finglas, Dublin 11, which will consist of the following:

- One apartment block ranging from 4 to 5-storeys, containing: 110 residential units (106 no. 1-bed and 4 no. 2-bed); and 434 sq.m. of community, arts and cultural facilities.
- 15 no. car parking spaces and 87 no. cycle spaces.
- 935 sq.m. of public open space and 609 sq.m. of communal open space.
- One vehicular and pedestrian access and one dedicated pedestrian access off Cardiffsbridge Road.
- Boundary treatments, public lighting, site drainage works, internal road surfacing and footpath, ESB meter rooms, plant rooms, stores, bin and bicycle storage, landscaping; and
- All ancillary site services and development works above and below ground.

1.1 Executive Summary

This report assesses the impact of the proposed development for Daylight and Sunlight on the neighbouring buildings and the quality of daylight and sunlight within the proposed development. This analysis is carried out based on the drawings of Seán Harrington Architects.

1.2 Assessment of potential impact to daylight and sunlight availability on adjacent properties

1.2.1 Daylight to Adjacent Properties

There will be minimal reduction to the available daylight levels to the adjacent dwellings. All the adjacent dwelling will retain daylight levels in excess of the recommended levels set out in the BRE guidelines BR209:2022 (third edition).

1.2.1 Sunlight to Adjacent Properties

There will be minimal reduction to the potential sunlight levels to the adjacent dwellings. All the adjacent dwelling will retain sunlight levels in excess of the recommended levels set out in the BRE guidelines BR209:2022 (third edition).

There will be minimal reduction in potential available sunlight to private or public amenity spaces of the adjacent properties. The reduction is minimal and any impact will be imperceptible.

The results find that any impact on the adjacent residential structures would be imperceptible. All areas assessed continue to meet or exceed the recommendations of the BRE guidelines (2022).

1.3 Assessment of the quality of the proposed development

The apartments were designed in line with the recommendations of the BRE guidelines. Numerous rounds of design iterations were conducted to improve the daylight and sunlight within in the proposed development. This included a detailed study daylight as effected by the existing deciduous trees. The guidelines clearly state that the they are recommendations only and flexibility is required when setting and interpreting the targets.

BR209:2022 recommends assessment methods set out in BS EN 17037 for daylight provision. BS EN 17037 contains a National Annex (NA1) which sets out minimum daylight levels to be achieved in the UK and channel Islands. Ireland has a similar latitude and climate to the UK. The National Annex in BS EN 17037 states that the target values set out in Table A1 may be hard to achieve in the UK and as a result sets alternative minimum values for rooms to dwellings. The minimum illuminance levels set out in BS EN17037:2018+A1:2021 are: Kitchens and living spaces containing a kitchen 200lux (1.3%DF). Living rooms 150lux (1%DF) and bedrooms 100lux (DF0.7%).

1.3.1 Assessment of daylight in accordance with BR209:2022 and BS EN 17037:2018+A1:2021

100% of the Living, Dining, Kitchen and Bedroom spaces within the proposed development achieve the target values set out in BS EN 17037:2018+A1:2021 section NA1 without trees and with trees in winter condition and are deemed to meet the recommendations of the BRE guidelines. These are the minimum values, per specified use, to be achieved in habitable rooms and meets the recommendations of the BRE guidelines.

1.3.2 Sunlight within the proposed development

110 units, 82.7% (91 units) have a living spaces which achieves the minimum recommended 1.5 direct sunlight hours. When the '9no. Retained Trees' are included in the assessment model, 78.2% (86 units) meet the minimum recommended 1.5 direct sunlight hours. These results are in line with the BRE guidelines example for an apartment layout where 4 in 5 achieves the target sunlight hours.

Both the public and communal amenity spaces achieve sunlight levels that exceed 2 hours sunlight over 50% of the amenity space on the 21st March, and meet the recommendations of the BRE guidelines.

1.4 Supplementary Information - Assessment of daylight in accordance with IS/ BS EN 17037:2018

EN 17037:2018 sets out values for target illuminance, minimum target illuminance and fractions of reference plane to be achieved. The target and minimum target levels set out in EN17037:2018 are for any type of building; they do not take into account room use or make allowance for rooms that have a lesser requirement for daylight.

The results indicate a high level of daylight provision, when the retained trees are included in the assessment model, 96.4% of rooms achieve Minimum Illuminance and 89.3% achieve Target Illuminance. When the assessment is undertaken without any trees the results show 98.2% of rooms achieving Minimum Illuminance and 94.6% achieving Target Illuminance. Appendix C & D identifies any rooms which do not achieve minimum illuminance or target illuminance levels.

To date there is no guidance from governmental bodies on the use or interpretation of IS EN 17038:2018. The local authorities guidelines and apartment guidelines refer to BR209 2022: "Site layout planning for daylight and sunlight" A guide to good practice:(Third edition) which in turn references BS EN 17037. BS EN17037:2018+A1:2021 is the same as IS EN 17037:2018 with the addition of a National Annex (NA1) and the annex specifically refers to and sets room specific values for dwellings in the UK and Channel Islands.

Appendix 16- Sunlight and Daylight of the Dublin City Development Plan 2022-2028 in reference to BS EN 17037 , section 3.3 BS EN 17037:2018 – Daylight in Buildings, states that:*"The minimum daylight provision targets given within the national annex have relevance."*

In section 3.4 IS EN 17037:2018 – Daylight in Buildings, the Appendix states that due to the lack of localisation and provision for specific guidance on individual room use and the absence of guidance on the impact to surrounding properties that: *" These limitations make it unsuitable for use in planning policy or during planning applications. BR 209 must still be used for this purpose."*

1.5 Conclusions

Overall the design team worked in response to the context to ensure the proposed development performed with regards to achieving the best possible daylight and sunlight quality. All apartments meet the minimum standard for daylight provision as per BS EN 17037:2018+A1:2021 as referred to in the BRE guidelines BR209:2022 (third edition). The majority of the apartment units achieve daylight provision as set out in IS EN 17038:2018.

Also of note with regards to internal daylighting section 6.7 of the Sustainable Urban Housing: Design Standards for New Apartments July 2023 states the following:

"Where an applicant cannot fully meet all of the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment of specific (sic). This may arise due to design constraints associated with the site or location and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution."

Furthermore Section 3.2 of the Urban Development and Building Heights: Guidelines for Planning Authorities (2018) states the following:

"Where a proposal may not be able to fully meet all the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, in respect of which the planning authority or An Bord Pleanála should apply their discretion, having regard to local factors including specific site constraints and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution."

All the rooms within the proposed development achieve the minimum target daylight levels set out in BS EN 17037:2018+A1:2021 as referred to in The BRE guidelines BR209:2022 (third edition) when assessed without trees and with trees in winter condition. The BRE guidelines states; *"For a room where the recommendation is exceeded in winter but not in the summer, daylight provision year round is likely to be adequate, but it is clear that trees are having some effect on daylight."* It is our opinion that no compensatory measures are required.

2. Methodology

2.1 Standards and Guidelines

Ministerial guidance is provided in Sustainable and Compact Settlements: Guidelines for Planning Authorities (2024) Section 5.3.7(b).

“In cases where a technical assessment of daylight performance is considered by the planning authority to be necessary regard should be had to quantitative performance approaches to daylight provision outlined in guides like A New European Standard for Daylighting in Buildings IS EN17037:2018, UK National Annex BS EN17037:2019 and the associated BRE Guide 209 2022 Edition (June 2022), or any relevant future standards or guidance specific to the Irish context.”

This is accordance with Section 6.6 of the Sustainable Urban Housing: Design Standards for New Apartments (2023), and Section 3.2 of the Urban Development and Building Heights Guidelines for Planning Authorities (2018).

The Daylight and Sunlight assessments included in this report demonstrates the level of compliance with these three documents:

- BR209:2022 Site Layout Planning for Daylight and Sunlight (Third edition), also referred to as the BRE guidelines.
- BS EN 17037:2018+A1:2021 Daylight in Buildings, also referred to as the UK Annex.
- IS EN 17037:2018 Daylight in Buildings.

As Appendix 16- Sunlight and Daylight of the Dublin City Development Plan 2022-2028 references BRE ‘Site Layout Planning for Daylight and Sunlight’ 2011 (Second edition), it is considered that the guidance in the Development Plan has been superseded by the BRE Guidelines 2022 and therefore it is not necessary to assess the scheme against the recommendations in Appendix 16 also.

2.2 BRE Guidance Document BR209:2022 - Site Layout Planning for Daylight and Sunlight (3rd edition).

The BRE guidelines (2022) state at the outset that “It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location.” The recommendations of the BRE guidelines (2022) are not suitable for rigid application to all developments in all contexts and this is of particular importance in the context of national and local policies for the consolidation and densification of urban areas.

BR209 2022 sets out the assessment metrics to be applied when assessing the potential impact of a development on the daylight and sunlight of neighbouring properties. The metrics for assessing impact to adjacent buildings in the areas of Daylight is the Vertical Sky Component (VSC) and Sunlight is the Annual Probable Sunlight Hours (APSH). Sunlight to adjacent amenity space is assessed through the measurement of sunlight availability on the 21st March and the plotting of shadow diagrams.

The BRE guidelines (2022) recommend the use of BS EN 17037:2018 for assessing the quality of interior spaces in proposed developments. BS EN 17037 sets out assessment methods for daylight provision and access to sunlight. It states that “The guidance here is intended for use in the United Kingdom and in the Republic of Ireland, though recommendations in the Irish Standard IS EN 17037 may vary from those in BS EN17037.”

EN 17037 is a unified daylighting standard published by the European Committee for Standardization (CEN) in 2018. It is applicable across all countries within the EU including Ireland with the Irish edition IS EN17037:2018. The standard is enacted in Britain under BS EN 17037:2018+A1:2021 with a UK National Annex for regional assessments. The daylight and sunlight assessment methods for internal daylight and sunlight provision are common to both the Irish Standard Version and the UK version.

The UK National Annex (NA) provides further recommendations for daylight provision in the UK and Channel Islands. NA.1 states that the UK committee supports the recommendations for daylight in buildings given in BS EN17037:2018. The annex states that the daylight target levels in Clause A.2 may be hard to achieve in buildings in the UK and in particular dwellings in urban areas with significant obstructions or tall trees outside. NA.2 sets out minimum daylight provision to be achieved in UK dwellings.

The UK National Annex A1 sets out room specific minimum values to be achieved in the UK and Channel Islands. All the rooms achieve the minimum DF factor levels set out in A1 for Bedrooms (DF0.7%), Living Rooms (1%DF) and Kitchens and Living Spaces containing a Kitchen(1.3%). The Daylight Factor percentage values are derived from minimum room specific illuminance levels set out in NA+1 and the Median External Diffuse Illuminance ($E_{v,d,med}$) for Dublin from Table A.3 EN17037:2018. The illuminance levels and corresponding DF% are given in Table 5 below.

2.3 Daylight to Existing Dwellings

BRE guidance document (2022) “Site layout planning for daylight and sunlight” relates to daylight and sunlight to potential impact in neighbouring buildings. As set out above, this is broadly in line with the previous version of the BRE guidelines (2011). The metrics are the same for assessing impact in the areas of Daylight (VSC) and Sunlight (APSH) to adjacent buildings. Sunlight to adjacent amenity space is assessed through the measurement of sunlight availability on the 21st March.

A proposed development could potentially have a negative effect on the level of daylight that a neighbouring property receives, if the obstructing building is large in relation to their distance from the existing dwelling. To ensure a neighbouring property is not adversely affected, the Vertical Sky Component (also referred to as VSC) is calculated and assessed. VSC can be defined as the amount of skylight that falls on a vertical wall or window.

BRE guidelines (2022) recommend that: *“Loss of light to existing windows need not be assessed if the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window.”*

The diffuse light of the existing building may be adversely affected if part of a new building measured in a vertical section perpendicular to the main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25° to the horizontal. If a window falls within a 45° angle both in plan and elevation with a new development in place then the window may be affected and should be assessed.

The guidelines sets out which rooms need to be assessed for daylight in Section 2.2:

“The guidelines here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed. The guidelines may also be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight; this would normally include schools, hospitals, hotels and hostels, small workshops and some offices”;

For loss of daylight the BRE guidelines (2022) recommends calculation of the Vertical Sky Component. This is the ratio of direct sky illuminance falling on the outside window, to the simultaneous horizontal illuminance under an unobstructed sky. The standard CIE Overcast Sky is used and the ratio is usually expressed as a percentage. The maximum value is just under 40% for a completely unobstructed vertical wall. The Vertical Sky Component on a window is a good measure of the amount of daylight entering it.

The BRE guidelines (2022) recommend one of two criteria is met when assessing for the Vertical Sky Component:

- a) Where the Vertical Sky Component at the centre of the existing window exceeds 27% with the new development in place then enough sky light should still be reached by the existing window.
- b) Where the Vertical Sky Component with the new development in place is both less than 27% and less than 0.8 times its former value, then the area lit by the window is likely to appear more gloomy, and electric light will be needed more of the time.

The BRE guidelines (2022) state that if the VSC is:

- At least 27%, then conventional window design will usually give reasonable results;
- Between 15% and 27%, then special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight;
- Between 5% and 15%, then it is very difficult to prove adequate daylight unless very large windows are used;
- Less than 5%, then it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed

This report assesses the percentage of direct sky illuminance that falls on the centre point of neighbouring windows that could be affected by the proposed development through the Vertical Sky Component (VSC) as per the methodologies contained in the BRE guidelines (2022).

2.4 Sunlight to Existing Buildings

The BRE guidelines (2022) recommend assessing the main living rooms and conservatories if they have a window wall facing within 90° of due south. Kitchens and bedrooms are less important but care should be taken not to block too much sun. If the proposed development is fully north of the existing window then sunlight need not be assessed.

The Annual Probable Sunlight Hours (APSH) is used to assess the quantity of sunlight for a given location. This is the total amount of sunshine for a given location on an unobstructed horizontal surface taking cloud cover into account. Statistical data from the Irish Meteorological Service is used to assess the APSH and the Winter Probable Sunlight Hours (taken to fall between the 21st of September and the 21st of March).

Table 1 below shows the average sunlight hours for each month and the maximum possible without any cloud cover. This gives the factor of possible sunlight hours for each month.

Met Éireann Sunlight Hours Data Set 1991-2020													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Average Sunlight Hours/ Day	1:54	2:54	3:42	5:24	6:24	6:00	5:17	5:00	4:24	3:24	2:24	1:42	
Average Sunlight Hours/ Month	58:54	81:12	114:42	162:00	198:24	180:00	163:47	155:00	132:00	105:24	72:00	52:42	1449.1
Total Available Sunlight Hours	252	265	358	412	483	485	496	451	375	320	250	236	4383
Probable Sunlight Hours Ratio	23.4%	30.6%	32.9%	39.3%	41.1%	37.1%	33.0%	34.4%	35.2%	32.9%	16.8%	22.3%	33.1%

Table 1: Average monthly sunlight hours recorded at Dublin Airport - Data set 1991-2020

The BRE guidelines (2022) recommend that the centre of a window or 1.6m above ground for a door be assessed and it should receive at least 25% of the APSH and it should receive at least 5% during the period of 21st September to 21st March. If the available APSH is less than this then it should not be reduced below 0.8 times its former value or noticeable loss of sunlight may occur.

2.5 Sunlight to Gardens and Open Spaces

For calculations of sunlight analysis it is general practice to use March 21st. The BRE guidelines (2022) states:

“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 which can receive two hours of sun on 21 March is less than 0.8 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.”

2.6 Calculations of Trees & Hedges

Trees are not usually included in the assessments of impact on neighbouring properties, unless specified otherwise. In relation to the effects of trees and hedges the BRE guidelines (2022) states:

“It is generally more difficult to calculate the effects of trees on daylight because of their irregular shape and because some light will generally penetrate through the crown. Where the effects of a new building on existing buildings nearby is being analysed, it is usual to ignore the effects of existing trees. This is because daylight is at its scarcest and most valuable in winter when most trees will not be in leaf.”

BR209:2022 recommends that sometimes trees should be taken into account for the proposed development where the new development is proposed near large existing trees. This needs to be done by modelling a representative of the existing trees. Reflectance and transparency should be taken into account. Table G1 in BR209:2022 gives values for transparencies of tree crowns in summer and winter for deciduous trees, dense evergreen can be assessed as opaque. Table G2 gives general reflectance values for shades of trees.

Model trees representing the breath and height of the existing trees are included with dynamic leaf condition for the annual daylight illuminance calculation. It should be noted that assessment of the results which include the simulation of trees should be viewed with caution due the difficulty in simulation on site tree conditions.

2.7 BRE Guidelines (2022) Appendix H: Environmental Impact Assessment

The BRE guidelines sets out criteria for classification for assessment of impact where a new development affects a number of existing buildings or open spaces in relation to an Environmental Impact Assessment. The guide does not give a specific range or percentages but sets out parameters set out below.

“Where the loss of skylight or sunlight fully meets the guidelines in this book, the impact is assessed as negligible or minor adverse. Where the loss of light is well within the guidelines, or only a small number of windows or limited area of open space lose light (within the guidelines), a classification of negligible impact is more appropriate. Where the loss of light is only just within the guidelines, and a larger number of windows or open space area are affected, a minor adverse impact would be more appropriate, especially if there is a particularly strong requirement for daylight and sunlight in the affected building or open space.

Where the loss of skylight or sunlight does not meet the guidelines in this book, the impact is assessed as minor, moderate or major adverse. Factors tending towards a minor adverse impact include:

- *only a small number of windows or limited area of open space are affected*
- *the loss of light is only marginally outside the guidelines*
- *an affected room has other sources of skylight or sunlight*
- *the affected building or open space only has a low level requirement for skylight or sunlight*
- *there are particular reasons why an alternative, less stringent, guideline should be applied.*

Factors tending towards a major adverse impact include:

- *a large number of windows or large area of open space are affected*
- *the loss of light is substantially outside the guidelines*
- *all the windows in a particular property are affected*
- *the affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight, eg a living room in a dwelling or a children’s playground.*

Beneficial impacts occur when there is a significant increase in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space.

Beneficial impacts should be worked out using the same principles as adverse impacts. Thus a tiny increase in light would be classified as a negligible impact, not a minor beneficial impact.”

A flexible approach should be taken when assessing the impact with daylight and sunlight being one of many factors that influence the environment when planning a new development.

The BRE guidelines does not set out a specific value range for the different classification of impact level of Minor, Moderate and Major to each window. For the purpose of this report one of five classification levels will be applied:

1. Imperceptible: There is no reduction in the VSC levels or where the levels are 99% of the existing value.
2. No substantial change: A reduction in the VSC level but it retains a VSC >27% or <27% but >80% of the existing value
3. Minor reduction: A reduction below <27%VSC and <80% of the existing value but greater than 20% VSC.
4. Moderate reduction: A reduction below <20%VSC and <80% of the existing value but greater than 10% VSC.
5. Major reduction: A reduction below <10%VSC and <80% of the existing value.

The evaluation of the impact should be considered in conjunction with other factors when determining the overall impact level to a property.

2.8 Daylight in the Proposed Development.

BR209 (2022) Appendix C sets out interior daylight recommendations. The guideline sets out the that; “BS EN 17037 supersedes BS8206 Part 2 ‘Code of practice for daylighting’ which contained a method of assessment based on Average Daylight Factor, which is now no longer recommended.

BS EN 17037:2018+A1 sets out two methods for assessing daylight provision in proposed buildings. One method is called the **Illuminance method**. This is based on Target illuminances for daylight to be achieved across specified fractions of a reference plane at working plane height (0.85m) for half the daylight hours in a year. The Illuminance Method requires the use of a suitable weather file with local climate conditions and takes into account the orientation of the space.

The alternative method is called the **Daylight Factor Method**. This method is based on calculating the daylight factors achieved over specific fractions of a reference plane. The Daylight factor is the illuminance at a point on a reference plane in a space, divided by the illuminance on an unobstructed horizontal surface outdoors. This method uses an overcast sky for calculation and the assessment of the space is orientation independent. BS EN 17037 gives the Median External Diffuse Illuminance (Ev,d,med) for the capital cities throughout Europe to account for external local illuminance levels.

The UK National Annex (NA) sets out additional minimum room specific Target Daylight Factor values for the UK where the target values in A2 are hard to achieve. NA.2 sets out illuminance values to be exceeded over at least 50% of the points on a reference plane 0.85m above the floor for at least half the daylight hours. The UK committee formed the opinion that the Target Illuminance recommendations in Clause A.2 of BS EN 17037 may not be achievable for some buildings, particularly dwellings. The UK committee believes this could be the case for dwellings with basement rooms or those with significant external obstructions.

BR209 (2022) recommends surface reflectances should represent real conditions and where reflectance values have not been measured or specified default values are set out in Table C4 of the guidance document. The surface reflectances have been specified and are set out in Table 2 below. This table also shows the input values for material used and additional assessment model input parameters.

Input Values for Assessment Model			
Surface Reflectance			
Element	Reflectance	Transmittance	Material Description
Internal walls	80%	0%	White Painted Walls
Internal ceiling	80%	0%	White Painted Ceiling
Floor - light wood	40%	0%	Light wood Flooring
External walls - proposed development	50%	0%	Brick
External walls - outside site	50%	0%	CIBSE
External ground	20%	0%	CIBSE
Glass		68%	Triple glazed clear glass
Maintenance Factor for Glass		Assessment Plane	
Suburban Vertical no overhang	0.96	Sensor Grid spacing	0.3m
Suburban Vertical sheltered by balcony or overhang	0.88	Sensor grid inset	0.35m
Framing Factor: Patio Doors	0.77	Minimum inset	0.3m
		Work plane offset	0.85m

Table 2: Surface reflectance parameters and input values for model calculations

The EN17037:2018 Standard deals exclusively with new developments and does not give guidance or metrics on loss of light

or sunlight to existing properties. EN 17037:2018 sets out values for Minimum and Target levels to be achieved with a minimum, medium and high compliance level for each. The guideline recommends that the minimum level should be achieved for both target levels but it does not give guidance on the number of units or fraction within a multiple residential unit development that should achieve these values. Additionally it does not differentiate between room use and weighted targets for rooms which would have a lesser requirement. The UK National annex sets out factors for UK specific settings where it is difficult to achieve natural daylighting.

The compliance calculation is based on an annual, climate-based simulation of interior illuminance distributions. BR209 refers to this method as the Illuminance Method. For each hour of the year, the percentage of the floor area achieving minimum and target illuminance thresholds are measured on a room-by-room basis. Two target types are set with the following criteria:

- Target Illuminance: 300 lux over 50% of floor area for at least 50% of daylight hours.
- Minimum Illuminance: 100 lux over 95% of floor area for at least 50% of daylight hours.

BS EN 17037 gives three levels of recommendation for daylight provision in an interior space: Minimum, Medium and High. BR209:2022 Section C3 recommends for compliance with the standard, a space should achieve the Minimum level.

Daylight hours are defined as the 4380 hours with the most diffuse horizontal illuminance in the weather file. In addition to this baseline (Minimum) requirement, rooms can achieve Medium and High levels of compliance by meeting higher illuminance thresholds, as outlined in the table below:

Target Illuminance from Daylight over at least half the daylight hours		
Level of recommendation	Target illuminance $E_T(lx)$ for half of the assessment grid	Minimum illuminance $E_{TM}(lx)$ for 95% of the assessment grid
Minimum	300 lux	100 lux
Medium	500 lux	300 lux
High	750 lux	500 lux

Table 3: IS / BS EN 17037:2018 Target Illuminance from Daylight over at least half the daylight hours.

Target Daylight Factor (D) for Dublin*		
Level of recommendation	Target daylight factor D for half of the assessment grid	Minimum daylight factor D for 95% of the assessment grid
Minimum	2%	0.7%
Medium	3.5%	2%
High	5%	3.5%

Table 4: IS / BS EN 17037:2018 Target Daylight Factor (D) for Dublin.

Target Minimum Daylight Factor (D) for Dublin* based UK National Annex		
Room Type	Target illuminance $E_T(lx)$ for half of the assessment grid	Target daylight factor D from Table A.3 EN17037 $E_{v,d,med}$ for Dublin -14,900
Bedroom	100 lux	0.7%
Living Room	150 lux	1%
Kitchen	200 lux	1.3%

* EN17037 uses the latitude of the capital city of each European country to set individual values for daylight and sunlight metrics for use in setting the target levels to be achieved in a particular country.

Table 5: BS EN 17037:2018+A1:2021 Target Illuminance levels and Daylight Factor (D) for Dublin.

2.9 Sunlight within Proposed Developments

The BRE guidelines (2022) recommend that for large residential developments the overall sunlight potential can be initially assessed by counting the number of windows facing south, east and west and the aim should be to minimise the number of living rooms facing solely north, north-east or north-west unless there is some compensating factor such as an appealing view to the north. The guidelines acknowledge that it may not be possible to have every living room facing within 90° of south in large developments, however, it recommends maximising the number of units with a southerly aspect.

The BRE guidelines (2022) state that BS EN 17037 should be used to assess for interior access to direct sunlight and that the assessment of APSH should no longer be used. BS EN 17037 sets recommendations for access to sunlight and notes three levels of achievement; Minimum, Medium and High. In dwellings at least one habitable room, preferably a living room, should achieve the Minimum of 1.5 direct hours on a specified date between 1st February and 21st March, with a cloudless sky. This assessment uses the 21st March. The guidelines recommend a time step of 5 minutes or less for the assessment interval. The Minimum level to achieve is 1.5, the Medium level is 3 hours and the High level is 4 hours direct sunlight.

3. Assessment of Daylight in Neighbouring Buildings

3.1 Site Overview

The subject site (c. 0.77 Ha) is located sites on the footprint of the former Church of the Annunciation. It is a brownfield site, currently made up of a combination of former tarmacadam surface parking and access paving to the church, and a rubble/rock fill ground mat resulting from the demolition of the former church. The site is currently idle and has been hoarded off from the public. Access and utilities are provided off Cardiffsbridge Road.

The site falls within DCCDP's Strategic Development Regeneration Area for Finglas (SDRA3). This identifies the former Church of the Annunciation site as providing for a proposed Church/ Pastoral Centre and also Older Person's Housing. To the northern third of the site, planning permission has been recently granted for a more modest replacement for the former Church of the Annunciation (PA. Reg. Ref 3023/19 : Demolition of the existing Church of the Annunciation building and construction of a new church/parish pastoral centre building on a smaller site.) Dublin City Council (DCC) have identified the remainder of the site as providing for Older Person's Housing, which is the subject of this planning application.

There is a secondary school, Coláiste Eoin to the west of the site. The land directly south are currently an open field, parking and courts associated with Leisure Point, sport and fitness centre. There are mature deciduous trees on the eastern and southern boundary of the site. At the preliminary design stage, the impact on daylight and sunlight to the proposed development from the existing trees to the west of the site was reviewed in detail. This can be found in Section 5 and Appendix E below.



Figure 1: Indicative view of the site, taken from Google Earth.



3.2 Preliminary Assessment of Adjoining Dwellings

The BRE guidelines BR209:2022 (third edition) recommend that loss of light to existing windows need not be assessed if the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window. The zone of influence 3 times the height of the proposal is plotted in Figure 2 in yellow.

Section planes perpendicular to the window wall of the adjacent properties facing the proposed development are indicated in blue in Figure 2. The planes at locations A - C extend and if they intersect the proposed development, they are plotted in figure 3 below.

The document also states that if part of a new building measured in a vertical section perpendicular to the main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25° to the horizontal, then the diffuse light of the existing building may be adversely affected. If a window falls within a 45° angle both in plan and elevation with a new development in place then the window may be affected and should be assessed.

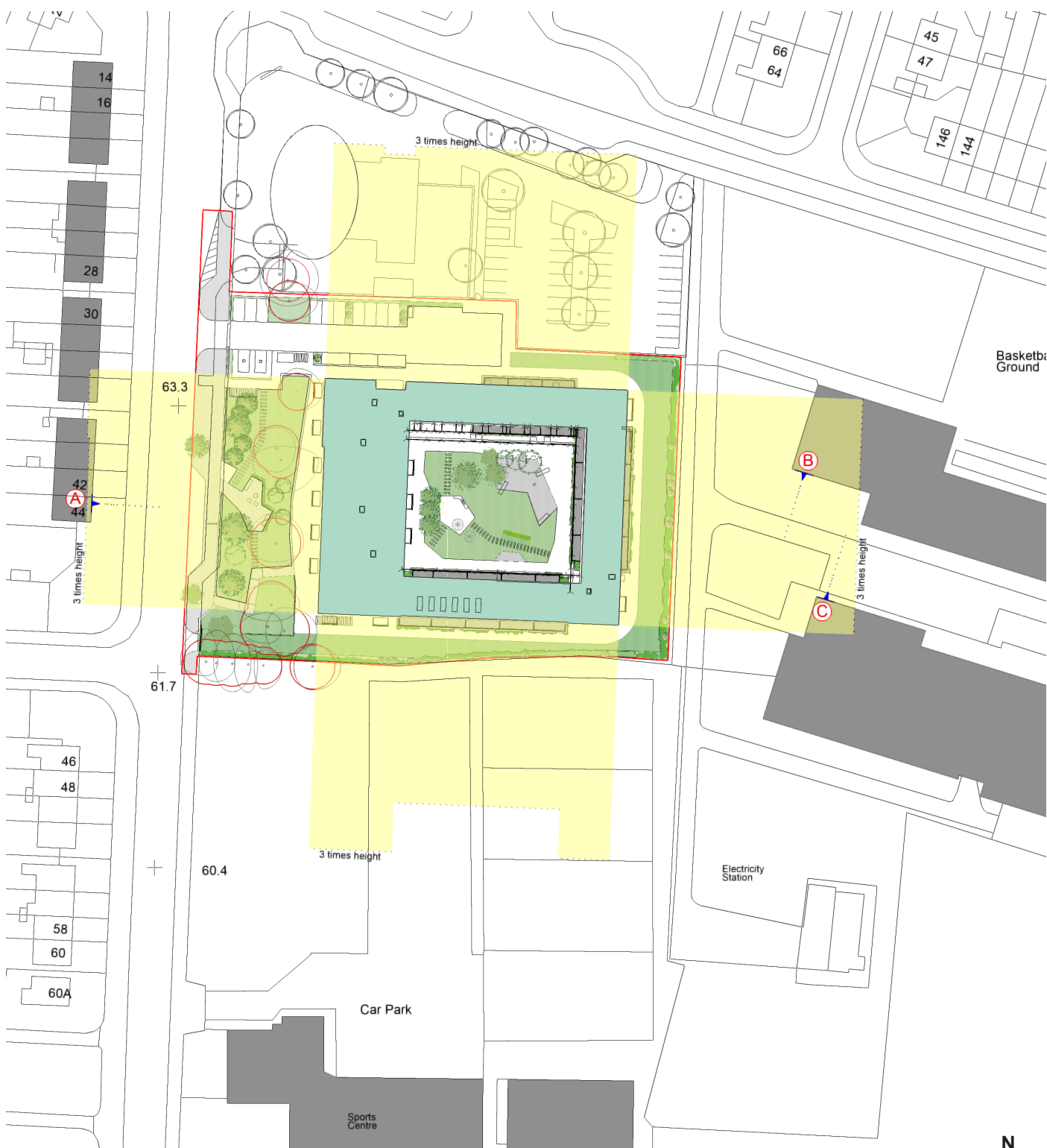


Figure 2: Proposed site plan showing the zone of influence (3 times the height of the proposed building) and direction of the window wall of adjacent residential properties.



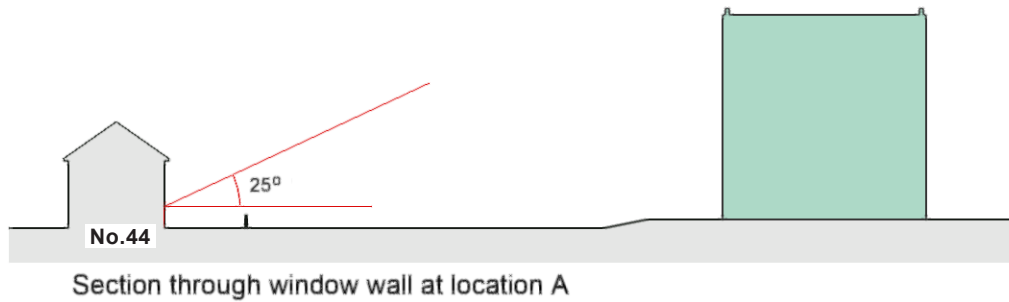


Figure 3: Section perpendicular to window wall at locations indicated in Figure 2.

3.3 Comment on the Preliminary Assessment of Daylight in Adjacent Buildings.

There are no relevant buildings to the North or South of the site within the area required to be considered for impact to daylight and sunlight. The houses to the opposite side of Cardiffsbridge Road were assessed. A section was taken through No.44.

Location A: The proposed development does not subtend the 25° angle indicating a reduction any reduction in daylight and sunlight will be negligible, indicating that there would be no perceptible impact on their daylight. A detailed assessment is not required.

Locations B & C though Coláiste Eoin Post Primary School: The windows do not face the proposed development indicating any reduction in available daylight will be negligible. No further assessment required.

3.4 Conclusion of Potential Impact to Daylight in Adjacent Buildings.

Any reduction in available daylight from the proposed development will be negligible and meets the recommendations of the BRE guidelines BR209:2022 (third edition).

4. Assessment of Sunlight to Adjoining Properties

4.1 Sunlight the neighbouring dwellings (Annual Probable Sunlight Hours)

The BRE guidelines BR209:2022 (third edition) recommend assessing window walls for the APSH that face within 90° of due south. The guidelines state that;

“ In housing the main requirement for sunlight is living rooms, where it is valued at any time of 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.”

For a proposed development to have a noticeable impact on the annual Probable Sunlight Hours the value need to be reduced below the recommended 25% annual or 5% in the winter period from September to March. If the value is either below this to begin with or is reduced below this then it should not be reduced below 0.8 times its former value.

The BRE guidelines states that obstruction to sunlight may become an issues if;

- *Some part of a new development is situated within 90° of due south of a main window wall of an existing building*
- *In the section drawn perpendicular to this existing window wall, the new development subtends an angle greater than 25° to the horizontal measured from the centre of the lowest window to a main living room.*

In Figure 3 above a section taken through No.44 Cardiffsbridge Road (Figure 2 - Location A): The 25° line is not subtended by the proposed development, indicating any reduction in available sunlight will be negligible, no further assessment required.

There are no windows with a requirement for sunlight that would be impacted by the proposed development.

4.2 Sunlight to Adjoining Amenity Spaces

The BRE guidelines BR209:2022 (third edition) indicate that for an amenity area to have good quality sunlight throughout the year, 50% should receive in excess of 2 hours sunlight on the 21st March. It also states that front gardens need not be assessed for sunlight. Amenity spaces which are entirely south of the proposed development would not be impacted by it.

The shadow diagrams in Section 8 indicate that the shadows caused by the proposed development do not extend to any private garden or amenity space with a requirement for sunlight on the 21st march and no detailed assessment is required.

4.3 Conclusion

There will be no reduction in sunlight to any of the neighbouring amenity spaces with a requirement for sunlight and the proposed development meets the requirements of the BRE guidelines BR209:2022 (third edition).

5. Daylight within the Proposed Development

All habitable rooms within the units were assessed for daylight provision by illuminance method. The Illuminance method assesses the daylight levels over at least 50% daylight hours in the year and uses a weather file data set. These methods take into account the orientation of the space. They provide an accurate representation of the daylight provision to a specific room in the context of the proposed environment.

5.1 Study of Daylight Provision in relation to the existing mature trees on site.

At the preliminary design stage, the impact on daylight and sunlight to the proposed development from the existing trees to the west of the site was reviewed in detail. This assessment was developed to establish a balance of acceptable levels of daylight to the proposed apartment units whilst maintaining the general extent of the existing tree line and to determine the minimum number of trees that require removal. This iterative study of daylight provision has been undertaken in consultation with the architectural and landscape consultants, it is attached in Appendix E.

The proposal, the subject of this planning application, is broadly aligned with the preliminary design scheme. In order to meet the minimum daylight and sunlight requirements, it is proposed to retain 9no. trees within close proximity to the proposed western façade, herein referred to '9no. Retained Trees'.

The assessment of the current proposal was undertaken with '9no. Retained Trees' and also without any trees. A summary of the results, under BS EN 17037:2018+A1:2021, are presented in Table 6 below and a complete set of room results and generated analysis for '9no. Retained Trees' are shown in Appendix A.

5.2 Assessment for Daylight Provision BS EN 17037:2018+A1:2021

The UK National Annex (A1) contains minimum room specific target values for dwellings in the UK. The UK committee fully supports the recommendations of EN17037:2018 but considers the target daylight levels may be hard to achieve in UK dwellings, in particular in urban areas and areas with mature trees. The Target and Minimum levels set out in IS / BS EN17037:2018 do not take into account room use or make allowance for room that have a lesser requirement for daylight. The UK National Annex A1 in BS EN17037:2018+A1:2021 sets out room specific minimum values to be achieved in the UK and Channel Islands. These target values are set to achieve similar minimum daylight levels as the superseded Average Daylight Factor method (ADF) in BS8206-2 2008.

Minimum daylight provision UK NA.1 - BS EN 17037:2018+A1:2021					
	Room Use	Number of rooms	Target illuminance $E_v(lx)$ for half of the assessment grid	Number of rooms to achieve target Lux over 50% of the assessment grid	Percentage of rooms achieving Target
9no. Retained Trees	LKD	110	200	108	98.10%
	Bedrooms	114	100	114	100.0%
Total		224		222	99.1%
Model without trees	LKD	110	200	110	100.0%
	Bedrooms	114	100	114	100.0%
Total		224		224	100.0%

Table 6: Summary of room for Target Illuminance compliance with BS EN 17037:2018+A1:2021. Individual room results can be viewed in Appendix A.

The assessment with trees is carried out with a dynamic leaf condition for simulation trees in the illuminance method which takes into account the seasonal leaf condition during the year. The results are inclusive of both summer and winter conditions.

An assessment of the proposed development with winter only condition resulted in all room achieving the minimum target value. The BRE guidelines states; *"For a room where the recommendation is exceeded in winter but not in the summer, daylight provision year round is likely to be adequate, but it is clear that trees are having some effect on daylight."* The proposed development is deemed to meet the recommendations of the BRE guidelines.

5.3 Conclusion

BR209:2022 recommends assessment methods set out in BS EN 17037 for daylight provision. 100% of the Living, Dining, Kitchen and Bedroom spaces achieve the target values set out in BS EN 17037:2018+A1:2021 section NA1 when assessed without trees and 99.1% achieve the target value when assessed with trees. 100% of the rooms achieve the minimum target value for the winter condition. These are the minimum values set out for different habitable residential room types to be achieved.

5.4 Supplementary Information - Assessment for Daylight Provision IS / BS EN 17037:2018

For supplementary information, an assessment of Daylight Provision with the illuminance method under IS /BS EN 17037:2018 were undertaken both with '9no. Retained Trees' and without any trees. A summary of the results are presented in Table 7 below, a schedule of room results are shown in Appendix B & C.

Daylight provision Illuminance Method IS EN 17037:2018						
		Below Target	Minimum	Medium	High	Percentage of rooms achieving Target
Model without trees	Target Illuminance	5.4%	9.8%	53.1%	31.7%	94.6%
	Minimum Illuminance	1.8%	18.8%	46.9%	32.6%	98.2%
9no. Retained Trees	Target Illuminance	10.7%	15.6%	45.5%	28.1%	89.3%
	Minimum Illuminance	3.6%	24.1%	44.6%	27.7%	96.4%

Table 7: Percentage of rooms at each level to IS/BS EN 17037:2018. Individual room results can be viewed in Appendix B & C

The results indicate a high level of daylight provision, when the retained trees are included in the assessment model, 96.3% of rooms achieve Minimum Illuminance and 89.3% achieve Target Illuminance.

The recommendations for Daylight provision in Table A1 are not specific for dwellings and do not make allowance for room use. BS EN 17037:2018+A1:2021 address this with the National Annex NA.1 which sets out room specific targets for dwellings and compliance for this is presented in Section 5.3.

6. Sunlight within the Proposed Development

6.1 Sunlight Hours

BR209:2022 (third edition) and BS EN 17037 set out recommendations for sunlight hours to be achieved preferably in a main living space. The guidelines recommends the sunlight hours should be assessed preferably on the 21st March over the course of the day. The guidelines sets three levels of achievement. Minimum 1.5h, Medium 3h and High 4h. The guideline does not set the percentage of units that need the achieve the recommendations but does give an example of a well designed floor layout in figure below where 4 out of 5 units in an apartment building would achieve the target sunlight.

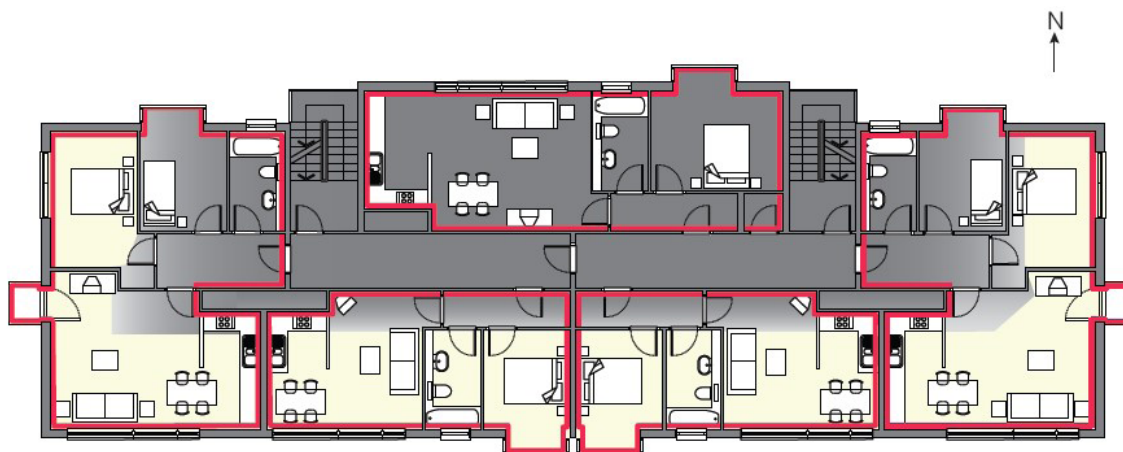


Figure 26: Careful layout design means that four out of the five flats shown have a south-facing living room

Figure 4: Extract from BR209:2022 Section 3 Sun-lighting: Diagram indicating sample floor plan to maximise units with a main living space facing south.

Appendix D details the results per habitable room and indicating if this room has a relevant South facing window. The assessments were undertaken with '9no. Retained Trees' and also without any trees. A summary of these results are displayed in the table below.

Sunlight Hours Summary Table									
	Total Units	Rooms with a window within 90° South		Below recommendation <1.5 hours	Minimum >1.5 hours	Medium >3 Hours	High >4 Hours	Number meets criteria	Ratio meets criteria
		No.	Ratio						
Model without any trees	110	86	78.2%	19	0	18	73	91	82.7%
9no. Retained Trees				24	6	19	61	86	78.2%

Table 8: Summary of results of assessment of Sunlight Hours

6.2 Comment on EN 17037 Sunlight Hours

The BRE Guidelines recommend maximising the amount of units that have a window within 90° due South but does not have set targets. The guidelines acknowledges that for large developments with site constraints its not possible to achieve south facing windows to all main living spaces. In this development all of 110 units were assessed, 86no. (78.2%) have window to a Living room or Kitchen/ Dining room which face within 90° South.

Often windows with an aspect of greater than 90° due South, to the North West or North East, will still receive sunlight, but it is likely to be lesser amounts especially in the winter period. In this development of 110 units, 82.7% (91 no.) have a living spaces achieve the minimum recommended 1.5 direct sunlight hours.

6.3 Conclusion

110 units, 82.7% (91 units) have a living spaces which achieves the minimum recommended 1.5 direct sunlight hours. When the '9no. Retained Trees' are included in the assessment model, 78.2% (86 units) meet the minimum recommended 1.5 direct sunlight hours. These results are in line with the BRE guidelines example for an apartment layout where 4 in 5 achieves the target sunlight hours.

7. Sunlight to Amenity within the Proposed Development

The BRE guidelines BR209:2022 (third edition) indicates that for an amenity area to have good quality sunlight throughout the year, 50% should receive in excess of 2 hours sunlight on the 21st March. It also states that front gardens need not be assessed for sunlight.

The amenity spaces are assessed for the amount of direct sunlight received by the space in 5 minute intervals between 8am and 6pm on the 21st March over an analysis grid with a 300mm grid size and the average is calculated.

7.1 Sunlight to Amenity Within the Proposed Development

The amenity area within this proposal have been assessed with a calculation of Sunlight on the Ground on the 21st March. Generated analysis is shown in Figure 5 and the results are set out in Table 9 below. For supplementary information the full extent of landscaped area outside of the building, to the site boundary, is shown in Figure 6.

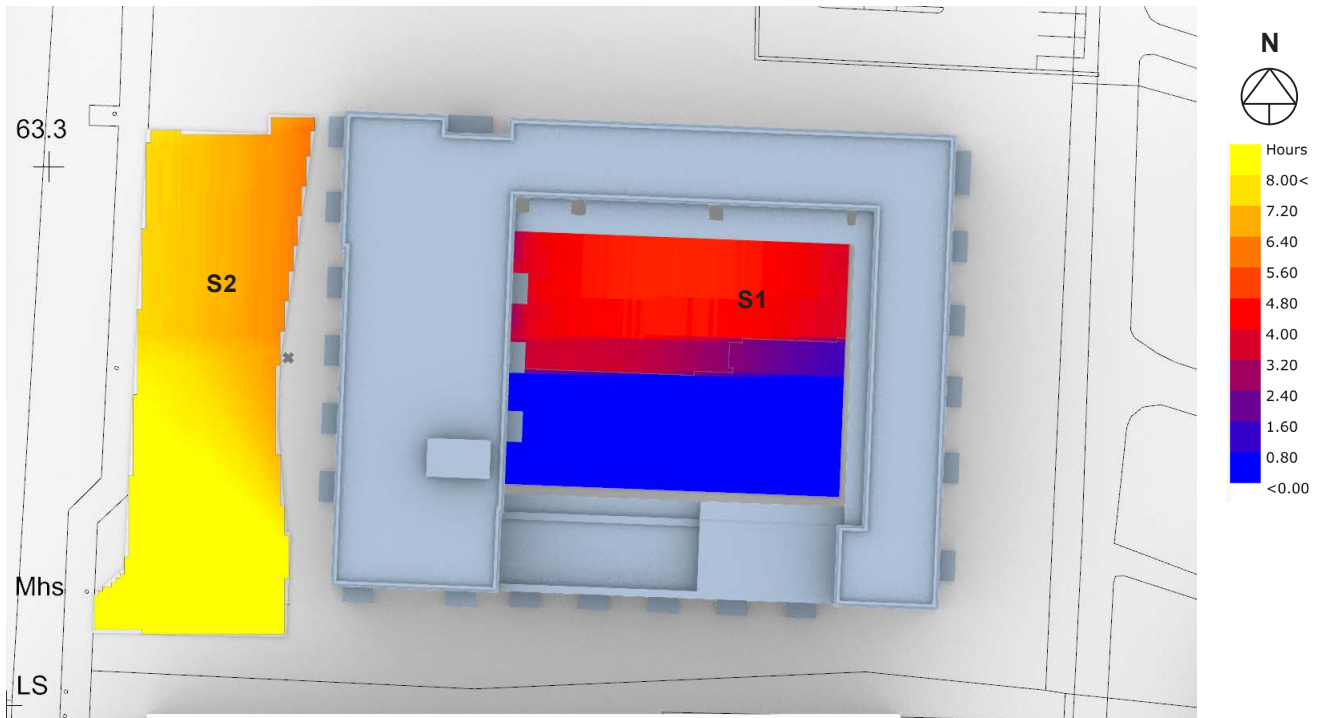


Figure 5: Radiation map of amenity within the Proposed Development, showing available sunlight on 21st March. The scale represents the percentage of daylight received from 0 - 8 hrs.

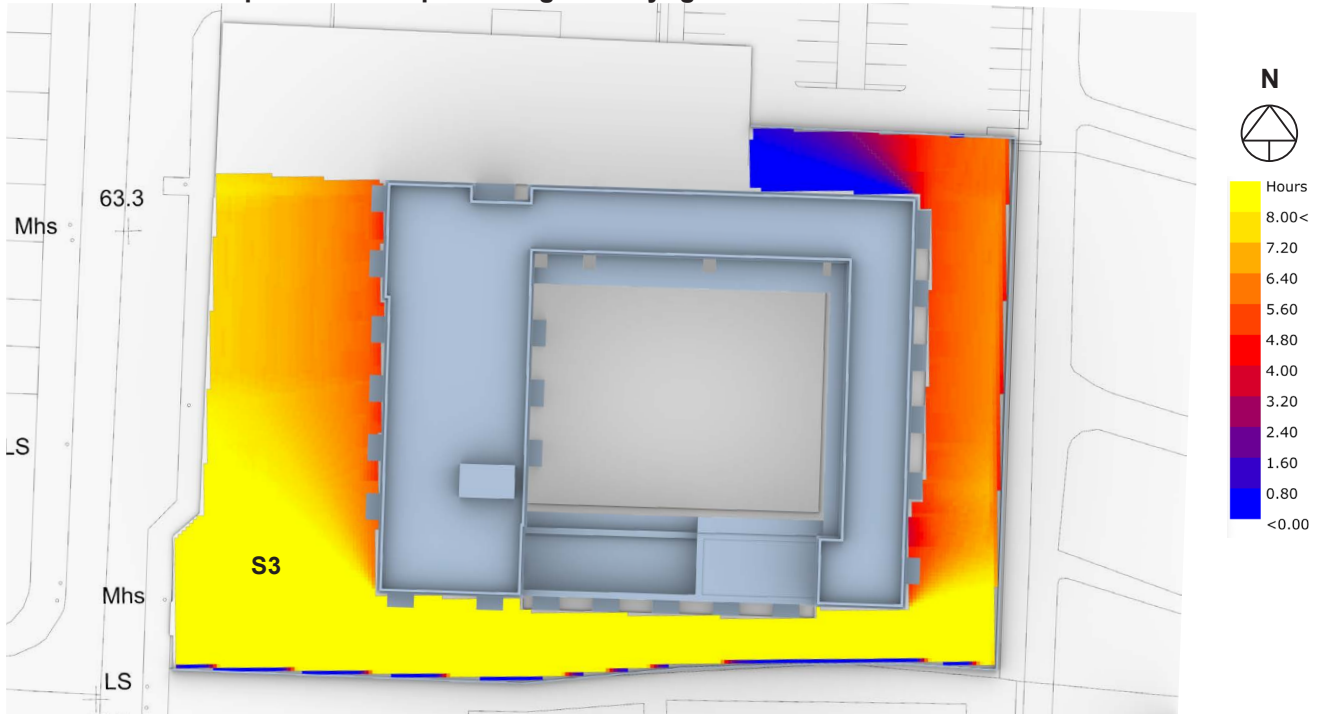


Figure 6: Supplementary Information - Radiation map of proposed landscaped area within the site boundary, on 21st March. The scale represents the percentage of daylight received from 0 - 8 hrs.

Sunlight on the Ground - Public & Communal Amenity				
Area ID	Use	Assessment plane area	Proposed: % Area receiving 2 hours sunlight on 21st March	Meets criteria of >50% area
S1	Communal Open Space	1015 m2	52%	Yes
S2	Public Open Space	868 m2	100%	Yes
Supplementary Information				
S3	Landscape area with site boundary	2562 m2	94.1%	Yes

Table 9: Calculation of Sun on the Ground to amenity spaces within the development

7.2 Comment on amenity in within the proposed development

The communal and public open space within the proposed development were assessed for sunlight availability. Both spaces exceed the minimum recommended target levels set out in the BRE guidelines. The communal courtyard is larger than the minimum area required for the proposed development (554 m2) and the BRE criteria for sunlight levels to the amenity space is met over the greater area of the courtyard as shown in Figure 5. Both the public and communal amenity areas will achieve 2 hours sunlight on the 21st March over in excess of 50% of the area. The proposed development meets the recommendations of the BRE guidelines BR209:2022 (third edition) for gardens and open spaces.

8. Shadow Diagrams

8.1 BRE Guidance on Shadow Studies

The BRE guidelines recommend using the March Equinox due to the equal length of the day and night time. It states:

“If a space is used all year round, the equinox (21 March) is the best date for which to prepare shadow plots as it gives an average level of shadowing. Lengths of shadows at the autumn equinox (21 September) will be the same as those for 21 March, so a separate set of plots for September is not required.”

June 21st and December 21st are provided below for information but it should be noted that the summer solstice is the best case scenario with shadows at their shortest. The summer solstice diagrams are included here with the Daylight Saving Time (UTC+1) applied. In Winter even low buildings will cast long shadows and it is common for large areas of the ground to be in shadow throughout the day especially in a built up area and sun barely rises above an altitude of 10° during the course of the day. The guidelines recommends that Sunlight at an altitude of 10° or less does not count. Below are the times for the Equinox and Solstice that the sun is above 10° altitude rounded to the nearest half hour.

Equinox: between 8:30 and 17:30

Summer Solstice: Between 6:30 and 20:00

Winter Solstice: Between 10:30 and 14:00

Section 8.2 shows the existing and proposed shadow diagrams for the Equinox on the 21st March at 2 hourly intervals during the day between 09:00 and 17:00.

Section 8.3 shows the existing and proposed shadow diagrams for the Summer Solstice on the 21st June at 2 hourly intervals during the day between 09:00 and 19:00.

Section 8.4 shows the existing and proposed shadow diagrams for the Winter Solstice on the 21st December at 2 hourly intervals during the day between 09:00 and 15:00.

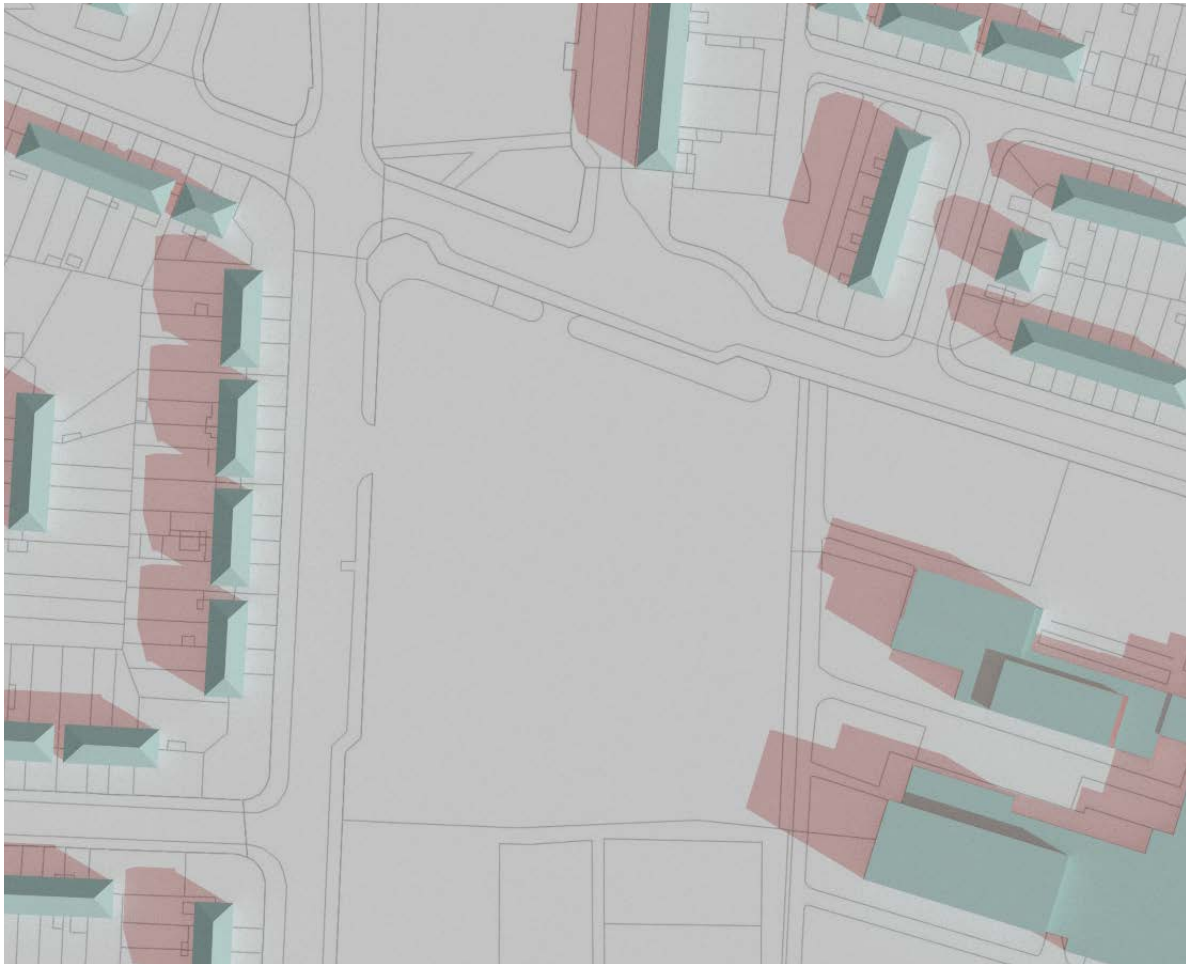
The site is a vacant, demolition of the Church building has already occurred. There are no shadow cast from any structures in the existing scenario. The shadow study is undertaken without the model of the existing trees. This is to clarify the potential overshadowing from the proposed structure on the neighbouring properties.

The proposed shadows also show the cumulative development of the permitted church building to the north of this site.

Shadow diagrams are a visual aid to understand where possible shading may occur. The use of shadow diagrams as an assessment method should be taken over the course of the day and not a specific time due to the transient nature of the sun and the shade caused by obstructions.

8.2 Shadow Casting diagrams March Equinox

Existing



Proposed

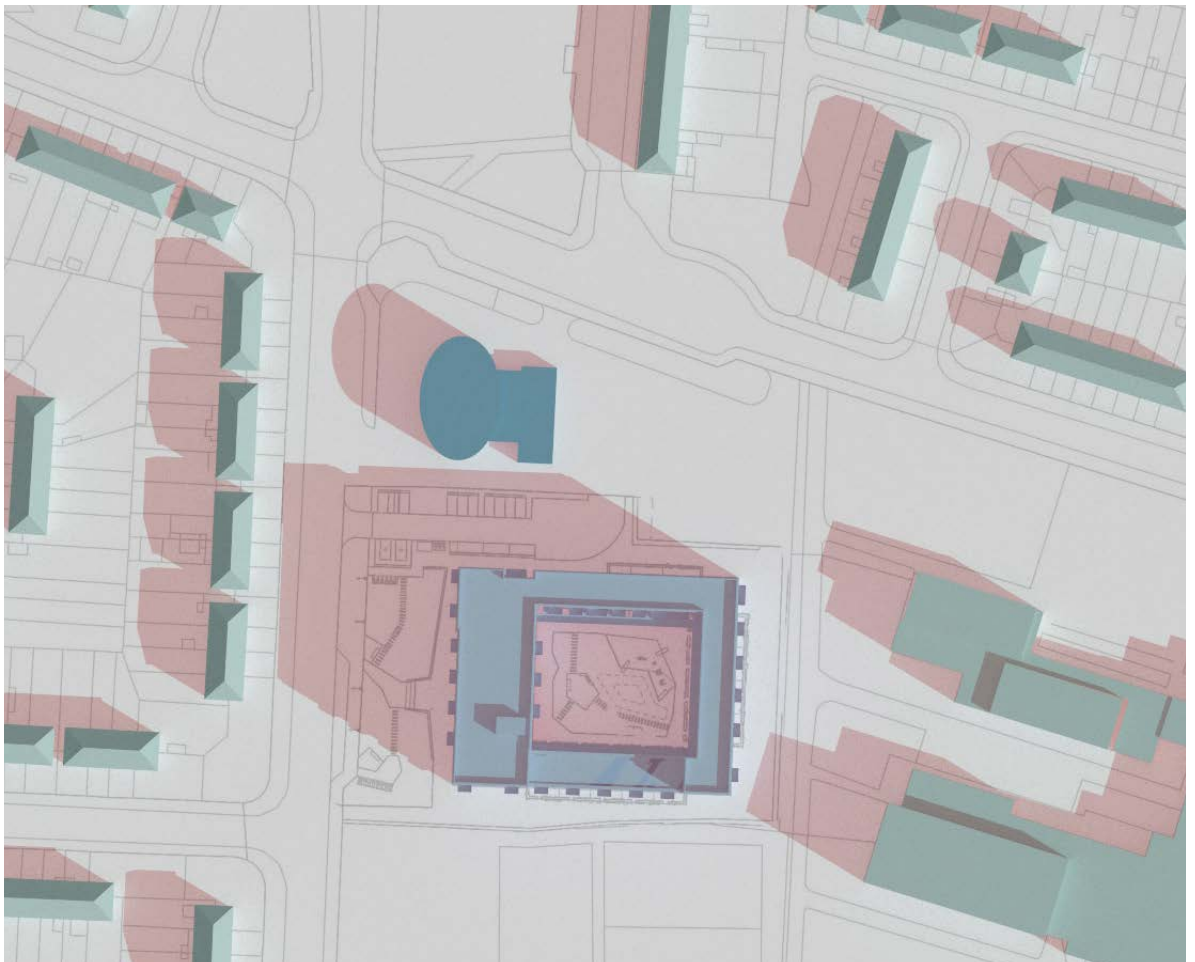
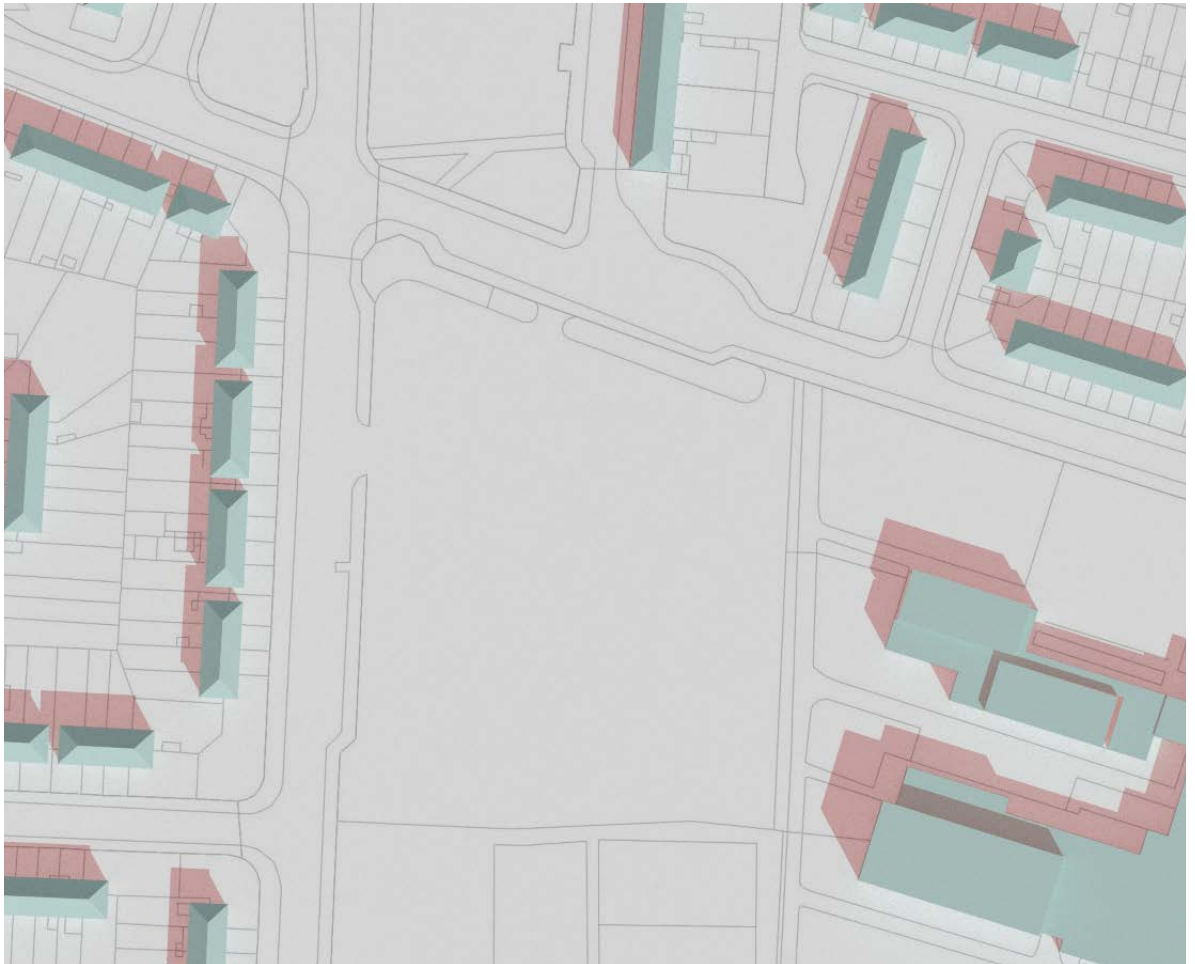


Figure 7: Shadow diagrams 21 March 09:00 UTC

Existing



Proposed

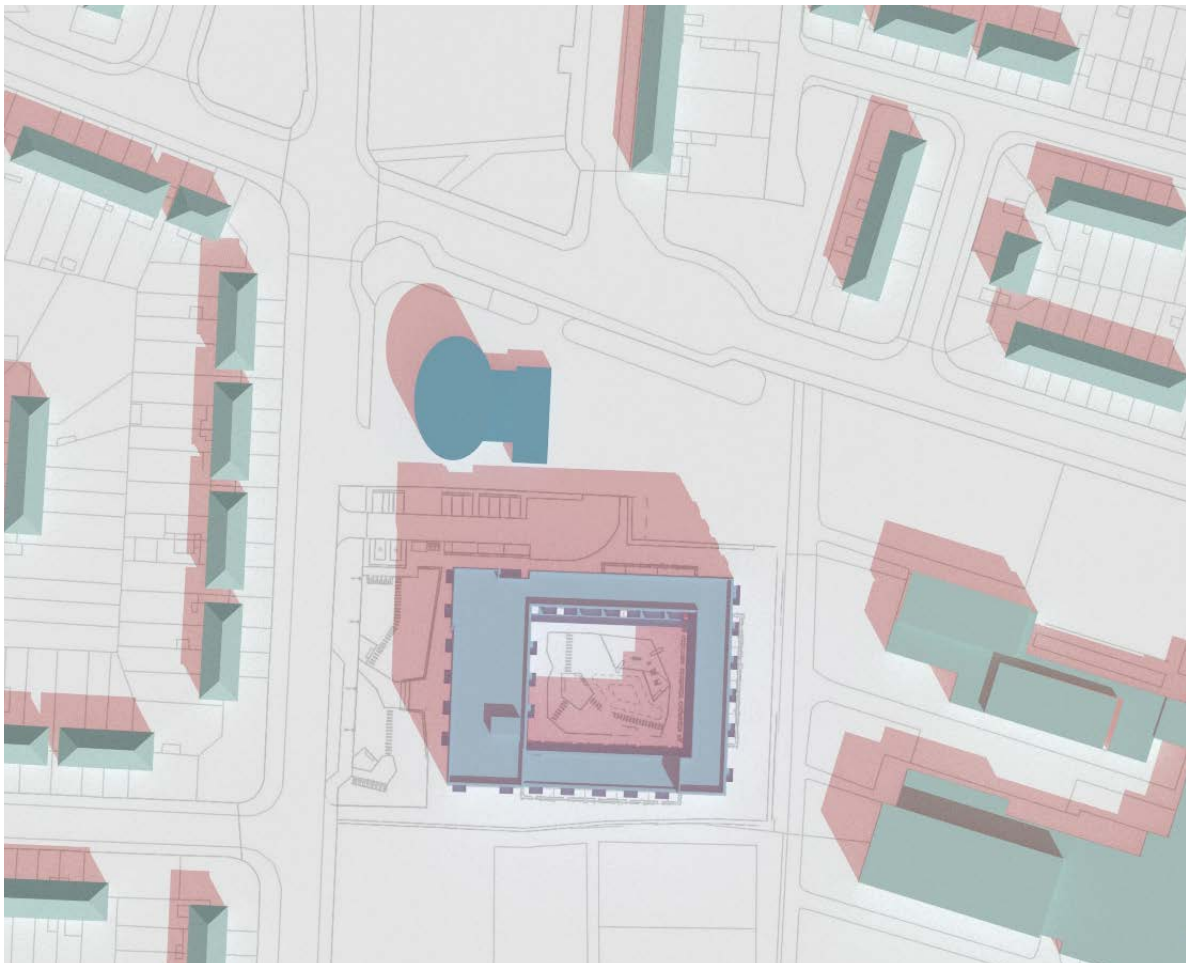


Figure 8: Shadow diagrams 21 March 11:00 UTC

Existing



Proposed

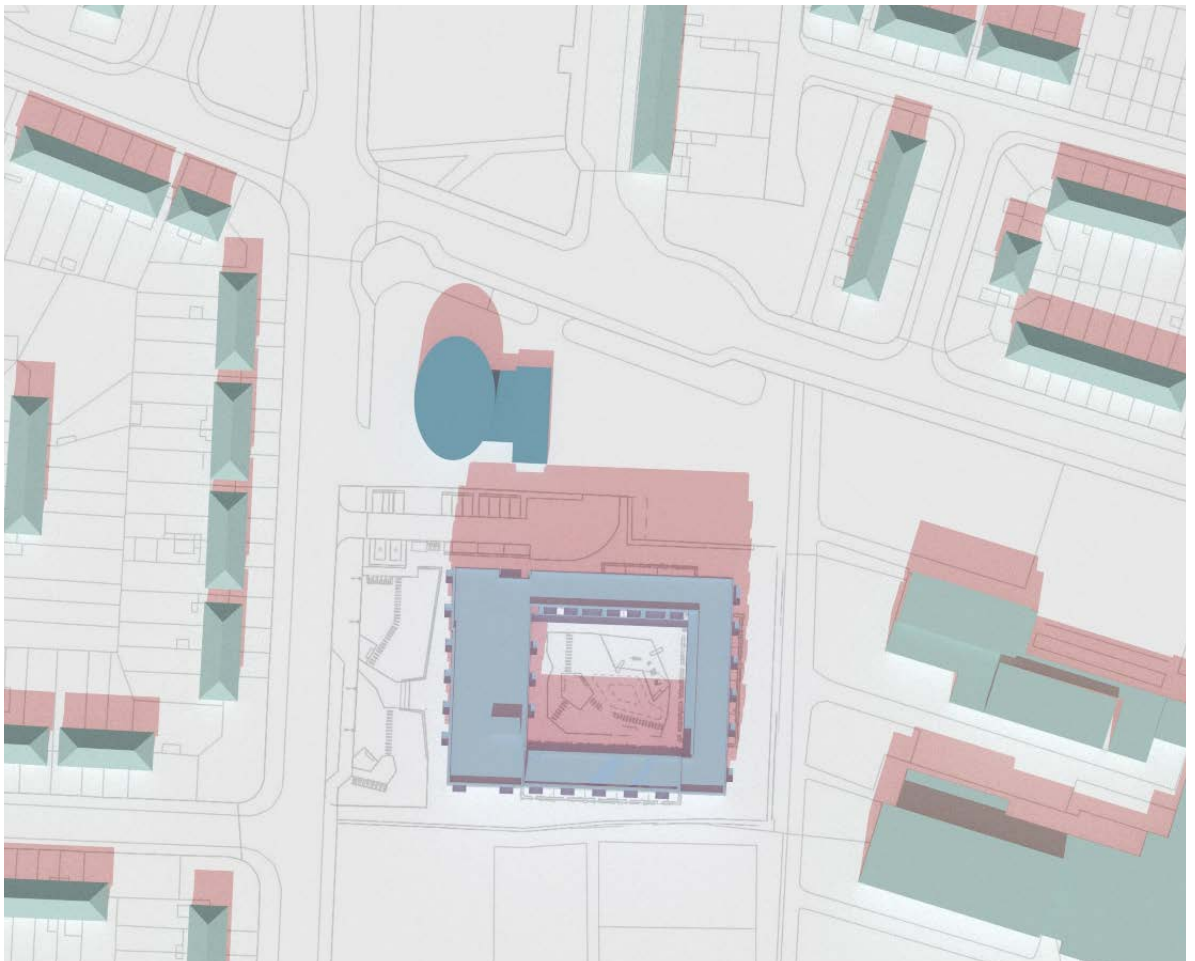
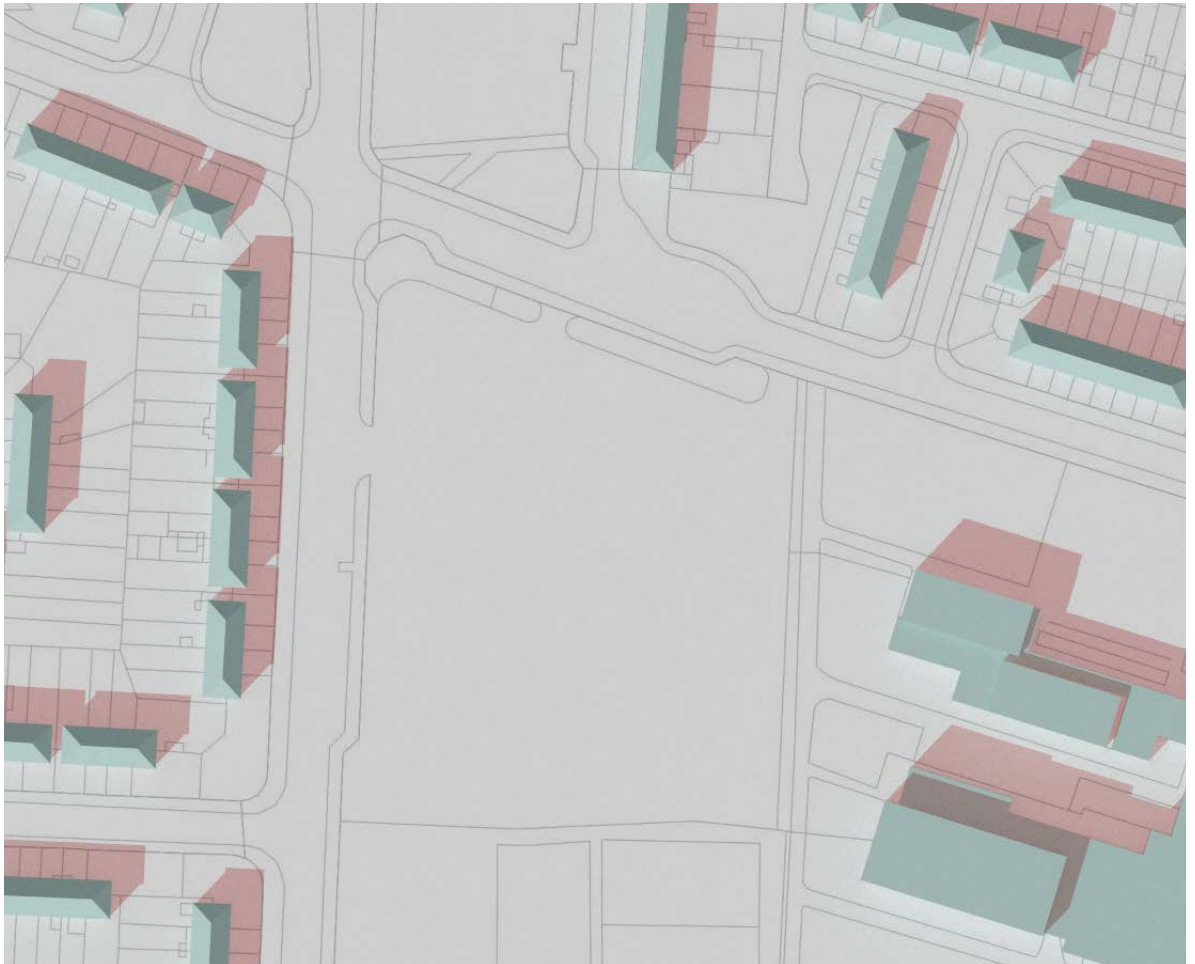


Figure 9: Shadow diagrams 21 March 13:00 UTC

Existing



Proposed

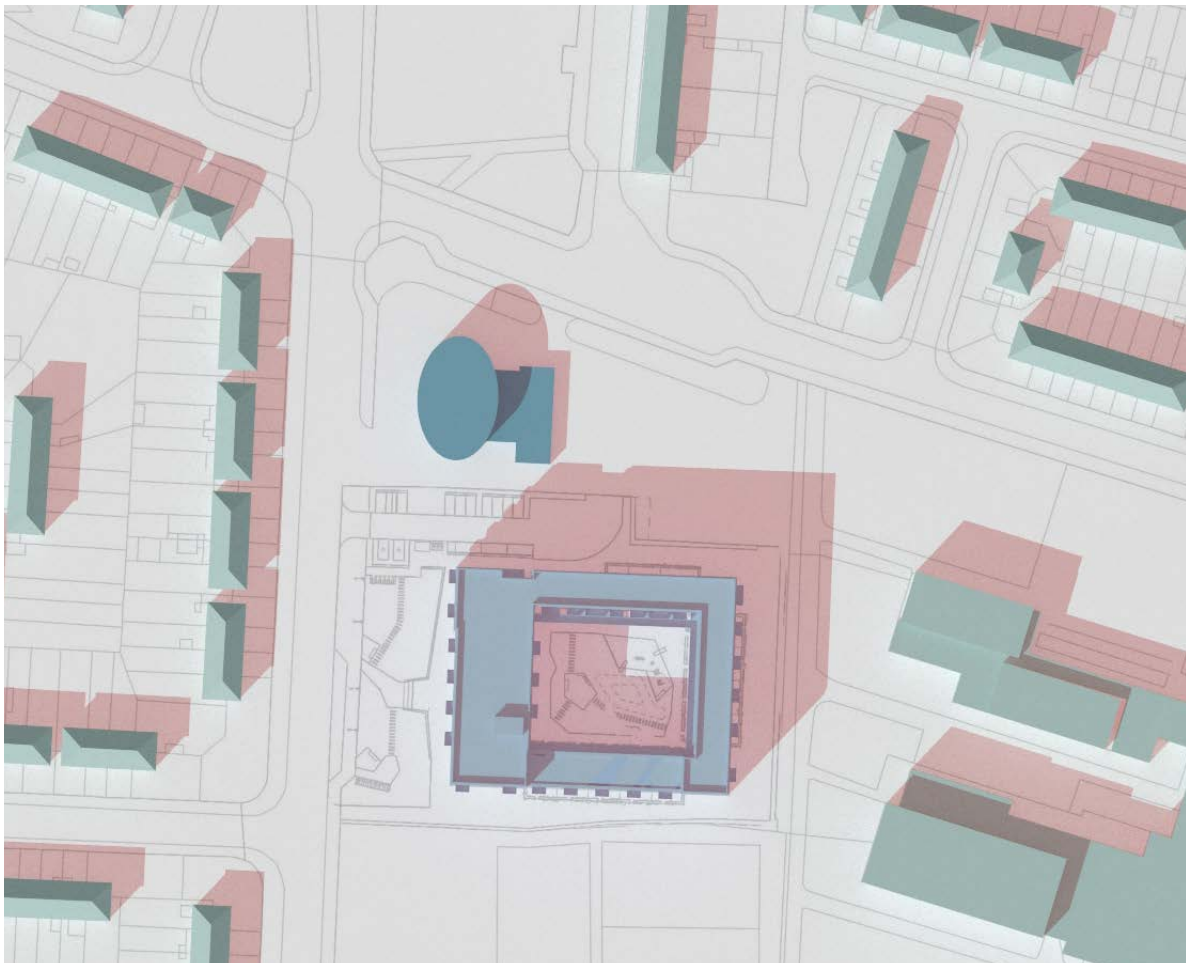
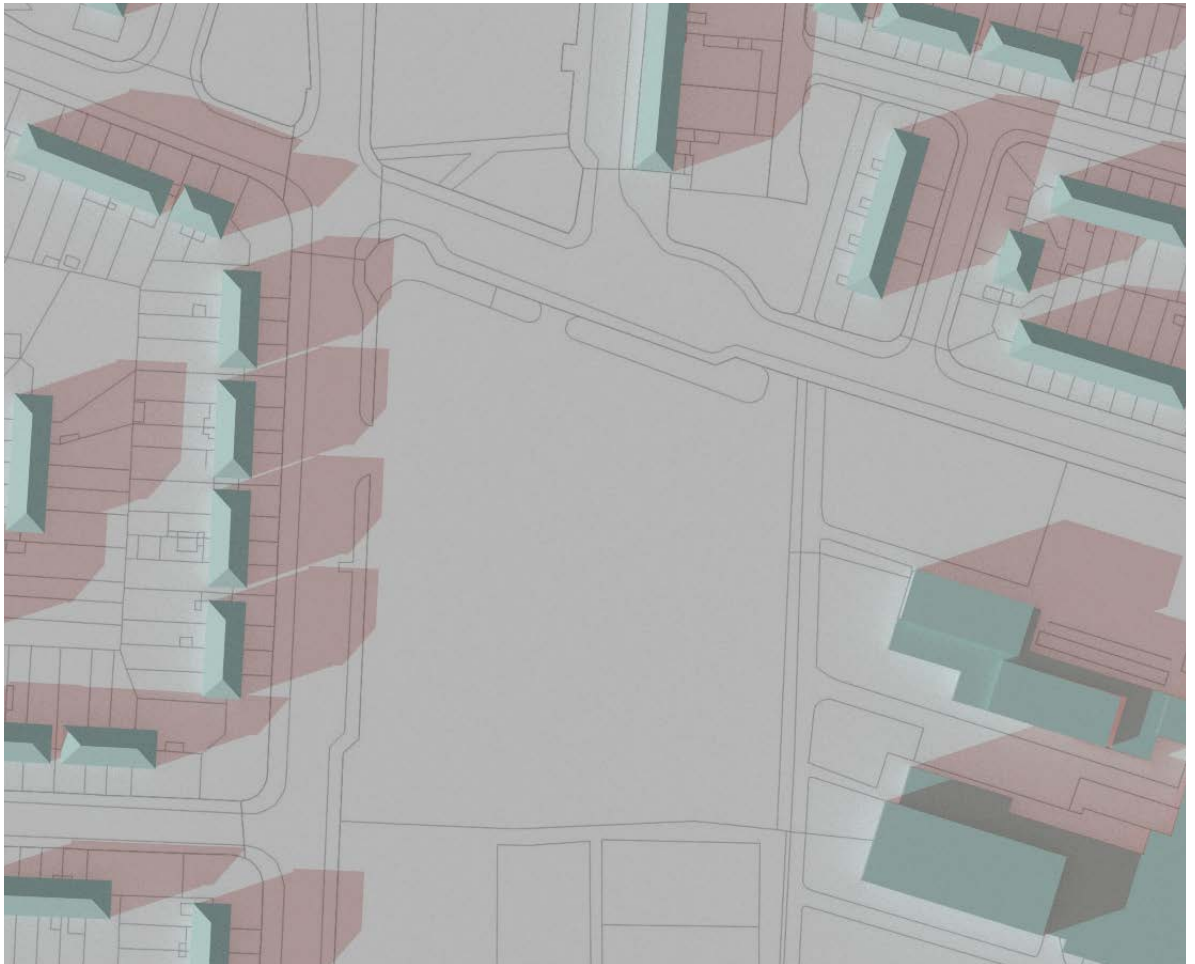


Figure 10: Shadow diagrams 21 March 15:00 UTC

Existing



Proposed

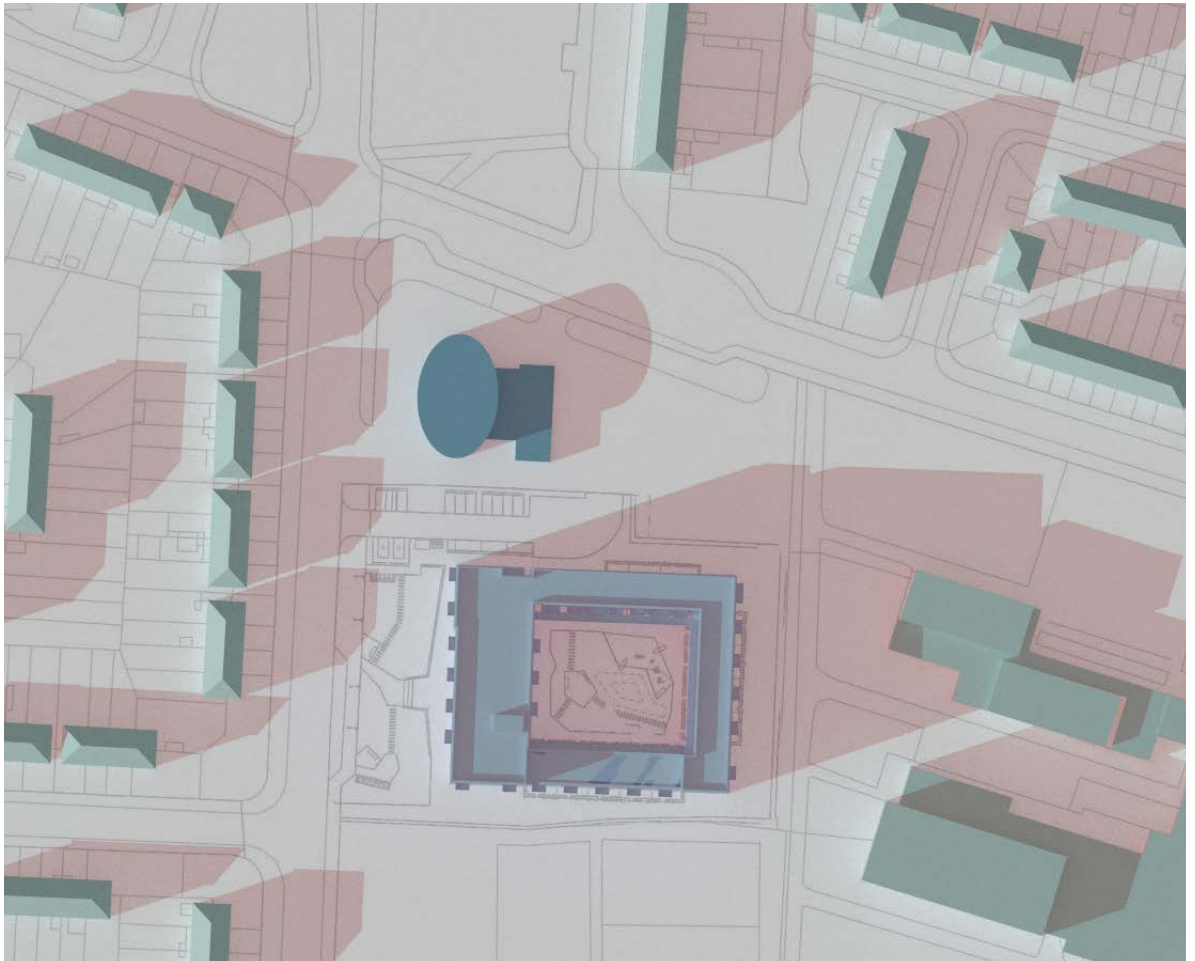


Figure 11: Shadow diagrams 21 March 17:00 UTC

8.3 Shadow Casting diagrams June Solstice

Existing



Proposed

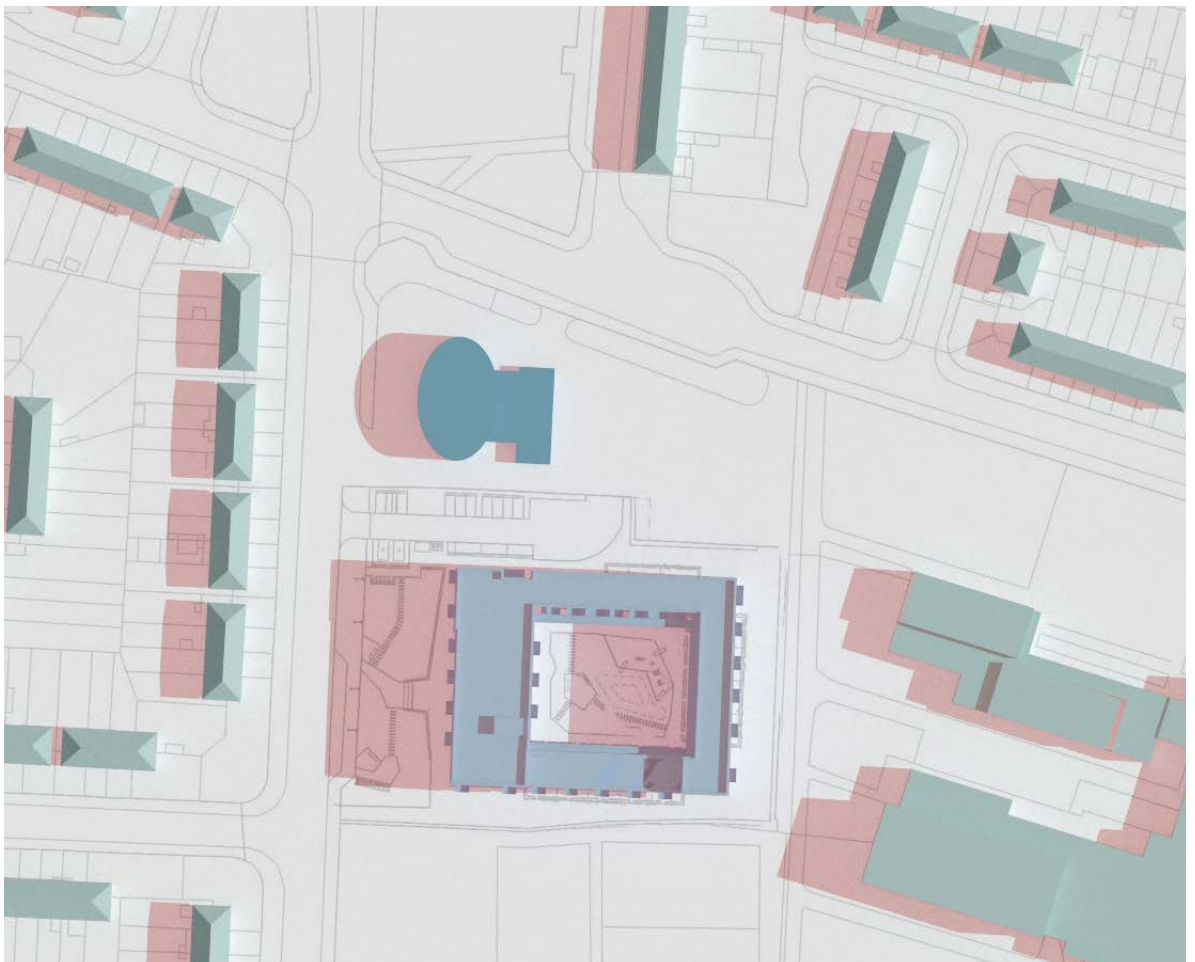


Figure 12: Shadow diagrams 21 June 09.00 UTC +1

Existing



Proposed

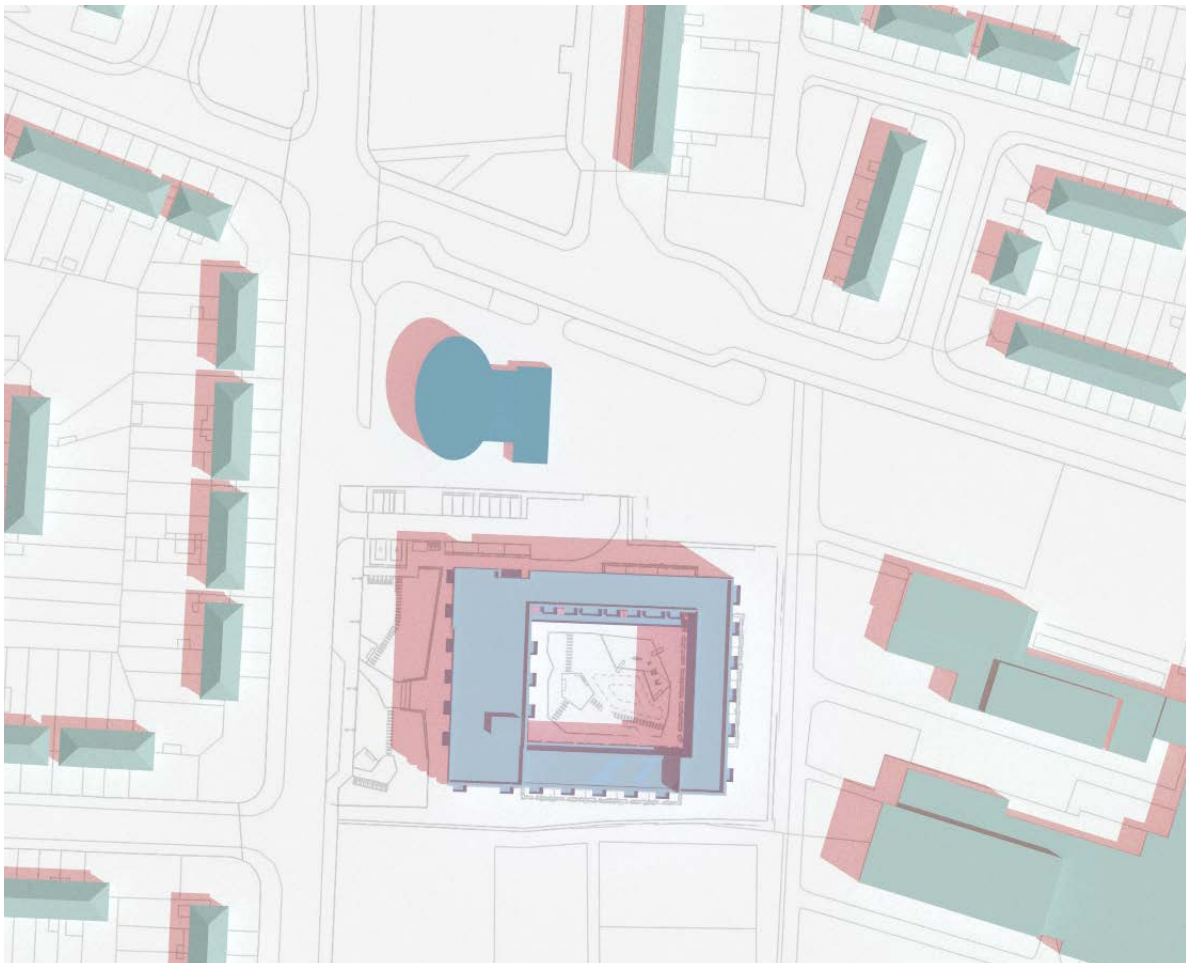


Figure 13: Shadow diagrams 21 June 11:00 UTC +1

Existing



Proposed

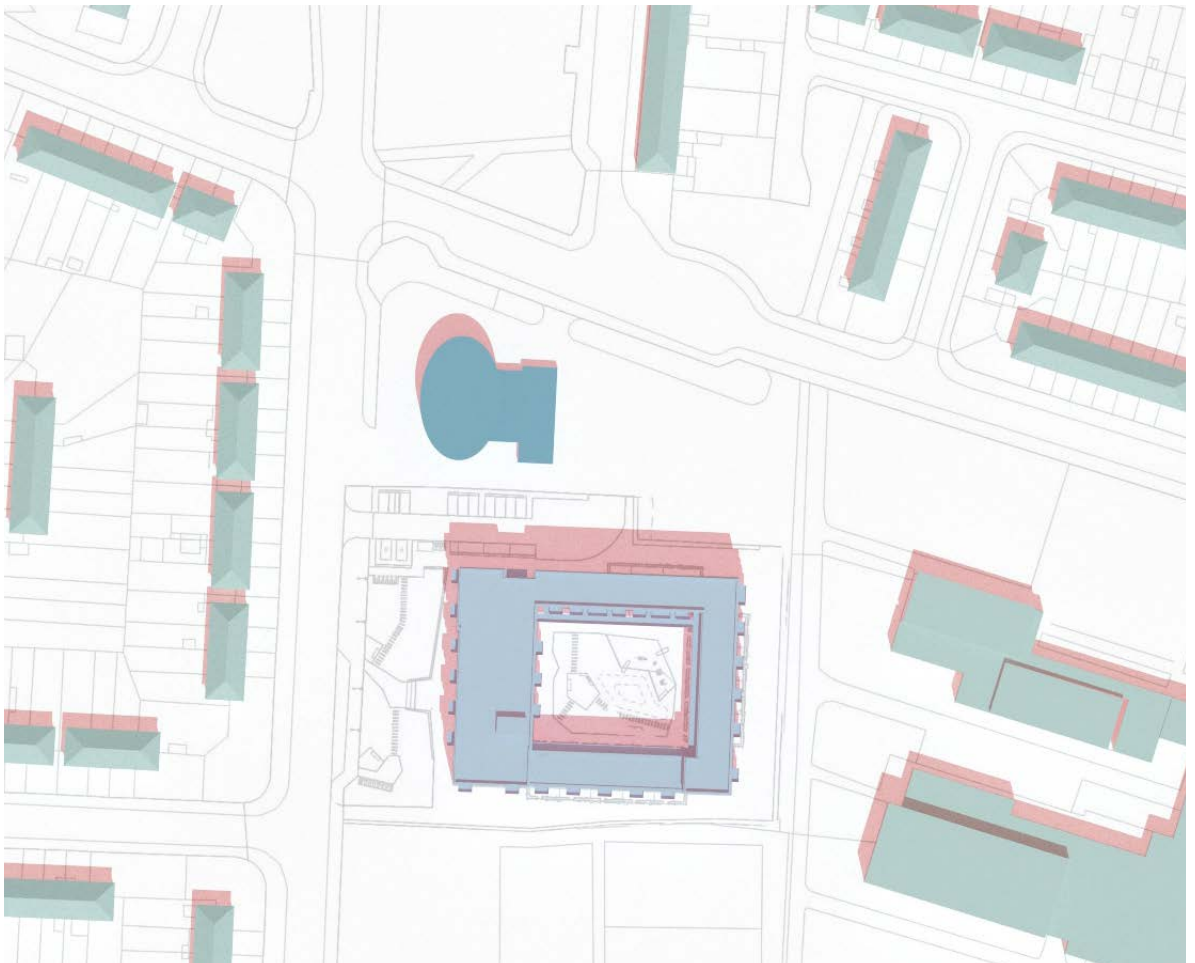


Figure 14: Shadow diagrams 21 June 13:00 UTC +1

Existing



Proposed

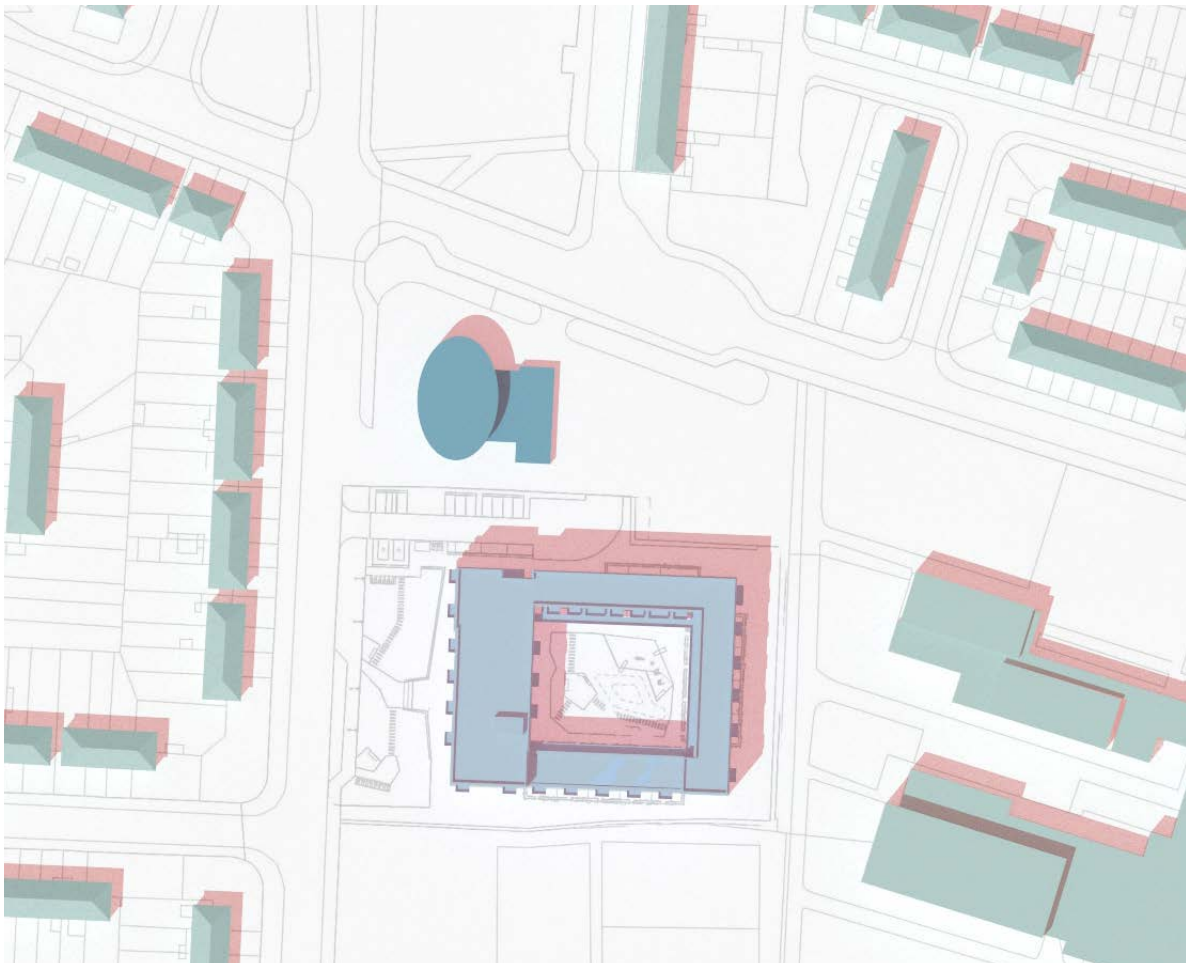


Figure 15: Shadow diagrams 21 June 15:00 UTC +1

Existing



Proposed

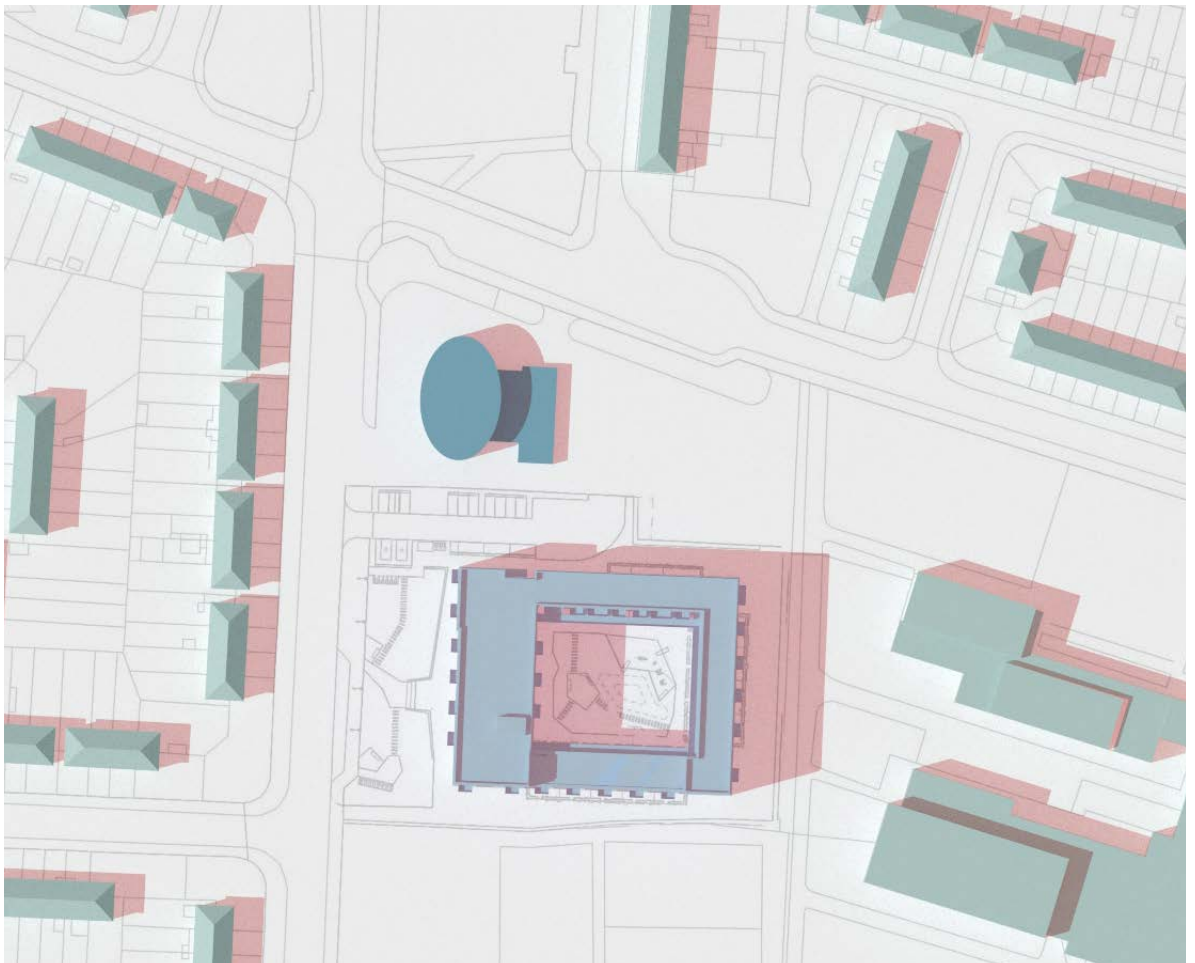


Figure 16: Shadow diagrams 21 June 17:00 UTC +1

Existing



Proposed

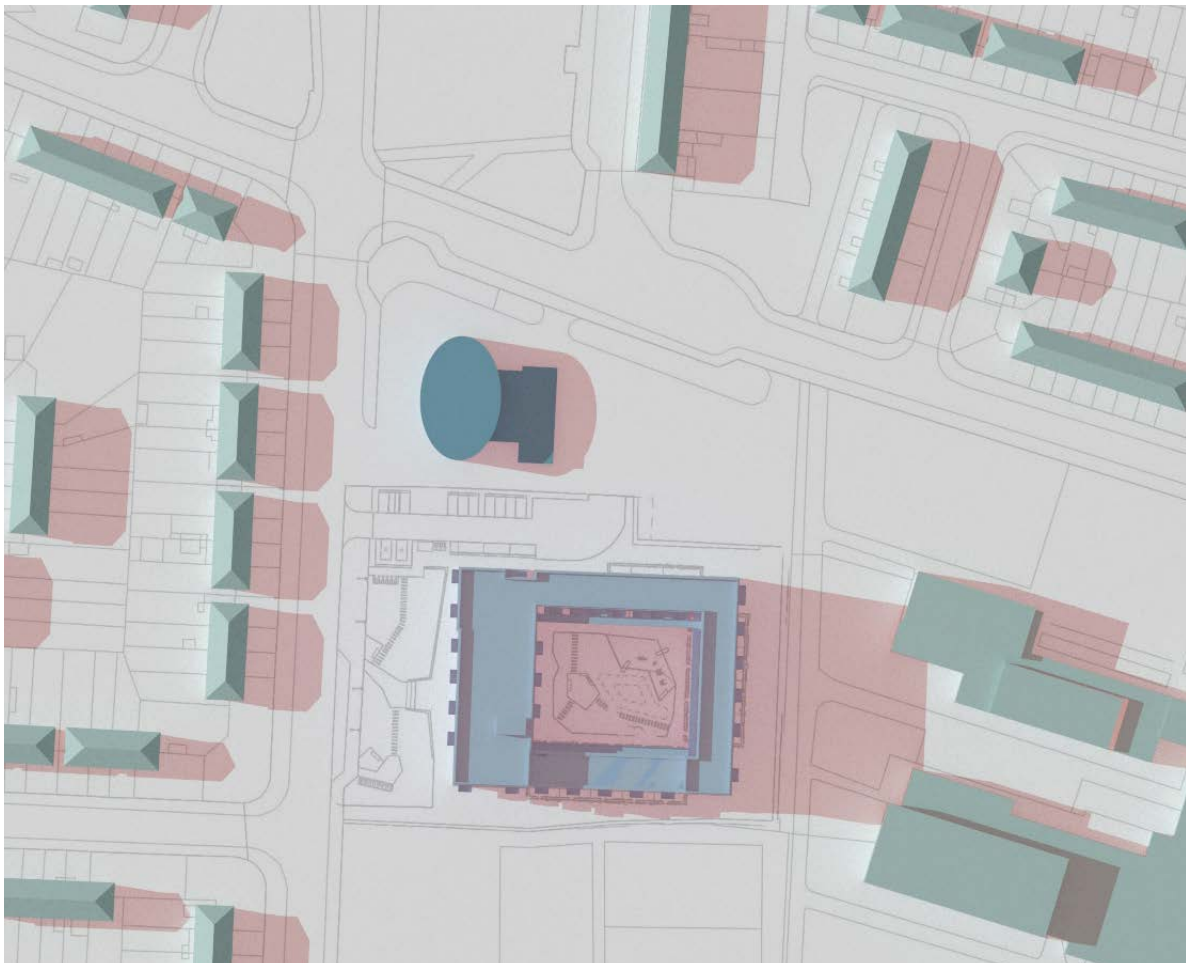
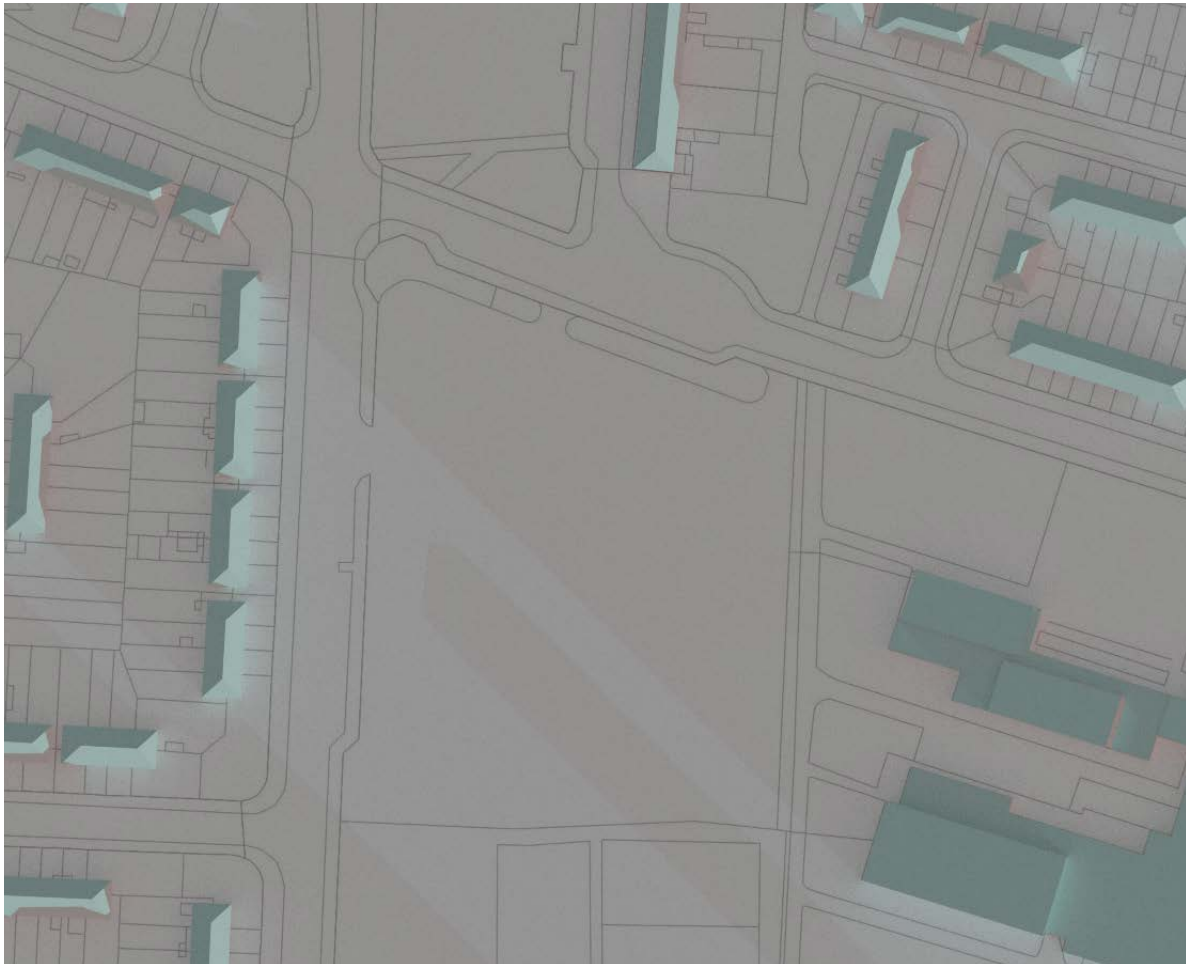


Figure 17: Shadow diagrams 21 June 19:00 UTC +1

8.4 Shadow Casting diagrams December Solstice

Existing



Proposed

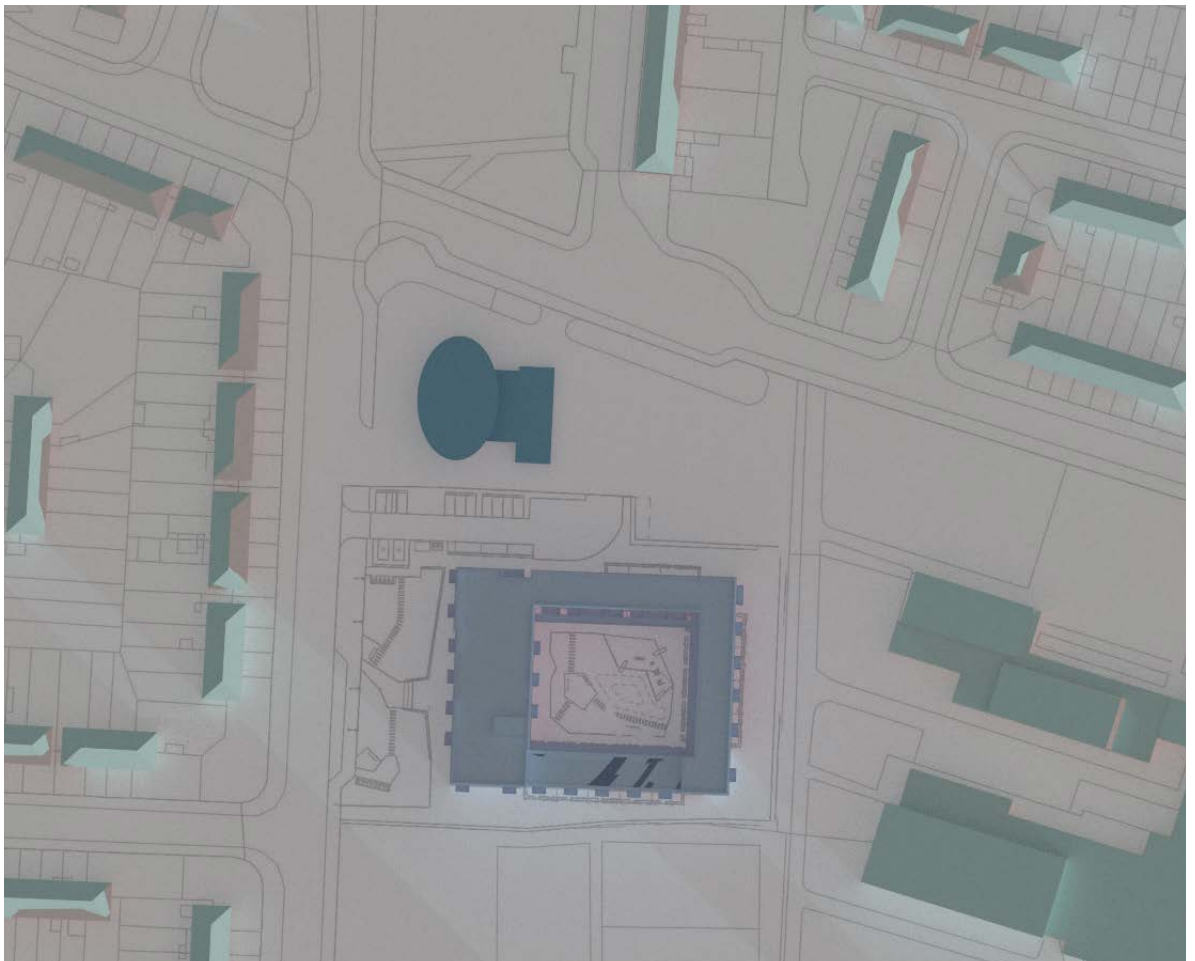
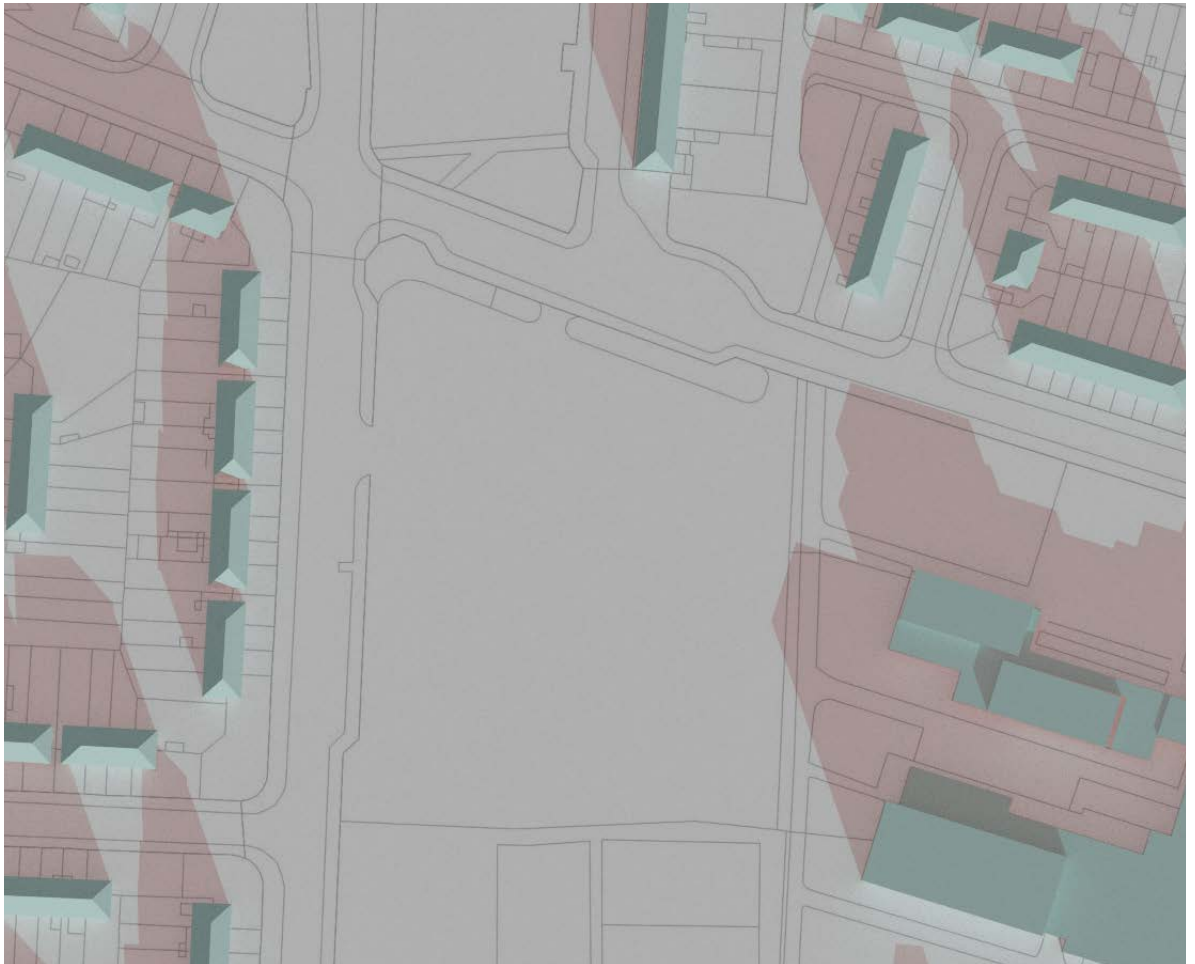


Figure 18: Shadow diagrams 21 December 09:00 UTC

Existing



Proposed

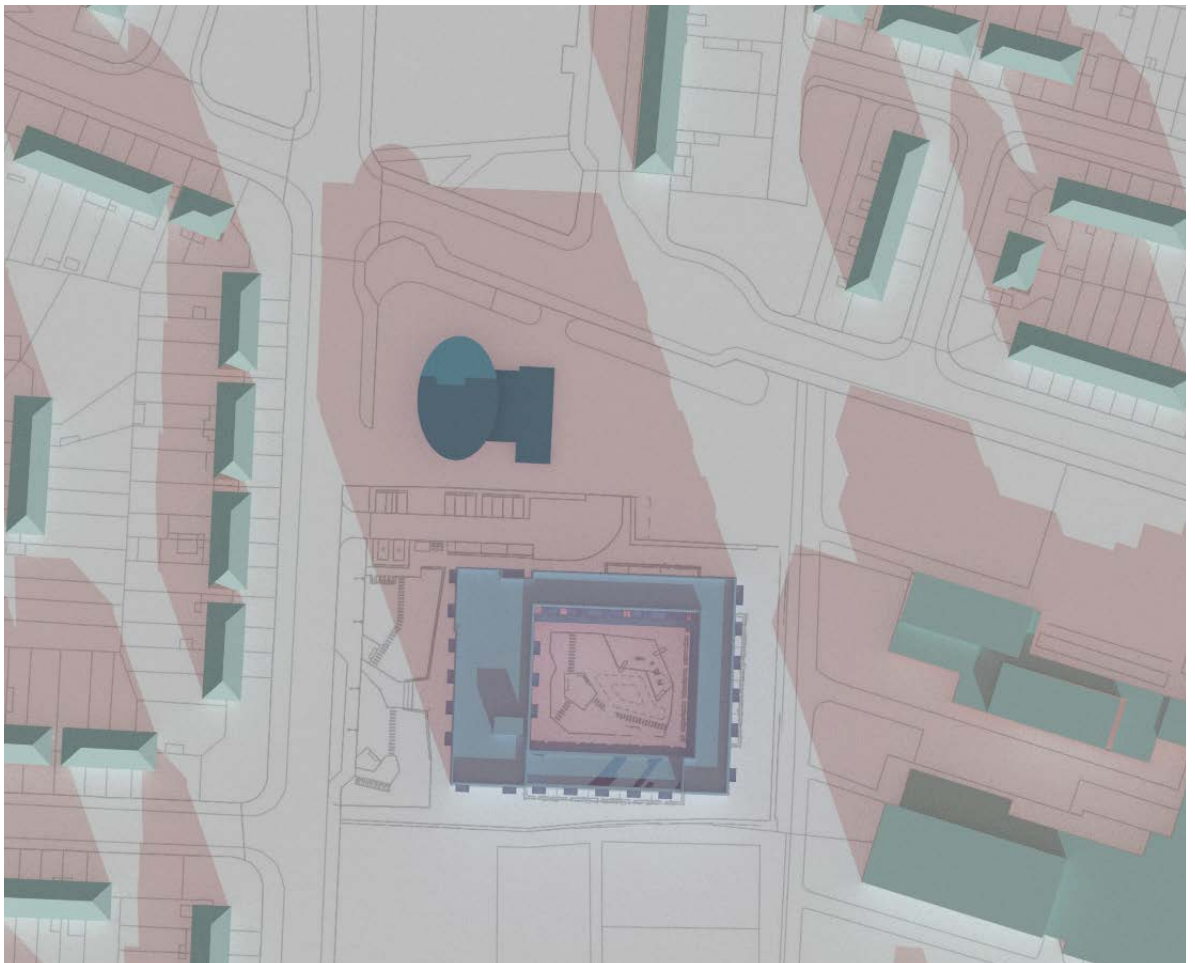
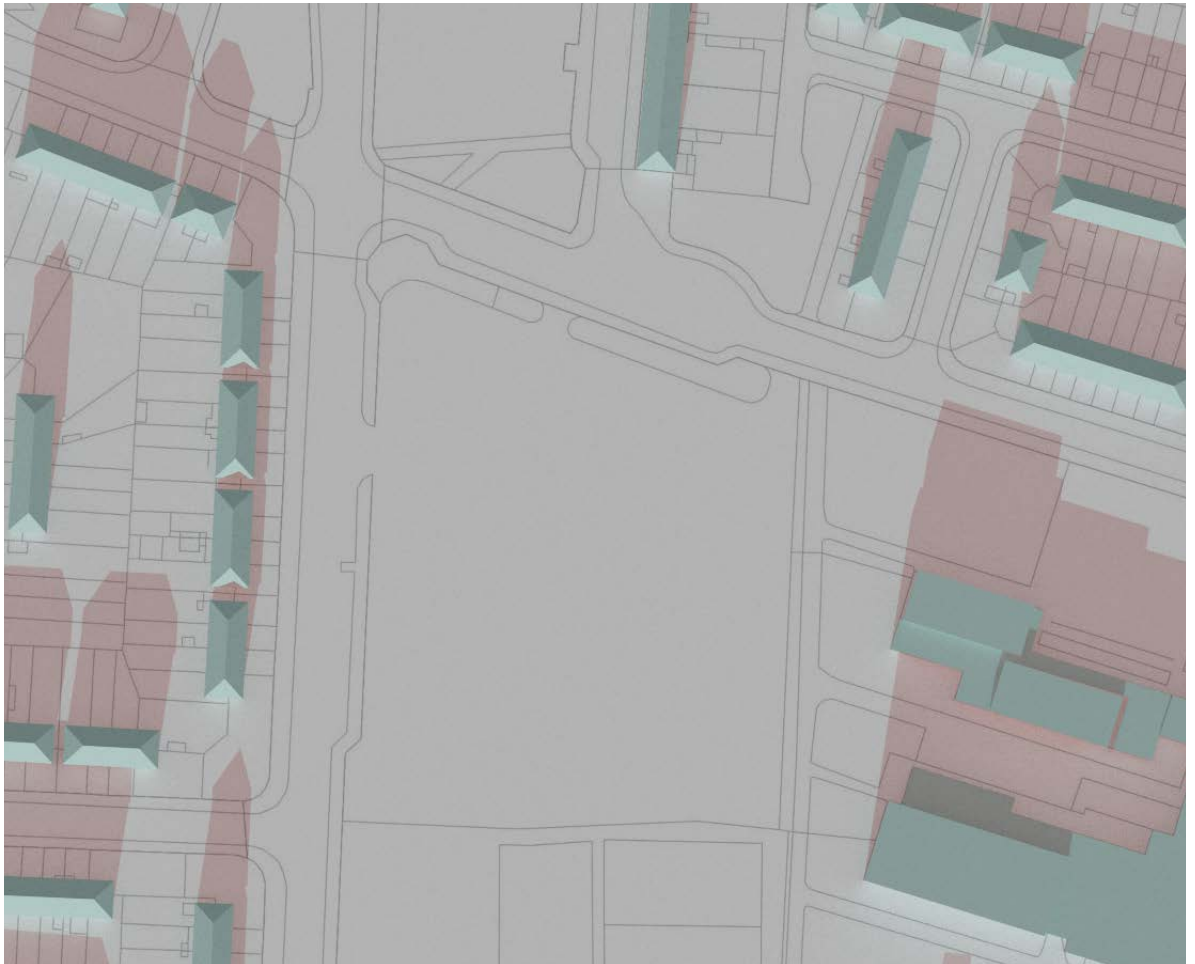


Figure 19: Shadow diagrams 21 December 11:00 UTC

Existing



Proposed

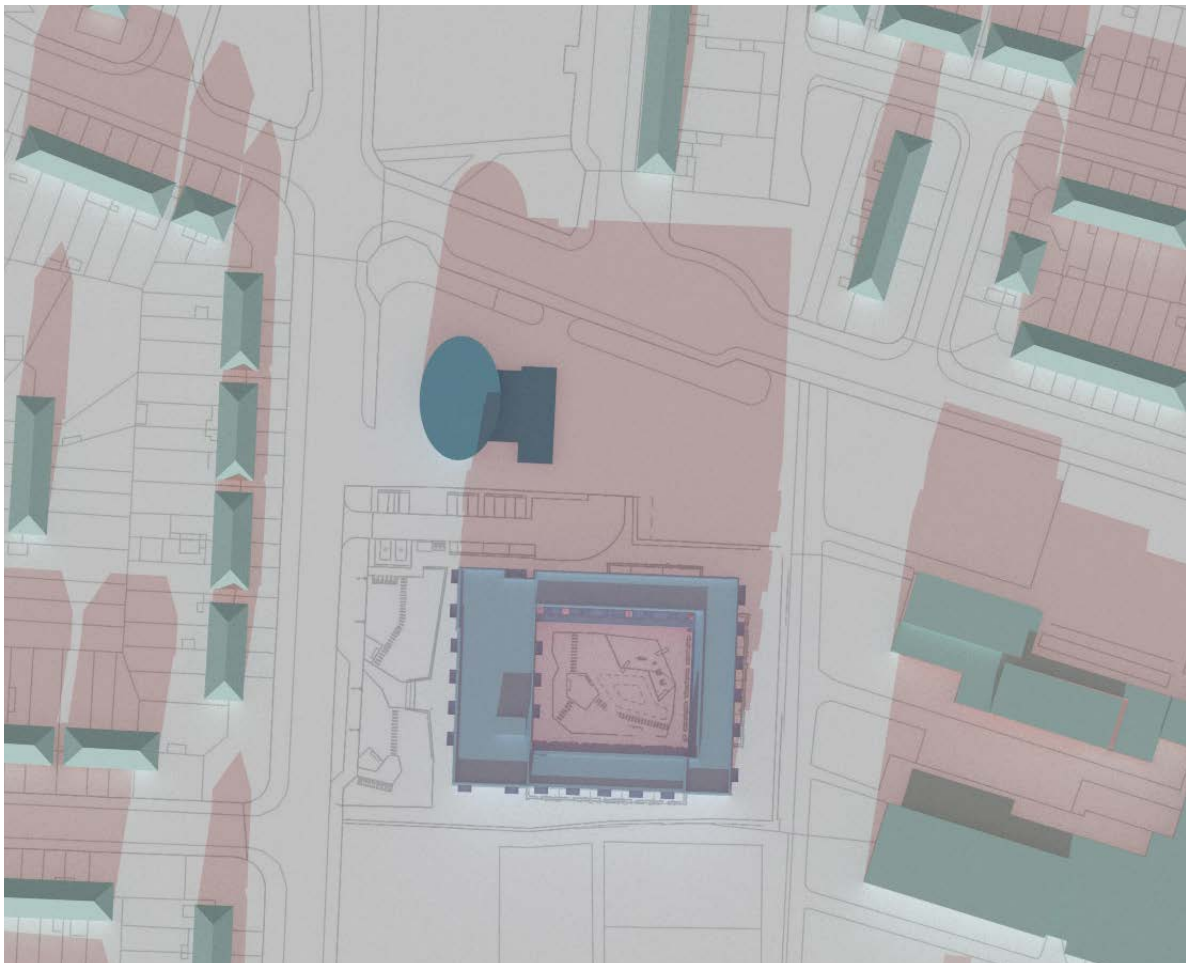
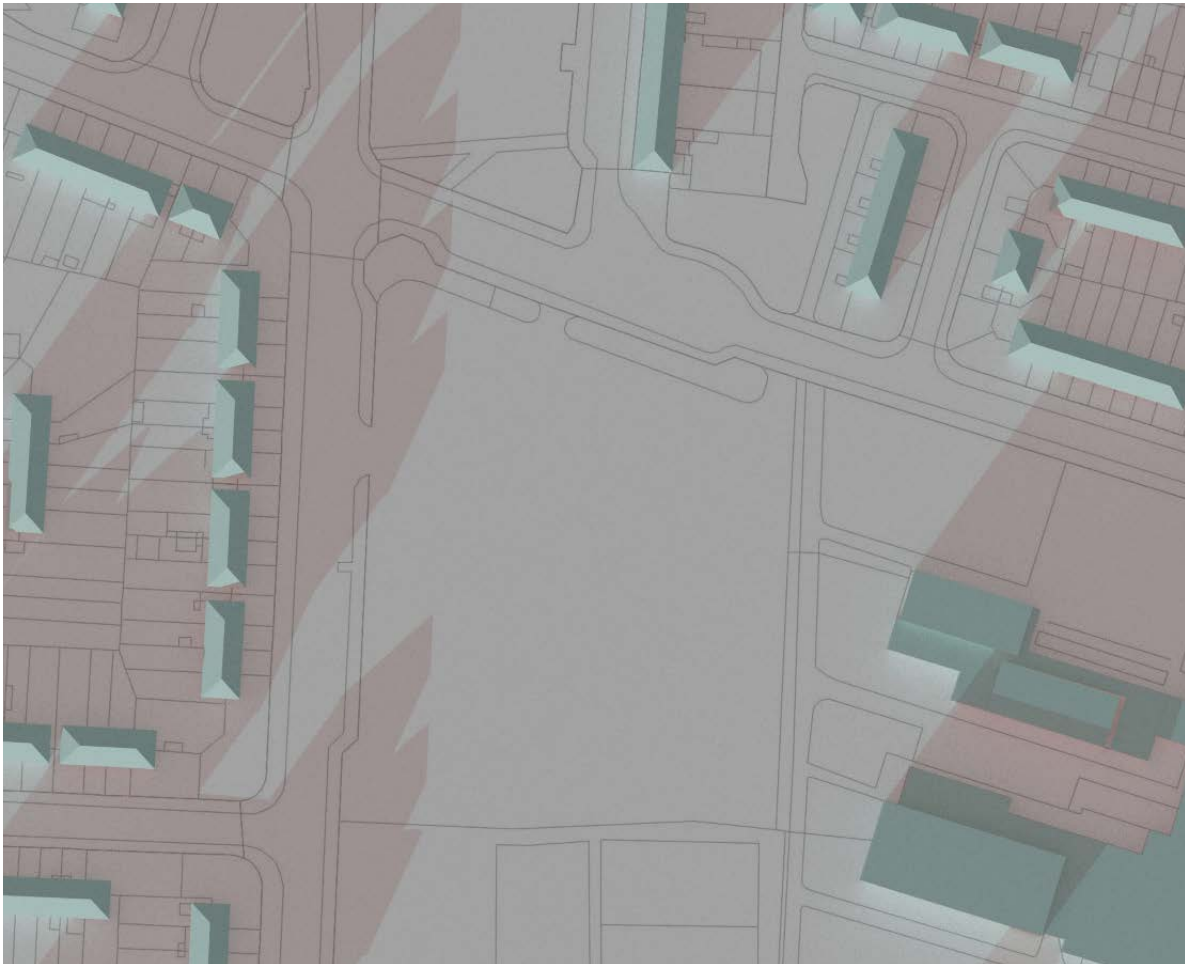


Figure 20: Shadow diagrams 21 December 13:00 UTC

Existing



Proposed

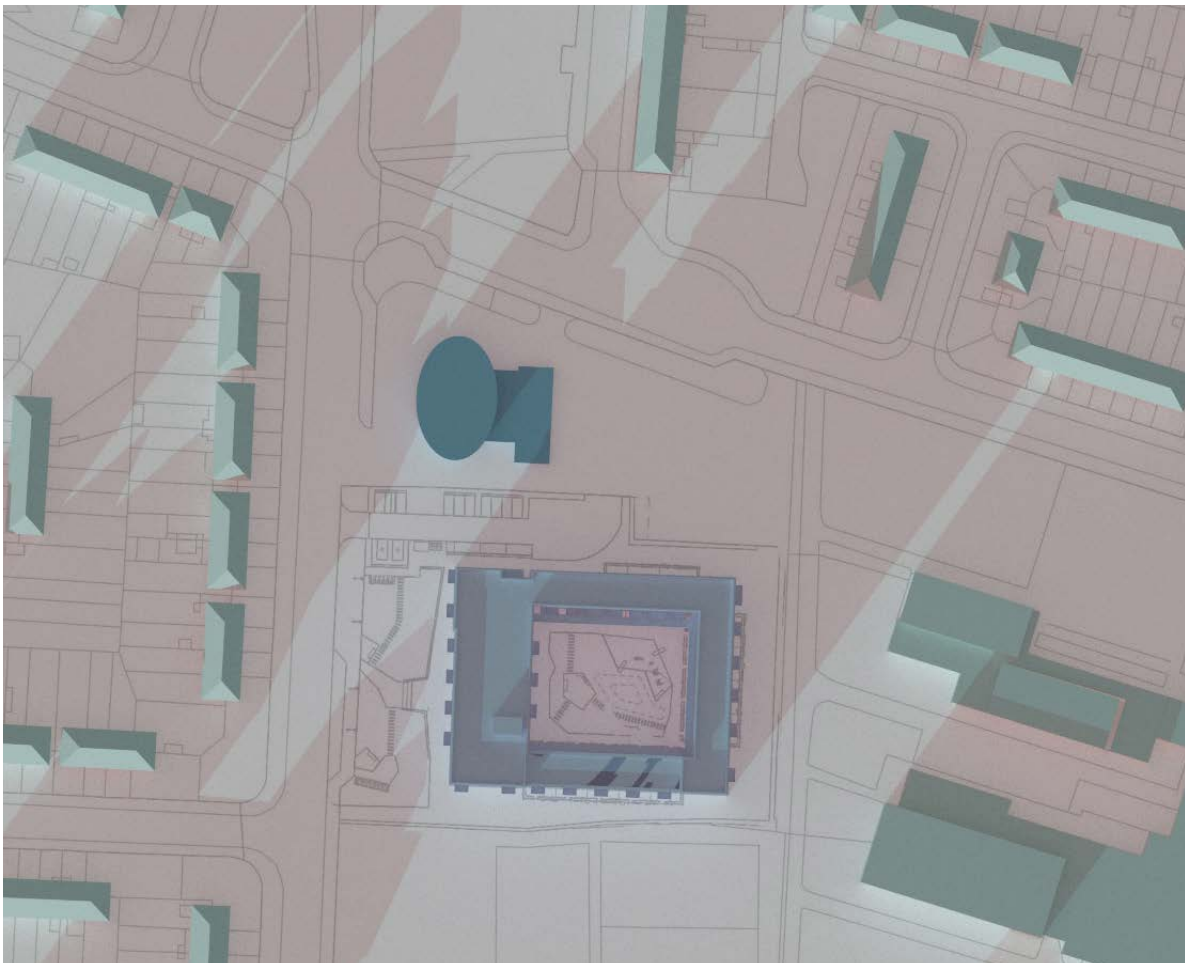


Figure 21: Shadow diagrams 21 December 15:00 UTC

Appendix A - Proposed Development - BS EN17037:2021+A1 Minimum room specific Daylight Provision in accordance with UK National Annex Table NA.1. Assessment results with 9no. Retained Trees winter condition

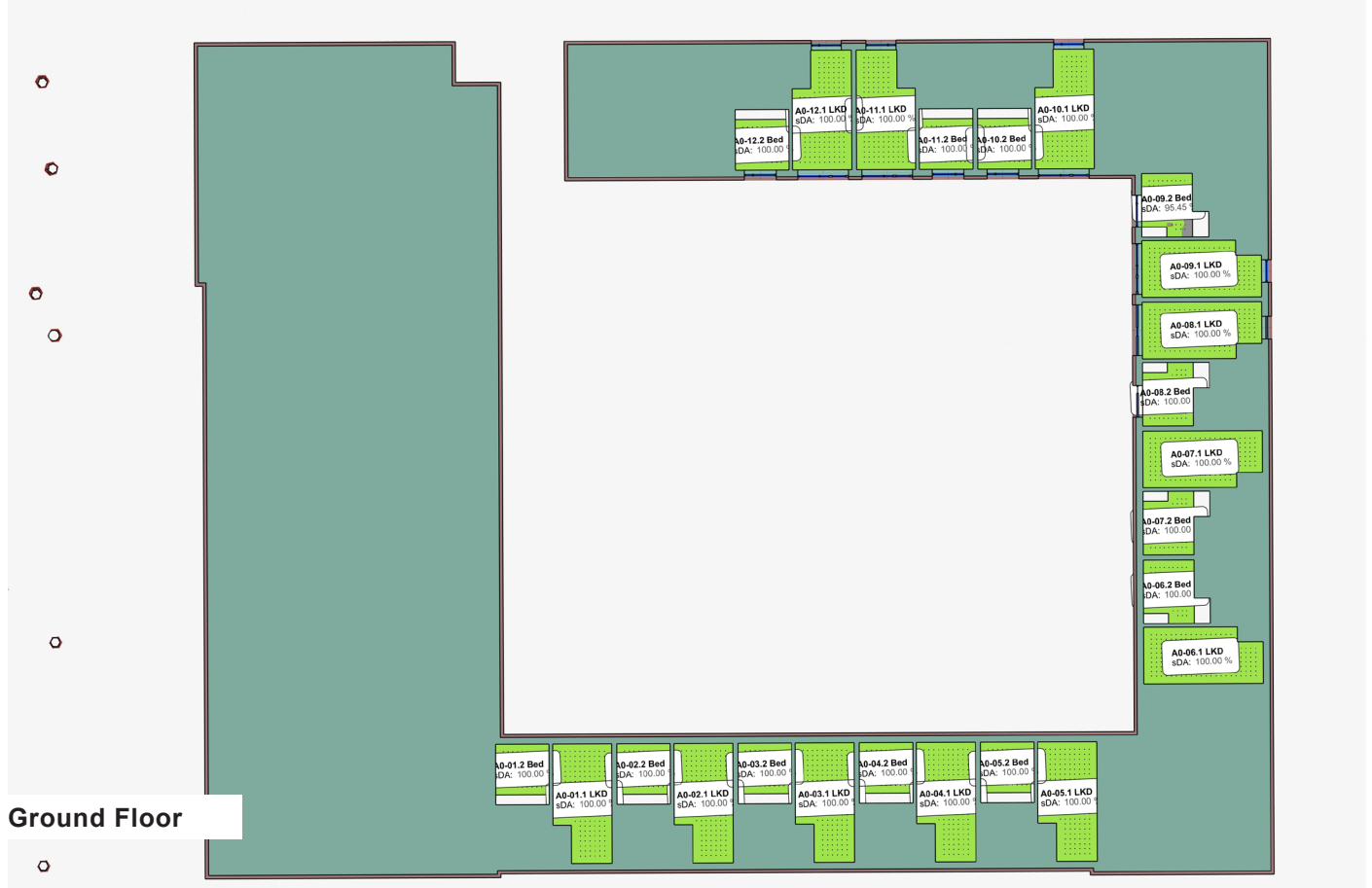
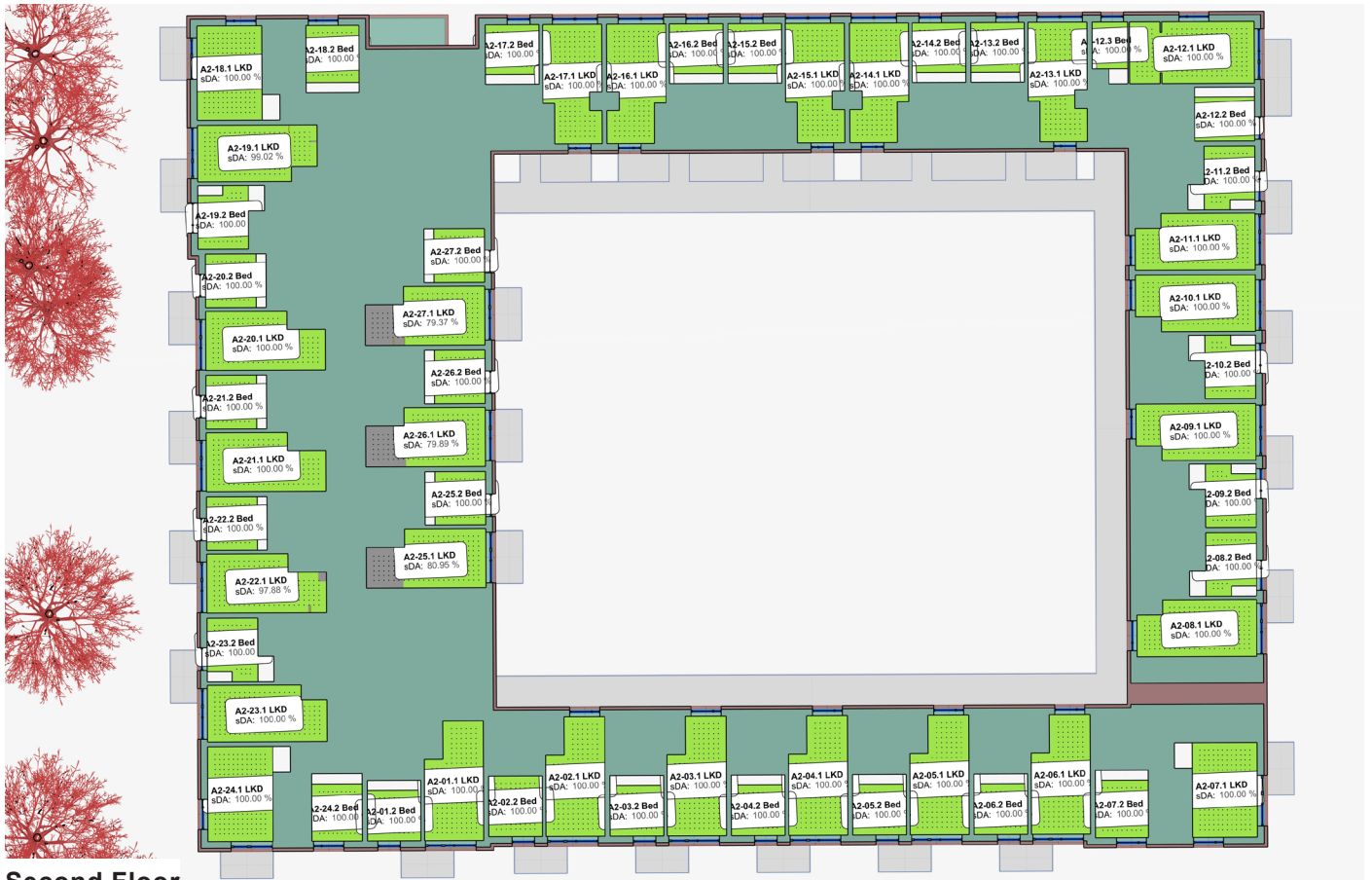
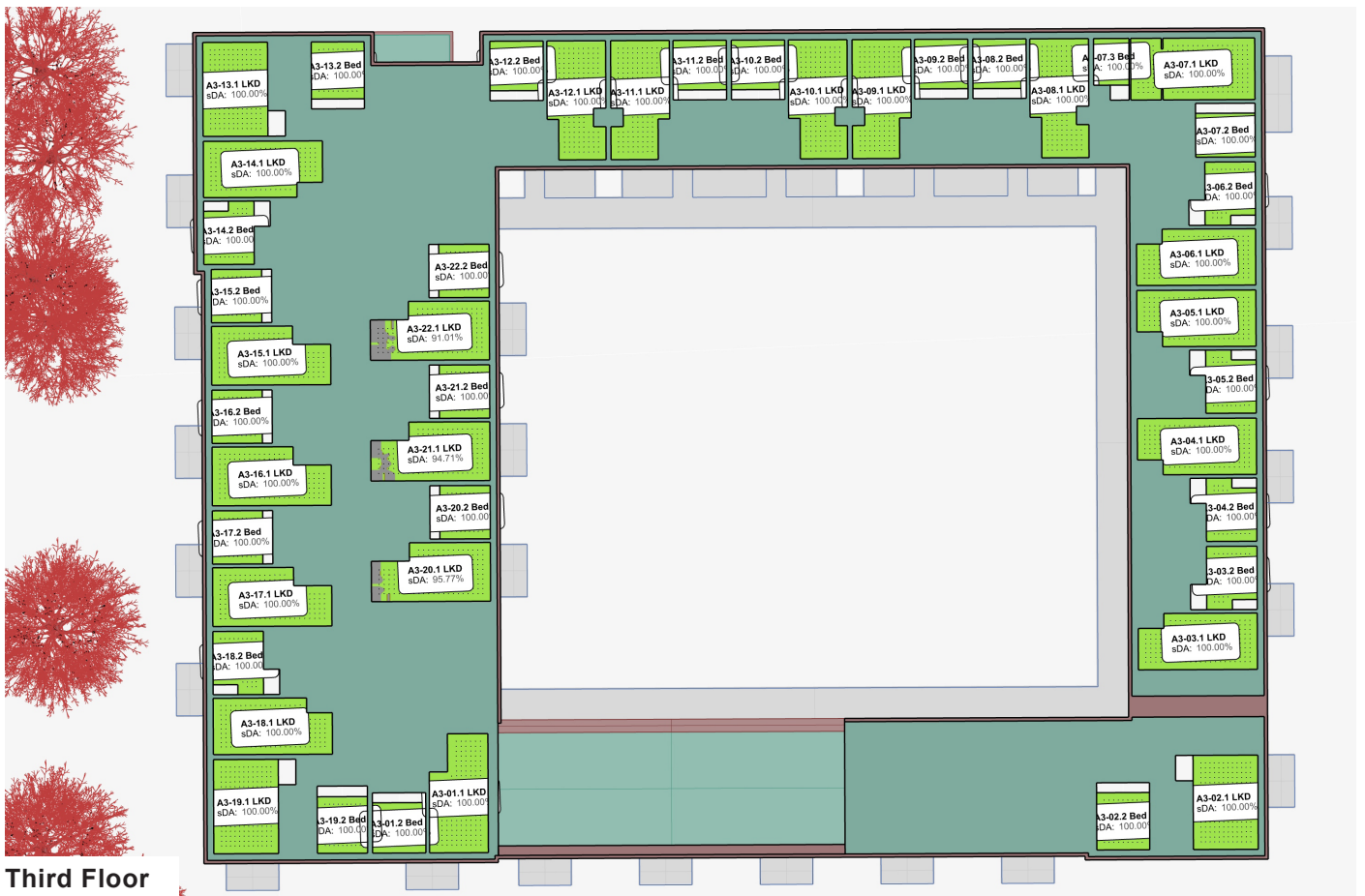


Figure 22: Floor plans indicating Daylight Provision compliance to BS EN17037:2021+A1 Table NA.1. Results shown in the winter condition.

Assessment with 9no. Retained Trees



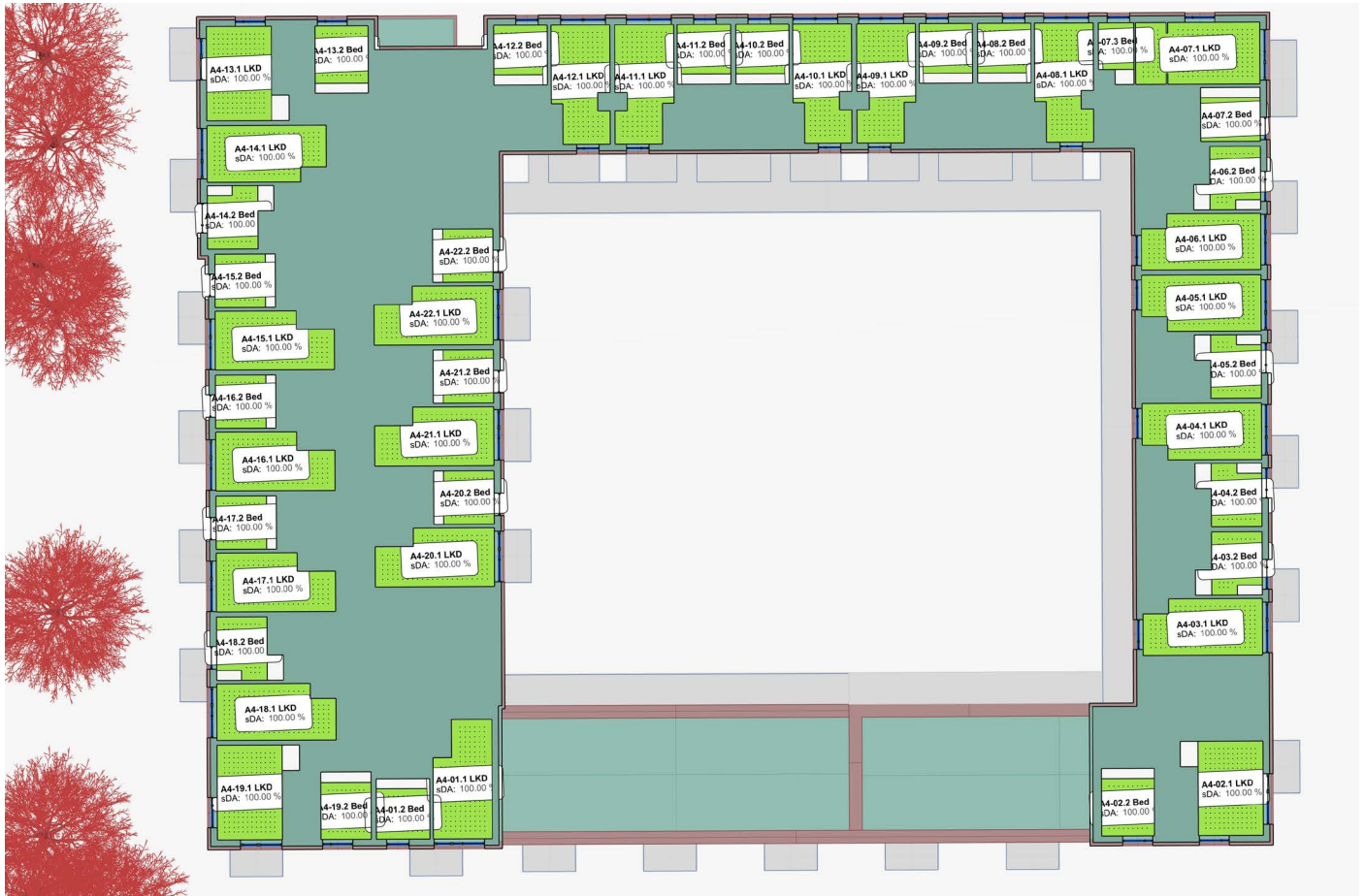
Second Floor



Third Floor

Figure 23: Floor plans indicating Daylight Provision compliance to BS EN17037:2021+A1 Table NA.1. Results shown in the winter condition.

Assessment with 9no. Retained Trees



Fourth Floor

Figure 24: Floor plans indicating Daylight Provision compliance to BS EN17037:2021+A1 Table NA.1. Results shown in the winter condition.

Minimum illuminance levels from BS EN17037:2018+A1:2021 - Table NA.1

Space ID	Use	Area m2	Sensor Count	Target Lux	Assessment without Trees		Assessment with 9no. retained trees annual simulation*		Assessment with 9no. retained trees winter simulation*	
					% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria
A0-01.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-01.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A0-02.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-02.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A0-03.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-03.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A0-04.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-04.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A0-05.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-05.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A0-06.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-06.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A0-07.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-07.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A0-08.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-08.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A0-09.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-09.2	Bed	10.8	88	100	96.6%	Y	92.0%	Y	95.5%	Y
A0-10.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-10.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A0-11.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-11.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A0-12.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A0-12.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-01.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-01.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-02.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-02.2	Bed	11.8	99	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-03.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-03.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-04.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-04.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-05.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-05.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-06.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-06.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-07.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-07.2	Bed	11.1	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-08.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-08.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-09.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-09.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-10.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-10.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-11.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-11.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-12.1	LKD	27.9	243	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-12.2	Bed	9.5	70	100	100.0%	Y	100.0%	Y	100.0%	Y

Minimum illuminance levels from BS EN17037:2018+A1:2021 - Table NA.1

Space ID	Use	Area m2	Sensor Count	Target Lux	Assessment without Trees		Assessment with 9no. retained trees annual simulation*		Assessment with 9no. retained trees winter simulation*	
					% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria
A1-12.3	Bed	6.1	48	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-13.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-13.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-14.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-14.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-15.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-15.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-16.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-16.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-17.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-17.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-18.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-18.2	Bed	11.0	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-19.1	LKD	23.1	205	200	100.0%	Y	33.7%	N	97.6%	Y
A1-19.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-20.1	LKD	23.0	189	200	100.0%	Y	70.4%	Y	97.9%	Y
A1-20.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-21.1	LKD	23.0	189	200	100.0%	Y	99.5%	Y	100.0%	Y
A1-21.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-22.1	LKD	23.0	189	200	100.0%	Y	56.1%	Y	100.0%	Y
A1-22.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-23.1	LKD	23.1	205	200	100.0%	Y	78.0%	Y	100.0%	Y
A1-23.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-24.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A1-24.2	Bed	10.4	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-25.1	LKD	23.0	189	200	65.6%	Y	65.6%	Y	65.6%	Y
A1-25.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-26.1	LKD	23.0	189	200	71.4%	Y	73.0%	Y	74.1%	Y
A1-26.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A1-27.1	LKD	23.0	189	200	69.8%	Y	68.8%	Y	71.4%	Y
A1-27.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-01.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-01.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-02.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-02.2	Bed	11.8	99	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-03.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-03.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-04.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-04.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-05.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-05.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-06.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-06.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-07.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-07.2	Bed	11.1	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-08.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-08.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-09.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y

Minimum illuminance levels from BS EN17037:2018+A1:2021 - Table NA.1

Space ID	Use	Area m2	Sensor Count	Target Lux	Assessment without Trees		Assessment with 9no. retained trees annual simulation*		Assessment with 9no. retained trees winter simulation*	
					% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria
A2-09.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-10.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-10.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-11.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-11.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-12.1	LKD	27.9	243	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-12.2	Bed	9.5	70	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-12.3	Bed	6.1	48	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-13.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-13.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-14.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-14.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-15.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-15.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-16.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-16.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-17.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-17.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-18.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-18.2	Bed	11.0	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-19.1	LKD	23.1	205	200	100.0%	Y	45.4%	N	99.0%	Y
A2-19.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-20.1	LKD	23.0	189	200	100.0%	Y	79.4%	Y	100.0%	Y
A2-20.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-21.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-21.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-22.1	LKD	23.0	189	200	100.0%	Y	65.6%	Y	97.9%	Y
A2-22.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-23.1	LKD	23.1	205	200	100.0%	Y	89.8%	Y	100.0%	Y
A2-23.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-24.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A2-24.2	Bed	10.4	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-25.1	LKD	23.0	189	200	81.0%	Y	81.5%	Y	81.0%	Y
A2-25.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-26.1	LKD	23.0	189	200	81.0%	Y	79.9%	Y	79.9%	Y
A2-26.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A2-27.1	LKD	23.0	189	200	79.9%	Y	78.8%	Y	79.4%	Y
A2-27.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-01.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-01.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-02.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-02.2	Bed	11.1	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-03.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-03.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-04.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-04.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-05.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-05.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y

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Space ID	Use	Area m2	Sensor Count	Target Lux	Assessment without Trees		Assessment with 9no. retained trees annual simulation*		Assessment with 9no. retained trees winter simulation*	
					% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria
A3-06.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-06.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-07.1	LKD	27.9	243	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-07.2	Bed	9.5	70	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-07.3	Bed	6.1	48	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-08.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-08.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-09.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-09.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-10.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-10.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-11.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-11.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-12.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-12.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-13.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-13.2	Bed	11.0	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-14.1	LKD	23.1	205	200	100.0%	Y	76.6%	Y	100.0%	Y
A3-14.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-15.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-15.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-16.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-16.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-17.1	LKD	23.0	189	200	100.0%	Y	85.2%	Y	100.0%	Y
A3-17.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-18.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-18.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-19.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A3-19.2	Bed	10.4	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-20.1	LKD	23.0	189	200	95.2%	Y	94.7%	Y	95.8%	Y
A3-20.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-21.1	LKD	23.0	189	200	95.8%	Y	95.2%	Y	94.7%	Y
A3-21.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A3-22.1	LKD	23.0	189	200	89.9%	Y	89.4%	Y	91.0%	Y
A3-22.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-01.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-01.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-02.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-02.2	Bed	11.1	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-03.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-03.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-04.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-04.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-05.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-05.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-06.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-06.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-07.1	LKD	27.9	243	200	100.0%	Y	100.0%	Y	100.0%	Y

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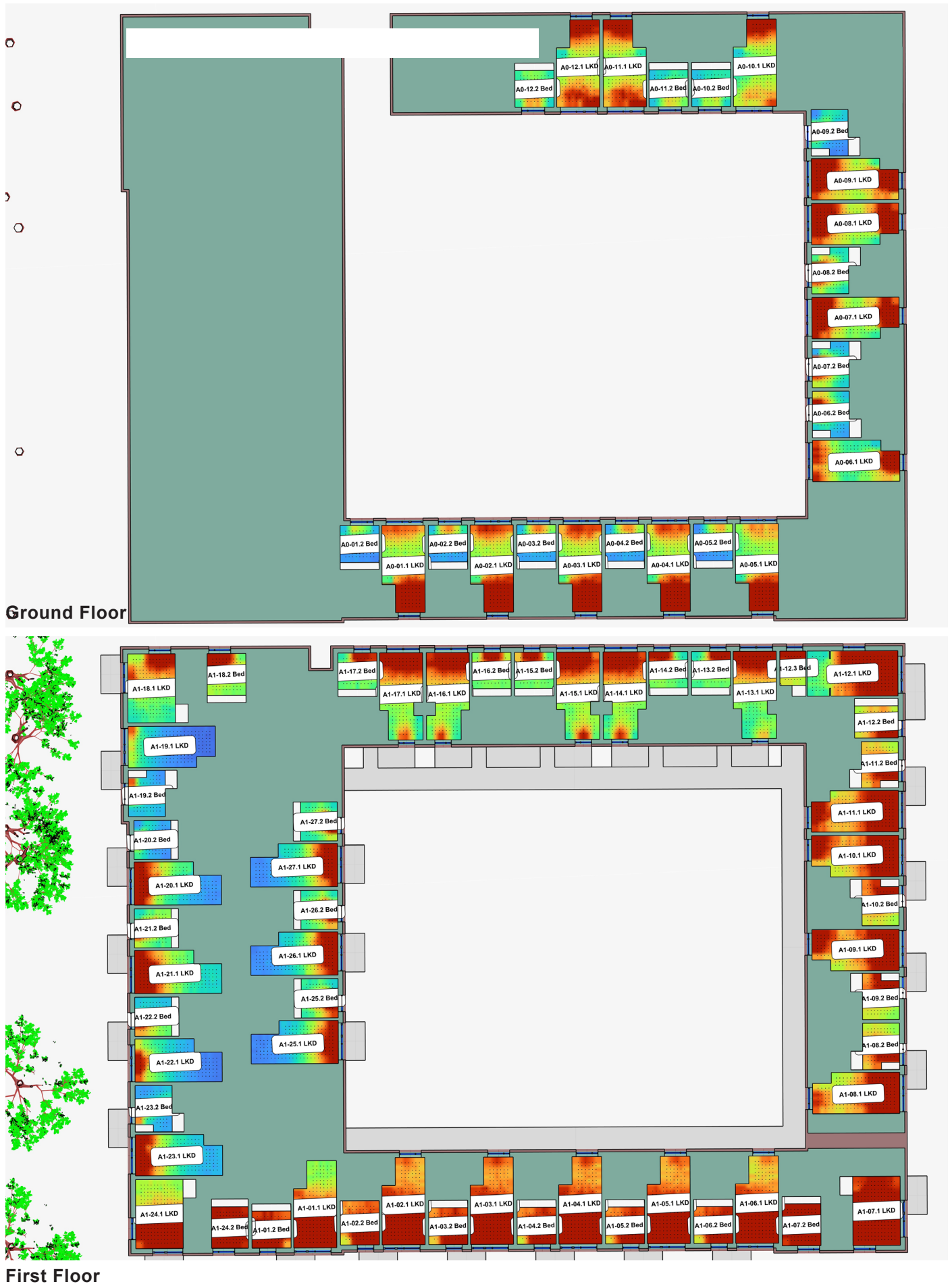
Space ID	Use	Area m2	Sensor Count	Target Lux	Assessment without Trees		Assessment with 9no. retained trees annual simulation*		Assessment with 9no. retained trees winter simulation*	
					% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria
A4-07.2	Bed	9.5	70	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-07.3	Bed	6.1	48	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-08.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-08.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-09.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-09.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-10.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-10.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-11.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-11.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-12.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-12.2	Bed	9.7	72	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-13.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-13.2	Bed	11.0	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-14.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-14.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-15.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-15.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-16.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-16.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-17.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-17.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-18.1	LKD	23.1	205	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-18.2	Bed	10.8	88	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-19.1	LKD	22.3	204	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-19.2	Bed	10.4	90	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-20.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-20.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-21.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-21.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y
A4-22.1	LKD	23.0	189	200	100.0%	Y	100.0%	Y	100.0%	Y
A4-22.2	Bed	9.8	81	100	100.0%	Y	100.0%	Y	100.0%	Y

Table 10: Minimum Daylight Provision BS EN17037:2018+A1:2021 Table NA.1 compliance for habitable rooms

*For annual workflow the simulation is carried out with dynamic leaf material state set by schedule and simulation timestep with variations in colour, reflection and transparency set by schedule. The simulation is carried without leaves for the winter assessment.

It should be noted that the accurate representation of trees in computer simulations is very difficult and can never completely represent the complex organic nature of trees in reality. Therefore any assessment of results should be viewed with caution and assessed in conjunction with the assessment without trees.

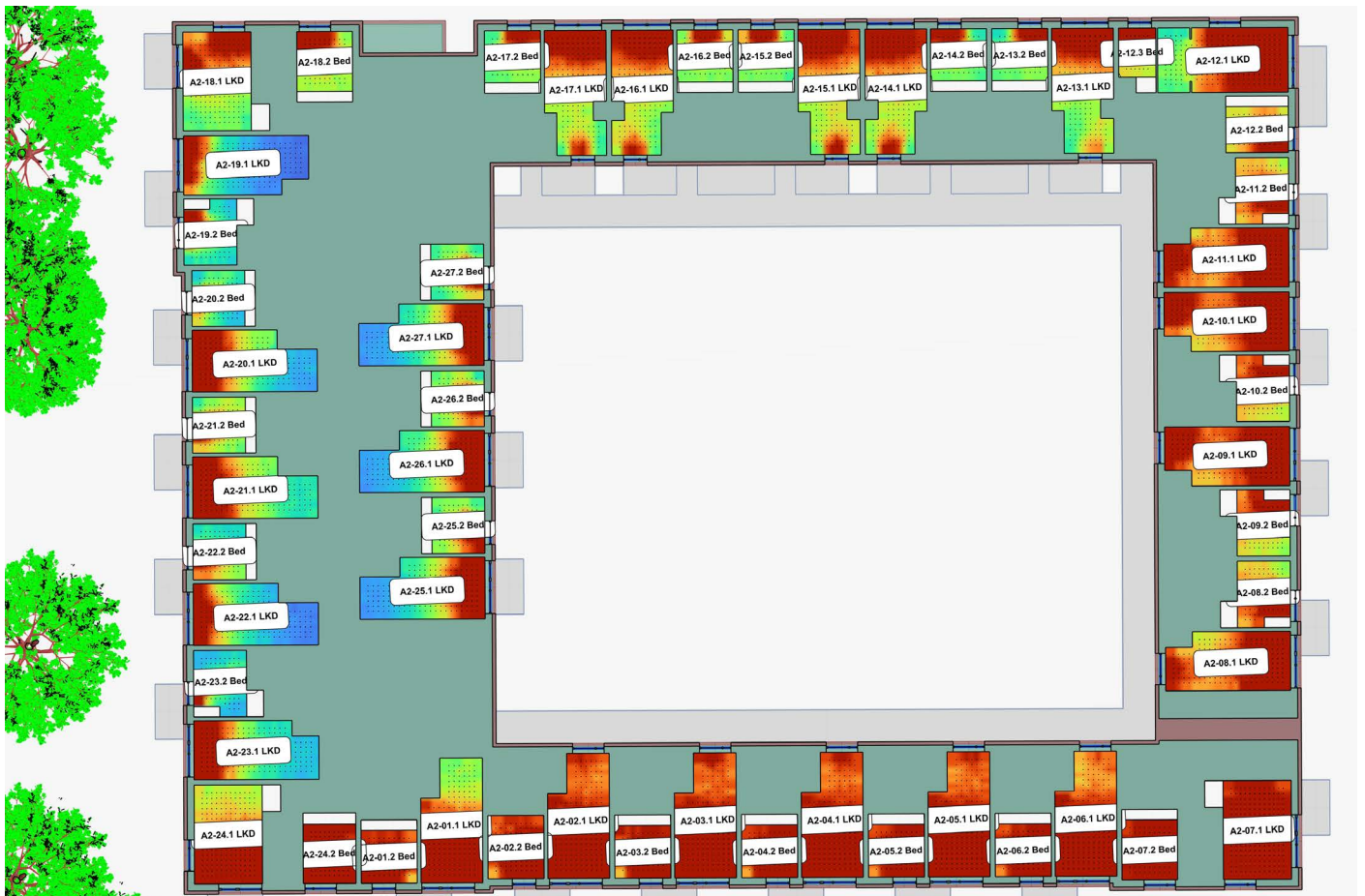
Appendix B - Supplementary Information - EN17037:2018 Table A.1 Daylight Provision Room Results. Assessment with 9no. Retained Trees. Annual Dynamic Tree Condition.



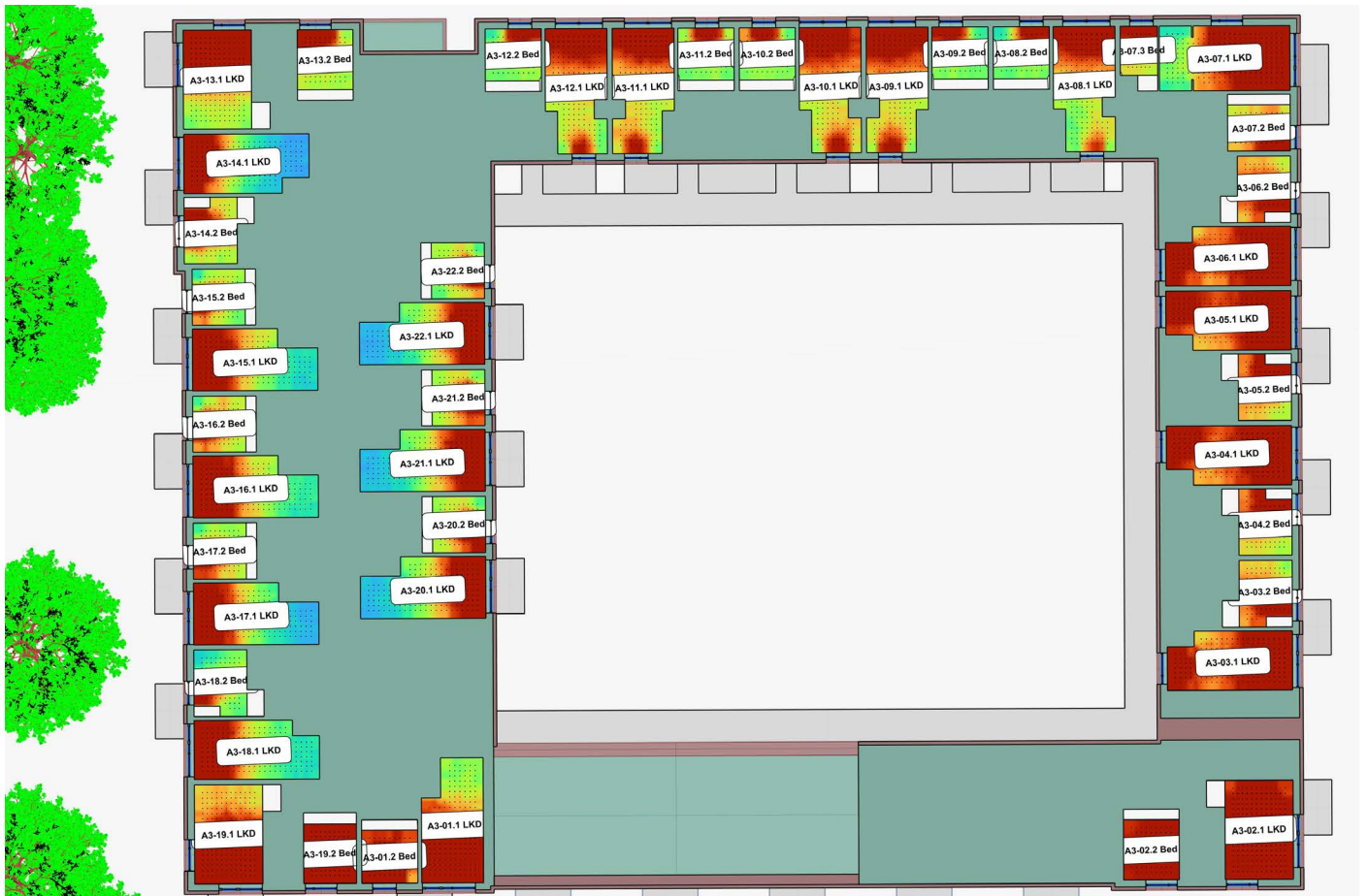
First Floor

Figure 25: Daylight Provision and Annual Average Illuminance to all habitable rooms

Assessment with 9no. Retained Trees



Second Floor



Third Floor

Figure 26: Daylight Provision and Annual Average Illuminance to all habitable rooms

Assessment with 9no. Retained Trees



Fourth Floor

Figure 27: Daylight Provision and Annual Average Illuminance to all habitable rooms

Assessment with 9no. Retained Trees - EN17037:2018 Table A.1 Daylight Provision Room Schedule

Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A0-01.1	LKD	23.0	189	Medium	65.1%	50.7%	36.9%	Medium	80.1%	53.8%	36.9%
A0-01.2	Bed	9.8	81	Fail	27.6%	2.6%	0.1%	Minimum	57.5%	3.5%	0.0%
A0-02.1	LKD	23.0	189	Medium	67.6%	53.2%	39.1%	Medium	80.8%	56.0%	38.5%
A0-02.2	Bed	9.8	81	Fail	45.8%	13.8%	0.3%	Minimum	63.5%	12.0%	0.0%
A0-03.1	LKD	23.0	189	Medium	67.5%	53.1%	39.5%	Medium	81.2%	56.7%	39.2%
A0-03.2	Bed	9.8	81	Fail	48.6%	15.0%	0.6%	Minimum	65.7%	13.4%	0.0%
A0-04.1	LKD	23.0	189	Medium	66.1%	51.5%	38.0%	Medium	80.8%	55.5%	37.9%
A0-04.2	Bed	9.8	81	Fail	45.2%	9.8%	0.4%	Minimum	64.3%	9.0%	0.0%
A0-05.1	LKD	23.0	189	Minimum	63.6%	48.8%	33.8%	Medium	78.1%	50.5%	32.6%
A0-05.2	Bed	9.8	81	Fail	33.8%	4.0%	0.2%	Minimum	58.6%	3.4%	0.0%
A0-06.1	LKD	23.1	205	Minimum	60.0%	40.7%	17.4%	Minimum	78.4%	47.2%	19.5%
A0-06.2	Bed	10.8	88	Minimum	50.3%	24.8%	6.3%	Minimum	65.5%	18.5%	3.6%
A0-07.1	LKD	23.1	205	Medium	65.8%	51.3%	35.4%	Medium	80.2%	53.6%	35.0%
A0-07.2	Bed	10.8	88	Minimum	54.4%	33.0%	14.1%	Minimum	63.0%	18.8%	5.1%
A0-08.1	LKD	23.1	205	Medium	67.3%	52.9%	38.3%	Medium	81.0%	55.0%	37.9%
A0-08.2	Bed	10.8	88	Minimum	56.4%	37.9%	19.4%	Minimum	72.3%	34.5%	11.2%
A0-09.1	LKD	23.1	205	Medium	66.8%	52.8%	38.1%	Medium	81.1%	55.3%	38.8%
A0-09.2	Bed	10.8	88	Fail	28.5%	11.0%	5.3%	Fail	44.1%	8.6%	3.5%
A0-10.1	LKD	23.0	189	Minimum	61.4%	43.7%	23.8%	Minimum	77.6%	45.0%	18.9%
A0-10.2	Bed	9.8	81	Fail	42.4%	26.3%	12.3%	Minimum	62.1%	27.8%	8.8%
A0-11.1	LKD	23.0	189	Minimum	65.0%	49.5%	32.4%	Medium	81.5%	56.5%	35.5%
A0-11.2	Bed	9.8	81	Fail	46.0%	28.1%	13.7%	Minimum	61.4%	28.0%	8.3%
A0-12.1	LKD	23.0	189	Medium	65.6%	50.6%	34.6%	Medium	81.2%	55.6%	35.1%
A0-12.2	Bed	9.8	81	Fail	49.5%	33.9%	18.0%	Minimum	68.9%	36.8%	17.0%
A1-01.1	LKD	23.0	189	Medium	73.3%	60.5%	48.9%	Medium	78.9%	52.3%	36.1%
A1-01.2	Bed	9.8	81	High	74.6%	62.0%	50.8%	High	84.8%	67.2%	52.4%
A1-02.1	LKD	23.0	189	High	75.8%	63.7%	52.2%	High	85.3%	66.6%	52.2%
A1-02.2	Bed	11.8	99	Medium	69.8%	56.5%	44.9%	Medium	83.2%	63.6%	48.5%
A1-03.1	LKD	23.0	189	High	76.2%	64.8%	53.1%	High	85.8%	68.2%	53.9%
A1-03.2	Bed	9.8	81	Medium	72.6%	59.9%	48.2%	High	83.7%	64.9%	50.7%
A1-04.1	LKD	23.0	189	High	76.1%	64.7%	53.1%	High	85.7%	67.9%	53.4%
A1-04.2	Bed	9.8	81	Medium	72.8%	60.1%	48.6%	High	83.8%	65.0%	50.8%
A1-05.1	LKD	23.0	189	High	76.3%	64.8%	53.5%	High	85.6%	67.3%	52.8%
A1-05.2	Bed	9.8	81	Medium	72.6%	59.8%	48.4%	High	83.6%	64.7%	50.1%
A1-06.1	LKD	23.0	189	High	75.1%	63.5%	51.8%	High	84.6%	65.4%	50.6%
A1-06.2	Bed	9.8	81	Medium	72.7%	60.0%	48.5%	High	83.4%	64.6%	50.6%
A1-07.1	LKD	22.3	204	High	83.5%	76.8%	68.1%	High	87.1%	74.7%	61.6%
A1-07.2	Bed	11.1	90	High	77.9%	67.7%	57.1%	High	86.6%	72.5%	59.2%
A1-08.1	LKD	23.1	205	Medium	73.0%	59.7%	45.8%	Medium	84.0%	63.2%	45.9%
A1-08.2	Bed	10.8	88	Medium	70.9%	56.3%	40.1%	Medium	83.0%	60.3%	40.0%
A1-09.1	LKD	23.1	205	Medium	75.0%	62.0%	49.5%	High	85.3%	66.2%	51.0%
A1-09.2	Bed	10.8	88	Medium	70.1%	55.8%	39.5%	Medium	82.2%	58.1%	37.8%
A1-10.1	LKD	23.1	205	Medium	73.9%	61.3%	48.6%	Medium	84.3%	64.9%	49.5%
A1-10.2	Bed	10.8	88	Medium	71.4%	57.0%	40.7%	Medium	84.0%	62.1%	41.9%
A1-11.1	LKD	23.1	205	Medium	74.2%	61.7%	49.4%	High	84.6%	66.1%	50.6%
A1-11.2	Bed	10.8	88	Medium	72.2%	58.1%	42.2%	Medium	83.6%	61.9%	42.1%
A1-12.1	LKD	27.9	243	High	80.9%	71.2%	59.4%	Medium	80.7%	53.5%	26.1%
A1-12.2	Bed	9.5	70	Medium	69.3%	54.1%	36.5%	Medium	83.2%	60.3%	38.5%
A1-12.3	Bed	6.1	48	High	78.7%	66.7%	51.3%	High	88.0%	72.6%	54.7%
A1-13.1	LKD	23.0	189	Medium	72.5%	56.9%	39.1%	Medium	79.7%	52.6%	26.3%

Assessment with 9no. Retained Trees - EN17037:2018 Table A.1 Daylight Provision Room Schedule

Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A1-13.2	Bed	9.7	72	Medium	70.0%	51.7%	27.8%	Medium	83.6%	57.2%	31.9%
A1-14.1	LKD	23.0	189	Medium	73.1%	57.8%	41.8%	Medium	81.2%	55.9%	34.7%
A1-14.2	Bed	9.7	72	Medium	69.8%	51.0%	27.0%	Medium	83.9%	57.1%	32.4%
A1-15.1	LKD	23.0	189	Medium	72.5%	57.2%	41.3%	Medium	81.5%	56.7%	35.7%
A1-15.2	Bed	9.7	72	Medium	72.2%	53.9%	32.9%	Medium	85.3%	61.8%	39.1%
A1-16.1	LKD	23.0	189	Medium	72.8%	57.4%	41.1%	Medium	80.3%	53.7%	31.8%
A1-16.2	Bed	9.7	72	Medium	71.5%	53.2%	31.1%	Medium	85.6%	63.1%	40.5%
A1-17.1	LKD	23.0	189	Medium	72.4%	57.0%	40.9%	Medium	80.1%	52.6%	30.8%
A1-17.2	Bed	9.7	72	Medium	70.1%	52.0%	29.0%	Medium	84.5%	58.5%	34.2%
A1-18.1	LKD	22.3	204	Medium	74.0%	55.8%	32.2%	Medium	82.5%	55.3%	25.1%
A1-18.2	Bed	11.0	90	Medium	74.0%	56.6%	38.7%	Medium	85.7%	64.2%	43.5%
A1-19.1	LKD	23.1	205	Fail	11.5%	2.4%	0.4%	Fail	26.7%	0.5%	0.0%
A1-19.2	Bed	10.8	88	Fail	28.6%	9.3%	4.4%	Minimum	58.7%	12.8%	4.4%
A1-20.1	LKD	23.0	189	Fail	44.9%	23.1%	12.3%	Minimum	51.9%	9.7%	4.5%
A1-20.2	Bed	9.8	81	Fail	20.2%	6.0%	2.6%	Minimum	53.4%	7.0%	1.9%
A1-21.1	LKD	23.0	189	Minimum	60.8%	36.2%	18.5%	Minimum	74.5%	30.2%	9.2%
A1-21.2	Bed	9.8	81	Minimum	59.9%	35.7%	17.9%	Minimum	78.8%	40.6%	17.4%
A1-22.1	LKD	23.0	189	Fail	31.7%	7.8%	3.9%	Fail	43.5%	2.5%	0.2%
A1-22.2	Bed	9.8	81	Minimum	54.0%	26.6%	7.0%	Minimum	75.1%	26.5%	4.2%
A1-23.1	LKD	23.1	205	Fail	42.9%	19.2%	8.9%	Minimum	65.8%	13.5%	5.2%
A1-23.2	Bed	10.8	88	Fail	32.0%	12.2%	5.1%	Minimum	57.3%	10.9%	3.9%
A1-24.1	LKD	22.3	204	Medium	70.7%	56.2%	42.5%	Medium	81.7%	55.8%	39.3%
A1-24.2	Bed	10.4	90	High	77.8%	67.3%	56.1%	High	86.6%	72.2%	58.6%
A1-25.1	LKD	23.0	189	Fail	42.1%	18.1%	7.1%	Fail	45.3%	4.9%	2.1%
A1-25.2	Bed	9.8	81	Minimum	55.0%	34.0%	17.8%	Minimum	74.7%	34.6%	15.3%
A1-26.1	LKD	23.0	189	Fail	46.9%	22.5%	10.2%	Fail	49.4%	6.8%	2.9%
A1-26.2	Bed	9.8	81	Minimum	57.0%	37.1%	19.9%	Minimum	75.3%	38.6%	18.6%
A1-27.1	LKD	23.0	189	Fail	44.3%	21.3%	9.4%	Fail	48.5%	6.7%	3.2%
A1-27.2	Bed	9.8	81	Minimum	52.0%	30.6%	15.8%	Minimum	71.0%	33.2%	14.4%
A2-01.1	LKD	23.0	189	Medium	73.3%	60.8%	49.1%	Medium	79.3%	53.2%	38.0%
A2-01.2	Bed	9.8	81	High	75.0%	63.3%	52.0%	High	85.3%	67.8%	53.6%
A2-02.1	LKD	23.0	189	High	77.7%	66.5%	56.0%	High	86.6%	71.2%	57.9%
A2-02.2	Bed	11.8	99	Medium	73.5%	61.1%	49.6%	High	84.7%	66.5%	52.4%
A2-03.1	LKD	23.0	189	High	78.0%	66.8%	56.2%	High	86.7%	71.8%	58.4%
A2-03.2	Bed	9.8	81	High	75.6%	64.3%	53.3%	High	85.8%	69.1%	55.3%
A2-04.1	LKD	23.0	189	High	78.1%	67.2%	56.7%	High	86.8%	72.1%	58.3%
A2-04.2	Bed	9.8	81	High	75.6%	64.0%	53.2%	High	85.7%	69.2%	55.6%
A2-05.1	LKD	23.0	189	High	77.8%	66.5%	56.0%	High	86.7%	71.7%	57.8%
A2-05.2	Bed	9.8	81	High	75.6%	64.3%	53.5%	High	85.5%	68.7%	55.0%
A2-06.1	LKD	23.0	189	High	76.9%	65.7%	54.2%	High	86.3%	69.3%	55.3%
A2-06.2	Bed	9.8	81	High	75.7%	64.4%	53.7%	High	85.6%	68.6%	54.9%
A2-07.1	LKD	22.3	204	High	83.8%	77.1%	68.5%	High	87.6%	75.6%	63.1%
A2-07.2	Bed	11.1	90	High	78.4%	68.3%	57.7%	High	86.6%	72.2%	58.9%
A2-08.1	LKD	23.1	205	High	76.1%	63.0%	50.2%	High	85.5%	67.3%	51.9%
A2-08.2	Bed	10.8	88	Medium	72.8%	59.2%	43.9%	Medium	83.6%	61.9%	42.9%
A2-09.1	LKD	23.1	205	High	77.3%	65.3%	53.8%	High	86.6%	70.7%	56.8%
A2-09.2	Bed	10.8	88	Medium	71.9%	58.0%	42.5%	Medium	83.2%	60.7%	41.3%
A2-10.1	LKD	23.1	205	High	76.7%	64.7%	53.2%	High	85.9%	68.2%	54.5%
A2-10.2	Bed	10.8	88	Medium	73.3%	59.5%	44.3%	Medium	84.2%	63.5%	45.6%
A2-11.1	LKD	23.1	205	High	76.2%	64.5%	52.5%	High	86.0%	69.0%	55.2%

Assessment with 9no. Retained Trees - EN17037:2018 Table A.1 Daylight Provision Room Schedule

Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A2-11.2	Bed	10.8	88	Medium	72.7%	59.1%	44.2%	Medium	84.8%	65.6%	47.5%
A2-12.1	LKD	27.9	243	High	81.7%	72.3%	60.8%	Medium	82.3%	56.7%	32.7%
A2-12.2	Bed	9.5	70	Medium	69.7%	54.9%	38.5%	Medium	84.0%	62.8%	43.3%
A2-12.3	Bed	6.1	48	High	79.2%	68.0%	52.9%	High	87.9%	72.4%	54.6%
A2-13.1	LKD	23.0	189	Medium	73.6%	58.4%	43.1%	Medium	81.1%	55.5%	32.4%
A2-13.2	Bed	9.7	72	Medium	70.1%	51.8%	29.1%	Medium	84.1%	58.3%	35.0%
A2-14.1	LKD	23.0	189	Medium	74.7%	60.5%	46.1%	Medium	83.0%	60.4%	42.9%
A2-14.2	Bed	9.7	72	Medium	71.2%	52.9%	31.8%	Medium	83.9%	57.7%	34.3%
A2-15.1	LKD	23.0	189	Medium	74.3%	59.7%	45.8%	Medium	83.3%	61.0%	43.8%
A2-15.2	Bed	9.7	72	Medium	72.4%	54.4%	34.1%	Medium	85.3%	62.0%	40.2%
A2-16.1	LKD	23.0	189	Medium	74.1%	59.6%	45.1%	Medium	81.8%	57.9%	38.9%
A2-16.2	Bed	9.7	72	Medium	72.4%	54.5%	34.8%	Medium	85.8%	63.8%	42.7%
A2-17.1	LKD	23.0	189	Medium	74.4%	59.5%	45.0%	Medium	81.9%	58.2%	37.8%
A2-17.2	Bed	9.7	72	Medium	71.9%	54.0%	33.9%	Medium	84.8%	60.2%	37.3%
A2-18.1	LKD	22.3	204	Medium	76.2%	60.2%	41.6%	Medium	84.0%	60.0%	37.2%
A2-18.2	Bed	11.0	90	Medium	74.7%	58.0%	41.0%	Medium	86.3%	66.7%	47.2%
A2-19.1	LKD	23.1	205	Fail	21.8%	6.6%	3.1%	Fail	28.6%	2.2%	0.1%
A2-19.2	Bed	10.8	88	Fail	45.3%	24.8%	11.2%	Minimum	70.2%	28.1%	11.5%
A2-20.1	LKD	23.0	189	Minimum	57.4%	33.3%	18.0%	Minimum	60.4%	12.5%	6.3%
A2-20.2	Bed	9.8	81	Fail	44.5%	22.2%	9.5%	Minimum	71.1%	22.5%	7.3%
A2-21.1	LKD	23.0	189	Minimum	63.8%	41.8%	22.6%	Minimum	76.2%	38.2%	11.4%
A2-21.2	Bed	9.8	81	Minimum	64.7%	41.5%	23.7%	Medium	81.4%	51.9%	26.8%
A2-22.1	LKD	23.0	189	Fail	39.7%	16.0%	6.1%	Fail	45.4%	4.9%	0.3%
A2-22.2	Bed	9.8	81	Minimum	61.4%	36.1%	16.5%	Minimum	77.4%	34.4%	9.8%
A2-23.1	LKD	23.1	205	Minimum	50.9%	25.8%	12.4%	Minimum	70.2%	20.9%	7.8%
A2-23.2	Bed	10.8	88	Fail	41.7%	19.0%	9.0%	Minimum	65.2%	17.4%	6.0%
A2-24.1	LKD	22.3	204	Medium	74.2%	61.0%	48.2%	Medium	82.3%	59.1%	42.7%
A2-24.2	Bed	10.4	90	High	77.8%	67.7%	56.6%	High	86.6%	72.8%	59.2%
A2-25.1	LKD	23.0	189	Minimum	56.5%	35.5%	17.7%	Minimum	55.6%	10.3%	4.1%
A2-25.2	Bed	9.8	81	Minimum	62.6%	43.2%	24.7%	Minimum	79.3%	46.8%	23.8%
A2-26.1	LKD	23.0	189	Minimum	55.2%	33.4%	15.9%	Minimum	58.5%	11.1%	4.7%
A2-26.2	Bed	9.8	81	Minimum	62.8%	43.8%	26.8%	Minimum	79.1%	48.0%	25.4%
A2-27.1	LKD	23.0	189	Minimum	52.4%	30.3%	13.4%	Minimum	54.4%	10.2%	4.1%
A2-27.2	Bed	9.8	81	Minimum	57.6%	39.1%	21.8%	Minimum	75.1%	40.6%	20.1%
A3-01.1	LKD	23.0	189	High	74.0%	62.1%	50.7%	Medium	79.6%	53.4%	37.6%
A3-01.2	Bed	9.8	81	High	75.1%	63.2%	52.4%	High	85.3%	67.9%	53.9%
A3-02.1	LKD	22.3	204	High	84.0%	77.6%	69.1%	High	87.8%	76.3%	64.0%
A3-02.2	Bed	11.1	90	High	78.4%	68.1%	57.4%	High	86.6%	72.6%	59.6%
A3-03.1	LKD	23.1	205	High	78.4%	66.4%	55.6%	High	86.7%	71.5%	57.2%
A3-03.2	Bed	10.8	88	Medium	73.1%	59.4%	44.6%	Medium	84.3%	63.8%	46.4%
A3-04.1	LKD	23.1	205	High	78.7%	67.7%	57.3%	High	86.9%	72.6%	59.0%
A3-04.2	Bed	10.8	88	Medium	72.6%	58.9%	44.0%	Medium	83.7%	62.3%	43.5%
A3-05.1	LKD	23.1	205	High	78.4%	67.4%	56.7%	High	86.6%	71.3%	58.1%
A3-05.2	Bed	10.8	88	Medium	74.8%	61.0%	46.3%	Medium	84.5%	63.9%	46.3%
A3-06.1	LKD	23.1	205	High	78.2%	66.9%	56.2%	High	86.6%	71.5%	58.4%
A3-06.2	Bed	10.8	88	Medium	74.9%	61.4%	46.7%	Medium	84.7%	65.8%	48.5%
A3-07.1	LKD	27.9	243	High	81.5%	72.1%	61.1%	Medium	82.3%	56.9%	33.4%
A3-07.2	Bed	9.5	70	Medium	70.4%	55.8%	40.3%	Medium	84.2%	63.8%	45.0%
A3-07.3	Bed	6.1	48	High	78.6%	67.2%	52.2%	High	88.2%	73.3%	55.7%
A3-08.1	LKD	23.0	189	Medium	74.5%	60.1%	45.6%	Medium	82.1%	58.3%	37.7%

Assessment with 9no. Retained Trees - EN17037:2018 Table A.1 Daylight Provision Room Schedule

Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A3-08.2	Bed	9.7	72	Medium	70.8%	52.9%	31.6%	Medium	84.9%	59.7%	36.9%
A3-09.1	LKD	23.0	189	Medium	75.8%	62.0%	49.1%	Medium	84.2%	63.2%	47.2%
A3-09.2	Bed	9.7	72	Medium	71.1%	52.9%	32.1%	Medium	85.0%	60.2%	37.4%
A3-10.1	LKD	23.0	189	Medium	75.3%	61.8%	48.1%	Medium	84.3%	63.7%	47.9%
A3-10.2	Bed	9.7	72	Medium	72.5%	54.8%	35.5%	Medium	85.8%	63.8%	43.5%
A3-11.1	LKD	23.0	189	Medium	75.3%	61.0%	47.7%	Medium	83.6%	61.9%	45.3%
A3-11.2	Bed	9.7	72	Medium	72.5%	54.7%	35.3%	Medium	85.4%	62.6%	41.9%
A3-12.1	LKD	23.0	189	Medium	75.4%	61.1%	48.2%	Medium	83.4%	61.1%	43.8%
A3-12.2	Bed	9.7	72	Medium	72.1%	54.6%	35.1%	Medium	85.1%	61.3%	39.8%
A3-13.1	LKD	22.3	204	High	78.9%	67.6%	54.1%	Medium	85.5%	64.5%	45.8%
A3-13.2	Bed	11.0	90	Medium	75.8%	59.6%	44.0%	Medium	86.6%	67.9%	49.1%
A3-14.1	LKD	23.1	205	Minimum	51.1%	26.4%	11.1%	Minimum	64.3%	12.0%	5.1%
A3-14.2	Bed	10.8	88	Medium	70.4%	50.0%	31.8%	Medium	82.9%	57.3%	32.7%
A3-15.1	LKD	23.0	189	Minimum	66.5%	48.0%	27.6%	Minimum	74.4%	30.3%	11.7%
A3-15.2	Bed	9.8	81	Minimum	64.8%	42.1%	24.1%	Medium	81.7%	51.2%	25.4%
A3-16.1	LKD	23.0	189	Medium	67.7%	51.4%	30.0%	Minimum	77.4%	43.4%	16.4%
A3-16.2	Bed	9.8	81	Medium	68.7%	51.7%	31.8%	Medium	83.0%	59.9%	36.5%
A3-17.1	LKD	23.0	189	Minimum	62.6%	39.5%	21.7%	Minimum	68.3%	16.9%	7.0%
A3-17.2	Bed	9.8	81	Minimum	67.7%	49.7%	28.2%	Medium	81.8%	54.0%	28.2%
A3-18.1	LKD	23.1	205	Minimum	62.9%	40.6%	22.7%	Minimum	75.5%	35.4%	11.9%
A3-18.2	Bed	10.8	88	Minimum	58.5%	35.1%	18.1%	Minimum	76.6%	37.6%	16.3%
A3-19.1	LKD	22.3	204	High	78.3%	68.0%	57.7%	Medium	83.3%	63.9%	49.4%
A3-19.2	Bed	10.4	90	High	78.3%	68.1%	57.7%	High	87.0%	73.6%	60.7%
A3-20.1	LKD	23.0	189	Minimum	63.9%	46.4%	25.4%	Minimum	66.4%	21.3%	6.6%
A3-20.2	Bed	9.8	81	Medium	67.8%	51.7%	32.0%	Medium	81.4%	54.8%	31.2%
A3-21.1	LKD	23.0	189	Minimum	63.6%	46.0%	24.7%	Minimum	66.0%	20.3%	6.3%
A3-21.2	Bed	9.8	81	Medium	67.4%	51.5%	32.5%	Medium	81.2%	54.3%	32.4%
A3-22.1	LKD	23.0	189	Minimum	60.6%	41.3%	22.9%	Minimum	62.5%	15.8%	5.7%
A3-22.2	Bed	9.8	81	Minimum	62.9%	46.1%	28.5%	Medium	78.8%	50.3%	28.4%
A4-01.1	LKD	23.0	189	High	75.5%	64.5%	53.4%	Medium	80.6%	55.1%	41.0%
A4-01.2	Bed	9.8	81	High	76.1%	65.3%	54.3%	High	85.9%	69.4%	55.4%
A4-02.1	LKD	22.3	204	High	84.7%	78.4%	70.5%	High	88.1%	76.7%	64.9%
A4-02.2	Bed	11.1	90	High	77.7%	67.6%	57.0%	High	86.6%	72.6%	59.3%
A4-03.1	LKD	23.1	205	High	80.2%	71.3%	60.6%	High	88.2%	76.9%	63.8%
A4-03.2	Bed	10.8	88	High	76.7%	64.0%	50.8%	High	85.9%	68.5%	52.4%
A4-04.1	LKD	23.1	205	High	79.8%	70.6%	60.2%	High	87.9%	75.6%	62.9%
A4-04.2	Bed	10.8	88	Medium	76.2%	62.9%	49.2%	Medium	85.3%	66.2%	49.8%
A4-05.1	LKD	23.1	205	High	79.8%	70.5%	59.9%	High	87.8%	75.6%	62.6%
A4-05.2	Bed	10.8	88	High	76.6%	63.8%	50.8%	High	86.1%	68.2%	53.2%
A4-06.1	LKD	23.1	205	High	79.4%	69.2%	59.7%	High	87.6%	75.0%	62.0%
A4-06.2	Bed	10.8	88	High	77.2%	64.7%	52.0%	High	86.2%	69.1%	53.2%
A4-07.1	LKD	27.9	243	High	82.4%	73.9%	63.1%	Medium	83.2%	60.0%	38.9%
A4-07.2	Bed	9.5	70	Medium	71.7%	57.3%	42.9%	Medium	84.9%	65.2%	47.6%
A4-07.3	Bed	6.1	48	High	79.4%	68.6%	53.9%	High	88.1%	73.0%	55.7%
A4-08.1	LKD	23.0	189	Medium	75.5%	61.4%	47.9%	Medium	84.1%	62.9%	46.5%
A4-08.2	Bed	9.7	72	Medium	70.9%	53.0%	31.9%	Medium	84.6%	59.9%	37.9%
A4-09.1	LKD	23.0	189	High	76.8%	63.5%	51.0%	High	85.7%	66.2%	50.8%
A4-09.2	Bed	9.7	72	Medium	71.7%	53.8%	33.9%	Medium	85.1%	60.4%	39.0%
A4-10.1	LKD	23.0	189	High	76.4%	62.9%	50.3%	High	85.8%	66.4%	51.4%
A4-10.2	Bed	9.7	72	Medium	72.8%	55.4%	37.1%	Medium	85.8%	63.8%	43.7%

Assessment with 9no. Retained Trees - EN17037:2018 Table A.1 Daylight Provision Room Schedule

Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A4-11.1	LKD	23.0	189	High	76.5%	62.9%	50.6%	High	85.7%	66.2%	50.8%
A4-11.2	Bed	9.7	72	Medium	73.6%	56.0%	37.6%	Medium	85.8%	64.0%	43.7%
A4-12.1	LKD	23.0	189	High	76.6%	63.0%	50.5%	Medium	85.2%	65.4%	49.7%
A4-12.2	Bed	9.7	72	Medium	72.4%	55.3%	36.9%	Medium	85.3%	62.1%	41.2%
A4-13.1	LKD	22.3	204	High	81.9%	74.3%	62.6%	High	87.0%	70.3%	54.4%
A4-13.2	Bed	11.0	90	Medium	75.8%	59.8%	44.4%	Medium	86.6%	68.0%	49.6%
A4-14.1	LKD	23.1	205	Medium	68.1%	51.0%	29.7%	Minimum	77.9%	42.1%	16.6%
A4-14.2	Bed	10.8	88	Medium	76.9%	63.9%	48.3%	High	86.8%	69.1%	52.1%
A4-15.1	LKD	23.0	189	Medium	71.8%	56.7%	39.1%	Minimum	79.0%	48.3%	21.2%
A4-15.2	Bed	9.8	81	Medium	72.8%	57.0%	38.2%	Medium	85.0%	64.5%	43.6%
A4-16.1	LKD	23.0	189	Medium	72.9%	58.2%	41.1%	Minimum	79.0%	49.6%	21.6%
A4-16.2	Bed	9.8	81	Medium	73.7%	59.0%	42.3%	Medium	85.2%	65.3%	45.9%
A4-17.1	LKD	23.0	189	Medium	71.7%	55.9%	37.0%	Minimum	78.1%	44.4%	17.4%
A4-17.2	Bed	9.8	81	Medium	74.1%	59.6%	43.3%	Medium	85.4%	65.4%	46.2%
A4-18.1	LKD	23.1	205	Medium	68.9%	52.7%	32.9%	Minimum	78.7%	47.6%	20.5%
A4-18.2	Bed	10.8	88	Medium	68.6%	51.8%	33.8%	Medium	82.0%	56.7%	34.3%
A4-19.1	LKD	22.3	204	High	81.3%	73.4%	63.2%	High	85.8%	69.2%	56.2%
A4-19.2	Bed	10.4	90	High	78.9%	68.6%	58.9%	High	86.8%	73.3%	60.1%
A4-20.1	LKD	23.0	189	Medium	71.5%	57.1%	40.9%	Minimum	76.2%	42.1%	15.7%
A4-20.2	Bed	9.8	81	Medium	70.4%	56.3%	39.4%	Medium	83.6%	61.8%	41.6%
A4-21.1	LKD	23.0	189	Medium	69.2%	54.6%	36.9%	Minimum	75.6%	39.7%	14.0%
A4-21.2	Bed	9.8	81	Medium	70.5%	56.2%	39.9%	Medium	83.5%	61.8%	42.2%
A4-22.1	LKD	23.0	189	Medium	68.9%	54.0%	35.9%	Minimum	74.7%	38.2%	13.8%
A4-22.2	Bed	9.8	81	Medium	68.7%	53.8%	38.2%	Medium	82.5%	58.6%	38.8%

Table 11: Assessment with 9no. Retained Trees - Daylight Provision individual values for all habitable rooms to EN 17037 Table A.1.

Appendix C - Supplementary Information

EN17037:2018 Table A.1 Daylight Provision Room Results - Assessment without trees

Assessment without trees - EN17037:2018 Table A.1 Daylight Provision Room Schedule											
Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A0-01.1	LKD	23.0	189	Medium	66.1%	51.4%	37.5%	Medium	80.7%	55.1%	37.9%
A0-01.2	Bed	9.8	81	Fail	27.8%	2.0%	0.0%	Minimum	55.6%	2.4%	0.0%
A0-02.1	LKD	23.0	189	Medium	67.4%	52.9%	39.1%	Medium	81.2%	56.8%	40.1%
A0-02.2	Bed	9.8	81	Fail	45.5%	14.7%	0.4%	Minimum	64.7%	14.1%	0.0%
A0-03.1	LKD	23.0	189	Medium	67.2%	52.9%	38.7%	Medium	81.0%	56.2%	38.3%
A0-03.2	Bed	9.8	81	Fail	49.0%	13.6%	0.4%	Minimum	66.3%	13.1%	0.0%
A0-04.1	LKD	23.0	189	Medium	66.5%	51.8%	38.5%	Medium	80.7%	55.2%	38.0%
A0-04.2	Bed	9.8	81	Fail	43.8%	8.9%	0.3%	Minimum	64.6%	9.5%	0.0%
A0-05.1	LKD	23.0	189	Minimum	63.8%	48.7%	33.1%	Medium	78.8%	51.3%	32.9%
A0-05.2	Bed	9.8	81	Fail	34.6%	4.9%	0.3%	Minimum	60.1%	4.7%	0.0%
A0-06.1	LKD	23.1	205	Minimum	59.6%	39.8%	16.8%	Minimum	78.0%	45.6%	17.8%
A0-06.2	Bed	10.8	88	Minimum	50.3%	25.3%	6.6%	Minimum	64.6%	17.8%	3.3%
A0-07.1	LKD	23.1	205	Medium	66.2%	51.8%	35.1%	Medium	80.9%	54.3%	36.5%
A0-07.2	Bed	10.8	88	Minimum	53.7%	31.9%	12.6%	Minimum	64.6%	19.6%	5.5%
A0-08.1	LKD	23.1	205	Medium	67.0%	53.2%	38.8%	Medium	80.6%	54.5%	37.1%
A0-08.2	Bed	10.8	88	Minimum	57.5%	39.5%	20.2%	Minimum	71.5%	33.5%	11.0%
A0-09.1	LKD	23.1	205	Medium	67.0%	53.0%	38.9%	Medium	81.1%	55.3%	38.7%
A0-09.2	Bed	10.8	88	Fail	27.4%	11.1%	5.2%	Fail	41.4%	7.0%	3.0%
A0-10.1	LKD	23.0	189	Minimum	61.4%	43.9%	24.4%	Minimum	77.8%	45.8%	20.7%
A0-10.2	Bed	9.8	81	Fail	42.6%	26.4%	12.2%	Minimum	62.3%	27.9%	9.2%
A0-11.1	LKD	23.0	189	Medium	65.6%	50.4%	33.1%	Medium	81.3%	56.2%	35.0%
A0-11.2	Bed	9.8	81	Fail	47.0%	30.0%	15.2%	Minimum	63.1%	29.7%	9.8%
A0-12.1	LKD	23.0	189	Medium	65.8%	50.8%	34.7%	Medium	80.9%	55.5%	34.4%
A0-12.2	Bed	9.8	81	Fail	49.3%	33.3%	18.8%	Minimum	70.0%	37.1%	17.5%
A1-01.1	LKD	23.0	189	Medium	73.9%	61.7%	49.8%	Medium	78.9%	52.8%	36.6%
A1-01.2	Bed	9.8	81	High	75.3%	63.6%	52.6%	High	85.5%	68.1%	54.2%
A1-02.1	LKD	23.0	189	High	75.9%	64.4%	52.8%	High	85.3%	66.5%	52.1%
A1-02.2	Bed	11.8	99	Medium	70.3%	57.3%	45.2%	Medium	83.5%	64.4%	49.5%
A1-03.1	LKD	23.0	189	High	76.2%	64.7%	53.2%	High	85.8%	68.3%	53.8%
A1-03.2	Bed	9.8	81	Medium	71.9%	59.7%	47.9%	High	83.8%	65.0%	50.3%
A1-04.1	LKD	23.0	189	High	76.4%	65.0%	53.3%	High	85.9%	68.1%	53.5%
A1-04.2	Bed	9.8	81	Medium	72.5%	60.0%	48.3%	High	83.4%	64.7%	50.2%
A1-05.1	LKD	23.0	189	High	76.2%	64.8%	53.3%	High	85.7%	67.5%	53.0%
A1-05.2	Bed	9.8	81	Medium	71.5%	59.1%	46.8%	High	83.4%	64.7%	50.5%
A1-06.1	LKD	23.0	189	High	75.1%	63.6%	52.0%	High	84.7%	65.2%	50.3%
A1-06.2	Bed	9.8	81	Medium	71.8%	59.8%	47.6%	High	84.0%	65.3%	51.2%
A1-07.1	LKD	22.3	204	High	83.3%	76.7%	68.0%	High	87.3%	75.1%	62.0%
A1-07.2	Bed	11.1	90	High	77.9%	67.5%	56.8%	High	86.3%	71.6%	58.7%
A1-08.1	LKD	23.1	205	Medium	73.2%	60.0%	46.4%	Medium	84.1%	63.9%	46.7%
A1-08.2	Bed	10.8	88	Medium	70.5%	56.2%	40.0%	Medium	82.6%	59.4%	38.8%
A1-09.1	LKD	23.1	205	Medium	75.1%	62.3%	49.6%	High	85.1%	66.0%	50.7%
A1-09.2	Bed	10.8	88	Medium	70.5%	56.1%	39.7%	Medium	82.3%	58.3%	37.1%
A1-10.1	LKD	23.1	205	Medium	74.6%	62.1%	49.4%	Medium	84.4%	65.1%	49.7%
A1-10.2	Bed	10.8	88	Medium	71.1%	56.6%	40.6%	Medium	83.7%	61.4%	42.2%
A1-11.1	LKD	23.1	205	Medium	73.9%	61.4%	49.1%	High	84.6%	66.1%	50.5%
A1-11.2	Bed	10.8	88	Medium	71.7%	57.4%	40.9%	Medium	84.2%	63.2%	43.8%
A1-12.1	LKD	27.9	243	High	81.1%	71.6%	59.7%	Medium	81.3%	54.5%	28.1%
A1-12.2	Bed	9.5	70	Medium	69.8%	54.7%	37.2%	Medium	83.0%	60.4%	39.3%

Assessment without trees - EN17037:2018 Table A.1 Daylight Provision Room Schedule

Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A1-12.3	Bed	6.1	48	High	78.4%	66.5%	51.4%	High	87.9%	72.0%	54.0%
A1-13.1	LKD	23.0	189	Medium	72.0%	56.4%	38.2%	Medium	79.5%	52.0%	25.4%
A1-13.2	Bed	9.7	72	Medium	69.9%	51.0%	26.6%	Medium	83.1%	56.0%	29.0%
A1-14.1	LKD	23.0	189	Medium	72.4%	57.7%	41.3%	Medium	81.2%	56.0%	35.1%
A1-14.2	Bed	9.7	72	Medium	70.4%	51.6%	28.4%	Medium	83.8%	56.7%	29.7%
A1-15.1	LKD	23.0	189	Medium	72.8%	57.6%	41.6%	Medium	81.1%	56.3%	36.4%
A1-15.2	Bed	9.7	72	Medium	71.7%	53.4%	31.6%	Medium	85.3%	61.6%	38.2%
A1-16.1	LKD	23.0	189	Medium	72.6%	57.1%	40.6%	Medium	80.9%	54.6%	32.4%
A1-16.2	Bed	9.7	72	Medium	71.7%	53.7%	32.3%	Medium	85.3%	61.4%	38.5%
A1-17.1	LKD	23.0	189	Medium	72.1%	56.8%	40.6%	Medium	80.4%	53.4%	31.8%
A1-17.2	Bed	9.7	72	Medium	70.5%	52.3%	30.0%	Medium	84.8%	59.3%	35.5%
A1-18.1	LKD	22.3	204	High	80.1%	70.3%	57.9%	Medium	85.8%	65.8%	48.3%
A1-18.2	Bed	11.0	90	Medium	74.2%	56.8%	39.2%	Medium	85.5%	64.0%	43.6%
A1-19.1	LKD	23.1	205	Medium	67.9%	51.8%	32.2%	Minimum	78.5%	47.8%	19.4%
A1-19.2	Bed	10.8	88	Medium	76.6%	63.8%	49.3%	High	86.9%	69.6%	54.0%
A1-20.1	LKD	23.0	189	Medium	70.1%	54.8%	37.1%	Minimum	77.4%	45.2%	17.3%
A1-20.2	Bed	9.8	81	Medium	71.4%	56.1%	38.1%	Medium	84.5%	63.7%	43.4%
A1-21.1	LKD	23.0	189	Medium	70.3%	55.1%	37.0%	Minimum	77.8%	45.6%	17.9%
A1-21.2	Bed	9.8	81	Medium	71.0%	55.8%	37.8%	Medium	84.7%	63.7%	44.0%
A1-22.1	LKD	23.0	189	Medium	69.8%	55.3%	37.5%	Minimum	77.5%	44.7%	18.1%
A1-22.2	Bed	9.8	81	Medium	69.7%	54.2%	36.2%	Medium	83.4%	61.3%	40.0%
A1-23.1	LKD	23.1	205	Medium	68.7%	53.9%	35.5%	Minimum	78.6%	47.9%	22.1%
A1-23.2	Bed	10.8	88	Minimum	65.5%	47.9%	27.7%	Medium	80.1%	51.7%	28.1%
A1-24.1	LKD	22.3	204	High	81.2%	73.1%	62.9%	High	85.8%	69.2%	56.2%
A1-24.2	Bed	10.4	90	High	78.4%	68.1%	58.2%	High	86.8%	73.3%	60.0%
A1-25.1	LKD	23.0	189	Fail	41.5%	17.9%	7.3%	Fail	45.0%	4.8%	2.3%
A1-25.2	Bed	9.8	81	Minimum	55.6%	34.6%	18.0%	Minimum	73.5%	32.5%	14.2%
A1-26.1	LKD	23.0	189	Fail	46.4%	23.0%	10.3%	Fail	49.3%	6.6%	2.5%
A1-26.2	Bed	9.8	81	Minimum	56.3%	36.5%	20.4%	Minimum	74.9%	37.8%	18.6%
A1-27.1	LKD	23.0	189	Fail	45.2%	21.6%	10.6%	Fail	47.2%	6.5%	3.1%
A1-27.2	Bed	9.8	81	Minimum	51.5%	29.9%	15.1%	Minimum	71.9%	33.9%	15.4%
A2-01.1	LKD	23.0	189	High	74.5%	62.6%	50.8%	Medium	79.6%	53.6%	38.5%
A2-01.2	Bed	9.8	81	High	75.1%	63.7%	52.7%	High	85.1%	67.8%	53.9%
A2-02.1	LKD	23.0	189	High	77.6%	66.5%	55.6%	High	86.6%	71.2%	57.7%
A2-02.2	Bed	11.8	99	Medium	73.7%	61.2%	49.9%	High	84.8%	67.0%	53.0%
A2-03.1	LKD	23.0	189	High	78.1%	67.0%	56.7%	High	86.9%	72.1%	58.6%
A2-03.2	Bed	9.8	81	High	75.4%	64.0%	53.3%	High	86.0%	69.7%	56.0%
A2-04.1	LKD	23.0	189	High	78.1%	67.0%	56.7%	High	87.0%	72.5%	58.7%
A2-04.2	Bed	9.8	81	High	75.6%	64.3%	53.6%	High	85.5%	68.5%	55.0%
A2-05.1	LKD	23.0	189	High	77.9%	66.6%	56.3%	High	86.8%	71.9%	57.8%
A2-05.2	Bed	9.8	81	High	75.4%	64.1%	53.7%	High	86.0%	69.8%	56.1%
A2-06.1	LKD	23.0	189	High	77.1%	65.8%	54.3%	High	86.0%	68.9%	54.7%
A2-06.2	Bed	9.8	81	High	75.6%	64.5%	53.9%	High	85.5%	68.4%	54.7%
A2-07.1	LKD	22.3	204	High	83.7%	77.1%	68.4%	High	87.3%	75.1%	62.4%
A2-07.2	Bed	11.1	90	High	77.8%	67.7%	56.9%	High	86.7%	73.0%	59.9%
A2-08.1	LKD	23.1	205	High	76.0%	62.8%	50.3%	High	85.5%	66.9%	51.4%
A2-08.2	Bed	10.8	88	Medium	72.1%	58.2%	43.5%	Medium	83.9%	63.2%	45.0%
A2-09.1	LKD	23.1	205	High	77.3%	65.1%	53.5%	High	86.4%	70.2%	56.6%
A2-09.2	Bed	10.8	88	Medium	71.7%	57.6%	42.4%	Medium	83.3%	60.9%	41.8%
A2-10.1	LKD	23.1	205	High	76.7%	64.8%	53.2%	High	85.8%	68.2%	54.2%

Assessment without trees - EN17037:2018 Table A.1 Daylight Provision Room Schedule

Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A2-10.2	Bed	10.8	88	Medium	73.2%	59.7%	44.5%	Medium	84.3%	63.3%	45.4%
A2-11.1	LKD	23.1	205	High	76.6%	64.8%	53.1%	High	86.1%	69.4%	56.0%
A2-11.2	Bed	10.8	88	Medium	73.6%	59.8%	44.6%	Medium	84.3%	64.3%	47.0%
A2-12.1	LKD	27.9	243	High	81.2%	71.8%	60.3%	Medium	82.2%	56.6%	32.1%
A2-12.2	Bed	9.5	70	Medium	69.7%	54.6%	37.8%	Medium	83.3%	61.1%	40.8%
A2-12.3	Bed	6.1	48	High	79.0%	67.7%	52.6%	High	88.2%	73.1%	55.6%
A2-13.1	LKD	23.0	189	Medium	73.2%	58.2%	42.7%	Medium	81.1%	55.8%	32.6%
A2-13.2	Bed	9.7	72	Medium	70.6%	52.3%	30.4%	Medium	84.1%	58.0%	33.9%
A2-14.1	LKD	23.0	189	Medium	74.3%	60.3%	46.0%	Medium	82.3%	59.7%	41.6%
A2-14.2	Bed	9.7	72	Medium	71.3%	52.9%	31.6%	Medium	84.4%	58.5%	35.1%
A2-15.1	LKD	23.0	189	Medium	74.3%	59.7%	45.8%	Medium	83.0%	60.8%	43.0%
A2-15.2	Bed	9.7	72	Medium	72.4%	54.6%	34.5%	Medium	85.5%	63.1%	41.9%
A2-16.1	LKD	23.0	189	Medium	73.9%	59.5%	45.0%	Medium	82.1%	58.6%	39.6%
A2-16.2	Bed	9.7	72	Medium	72.4%	54.7%	34.8%	Medium	85.5%	63.1%	41.8%
A2-17.1	LKD	23.0	189	Medium	74.5%	59.6%	45.1%	Medium	82.0%	58.7%	39.3%
A2-17.2	Bed	9.7	72	Medium	72.2%	54.6%	34.4%	Medium	85.2%	61.1%	38.8%
A2-18.1	LKD	22.3	204	High	80.2%	70.9%	58.8%	High	86.4%	68.1%	51.6%
A2-18.2	Bed	11.0	90	Medium	75.0%	58.3%	42.2%	Medium	86.3%	66.8%	47.7%
A2-19.1	LKD	23.1	205	Medium	68.8%	53.8%	35.2%	Minimum	78.9%	48.9%	21.0%
A2-19.2	Bed	10.8	88	High	76.9%	64.3%	50.1%	High	87.0%	70.2%	55.0%
A2-20.1	LKD	23.0	189	Medium	70.4%	55.7%	38.7%	Minimum	78.4%	47.5%	19.5%
A2-20.2	Bed	9.8	81	Medium	72.0%	56.9%	39.8%	Medium	84.5%	63.8%	44.6%
A2-21.1	LKD	23.0	189	Medium	70.8%	56.2%	39.2%	Minimum	78.3%	47.0%	19.1%
A2-21.2	Bed	9.8	81	Medium	71.3%	56.3%	39.2%	Medium	85.1%	65.1%	45.8%
A2-22.1	LKD	23.0	189	Medium	70.3%	55.5%	38.6%	Minimum	78.3%	47.2%	19.6%
A2-22.2	Bed	9.8	81	Medium	71.0%	55.7%	38.6%	Medium	84.0%	62.7%	42.7%
A2-23.1	LKD	23.1	205	Medium	69.1%	54.4%	36.8%	Minimum	78.8%	49.5%	23.6%
A2-23.2	Bed	10.8	88	Minimum	66.2%	49.3%	29.2%	Medium	80.0%	52.9%	29.2%
A2-24.1	LKD	22.3	204	High	81.3%	73.4%	63.4%	High	85.9%	69.3%	56.3%
A2-24.2	Bed	10.4	90	High	79.0%	68.7%	59.0%	High	87.1%	74.1%	61.2%
A2-25.1	LKD	23.0	189	Minimum	55.1%	33.2%	16.5%	Minimum	56.6%	10.4%	4.1%
A2-25.2	Bed	9.8	81	Minimum	62.3%	43.0%	24.3%	Minimum	78.4%	45.8%	22.5%
A2-26.1	LKD	23.0	189	Minimum	56.0%	35.8%	17.4%	Minimum	58.0%	11.2%	4.9%
A2-26.2	Bed	9.8	81	Minimum	62.8%	44.4%	25.3%	Minimum	78.3%	46.6%	23.2%
A2-27.1	LKD	23.0	189	Minimum	52.5%	29.9%	13.6%	Minimum	53.5%	9.7%	4.4%
A2-27.2	Bed	9.8	81	Minimum	56.6%	38.5%	21.8%	Minimum	76.3%	41.8%	21.7%
A3-01.1	LKD	23.0	189	High	74.1%	62.1%	50.6%	Medium	79.6%	54.0%	38.9%
A3-01.2	Bed	9.8	81	High	75.2%	63.7%	52.6%	High	85.5%	68.3%	54.4%
A3-02.1	LKD	22.3	204	High	84.1%	77.6%	69.2%	High	87.7%	75.8%	63.4%
A3-02.2	Bed	11.1	90	High	78.0%	67.7%	57.1%	High	86.7%	73.2%	60.0%
A3-03.1	LKD	23.1	205	High	78.4%	66.5%	55.7%	High	86.9%	72.3%	57.9%
A3-03.2	Bed	10.8	88	Medium	73.9%	60.0%	45.4%	Medium	83.9%	62.8%	45.1%
A3-04.1	LKD	23.1	205	High	78.7%	67.9%	57.4%	High	87.2%	73.3%	59.3%
A3-04.2	Bed	10.8	88	Medium	72.9%	59.3%	44.2%	Medium	83.7%	62.2%	43.5%
A3-05.1	LKD	23.1	205	High	78.4%	67.2%	56.5%	High	86.8%	72.0%	58.2%
A3-05.2	Bed	10.8	88	Medium	74.1%	60.6%	45.5%	Medium	84.2%	63.7%	46.3%
A3-06.1	LKD	23.1	205	High	78.1%	66.8%	56.3%	High	86.6%	71.5%	58.4%
A3-06.2	Bed	10.8	88	Medium	74.6%	61.1%	46.7%	Medium	84.4%	64.5%	47.5%
A3-07.1	LKD	27.9	243	High	81.8%	72.5%	61.1%	Medium	82.7%	58.3%	35.9%
A3-07.2	Bed	9.5	70	Medium	71.8%	56.5%	41.2%	Medium	83.8%	62.9%	43.6%

Assessment without trees - EN17037:2018 Table A.1 Daylight Provision Room Schedule

Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A3-07.3	Bed	6.1	48	High	79.1%	67.9%	52.9%	High	88.0%	72.6%	55.0%
A3-08.1	LKD	23.0	189	Medium	74.3%	60.0%	45.4%	Medium	82.2%	58.8%	39.0%
A3-08.2	Bed	9.7	72	Medium	70.6%	52.7%	30.9%	Medium	83.6%	57.1%	34.1%
A3-09.1	LKD	23.0	189	Medium	75.5%	61.6%	48.4%	Medium	84.1%	63.3%	47.5%
A3-09.2	Bed	9.7	72	Medium	70.5%	52.3%	31.4%	Medium	84.7%	59.2%	37.1%
A3-10.1	LKD	23.0	189	Medium	75.2%	61.5%	48.1%	Medium	84.0%	62.9%	46.7%
A3-10.2	Bed	9.7	72	Medium	73.6%	55.7%	36.9%	Medium	85.8%	64.0%	43.5%
A3-11.1	LKD	23.0	189	Medium	75.3%	61.3%	48.0%	Medium	83.8%	62.3%	45.5%
A3-11.2	Bed	9.7	72	Medium	73.1%	55.4%	36.8%	Medium	85.8%	64.1%	43.4%
A3-12.1	LKD	23.0	189	Medium	75.4%	61.1%	48.0%	Medium	83.4%	61.3%	44.1%
A3-12.2	Bed	9.7	72	Medium	72.8%	55.2%	36.7%	Medium	85.3%	61.8%	40.6%
A3-13.1	LKD	22.3	204	High	80.7%	71.6%	60.0%	High	86.5%	68.4%	52.1%
A3-13.2	Bed	11.0	90	Medium	75.6%	59.6%	44.0%	High	86.6%	68.2%	50.0%
A3-14.1	LKD	23.1	205	Medium	69.2%	54.1%	36.2%	Medium	79.5%	50.7%	23.4%
A3-14.2	Bed	10.8	88	High	77.1%	64.7%	51.3%	High	87.2%	71.0%	56.3%
A3-15.1	LKD	23.0	189	Medium	70.4%	55.6%	39.3%	Minimum	78.5%	47.7%	19.0%
A3-15.2	Bed	9.8	81	Medium	72.6%	58.4%	42.1%	Medium	85.1%	65.1%	46.5%
A3-16.1	LKD	23.0	189	Medium	71.4%	57.1%	40.8%	Minimum	78.5%	48.0%	20.5%
A3-16.2	Bed	9.8	81	Medium	72.2%	57.4%	40.7%	Medium	85.1%	64.9%	46.1%
A3-17.1	LKD	23.0	189	Medium	71.7%	57.5%	41.1%	Minimum	78.6%	48.2%	20.7%
A3-17.2	Bed	9.8	81	Medium	70.7%	55.6%	38.5%	Medium	84.5%	63.9%	45.0%
A3-18.1	LKD	23.1	205	Medium	70.0%	55.0%	38.4%	Medium	79.0%	50.0%	23.6%
A3-18.2	Bed	10.8	88	Minimum	66.0%	49.0%	28.9%	Medium	80.0%	52.2%	28.9%
A3-19.1	LKD	22.3	204	High	81.2%	73.2%	63.3%	High	85.8%	69.3%	56.4%
A3-19.2	Bed	10.4	90	High	79.2%	69.2%	59.4%	High	87.1%	73.9%	61.2%
A3-20.1	LKD	23.0	189	Minimum	64.3%	47.0%	25.9%	Minimum	66.5%	20.7%	6.4%
A3-20.2	Bed	9.8	81	Medium	66.6%	50.5%	30.1%	Medium	81.8%	55.1%	32.4%
A3-21.1	LKD	23.0	189	Minimum	62.7%	44.1%	24.0%	Minimum	65.7%	19.9%	6.1%
A3-21.2	Bed	9.8	81	Medium	67.9%	51.7%	32.9%	Medium	81.1%	53.8%	31.9%
A3-22.1	LKD	23.0	189	Minimum	60.0%	40.6%	22.4%	Minimum	63.5%	18.1%	6.3%
A3-22.2	Bed	9.8	81	Minimum	62.1%	44.4%	27.6%	Minimum	78.8%	49.9%	28.0%
A4-01.1	LKD	23.0	189	High	75.2%	64.2%	52.9%	Medium	80.9%	55.7%	41.6%
A4-01.2	Bed	9.8	81	High	76.1%	65.2%	54.2%	High	86.1%	70.1%	56.7%
A4-02.1	LKD	22.3	204	High	84.5%	78.3%	70.3%	High	88.1%	76.8%	65.0%
A4-02.2	Bed	11.1	90	High	78.5%	68.3%	57.6%	High	86.7%	72.9%	59.6%
A4-03.1	LKD	23.1	205	High	80.3%	71.4%	60.6%	High	88.2%	76.8%	63.6%
A4-03.2	Bed	10.8	88	High	76.4%	64.0%	51.1%	High	85.4%	67.6%	52.0%
A4-04.1	LKD	23.1	205	High	79.8%	70.6%	60.3%	High	87.9%	75.8%	62.9%
A4-04.2	Bed	10.8	88	Medium	76.0%	62.7%	48.9%	High	85.6%	66.6%	50.5%
A4-05.1	LKD	23.1	205	High	79.7%	70.4%	59.9%	High	87.7%	75.3%	62.4%
A4-05.2	Bed	10.8	88	High	77.1%	64.2%	51.0%	High	86.3%	68.6%	52.5%
A4-06.1	LKD	23.1	205	High	79.5%	69.4%	59.8%	High	87.5%	74.9%	61.9%
A4-06.2	Bed	10.8	88	High	77.2%	64.6%	52.0%	High	86.5%	69.6%	54.4%
A4-07.1	LKD	27.9	243	High	82.5%	74.4%	63.6%	Medium	82.6%	58.2%	36.3%
A4-07.2	Bed	9.5	70	Medium	71.7%	57.0%	42.3%	Medium	84.7%	65.1%	47.4%
A4-07.3	Bed	6.1	48	High	79.2%	68.2%	53.7%	High	87.9%	72.4%	55.4%
A4-08.1	LKD	23.0	189	Medium	75.1%	61.0%	47.5%	Medium	84.2%	62.6%	46.0%
A4-08.2	Bed	9.7	72	Medium	70.7%	52.6%	31.7%	Medium	84.7%	59.2%	36.5%
A4-09.1	LKD	23.0	189	High	76.3%	62.9%	50.7%	High	85.4%	65.8%	50.4%
A4-09.2	Bed	9.7	72	Medium	71.4%	53.4%	33.3%	Medium	84.7%	59.4%	37.8%

Assessment without trees - EN17037:2018 Table A.1 Daylight Provision Room Schedule

Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A4-10.1	LKD	23.0	189	High	76.5%	63.1%	50.9%	High	86.0%	66.7%	51.8%
A4-10.2	Bed	9.7	72	Medium	72.9%	55.2%	36.4%	Medium	85.6%	64.0%	43.5%
A4-11.1	LKD	23.0	189	High	76.3%	62.7%	50.4%	High	85.5%	65.7%	50.5%
A4-11.2	Bed	9.7	72	Medium	73.4%	55.8%	37.4%	Medium	86.0%	65.1%	45.1%
A4-12.1	LKD	23.0	189	High	76.3%	62.7%	50.2%	Medium	85.2%	65.5%	49.4%
A4-12.2	Bed	9.7	72	Medium	72.1%	55.0%	35.8%	Medium	85.3%	62.3%	41.7%
A4-13.1	LKD	22.3	204	High	82.1%	74.6%	63.3%	High	87.2%	70.7%	55.3%
A4-13.2	Bed	11.0	90	Medium	76.1%	60.6%	45.4%	High	86.9%	69.0%	50.9%
A4-14.1	LKD	23.1	205	Medium	71.3%	57.2%	40.5%	Medium	79.9%	51.9%	26.6%
A4-14.2	Bed	10.8	88	High	78.5%	67.3%	54.5%	High	87.5%	72.6%	57.8%
A4-15.1	LKD	23.0	189	Medium	73.6%	59.7%	44.5%	Medium	79.4%	50.3%	23.7%
A4-15.2	Bed	9.8	81	Medium	74.8%	61.5%	46.1%	Medium	86.0%	66.7%	49.7%
A4-16.1	LKD	23.0	189	Medium	73.2%	59.2%	43.9%	Medium	79.3%	50.2%	23.6%
A4-16.2	Bed	9.8	81	Medium	74.9%	61.8%	46.6%	Medium	85.9%	66.4%	49.1%
A4-17.1	LKD	23.0	189	Medium	72.5%	58.6%	42.1%	Medium	79.4%	50.1%	24.2%
A4-17.2	Bed	9.8	81	Medium	74.2%	60.7%	45.2%	Medium	86.0%	66.6%	48.7%
A4-18.1	LKD	23.1	205	Medium	71.4%	57.0%	40.7%	Medium	79.7%	51.3%	25.7%
A4-18.2	Bed	10.8	88	Medium	70.5%	55.2%	37.4%	Medium	82.7%	59.2%	38.1%
A4-19.1	LKD	22.3	204	High	82.1%	75.0%	65.0%	High	86.6%	71.9%	58.9%
A4-19.2	Bed	10.4	90	High	79.3%	68.9%	59.6%	High	87.0%	73.7%	60.8%
A4-20.1	LKD	23.0	189	Medium	71.7%	57.6%	41.1%	Minimum	76.3%	42.0%	15.3%
A4-20.2	Bed	9.8	81	Medium	70.5%	55.9%	40.1%	Medium	83.6%	61.8%	41.6%
A4-21.1	LKD	23.0	189	Medium	69.5%	54.9%	37.1%	Minimum	75.1%	39.5%	13.6%
A4-21.2	Bed	9.8	81	Medium	70.5%	56.2%	40.6%	Medium	83.2%	61.2%	41.5%
A4-22.1	LKD	23.0	189	Medium	69.1%	54.1%	36.4%	Minimum	74.9%	38.5%	13.8%
A4-22.2	Bed	9.8	81	Medium	68.4%	53.7%	37.9%	Medium	82.5%	58.2%	38.1%

Table 12: Assessment without trees - Daylight Provision individual values for all habitable rooms to EN 17037 Table A.1.

Appendix D - Sunlight Hours for Living Spaces

Sunlight Hours					
Unit ID	LKD window within 90° South	Model Without Trees		9no. Retained Trees	
		No. sunlight hours on 21st March	BRE Recommendation	No. sunlight hours on 21st March	BRE Recommendation
A0-01.1	Yes	7.33	High	7.33	High
A0-02.1	Yes	7.33	High	7.33	High
A0-03.1	Yes	7.33	High	7.33	High
A0-04.1	Yes	7.33	High	7.33	High
A0-05.1	Yes	6.67	High	6.67	High
A0-06.1	Yes	4.08	High	4.08	High
A0-07.1	Yes	4.08	High	4.08	High
A0-08.1	Yes	4.08	High	4.08	High
A0-09.1	Yes	4.08	High	4.08	High
A0-10.1	Yes	0.00	Below criteria	0.00	Below criteria
A0-11.1	Yes	0.00	Below criteria	0.00	Below criteria
A0-12.1	Yes	0.00	Below criteria	0.00	Below criteria
A1-01.1	Yes	9.00	High	8.25	High
A1-02.1	Yes	8.92	High	8.67	High
A1-03.1	Yes	8.92	High	8.92	High
A1-04.1	Yes	8.92	High	8.92	High
A1-05.1	Yes	8.92	High	8.92	High
A1-06.1	Yes	8.42	High	8.42	High
A1-07.1	Yes	7.33	High	7.33	High
A1-08.1	Yes	5.08	High	5.08	High
A1-09.1	Yes	3.75	Medium	3.75	Medium
A1-10.1	Yes	3.75	Medium	3.75	Medium
A1-11.1	Yes	5.08	High	5.08	High
A1-12.1	Yes	3.75	Medium	3.75	Medium
A1-13.1	Yes	0.00	Below criteria	0.00	Below criteria
A1-14.1	Yes	0.00	Below criteria	0.00	Below criteria
A1-15.1	Yes	0.00	Below criteria	0.00	Below criteria
A1-16.1	Yes	0.00	Below criteria	0.00	Below criteria
A1-17.1	Yes	0.00	Below criteria	0.00	Below criteria
A1-18.1	No	4.67	High	0.42	Below criteria
A1-19.1	No	3.58	Medium	0.92	Below criteria
A1-20.1	No	4.92	High	3.08	Medium
A1-21.1	No	4.92	High	2.25	Minimum
A1-22.1	No	4.92	High	2.25	Minimum
A1-23.1	No	4.92	High	2.08	Minimum
A1-24.1	Yes	8.50	High	6.25	High
A1-25.1	Yes	0.00	Below criteria	0.00	Below criteria
A1-26.1	Yes	3.25	Medium	3.25	Medium
A1-27.1	Yes	3.33	Medium	3.33	Medium
A2-01.1	Yes	9.00	High	8.50	High
A2-02.1	Yes	9.00	High	8.92	High
A2-03.1	Yes	9.00	High	9.00	High
A2-04.1	Yes	9.00	High	9.00	High
A2-05.1	Yes	9.00	High	9.00	High
A2-06.1	Yes	8.42	High	8.42	High
A2-07.1	Yes	7.33	High	7.33	High
A2-08.1	Yes	5.08	High	5.08	High
A2-09.1	Yes	3.75	Medium	3.75	Medium
A2-10.1	Yes	3.75	Medium	3.75	Medium
A2-11.1	Yes	5.08	High	5.08	High

Sunlight Hours					
Unit ID	LKD window within 90° South	Model Without Trees		9no. Retained Trees	
		No. sunlight hours on 21st March	BRE Recommendation	No. sunlight hours on 21st March	BRE Recommendation
A2-12.1	Yes	3.75	Medium	3.75	Medium
A2-13.1	Yes	0.00	Below criteria	0.00	Below criteria
A2-14.1	Yes	0.00	Below criteria	0.00	Below criteria
A2-15.1	Yes	0.00	Below criteria	0.00	Below criteria
A2-16.1	Yes	0.00	Below criteria	0.00	Below criteria
A2-17.1	Yes	0.00	Below criteria	0.00	Below criteria
A2-18.1	No	4.67	High	0.58	Below criteria
A2-19.1	No	3.58	Medium	1.08	Below criteria
A2-20.1	No	4.92	High	3.75	Medium
A2-21.1	No	4.92	High	3.17	Medium
A2-22.1	No	4.92	High	2.58	Minimum
A2-23.1	No	4.92	High	4.00	High
A2-24.1	Yes	8.50	High	6.67	High
A2-25.1	Yes	3.42	Medium	3.42	Medium
A2-26.1	Yes	3.67	Medium	3.67	Medium
A2-27.1	Yes	3.75	Medium	3.75	Medium
A3-01.1	Yes	9.00	High	8.92	High
A3-02.1	Yes	7.33	High	7.33	High
A3-03.1	Yes	5.08	High	5.08	High
A3-04.1	Yes	3.75	Medium	3.75	Medium
A3-05.1	Yes	3.75	Medium	3.75	Medium
A3-06.1	Yes	5.08	High	5.08	High
A3-07.1	Yes	3.75	Medium	3.75	Medium
A3-08.1	Yes	0.00	Below criteria	0.00	Below criteria
A3-09.1	Yes	0.00	Below criteria	0.00	Below criteria
A3-10.1	Yes	0.00	Below criteria	0.00	Below criteria
A3-11.1	Yes	0.00	Below criteria	0.00	Below criteria
A3-12.1	Yes	0.00	Below criteria	0.00	Below criteria
A3-13.1	No	4.67	High	1.17	Below criteria
A3-14.1	No	3.58	Medium	2.58	Minimum
A3-15.1	No	4.92	High	4.83	High
A3-16.1	No	4.92	High	4.92	High
A3-17.1	No	4.92	High	3.25	Medium
A3-18.1	No	4.92	High	4.92	High
A3-19.1	Yes	8.50	High	7.50	High
A3-20.1	Yes	3.92	Medium	3.92	Medium
A3-21.1	Yes	4.08	High	4.08	High
A3-22.1	Yes	4.08	High	4.08	High
A4-01.1	Yes	9.00	High	9.00	High
A4-02.1	Yes	7.33	High	7.33	High
A4-03.1	Yes	5.08	High	5.08	High
A4-04.1	Yes	5.08	High	5.08	High
A4-05.1	Yes	5.08	High	5.08	High
A4-06.1	Yes	5.08	High	5.08	High
A4-07.1	Yes	5.08	High	5.08	High
A4-08.1	Yes	5.25	High	5.25	High
A4-09.1	Yes	6.33	High	6.33	High
A4-10.1	Yes	6.33	High	6.33	High
A4-11.1	Yes	6.33	High	6.33	High
A4-12.1	Yes	5.67	High	5.67	High
A4-13.1	No	4.67	High	2.67	Minimum

Sunlight Hours					
Unit ID	LKD window within 90° South	Model Without Trees		9no. Retained Trees	
		No. sunlight hours on 21st March	BRE Recommendation	No. sunlight hours on 21st March	BRE Recommendation
A4-14.1	No	4.92	High	4.92	High
A4-15.1	No	4.92	High	4.92	High
A4-16.1	No	4.92	High	4.92	High
A4-17.1	No	4.92	High	4.25	High
A4-18.1	No	4.92	High	4.92	High
A4-19.1	Yes	8.50	High	8.50	High
A4-20.1	Yes	4.42	High	4.42	High
A4-21.1	Yes	4.58	High	4.58	High
A4-22.1	Yes	4.58	High	4.58	High

Table 13: Sunlight hours to living spaces

Appendix E - Iterative study of Daylight Provision in relation to the existing trees

At the preliminary design stage, the impact on daylight and sunlight to the proposed development from the existing trees to the west of the site was reviewed in detail. This assessment was developed to establish a balance of acceptable levels of daylight to the proposed apartment units whilst maintaining the general extent of the existing tree line and to determine the minimum number of trees that require removal. The proposal, the subject of this planning application, is broadly aligned with the preliminary design scheme. In order to meet the minimum daylight and sunlight requirements, it is proposed to retain 9no. trees within close proximity to the proposed western façade, herein referred to '9no. retained trees'. The current proposal for daylight analysis can be found in section 5 and Appendix A - C above.

E.1 BRE guidance on assessments including trees

There are some mature trees on the site. The BRE guidelines have recommendations on the treatment of trees in an assessment. It states:

G2.7 In order to assess interior daylighting two methods can be used in the British Standard Daylight in Buildings, BS EN 17037: illuminances through the year or daylight factor[G5] (Appendix C). BS EN 17037 does not give guidance on trees. When using the former method, illuminances are assessed at calculation points for at least hourly intervals. The transparency and reflectances of the modelled trees therefore need to be varied to account for summer and winter; BRE Digest 350[G6] gives times when trees are in leaf.

G2.8 If using the daylight factor method, the calculations should be repeated for summer and winter conditions and two sets of results shown. If BS EN 17037 recommended values of daylight factor over at least half of an assessment grid are exceeded in both summer and winter, then daylight would be considered adequate; and if the recommendations are not reached in both summer or winter then daylight would be considered inadequate. For a room where the recommendation is exceeded in winter, but not in summer, daylight provision year round is likely to be adequate, but it is clear that the trees are having some effect on daylight.

An iterative study of daylight provision has been undertaken with the gradual removal of trees, to improve the number of rooms achieving compliance. The images and results at preliminary design stage for '8no. Retained Trees' are included in this Appendix.

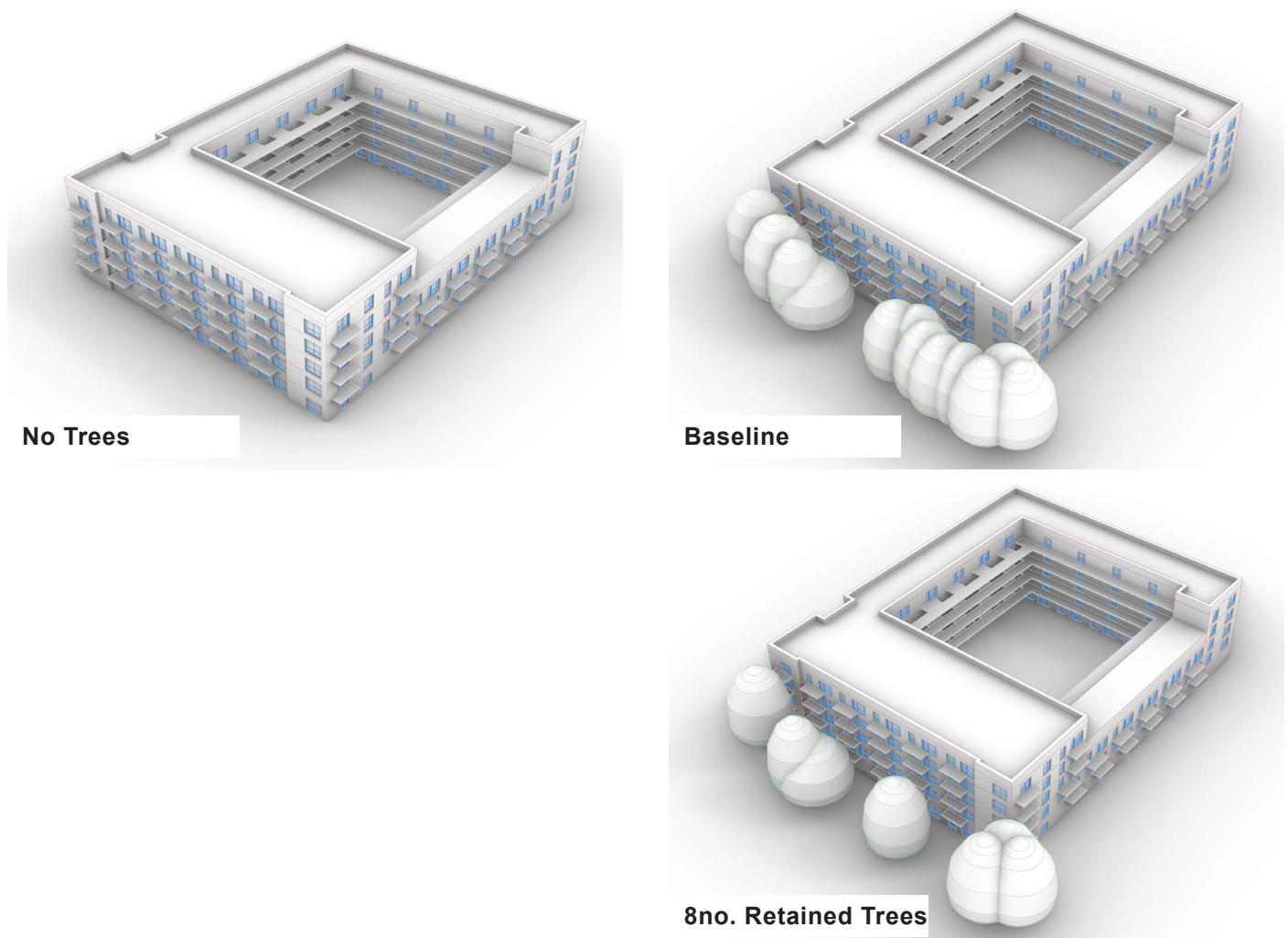


Figure 28: Images of the assessment model at preliminary design stage.

The results for the ground and first floor are shown as follows:

- Without trees
- Winter with existing trees
- Winter with 8no. Retained Trees
- Summer with existing trees
- Summer with 8no. Retained Trees

E.2 Assessment for Daylight Provision BS EN 17037:2018+A1:2021

The UK National Annex (A1) contains minimum room specific target values for dwellings in the UK. The UK committee fully supports the recommendations of EN17037:2018 but considers the target daylight levels may be hard to achieve in UK dwellings, in particular in urban areas and areas with mature trees. The Target and Minimum levels set out in IS / BS EN17037:2018 does not take into account room use or make allowance for room that have a lesser requirement for daylight. The UK National Annex A1 in BS EN17037:2018+A1:2021 sets out room specific minimum values to be achieved in the UK and Channel Islands. These target values are set to achieve similar minimum daylight levels as the superseded Average Daylight Factor method (ADF) in BS8206-2 2008.

A summary of the results are presented in Table 15 below. A complete set of room results, for each modelling state, are shown in Table 12. Generated analysis for each modelling state is shown in Section E.5 below.

Minimum daylight provision UK NA.1 - BS EN 17037:2018+A1:2021												
Room Use	Number of rooms	Target illuminance	Without Trees		Winter Baseline		Winter 8no. Retained Trees		Supplementary Information			
			Number of rooms to achieve target	Percentage of rooms achieving Target	Number of rooms to achieve target	Percentage of rooms achieving Target	Number of rooms to achieve target	Percentage of rooms achieving Target	Summer Baseline		Summer 8no. Retained Trees	
			Number of rooms to achieve target	Percentage of rooms achieving Target	Number of rooms to achieve target	Percentage of rooms achieving Target	Number of rooms to achieve target	Percentage of rooms achieving Target	Number of rooms to achieve target	Percentage of rooms achieving Target	Number of rooms to achieve target	Percentage of rooms achieving Target
LKD	43	200	43	100.0%	39	90.7%	43	100.0%	36	83.7%	38	88.4%
Bedrooms	43	100	43	100.0%	43	100.0%	43	100.0%	40	93.0%	41	95.3%
Overall total	86		86	100.0%	82	95.3%	86	100.0%	76	88.4%	79	91.9%

Table 14: Summary of room for Target Illuminance compliance with BS EN 17037:2018+A1:2021. Individual room results can be viewed in Table 17

E.3 Comment on assessment of Daylight Provision BS EN 17037:2018+A1:2021 with tree study

The assessment with '8no. Retained Trees' indicated that all rooms achieve the minimum daylight provision to BS EN 17037 NA1- the UK annex for the winter condition, this sets out minimum daylight levels to be achieved in dwellings. The guidelines recommends that if the recommended target levels are achieved in winter but not summer then the daylight levels are likely to be adequate but the trees will have some effect.

E.4 Supplementary Information - Assessment for Daylight Provision IS / BS EN 17037:2018 with tree study.

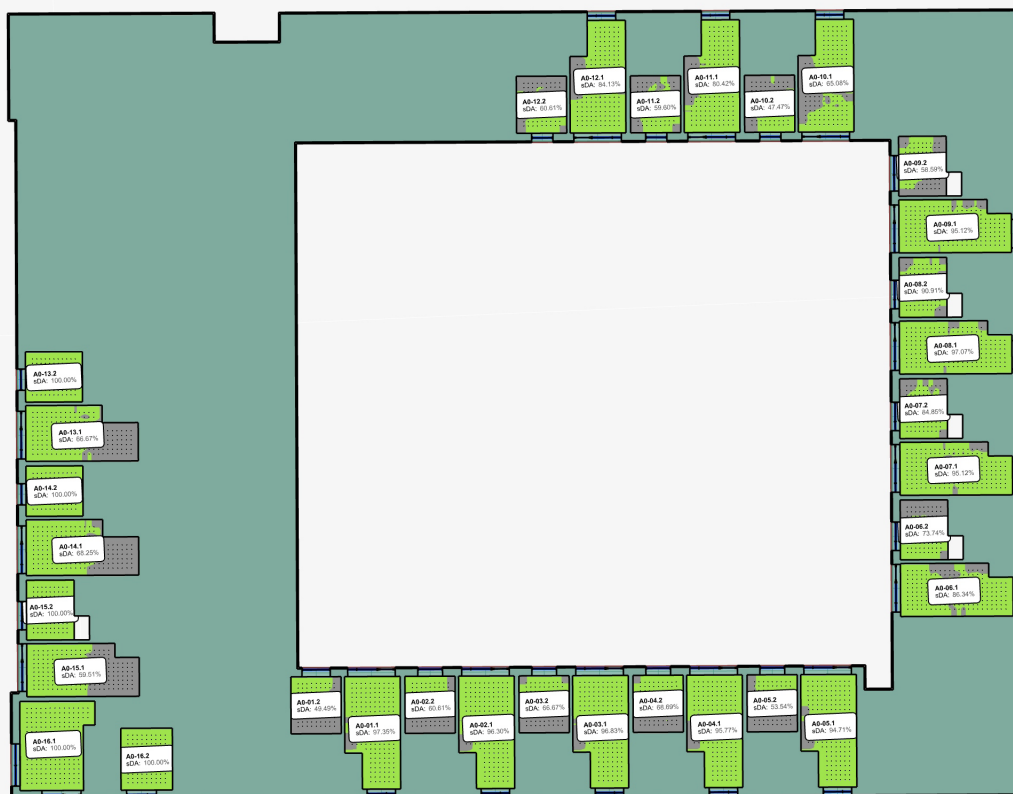
A summary of Minimum and Target Illuminance level compliance with Annex A Table A1 as set out in Table 16 below and a complete set of room results are shown in Table 15. Generated analysis for each modelling state is shown in Section E.6 below.

Daylight provision Illuminance Method IS EN 17037:2018						
		Below Target	Minimum	Medium	High	Percentage of rooms achieving Target
Apartments	Target Illuminance	41.9%	38.4%	17.4%	2.3%	58.1%
	Minimum Illuminance	25.6%	55.8%	17.4%	1.2%	74.4%

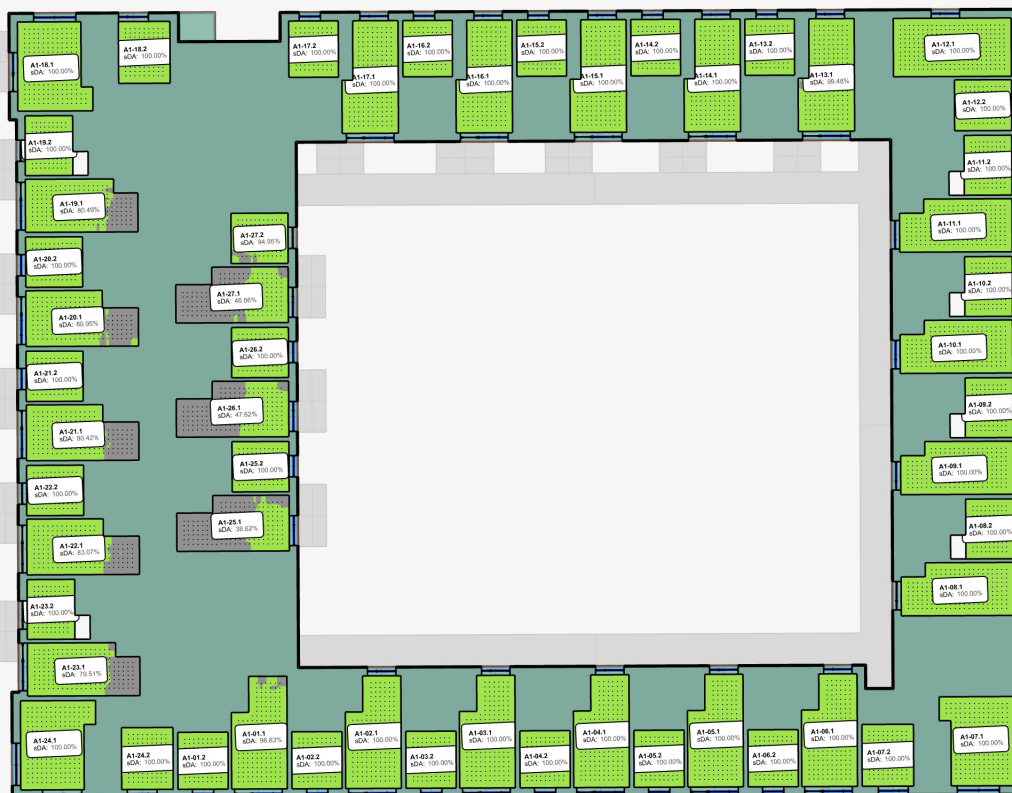
Table 15: Percentage of rooms at each level to IS/BS EN 17037:2018. Individual room results can be viewed in Table 18

The recommendations for Daylight provision in Table A1 are not specific for dwellings and do not make allowance for room use. BS EN 17037:2018+A1:2021 address this with the National Annex NA.1 which sets out room specific targets for dwellings.

Appendix E continued: Iterative study of Daylight Provision in relation to existing trees
 Section E.5
 BS EN17037:2018+A1:2021 Minimum room specific Daylight Provision in accordance with UK National Annex Table NA.1.



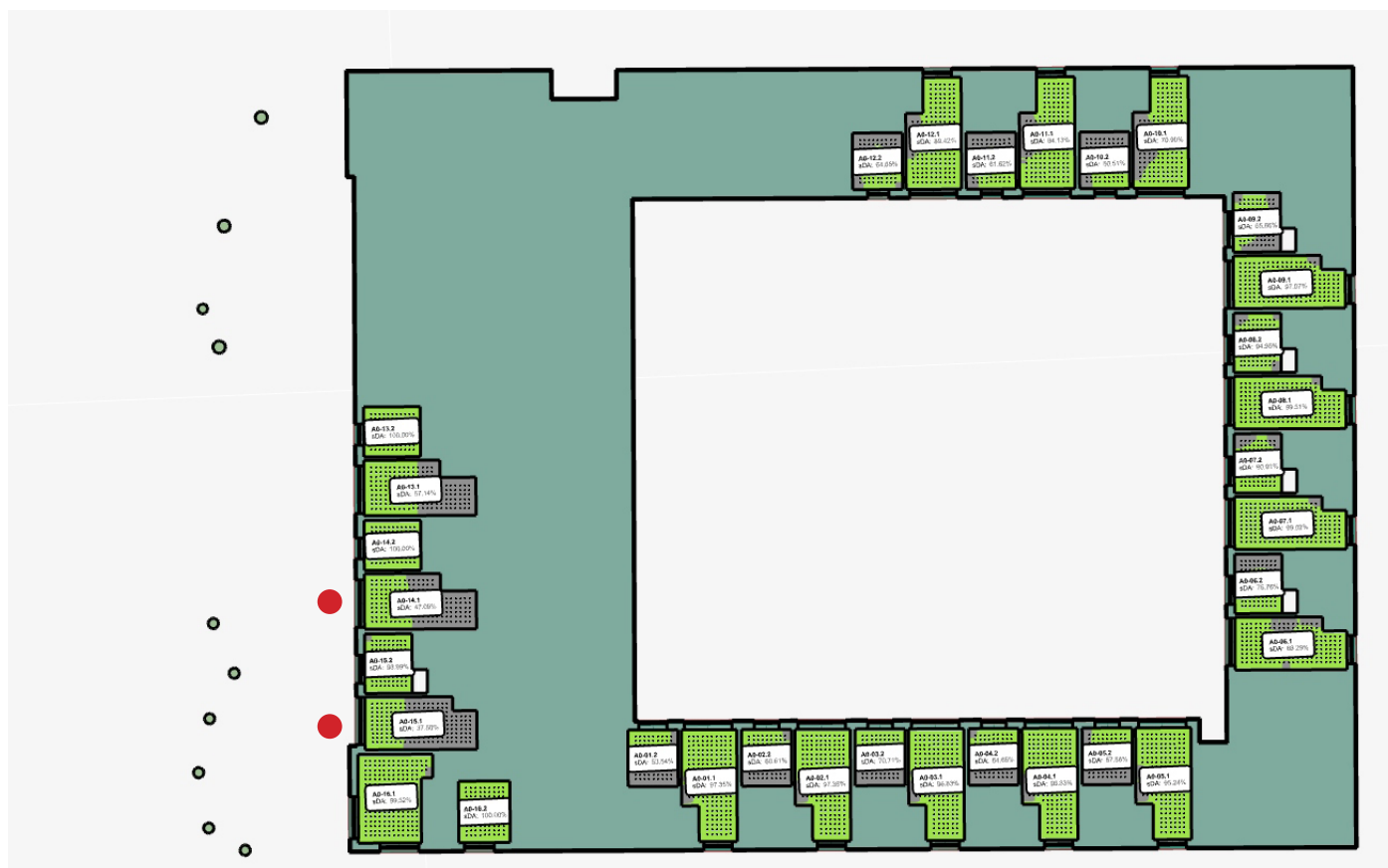
Ground Floor:
Without Trees



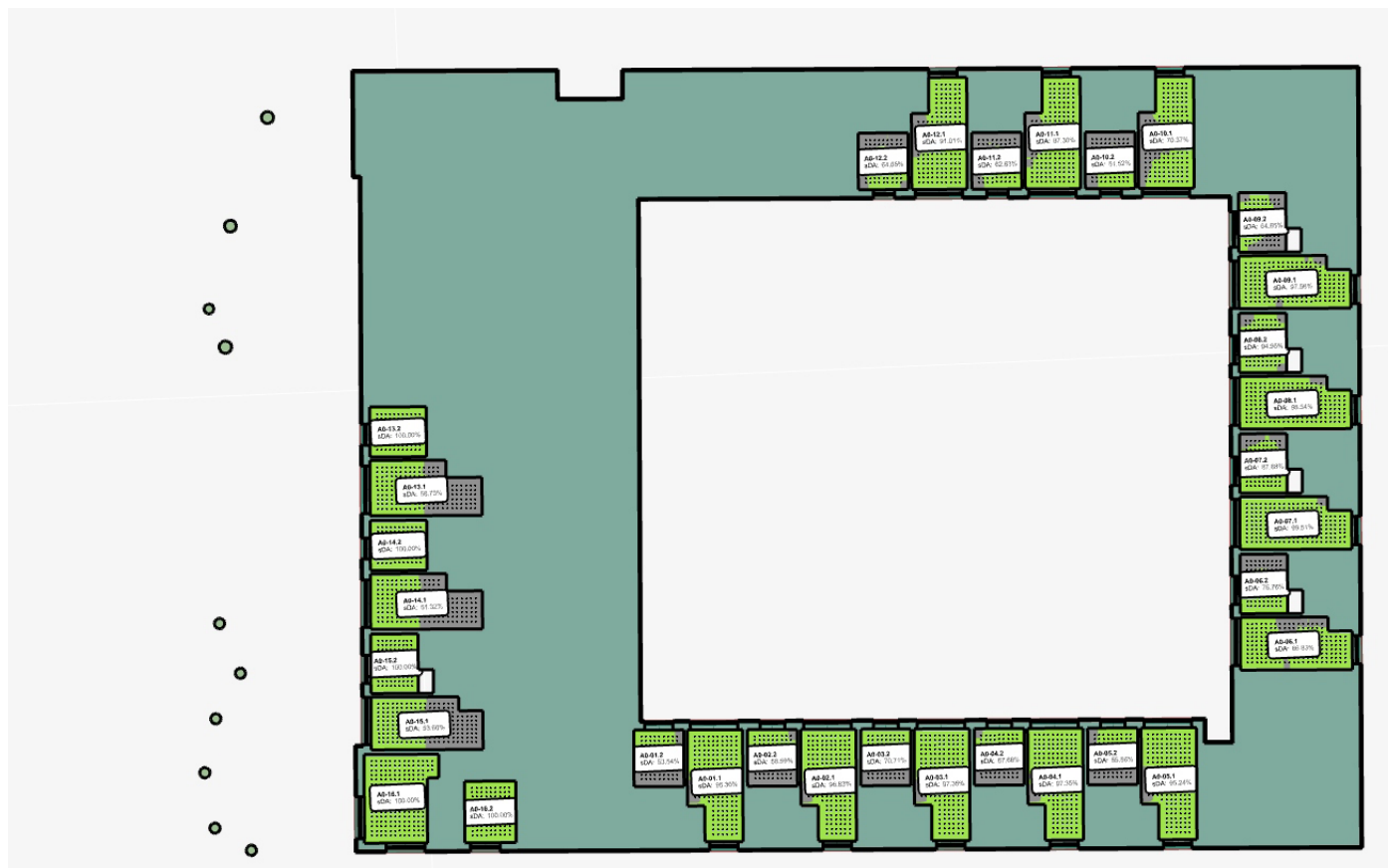
First Floor:
Without Trees

Figure 29: Daylight Provision BS EN17037:2018+A1:2021 Table NA.1 compliance for all habitable rooms

Appendix E continued: Iterative study of Daylight Provision in relation to existing trees



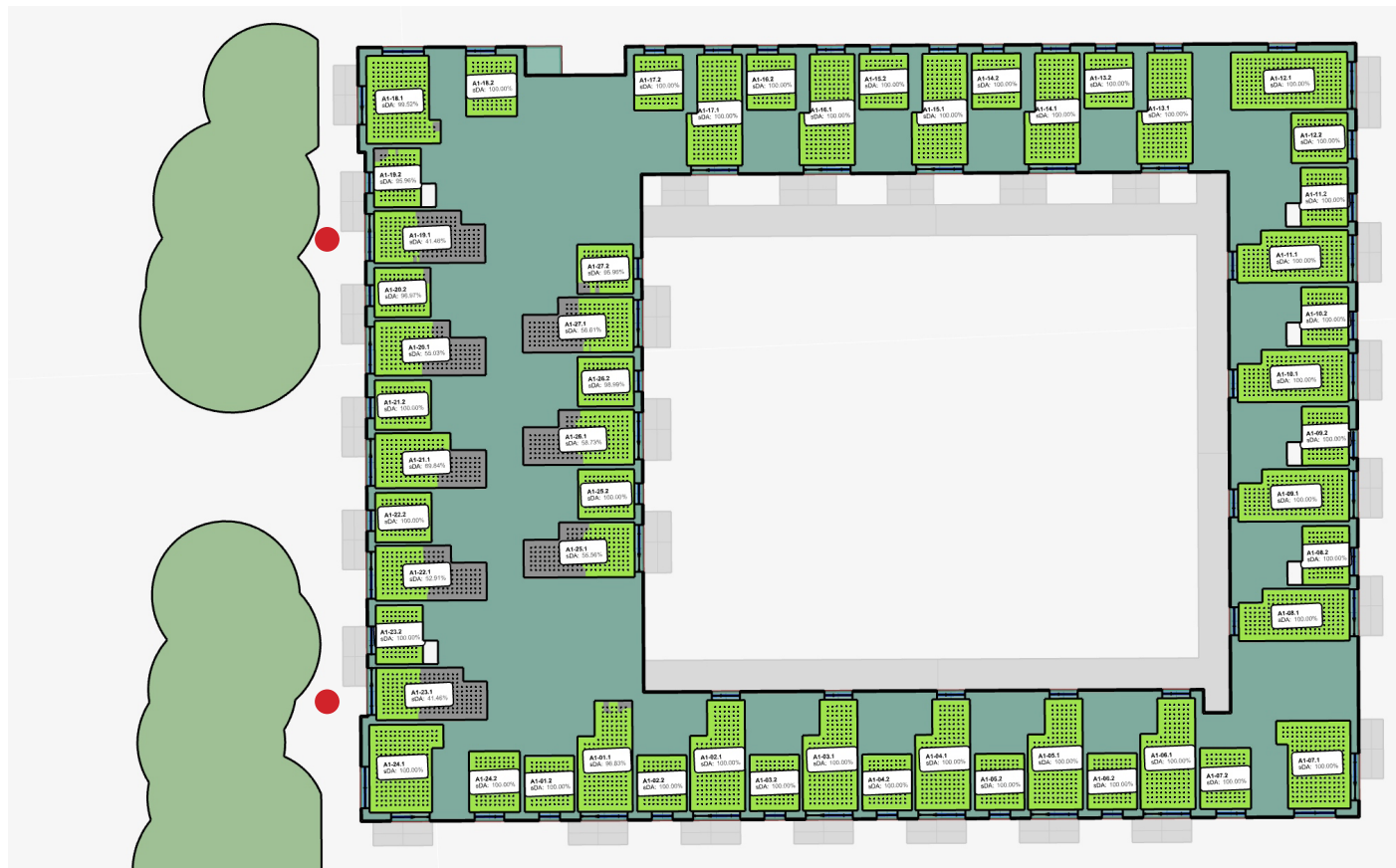
Ground Floor: Winter Baseline



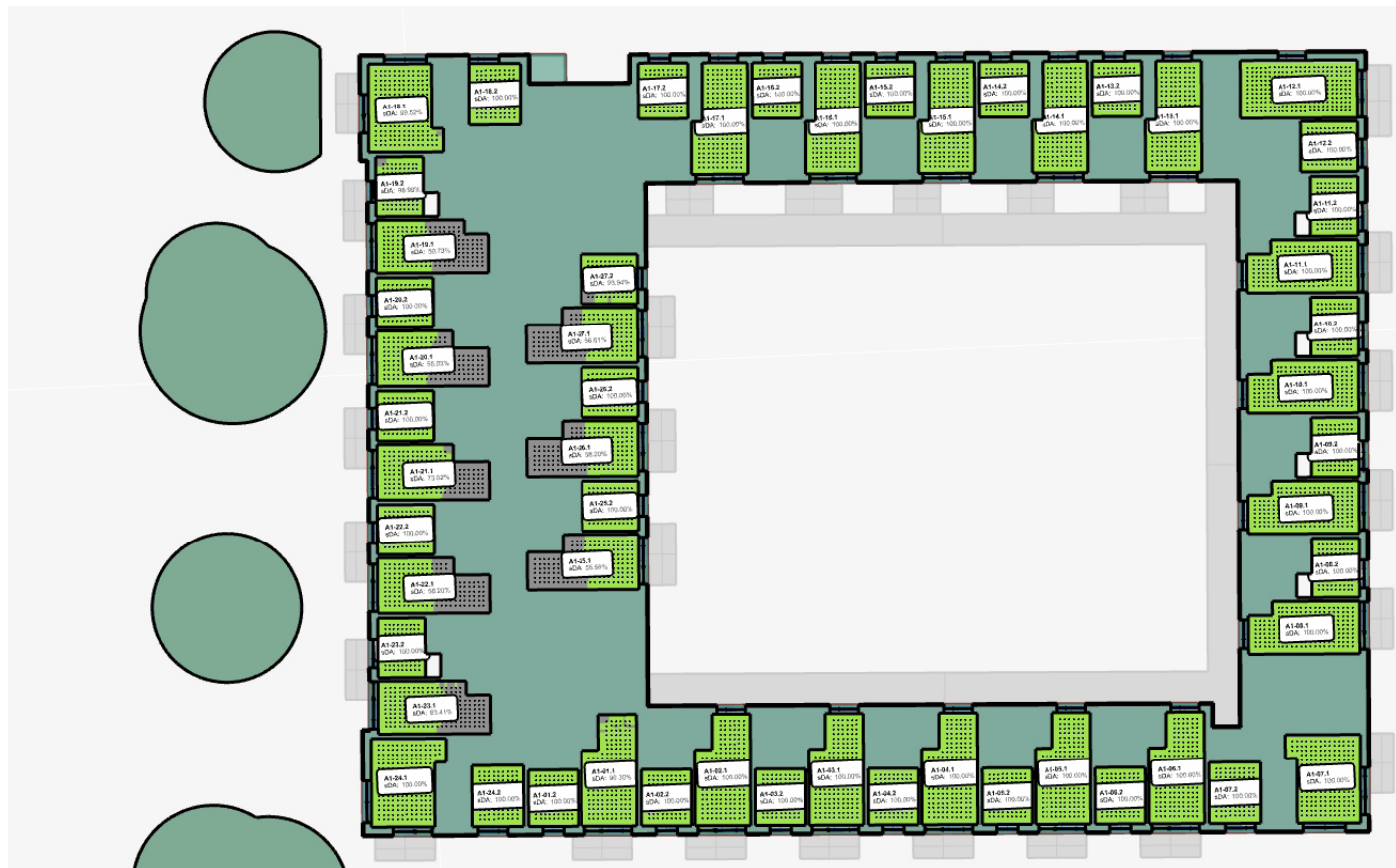
Ground Floor: Winter 8no. Retained Trees

Figure 30: Daylight Provision BS EN17037:2018+A1:2021 Table NA.1 compliance for all habitable rooms

Appendix E continued: Iterative study of Daylight Provision in relation to existing trees



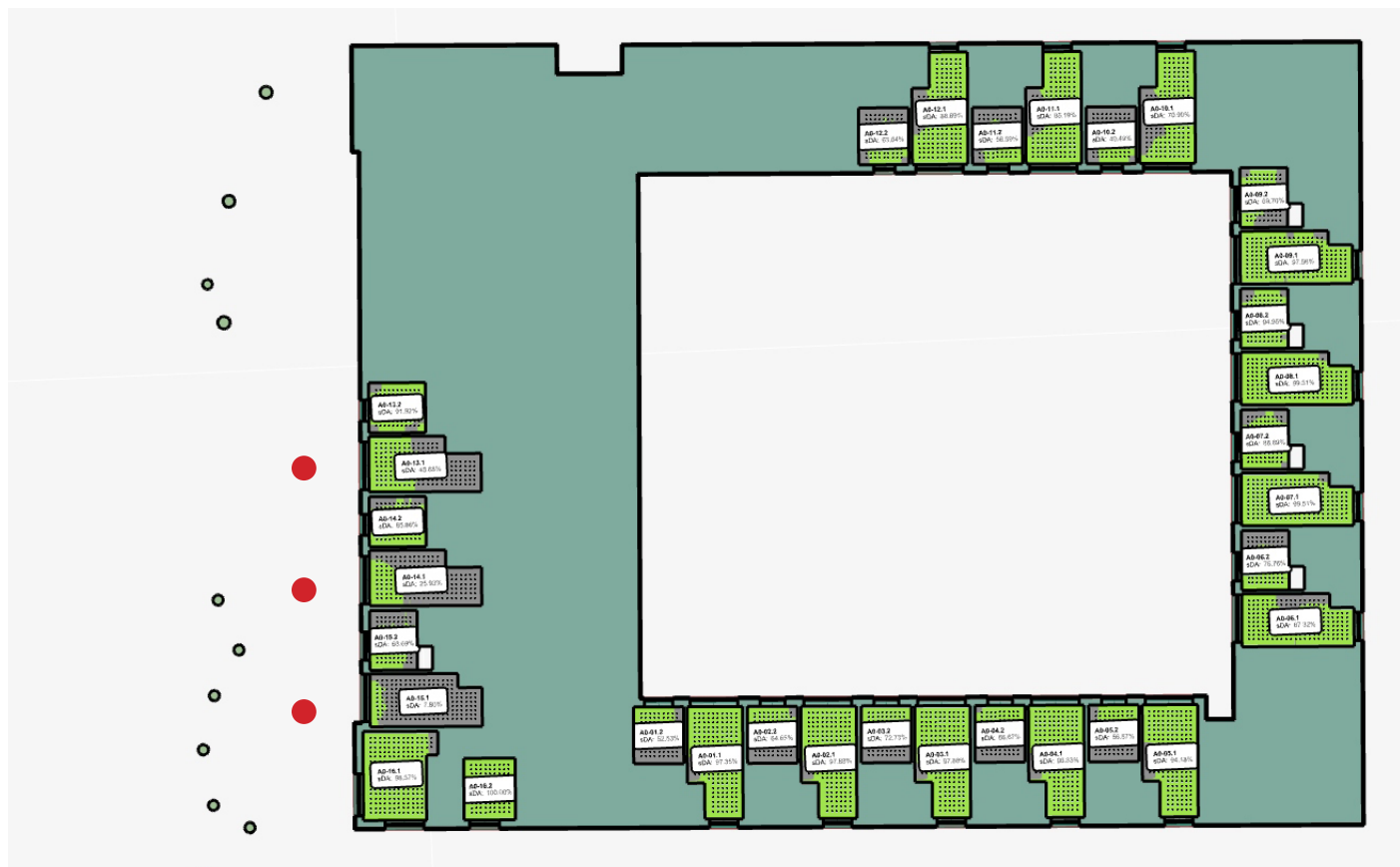
First Floor: Winter Baseline



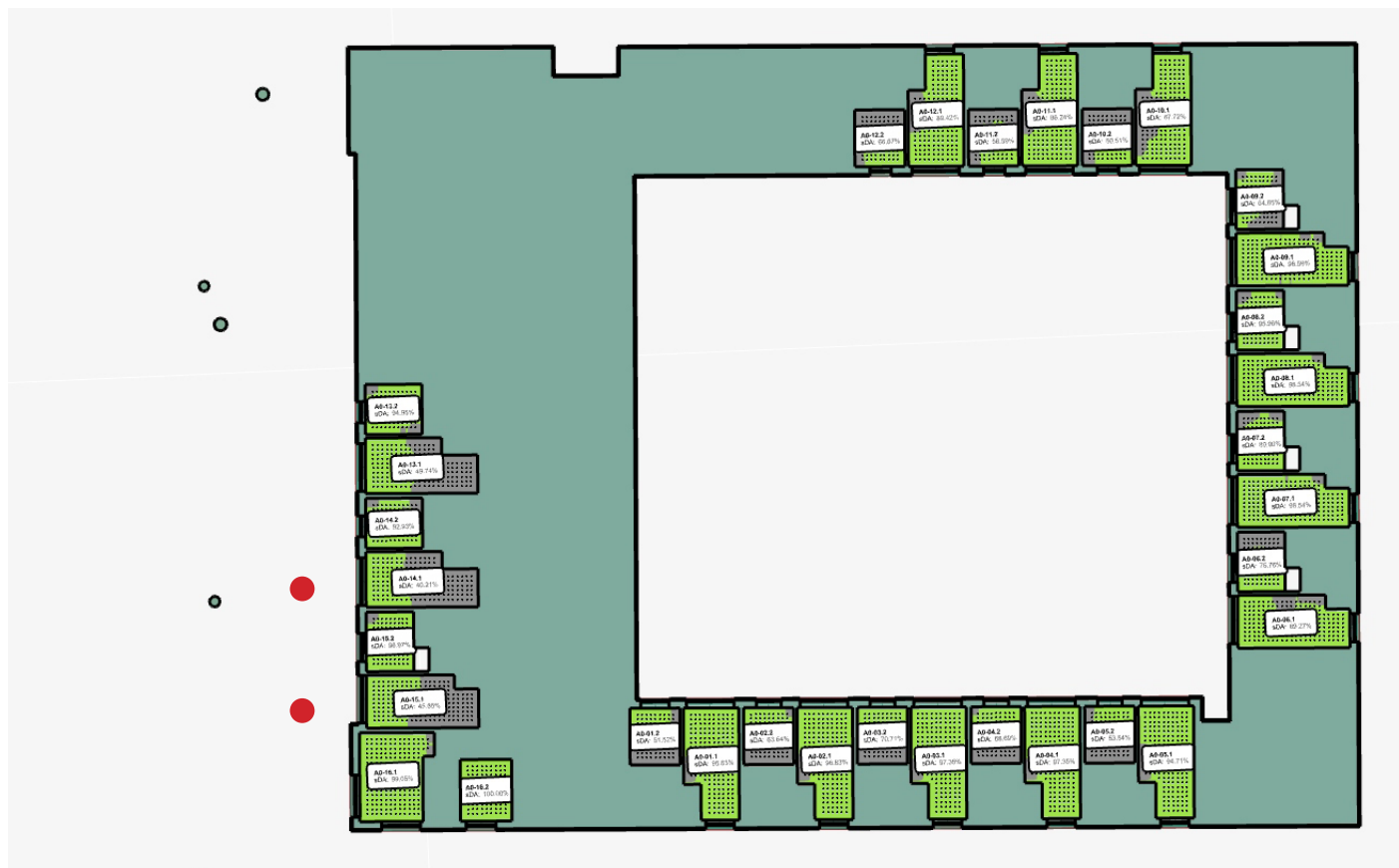
First Floor: Winter 8no. Retained Trees

Figure 31: Daylight Provision BS EN17037:2018+A1:2021 Table NA.1 compliance for all habitable rooms

Appendix E continued: Iterative study of Daylight Provision in relation to existing trees



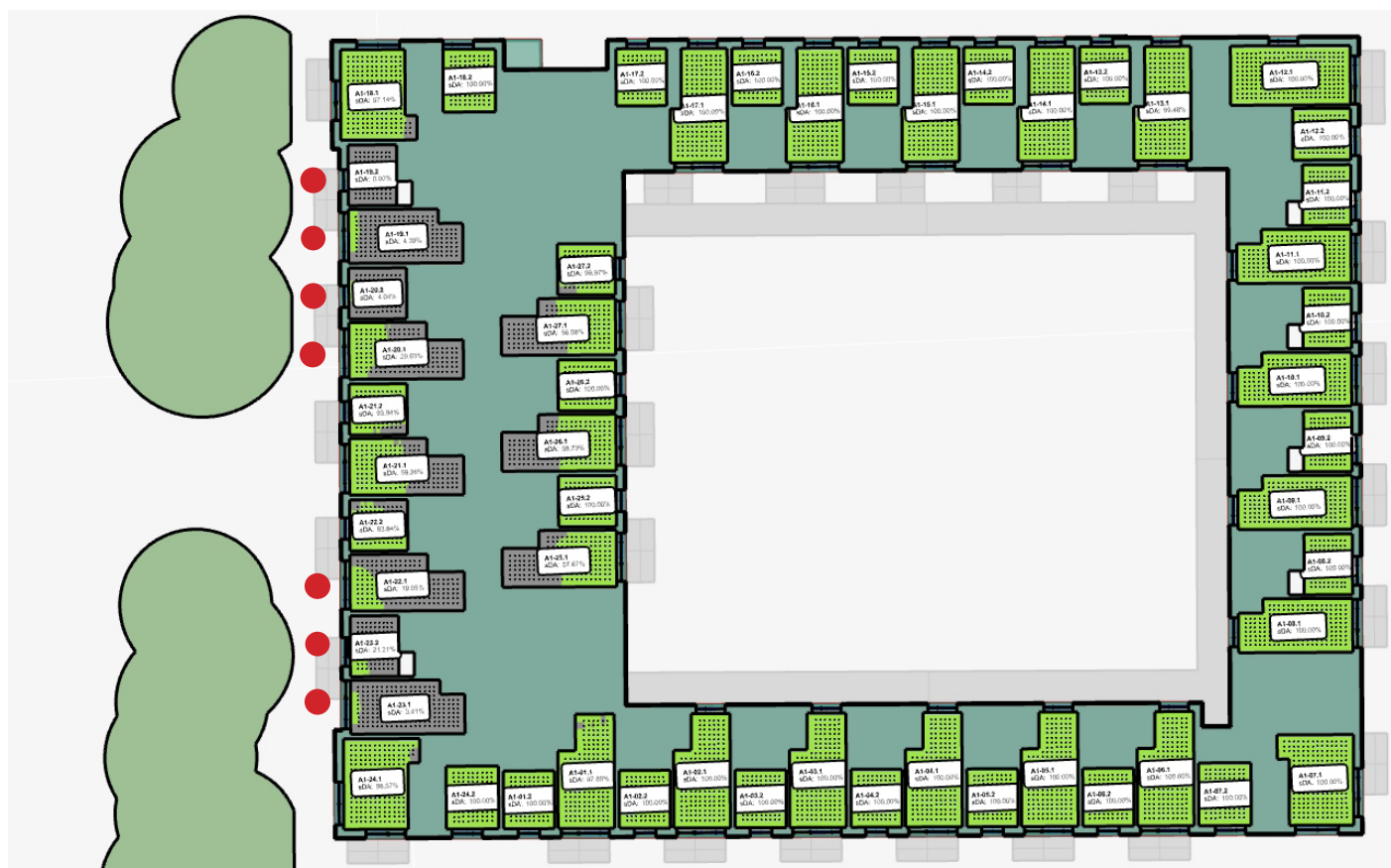
Ground Floor: Summer Baseline



Ground Floor: Summer 8no. Retained Trees

Figure 32: Daylight Provision BS EN17037:2018+A1:2021 Table NA.1 compliance for all habitable rooms

Appendix E continued: Iterative study of Daylight Provision in relation to existing trees



First Floor: Summer Baseline



First Floor: Summer 8no. Retained Trees

Figure 33: Daylight Provision BS EN17037:2018+A1:2021 Table NA.1 compliance for all habitable rooms

Appendix E continued: Iterative study of Daylight Provision in relation to existing trees

Minimum illuminance levels from BS EN17037:2018+A1:2021 - Table NA.1														
Space ID	Use	Target Lux	Without Trees				Winter: Baseline		Winter: 8no. Retained Trees		Supplementary Information			
			% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	Summer Baseline		Summer: 8no. Retained Trees			
									% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria		
A0-01.1	LKD	200	97.88%	Y	96.3%	Y	96.3%	Y	97.4%	Y	96.8%	Y		
A0-01.2	Bed	100	50.51%	Y	51.5%	Y	53.5%	Y	52.5%	Y	51.5%	Y		
A0-02.1	LKD	200	96.83%	Y	97.4%	Y	96.8%	Y	97.9%	Y	96.8%	Y		
A0-02.2	Bed	100	63.64%	Y	60.6%	Y	58.6%	Y	64.6%	Y	63.6%	Y		
A0-03.1	LKD	200	97.88%	Y	96.3%	Y	97.4%	Y	97.9%	Y	97.4%	Y		
A0-03.2	Bed	100	69.70%	Y	65.7%	Y	70.7%	Y	72.7%	Y	70.7%	Y		
A0-04.1	LKD	200	96.83%	Y	97.4%	Y	97.4%	Y	96.8%	Y	97.4%	Y		
A0-04.2	Bed	100	65.66%	Y	66.7%	Y	67.7%	Y	66.7%	Y	68.7%	Y		
A0-05.1	LKD	200	95.24%	Y	94.7%	Y	95.2%	Y	94.2%	Y	94.7%	Y		
A0-05.2	Bed	100	55.56%	Y	54.5%	Y	55.6%	Y	56.6%	Y	53.5%	Y		
A0-06.1	LKD	200	84.39%	Y	86.8%	Y	86.8%	Y	87.3%	Y	89.3%	Y		
A0-06.2	Bed	100	72.73%	Y	74.7%	Y	75.8%	Y	75.8%	Y	75.8%	Y		
A0-07.1	LKD	200	98.54%	Y	98.5%	Y	99.5%	Y	99.5%	Y	98.5%	Y		
A0-07.2	Bed	100	91.92%	Y	86.9%	Y	87.9%	Y	88.9%	Y	89.9%	Y		
A0-08.1	LKD	200	99.02%	Y	98.5%	Y	98.5%	Y	99.5%	Y	98.5%	Y		
A0-08.2	Bed	100	93.94%	Y	92.9%	Y	94.9%	Y	94.9%	Y	96.0%	Y		
A0-09.1	LKD	200	97.07%	Y	95.1%	Y	97.6%	Y	97.6%	Y	96.6%	Y		
A0-09.2	Bed	100	65.66%	Y	64.6%	Y	64.6%	Y	69.7%	Y	64.6%	Y		
A0-10.1	LKD	200	68.78%	Y	68.3%	Y	70.4%	Y	70.9%	Y	67.7%	Y		
A0-10.2	Bed	100	49.49%	N	50.5%	Y	51.5%	Y	49.5%	N	50.5%	Y		
A0-11.1	LKD	200	85.19%	Y	83.6%	Y	87.3%	Y	85.2%	Y	86.2%	Y		
A0-11.2	Bed	100	62.63%	Y	58.6%	Y	62.6%	Y	58.6%	Y	58.6%	Y		
A0-12.1	LKD	200	89.42%	Y	87.8%	Y	91.0%	Y	88.9%	Y	89.4%	Y		
A0-12.2	Bed	100	64.65%	Y	65.7%	Y	64.6%	Y	63.6%	Y	66.7%	Y		
A0-13.1	LKD	200	66.67%	Y	59.8%	Y	58.7%	Y	48.7%	N	49.7%	N		
A0-13.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	91.9%	Y	94.9%	Y		
A0-14.1	LKD	200	67.72%	Y	44.4%	N	51.3%	Y	25.9%	N	40.2%	N		
A0-14.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	85.9%	Y	92.9%	Y		
A0-15.1	LKD	200	60.00%	Y	37.1%	N	53.7%	Y	7.8%	N	45.9%	N		
A0-15.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	68.7%	Y	97.0%	Y		
A0-16.1	LKD	200	100.00%	Y	99.5%	Y	100.0%	Y	98.6%	Y	99.0%	Y		
A0-16.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		
A1-01.1	LKD	200	99.47%	Y	95.2%	Y	96.3%	Y	97.9%	Y	96.8%	Y		
A1-01.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		
A1-02.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		
A1-02.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		
A1-03.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		
A1-03.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		
A1-04.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		
A1-04.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		
A1-05.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		
A1-05.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		
A1-06.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		
A1-06.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y		

Minimum illuminance levels from BS EN17037:2018+A1:2021 - Table NA.1

Space ID	Use	Target Lux	Without Trees				Winter: Baseline				Winter: 8no. Retained Trees				Supplementary Information			
			Without Trees		Winter: Baseline		Winter: 8no. Retained Trees		Summer Baseline		Summer: 8no. Retained Trees		Summer Baseline		Summer: 8no. Retained Trees			
			% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria	% of grid target exceeded: Minimum 50% of grid	Meets Criteria		
A1-07.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-07.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-08.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-08.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-09.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-09.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-10.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-10.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-11.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-11.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-12.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-12.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-13.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	99.5%	Y	100.0%	Y	100.0%	Y				
A1-13.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-14.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-14.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-15.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-15.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-16.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-16.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-17.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-17.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-18.1	LKD	200	100.00%	Y	99.0%	Y	99.5%	Y	97.1%	Y	98.6%	Y	98.6%	Y				
A1-18.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-19.1	LKD	200	81.46%	Y	42.4%	N	50.7%	Y	4.4%	N	28.8%	N	28.8%	N				
A1-19.2	Bed	100	100.00%	Y	97.0%	Y	99.0%	Y	0.0%	N	47.5%	N	47.5%	N				
A1-20.1	LKD	200	80.95%	Y	54.0%	Y	55.0%	Y	29.6%	N	29.1%	N	29.1%	N				
A1-20.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	4.0%	N	26.3%	N	26.3%	N				
A1-21.1	LKD	200	81.48%	Y	72.0%	Y	73.0%	Y	59.3%	Y	59.8%	Y	59.8%	Y				
A1-21.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	93.9%	Y	92.9%	Y	92.9%	Y				
A1-22.1	LKD	200	80.95%	Y	52.4%	Y	58.2%	Y	19.0%	N	34.4%	N	34.4%	N				
A1-22.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	83.8%	Y	86.9%	Y	86.9%	Y				
A1-23.1	LKD	200	80.98%	Y	42.4%	N	63.4%	Y	3.4%	N	51.7%	Y	51.7%	Y				
A1-23.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	21.2%	N	97.0%	Y	97.0%	Y				
A1-24.1	LKD	200	100.00%	Y	100.0%	Y	100.0%	Y	98.6%	Y	99.5%	Y	99.5%	Y				
A1-24.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-25.1	LKD	200	41.80%	N	55.0%	Y	55.6%	Y	57.7%	Y	56.1%	Y	56.1%	Y				
A1-25.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-26.1	LKD	200	48.15%	N	59.3%	Y	58.2%	Y	58.7%	Y	59.3%	Y	59.3%	Y				
A1-26.2	Bed	100	100.00%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y	100.0%	Y				
A1-27.1	LKD	200	47.62%	N	57.1%	Y	56.6%	Y	56.1%	Y	56.6%	Y	56.6%	Y				
A1-27.2	Bed	100	95.96%	Y	94.9%	Y	93.9%	Y	97.0%	Y	91.9%	Y	91.9%	Y				

Table 16: Minimum Daylight Provision BS EN17037:2018+A1:2021 Table NA.1 compliance for habitable rooms

Section E.6 - EN17037:2018 Table A.1 Daylight Provision Results - 8no. Retained Trees

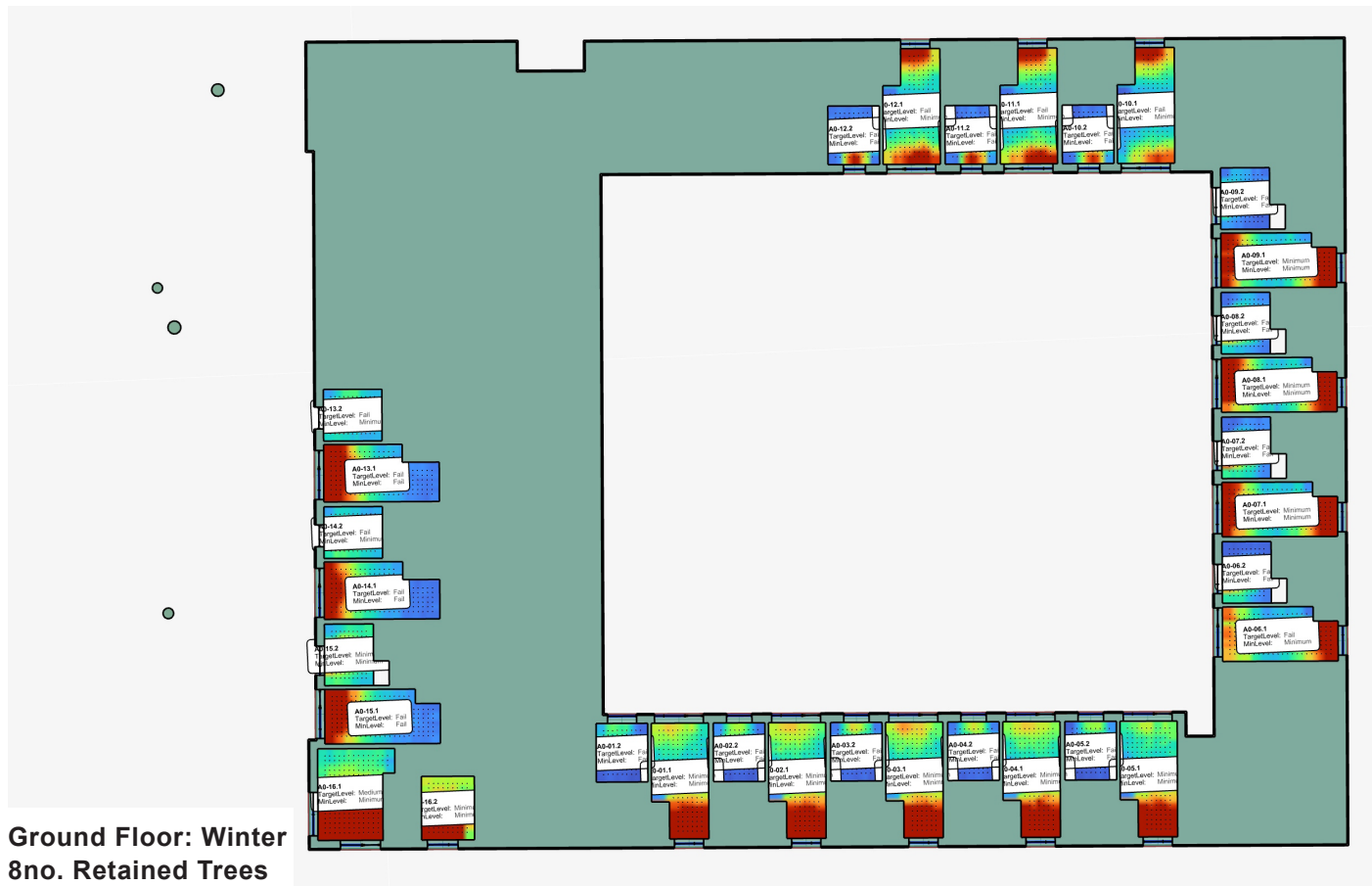


Figure 34: Daylight Provision and Annual Average Illuminance to all habitable rooms

Appendix E continued: Iterative study of Daylight Provision in relation to existing trees

EN17037:2018 Table A.1 Daylight Provision Room Schedule											
Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A0-01.1	LKD	23.1	189	Minimum	52.0%	32.1%	10.5%	Minimum	64.9%	27.8%	3.3%
A0-01.2	Bed	11.7	99	Fail	1.0%	0.0%	0.0%	Fail	7.1%	0.0%	0.0%
A0-02.1	LKD	23.1	189	Minimum	53.2%	34.3%	12.8%	Minimum	65.0%	27.1%	3.6%
A0-02.2	Bed	11.7	99	Fail	3.4%	0.0%	0.0%	Fail	10.8%	0.0%	0.0%
A0-03.1	LKD	23.1	189	Minimum	53.6%	35.0%	14.5%	Minimum	66.6%	30.3%	4.5%
A0-03.2	Bed	11.7	99	Fail	5.3%	0.0%	0.0%	Fail	16.1%	0.0%	0.0%
A0-04.1	LKD	23.1	189	Minimum	52.9%	34.1%	11.7%	Minimum	65.4%	26.3%	3.0%
A0-04.2	Bed	11.7	99	Fail	3.3%	0.0%	0.0%	Fail	12.9%	0.0%	0.0%
A0-05.1	LKD	23.1	189	Minimum	50.2%	30.0%	7.5%	Minimum	61.8%	21.5%	1.2%
A0-05.2	Bed	11.7	99	Fail	0.5%	0.0%	0.0%	Fail	7.9%	0.0%	0.0%
A0-06.1	LKD	23.0	205	Fail	47.9%	20.7%	4.0%	Minimum	63.7%	16.3%	1.2%
A0-06.2	Bed	11.7	99	Fail	21.1%	6.7%	3.1%	Fail	13.9%	1.8%	0.3%
A0-07.1	LKD	23.0	205	Minimum	53.3%	33.5%	9.9%	Minimum	68.2%	28.2%	3.4%
A0-07.2	Bed	11.7	99	Fail	32.9%	13.3%	5.9%	Fail	31.5%	4.3%	1.2%
A0-08.1	LKD	23.0	205	Minimum	53.4%	34.4%	9.4%	Minimum	68.6%	30.9%	3.0%
A0-08.2	Bed	11.7	99	Fail	29.9%	14.1%	6.0%	Fail	37.2%	4.7%	0.7%
A0-09.1	LKD	23.0	205	Minimum	50.3%	31.9%	6.0%	Minimum	64.8%	26.6%	1.6%
A0-09.2	Bed	11.7	99	Fail	15.6%	4.3%	0.7%	Fail	21.2%	1.1%	0.0%
A0-10.1	LKD	23.1	189	Fail	30.6%	7.9%	0.3%	Minimum	50.1%	2.7%	0.0%
A0-10.2	Bed	11.7	99	Fail	10.8%	2.2%	0.1%	Fail	17.6%	0.1%	0.0%
A0-11.1	LKD	23.1	189	Fail	40.7%	16.1%	1.4%	Minimum	57.3%	7.8%	0.0%
A0-11.2	Bed	11.7	99	Fail	11.6%	2.1%	0.0%	Fail	22.0%	0.2%	0.0%
A0-12.1	LKD	23.1	189	Fail	42.0%	20.0%	2.4%	Minimum	58.9%	13.0%	0.0%
A0-12.2	Bed	11.7	99	Fail	12.5%	2.0%	0.0%	Fail	25.3%	0.5%	0.0%
A0-13.1	LKD	23.1	189	Fail	35.3%	17.5%	9.8%	Fail	34.4%	4.4%	1.1%
A0-13.2	Bed	11.7	99	Fail	35.4%	17.6%	10.0%	Minimum	62.1%	16.4%	5.3%
A0-14.1	LKD	23.1	189	Fail	27.4%	15.7%	7.0%	Fail	30.7%	2.5%	0.1%
A0-14.2	Bed	11.7	99	Fail	33.6%	16.8%	8.0%	Minimum	60.3%	15.9%	3.5%
A0-15.1	LKD	23.0	205	Fail	28.6%	14.6%	7.9%	Fail	38.4%	5.0%	1.1%
A0-15.2	Bed	11.7	99	Minimum	50.6%	26.6%	15.9%	Minimum	67.4%	23.9%	9.6%
A0-16.1	LKD	24.3	210	Medium	71.4%	58.6%	46.9%	Minimum	73.9%	44.4%	23.7%
A0-16.2	Bed	13.1	108	Minimum	64.9%	50.0%	37.6%	Minimum	76.6%	48.4%	34.6%
A1-01.1	LKD	23.1	189	Medium	65.1%	50.7%	38.9%	Minimum	65.4%	32.5%	11.9%
A1-01.2	Bed	11.7	99	Minimum	61.6%	46.5%	34.9%	Minimum	76.9%	48.7%	32.1%
A1-02.1	LKD	23.1	189	Medium	70.2%	56.9%	44.5%	Medium	82.2%	58.4%	41.3%
A1-02.2	Bed	11.7	99	Minimum	62.3%	47.3%	36.6%	Minimum	77.1%	49.2%	32.6%
A1-03.1	LKD	23.1	189	Medium	70.5%	57.4%	45.1%	Medium	82.4%	58.9%	42.4%
A1-03.2	Bed	11.7	99	Minimum	61.6%	46.9%	35.5%	Minimum	75.9%	48.1%	32.5%
A1-04.1	LKD	23.1	189	Medium	70.8%	57.6%	45.4%	Medium	82.6%	59.6%	43.4%
A1-04.2	Bed	11.7	99	Minimum	62.8%	47.6%	36.8%	Minimum	76.0%	48.2%	32.2%
A1-05.1	LKD	23.1	189	Medium	70.3%	56.7%	44.6%	Medium	82.4%	58.8%	42.7%
A1-05.2	Bed	11.7	99	Minimum	63.2%	48.1%	37.3%	Medium	77.2%	50.1%	34.3%
A1-06.1	LKD	23.1	189	Medium	69.2%	55.3%	43.0%	Medium	80.6%	55.5%	36.8%
A1-06.2	Bed	11.7	99	Minimum	62.8%	47.8%	36.4%	Medium	77.7%	50.8%	34.8%
A1-07.1	LKD	24.3	210	High	82.6%	74.2%	66.0%	High	84.9%	66.5%	52.9%
A1-07.2	Bed	13.1	108	Medium	71.0%	58.2%	46.4%	Medium	81.8%	58.9%	42.9%
A1-08.1	LKD	23.0	205	Medium	67.9%	51.3%	33.3%	Medium	80.1%	52.1%	28.4%
A1-08.2	Bed	11.7	99	Minimum	66.1%	47.2%	27.7%	Minimum	77.4%	45.4%	23.2%
A1-09.1	LKD	23.0	205	Medium	70.1%	55.5%	40.5%	Medium	82.2%	57.3%	38.9%

Appendix E continued: Iterative study of Daylight Provision in relation to existing trees

EN17037:2018 Table A.1 Daylight Provision Room Schedule											
Space ID	Description	Area m2	Sensor Count	Target Illuminance	300lux_50	500lux_50	750lux_50	Minimum Target Illuminance	100lux_95	300lux_95	500lux_95
A1-09.2	Bed	11.7	99	Minimum	66.1%	46.8%	27.3%	Minimum	76.6%	43.2%	22.7%
A1-10.1	LKD	23.0	205	Medium	70.1%	55.5%	41.1%	Medium	82.1%	58.1%	39.2%
A1-10.2	Bed	11.7	99	Minimum	64.1%	43.8%	25.4%	Minimum	75.7%	41.1%	20.5%
A1-11.1	LKD	23.0	205	Medium	68.7%	53.6%	39.0%	Medium	81.1%	55.9%	37.0%
A1-11.2	Bed	11.7	99	Minimum	63.7%	43.1%	25.1%	Minimum	75.1%	39.4%	20.0%
A1-12.1	LKD	28.2	264	Medium	75.8%	62.9%	46.2%	Minimum	78.9%	46.2%	18.0%
A1-12.2	Bed	11.9	99	Minimum	67.2%	49.0%	30.2%	Medium	81.1%	53.3%	28.4%
A1-13.1	LKD	23.3	194	Minimum	57.2%	37.4%	17.6%	Minimum	74.0%	39.1%	16.1%
A1-13.2	Bed	11.4	90	Minimum	55.3%	28.4%	0.3%	Minimum	76.1%	33.5%	0.3%
A1-14.1	LKD	23.3	194	Minimum	61.3%	43.7%	24.3%	Minimum	77.4%	47.6%	24.7%
A1-14.2	Bed	11.4	90	Minimum	52.7%	24.7%	0.1%	Minimum	75.0%	29.2%	0.1%
A1-15.1	LKD	23.3	194	Minimum	62.8%	46.2%	27.6%	Minimum	77.6%	48.3%	25.5%
A1-15.2	Bed	11.4	90	Minimum	54.1%	26.1%	0.2%	Minimum	75.2%	29.8%	0.1%
A1-16.1	LKD	23.3	194	Minimum	61.0%	43.5%	25.3%	Minimum	77.3%	46.5%	23.3%
A1-16.2	Bed	11.4	90	Minimum	52.4%	23.9%	0.2%	Minimum	75.3%	29.6%	0.1%
A1-17.1	LKD	23.3	194	Minimum	60.4%	41.2%	22.9%	Minimum	76.6%	43.7%	21.4%
A1-17.2	Bed	11.4	90	Minimum	55.5%	29.1%	0.3%	Minimum	75.1%	29.3%	0.2%
A1-18.1	LKD	24.3	210	Medium	74.0%	58.5%	42.5%	Minimum	79.5%	48.7%	21.5%
A1-18.2	Bed	13.1	108	Minimum	57.5%	33.7%	0.7%	Minimum	76.7%	37.0%	1.2%
A1-19.1	LKD	23.0	205	Fail	31.0%	16.1%	8.1%	Fail	40.9%	6.1%	1.5%
A1-19.2	Bed	11.7	99	Fail	31.5%	15.8%	7.6%	Minimum	51.1%	12.9%	3.4%
A1-20.1	LKD	23.1	189	Fail	35.6%	19.2%	11.8%	Fail	33.5%	6.0%	0.5%
A1-20.2	Bed	11.7	99	Fail	26.7%	14.7%	5.9%	Minimum	53.3%	12.3%	2.3%
A1-21.1	LKD	23.1	189	Fail	48.9%	25.3%	15.3%	Minimum	52.4%	11.8%	4.3%
A1-21.2	Bed	11.7	99	Fail	39.7%	20.4%	12.3%	Minimum	64.7%	20.4%	9.4%
A1-22.1	LKD	23.1	189	Fail	37.5%	18.9%	10.3%	Fail	36.6%	4.4%	0.6%
A1-22.2	Bed	11.7	99	Fail	38.9%	18.5%	10.2%	Minimum	62.5%	18.4%	6.1%
A1-23.1	LKD	23.0	205	Fail	42.4%	21.6%	13.4%	Minimum	51.3%	11.9%	4.1%
A1-23.2	Bed	11.7	99	Minimum	50.8%	27.6%	17.3%	Minimum	70.3%	27.1%	13.7%
A1-24.1	LKD	24.3	210	High	74.7%	63.3%	52.6%	Medium	78.1%	52.4%	36.6%
A1-24.2	Bed	13.1	108	Medium	69.4%	55.5%	43.9%	Medium	80.4%	55.4%	38.8%
A1-25.1	LKD	23.1	189	Fail	18.3%	9.9%	4.0%	Fail	12.7%	1.2%	0.0%
A1-25.2	Bed	11.7	99	Fail	32.5%	12.3%	4.6%	Minimum	53.9%	9.0%	1.9%
A1-26.1	LKD	23.1	189	Fail	23.0%	10.7%	4.5%	Fail	14.5%	1.1%	0.2%
A1-26.2	Bed	11.7	99	Fail	32.4%	14.4%	4.5%	Minimum	50.8%	8.2%	1.6%
A1-27.1	LKD	23.1	189	Fail	23.7%	10.8%	4.5%	Fail	15.1%	1.4%	0.0%
A1-27.2	Bed	11.7	99	Fail	23.5%	9.7%	3.1%	Fail	36.6%	4.1%	0.8%

Table 17: Daylight Provision individual values for all habitable rooms to EN 17037 Table A.1.