MAX FORDHAM

Dublin City Housing

Crumlin Rafter's Road - Part 8 DSO Assessment

P03

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1.0 METRICS, TERMINOLOGY AND METHODOLOGY

1.1 Introduction

In line with Dublin City Development Plan 2022-2028, this report uses the document *''Site layout for daylight and sunlight: a good practice guide''* (3rd edition), published by the Building Research Establishment (BRE) as a basis for examining the daylight, sunlight, and overshadowing performance of the proposed residential development on Crumlin Road, Dublin. In this report this development will be referred to as either Crumlin Rafter's Road, CRR or simply the proposed development.

The numerical targets contained within the BRE Guide are, as the Guide states, *"purely advisory and different targets may be used based on the special requirements of the proposed development or its location."* This assessment divides into two parts:

- Impact on the surroundings
- Performance of the proposed accommodation

1.2 Case Specific Considerations.

In this case, the neighbouring site to Crumlin Rafter's Road has had planning permission granted for a library building and café, also developed by Dublin City Council. In this report it will be referred to as the Consented Library Development (to clearly differentiate it from the proposed development of Crumlin Rafter's Road). This consented development consists of a new library building and the redevelopment of 318 Crumlin Road.

Due to this development, some extra analysis was required to consider both the impact of the proposed development on the surroundings and the daylight performance of the proposed development. Testing scenarios with and without the consented library development were considered. The BRE procedure requires each test to compare a baseline condition to a future proposed condition.

As we believe that this consented scheme is highly likely to be built, the models used in this report to determine the impact of CRR on the surroundings included the consented library development in both the base and future proposed conditions. Initial testing was carried out to ensure that this was an appropriate choice and there were not any windows or areas deemed to be overly sensitive to the inclusion of the library building.

Outline of Scenarios for Impact Testing
Baseline Condition – Surroundings as currently existing with the inclusion of the consented library development.

Future Proposed Condition – as per the baseline condition but with the inclusion of Crumlin Rafter's Road (and the removal of the existing buildings on that site).

Outline of Scenarios for Internal Daylight Performance Testing
Due to the sensitivity of some of the windows in CRR, it was deemed sensible to test the daylight performance using two scenarios. As the performance test is not a comparative one, only one condition is required per test.

- **Scenario 1** - The surrounding context includes the consented library development, as well as existing surrounding buildings.
- **Scenario 2** - The surroundings are as existing currently.

1.3 External Impact Assessment Criteria

There are three elements to this part of the assessment, as below, which are further described in the following sections:

- Daylight impact analysis of neighbouring buildings: Vertical Sky Component (VSC) and No-Sky Line (NSL)
- Sunlight impact analysis of surrounding buildings: Annual Probable Sunlight Hours and Winter Probable Sunlight Hours (APSH and WPSH)
- Sunlight to surrounding amenity areas (sunlight hours on March 21st)

1.3.1 Vertical Sky Component (VSC)

In designing a new development, it is important to safeguard the daylight to nearby buildings. To assess this, the BRE Guide recommends using the Vertical Sky Component (VSC) as a metric, comparing existing values for nearby windows with proposed values with the proposed building in place.

The VSC indicates the degree of daylight availability on a vertical surface and is expressed as a percentage, with 40% being the maximum. It represents the extent to which skylight from an overcast sky is able to reach a window as a proportion of the whole sky hemisphere. In suburban areas, the recommended minimum is 27%, any change below this should be limited to 0.8 of the existing value.

The BRE Guide states, *"Although the BRE guide gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design. In special circumstances the developer or planning authority may wish to use different target values."*

The following paragraph is from the BRE Guide; it describes how the 27% target is derived:

"If we consider a theoretical road with two storey terraced houses on either side, twelve metres apart. Assuming the houses have windows at ground and first floor level, and a pitched roof with a central ridge, then a reference point could be taken at the centre of a ground floor window of one of the properties. From this point if a line was drawn to the central ridge of the property on the other side of the road the angle of this line would equate to 25 degrees…. this equates to an equivalent vertical sky component of 27%."

It can be appreciated that in a city, this kind of urban form is impractical. The BRE Guide gives planning authorities the option of setting alternative targets for locations where these numerical targets may not be appropriate.

A VSC of 15% is mentioned in the BRE Guide as minimum for large windows, above which, daylight availability is likely to be adequate; 27% is the equivalent for average window sizes.

15% VSC has also been used as a benchmark for urban regeneration areas in other urban contexts. Comments by Greater London Authority (GLA) in the context of a planning appeal have been used as guidance on urban sites in London. The GLA report presented 20% VSC in the proposed case as "reasonably good" and mid-teens VSCs to be "acceptable" on such sites.

Due to the low density of the surrounding buildings, this report refers to the 27% VSC target as we believe that this will be achievable with the proposed design in its suburban context.

1.3.2 No-Sky Line (NSL)

The BRE Guide recommends use of the No-Sky Line (NSL) metric to assess daylight distribution within the rooms of surrounding buildings. The NSL divides areas of the working plane which can "see" the sky from those which cannot. The recommendation is for the area of the room which can "see" the sky with the proposal in place to be no smaller than 0.8 of the existing value. The working plane is placed at 850mm above the floor. The BRE Guide states that NSLs should only be assessed where room layouts are known as inaccuracies are likely to arise if estimated layouts are used.

1.3.3 Probable Sunlight Hours (APSH/WPSH)

APSH and WPSH (Annual and Winter Probable Sunlight Hours) measure the percentage of sunlight hours a window is likely to receive for a year or for the winter months between 21st September and 21st March. The recommendation for a room to appear adequately sunlit is for it to receive 25% of annual probable sunlight hours, including at least 5% of winter probable sunlight hours. It is recommended that reduction in sunlight access below these levels be kept to a minimum. If the available sunlight hours are both less than the percentages stated above, less than 0.80 times their former value in either period, and the overall annual loss is greater than 4% of APSH, then the reduction in sunlight may be noticeable.

The Guide suggests that the recommendation be applied to main living rooms of dwellings with a window facing within 90° of due south. Kitchens and bedrooms are considered less important and need not be analysed, although it is recommended not to block too much sun. In this study, room uses are largely unknown, so all windows tested for daylight and facing within 90° of due south have been analysed. Where room uses and dimensions are known, the results for the best sunlit window of the room are taken to determine if a room passes or fails the test.

1.3.4 Sunlight to Surrounding Amenity

It is recommended that at least half an amenity space should receive at least two hours of direct sunlight on March 21st, and any change to this area that may be caused by a new development not result in this area being less than 0.8 times its existing value.

1.3.5 BRE Impact Assessment Classification

The BRE Guide states the following in its Appendix H:

"The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied.

Where the loss of skylight or sunlight fully meets the guidelines in this document, 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 a 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 requirements 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 document, 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, for example an overhang above the window or a window standing unusually close to the boundary.

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, e.g. a living room in a dwelling or a children's playground.*

1.4 Performance: Target Illuminance

The BRE Guide offers two methods for assessing interior daylight in new buildings. Target Illuminance uses climate-based daylight modelling to account for orientation and sunlight and is the method employed in this assessment. The table shows median illuminance levels, quoted in the BRE Guide from the national annex of BS EN 17037:2018, as applicable to "hard to light dwellings". The target is for these levels to be achieved over half of the working plane for half of the daylight hours in a year.

Table 1-1.4-1: Target illuminance values for dwellings according to the National Annex in BS EN 17037:2018.

Room Type	Illuminance (lux)
Kitchens	200
Living Rooms	150
Bedrooms	100

Kitchen-Diners or Kitchen-Living-Diners are generally required to achieve the level of the kitchen as this room has the highest requirement of the combined room types. However, if the main usage of the space is considered to be that of a living room, it may be appropriate to use the target for the living room across the whole space.

1.5 Performance: Sunlight Levels

The recommendation is for at least one habitable room per dwelling to receive at least 1.5 hours sunlight on March 21st. As per the guidance for this test, "habitable rooms" has been taken not to include bedrooms.

1.6 Performance: Sunlight on Surrounding Amenity

The same test is used to demonstrate the performance of amenity spaces within the proposal as is used to assess the impact on the surrounding amenity i.e. it is recommended that at least half an amenity space should receive at least two hours of direct sunlight on March 21st, and any change to this area that may be caused by a new development should not result in this area being less than 0.8 times its existing value.

1.7 Geometry

The proposed building was converted from Revit models supplied by the project architects in March 2025. In line with section 5.3 of the Dublin City Development Plan 2022-2028 Appendix 16: Daylight and Sunlight, all surrounding buildings that sit within three times the height of the proposed development have been considered for assessment.

Reasonable approximations of neighbouring window locations and geometries have been used with appropriate care, from information derived from a site survey made in Autumn 2021 and online data. Since this is, in part, a comparative study, two models were set up representing the existing and proposed cases. In both models, fences, trees, and shrubbery were excluded as per the BRE guidance.

1.8 Model Set-up

The following values, taken from EN 17037 and the BRE Guide, were used in calculations:

Table 1.8-1: Surface reflectance values used in internal performance model.

Internal Surface Finishes	Reflectance
Internal Walls	0.5
Floor	0.2
Ceiling	0.7
Ground & Context	0.2

As per the BRE Guide, Visible Light Transmittance (VLT) for double glazing was assumed to be 0.68. A fairly conservative maintenance factor of 0.92 was chosen in line with guidance given in BS EN 17037 for urban environments.

A 200mm grid was used in illuminance calculations.

These analyses were carried out using the following software: Radiance, Revit, Rhino, and Grasshopper Tools

2.0 ARCHITECTURE & DAYLIGHT

2.1 Location and design

Dublin City Council (DCC) is proposing to develop the site at the junction of Crumlin Rd and Rafters Rd, bordered by Rafters Lane to the North, shown to the right in Figure 2.1-1Figure 2.1-1: Aerial photo showing the site of the proposed development highlighted in blue. The proposal comprises accommodation over four floors.

A number of iterations for the design of the proposed building have been tested, and adjustments have been made to improve the quality of daylight within the proposed dwellings. The design team improved the design over a series of iterations. Design modifications included:

- Widening and adding windows
- Narrowing balconies
- Reconfiguration of internal layouts

Figure 2.1-1: Aerial photo showing the site of the proposed development highlighted in blue. The site of the consented library development has been highlighted in orange.

The resulting proposal maximises internal daylight levels within the given design parameters. Further enhancement would require architectural features regarded as necessary (e.g. amenity, deck access, fire walls) to be compromised. Importantly, the daylight and energy strategies have been harmonised. Advice and testing for daylight, have been made in conjunction with advice and testing for the project's energy performance requirements. Window sizes for some apartments are close to the limit of acceptability for compliance with the Nearly Zero Energy Building standard, required for planning.

Max Fordham LLP has been appointed by DCC to undertake this Sunlight, Daylight and Overshadowing report to accompany the project's planning submission.

3.0 EXECUTIVE SUMMARY

The purpose of this report is to examine the impact of the proposed building at Crumlin Rafters Road on the sunlight, daylight and overshadowing of adjacent properties, and to assess levels of daylight and sunlight within the proposal.

This report follows the assessment method described in the document: *''Site layout for daylight and sunlight: a good practice guide''* (3rd edition), published by the BRE – it is the industry standard document for such assessments and the reference cited in Dublin City Council's (DCC) Development Plan (Appendix 16, Draft Dublin City Development Plan 2022 – 2028).

Contained within each edition of the BRE Guide is a reminder that the Guide's aim is to help rather than constrain the designer and that its numerical guidelines should be interpreted flexibly because daylight is one of many factors under consideration. The results of this study reflect:

- the other constraints on the design e.g., housing density targets, provision of amenity, access, cost, and space requirements for each apartment
- the harmonisation of daylight and energy strategies, considering the heat loss associated with façade openings and the project's DEAP energy obligations.

The design team developed several iterations of the proposed building's form to reduce the impact on neighbouring properties and increase access to natural light within the development. A preliminary daylight analysis was undertaken while the massing of the proposed scheme was being designed.

3.1 Impact on the surroundings

In line with DCC City Plan 2022-2028 Appendix 16 recommendations, receptors in a radius 3 times the height of the proposed building were assessed: a total of 245 windows and 34 amenity areas. Overall, 99% of the windows comply with the VSC guidance. When the windows which did not pass were considered without overhangs and in context – as part of the room they serve - all measured spaces comply with the guidance. All windows or rooms complied with the annual probable sunlight hours guidance and all amenity areas complied with the sunlight hours guidance.

Therefore, the impact to all the assessed buildings may be classified as negligible. Results for all properties can be seen in the Appendices.

Existing surroundings
A total of 222 windows, 3 rooms and 33 amenity spaces were assessed at the following locations:

- 5-6 Rafter's Lane
- 6a-6b Rafter's Lane
- 7-11 Rafter's Lane
- 11a-11b Rafter's Lane
- 2-2a Rafter's Road
- 3-4 Rafter's Road
- 309-315 Crumlin Road
- 317-325 Crumlin Road
- 327-331 Crumlin Road
- 333-343 Crumlin Road
- 345-349 Crumlin Road
- 351-353 Crumlin Road

- 310 Crumlin Road
- 312 Crumlin Road

In terms of its effect on existing neighbouring properties, 100% of the windows tested comply with VSC daylight recommendations and 100% of those which have a potential sunlight expectation comply with sunlight recommendations. Sunlight levels at surrounding amenity spaces are maintained. 100% of the rooms tested (which were only those with available information) passed the no-sky line test.

Impact on the consented development
23 windows over 12 rooms and 1 amenity space were assessed at the following locations:

- Consented Library Development -318 Crumlin Road
- Consented Library Development – New Library Building.

In terms of the effect on the consented development, 93% of the windows pass the VSC test with the standard target, and 97% with the reduced target of 15%.

The BRE Guide states that for overhung windows *"even a modest obstruction opposite may result in a large relative impact on the VSC."* Two windows in the New Library Building for the children's library had a minor impact to the VSC. However, when the overhang shading was removed, the impact on the main window was reduced to negligible. The other window is significantly smaller in area and is less important for the daylight in the room.

When the overhang was removed, 97% of the windows passed the VSC test with the standard target, including the large west facing window in the children's library. The weighted VSC was calculated for the children's library. Using this metric, the whole room passes the VSC guidelines.

All the tested rooms – those with an expectation of daylight - passed the no-sky line test.

For the sunlight target for windows and rooms, as there was room data available it was possible to identify a main window for each room for sunlight access. Therefore, even though some individual windows were affected, as each room has a main window that has sufficient sunlight access, all the spaces here passed the APSH guidelines.

Sunlight levels were maintained in the amenity space of the library.

3.2 Performance of the proposed development

Natural levels within the rooms of the proposal have been enhanced throughout the development through over various design iterations such as:

- Widening of windows
- Dual aspect units
- Careful placement of WCs and stores in less daylit areas within units and habitable rooms in well daylit areas
- Considered sizing and positioning of windows and balconies.

As mentioned in the BRE guide, for a courtyard development, which was considered the right urban design typology in this case, it can be tricky to ensure adequate daylight to all areas. The design was also constrained by the relatively low form when compared to the surroundings, which is reflected in the excellent external impact results, and the requirement to ensure efficient usage of the space with regards to number of units.

The performance may be described as follows:

Scenario 1
Daylight: 85% of rooms meet or exceed the relevant benchmark, as measured against the minimum target illuminance method set out in the latest edition of the BRE Guide and the National Annex of BS EN 17037, when the KLD rooms are treated as living rooms. If the KLD rooms are treated as kitchens the pass rate is reduced to 77% of rooms.

Scenario 2
Daylight: 86% of rooms meet or exceed the relevant benchmark, as measured against the minimum target illuminance method set out in the latest edition of the BRE Guide and the National Annex of BS EN 17037, when the KLD rooms are treated as living rooms. If the KLD rooms are treated as kitchens the pass rate is reduced to 77% of rooms.

Sunlight – Both scenarios
Sunlight on windows**:** The benchmark for sunlight hours incident on windows is met or exceeded in 95% of the proposed dwellings.

Sunlight on amenity**:** For completeness, two areas were tested: The Courtyard Garden and the Facility Area. The Courtyard Garden passes the good practice benchmark, with 56% of the area exceeding 2 hours of sunlight on the 21st March. The Facility Area does not meet the good practice benchmark.

Consideration has gone into the design of the landscape, such that the features that most benefit from sunlight access – the play area and seating – have been placed in the Courtyard Garden, where they will receive adequate sunlight. Features that do not have such a high requirement for sunlight, including bike parking and access paths, are in the Facility Area.

4.0 RELEVANT DOCUMENTS

Sustainable Urban Housing: Design Standards for New Apartments – Guidelines for Planning Authorities (Department of Housing, Planning and Local Government, December 2022):

'' 3.20 Floor-to-ceiling height affects the internal amenities of apartments, in terms of sunlight / daylight, storage space, and ventilation. This is most significant at ground level, where the potential for overshadowing is greatest. Ground level floor to ceiling height will also influence the future adaptability of individual apartments for potential alternative uses, which will vary depending on location.''

''6.5 The provision of acceptable levels of natural light in new apartment developments is an important planning consideration as it contributes to the liveability and amenity enjoyed by apartment residents. In assessing development proposals, planning authorities must however weigh up the overall quality of the design and layout of the scheme and the measures proposed to maximise daylight provision with the location of the site and the need to ensure an appropriate scale of urban residential development.

6.6 Planning authorities should avail of appropriate expert advice where necessary and have regard 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, when undertaken by development proposers which offer the capability to satisfy minimum standards of daylight provision.

6.7 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 specifics. 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.''

Dublin City Draft Development Plan 2022 – 2028, Appendix 16c, Section 1.0

"This guide is intended to provide direction to applicants and consultants carrying out such assessments. Its purpose is to offer clarity on the required technical approach, such that a standardised methodology and set of metrics are used by consultants for completing daylight and sunlight assessments. The guide also contains information on what standards are appropriate and what information should be contained in daylight and sunlight reports to enable the planning authority to complete a robust assessment of potential impacts and mitigation measures. The intended outcome of this guide is to ensure a consistent approach to completing daylight and sunlight assessments. This guide does not outline exact, city wide, expected results or a suite of results that are likely to be considered acceptable by the planning authority. Proposals will continue to be assessed on a case-by-case basis depending on site specific circumstances and location." "…both BS 8206-2 and BS EN 17037 have relevance. will look to receive relevant metrics from BR 209, BS 8206-2 and BS EN 17037. If, over the coming years, a revised version of BR 209 is to be issued, the guidance within this new version will take precedence."

Urban Development and Building Heights – Guidelines for Planning Authorities (March 2018)

"At the scale of the site/building:

- *The form, massing and height of proposed developments should be carefully modulated so as to maximise access to natural daylight, ventilation and views and minimise overshadowing and loss of light.*
- *Appropriate and reasonable regard should be taken of quantitative performance approaches to daylight provision outlined in guides like the Building Research Establishment's 'Site Layout Planning for Daylight and Sunlight' (2nd edition) or BS 8206-2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting'.*

BR 209 (2022) – Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice (Third Edition)

This document is widely used as a methodology for daylight and sunlight assessments, both for the impact of a new development on its surroundings and for assessment of natural light within proposed buildings. The third edition incorporates BS EN 17037.

BS EN 17037:2018 – Daylight in Buildings

A new, European-wide standard for daylight in buildings was introduced in 2018. The UK National Annex A of BS EN 17037 also gives minimum values for housing, in living rooms, kitchens, and bedrooms. These are minimum recommended values for locations where a predominantly daylit appearance is not achievable; "*for example in basement rooms or with significant external obstructions (perhaps in a dense urban area…)"*

The national annex contains minimum daylight targets for kitchens, living rooms and bedrooms.

Greater London Authority, representation hearing report D&P/3067/03 – Appendix 1, 18/11/2013.

Comments by Greater London Authority (GLA) in the context of a planning appeal have been used as guidance on urban sites in the UK:

"It should, nevertheless, be noted that the 27% VSC target value is derived from a low-density suburban housing model. The independent daylight and sunlight review states that in an inner-city urban environment, VSC values more than 20% should be considered as reasonably good and that VSC in the mid-teens should be acceptable. However, where the VSC value falls below 10% (to be in single figures), the availability of direct light from the sky will be poor."

5.0 CONCLUSION

The proposed development at Crumlin Rafters Road has been assessed both for its impact on natural light at surrounding properties and provision of daylight and sunlight within the proposal itself. In keeping with Dublin City Council's Development Plan (Appendix 16, Draft Dublin City Development Plan 2022 – 2028), the assessment followed 3rd. edition of 'Site layout for daylight and sunlight: a good practice guide' This report has described the design team's development of several iterations of the proposed building's form to reduce the impact on neighbouring properties and increase access to natural light within the development.

This report has described the design team's development of several iterations of the proposed building's form to reduce the impact on neighbouring properties and increase access to natural light within the development.

The results of this study reflect:

- the other constraints on the design e.g., housing density targets, provision of amenity, access, cost, and space requirements for each apartment
- the harmonisation of daylight and energy strategies, considering the heat loss associated with façade openings and the project's DEAP energy obligations.

The proposed development offers 100% dual aspect homes and a residential courtyard.

5.1 Impact on the surroundings

The numerical targets contained within the BRE Guide are, as the Guide states, *"purely advisory and different targets may be used based on the special requirements of the proposed development or its location."* Reference in this report has been made to target VSCs of 27%.

A total of 245 windows, 15 rooms and 34 amenity areas have been assessed. Some of these windows will serve non-habitable rooms and others serve bedrooms which the BRE Guide considers less important. However, due to lack of data it was not possible to identify all of these and hence, in case of uncertainty, these windows were included.

Using this as a basis, the vast majority – 99% - of the surrounding windows tested are compliant with standard BRE daylight guidelines with the proposal in place. When overhangs and whole rooms VSC values are considered, this rises to 100%. All tested rooms passed the no-sky line test. The pass rate for sunlight to windows or rooms is 100%.

The impact to amenity areas around the site is in line with BRE recommendations.

5.2 Performance of the proposed development

Daylight levels: In scenario 1, which has the inclusion of the consented library development in the surroundings, 85% of habitable rooms within the proposal meet the relevant benchmark recommended in the BRE Guide when the KLD rooms are treated as living rooms. This rate slightly increases in scenario 2, which is without the inclusion of the consented development, to 86% of rooms passing. When KLD rooms are treated as kitchens, the pass rate is 77%, regardless of the surroundings.

Sunlight on windows: 95% of apartments satisfy the minimum requirement for sunlight to habitable rooms ("habitable rooms" in this sense only has been taken not to include bedrooms).

Sunlight to amenity areas: 56% of the Crumlin Rafter's Road Courtyard Garden amenity space satisfies the recommendations for amenity sunlight provision (i.e. area over the 2h benchmark). This is greater than the recommended 50% benchmark. The Facility Area does not meet the recommended benchmark. However, the functionality of this space means that it has lower sunlight requirements than the Courtyard Garden.

6.0 APPENDICES

7.0 VSC RESULTS

This appendix gives the calculated values for the VSC for all tested windows. BRE VSC numerical recommendation: 27% proposed VSC and/or ratio 0.8 or above e.g. a window with 21% VSC and Ratio of 0.91 meets the recommendation. The visualisation is as follows:

- Green – The window passes the standard test.
- Yellow – The window either marginal passes or a marginally fails the standard test. Due to the nature of the test, there is slight variation in the results between calculations and therefore and window that has a reduction factor within ±0.005 of 0.80 is categorised as marginal. These windows can be examined on a case-by-case basis. If the proposed VSC for the window is comfortably above 27% then it passes.
- Amber – Window fails the standard test (27%) target but passes the alternative urban target of 15%.
- Magenta – The window either marginally passes or marginally fails the test with the alternative target of 15%.
- Red – The window fails both the standard and the alternative target test.

Unless noted otherwise, the consented neighbouring library development has been included in both the baseline and proposed model.

7.1 6a – 6b Rafter's Lane

Table 7.1-1: VSC summary, 6a-6b Rafter's Lane

Total Windows	6		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
External Impact Test	100.0%	100.0%	16.7%	83.3%	0.0%	0.0%	0.0%

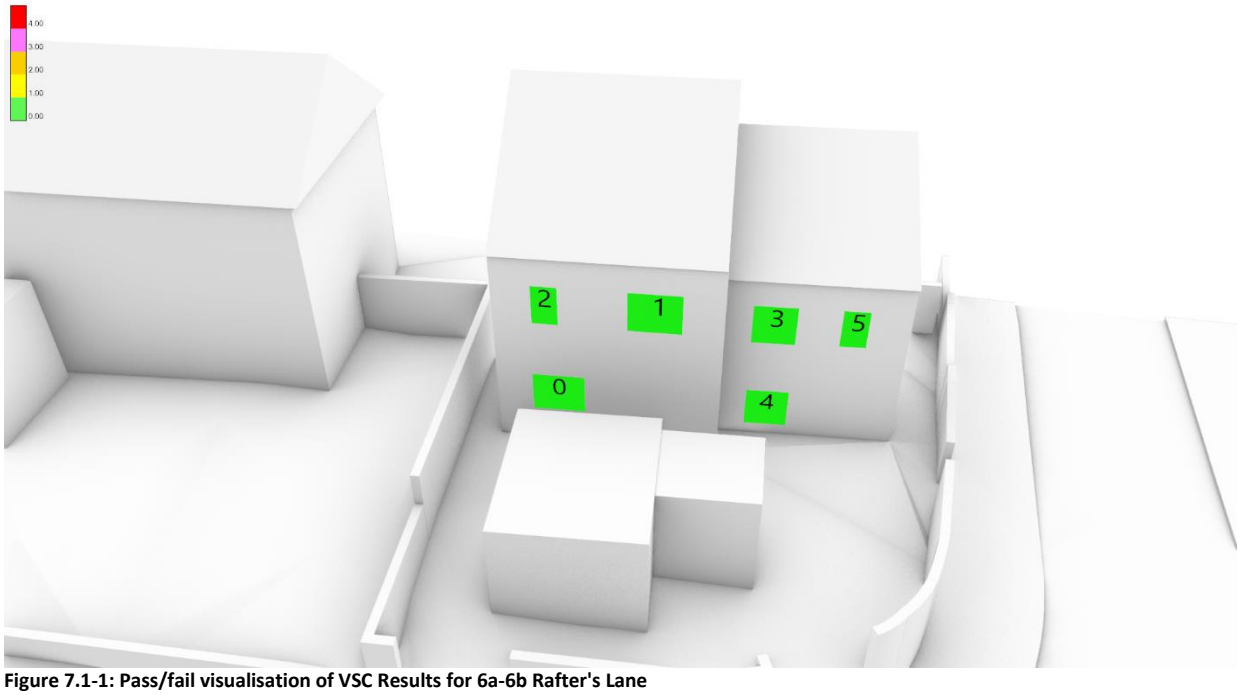


Figure 7.1-1: Pass/fail visualisation of VSC Results for 6a-6b Rafter's Lane

Table 7.1-2: VSC results for 6a-6b Rafter's Lane

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	29.6	28.2	0.95	27	Pass	15	Pass	Negligible
1	36.4	34.3	0.94	27	Pass	15	Pass	Negligible
2	36.6	34.2	0.93	27	Pass	15	Pass	Negligible
3	33.5	31.8	0.95	27	Pass	15	Pass	Negligible
4	27.6	27.6	1.00	27	Pass	15	Pass	None
5	35.6	33.9	0.95	27	Pass	15	Pass	Negligible

7.2 7-11 Rafter's Lane

Table 7.2-1: VSC Summary, 7-11 Rafter's Lane

Total Windows	20		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
External impact test	100.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%

The figure below shows the windows assessed and a reference number for each.

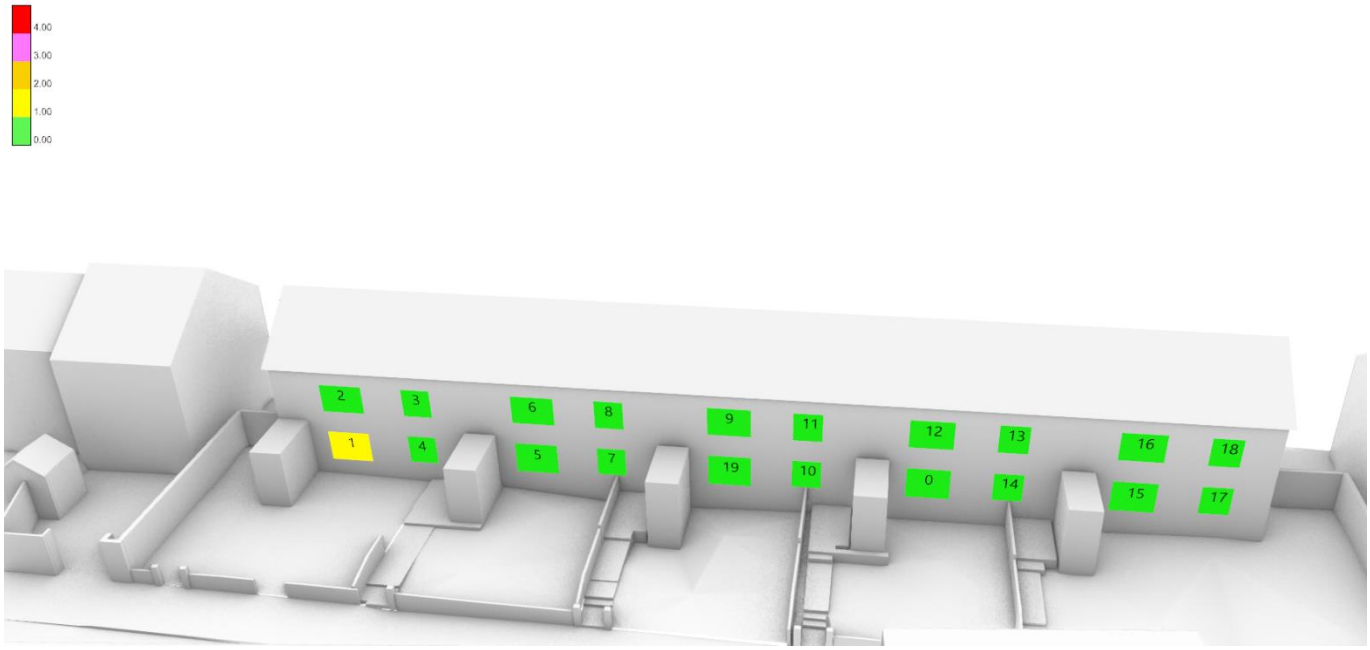


Figure 7.2-1: Pass/fail visualisation of VSC Results for 7-11 Rafter's Lane.

Table 7.2-2: VSC results for 7-11 Rafter's Lane.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	31.9	27.7	0.87	27	Pass	15	Pass	Negligible
1	33.4	26.8	0.80	27	Marginal Pass	15	Pass	Negligible
2	37.9	32.9	0.87	27	Pass	15	Pass	Negligible
3	37.9	32.8	0.87	27	Pass	15	Pass	Negligible
4	34.4	28.3	0.82	27	Pass	15	Pass	Negligible
5	32.7	26.5	0.81	27	Pass	15	Pass	Negligible
6	37.9	32.3	0.85	27	Pass	15	Pass	Negligible
7	34.4	27.5	0.80	27	Pass	15	Pass	Negligible

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
8	37.7	32.4	0.86	27	Pass	15	Pass	Negligible
9	37.7	32.4	0.86	27	Pass	15	Pass	Negligible
10	34.1	27.4	0.80	27	Pass	15	Pass	Negligible
11	37.7	32.5	0.86	27	Pass	15	Pass	Negligible
12	37.5	33.1	0.88	27	Pass	15	Pass	Negligible
13	37.5	33.4	0.89	27	Pass	15	Pass	Negligible
14	33.6	28.6	0.85	27	Pass	15	Pass	Negligible
15	31.7	29.2	0.92	27	Pass	15	Pass	Negligible
16	37.2	33.8	0.91	27	Pass	15	Pass	Negligible
17	35.1	31.8	0.90	27	Pass	15	Pass	Negligible
18	37.2	34.2	0.92	27	Pass	15	Pass	Negligible
19	32.5	26.8	0.82	27	Pass	15	Pass	Negligible

7.3 5-6 Rafter's Lane

Table 7.3-1: VSC Summary, 5-6 Rafter's Lane

Total Windows	6		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
External impact test	100.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%

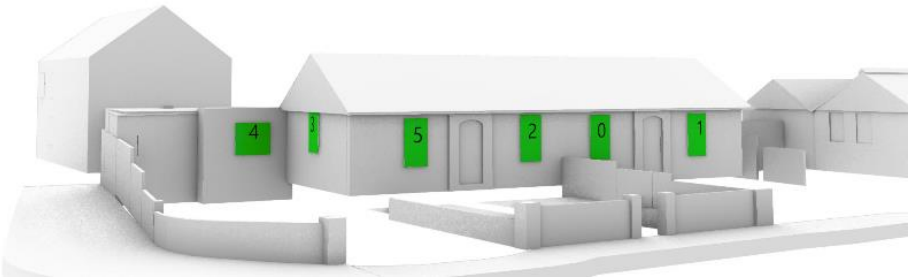


Figure 7.3-1: Pass/fail visualisation of VSC Results for 5-6 Rafter's Lane.

Table 7.3-2: VSC results for 5-6 Rafter's Lane.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	33.2	32.7	0.99	27	Pass	15	Pass	Negligible
1	33.6	33.4	1.00	27	Pass	15	Pass	Negligible
2	32.8	32.2	0.98	27	Pass	15	Pass	Negligible
3	33.7	32.5	0.96	27	Pass	15	Pass	Negligible
4	21.3	20.7	0.97	27	Pass	15	Pass	Negligible
5	31.6	31.6	1.00	27	Pass	15	Pass	Negligible

7.4 11a -11b Rafter's Lane

Table 7.4-1: VSC Summary, 11a -11b Rafter's Lane

Total Windows	8		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
External impact test	100.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%

Figure 7.4-1: Pass/fail visualisation of VSC Results for 11a-11b Rafter's Lane.

Table 7.4-2: VSC results for 11a-11b Rafter's Lane.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	67.6	67.3	1.00	27	Pass	15	Pass	Negligible
1	32.4	30.7	0.95	27	Pass	15	Pass	Negligible
2	36.5	33.4	0.92	27	Pass	15	Pass	Negligible
3	37.9	35.4	0.93	27	Pass	15	Pass	Negligible
4	36.4	33.6	0.92	27	Pass	15	Pass	Negligible
5	38.1	34.5	0.91	27	Pass	15	Pass	Negligible
6	35.9	30.5	0.85	27	Pass	15	Pass	Negligible
7	38.1	34.1	0.89	27	Pass	15	Pass	Negligible

7.5 3-4 Rafter's Road

Table 7.5-1: VSC summary, 3-4 Rafter's Road

Total Windows	6		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
External impact test	100.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%

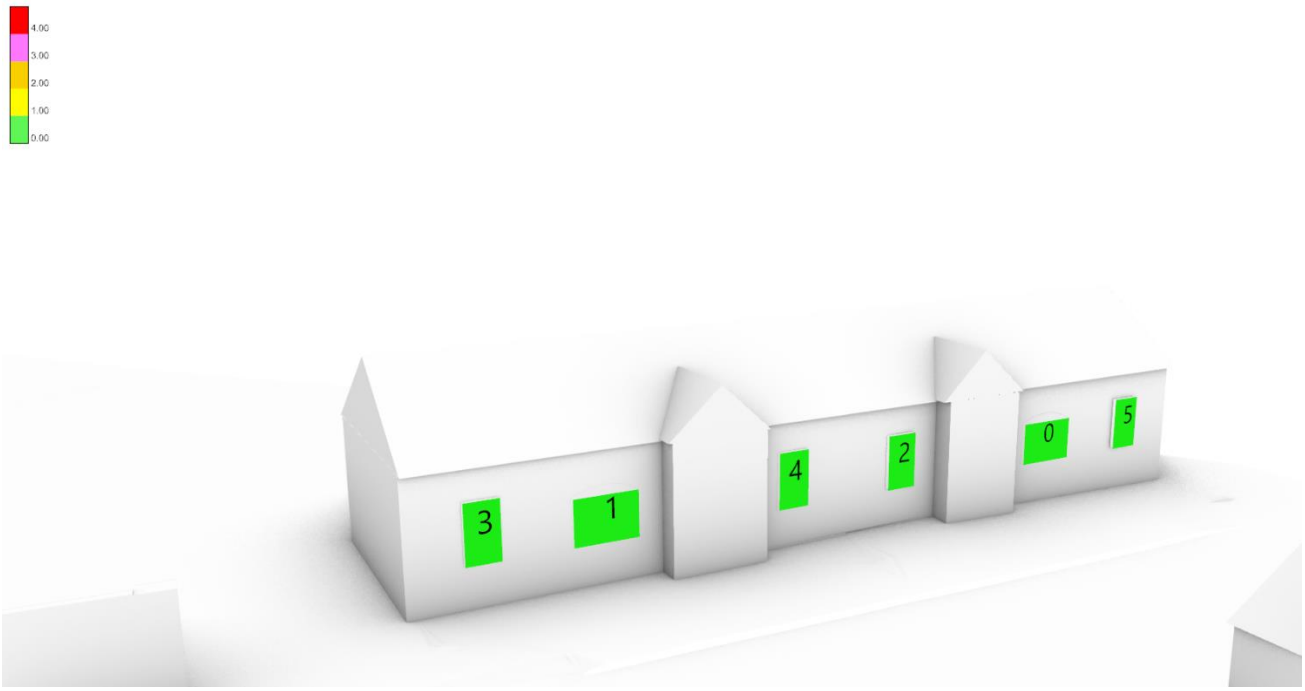


Figure 7.5-1: Pass/fail visualisation of VSC Results for 3-4 Rafter's Road.

Table 7.5-2: VSC results for 3-4 Rafter's Road.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	35.9	34.9	0.97	27	Pass	15	Pass	Negligible
1	35.0	32.9	0.94	27	Pass	15	Pass	Negligible
2	34.8	33.4	0.96	27	Pass	15	Pass	Negligible
3	36.0	33.4	0.93	27	Pass	15	Pass	Negligible
4	34.2	32.8	0.96	27	Pass	15	Pass	Negligible
5	37.0	36.2	0.98	27	Pass	15	Pass	Negligible

7.6 2-2a Rafter's Road

Table 7.6-1: VSC Summary, 2-2a Rafter's Road

Total Windows	4		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
External impact test	100.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%

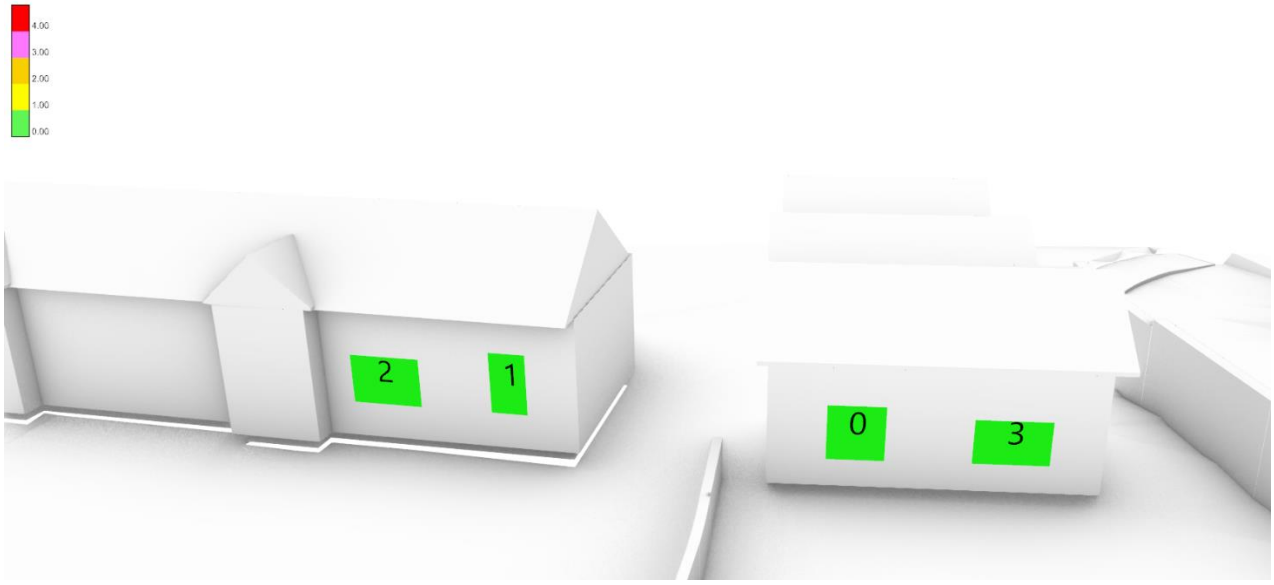


Figure 7.6-1: Pass/fail visualisation of VSC Results for 2-2a Rafter's Road.

Table 7.6-2: VSC results for 2-2a Rafter's Road.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	37.0	35.0	0.94	27	Pass	15	Pass	Negligible
1	35.6	33.5	0.94	27	Pass	15	Pass	Negligible
2	35.0	33.7	0.96	27	Pass	15	Pass	Negligible
3	36.9	34.5	0.94	27	Pass	15	Pass	Negligible

7.7 309-315 Crumlin Road

Table 7.7-1: VSC Summary, 309-315 Crumlin Road

Total Windows	28		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
External impact test	100.0%	100.0%	7.1%	92.9%	0.0%	0.0%	0.0%

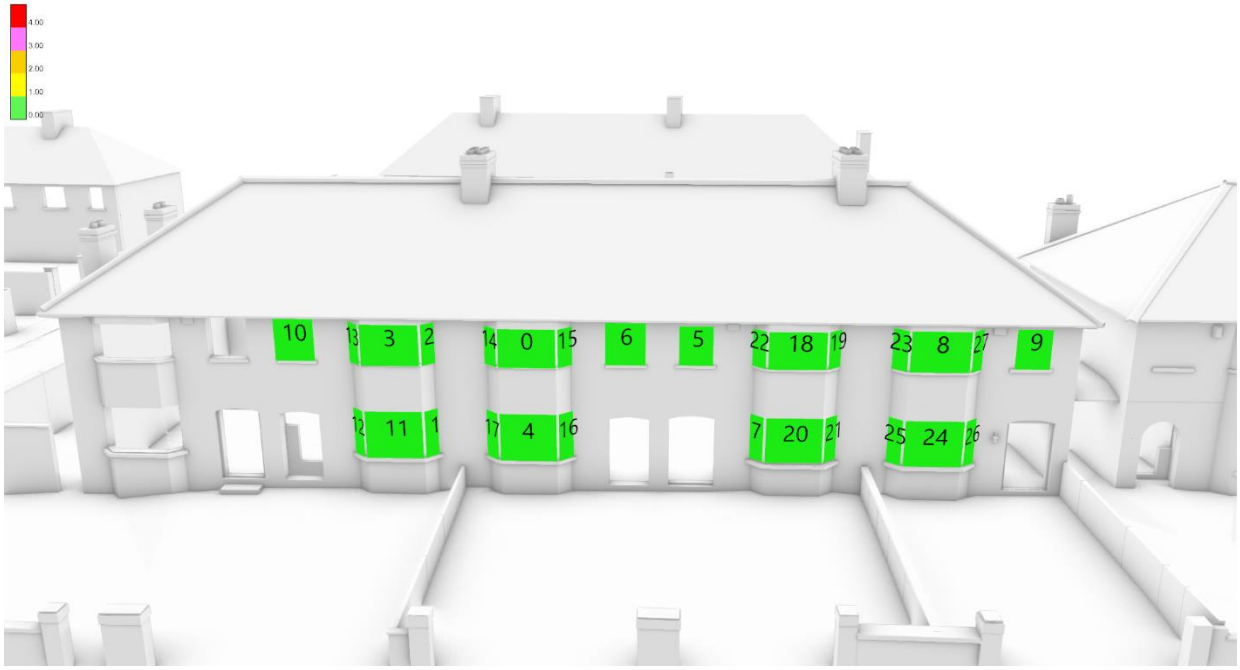


Figure 7.7-1: Pass/fail visualisation of VSC Results for 309-315 Crumlin Road.

Table 7.7-2: VSC results for 309-315 Crumlin Road.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	37.6	36.7	0.98	27	Pass	15	Pass	Negligible
1	29.8	28.4	0.95	27	Pass	15	Pass	Negligible
2	28.3	27.1	0.96	27	Pass	15	Pass	Negligible
3	37.5	36.8	0.98	27	Pass	15	Pass	Negligible
4	36.2	35.1	0.97	27	Pass	15	Pass	Negligible
5	34.6	33.3	0.96	27	Pass	15	Pass	Negligible
6	34.3	33.3	0.97	27	Pass	15	Pass	Negligible

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
7	30.2	30.1	1.00	27	Pass	15	Pass	Negligible
8	37.6	36.0	0.96	27	Pass	15	Pass	Negligible
9	34.6	32.6	0.94	27	Pass	15	Pass	Negligible
10	34.0	33.4	0.98	27	Pass	15	Pass	Negligible
11	36.1	35.2	0.97	27	Pass	15	Pass	Negligible
12	30.5	30.6	1.00	27	Pass	15	Pass	None
13	29.4	29.3	1.00	27	Pass	15	Pass	Negligible
14	29.3	29.3	1.00	27	Pass	15	Pass	None
15	30.1	28.4	0.94	27	Pass	15	Pass	Negligible
16	30.7	28.9	0.94	27	Pass	15	Pass	Negligible
17	30.5	30.3	1.00	27	Pass	15	Pass	Negligible
18	37.7	36.2	0.96	27	Pass	15	Pass	Negligible
19	30.2	28.2	0.93	27	Pass	15	Pass	Negligible
20	36.4	34.7	0.95	27	Pass	15	Pass	Negligible
21	31.6	29.1	0.92	27	Pass	15	Pass	Negligible
22	29.2	28.9	0.99	27	Pass	15	Pass	Negligible
23	29.1	28.9	0.99	27	Pass	15	Pass	Negligible
24	36.4	34.5	0.95	27	Pass	15	Pass	Negligible
25	30.4	30.0	0.99	27	Pass	15	Pass	Negligible
26	32.0	29.1	0.91	27	Pass	15	Pass	Negligible
27	30.2	28.0	0.93	27	Pass	15	Pass	Negligible

7.8 317 – 325 Crumlin Road

Table 7.8-1: VSC Summary, 317-325 Crumlin Road

Total Windows	35		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
External impact test	100.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%

Figure 7.8-1: Pass/fail visualisation of VSC Results for 317-325 Crumlin Road.

Table 7.8-2: VSC results for 317-325 Crumlin Road

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	35.8	33.5	0.94	27	Pass	15	Pass	Negligible
1	30.9	30.4	0.98	27	Pass	15	Pass	Negligible
2	30.9	27.1	0.88	27	Pass	15	Pass	Negligible
3	37.9	35.5	0.94	27	Pass	15	Pass	Negligible
4	30.6	29.7	0.97	27	Pass	15	Pass	Negligible
5	31.3	26.9	0.86	27	Pass	15	Pass	Negligible
6	37.9	35.1	0.92	27	Pass	15	Pass	Negligible

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
7	37.2	32.4	0.87	27	Pass	15	Pass	Negligible
8	31.6	29.8	0.94	27	Pass	15	Pass	Negligible
9	36.8	33.8	0.92	27	Pass	15	Pass	Negligible
10	30.3	27.2	0.90	27	Pass	15	Pass	Negligible
11	30.3	29.9	0.99	27	Pass	15	Pass	Negligible
12	30.4	29.7	0.98	27	Pass	15	Pass	Negligible
13	37.0	33.3	0.90	27	Pass	15	Pass	Negligible
14	30.8	27.3	0.89	27	Pass	15	Pass	Negligible
15	36.3	33.3	0.92	27	Pass	15	Pass	Negligible
16	36.3	32.8	0.90	27	Pass	15	Pass	Negligible
17	38.0	34.3	0.90	27	Pass	15	Pass	Negligible
18	31.1	27.2	0.87	27	Pass	15	Pass	Negligible
19	30.9	26.0	0.84	27	Pass	15	Pass	Negligible
20	38.1	33.9	0.89	27	Pass	15	Pass	Negligible
21	37.3	32.0	0.86	27	Pass	15	Pass	Negligible
22	36.6	32.2	0.88	27	Pass	15	Pass	Negligible
23	31.3	27.1	0.86	27	Pass	15	Pass	Negligible
24	31.3	29.1	0.93	27	Pass	15	Pass	Negligible
25	31.7	26.3	0.83	27	Pass	15	Pass	Negligible
26	30.8	29.6	0.96	27	Pass	15	Pass	Negligible
27	31.0	29.5	0.95	27	Pass	15	Pass	Negligible
28	36.6	31.9	0.87	27	Pass	15	Pass	Negligible
29	38.1	33.1	0.87	27	Pass	15	Pass	Negligible
30	37.3	31.1	0.83	27	Pass	15	Pass	Negligible
31	31.0	25.4	0.82	27	Pass	15	Pass	Negligible
32	30.1	25.7	0.85	27	Pass	15	Pass	Negligible
33	31.4	29.1	0.93	27	Pass	15	Pass	Negligible
34	31.5	28.4	0.90	27	Pass	15	Pass	Negligible

7.9 327 – 331 Crumlin Road

Table 7.9-1: VSC Summary, 327-331 Crumlin Road

Total Windows	21		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
External impact test	100.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%

Figure 7.9-1: Pass/fail visualisation of VSC Results for 327-331 Crumlin Road.

Table 7.9-2: VSC results for 327-331 Crumlin Road.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	32.1	27.7	0.86	27	Pass	15	Pass	Negligible
1	31.1	26.9	0.86	27	Pass	15	Pass	Negligible
2	37.6	30.5	0.81	27	Pass	15	Pass	Negligible
3	35.1	29.4	0.84	27	Pass	15	Pass	Negligible
4	31.2	27.3	0.87	27	Pass	15	Pass	Negligible
5	37.6	30.7	0.82	27	Pass	15	Pass	Negligible
6	33.2	27.8	0.84	27	Pass	15	Pass	Negligible
7	29.9	26.4	0.88	27	Pass	15	Pass	Negligible
8	38.3	32.8	0.86	27	Pass	15	Pass	Negligible
9	29.7	25.1	0.85	27	Pass	15	Pass	Negligible

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
10	31.1	25.7	0.83	27	Pass	15	Pass	Negligible
11	30.3	26.7	0.88	27	Pass	15	Pass	Negligible
12	38.3	32.6	0.85	27	Pass	15	Pass	Negligible
13	31.0	26.8	0.86	27	Pass	15	Pass	Negligible
14	31.9	26.6	0.84	27	Pass	15	Pass	Negligible
15	38.2	32.6	0.85	27	Pass	15	Pass	Negligible
16	37.5	30.5	0.81	27	Pass	15	Pass	Negligible
17	31.7	26.7	0.84	27	Pass	15	Pass	Negligible
18	32.2	27.2	0.84	27	Pass	15	Pass	Negligible
19	31.9	28.1	0.88	27	Pass	15	Pass	Negligible
20	35.8	30.4	0.85	27	Pass	15	Pass	Negligible

7.10 333 – 343 Crumlin Road

Table 7.10-1: VSC Summary, 333-343 Crumlin Road

Total Windows	42		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
Impact Test	100.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%

Figure 7.10-1: Pass/fail visualisation of VSC Results for 333-343 Crumlin Road.

Table 7.10-2: VSC results for 333-343 Crumlin Road.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	35.9	31.5	0.88	27	Pass	15	Pass	Negligible
1	30.4	25.6	0.84	27	Pass	15	Pass	Negligible
2	30.1	26.2	0.87	27	Pass	15	Pass	Negligible
3	31.6	28.9	0.92	27	Pass	15	Pass	Negligible
4	30.8	28.5	0.93	27	Pass	15	Pass	Negligible
5	38.5	33.9	0.88	27	Pass	15	Pass	Negligible
6	38.0	32.0	0.84	27	Pass	15	Pass	Negligible
7	38.5	33.6	0.87	27	Pass	15	Pass	Negligible

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
8	38.0	31.5	0.83	27	Pass	15	Pass	Negligible
9	38.1	33.5	0.88	27	Pass	15	Pass	Negligible
10	30.9	29.1	0.94	27	Pass	15	Pass	Negligible
11	30.5	29.2	0.96	27	Pass	15	Pass	Negligible
12	30.7	27.4	0.89	27	Pass	15	Pass	Negligible
13	30.0	26.9	0.90	27	Pass	15	Pass	Negligible
14	30.4	26.4	0.87	27	Pass	15	Pass	Negligible
15	36.5	33.7	0.92	27	Pass	15	Pass	Negligible
16	37.0	34.3	0.93	27	Pass	15	Pass	Negligible
17	38.7	36.5	0.94	27	Pass	15	Pass	Negligible
18	31.8	28.4	0.89	27	Pass	15	Pass	Negligible
19	31.0	28.6	0.92	27	Pass	15	Pass	Negligible
20	38.3	35.8	0.93	27	Pass	15	Pass	Negligible
21	35.7	30.6	0.86	27	Pass	15	Pass	Negligible
22	31.4	27.4	0.87	27	Pass	15	Pass	Negligible
23	31.8	27.0	0.85	27	Pass	15	Pass	Negligible
24	30.5	27.2	0.89	27	Pass	15	Pass	Negligible
25	29.9	27.3	0.91	27	Pass	15	Pass	Negligible
26	35.4	31.9	0.90	27	Pass	15	Pass	Negligible
27	39.0	35.5	0.91	27	Pass	15	Pass	Negligible
28	31.4	27.0	0.86	27	Pass	15	Pass	Negligible
29	38.2	34.2	0.90	27	Pass	15	Pass	Negligible
30	38.8	35.7	0.92	27	Pass	15	Pass	Negligible
31	31.3	30.2	0.97	27	Pass	15	Pass	Negligible
32	32.0	30.7	0.96	27	Pass	15	Pass	Negligible
33	38.3	35.4	0.92	27	Pass	15	Pass	Negligible
34	31.7	30.9	0.98	27	Pass	15	Pass	Negligible
35	31.8	31.2	0.98	27	Pass	15	Pass	Negligible
36	31.5	28.7	0.91	27	Pass	15	Pass	Negligible
37	38.7	36.8	0.95	27	Pass	15	Pass	Negligible
38	30.9	27.7	0.90	27	Pass	15	Pass	Negligible
39	32.3	31.9	0.99	27	Pass	15	Pass	Negligible
40	32.7	32.2	0.99	27	Pass	15	Pass	Negligible
41	37.2	35.5	0.96	27	Pass	15	Pass	Negligible

7.11 345-349 Crumlin Road

Table 7.11-1: VSC Summary, 345-349 Crumlin Road

Total Windows	21		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
Impact test	100.0%	100.0%	4.8%	95.2%	0.0%	0.0%	0.0%

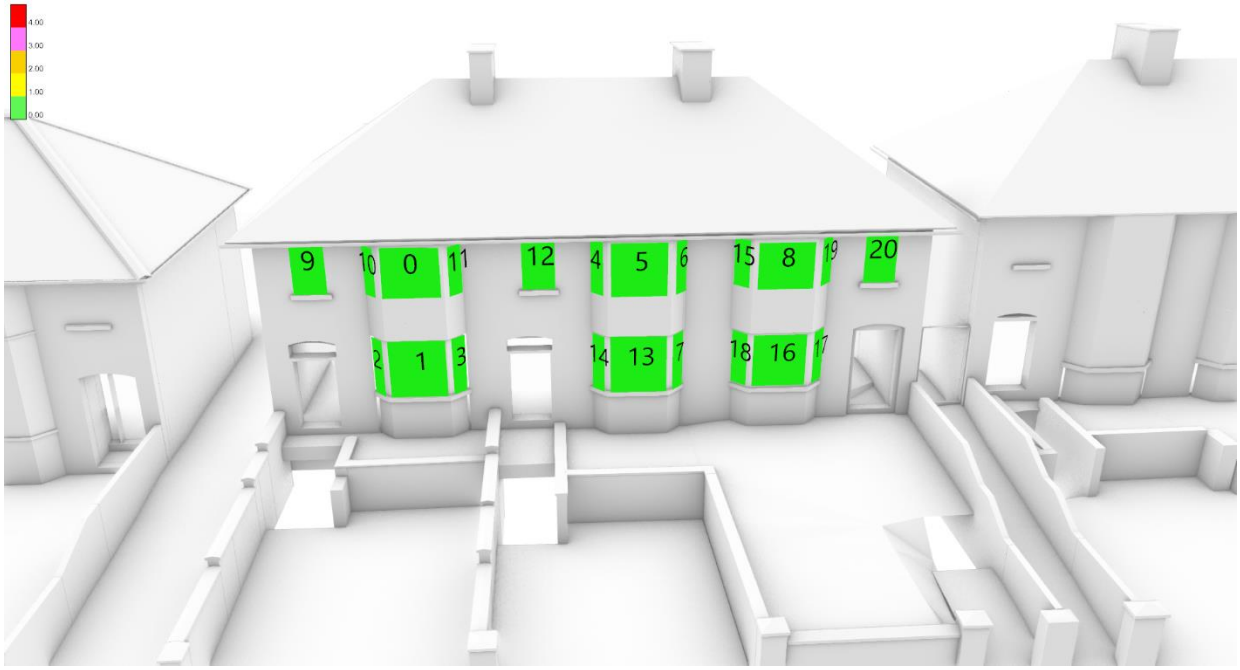


Figure 7.11-1: Pass/fail visualisation of VSC Results for 345-349 Crumlin Road.

Table 7.11-2: VSC results for 345-349 Crumlin Road.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	41.9	40.7	0.97	27	Pass	15	Pass	Negligible
1	38.5	37.0	0.96	27	Pass	15	Pass	Negligible
2	32.6	30.5	0.93	27	Pass	15	Pass	Negligible
3	32.4	32.1	0.99	27	Pass	15	Pass	Negligible
4	30.7	29.6	0.96	27	Pass	15	Pass	Negligible
5	38.8	37.9	0.98	27	Pass	15	Pass	Negligible
6	31.0	31.0	1.00	27	Pass	15	Pass	Negligible
7	31.3	31.3	1.00	27	Pass	15	Pass	None
8	38.8	38.1	0.98	27	Pass	15	Pass	Negligible
9	36.1	34.7	0.96	27	Pass	15	Pass	Negligible
10	31.5	30.0	0.95	27	Pass	15	Pass	Negligible
11	30.7	30.6	1.00	27	Pass	15	Pass	Negligible

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
12	36.4	35.4	0.97	27	Pass	15	Pass	Negligible
13	39.2	38.0	0.97	27	Pass	15	Pass	Negligible
14	31.8	30.1	0.94	27	Pass	15	Pass	Negligible
15	31.6	30.5	0.96	27	Pass	15	Pass	Negligible
16	38.5	37.5	0.97	27	Pass	15	Pass	Negligible
17	32.0	31.9	1.00	27	Pass	15	Pass	Negligible
18	31.9	30.4	0.95	27	Pass	15	Pass	Negligible
19	31.4	31.2	0.99	27	Pass	15	Pass	Negligible
20	36.8	36.2	0.98	27	Pass	15	Pass	Negligible

7.12 351 – 353 Crumlin Road

Table 7.12-1: VSC Summary, 351-353 Crumlin Road

Total Windows	14		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
Impact test	100.0%	100.0%	14.3%	85.7%	0.0%	0.0%	0.0%

Figure 7.12-1: Pass/fail visualisation of VSC Results for 351-353 Crumlin Road.

Table 7.12-2: VSC results for 351-353 Crumlin Road.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	31.4	30.3	0.96	27	Pass	15	Pass	Negligible
1	38.8	38.4	0.99	27	Pass	15	Pass	Negligible
2	31.4	31.5	1.00	27	Pass	15	Pass	None
3	32.2	31.0	0.96	27	Pass	15	Pass	Negligible
4	36.0	35.5	0.99	27	Pass	15	Pass	Negligible
5	38.9	38.3	0.99	27	Pass	15	Pass	Negligible
6	38.4	37.8	0.98	27	Pass	15	Pass	Negligible
7	30.7	30.7	1.00	27	Pass	15	Pass	None
8	29.5	29.4	1.00	27	Pass	15	Pass	Negligible
9	38.4	37.9	0.99	27	Pass	15	Pass	Negligible

10	32.4	32.4	1.00	27	Pass	15	Pass	Negligible
11	36.2	35.7	0.99	27	Pass	15	Pass	Negligible
12	30.5	29.7	0.97	27	Pass	15	Pass	Negligible
13	31.1	30.2	0.97	27	Pass	15	Pass	Negligible

7.13 310 Crumlin Road

Table 7.13-1: VSC Summary, 310 Crumlin Road

Total Windows	7		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
Impact test	100.0%	100.0%	14.3%	85.7%	0.0%	0.0%	0.0%

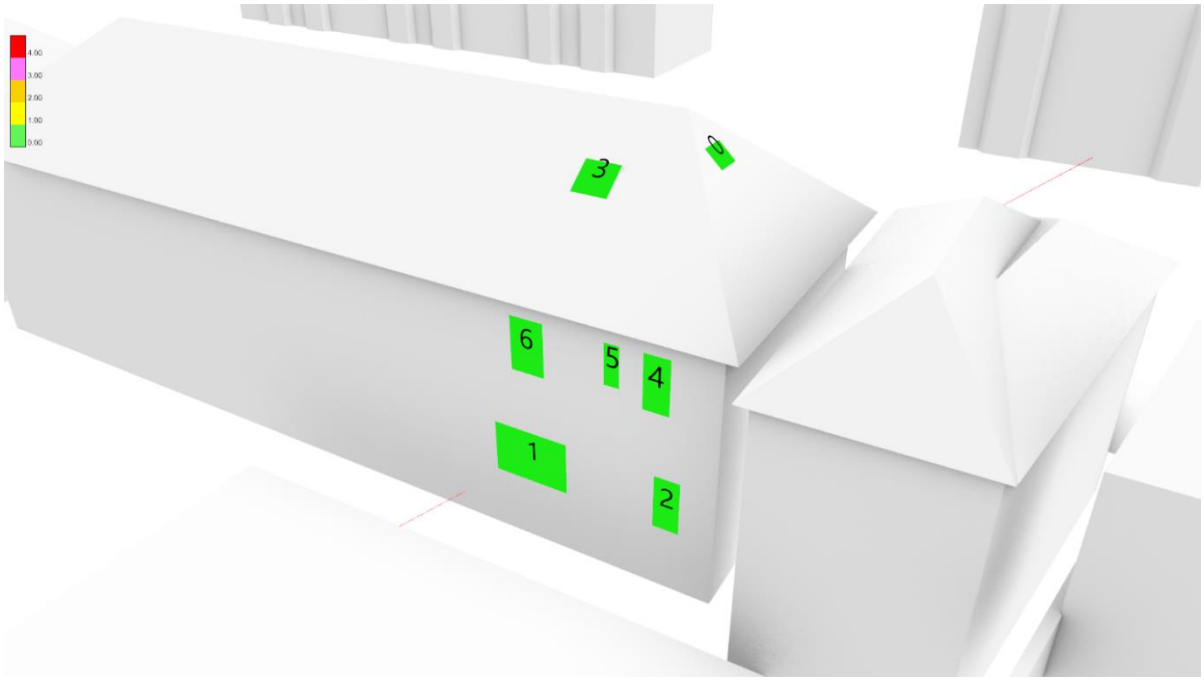


Figure 7.13-1: Pass/fail visualisation of VSC Results for 310 Crumlin Road.

Table 7.13-2: VSC results for 310 Crumlin Road.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	79.8	79.0	0.99	27	Pass	15	Pass	Negligible
1	34.4	34.3	1.00	27	Pass	15	Pass	Negligible
2	31.4	31.3	1.00	27	Pass	15	Pass	Negligible
3	83.7	83.5	1.00	27	Pass	15	Pass	Negligible
4	34.6	34.8	1.01	27	Pass	15	Pass	None
5	35.3	35.0	0.99	27	Pass	15	Pass	Negligible
6	35.9	35.9	1.00	27	Pass	15	Pass	Negligible

7.14 312 Crumlin Road

Table 7.14-1: VSC summary, 312 Crumlin Road

Total Windows	4		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
Test 1	100.0%	100.0%	50.0%	50.0%	0.0%	0.0%	0.0%

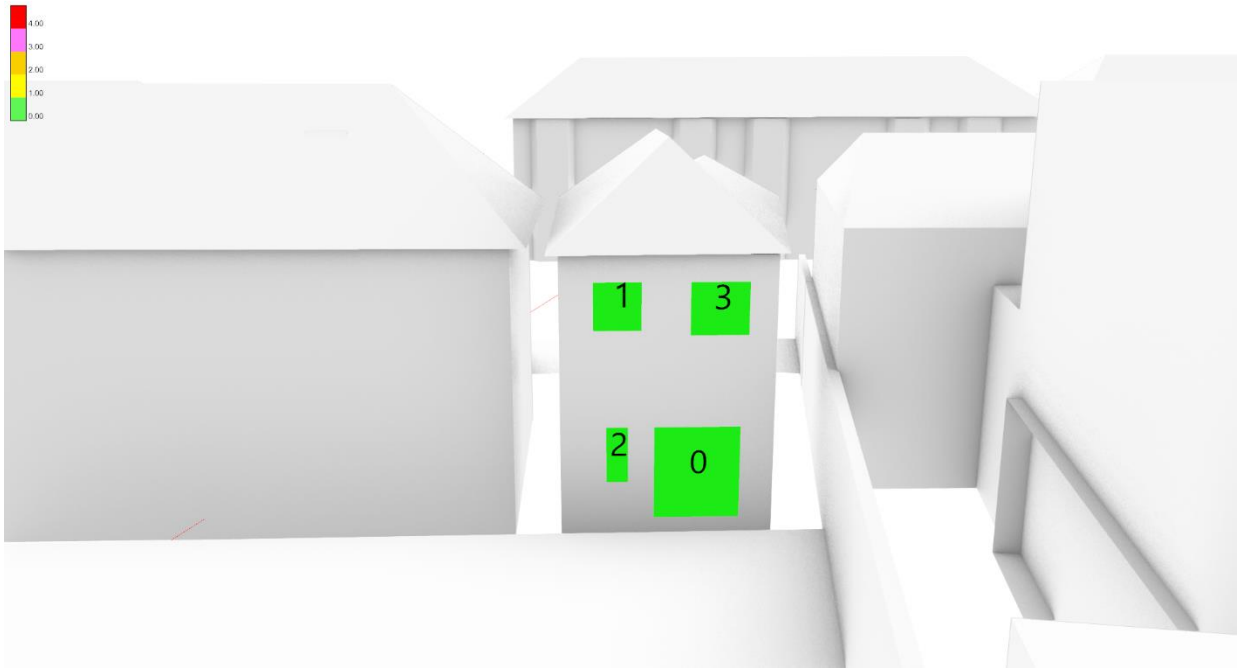


Figure 7.14-1: Pass/fail visualisation of VSC Results for 312 Crumlin Road.

Table 7.14-2: VSC results for 312 Crumlin Road.

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	26.8	26.9	1.00	27	Pass	15	Pass	None
1	33.5	33.3	0.99	27	Pass	15	Pass	Negligible
2	29.5	29.5	1.00	27	Pass	15	Pass	None
3	31.4	31.3	1.00	27	Pass	15	Pass	Negligible

7.15 Consented Neighbouring Library Development

The consented neighbouring library development can be broken down into two sections: the new library building and the redeveloped school building at 318 Crumlin Road

318 Crumlin Road

Total Windows	8		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
Impact test	100.0%	100.0%	12.5%	87.5%	0.0%	0.0%	0.0%

North View of 318 Crumlin Road

South View of 318 Crumlin Road

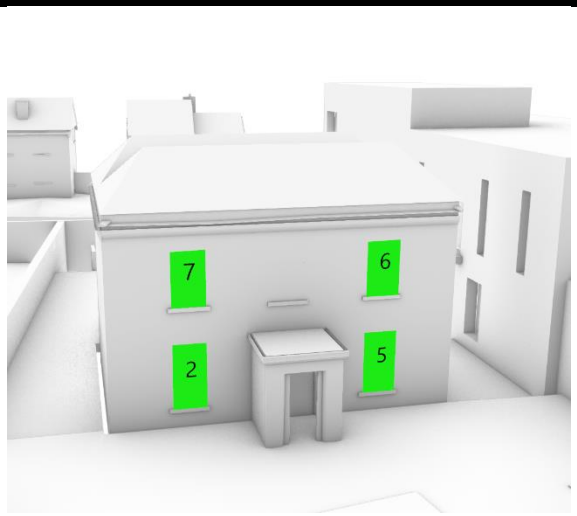


Figure 7.15-1: Pass/fail visualisation of VSC Results for 318 Crumlin Road.

Table 7.15-1: VSC results for 318 Crumlin Road.

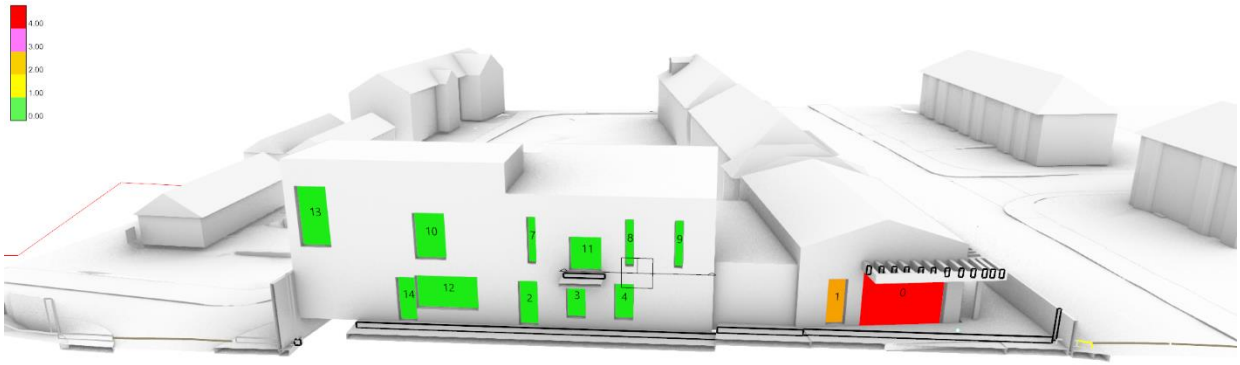
Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	19.5	19.7	1.01	27	Pass	15	Pass	None
1	19.1	15.7	0.82	27	Pass	15	Pass	Negligible
2	19.1	15.8	0.83	27	Pass	15	Pass	Negligible
3	35.6	33.4	0.94	27	Pass	15	Pass	Negligible
4	32.6	31.6	0.97	27	Pass	15	Pass	Negligible
5	32.9	29.8	0.91	27	Pass	15	Pass	Negligible
6	36.6	34.0	0.93	27	Pass	15	Pass	Negligible
7	36.8	31.2	0.85	27	Pass	15	Pass	Negligible

New Library Building – Summary

Table 7.15-2:VSC pass rate for the new library building, summary of options (with and without overhangs)

Total Windows	15		Impact Classification				
Scenario	Pass Rate - Standard Target (%)	Pass rate - Alternative Target (%)	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
With overhang shading	86.7%	93.3%	20.0%	66.7%	13.3%	0.0%	0.0%
Without overhang shading	93.3%	100.0%	20.0%	73.3%	6.7%	0.0%	0.0%

New Library Building – With overhangs



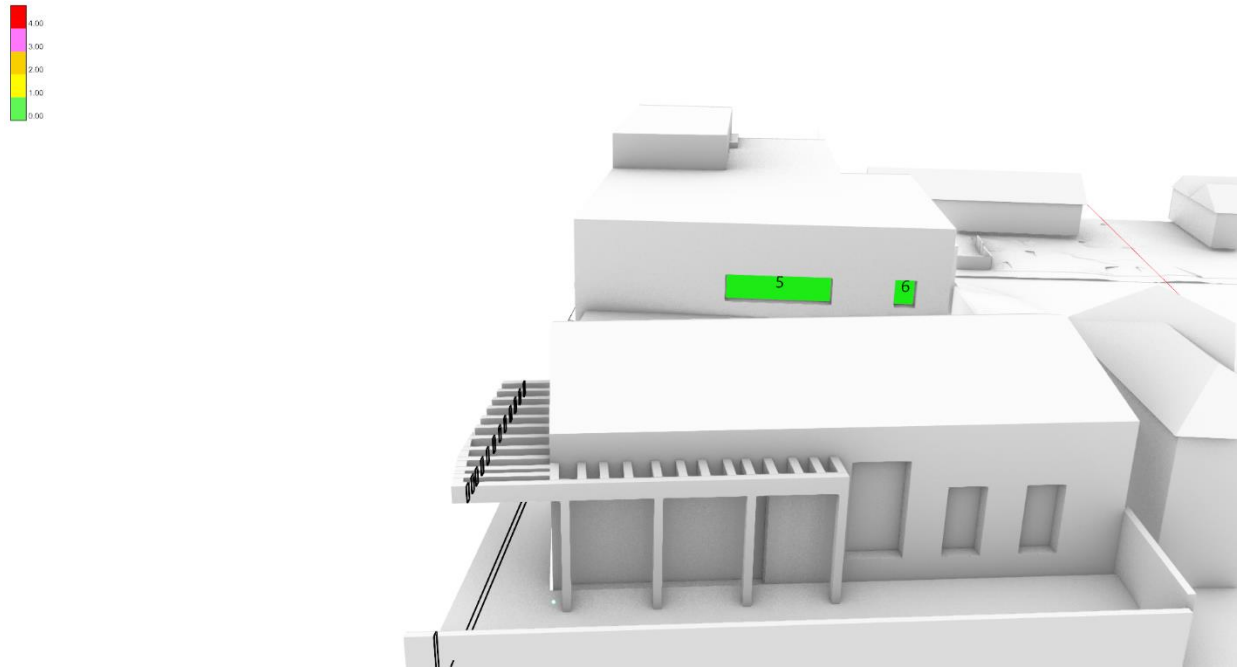


Figure 7.15-2: Pass/fail visualisation of VSC Results for the new library building (with overhangs).

Table 7.15-3: VSC results for the new library building (with overhangs).

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	16.6	11.7	0.71	27	Fail	15	Fail	Minor
1	24.3	18.6	0.77	27	Fail	15	Pass	Minor
2	17.9	17.3	0.97	27	Pass	15	Pass	Negligible
3	6.7	6.8	1.00	27	Pass	15	Pass	None
4	5.5	5.8	1.05	27	Pass	15	Pass	None
5	26.3	25.6	0.97	27	Pass	15	Pass	Negligible
6	21.0	20.9	1.00	27	Pass	15	Pass	Negligible
7	19.8	17.5	0.88	27	Pass	15	Pass	Negligible
8	12.4	12.5	1.00	27	Pass	15	Pass	None
9	13.3	12.7	0.95	27	Pass	15	Pass	Negligible
10	33.3	29.9	0.90	27	Pass	15	Pass	Negligible
11	21.3	20.4	0.96	27	Pass	15	Pass	Negligible
12	27.1	25.3	0.93	27	Pass	15	Pass	Negligible
13	35.0	32.6	0.93	27	Pass	15	Pass	Negligible
14	25.5	24.1	0.95	27	Pass	15	Pass	Negligible

New Library Building – No Overhangs

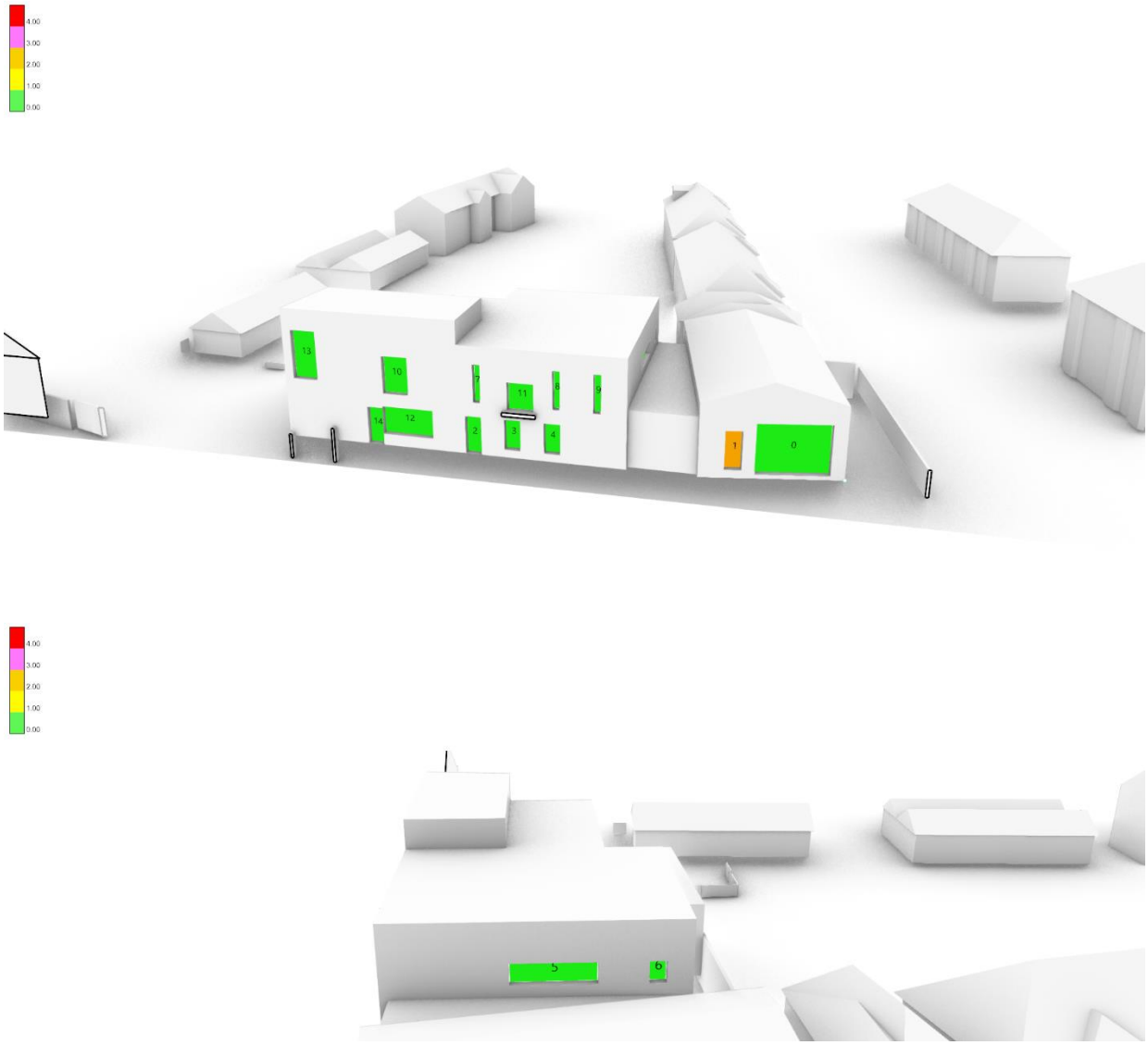


Figure 7.15-3: Pass/fail visualisation of VSC Results for the new library building (no overhangs).

Table 7.15-4: VSC results for the new library building (no overhangs).

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
0	34.0	28.2	0.83	27	Pass	15	Pass	Negligible
1	28.6	22.5	0.79	27	Fail	15	Pass	Minor
2	18.4	17.7	0.96	27	Pass	15	Pass	Negligible
3	7.0	6.9	0.98	27	Pass	15	Pass	Negligible
4	5.6	5.7	1.02	27	Pass	15	Pass	None
5	26.2	25.7	0.98	27	Pass	15	Pass	Negligible
6	21.0	21.1	1.00	27	Pass	15	Pass	None
7	19.8	17.3	0.87	27	Pass	15	Pass	Negligible

Window Ref	Baseline VSC (%)	Proposed VSC (%)	Ratio	VSC Target (%)	Pass/Fail	Alternative VSC Target (%)	Pass/Fail Alternative Target	Window Impact Classification
8	12.4	12.5	1.01	27	Pass	15	Pass	None
9	13.2	12.5	0.95	27	Pass	15	Pass	Negligible
10	33.3	30.1	0.90	27	Pass	15	Pass	Negligible
11	21.5	20.6	0.96	27	Pass	15	Pass	Negligible
12	28.1	25.2	0.90	27	Pass	15	Pass	Negligible
13	35.2	32.6	0.93	27	Pass	15	Pass	Negligible
14	26.5	23.9	0.90	27	Pass	15	Pass	Negligible

New Library Building – Weighted VSC for the Children's Library

Table 7.15-5: Summary table of weighted VSC for children's library

Children's Library	
Weighted VSC Existing (%)	20.21
Weighted VSC Proposed (%)	18.10
Ratio	0.90

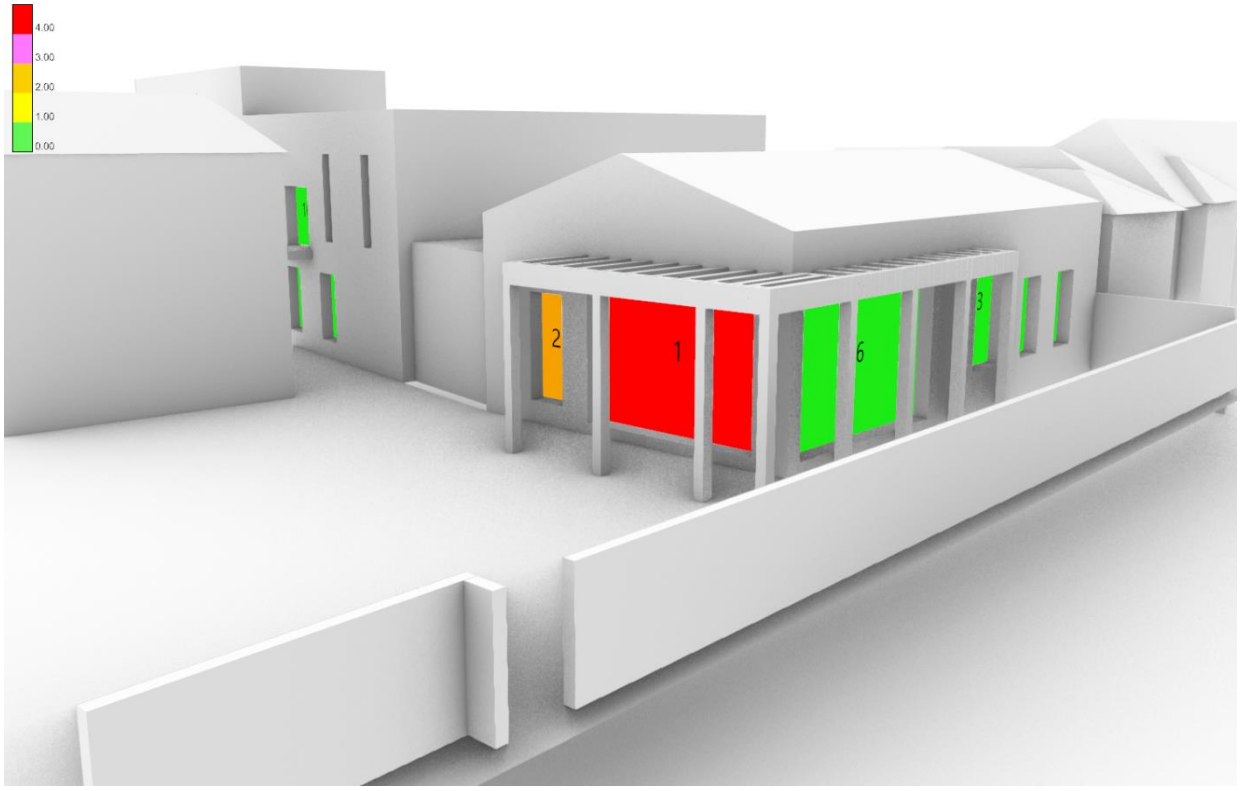


Figure 7.15-4: Window references for weighted VSC, children's library.

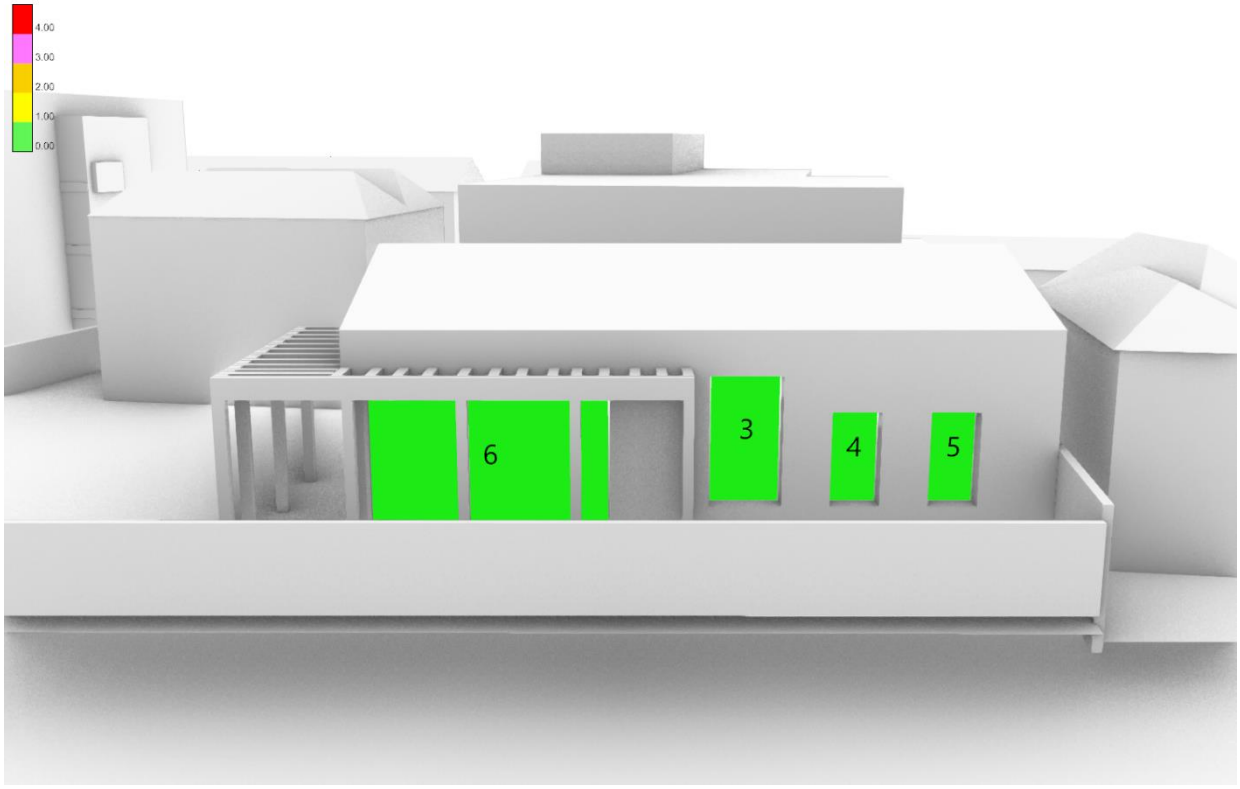


Figure 7.15-5: Window references for weighted VSC, children's library.

Table 7.15-6: VSC data for weighted VSC calculation, children's library

Windows	Area (m^2)	VSC Existing (%)	VSC Area existing (m^2)	VSC Proposed (%)	VSC Area Proposed (m^2)
1	19.85	16.81	333.66	11.58	229.99
2	3.27	24.46	80.00	18.57	60.71
3	5.45	27.86	151.72	28.08	152.93
4	2.59	27.19	70.51	27.31	70.80
5	2.59	27.25	70.65	27.28	70.74
6	21.92	19.10	418.58	19.28	422.46
Total	**55.67**		**1125.11**		**1007.63**

8.0 NO-SKY LINE

No-Sky Lines (NSL) have been calculated for the locations listed below. These were the only locations for which reliable plans were obtained.

- 335 Crumlin Road
- Proposed Neighbouring Library Development
    - 318 Crumlin Road
    - New Library Building

NSLs were calculated for habitable rooms facing the proposed building.

8.1 335 Crumlin Road

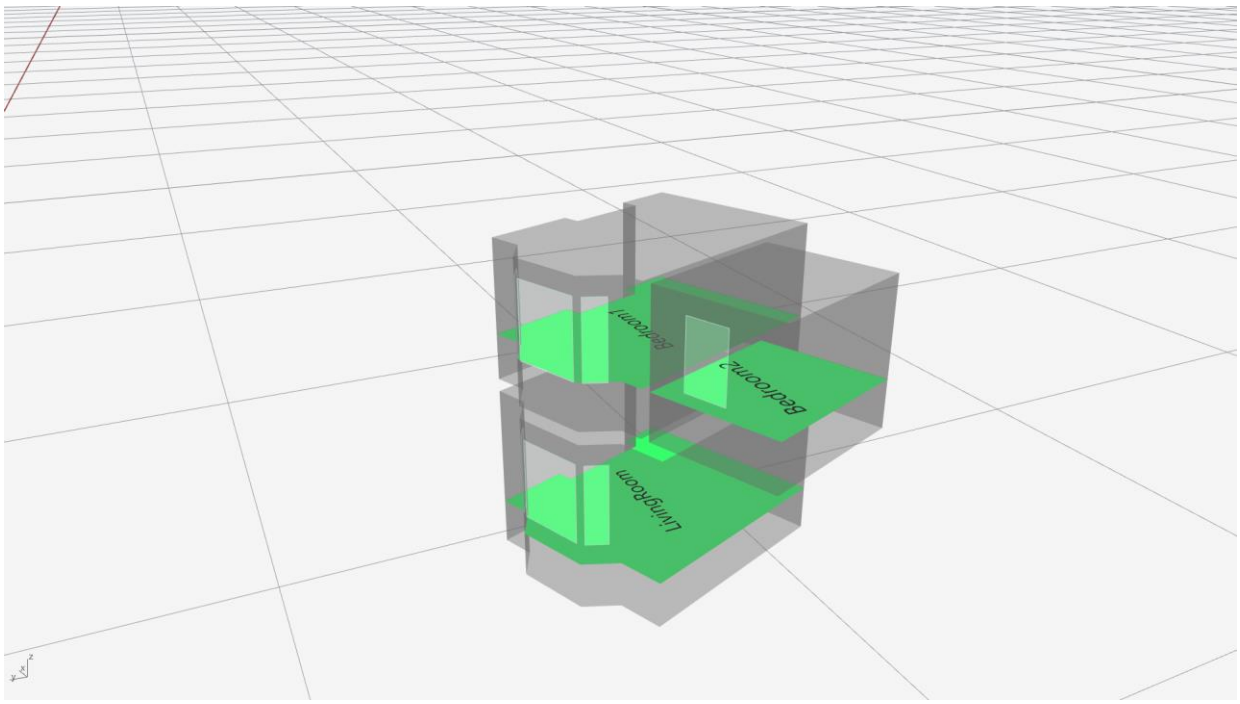


Figure 8.1-1: Pass-fail visualisation, No sky line, 335 Crumlin Road

Table 8.1-1: No Sky line data, 335 Crumlin Road

Room ID	Room Area (m^2)	Sky View Existing (%)	Sky View Proposed (%)	Reduction Factor	Pass/ Fail
Living Room	14.368	98.99	98.99	1.00	Pass
Bedroom1	13.307	99.35	98.97	1.00	Pass
Bedroom2	6.1223	88.11	88.11	1.00	Pass

8.2 Proposed Neighbouring Library Development

318 Crumlin Road

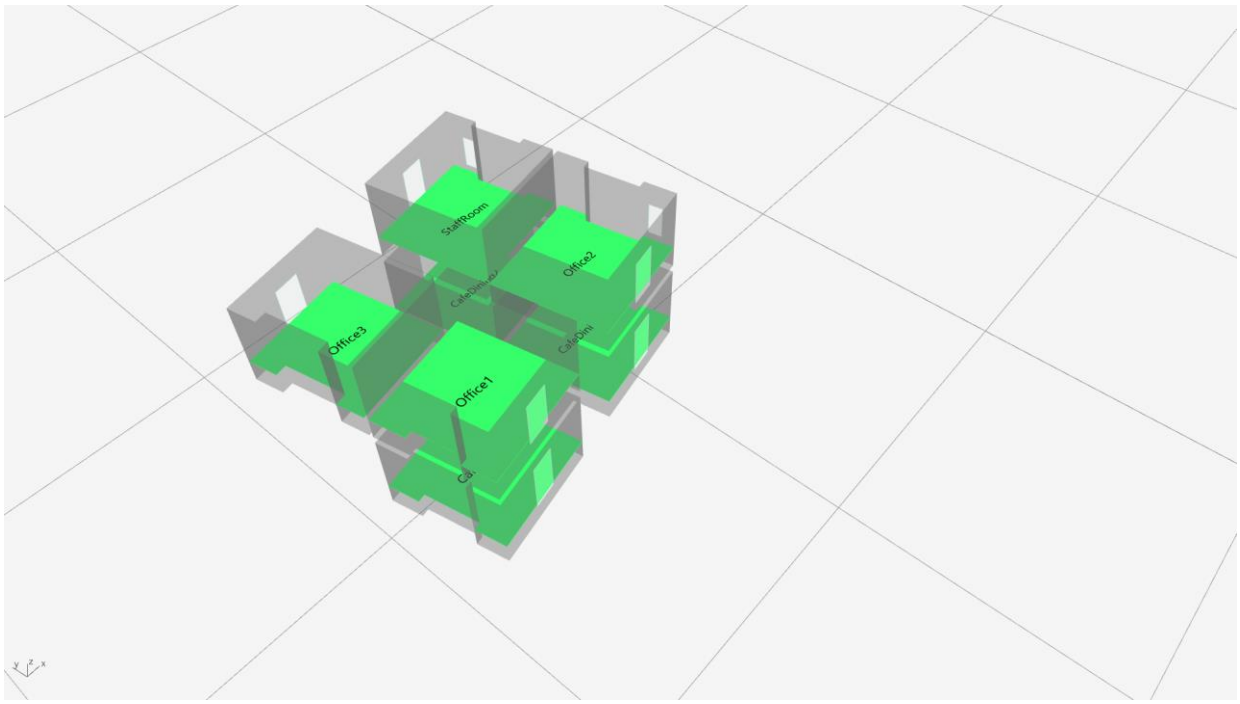


Figure 8.2-1: No sky line pass-fail visualisation, 318 Crumlin Road

Table 8.2-1: No sky line data, 318 Crumlin Road

Room ID	Room Area (m^2)	Sky View Existing (%)	Sky View Proposed (%)	Reduction Factor	Pass/ Fail
Office1	17.98	93.90	83.30	0.89	Pass
Office3	15.25	94.05	94.20	1.00	Pass
Café Servery	17.95	93.92	84.15	0.90	Pass
CafeDining1	17.95	93.65	92.04	0.98	Pass
CafeDining2	17.60	77.35	75.54	0.98	Pass
Office2	17.95	96.06	95.44	0.99	Pass
Staff Room	17.60	94.32	95.35	1.01	Pass

New Library Building

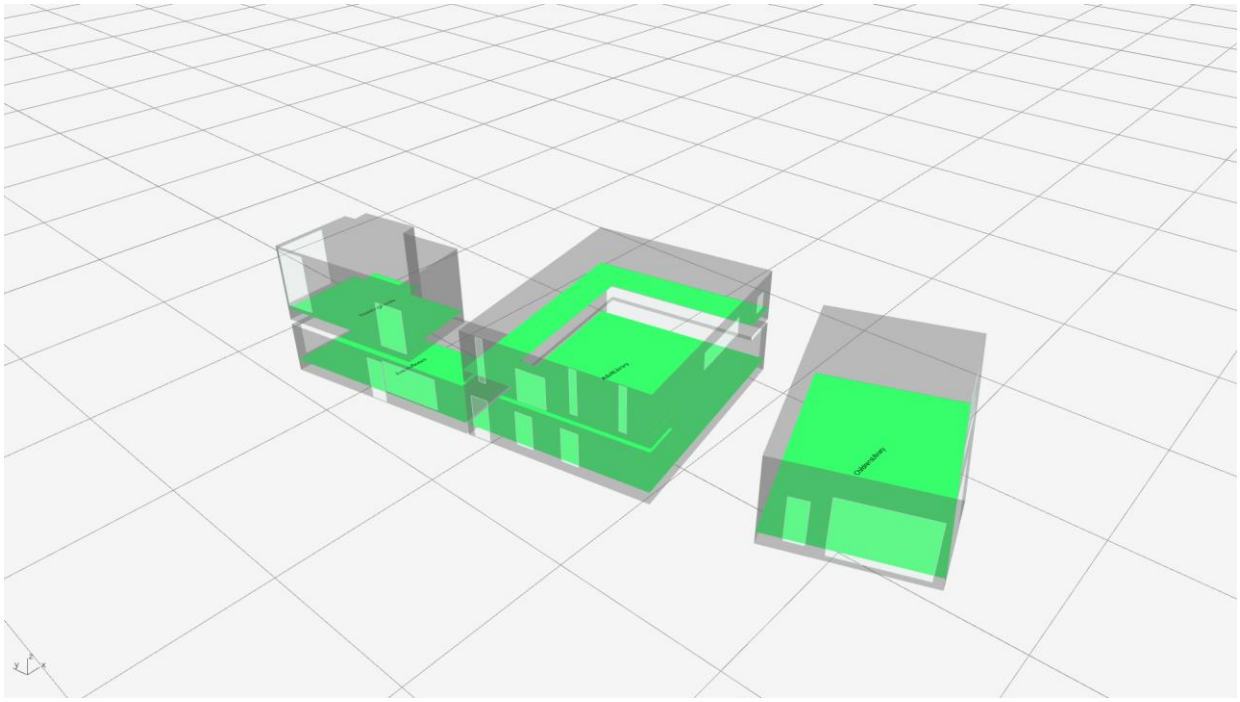


Figure 8.2-2: Pass-fail visualisation for no-sky line, new library building.

Table 8.2-2: No-sky line data, new library building

Room ID	Room Area (m^2)	Sky View Existing (%)	Sky View Proposed (%)	Reduction Factor	Pass/ Fail
Adult Library	262.52	98.73	97.69	0.99	Pass
Reading Room	51.47	100.00	100.00	1.00	Pass
Events Room	75.91	99.57	99.62	1.00	Pass
Children's Library	143.37	100.00	99.66	1.00	Pass

9.0 APSH AND WPSH

Results for windows known to serve circulation spaces or non-habitable spaces have been omitted. Windows that do not face within 90° of due south have also been omitted, as it is not expected for these windows to receive direct sunlight.

BRE APSH/WPSH: The recommendation for a room to appear adequately sunlit is for it to receive 25% of annual probable sunlight hours, including at least 5% of winter probable sunlight hours. It is recommended that reduction in sunlight access below these levels be kept to a minimum. If the available sunlight hours are both less than the percentages stated above, less than 0.80 times their former value in either period, and the overall annual loss is greater than 4% of APSH, then the reduction in sunlight may be noticeable.

9.1 5-6 Rafter's Lane

Table 9.1-1: APSH Summary, 5-6 Rafter's Lane

Total Windows	6
Scenario	**Window Pass Rate (%)**
Impact Test	100.0%

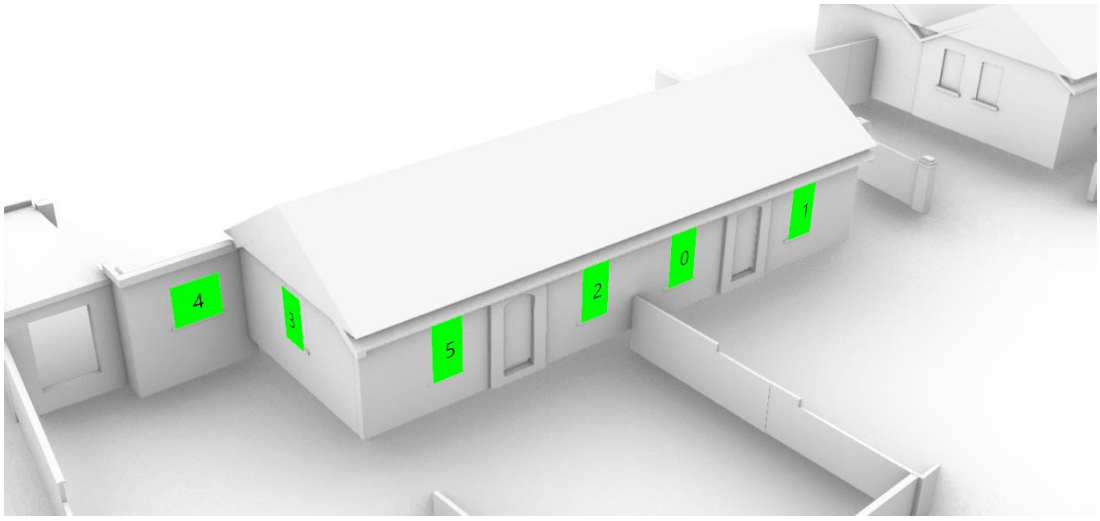


Figure 9.1-1: Pass/Fail visualisation for APSH on windows for 5-6 Rafter's Lane.

Table 9.1-2: APSH and WPSH results for 5-6 Rafter's Lane.

Window Ref	APSH Existing (%)	APSH Proposed (%)	APSH Ratio	APSH Points Reduction (%)	WPSH Existing	WPSH Proposed	WPSH Ratio	Pass/Fail
0	61.4	60.6	0.99	-0.8	23.1	22.3	0.97	Pass
1	62.8	62.0	0.99	-0.8	24.2	23.4	0.97	Pass

Window Ref	APSH Existing (%)	APSH Proposed (%)	APSH Ratio	APSH Points Reduction (%)	WPSH Existing	WPSH Proposed	WPSH Ratio	Pass/Fail
2	60.5	59.5	0.98	-1.0	22.4	21.5	0.96	Pass
3	36.3	34.5	0.95	-1.8	9.4	7.6	0.81	Pass
4	37.7	35.0	0.93	-2.7	14.6	11.9	0.82	Pass
5	59.1	58.1	0.98	-1.0	20.7	19.7	0.95	Pass

9.2 6a - 6b Rafter's Lane

Table 9.2-1: APSH Summary, 6a-6b Rafter's Lane

Total Windows	6
Scenario	**Window Pass Rate (%)**
Impact test	100.0%

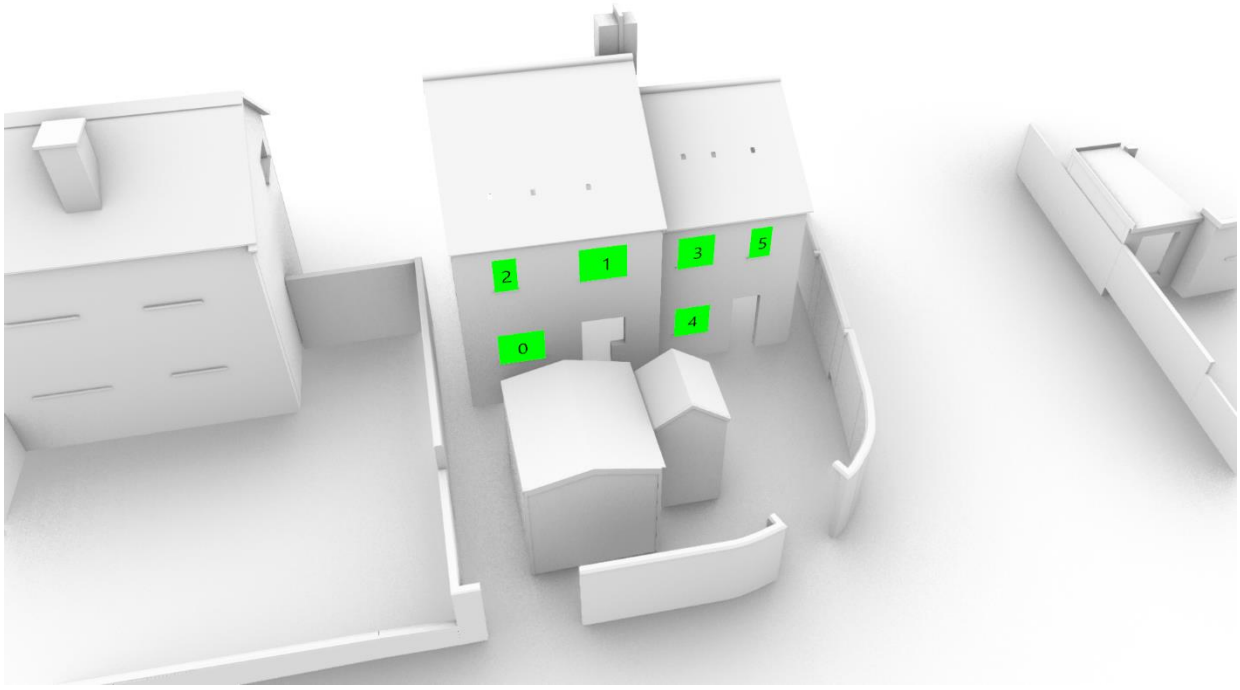


Figure 9.2-1: Pass/Fail visualisation for APSH on windows for 6a-6b Rafter's Lane.

Table 9.2-2: APSH and WPSH results for 6a-6b Rafter's Lane.

Window Ref	APSH Existing (%)	APSH Proposed (%)	APSH Ratio	APSH Points Reduction (%)	WPSH Existing	WPSH Proposed	WPSH Ratio	Pass/Fail
0	54.3	51.4	0.95	-2.9	13.6	10.6	0.79	Pass
1	71.7	66.6	0.93	-5.1	30.4	25.4	0.83	Pass
2	72.0	66.1	0.92	-5.9	30.7	24.8	0.81	Pass
3	59.3	55.2	0.93	-4.0	27.0	22.9	0.85	Pass
4	46.1	46.0	1.00	-0.1	14.1	14.0	0.99	Pass
5	66.1	61.6	0.93	-4.4	28.8	24.4	0.85	Pass

9.3 7-11 Rafter's Lane

Table 9.3-1: APSH Summary, 7-11 Rafter's Lane

Total Windows	20
Scenario	**Window Pass Rate (%)**
Impact test	100.0%

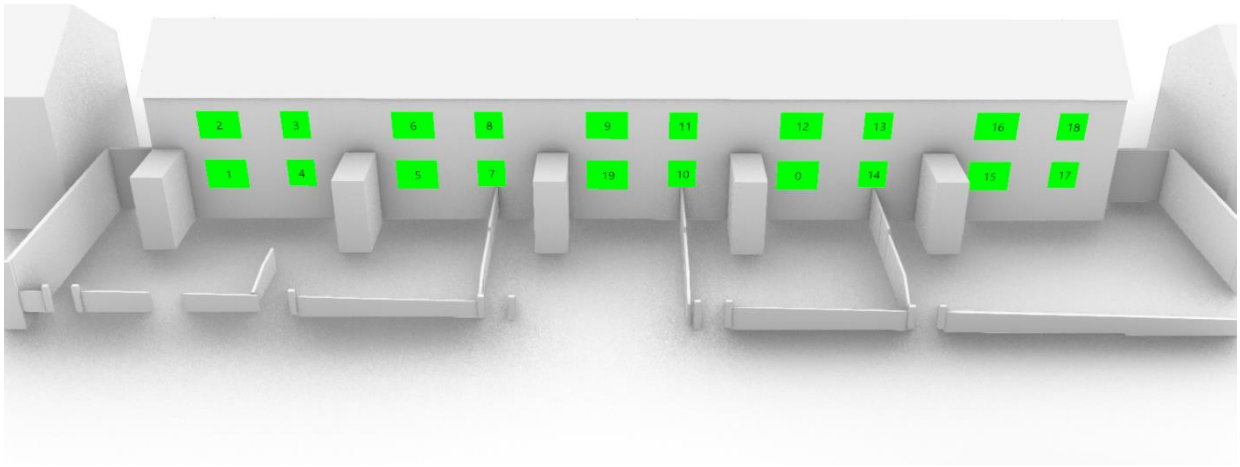


Figure 9.3-1: Pass/Fail visualisation for APSH on windows for 7-11 Rafter's Lane.

Table 9.3-2: APSH and WPSH results for 7-11 Rafter's Lane.

Window Ref	APSH Existing (%)	APSH Proposed (%)	APSH Ratio	APSH Points Reduction (%)	WPSH Existing	WPSH Proposed	WPSH Ratio	Pass/Fail
0	56.0	47.8	0.85	-8.3	20.5	12.2	0.60	Pass
1	58.9	44.4	0.75	-14.5	23.7	9.2	0.39	Pass
2	72.9	62.0	0.85	-10.9	33.7	22.8	0.68	Pass
3	73.4	61.9	0.84	-11.6	33.5	21.9	0.66	Pass
4	61.5	48.5	0.79	-13.0	26.3	13.3	0.51	Pass
5	57.2	44.4	0.78	-12.8	22.0	9.2	0.42	Pass
6	74.0	62.0	0.84	-12.0	33.7	21.8	0.65	Pass
7	61.0	46.3	0.76	-14.6	25.3	10.7	0.42	Pass
8	73.9	61.0	0.83	-12.8	33.6	20.8	0.62	Pass
9	73.9	61.1	0.83	-12.7	33.6	20.9	0.62	Pass
10	60.6	46.1	0.76	-14.4	25.1	10.7	0.43	Pass
11	73.7	62.3	0.84	-11.5	33.4	21.9	0.66	Pass

Window Ref	APSH Existing (%)	APSH Proposed (%)	APSH Ratio	APSH Points Reduction (%)	WPSH Existing	WPSH Proposed	WPSH Ratio	Pass/Fail
12	73.5	63.7	0.87	-9.8	33.1	23.3	0.70	Pass
13	73.8	64.0	0.87	-9.8	33.4	23.7	0.71	Pass
14	60.3	47.9	0.80	-12.4	25.5	13.1	0.51	Pass
15	57.7	51.6	0.89	-6.2	21.9	15.8	0.72	Pass
16	72.5	64.2	0.89	-8.3	32.3	24.1	0.74	Pass
17	67.2	58.1	0.87	-9.1	28.1	19.0	0.68	Pass
18	71.2	64.8	0.91	-6.4	31.8	25.3	0.80	Pass
19	57.0	45.8	0.80	-11.2	21.0	9.9	0.47	Pass

9.4 11a-11b Rafter’s Lane

Table 9.4-1: ASPH summary, 11a-11b Rafter's Road

Total Windows	8
Scenario	**Window Pass Rate (%)**
Impact test	100.0%

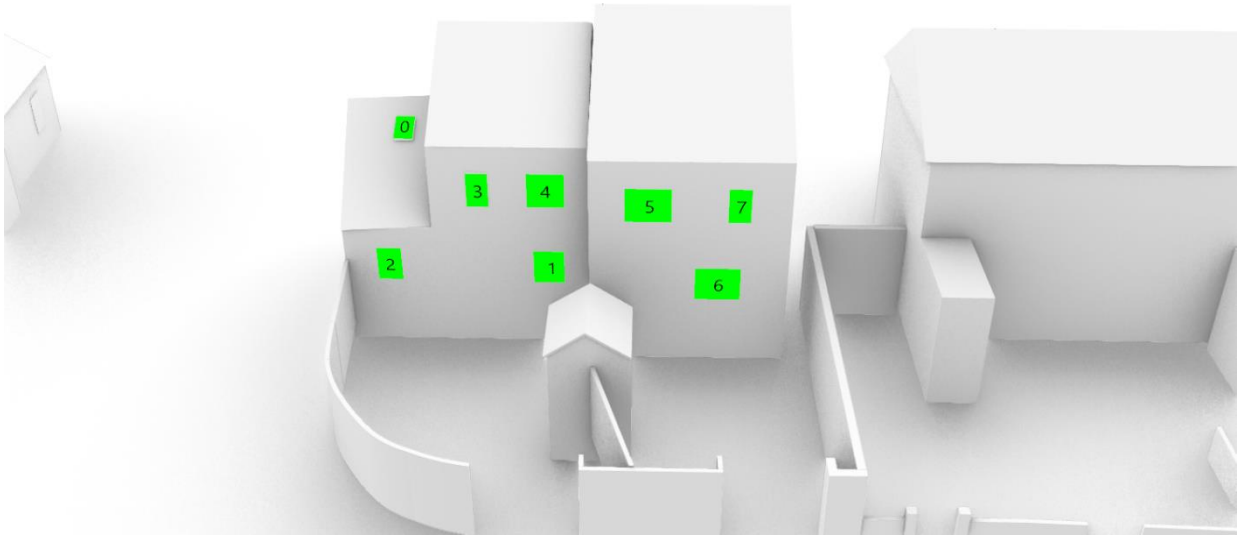


Figure 9.4-1: Pass/Fail visualisation for APSH on windows for 11a-11b Rafter's Lane.

Table 9.4-2: APSH and WPSH results for 11a-11b Rafter's Lane.

Window Ref	APSH Existing (%)	APSH Proposed (%)	APSH Ratio	APSH Points Reduction (%)	WPSH Existing	WPSH Proposed	WPSH Ratio	Pass/Fail
0	59.1	57.7	0.98	-1.4	25.4	24.0	0.94	Pass
1	57.7	53.2	0.92	-4.5	25.2	20.7	0.82	Pass
2	68.6	61.1	0.89	-7.5	30.3	22.8	0.75	Pass
3	73.1	65.7	0.90	-7.4	34.2	26.9	0.78	Pass
4	65.9	58.1	0.88	-7.8	33.1	25.4	0.77	Pass
5	75.8	67.1	0.89	-8.7	34.5	25.8	0.75	Pass
6	68.6	55.8	0.81	-12.8	28.2	15.4	0.55	Pass
7	75.9	66.1	0.87	-9.8	34.5	24.8	0.72	Pass

9.5 2-2a Rafter's Road

Table 9.5-1: ASPH summary, 2-2a Rafter's Road

Total Windows	4
Scenario	**Window Pass Rate (%)**
Impact test	100.0%

Figure 9.5-1: Pass/Fail visualisation for APSH on windows for 2-2a Rafter's Lane.

Table 9.5-2: APSH and WPSH results for 2-2a Rafter's Lane.

Window Ref	APSH Existing (%)	APSH Proposed (%)	APSH Ratio	APSH Points Reduction (%)	WPSH Existing	WPSH Proposed	WPSH Ratio	Pass/Fail
0	55.0	49.4	0.90	-5.7	23.0	22.0	0.96	Pass
1	52.3	47.5	0.91	-4.8	22.5	21.7	0.96	Pass
2	49.2	44.6	0.91	-4.6	18.6	18.0	0.97	Pass
3	54.6	48.3	0.88	-6.3	22.8	21.4	0.94	Pass

9.6 Consented Neighbouring Library Development

318 Crumlin Road

Below is a summary table of results.

Table 9.6-1: APSH summary, 318 Crumlin Road

Total Rooms	**4**	
Total Windows	**4**	
Scenario	**Window Pass Rate (%)**	**Room Pass Rate (%)**
Impact test	100.0%	100.0%

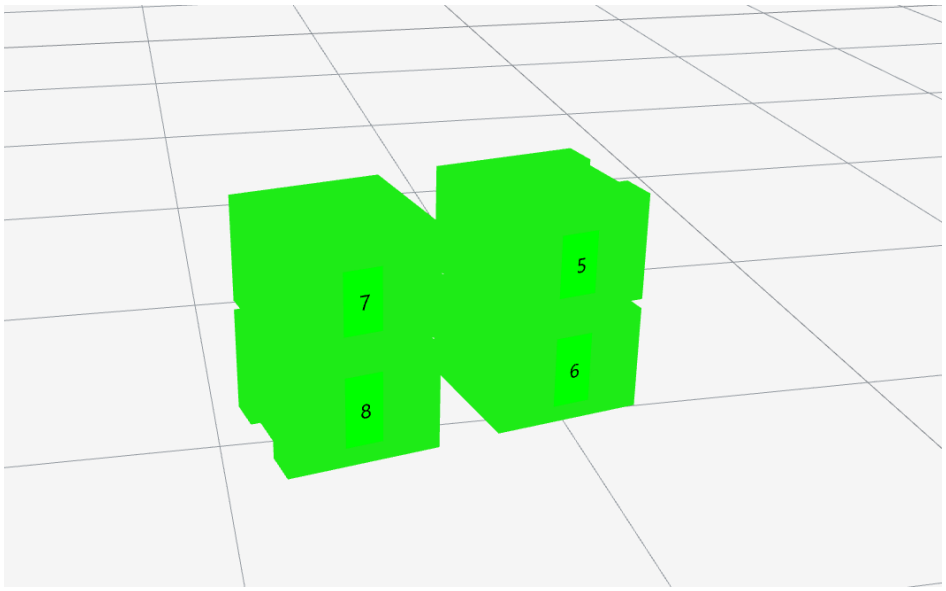


Figure 9.6-1: Rooms and windows APSH Pass-fail visualisation for 318 Crumlin Road

Table 9.6-2: Rooms APSH pass data for 318 Crumlin Road

Room Name	Pass?
Office2	TRUE
CafeDining1	TRUE
Office1	TRUE
Café Servery	TRUE

Table 9.6-3: APSH and WPSH data for windows in 318 Crumlin Road

Window Ref	APSH Existing (%)	APSH Proposed (%)	APSH Ratio	APSH Points Reduction (%)	WPSH Existing	WPSH Proposed	WPSH Ratio	Pass/Fail
5	50.4	46.6	0.92	-3.8	26.9	23.1	0.86	Pass
6	45.7	41.6	0.91	-4.2	22.6	19.0	0.84	Pass
7	53.0	43.4	0.82	-9.6	28.4	20.4	0.72	Pass
8	49.4	39.1	0.79	-10.3	24.8	17.4	0.70	Pass

New Library Building

Below is a summary table of the results for the new library building. Although some of the windows do not pass the tests, because each room has a main window that does pass, all the rooms pass the guidance as set out in the BRE guidelines.

Table 9.6-4: APSH summary, new library building

Total Rooms	**4**	
Total Windows	**19**	
Scenario	**Window Pass Rate (%)**	**Room Pass Rate (%)**
Impact test	84.2%	100.0%

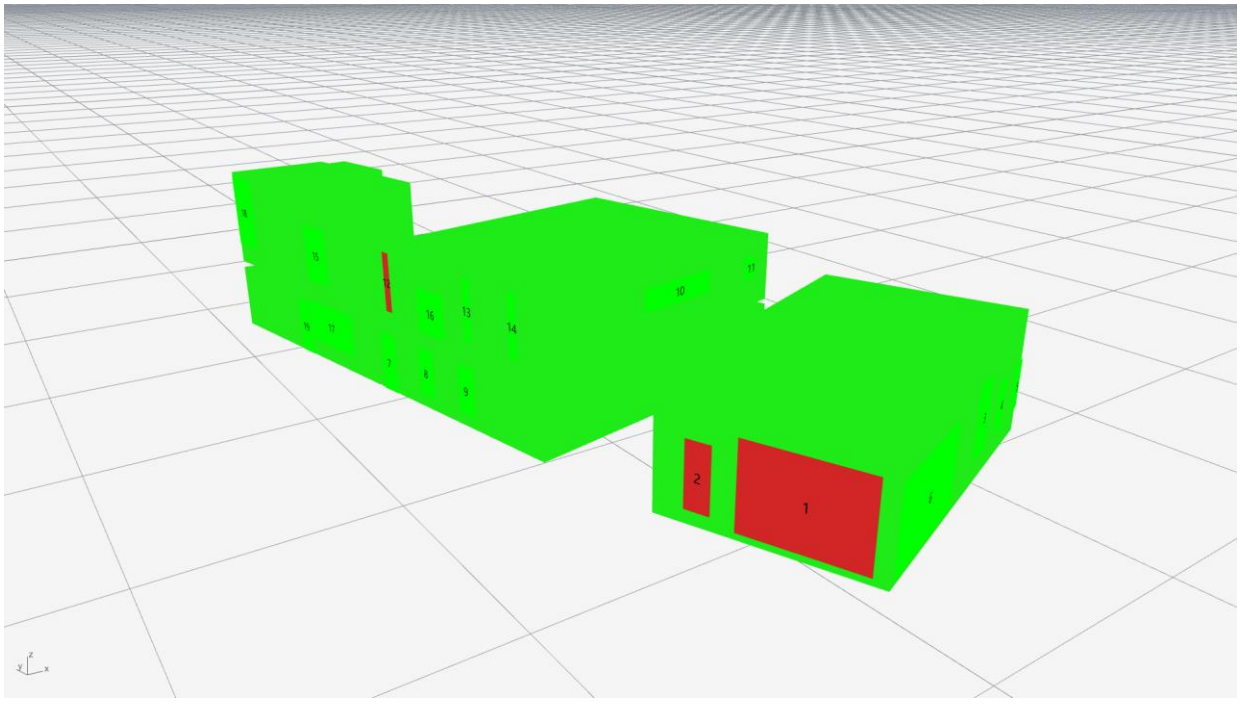


Figure 9.6-2: APSH pass-fail visualisation, new library building.

Table 9.6-5: APSH rooms data, new library building

Room Name	Pass?
Children's Library	TRUE
Adult Library	TRUE
Reading Room	TRUE
Events Room	TRUE

Table 9.6-6: APSH windows data, new library building

Window Ref	APSH Existing (%)	APSH Proposed (%)	APSH Ratio	APSH Points Reduction (%)	WPSH Existing	WPSH Proposed	WPSH Ratio	Pass/Fail
1	26.7	15.9	0.60	-10.8	11.8	11.1	0.94	Fail
2	28.6	19.0	0.66	-9.6	8.8	7.0	0.79	Fail
3	45.4	45.4	1.00	0.0	21.1	21.1	1.00	Pass
4	43.4	43.4	1.00	0.0	21.3	21.3	1.00	Pass
5	43.5	43.5	1.00	0.0	21.4	21.4	1.00	Pass
6	33.8	33.8	1.00	0.0	20.4	20.4	1.00	Pass
7	12.5	11.7	0.93	-0.8	0.0	0.0	1.00	Pass
8	0.8	1.7	2.18	0.9	0.0	0.0	1.00	Pass
9	3.5	3.5	1.00	0.0	0.0	0.0	1.00	Pass
10	47.8	45.4	0.95	-2.4	29.1	26.8	0.92	Pass
11	33.8	33.8	1.00	0.0	21.6	21.6	1.00	Pass
12	21.6	16.7	0.78	-4.8	1.1	0.4	0.38	Fail
13	8.6	8.6	1.00	0.0	0.0	0.0	1.00	Pass
14	9.2	7.8	0.85	-1.3	1.4	0.1	0.07	Pass
15	36.2	29.3	0.81	-6.9	8.9	5.7	0.65	Pass
16	17.9	15.0	0.83	-3.0	2.6	2.6	1.00	Pass
17	24.4	22.6	0.93	-1.8	2.9	2.5	0.85	Pass
18	41.2	34.9	0.85	-6.2	13.7	8.1	0.59	Pass
19	23.9	22.1	0.92	-1.8	2.4	1.3	0.55	Pass

10.0 AMENITY SUNLIGHT – EXISTING AREAS

BRE Amenity Sunlight: The recommendation for an amenity space to receive adequate sunlight is for at least half the area to receive 2 hours of direct sunlight on March 21st. If a space is already existing, then the area receiving more than 2 hours of sunlight should not be reduced by greater than 20%, i.e., a reduction factor of less than 0.8.

10.1 Results

Table 10.1-1: Amenity Sunlight, existing areas, summary data

Total windows	34	Impact Classification				
Scenario	Pass rate	None (%)	Negligible (%)	Minor (%)	Moderate (%)	Major (%)
	100.0%	24.0	10.0	0.0	0.0	0.0

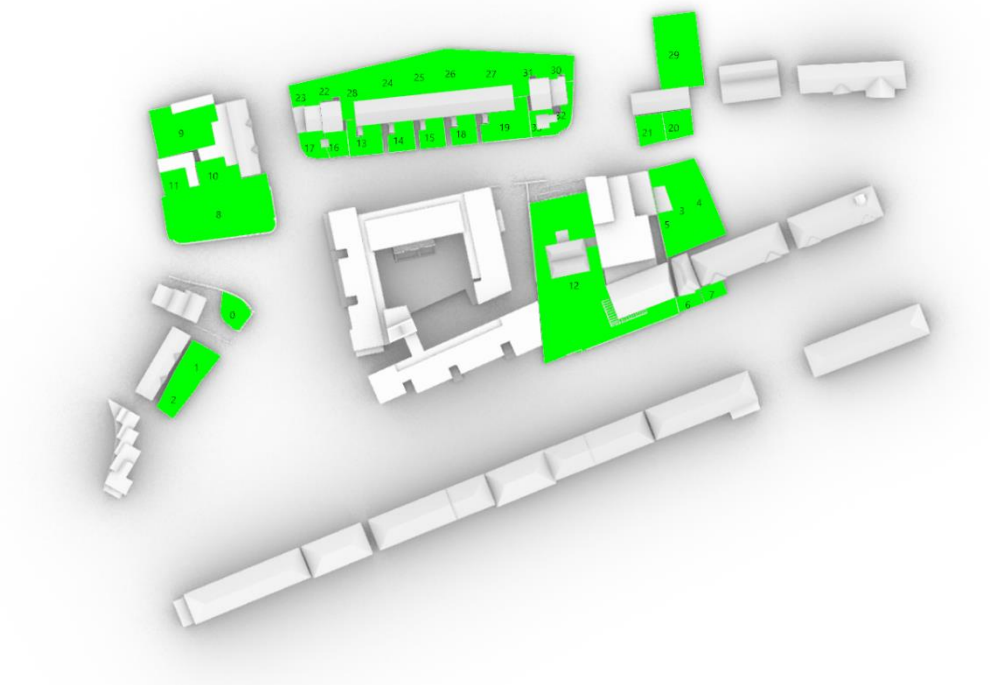


Figure 10.1-1:Reference amenity spaces for sunlight hours analysis with Pass Fail Colouration.

Table 10.1-2: Hours of sunlight at the surrounding amenity spaces

Area Reference	Area Name	Area (m^2)	Existing Average Sun Hours (h)	% Area Over 2 Hours (existing)	Proposed Average Sun Hours (h)	% Area Over 2 Hours (proposed)	Area Reduction Factor	Pass/Fail
0	2ARaftersRoadFront	64.75	7.80	99.98	7.52	99.98	1.00	Pass
1	2RaftersRoadFront	98.63	9.42	100.00	8.78	100.00	1.00	Pass
2	1RaftersRoadFront	73.44	8.31	100.00	8.25	100.00	1.00	Pass
3	310CrumlinRoadRear	139.02	3.62	77.86	3.62	77.86	1.00	Pass
4	308CrumlinRoadRear	137.71	4.95	83.12	4.95	83.12	1.00	Pass
5	312CrumlinRoadRear	93.36	1.49	37.90	1.49	37.90	1.00	Pass
6	312CrumlinRoadFront	30.09	7.01	100.00	7.01	100.00	1.00	Pass
7	310CrumlinRoadFront	29.69	9.10	100.00	9.08	100.00	1.00	Pass
8	3RaftersRoad1	477.93	8.59	86.43	8.04	86.34	1.00	Pass
9	4RaftersRoad	220.56	8.17	96.79	8.17	96.79	1.00	Pass
10	3RaftersRoad2	79.49	7.97	100.00	7.23	100.00	1.00	Pass
11	3RaftersRoad3	54.48	10.18	100.00	9.73	100.00	1.00	Pass
12	Library	961.31	4.58	73.85	3.82	66.68	0.90	Pass
13	11RaftersLaneFront	83.45	5.74	93.15	4.63	85.68	0.92	Pass
14	10RaftersLaneFront	59.66	6.55	86.65	5.59	86.22	1.00	Pass
15	9RaftersLaneFront	58.00	7.40	99.90	5.80	99.67	1.00	Pass
16	11ARaftersLaneFront	43.00	3.61	94.66	3.08	81.08	0.86	Pass
17	11BRaftersLaneFront	51.14	4.06	97.28	3.50	84.51	0.87	Pass
18	8RaftersLaneFront	57.32	6.84	93.33	5.83	92.69	0.99	Pass
19	7RaftersLaneFront	122.17	7.87	97.81	7.37	97.70	1.00	Pass
20	5RaftersLaneFront	63.56	11.14	100.00	11.09	100.00	1.00	Pass
21	6RaftersLaneFront	65.71	10.56	100.00	10.30	100.00	1.00	Pass
22	11ARaftersLaneRear	40.23	2.11	53.87	2.11	53.87	1.00	Pass
23	11BRaftersLaneRear	56.61	2.67	64.22	2.67	64.22	1.00	Pass
24	10RaftersLaneRear	94.39	2.56	41.89	2.56	41.89	1.00	Pass
25	9RaftersLaneRear	104.42	3.49	39.94	3.49	39.94	1.00	Pass
26	8RaftersLaneRear	110.76	3.80	45.61	3.80	45.61	1.00	Pass
27	7RaftersLaneRear	148.56	3.24	57.38	3.24	57.38	1.00	Pass
28	11RaftersLaneRear	116.66	1.87	50.76	1.87	50.76	1.00	Pass
29	5RaftersLaneRear	270.52	9.84	94.54	9.84	94.54	1.00	Pass
30	6ARaftersLaneRear	53.44	4.76	87.14	4.76	87.14	1.00	Pass
31	6BRaftersLaneRear	68.21	3.30	78.21	3.30	78.21	1.00	Pass
32	6ARaftersLaneFront	40.78	4.67	92.85	4.65	92.85	1.00	Pass
33	6BRaftersLaneFront	32.54	2.72	62.61	2.58	61.17	0.98	Pass

Hours of sunlight at the surrounding amenity spaces

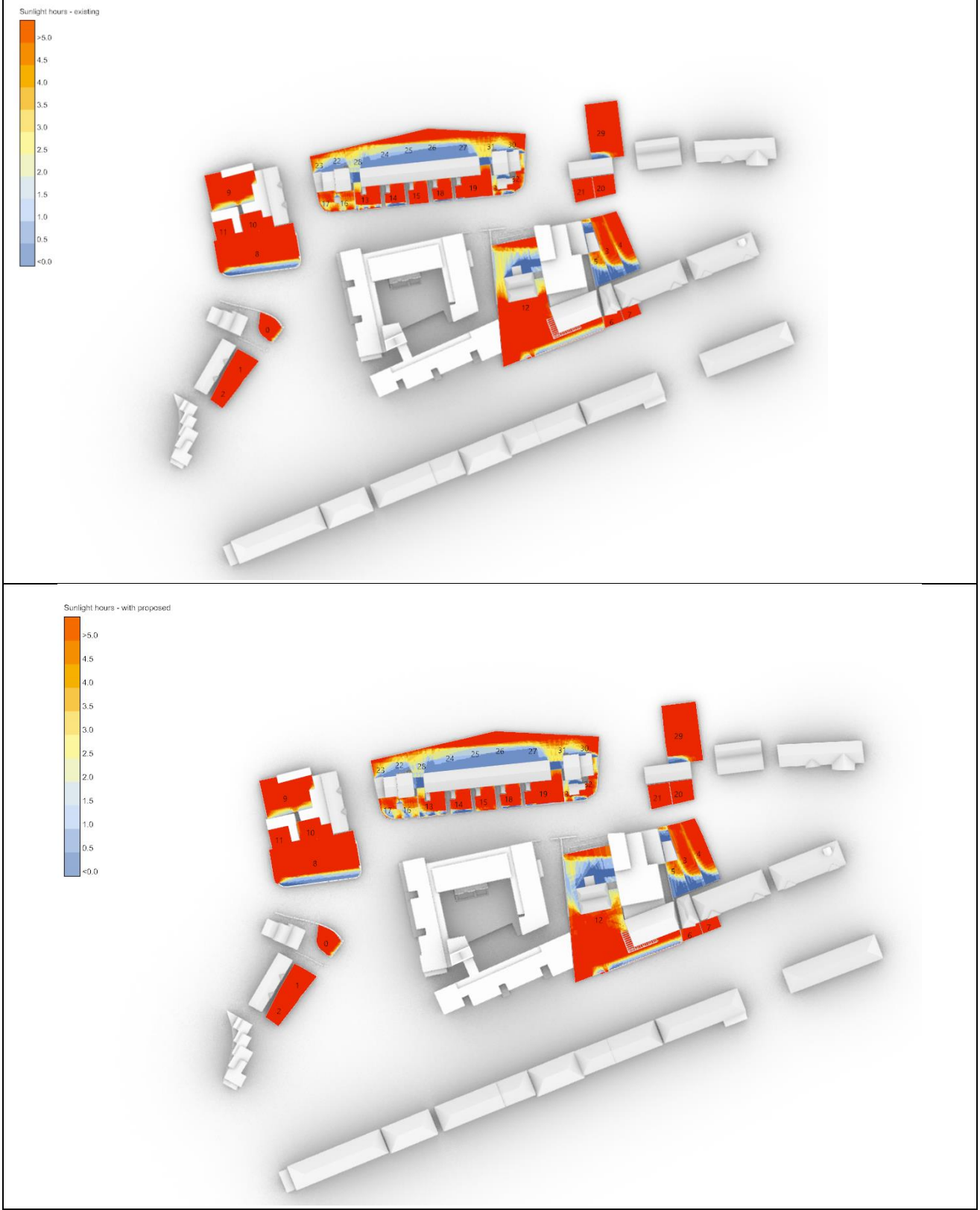


Figure 10.1-2: Hours of sunlight at the surrounding amenity spaces.

11.0 DAYLIGHT PERFORMANCE

Target Illuminances for the habitable rooms of the proposal are shown below. Figures are compared with the National Annex of BS EN 17037:2018, as recommended in the BRE Guide and by the Dublin City Development Guide due to their room specificity.

The targets are:

- In kitchens, greater than 200 lux over 50% of the floor area for over 50% annual daylight hours.
- In living rooms, greater than 150 lux over 50% of the floor area for over 50% annual daylight hours.
- In bedrooms, greater than 100 lux over 50% of the floor area for over 50% annual daylight hours.
- For Kitchen-Living-Dining Rooms (KLD), these can either be counted as a kitchen or a living room, dependent on the main use of the room. The default is to assume usage as a kitchen as this is the more onerous daylight requirement. We have included both versions of the results for completeness.

In the tables of data below, BSEN17037 refers to European Standard BS EN 17037:2018, which are not room type specific, whereas Annex refers to the British National Annex in BS EN 17037:2018, which provides room specific targets. The results referred to in the report are those from the British National Annex in BS EN 17037:2018. The results using European Standard BS EN 17037:2018 are included for completeness.

In total, 114 rooms were tested, including 34 KLD rooms, 4 kitchens, 4 living rooms and 72 bedrooms.

11.1 Scenario 1 – With the consented neighbouring library development.

For scenario 1, when the KLD rooms are treated as kitchens, i.e. the target illuminance level is 200 lux, then 88 out of 114 rooms pass, which is a 77% pass rate. When the KLD rooms are treated as living rooms, with a target illuminance of 150 lux, then the number of rooms passing increases to 97, which is an 85% pass rate.

11.1.1 With KLD Rooms treated as Kitchens

Ground Floor

Table 11.1.1-1: sDA for ground floor, scenario 1 with KLD rooms treated as kitchens.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
N	0	4	2B4P	KLD	17.79%	FALSE	23.84%	FALSE
N	0	4	2B4P	Bedroom	8.70%	FALSE	34.78%	FALSE
N	0	4	2B4P	Bedroom	0.00%	FALSE	24.52%	FALSE
N	0	3	2B3P	Bedroom	0.00%	FALSE	19.91%	FALSE
N	0	3	2B3P	Bedroom	0.00%	FALSE	4.39%	FALSE
N	0	3	2B3P	KLD	8.62%	FALSE	13.60%	FALSE
E	0	6	1B2P	KLD	29.45%	FALSE	50.36%	TRUE
E	0	6	1B2P	Bedroom	16.12%	FALSE	71.49%	TRUE
E	0	5	1B2P	KLD	13.69%	FALSE	23.62%	FALSE
E	0	5	1B2P	Bedroom	16.85%	FALSE	59.18%	TRUE
S	0	7	2B4P	Bedroom	1.69%	FALSE	41.57%	FALSE
S	0	7	2B4P	Bedroom	12.33%	FALSE	66.21%	TRUE
S	0	10	1B2P	Kitchen	65.75%	TRUE	96.58%	TRUE
W	0	1	2B4P	Bedroom	37.93%	FALSE	99.43%	TRUE
W	0	2	2B4P	Bedroom	37.93%	FALSE	99.43%	TRUE
W	0	2	2B4P	KLD	37.05%	FALSE	57.01%	TRUE
W	0	1	2B4P	KLD	37.02%	FALSE	57.09%	TRUE
S	0	9	2B3P	Bedroom	35.45%	FALSE	93.64%	TRUE
S	0	9	2B3P	Bedroom	33.72%	FALSE	95.93%	TRUE
S	0	9	2B3P	KLD	35.30%	FALSE	47.85%	FALSE
S	0	8	3B5P	Bedroom	34.60%	FALSE	98.58%	TRUE
S	0	8	3B5P	Bedroom	55.83%	TRUE	100.00%	TRUE
S	0	8	3B5P	Bedroom	37.79%	FALSE	98.84%	TRUE
S	0	8	3B5P	KLD	29.23%	FALSE	41.07%	FALSE
W	0	2	2B4P	Bedroom	97.12%	TRUE	100.00%	TRUE
W	0	1	2B4P	Bedroom	35.15%	FALSE	99.01%	TRUE
S	0	7	2B4P	KLD	29.93%	FALSE	45.62%	FALSE
S	0	10	1B2P	Living	100.00%	TRUE	100.00%	TRUE
S	0	10	1B2P	Bedroom	55.35%	FALSE	88.68%	TRUE

sDA results, Ground floor, KLD rooms treated as Kitchens

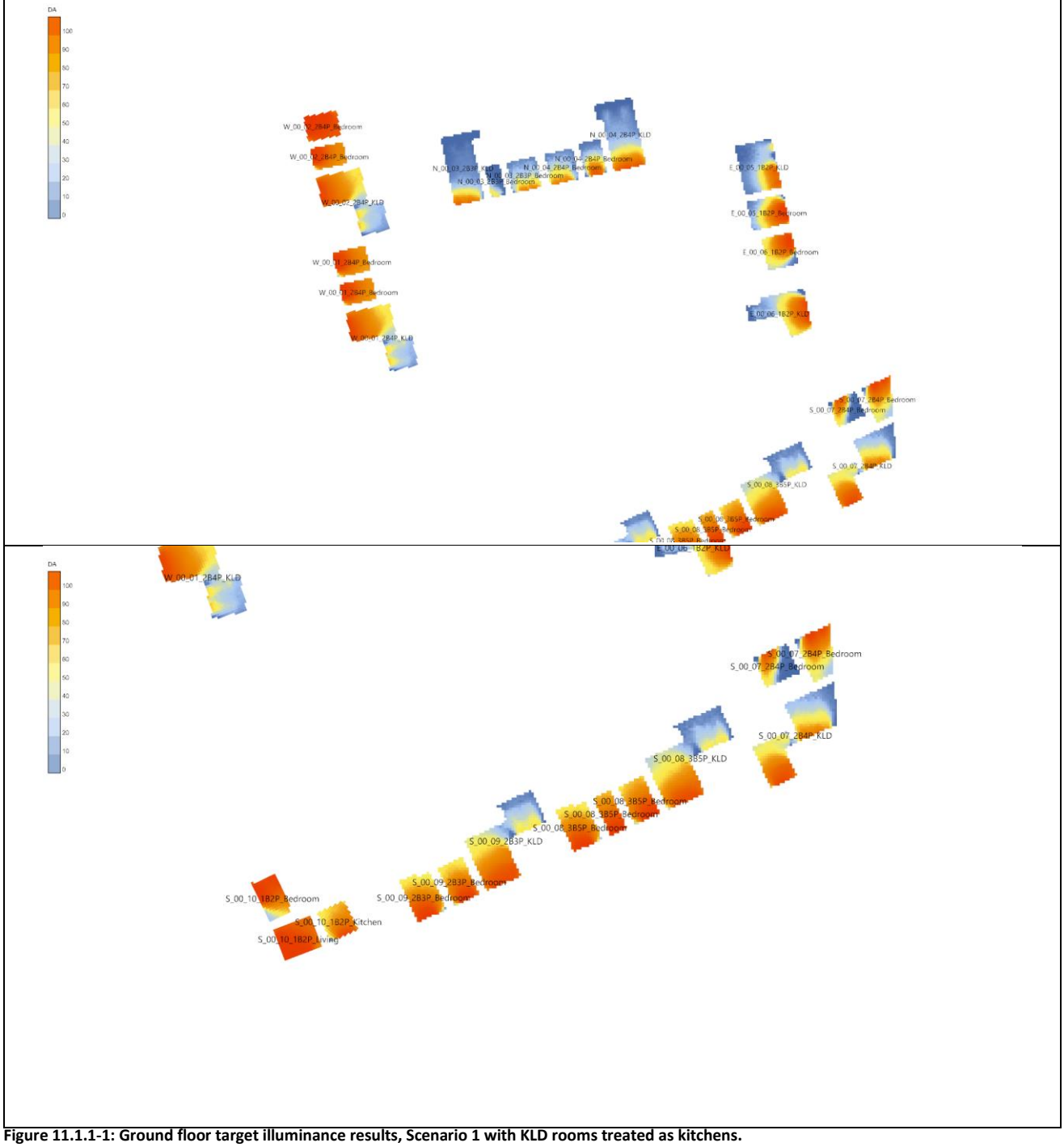


Figure 11.1.1-1: Ground floor target illuminance results, Scenario 1 with KLD rooms treated as kitchens.

Pass/Fail, Ground floor, KLD rooms treated as Kitchens

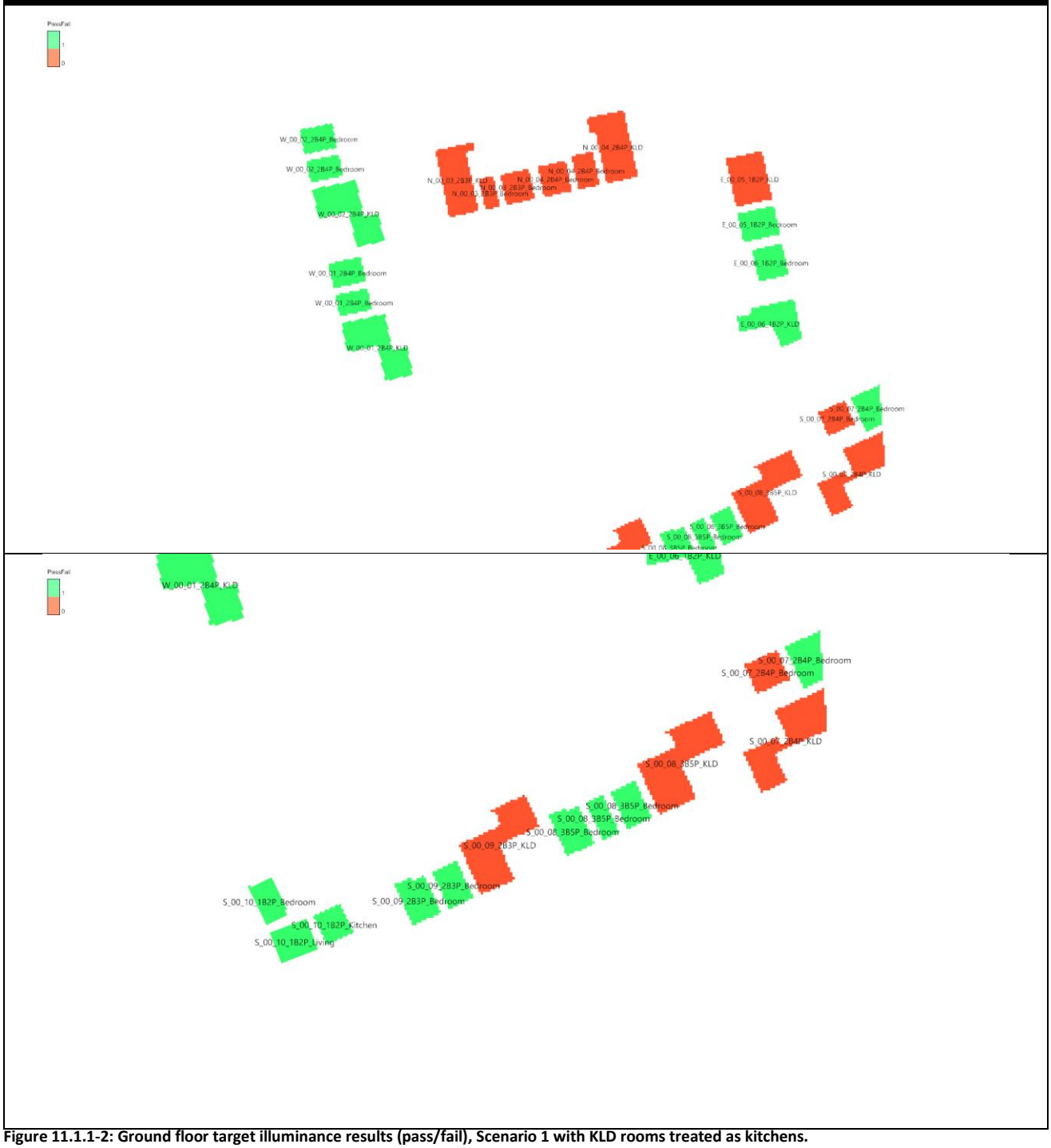


Figure 11.1.1-2: Ground floor target illuminance results (pass/fail), Scenario 1 with KLD rooms treated as kitchens.

First Floor

Table 11.1.1-2: sDA for first floor, scenario 1 with KLD rooms treated as kitchens.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
E	1	6	1B2P	KLD	17.44%	FALSE	32.89%	FALSE
E	1	7	1B2P	KLD	17.66%	FALSE	30.91%	FALSE
E	1	7	1B2P	Bedroom	17.60%	FALSE	73.78%	TRUE
E	1	8	2B4P	Bedroom	23.79%	FALSE	66.02%	TRUE
E	1	6	1B2P	Bedroom	66.29%	TRUE	100.00%	TRUE
E	1	8	2B4P	Bedroom	80.19%	TRUE	99.53%	TRUE
E	1	8	2B4P	KLD	17.03%	FALSE	25.45%	FALSE
S	1	9	2B4P	Bedroom	24.66%	FALSE	99.54%	TRUE
S	1	9	2B4P	Bedroom	4.49%	FALSE	46.07%	FALSE
N	1	4	3B5P	Bedroom	10.19%	FALSE	35.44%	FALSE
N	1	4	3B5P	Bedroom	18.55%	FALSE	53.23%	TRUE
N	1	4	3B5P	Bedroom	0.00%	FALSE	5.32%	FALSE
N	1	5	2B4P	Bedroom	17.55%	FALSE	53.72%	TRUE
N	1	5	2B4P	Bedroom	15.67%	FALSE	46.08%	FALSE
N	1	4	3B5P	KLD	0.16%	FALSE	3.91%	FALSE
N	1	5	2B4P	KLD	0.89%	FALSE	6.22%	FALSE
W	1	3	2B4P	Bedroom	99.48%	TRUE	100.00%	TRUE
W	1	2	2B4P	Bedroom	37.13%	FALSE	99.50%	TRUE
W	1	1	2B4P	KLD	40.16%	FALSE	64.23%	TRUE
W	1	3	2B4P	KLD	37.61%	FALSE	56.88%	TRUE
W	1	2	2B4P	KLD	37.59%	FALSE	58.52%	TRUE
W	1	2	2B4P	Bedroom	40.23%	FALSE	100.00%	TRUE
W	1	3	2B4P	Bedroom	32.76%	FALSE	99.43%	TRUE
W	1	1	2B4P	Bedroom	28.95%	FALSE	96.05%	TRUE
W	1	1	2B4P	Bedroom	32.18%	FALSE	98.51%	TRUE
S	1	12	1B2P	Kitchen	77.78%	TRUE	98.61%	TRUE
S	1	11	2B4P	Bedroom	44.19%	FALSE	99.42%	TRUE
S	1	11	2B4P	KLD	38.35%	FALSE	57.71%	TRUE
S	1	10	3B5P	Bedroom	36.97%	FALSE	99.05%	TRUE
S	1	10	3B5P	Bedroom	58.33%	TRUE	100.00%	TRUE
S	1	10	3B5P	Bedroom	41.86%	FALSE	98.84%	TRUE
S	1	10	3B5P	KLD	31.91%	FALSE	45.97%	FALSE
S	1	9	2B4P	KLD	28.28%	FALSE	56.39%	TRUE
S	1	11	2B4P	Bedroom	38.64%	FALSE	99.09%	TRUE
S	1	12	1B2P	Bedroom	56.47%	FALSE	90.00%	TRUE
S	1	12	1B2P	Living	100.00%	TRUE	100.00%	TRUE

sDA Results, first floor, KLD rooms treated as Kitchens

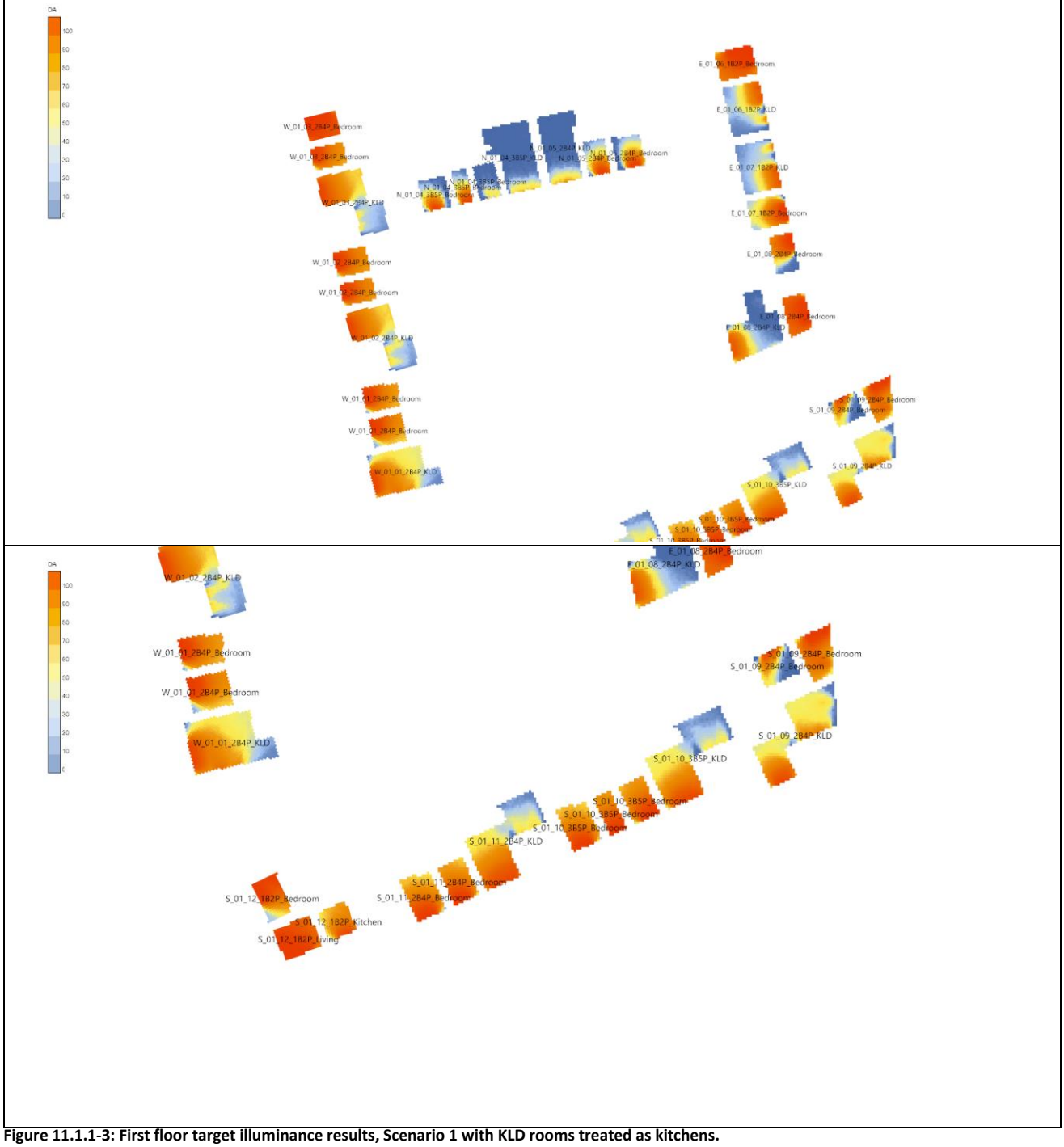


Figure 11.1.1-3: First floor target illuminance results, Scenario 1 with KLD rooms treated as kitchens.

Pass/Fail, First floor. KLD rooms treated as Kitchens

Figure 11.1.1-4: First floor target illuminance results (pass/fail), Scenario 1 with KLD rooms treated as kitchens.

Second Floor

Table 11.1.1-3: sDA values for second floor, scenario 1 with KLD rooms treated as kitchens.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
S	2	9	2B4P	Bedroom	28.31%	FALSE	99.54%	TRUE
S	2	9	2B4P	Bedroom	11.80%	FALSE	69.66%	TRUE
S	2	12	1B2P	Kitchen	86.43%	TRUE	98.57%	TRUE
S	2	11	2B4P	Bedroom	41.36%	FALSE	99.09%	TRUE
S	2	11	2B4P	Bedroom	50.00%	TRUE	100.00%	TRUE
S	2	11	2B4P	KLD	40.14%	FALSE	63.26%	TRUE
S	2	10	3B5P	Bedroom	40.76%	FALSE	99.53%	TRUE
S	2	10	3B5P	Bedroom	61.67%	TRUE	100.00%	TRUE
S	2	10	3B5P	Bedroom	44.77%	FALSE	98.84%	TRUE
S	2	10	3B5P	KLD	33.18%	FALSE	54.66%	TRUE
S	2	9	2B4P	KLD	32.12%	FALSE	77.19%	TRUE
E	2	8	2B4P	Bedroom	24.76%	FALSE	65.53%	TRUE
E	2	7	1B2P	Bedroom	17.98%	FALSE	90.64%	TRUE
E	2	7	1B2P	KLD	20.09%	FALSE	36.87%	FALSE
E	2	6	1B2P	KLD	22.08%	FALSE	48.34%	FALSE
E	2	8	2B4P	KLD	30.47%	FALSE	44.80%	FALSE
E	2	8	2B4P	Bedroom	95.28%	TRUE	100.00%	TRUE
E	2	6	1B2P	Bedroom	70.41%	TRUE	100.00%	TRUE
N	2	4	3B5P	Bedroom	17.48%	FALSE	58.74%	TRUE
N	2	4	3B5P	Bedroom	34.13%	FALSE	76.98%	TRUE
N	2	4	3B5P	Bedroom	26.44%	FALSE	74.71%	TRUE
N	2	5	2B4P	Bedroom	26.44%	FALSE	77.59%	TRUE
N	2	5	2B4P	Bedroom	23.26%	FALSE	72.09%	TRUE
N	2	4	3B5P	KLD	30.70%	FALSE	39.82%	FALSE
N	2	5	2B4P	KLD	32.62%	FALSE	42.38%	FALSE
W	2	1	2B4P	KLD	37.79%	FALSE	63.20%	TRUE
W	2	1	2B4P	Bedroom	29.41%	FALSE	98.53%	TRUE
W	2	1	2B4P	Bedroom	25.91%	FALSE	93.64%	TRUE
W	2	2	2B4P	Bedroom	33.91%	FALSE	99.43%	TRUE
W	2	3	2B4P	Bedroom	33.91%	FALSE	99.43%	TRUE
W	2	3	2B4P	KLD	57.32%	TRUE	83.21%	TRUE
W	2	2	2B4P	KLD	65.89%	TRUE	90.00%	TRUE
S	2	12	1B2P	Living	100.00%	TRUE	100.00%	TRUE
S	2	12	1B2P	Bedroom	59.34%	FALSE	90.11%	TRUE
W	2	2	2B4P	Bedroom	32.18%	FALSE	99.01%	TRUE
W	2	3	2B4P	Bedroom	98.51%	TRUE	100.00%	TRUE

sDA Results, second floor, with KLD rooms treated as kitchens

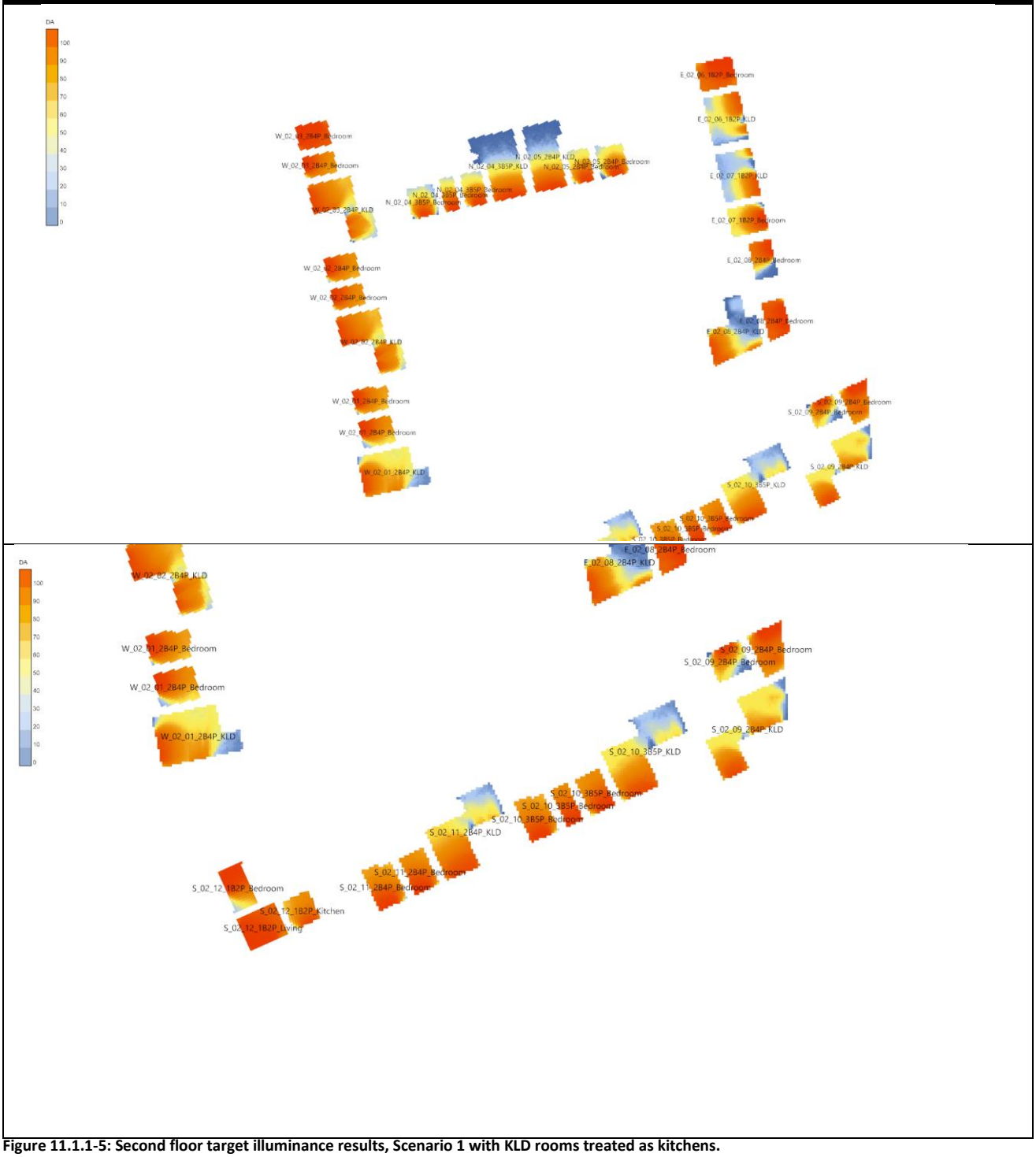


Figure 11.1.1-5: Second floor target illuminance results, Scenario 1 with KLD rooms treated as kitchens.

Pass/Fail, second floor, with KLD rooms treated as kitchens

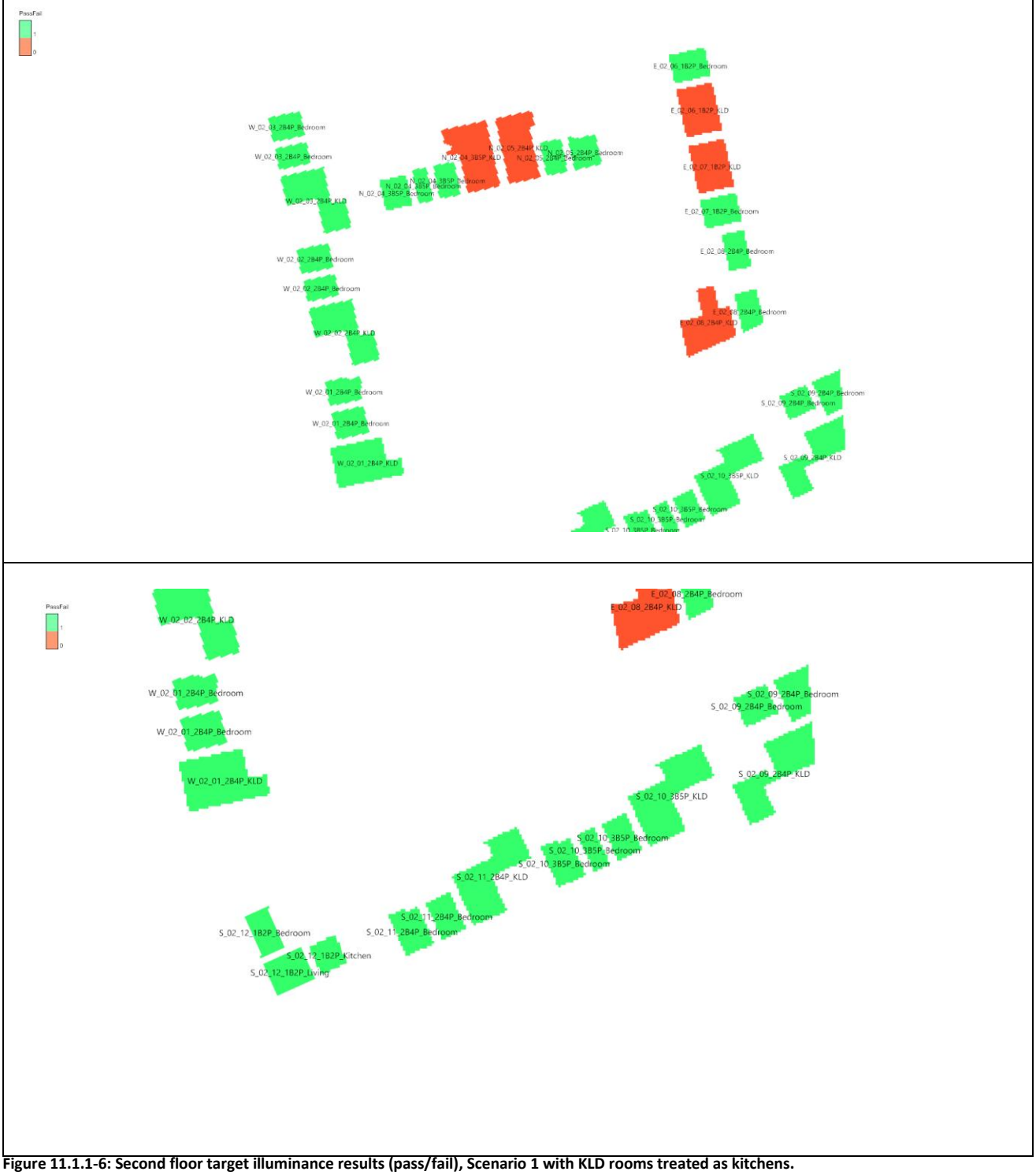


Figure 11.1.1-6: Second floor target illuminance results (pass/fail), Scenario 1 with KLD rooms treated as kitchens.

Third Floor

Table 11.1.1-4: sDA results, third floor, scenario 1 with KLD rooms treated as kitchens.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
S	3	1	2B4P	KLD	78.65%	TRUE	98.18%	TRUE
S	3	2	3B5P	KLD	63.03%	TRUE	93.52%	TRUE
S	3	2	3B5P	Bedroom	43.02%	FALSE	98.84%	TRUE
S	3	2	3B5P	Bedroom	61.67%	TRUE	100.00%	TRUE
S	3	2	3B5P	Bedroom	38.86%	FALSE	99.05%	TRUE
S	3	3	2B4P	KLD	72.76%	TRUE	96.24%	TRUE
S	3	3	2B4P	Bedroom	48.26%	FALSE	99.42%	TRUE
S	3	3	2B4P	Bedroom	41.36%	FALSE	99.09%	TRUE
S	3	4	1B2P	Kitchen	96.53%	TRUE	99.31%	TRUE
S	3	1	2B4P	Bedroom	100.00%	TRUE	100.00%	TRUE
S	3	1	2B4P	Bedroom	21.35%	FALSE	96.07%	TRUE
S	3	4	1B2P	Living	100.00%	TRUE	100.00%	TRUE
S	3	4	1B2P	Bedroom	71.76%	TRUE	100.00%	TRUE

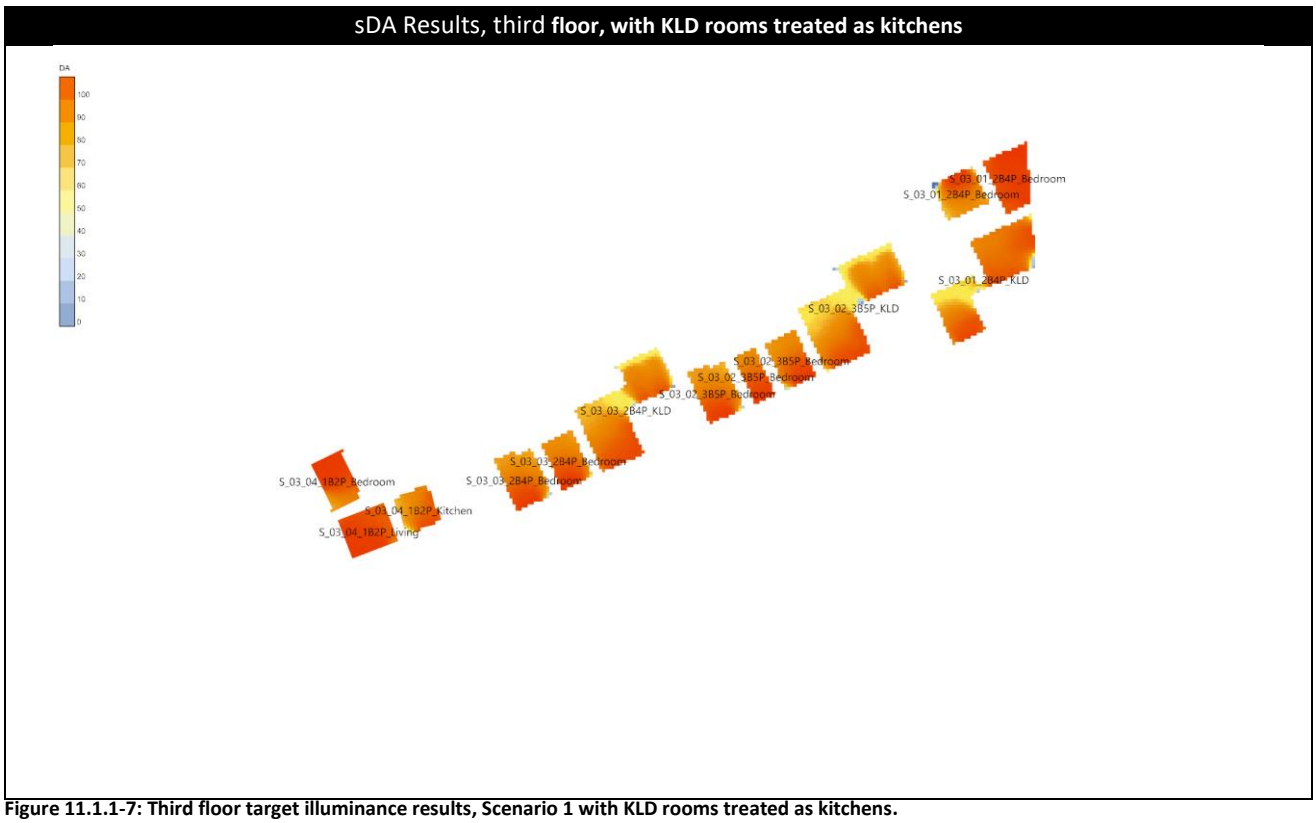


Figure 11.1.1-7: Third floor target illuminance results, Scenario 1 with KLD rooms treated as kitchens.

Third **floor**

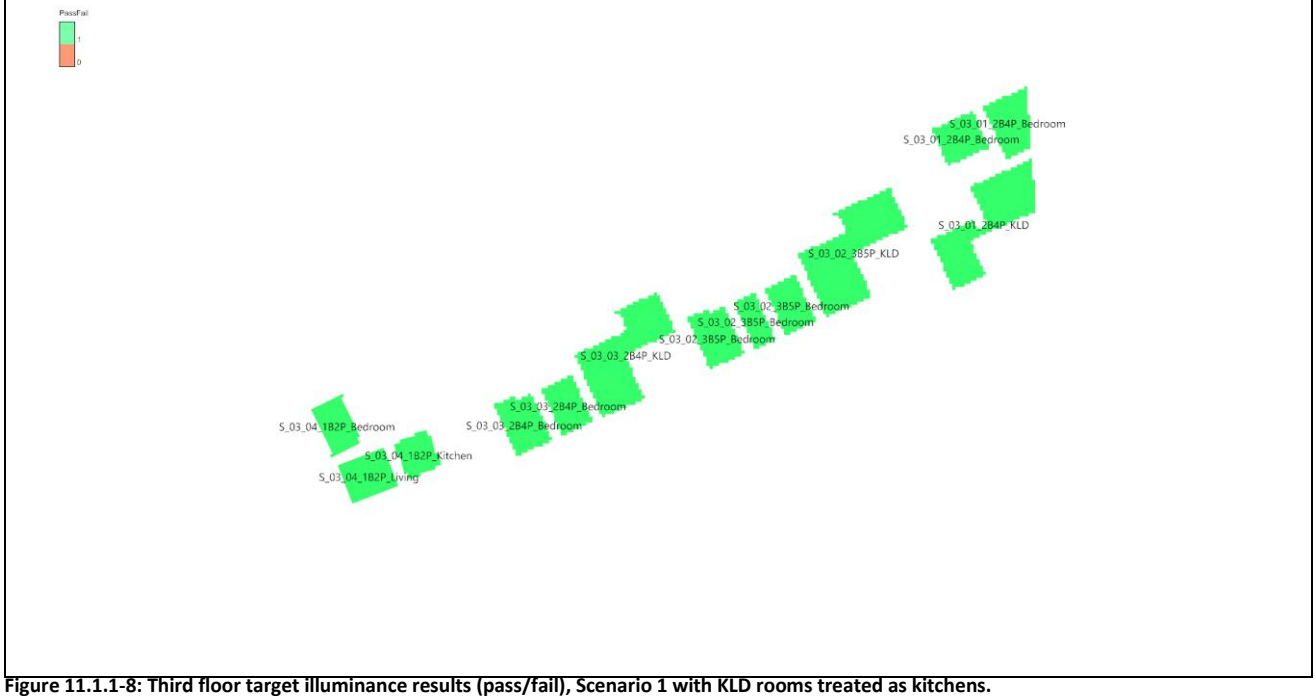


Figure 11.1.1-8: Third floor target illuminance results (pass/fail), Scenario 1 with KLD rooms treated as kitchens.

11.1.2 With KLD Rooms treated as Living Rooms

Ground Floor

Table 11.1.2-1: sDA results, ground floor, Scenario 1 with KLD rooms treated as living rooms.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
N	0	4	2B4P	KLD	17.44%	FALSE	28.65%	FALSE
N	0	4	2B4P	Bedroom	8.15%	FALSE	33.70%	FALSE
N	0	4	2B4P	Bedroom	0.00%	FALSE	24.04%	FALSE
N	0	3	2B3P	Bedroom	0.00%	FALSE	19.03%	FALSE
N	0	3	2B3P	Bedroom	0.00%	FALSE	4.39%	FALSE
N	0	3	2B3P	KLD	9.00%	FALSE	17.05%	FALSE
E	0	6	1B2P	KLD	29.69%	FALSE	66.03%	TRUE
E	0	6	1B2P	Bedroom	16.12%	FALSE	71.07%	TRUE
E	0	5	1B2P	KLD	13.91%	FALSE	33.55%	FALSE
E	0	5	1B2P	Bedroom	16.85%	FALSE	59.55%	TRUE
S	0	7	2B4P	Bedroom	1.12%	FALSE	41.01%	FALSE
S	0	7	2B4P	Bedroom	12.33%	FALSE	66.67%	TRUE
S	0	10	1B2P	Kitchen	66.44%	TRUE	95.89%	TRUE
W	0	1	2B4P	Bedroom	37.93%	FALSE	99.43%	TRUE
W	0	2	2B4P	Bedroom	37.93%	FALSE	99.43%	TRUE
W	0	2	2B4P	KLD	37.41%	FALSE	69.42%	TRUE
W	0	1	2B4P	KLD	36.46%	FALSE	72.56%	TRUE
S	0	9	2B3P	Bedroom	35.91%	FALSE	94.55%	TRUE
S	0	9	2B3P	Bedroom	33.14%	FALSE	95.93%	TRUE
S	0	9	2B3P	KLD	35.48%	FALSE	62.90%	TRUE
S	0	8	3B5P	Bedroom	34.60%	FALSE	98.58%	TRUE
S	0	8	3B5P	Bedroom	55.00%	TRUE	100.00%	TRUE
S	0	8	3B5P	Bedroom	37.79%	FALSE	98.84%	TRUE
S	0	8	3B5P	KLD	29.23%	FALSE	53.40%	TRUE
W	0	2	2B4P	Bedroom	97.12%	TRUE	100.00%	TRUE
W	0	1	2B4P	Bedroom	35.15%	FALSE	99.01%	TRUE
S	0	7	2B4P	KLD	30.29%	FALSE	64.42%	TRUE
S	0	10	1B2P	Living	100.00%	TRUE	100.00%	TRUE
S	0	10	1B2P	Bedroom	55.35%	FALSE	88.68%	TRUE

sDA Results, Ground floor, Scenario 1 with KLD rooms treated as living rooms

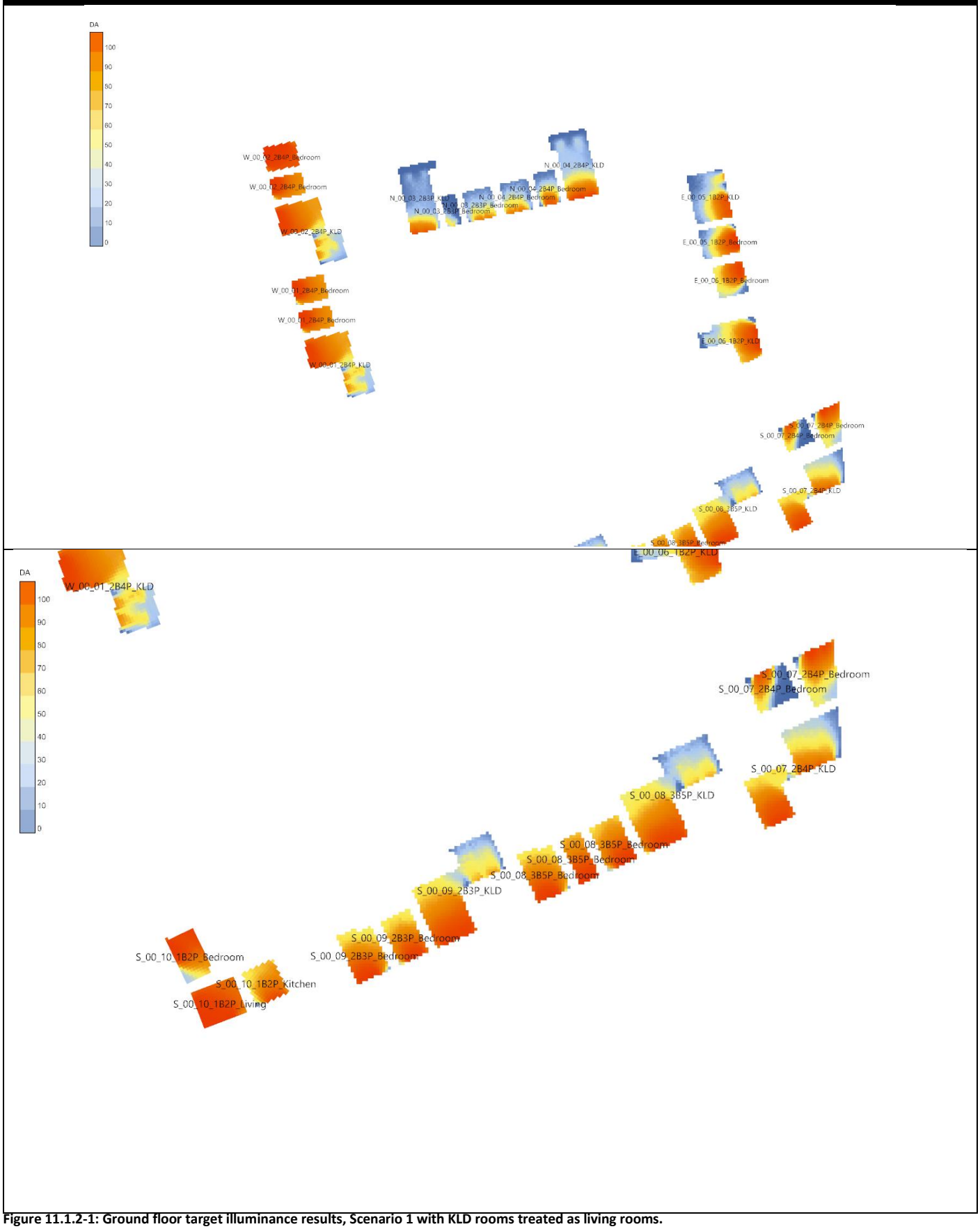


Figure 11.1.2-1: Ground floor target illuminance results, Scenario 1 with KLD rooms treated as living rooms.

Pass/Fail Results, Ground floor, Scenario 1 with KLD rooms treated as living rooms

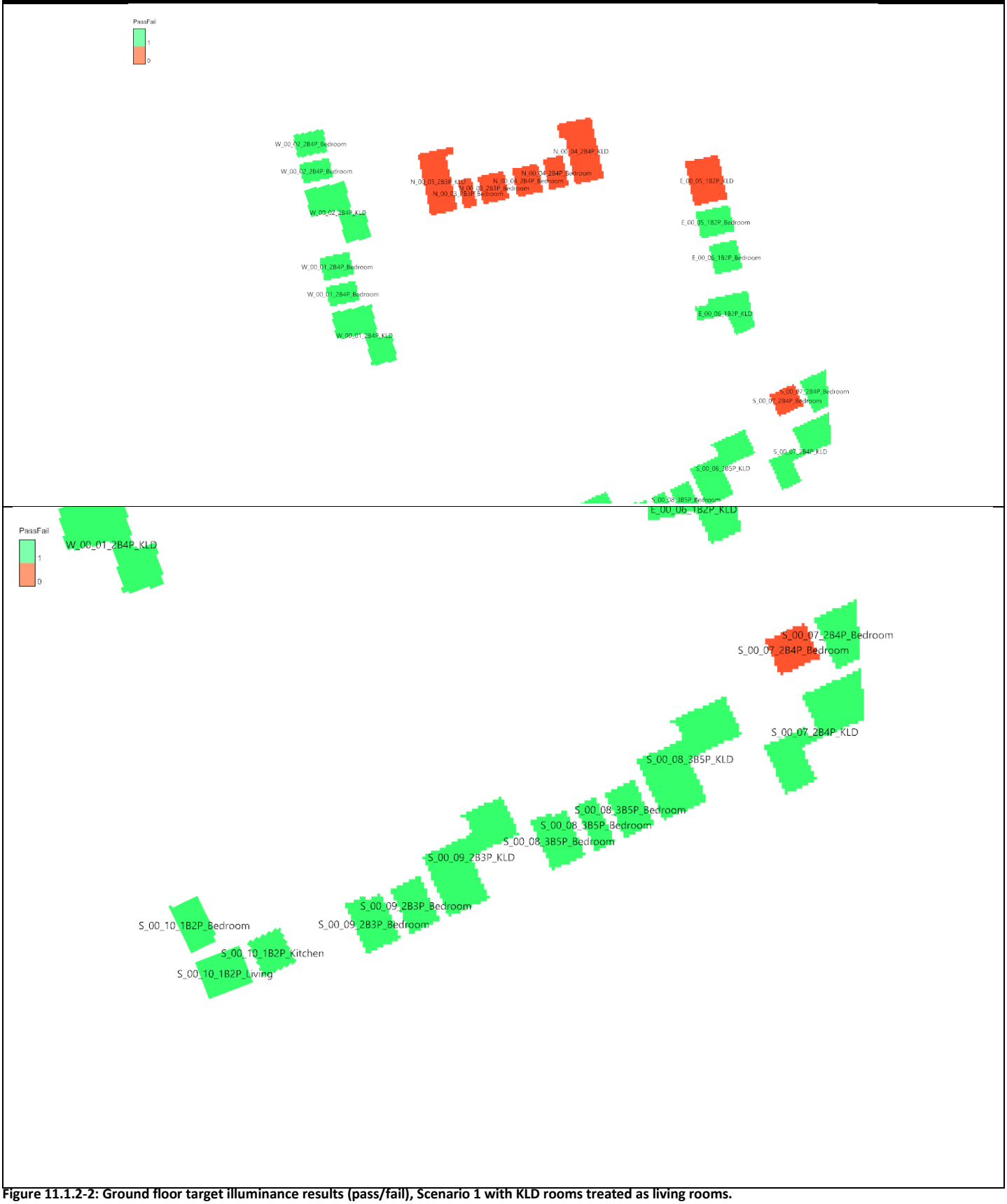


Figure 11.1.2-2: Ground floor target illuminance results (pass/fail), Scenario 1 with KLD rooms treated as living rooms.

First Floor

Table 11.1.2-2: sDA results, first floor, Scenario 1 with KLD rooms treated as living rooms.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
E	1	6	1B2P	KLD	17.22%	FALSE	60.71%	TRUE
E	1	7	1B2P	KLD	17.44%	FALSE	48.12%	FALSE
E	1	7	1B2P	Bedroom	17.98%	FALSE	73.03%	TRUE
E	1	8	2B4P	Bedroom	23.79%	FALSE	65.05%	TRUE
E	1	6	1B2P	Bedroom	66.29%	TRUE	100.00%	TRUE
E	1	8	2B4P	Bedroom	79.72%	TRUE	99.53%	TRUE
E	1	8	2B4P	KLD	17.03%	FALSE	34.23%	FALSE
S	1	9	2B4P	Bedroom	24.66%	FALSE	99.09%	TRUE
S	1	9	2B4P	Bedroom	4.49%	FALSE	46.63%	FALSE
N	1	4	3B5P	Bedroom	10.19%	FALSE	34.95%	FALSE
N	1	4	3B5P	Bedroom	18.55%	FALSE	53.23%	TRUE
N	1	4	3B5P	Bedroom	0.00%	FALSE	4.26%	FALSE
N	1	5	2B4P	Bedroom	17.55%	FALSE	52.13%	TRUE
N	1	5	2B4P	Bedroom	15.67%	FALSE	46.54%	FALSE
N	1	4	3B5P	KLD	0.16%	FALSE	7.82%	FALSE
N	1	5	2B4P	KLD	0.71%	FALSE	10.30%	FALSE
W	1	3	2B4P	Bedroom	98.96%	TRUE	100.00%	TRUE
W	1	2	2B4P	Bedroom	37.62%	FALSE	99.50%	TRUE
W	1	1	2B4P	KLD	40.00%	FALSE	84.55%	TRUE
W	1	3	2B4P	KLD	37.06%	FALSE	67.16%	TRUE
W	1	2	2B4P	KLD	37.41%	FALSE	78.52%	TRUE
W	1	2	2B4P	Bedroom	40.23%	FALSE	100.00%	TRUE
W	1	3	2B4P	Bedroom	33.91%	FALSE	99.43%	TRUE
W	1	1	2B4P	Bedroom	29.82%	FALSE	96.05%	TRUE
W	1	1	2B4P	Bedroom	32.67%	FALSE	98.51%	TRUE
S	1	12	1B2P	Kitchen	77.78%	TRUE	98.61%	TRUE
S	1	11	2B4P	Bedroom	45.35%	FALSE	99.42%	TRUE
S	1	11	2B4P	KLD	38.17%	FALSE	73.30%	TRUE
S	1	10	3B5P	Bedroom	37.44%	FALSE	99.05%	TRUE
S	1	10	3B5P	Bedroom	58.33%	TRUE	100.00%	TRUE
S	1	10	3B5P	Bedroom	41.86%	FALSE	98.84%	TRUE
S	1	10	3B5P	KLD	32.07%	FALSE	61.45%	TRUE
S	1	9	2B4P	KLD	28.83%	FALSE	89.05%	TRUE
S	1	11	2B4P	Bedroom	39.09%	FALSE	99.09%	TRUE
S	1	12	1B2P	Bedroom	55.88%	FALSE	89.41%	TRUE
S	1	12	1B2P	Living	100.00%	TRUE	100.00%	TRUE

sDA results, First Floor, Scenario 1 with KLD rooms treated as living rooms

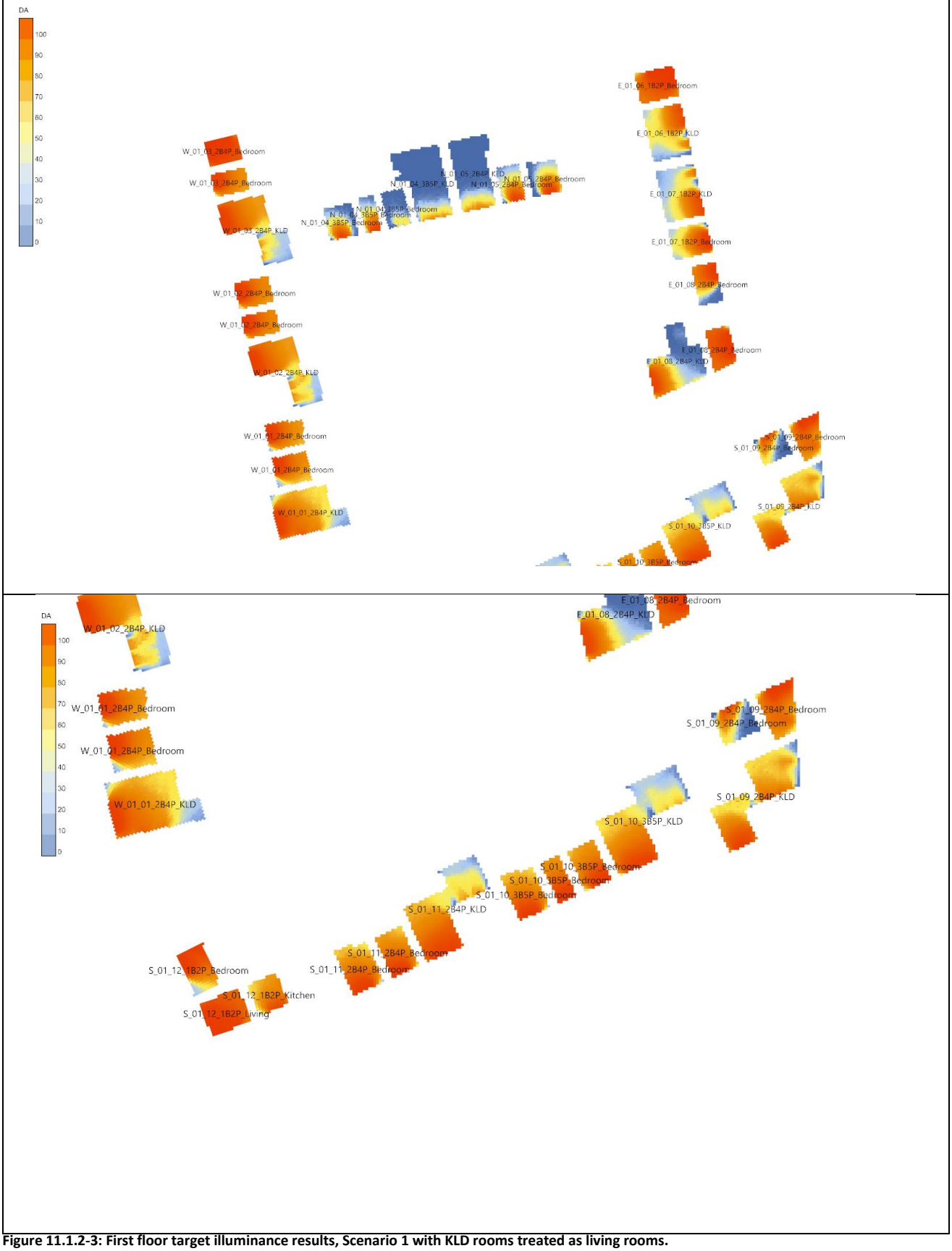


Figure 11.1.2-3: First floor target illuminance results, Scenario 1 with KLD rooms treated as living rooms.

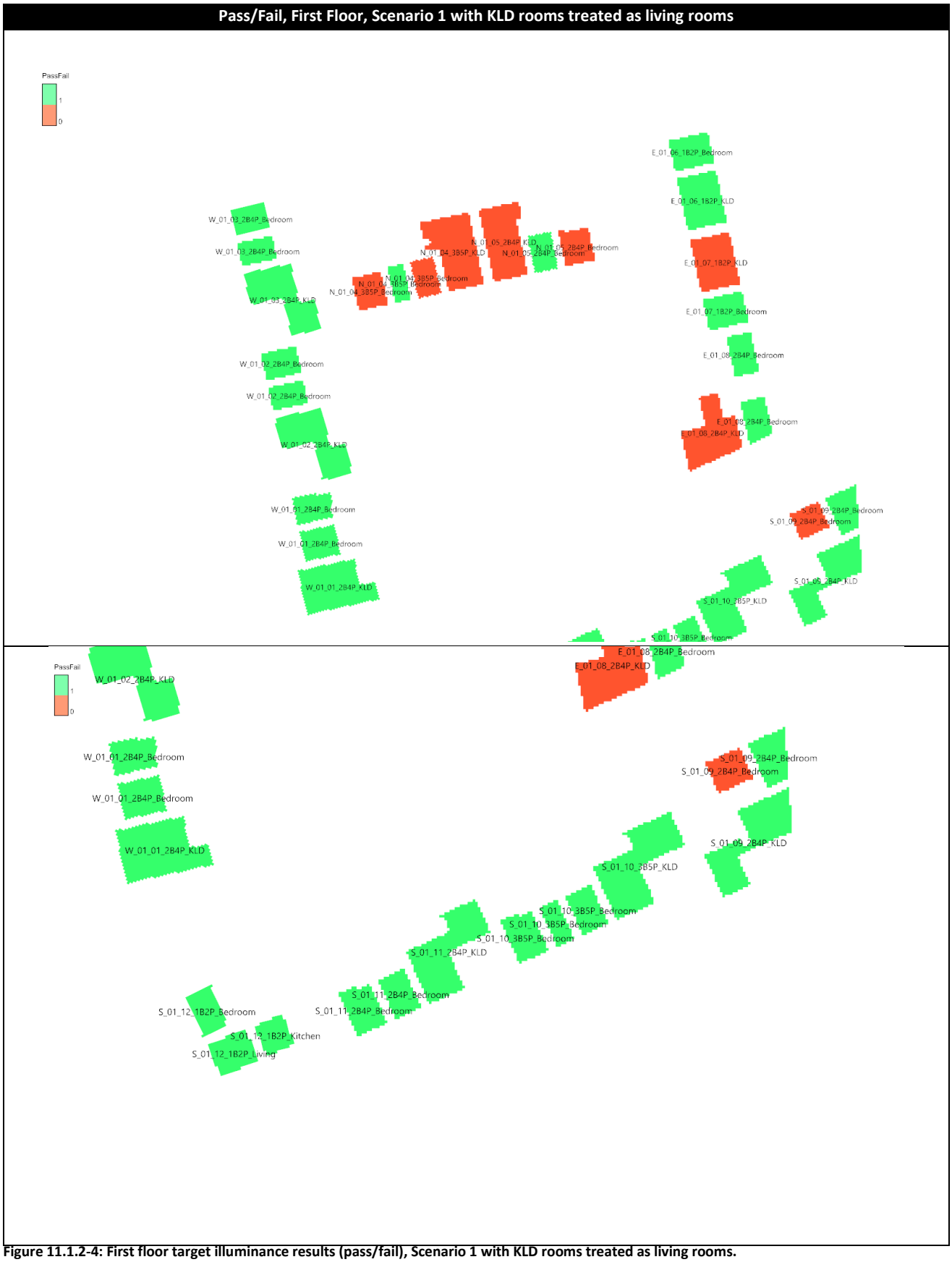


Figure 11.1.2-4: First floor target illuminance results (pass/fail), Scenario 1 with KLD rooms treated as living rooms.

Second Floor

Table 11.1.2-3: sDA results, second floor, Scenario 1 with KLD rooms treated as living rooms.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
S	2	9	2B4P	Bedroom	29.68%	FALSE	99.54%	TRUE
S	2	9	2B4P	Bedroom	12.36%	FALSE	68.54%	TRUE
S	2	12	1B2P	Kitchen	86.43%	TRUE	98.57%	TRUE
S	2	11	2B4P	Bedroom	42.73%	FALSE	99.09%	TRUE
S	2	11	2B4P	Bedroom	50.00%	TRUE	100.00%	TRUE
S	2	11	2B4P	KLD	40.14%	FALSE	81.72%	TRUE
S	2	10	3B5P	Bedroom	40.28%	FALSE	99.53%	TRUE
S	2	10	3B5P	Bedroom	62.50%	TRUE	100.00%	TRUE
S	2	10	3B5P	Bedroom	44.77%	FALSE	98.84%	TRUE
S	2	10	3B5P	KLD	33.18%	FALSE	66.03%	TRUE
S	2	9	2B4P	KLD	31.57%	FALSE	90.69%	TRUE
E	2	8	2B4P	Bedroom	25.24%	FALSE	65.53%	TRUE
E	2	7	1B2P	Bedroom	17.98%	FALSE	89.89%	TRUE
E	2	7	1B2P	KLD	20.09%	FALSE	58.72%	TRUE
E	2	6	1B2P	KLD	22.30%	FALSE	84.55%	TRUE
E	2	8	2B4P	KLD	30.65%	FALSE	52.51%	TRUE
E	2	8	2B4P	Bedroom	94.81%	TRUE	100.00%	TRUE
E	2	6	1B2P	Bedroom	70.04%	TRUE	100.00%	TRUE
N	2	4	3B5P	Bedroom	17.96%	FALSE	58.25%	TRUE
N	2	4	3B5P	Bedroom	34.13%	FALSE	76.98%	TRUE
N	2	4	3B5P	Bedroom	26.44%	FALSE	75.29%	TRUE
N	2	5	2B4P	Bedroom	27.01%	FALSE	77.01%	TRUE
N	2	5	2B4P	Bedroom	23.26%	FALSE	72.09%	TRUE
N	2	4	3B5P	KLD	30.70%	FALSE	48.63%	FALSE
N	2	5	2B4P	KLD	32.62%	FALSE	50.35%	TRUE
W	2	1	2B4P	KLD	38.28%	FALSE	85.64%	TRUE
W	2	1	2B4P	Bedroom	29.90%	FALSE	98.53%	TRUE
W	2	1	2B4P	Bedroom	26.36%	FALSE	94.09%	TRUE
W	2	2	2B4P	Bedroom	34.48%	FALSE	99.43%	TRUE
W	2	3	2B4P	Bedroom	33.91%	FALSE	99.43%	TRUE
W	2	3	2B4P	KLD	57.68%	TRUE	96.79%	TRUE
W	2	2	2B4P	KLD	66.61%	TRUE	98.93%	TRUE
S	2	12	1B2P	Living	100.00%	TRUE	100.00%	TRUE
S	2	12	1B2P	Bedroom	59.34%	FALSE	91.21%	TRUE
W	2	2	2B4P	Bedroom	31.68%	FALSE	98.51%	TRUE
W	2	3	2B4P	Bedroom	98.51%	TRUE	100.00%	TRUE

sDA results, Second Floor, Scenario 1 with KLD rooms treated as living rooms

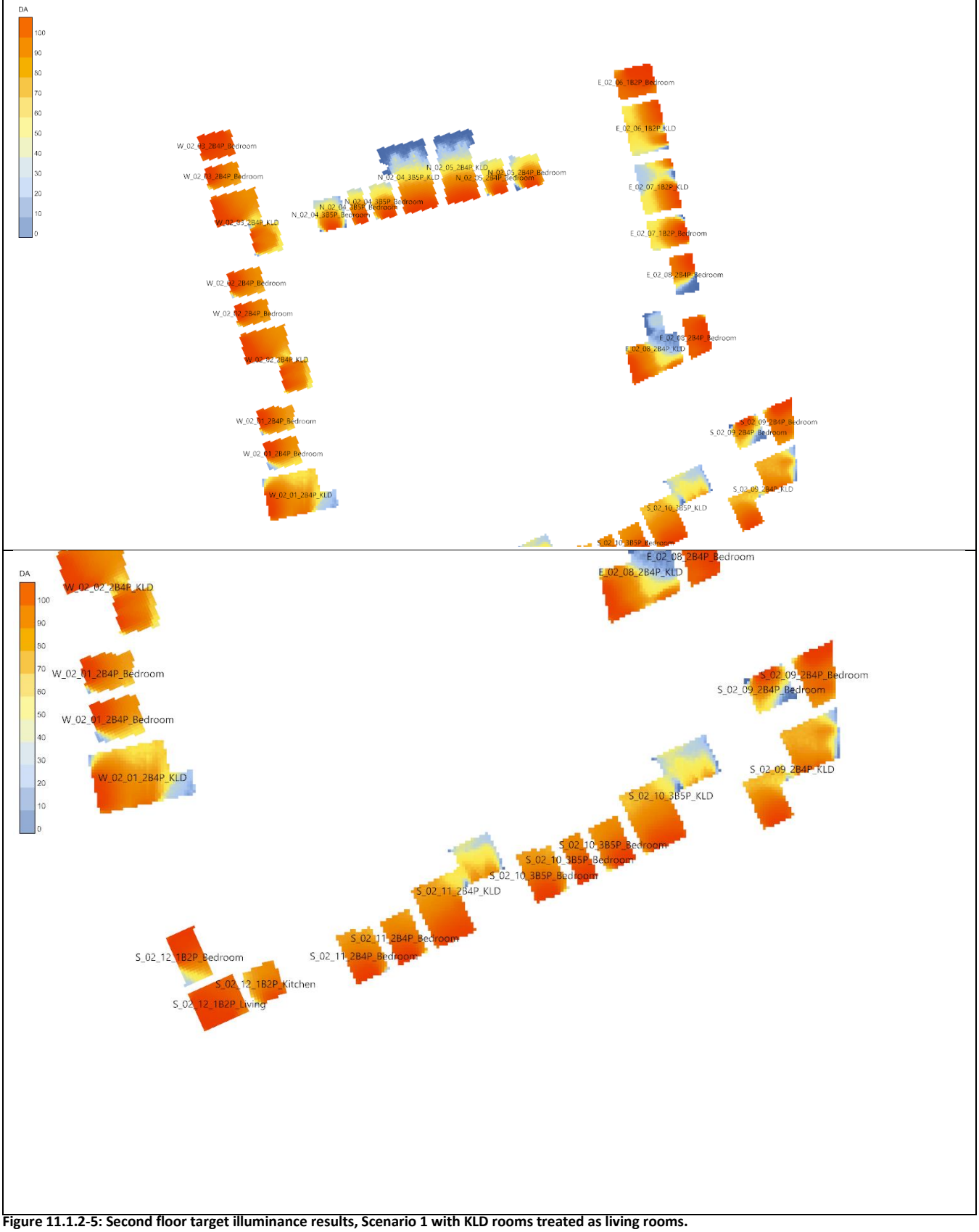


Figure 11.1.2-5: Second floor target illuminance results, Scenario 1 with KLD rooms treated as living rooms.

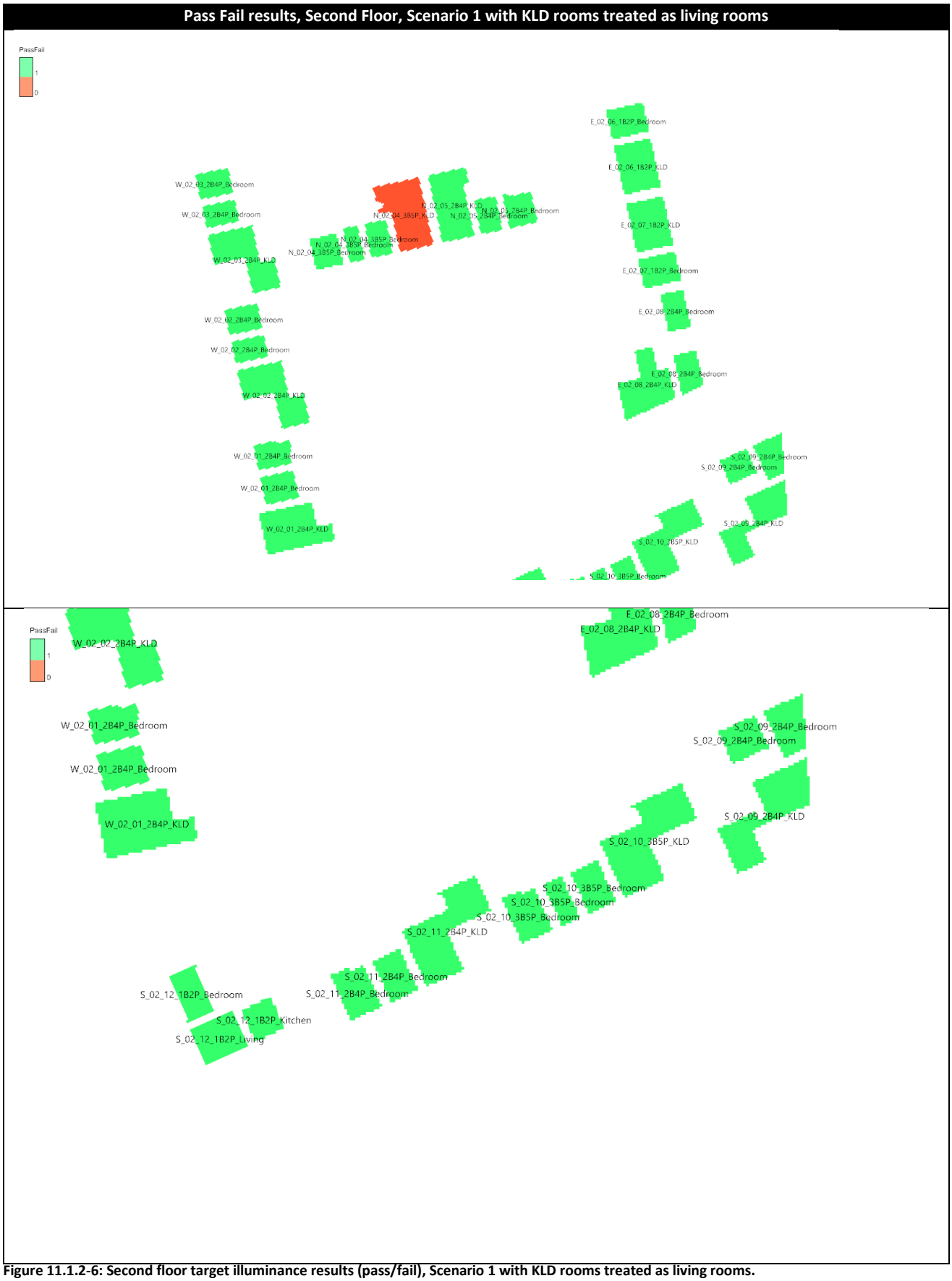


Figure 11.1.2-6: Second floor target illuminance results (pass/fail), Scenario 1 with KLD rooms treated as living rooms.

Third Floor

Table 11.1.2-4: sDA results, third floor, Scenario 1 with KLD rooms treated as living rooms.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
S	3	1	2B4P	KLD	78.83%	TRUE	99.09%	TRUE
S	3	2	3B5P	KLD	63.19%	TRUE	98.89%	TRUE
S	3	2	3B5P	Bedroom	43.02%	FALSE	98.84%	TRUE
S	3	2	3B5P	Bedroom	60.83%	TRUE	100.00%	TRUE
S	3	2	3B5P	Bedroom	38.86%	FALSE	99.05%	TRUE
S	3	3	2B4P	KLD	72.40%	TRUE	99.46%	TRUE
S	3	3	2B4P	Bedroom	48.84%	FALSE	99.42%	TRUE
S	3	3	2B4P	Bedroom	41.36%	FALSE	99.09%	TRUE
S	3	4	1B2P	Kitchen	96.53%	TRUE	99.31%	TRUE
S	3	1	2B4P	Bedroom	100.00%	TRUE	100.00%	TRUE
S	3	1	2B4P	Bedroom	21.35%	FALSE	96.07%	TRUE
S	3	4	1B2P	Living	100.00%	TRUE	100.00%	TRUE
S	3	4	1B2P	Bedroom	71.18%	TRUE	100.00%	TRUE

sDA results, Third Floor, Scenario 1 with KLD rooms treated as living rooms

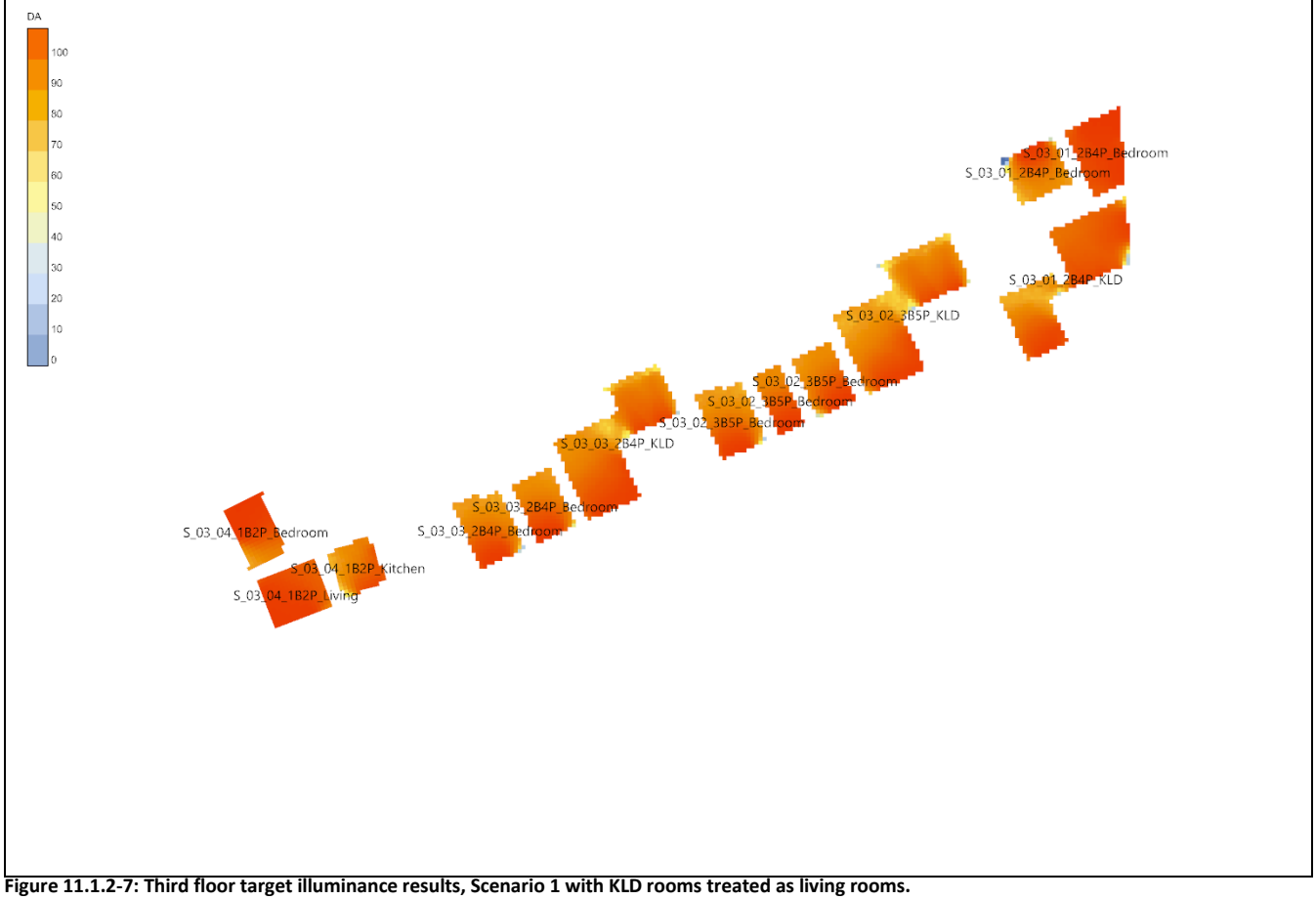


Figure 11.1.2-7: Third floor target illuminance results, Scenario 1 with KLD rooms treated as living rooms.

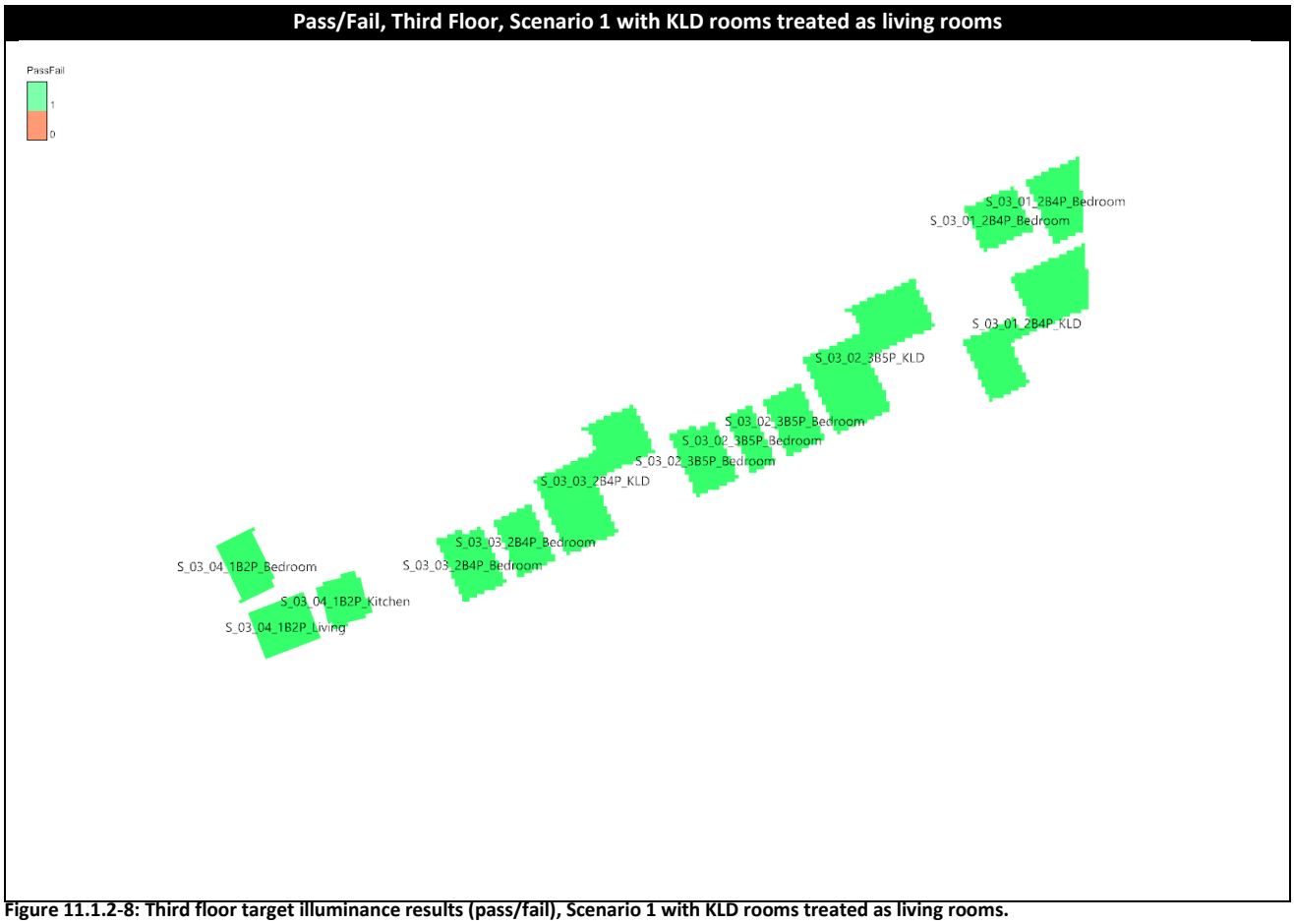


Figure 11.1.2-8: Third floor target illuminance results (pass/fail), Scenario 1 with KLD rooms treated as living rooms.

11.2 Scenario 2 – With the surroundings as existing

For scenario 2, when the KLD rooms are treated as kitchens, i.e. the target illuminance level is 200 lux, then 88 out of 114 rooms pass, which is a 77% pass rate. When the KLD rooms are treated as living rooms, with a target illuminance of 150 lux, then the number of rooms passing increases to 98, which is an 86% pass rate.

11.2.1 With KLD rooms treated as Kitchens

Ground Floor

Table 11.2.1-1: sDA for ground floor, Scenario 2 with KLD rooms treated as kitchens.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
N	0	4	2B4P	KLD	17.8%	FALSE	23.7%	FALSE
N	0	4	2B4P	Bedroom	8.7%	FALSE	34.8%	FALSE
N	0	4	2B4P	Bedroom	0.0%	FALSE	23.6%	FALSE
N	0	3	2B3P	Bedroom	0.0%	FALSE	19.0%	FALSE
N	0	3	2B3P	Bedroom	0.0%	FALSE	4.4%	FALSE
N	0	3	2B3P	KLD	8.8%	FALSE	13.8%	FALSE
E	0	6	1B2P	KLD	29.9%	FALSE	52.0%	TRUE
E	0	6	1B2P	Bedroom	16.5%	FALSE	81.0%	TRUE
E	0	5	1B2P	KLD	15.7%	FALSE	27.6%	FALSE
E	0	5	1B2P	Bedroom	18.4%	FALSE	73.4%	TRUE
S	0	7	2B4P	Bedroom	1.1%	FALSE	41.6%	FALSE
S	0	7	2B4P	Bedroom	12.8%	FALSE	65.8%	TRUE
S	0	10	1B2P	Kitchen	67.1%	TRUE	96.6%	TRUE
W	0	1	2B4P	Bedroom	37.9%	FALSE	99.4%	TRUE
W	0	2	2B4P	Bedroom	38.5%	FALSE	99.4%	TRUE
W	0	2	2B4P	KLD	37.2%	FALSE	57.4%	TRUE
W	0	1	2B4P	KLD	36.8%	FALSE	56.7%	TRUE
S	0	9	2B3P	Bedroom	35.5%	FALSE	95.0%	TRUE
S	0	9	2B3P	Bedroom	33.1%	FALSE	95.3%	TRUE
S	0	9	2B3P	KLD	35.5%	FALSE	48.4%	FALSE
S	0	8	3B5P	Bedroom	34.1%	FALSE	98.6%	TRUE
S	0	8	3B5P	Bedroom	55.0%	TRUE	100.0%	TRUE
S	0	8	3B5P	Bedroom	37.8%	FALSE	98.8%	TRUE
S	0	8	3B5P	KLD	29.4%	FALSE	41.1%	FALSE
W	0	2	2B4P	Bedroom	97.1%	TRUE	100.0%	TRUE
W	0	1	2B4P	Bedroom	34.7%	FALSE	99.0%	TRUE
S	0	7	2B4P	KLD	30.5%	FALSE	45.6%	FALSE
S	0	10	1B2P	Living	100.0%	TRUE	100.0%	TRUE
S	0	10	1B2P	Bedroom	56.0%	FALSE	89.3%	TRUE

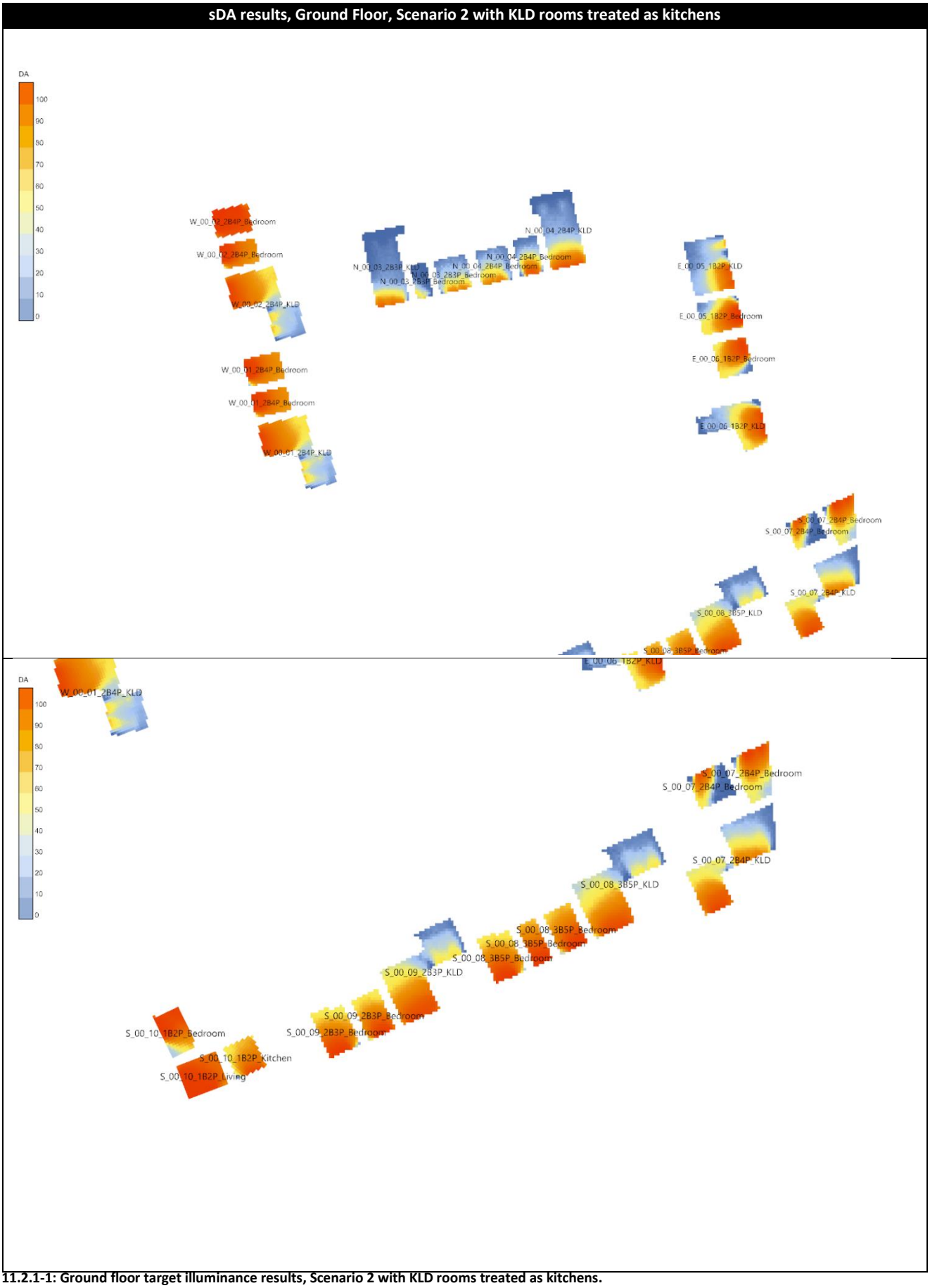


Figure 11.2.1-1: Ground floor target illuminance results, Scenario 2 with KLD rooms treated as kitchens.

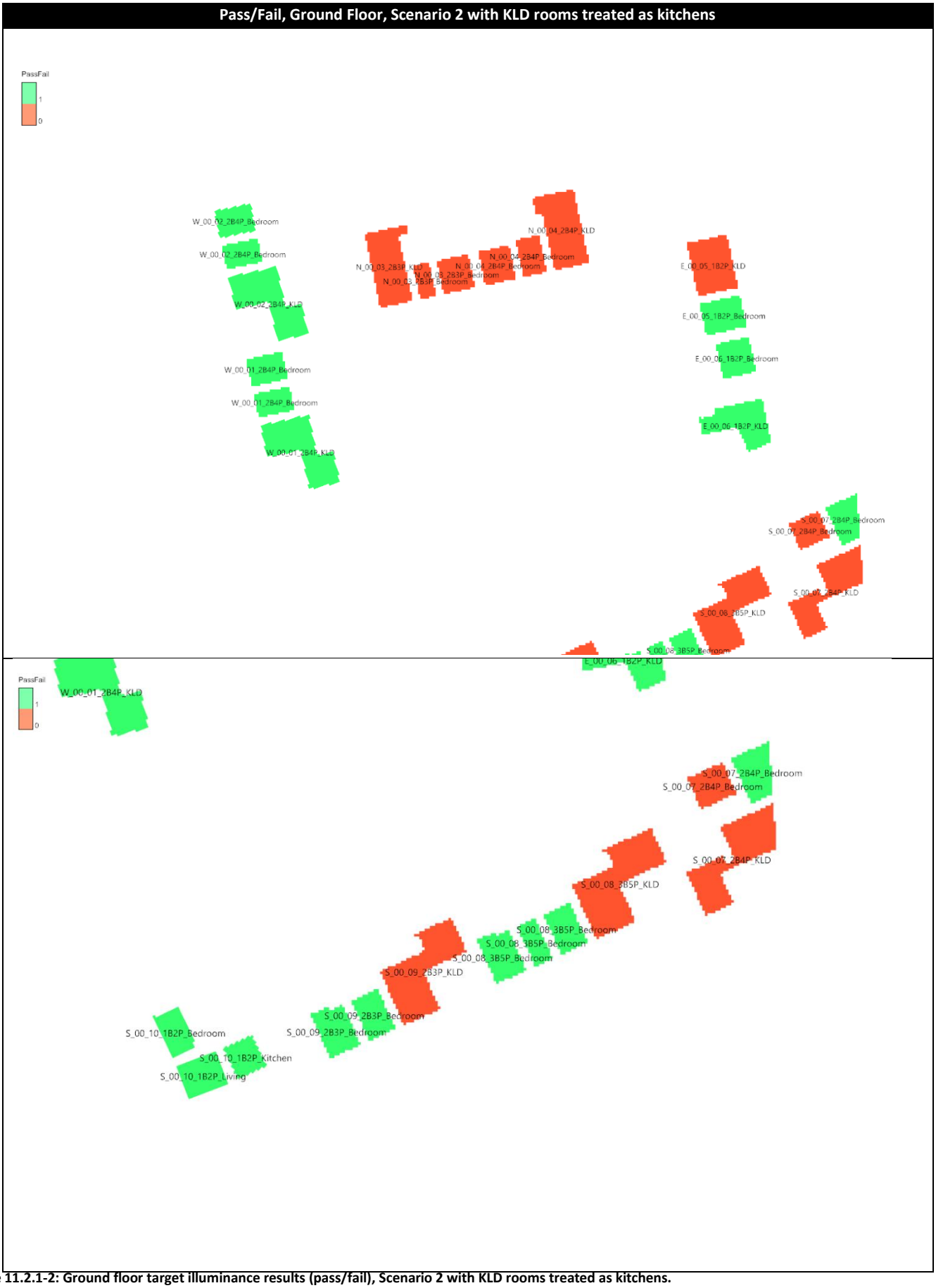


Figure 11.2.1-2: Ground floor target illuminance results (pass/fail), Scenario 2 with KLD rooms treated as kitchens.

First Floor

Table 11.2.1-2: sDA for first floor, scenario 2 with KLD rooms treated as kitchens.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
E	1	6	1B2P	KLD	18.3%	FALSE	36.2%	FALSE
E	1	7	1B2P	KLD	17.9%	FALSE	32.9%	FALSE
E	1	7	1B2P	Bedroom	18.7%	FALSE	83.9%	TRUE
E	1	8	2B4P	Bedroom	24.8%	FALSE	67.5%	TRUE
E	1	6	1B2P	Bedroom	67.8%	TRUE	100.0%	TRUE
E	1	8	2B4P	Bedroom	81.1%	TRUE	99.5%	TRUE
E	1	8	2B4P	KLD	17.2%	FALSE	25.1%	FALSE
S	1	9	2B4P	Bedroom	25.1%	FALSE	99.5%	TRUE
S	1	9	2B4P	Bedroom	4.5%	FALSE	45.5%	FALSE
N	1	4	3B5P	Bedroom	10.2%	FALSE	35.9%	FALSE
N	1	4	3B5P	Bedroom	18.5%	FALSE	54.0%	TRUE
N	1	4	3B5P	Bedroom	0.0%	FALSE	5.3%	FALSE
N	1	5	2B4P	Bedroom	16.5%	FALSE	51.1%	TRUE
N	1	5	2B4P	Bedroom	16.1%	FALSE	46.5%	FALSE
N	1	4	3B5P	KLD	0.2%	FALSE	3.9%	FALSE
N	1	5	2B4P	KLD	1.1%	FALSE	6.4%	FALSE
W	1	3	2B4P	Bedroom	99.5%	TRUE	100.0%	TRUE
W	1	2	2B4P	Bedroom	37.1%	FALSE	99.5%	TRUE
W	1	1	2B4P	KLD	40.3%	FALSE	63.4%	TRUE
W	1	3	2B4P	KLD	37.4%	FALSE	56.5%	TRUE
W	1	2	2B4P	KLD	37.8%	FALSE	58.9%	TRUE
W	1	2	2B4P	Bedroom	40.2%	FALSE	100.0%	TRUE
W	1	3	2B4P	Bedroom	34.5%	FALSE	99.4%	TRUE
W	1	1	2B4P	Bedroom	29.4%	FALSE	96.1%	TRUE
W	1	1	2B4P	Bedroom	31.7%	FALSE	98.5%	TRUE
S	1	12	1B2P	Kitchen	77.8%	TRUE	98.6%	TRUE
S	1	11	2B4P	Bedroom	45.3%	FALSE	99.4%	TRUE
S	1	11	2B4P	KLD	38.5%	FALSE	57.3%	TRUE
S	1	10	3B5P	Bedroom	37.4%	FALSE	99.1%	TRUE
S	1	10	3B5P	Bedroom	58.3%	TRUE	100.0%	TRUE
S	1	10	3B5P	Bedroom	41.3%	FALSE	98.8%	TRUE
S	1	10	3B5P	KLD	32.2%	FALSE	46.4%	FALSE
S	1	9	2B4P	KLD	28.5%	FALSE	56.4%	TRUE
S	1	11	2B4P	Bedroom	39.1%	FALSE	99.1%	TRUE
S	1	12	1B2P	Bedroom	55.3%	FALSE	89.4%	TRUE
S	1	12	1B2P	Living	100.0%	TRUE	100.0%	TRUE

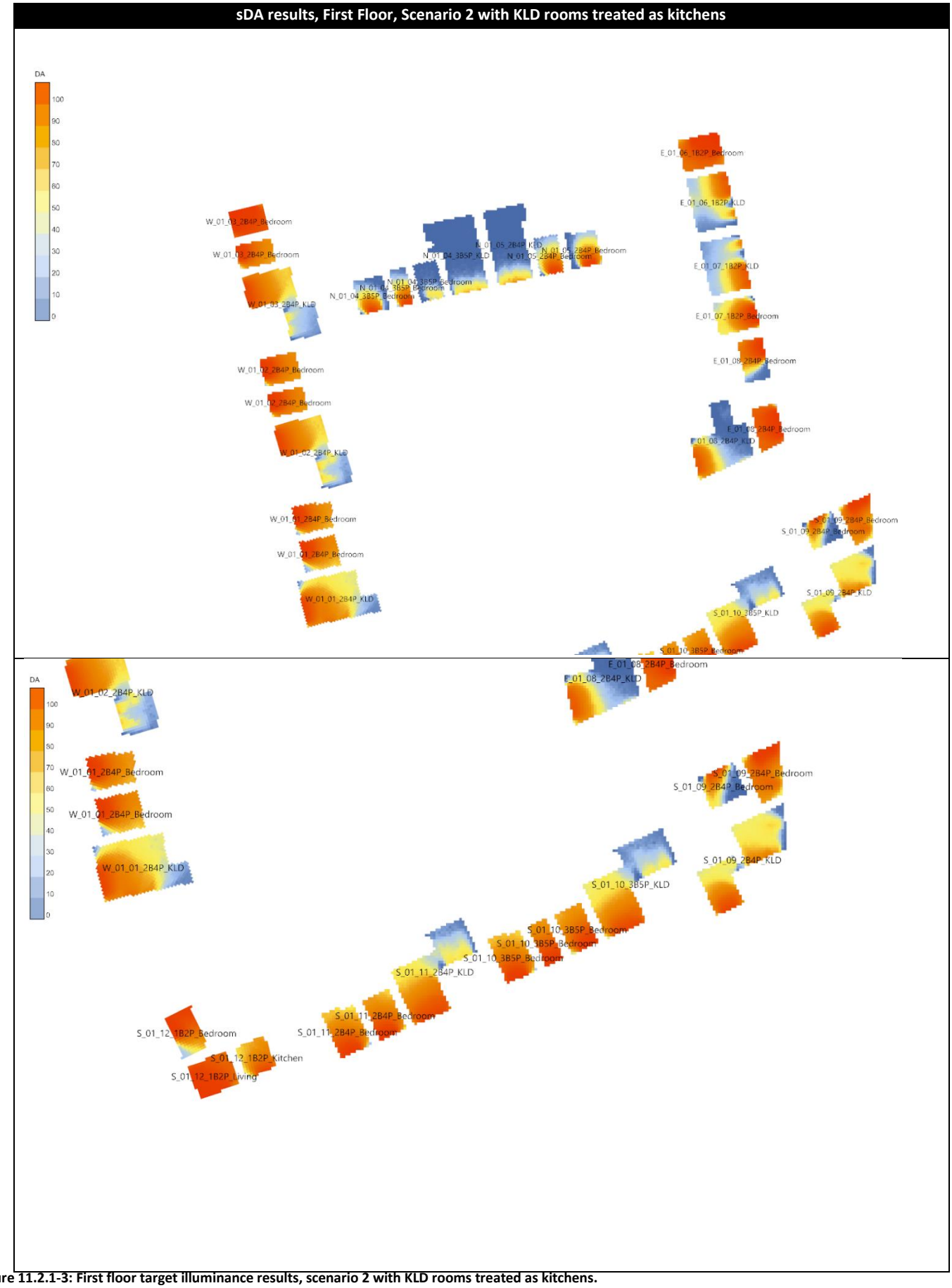


Figure 11.2.1-3: First floor target illuminance results, scenario 2 with KLD rooms treated as kitchens.

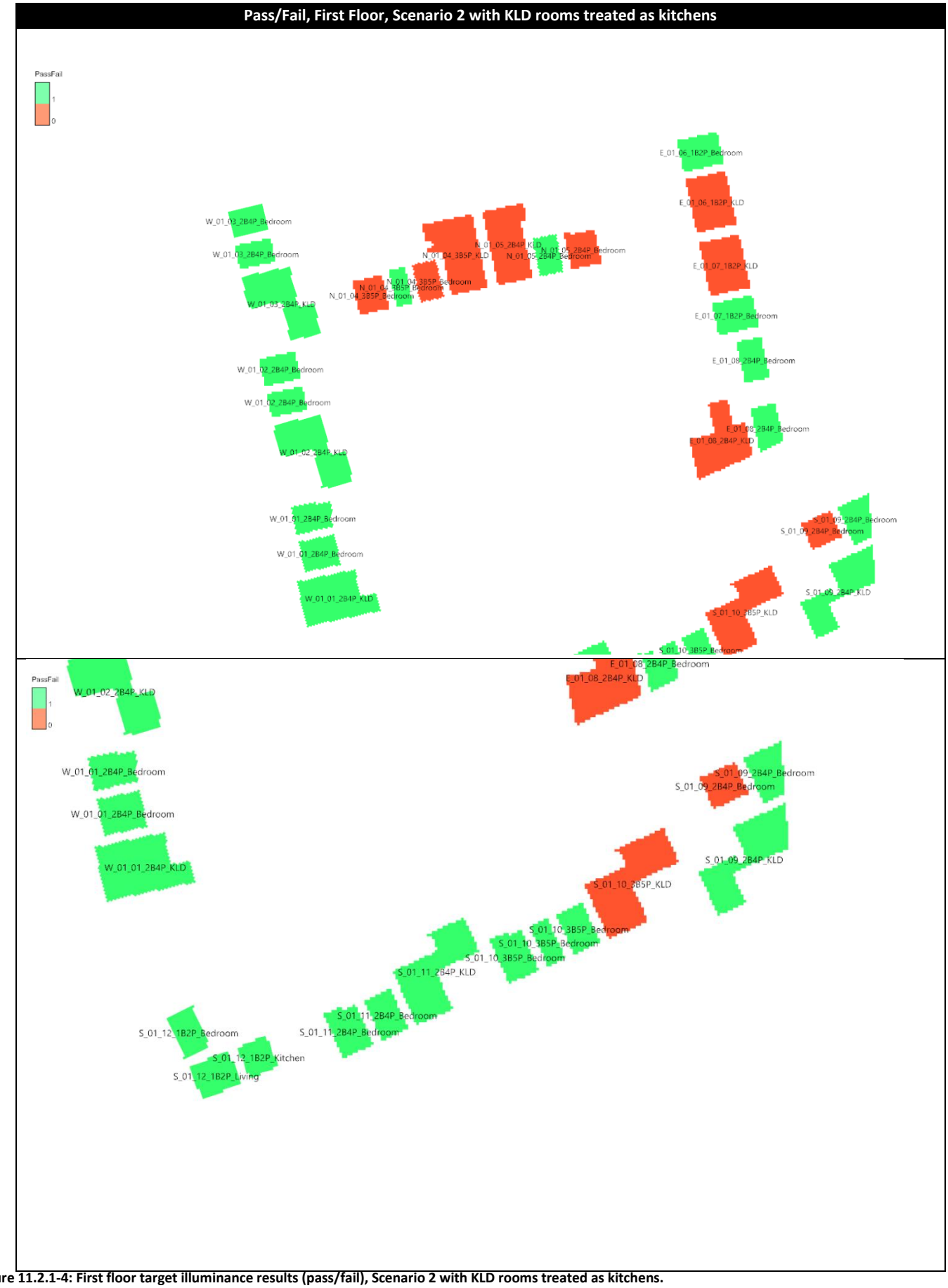


Figure 11.2.1-4: First floor target illuminance results (pass/fail), Scenario 2 with KLD rooms treated as kitchens.

Second Floor

Table 11.2.1-3: sDA for second floor, scenario 2 with KLD rooms treated as kitchens.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
S	2	9	2B4P	Bedroom	29.7%	FALSE	99.5%	TRUE
S	2	9	2B4P	Bedroom	11.8%	FALSE	69.7%	TRUE
S	2	12	1B2P	Kitchen	86.4%	TRUE	98.6%	TRUE
S	2	11	2B4P	Bedroom	42.3%	FALSE	99.1%	TRUE
S	2	11	2B4P	Bedroom	49.4%	FALSE	100.0%	TRUE
S	2	11	2B4P	KLD	40.5%	FALSE	63.4%	TRUE
S	2	10	3B5P	Bedroom	39.3%	FALSE	99.5%	TRUE
S	2	10	3B5P	Bedroom	62.5%	TRUE	100.0%	TRUE
S	2	10	3B5P	Bedroom	44.8%	FALSE	98.8%	TRUE
S	2	10	3B5P	KLD	33.0%	FALSE	54.7%	TRUE
S	2	9	2B4P	KLD	32.5%	FALSE	76.5%	TRUE
E	2	8	2B4P	Bedroom	24.8%	FALSE	66.5%	TRUE
E	2	7	1B2P	Bedroom	18.4%	FALSE	90.3%	TRUE
E	2	7	1B2P	KLD	20.3%	FALSE	37.1%	FALSE
E	2	6	1B2P	KLD	22.7%	FALSE	49.7%	FALSE
E	2	8	2B4P	KLD	30.8%	FALSE	44.8%	FALSE
E	2	8	2B4P	Bedroom	95.8%	TRUE	100.0%	TRUE
E	2	6	1B2P	Bedroom	70.0%	TRUE	100.0%	TRUE
N	2	4	3B5P	Bedroom	17.5%	FALSE	57.8%	TRUE
N	2	4	3B5P	Bedroom	34.9%	FALSE	77.0%	TRUE
N	2	4	3B5P	Bedroom	26.4%	FALSE	74.1%	TRUE
N	2	5	2B4P	Bedroom	26.4%	FALSE	76.4%	TRUE
N	2	5	2B4P	Bedroom	23.3%	FALSE	72.1%	TRUE
N	2	4	3B5P	KLD	30.7%	FALSE	40.4%	FALSE
N	2	5	2B4P	KLD	32.6%	FALSE	42.4%	FALSE
W	2	1	2B4P	KLD	37.5%	FALSE	62.7%	TRUE
W	2	1	2B4P	Bedroom	29.9%	FALSE	98.5%	TRUE
W	2	1	2B4P	Bedroom	25.9%	FALSE	94.1%	TRUE
W	2	2	2B4P	Bedroom	35.1%	FALSE	99.4%	TRUE
W	2	3	2B4P	Bedroom	33.9%	FALSE	99.4%	TRUE
W	2	3	2B4P	KLD	57.5%	TRUE	82.9%	TRUE
W	2	2	2B4P	KLD	66.3%	TRUE	89.8%	TRUE
S	2	12	1B2P	Living	100.0%	TRUE	100.0%	TRUE
S	2	12	1B2P	Bedroom	58.8%	FALSE	89.0%	TRUE
W	2	2	2B4P	Bedroom	31.7%	FALSE	98.5%	TRUE
W	2	3	2B4P	Bedroom	99.0%	TRUE	100.0%	TRUE

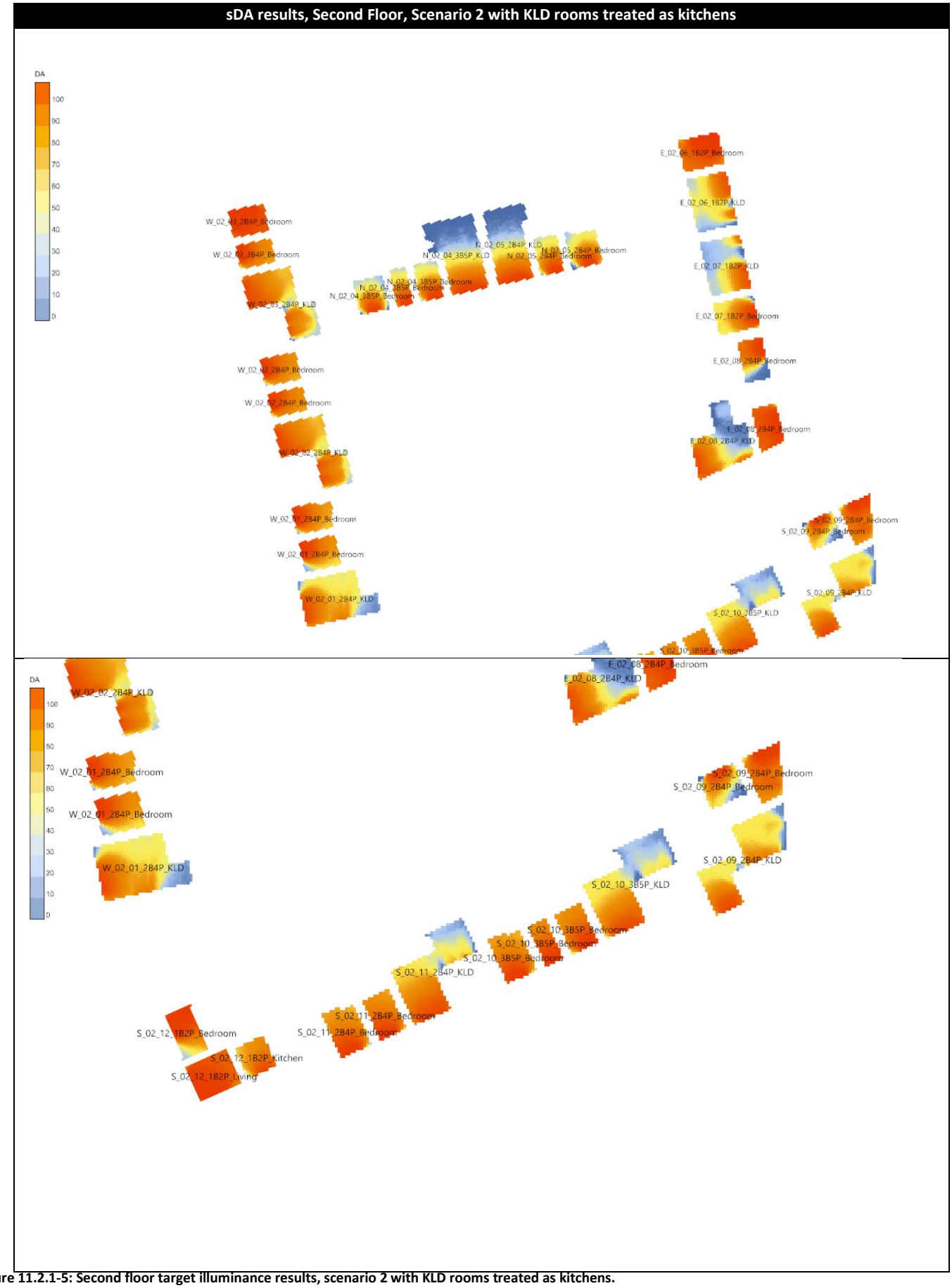


Figure 11.2.1-5: Second floor target illuminance results, scenario 2 with KLD rooms treated as kitchens.

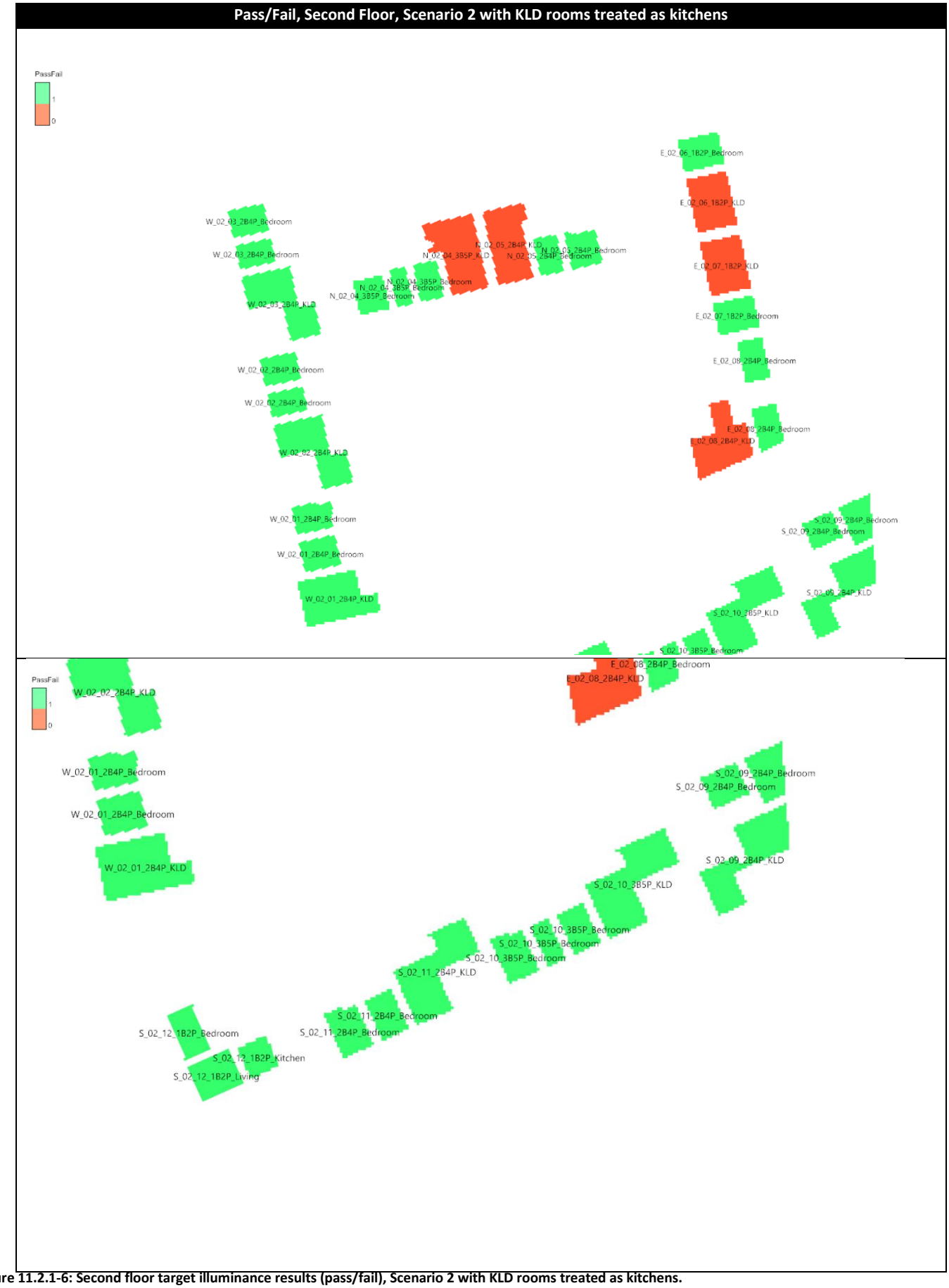


Figure 11.2.1-6: Second floor target illuminance results (pass/fail), Scenario 2 with KLD rooms treated as kitchens.

Third Floor

Table 11.2.1-4: sDA for third floor, scenario 2 with KLD rooms treated as kitchens.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
S	3	1	2B4P	KLD	78.6%	TRUE	97.8%	TRUE
S	3	2	3B5P	KLD	63.2%	TRUE	93.0%	TRUE
S	3	2	3B5P	Bedroom	43.6%	FALSE	98.8%	TRUE
S	3	2	3B5P	Bedroom	60.8%	TRUE	100.0%	TRUE
S	3	2	3B5P	Bedroom	38.9%	FALSE	99.1%	TRUE
S	3	3	2B4P	KLD	72.4%	TRUE	96.6%	TRUE
S	3	3	2B4P	Bedroom	47.7%	FALSE	99.4%	TRUE
S	3	3	2B4P	Bedroom	41.4%	FALSE	99.1%	TRUE
S	3	4	1B2P	Kitchen	95.8%	TRUE	99.3%	TRUE
S	3	1	2B4P	Bedroom	100.0%	TRUE	100.0%	TRUE
S	3	1	2B4P	Bedroom	21.9%	FALSE	96.1%	TRUE
S	3	4	1B2P	Living	100.0%	TRUE	100.0%	TRUE
S	3	4	1B2P	Bedroom	71.2%	TRUE	100.0%	TRUE

sDA results, Third Floor, Scenario 2 with KLD rooms treated as kitchens

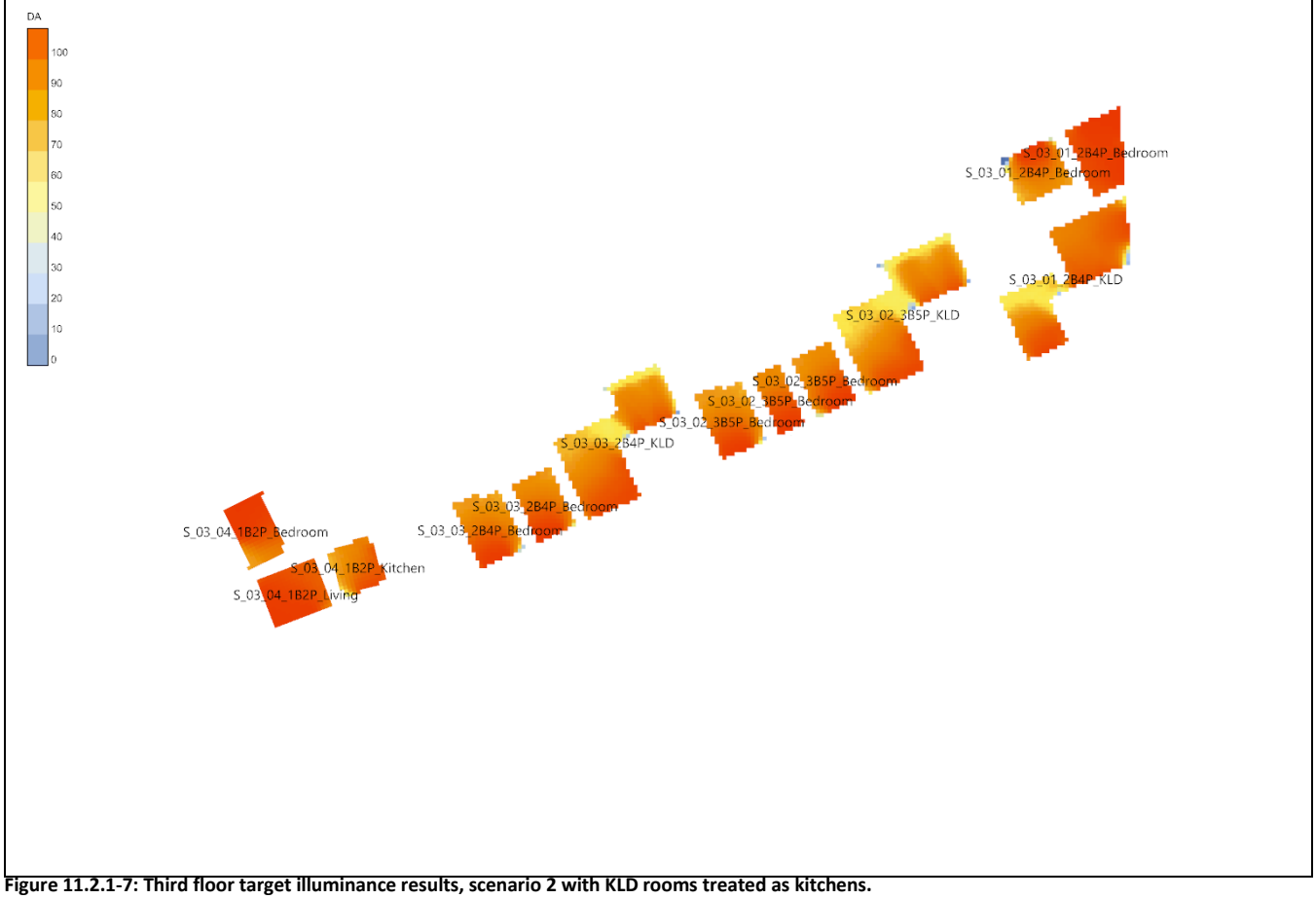


Figure 11.2.1-7: Third floor target illuminance results, scenario 2 with KLD rooms treated as kitchens.

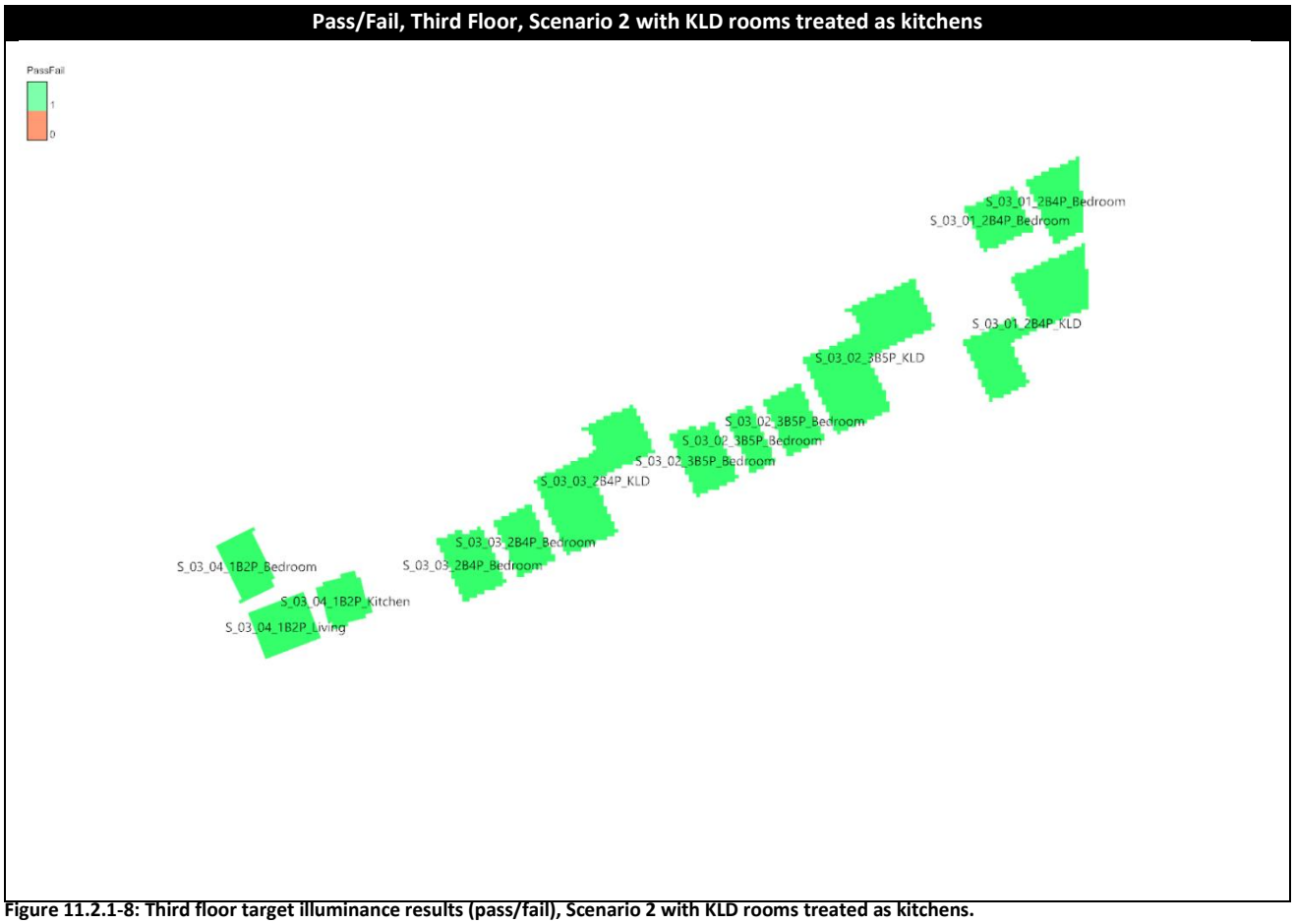


Figure 11.2.1-8: Third floor target illuminance results (pass/fail), Scenario 2 with KLD rooms treated as kitchens.

11.2.2 With KLD rooms treated as Living Rooms

Ground Floor

Table 11.2.2-1: sDA for ground floor, Scenario 2 with KLD rooms treated as living rooms.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
N	0	4	2B4P	KLD	17.8%	FALSE	28.6%	FALSE
N	0	4	2B4P	Bedroom	8.7%	FALSE	34.8%	FALSE
N	0	4	2B4P	Bedroom	0.0%	FALSE	23.6%	FALSE
N	0	3	2B3P	Bedroom	0.0%	FALSE	19.0%	FALSE
N	0	3	2B3P	Bedroom	0.0%	FALSE	4.4%	FALSE
N	0	3	2B3P	KLD	8.8%	FALSE	17.0%	FALSE
E	0	6	1B2P	KLD	29.9%	FALSE	68.2%	TRUE
E	0	6	1B2P	Bedroom	16.5%	FALSE	81.0%	TRUE
E	0	5	1B2P	KLD	15.7%	FALSE	41.5%	FALSE
E	0	5	1B2P	Bedroom	18.4%	FALSE	73.4%	TRUE
S	0	7	2B4P	Bedroom	1.1%	FALSE	41.6%	FALSE
S	0	7	2B4P	Bedroom	12.8%	FALSE	65.8%	TRUE
S	0	10	1B2P	Kitchen	67.1%	TRUE	96.6%	TRUE
W	0	1	2B4P	Bedroom	37.9%	FALSE	99.4%	TRUE
W	0	2	2B4P	Bedroom	38.5%	FALSE	99.4%	TRUE
W	0	2	2B4P	KLD	37.2%	FALSE	68.9%	TRUE
W	0	1	2B4P	KLD	36.8%	FALSE	73.5%	TRUE
S	0	9	2B3P	Bedroom	35.5%	FALSE	95.0%	TRUE
S	0	9	2B3P	Bedroom	33.1%	FALSE	95.3%	TRUE
S	0	9	2B3P	KLD	35.5%	FALSE	62.7%	TRUE
S	0	8	3B5P	Bedroom	34.1%	FALSE	98.6%	TRUE
S	0	8	3B5P	Bedroom	55.0%	TRUE	100.0%	TRUE
S	0	8	3B5P	Bedroom	37.8%	FALSE	98.8%	TRUE
S	0	8	3B5P	KLD	29.4%	FALSE	54.0%	TRUE
W	0	2	2B4P	Bedroom	97.1%	TRUE	100.0%	TRUE
W	0	1	2B4P	Bedroom	34.7%	FALSE	99.0%	TRUE
S	0	7	2B4P	KLD	30.5%	FALSE	65.7%	TRUE
S	0	10	1B2P	Living	100.0%	TRUE	100.0%	TRUE
S	0	10	1B2P	Bedroom	56.0%	FALSE	89.3%	TRUE

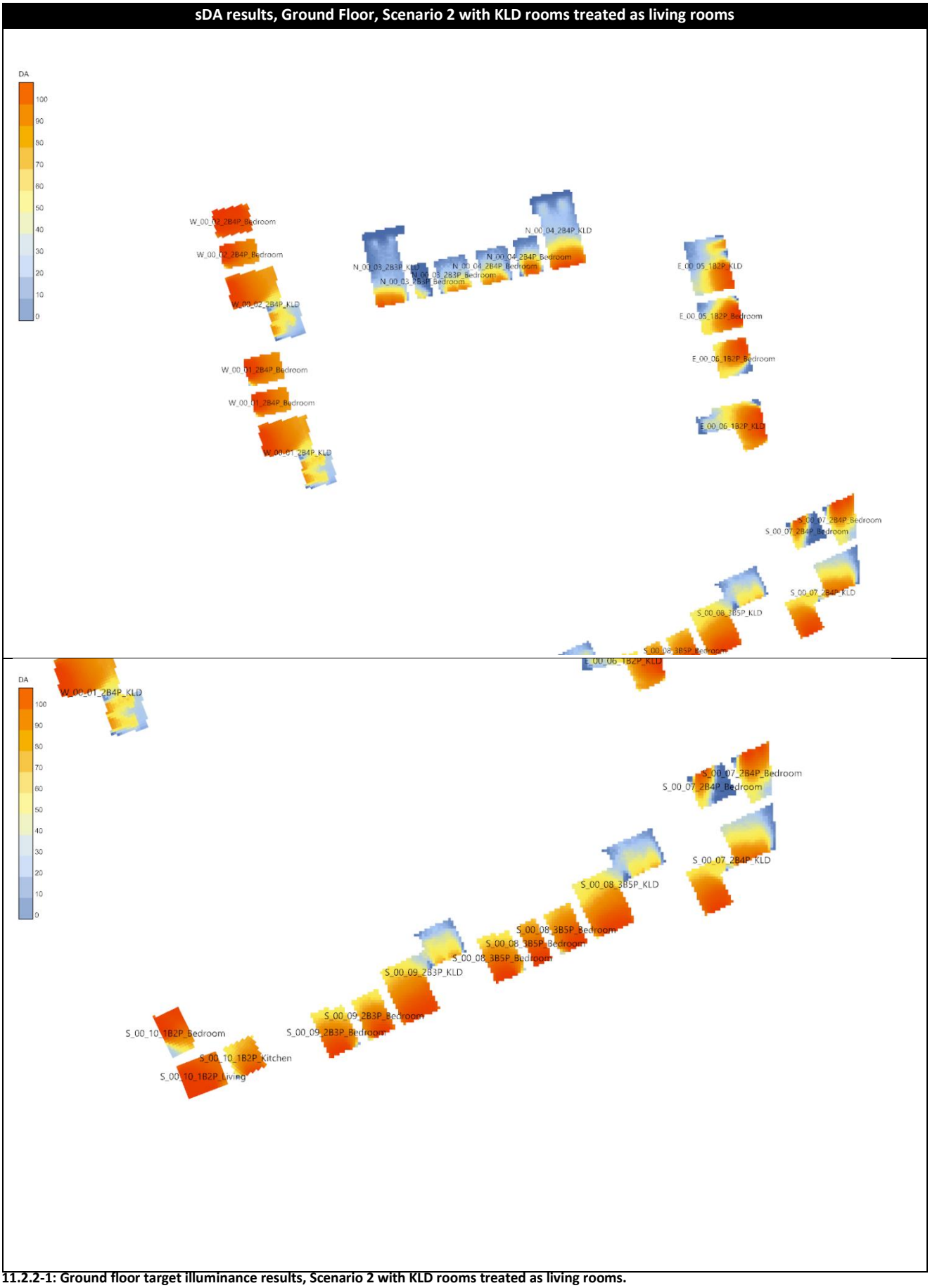


Figure 11.2.2-1: Ground floor target illuminance results, Scenario 2 with KLD rooms treated as living rooms.

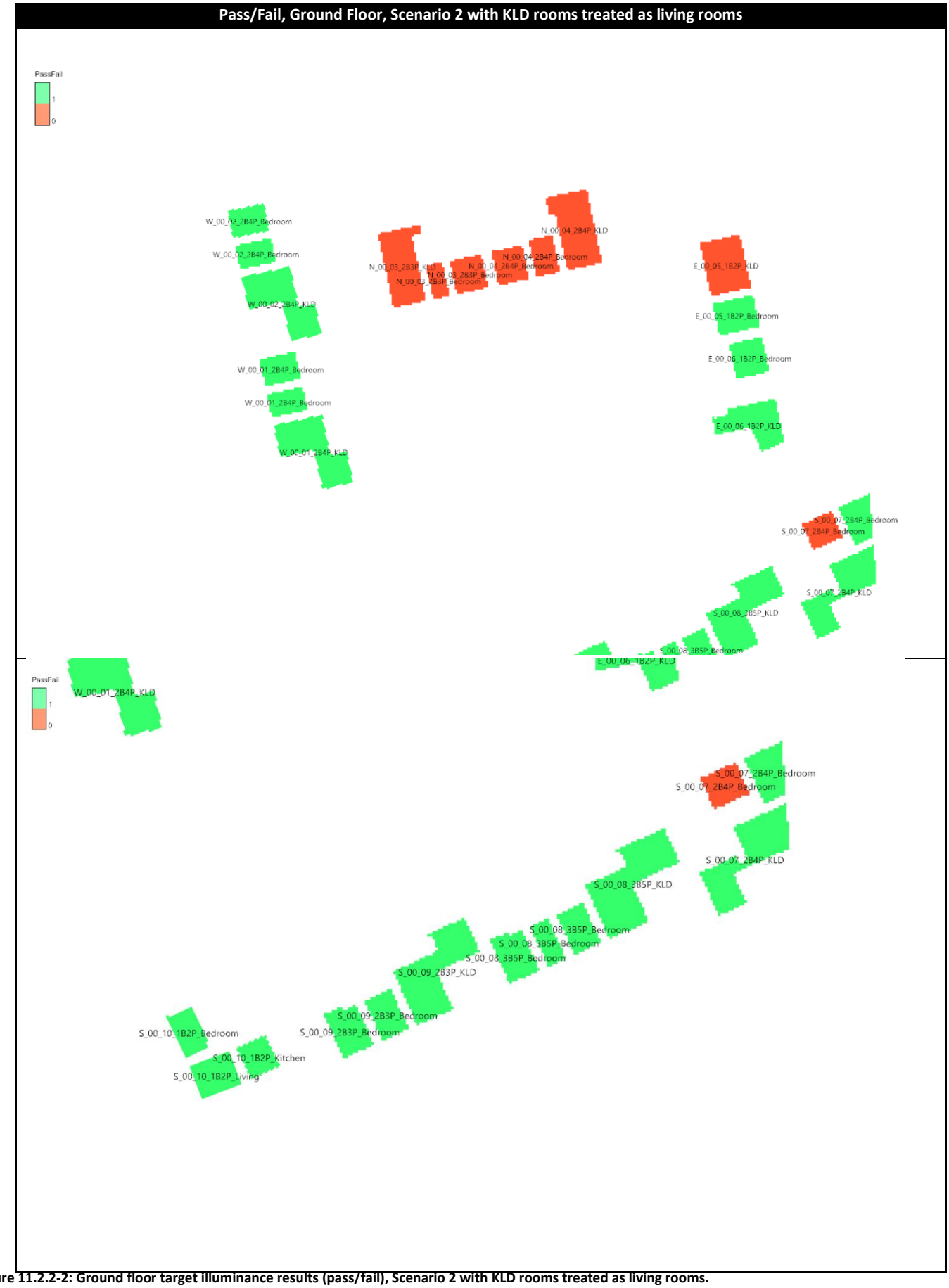


Figure 11.2.2-2: Ground floor target illuminance results (pass/fail), Scenario 2 with KLD rooms treated as living rooms.

First Floor

Table 11.2.2-2: sDA for first floor, Scenario 2 with KLD rooms treated as living rooms.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
E	1	6	1B2P	KLD	18.3%	FALSE	71.3%	TRUE
E	1	7	1B2P	KLD	17.9%	FALSE	54.5%	TRUE
E	1	7	1B2P	Bedroom	18.7%	FALSE	83.9%	TRUE
E	1	8	2B4P	Bedroom	24.8%	FALSE	67.5%	TRUE
E	1	6	1B2P	Bedroom	67.8%	TRUE	100.0%	TRUE
E	1	8	2B4P	Bedroom	81.1%	TRUE	99.5%	TRUE
E	1	8	2B4P	KLD	17.2%	FALSE	33.9%	FALSE
S	1	9	2B4P	Bedroom	25.1%	FALSE	99.5%	TRUE
S	1	9	2B4P	Bedroom	4.5%	FALSE	45.5%	FALSE
N	1	4	3B5P	Bedroom	10.2%	FALSE	35.9%	FALSE
N	1	4	3B5P	Bedroom	18.5%	FALSE	54.0%	TRUE
N	1	4	3B5P	Bedroom	0.0%	FALSE	5.3%	FALSE
N	1	5	2B4P	Bedroom	16.5%	FALSE	51.1%	TRUE
N	1	5	2B4P	Bedroom	16.1%	FALSE	46.5%	FALSE
N	1	4	3B5P	KLD	0.2%	FALSE	8.1%	FALSE
N	1	5	2B4P	KLD	1.1%	FALSE	10.7%	FALSE
W	1	3	2B4P	Bedroom	99.5%	TRUE	100.0%	TRUE
W	1	2	2B4P	Bedroom	37.1%	FALSE	99.5%	TRUE
W	1	1	2B4P	KLD	40.3%	FALSE	84.4%	TRUE
W	1	3	2B4P	KLD	37.4%	FALSE	67.5%	TRUE
W	1	2	2B4P	KLD	37.8%	FALSE	78.5%	TRUE
W	1	2	2B4P	Bedroom	40.2%	FALSE	100.0%	TRUE
W	1	3	2B4P	Bedroom	34.5%	FALSE	99.4%	TRUE
W	1	1	2B4P	Bedroom	29.4%	FALSE	96.1%	TRUE
W	1	1	2B4P	Bedroom	31.7%	FALSE	98.5%	TRUE
S	1	12	1B2P	Kitchen	77.8%	TRUE	98.6%	TRUE
S	1	11	2B4P	Bedroom	45.3%	FALSE	99.4%	TRUE
S	1	11	2B4P	KLD	38.5%	FALSE	72.8%	TRUE
S	1	10	3B5P	Bedroom	37.4%	FALSE	99.1%	TRUE
S	1	10	3B5P	Bedroom	58.3%	TRUE	100.0%	TRUE
S	1	10	3B5P	Bedroom	41.3%	FALSE	98.8%	TRUE
S	1	10	3B5P	KLD	32.2%	FALSE	61.6%	TRUE
S	1	9	2B4P	KLD	28.5%	FALSE	88.7%	TRUE
S	1	11	2B4P	Bedroom	39.1%	FALSE	99.1%	TRUE
S	1	12	1B2P	Bedroom	55.3%	FALSE	89.4%	TRUE
S	1	12	1B2P	Living	100.0%	TRUE	100.0%	TRUE

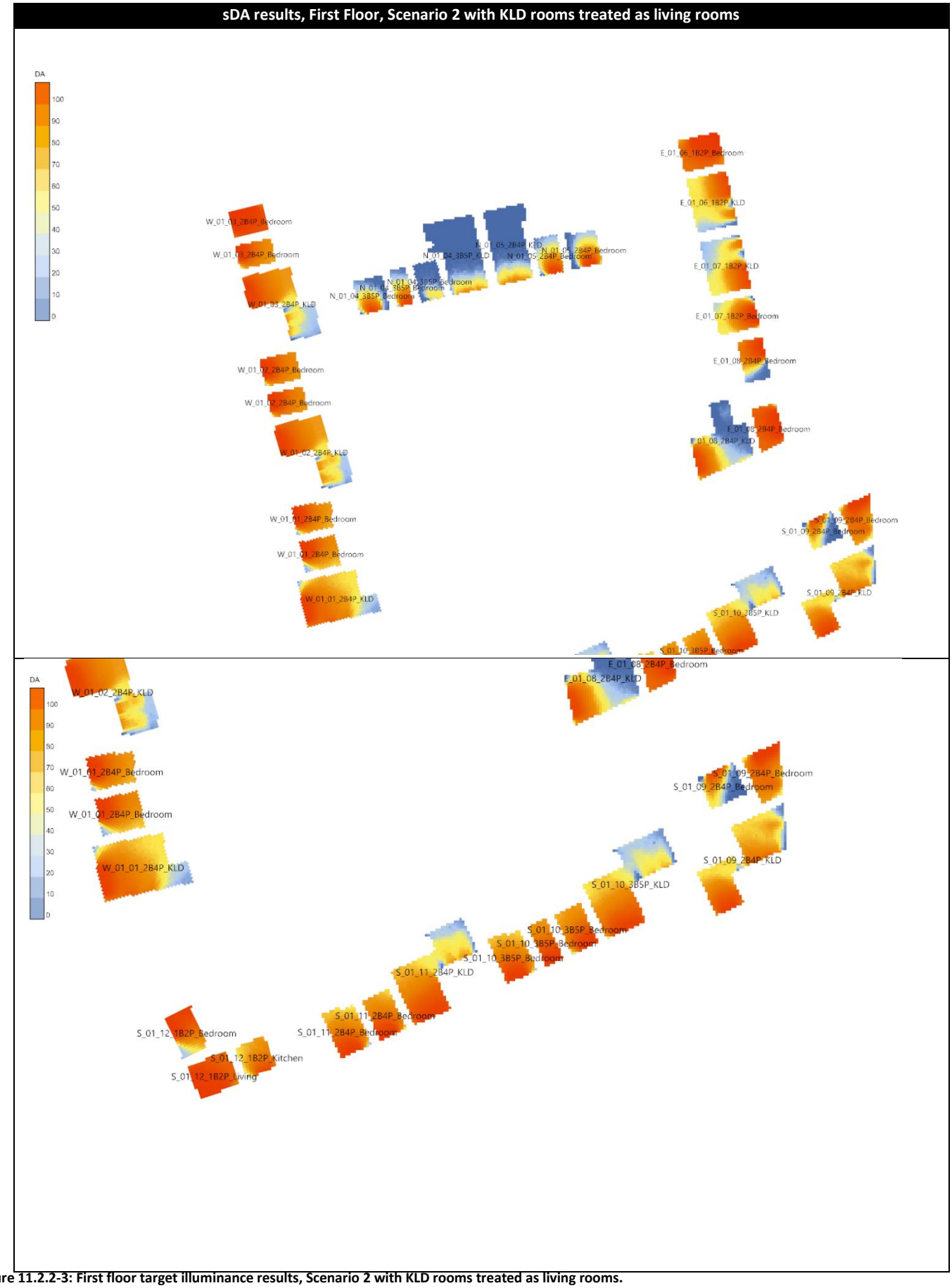


Figure 11.2.2-3: First floor target illuminance results, Scenario 2 with KLD rooms treated as living rooms.

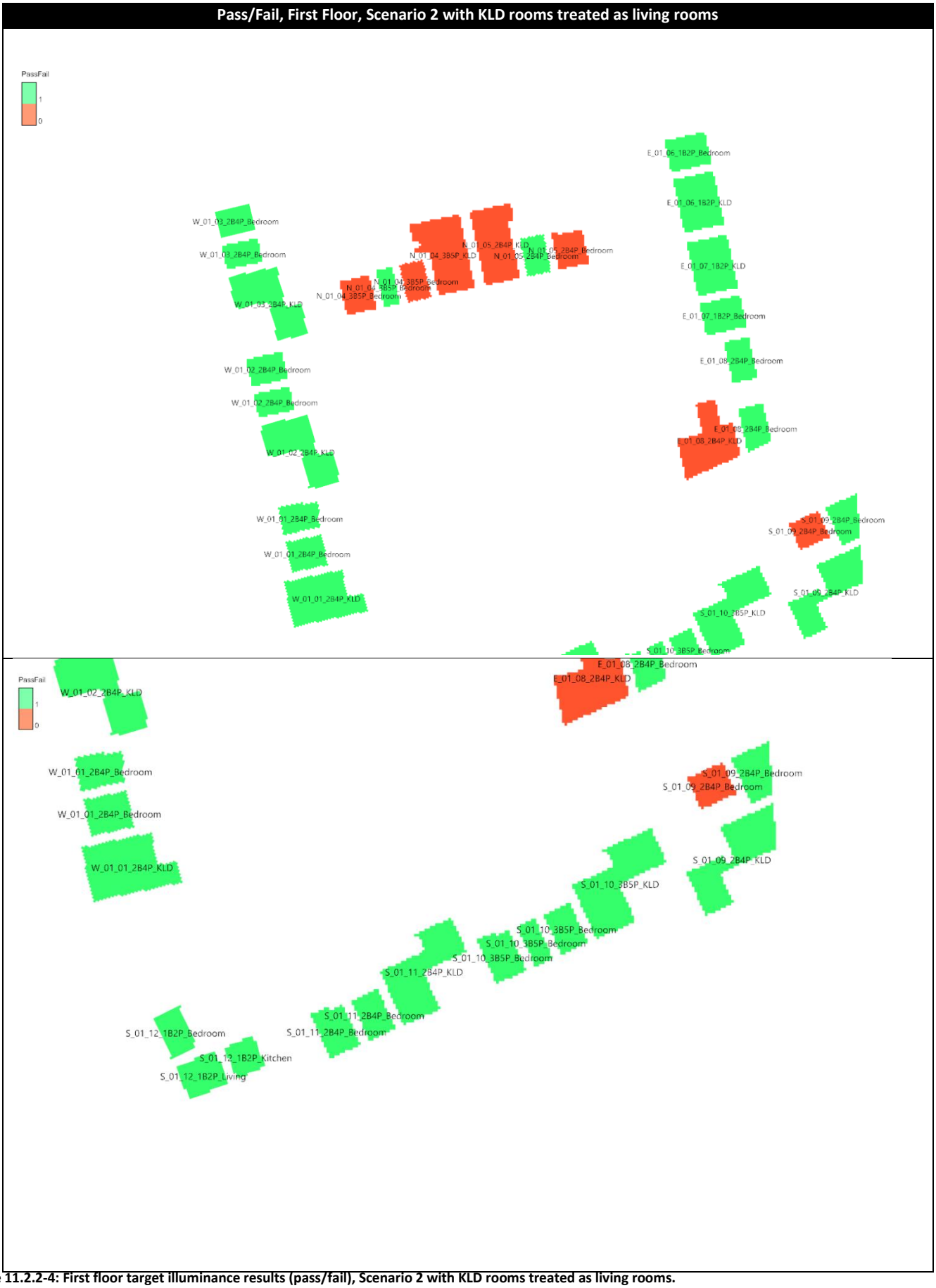


Figure 11.2.2-4: First floor target illuminance results (pass/fail), Scenario 2 with KLD rooms treated as living rooms.

Second floor

Table 11.2.2-3: sDA for second floor, Scenario 2 with KLD rooms treated as living rooms.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
S	2	9	2B4P	Bedroom	29.7%	FALSE	99.5%	TRUE
S	2	9	2B4P	Bedroom	11.8%	FALSE	69.7%	TRUE
S	2	12	1B2P	Kitchen	86.4%	TRUE	98.6%	TRUE
S	2	11	2B4P	Bedroom	42.3%	FALSE	99.1%	TRUE
S	2	11	2B4P	Bedroom	49.4%	FALSE	100.0%	TRUE
S	2	11	2B4P	KLD	40.5%	FALSE	81.9%	TRUE
S	2	10	3B5P	Bedroom	39.3%	FALSE	99.5%	TRUE
S	2	10	3B5P	Bedroom	62.5%	TRUE	100.0%	TRUE
S	2	10	3B5P	Bedroom	44.8%	FALSE	98.8%	TRUE
S	2	10	3B5P	KLD	33.0%	FALSE	65.6%	TRUE
S	2	9	2B4P	KLD	32.5%	FALSE	90.7%	TRUE
E	2	8	2B4P	Bedroom	24.8%	FALSE	66.5%	TRUE
E	2	7	1B2P	Bedroom	18.4%	FALSE	90.3%	TRUE
E	2	7	1B2P	KLD	20.3%	FALSE	61.6%	TRUE
E	2	6	1B2P	KLD	22.7%	FALSE	87.6%	TRUE
E	2	8	2B4P	KLD	30.8%	FALSE	51.4%	TRUE
E	2	8	2B4P	Bedroom	95.8%	TRUE	100.0%	TRUE
E	2	6	1B2P	Bedroom	70.0%	TRUE	100.0%	TRUE
N	2	4	3B5P	Bedroom	17.5%	FALSE	57.8%	TRUE
N	2	4	3B5P	Bedroom	34.9%	FALSE	77.0%	TRUE
N	2	4	3B5P	Bedroom	26.4%	FALSE	74.1%	TRUE
N	2	5	2B4P	Bedroom	26.4%	FALSE	76.4%	TRUE
N	2	5	2B4P	Bedroom	23.3%	FALSE	72.1%	TRUE
N	2	4	3B5P	KLD	30.7%	FALSE	47.9%	FALSE
N	2	5	2B4P	KLD	32.6%	FALSE	50.4%	TRUE
W	2	1	2B4P	KLD	37.5%	FALSE	85.3%	TRUE
W	2	1	2B4P	Bedroom	29.9%	FALSE	98.5%	TRUE
W	2	1	2B4P	Bedroom	25.9%	FALSE	94.1%	TRUE
W	2	2	2B4P	Bedroom	35.1%	FALSE	99.4%	TRUE
W	2	3	2B4P	Bedroom	33.9%	FALSE	99.4%	TRUE
W	2	3	2B4P	KLD	57.5%	TRUE	97.1%	TRUE
W	2	2	2B4P	KLD	66.3%	TRUE	99.5%	TRUE
S	2	12	1B2P	Living	100.0%	TRUE	100.0%	TRUE
S	2	12	1B2P	Bedroom	58.8%	FALSE	89.0%	TRUE
W	2	2	2B4P	Bedroom	31.7%	FALSE	98.5%	TRUE
W	2	3	2B4P	Bedroom	99.0%	TRUE	100.0%	TRUE

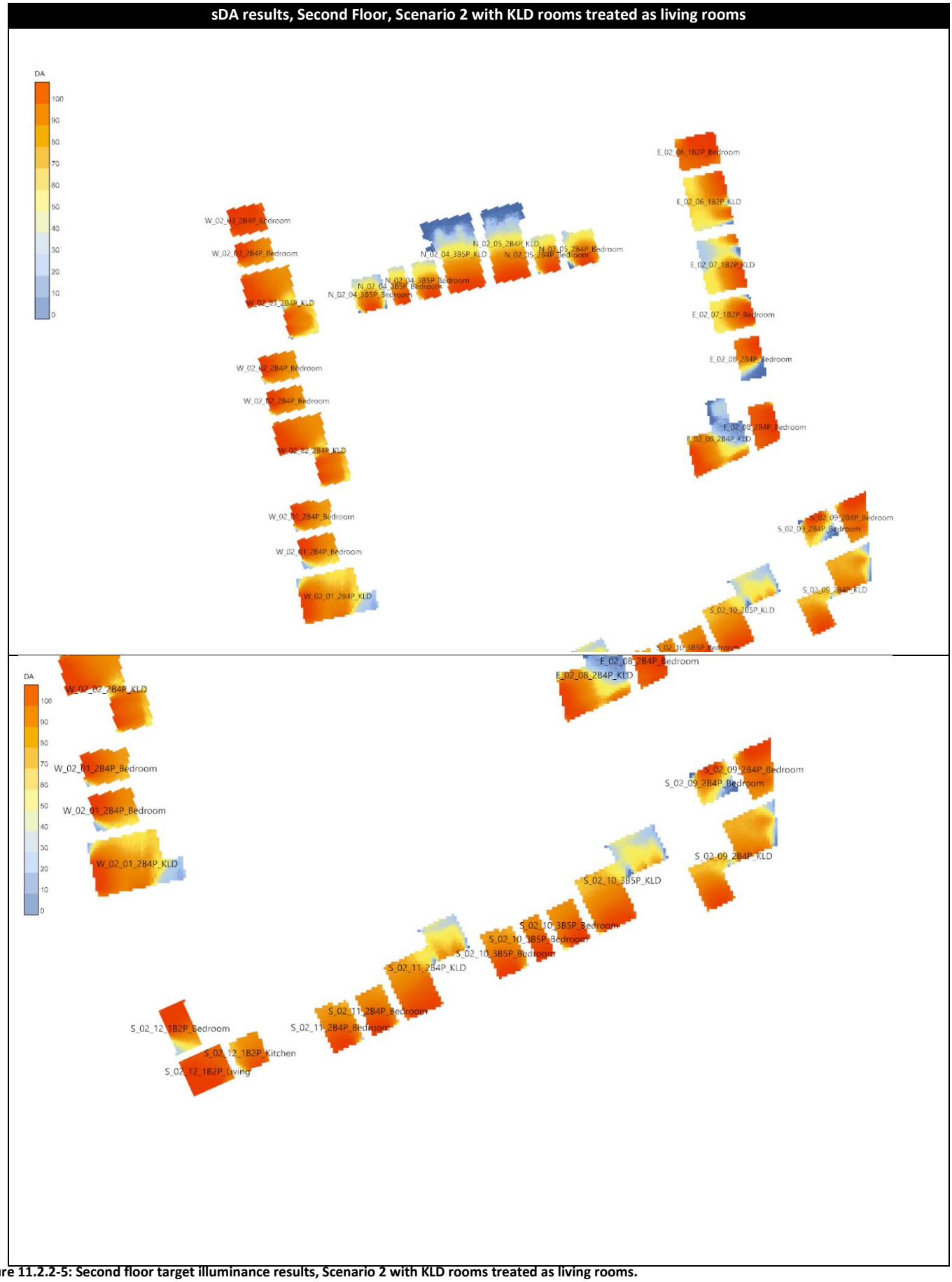


Figure 11.2.2-5: Second floor target illuminance results, Scenario 2 with KLD rooms treated as living rooms.

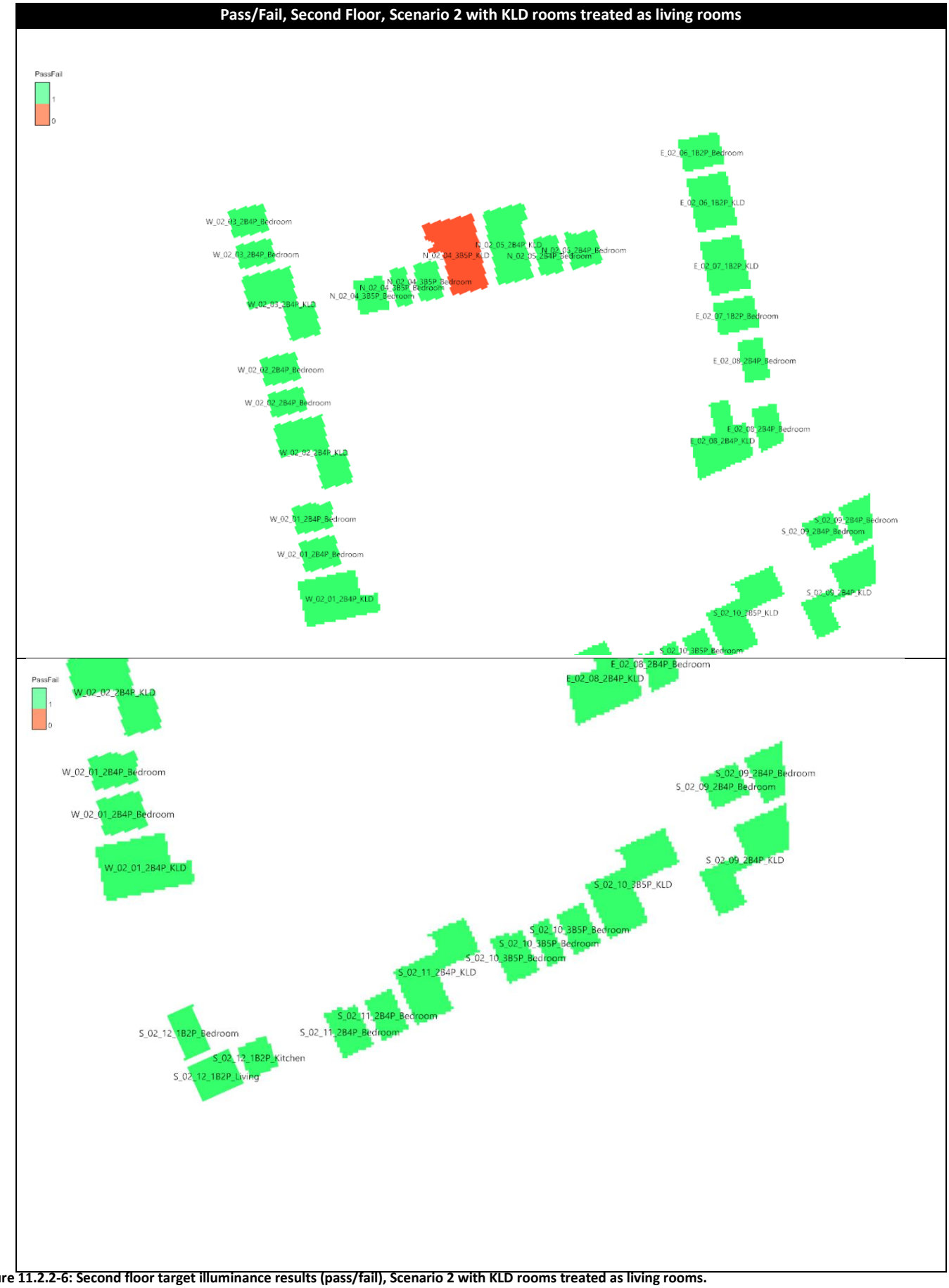


Figure 11.2.2-6: Second floor target illuminance results (pass/fail), Scenario 2 with KLD rooms treated as living rooms.

Third floor

Table 11.2.2-4: sDA for third floor, Scenario 2 with KLD rooms treated as living rooms.

Block	Floor	Flat Number	Flat Type	Room Type	Room % above target illuminance (Et) compliance (BSEN17037)	Meets Recommendation (BSEN17037)	Room % above target illuminance (Et) compliance (Annex)	Meets Recommendation (Annex)
S	3	1	2B4P	KLD	78.6%	TRUE	99.3%	TRUE
S	3	2	3B5P	KLD	63.2%	TRUE	98.9%	TRUE
S	3	2	3B5P	Bedroom	43.6%	FALSE	98.8%	TRUE
S	3	2	3B5P	Bedroom	60.8%	TRUE	100.0%	TRUE
S	3	2	3B5P	Bedroom	38.9%	FALSE	99.1%	TRUE
S	3	3	2B4P	KLD	72.4%	TRUE	99.5%	TRUE
S	3	3	2B4P	Bedroom	47.7%	FALSE	99.4%	TRUE
S	3	3	2B4P	Bedroom	41.4%	FALSE	99.1%	TRUE
S	3	4	1B2P	Kitchen	95.8%	TRUE	99.3%	TRUE
S	3	1	2B4P	Bedroom	100.0%	TRUE	100.0%	TRUE
S	3	1	2B4P	Bedroom	21.9%	FALSE	96.1%	TRUE
S	3	4	1B2P	Living	100.0%	TRUE	100.0%	TRUE
S	3	4	1B2P	Bedroom	71.2%	TRUE	100.0%	TRUE

sDA results, Third Floor, Scenario 2 with KLD rooms treated as living rooms

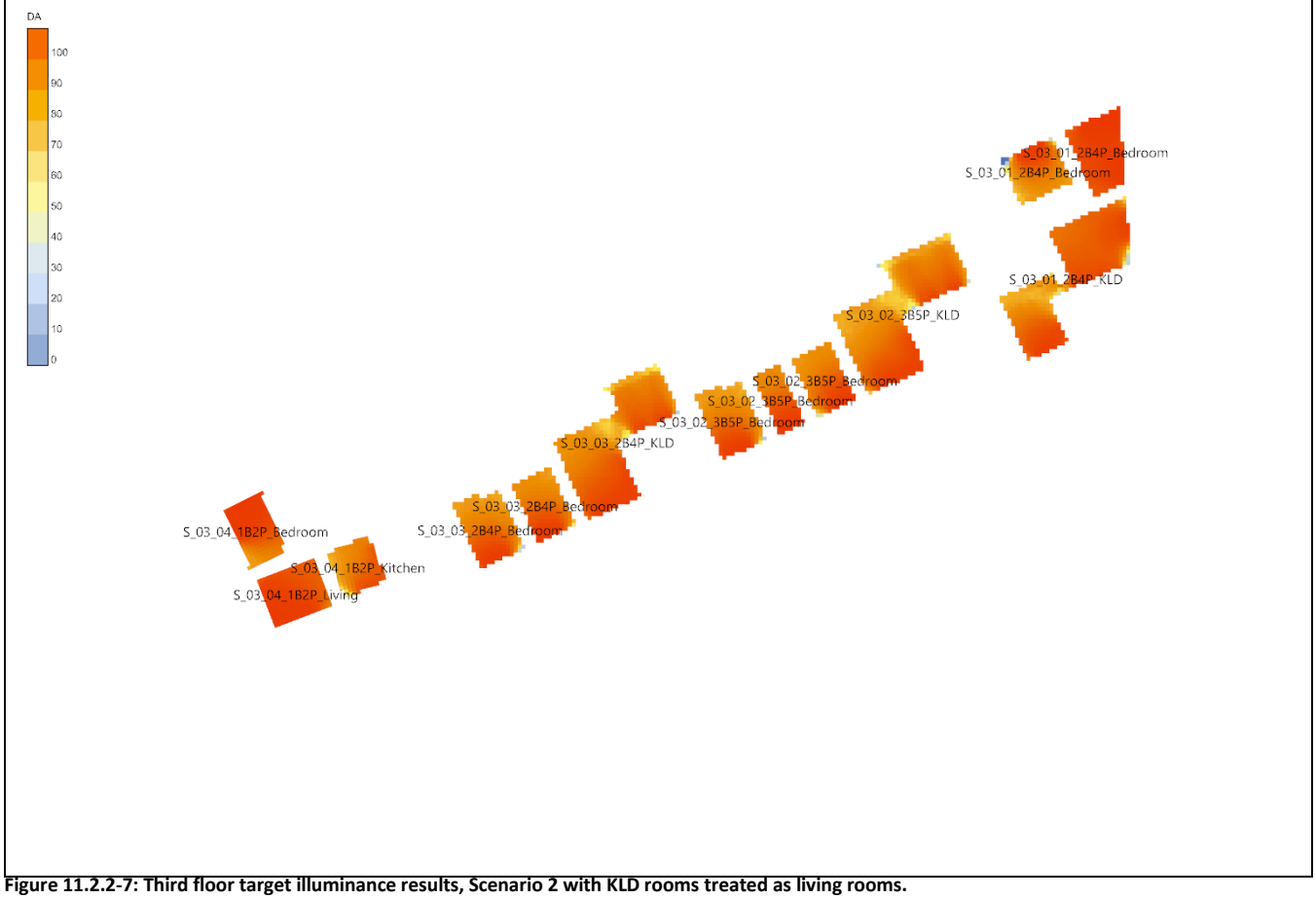


Figure 11.2.2-7: Third floor target illuminance results, Scenario 2 with KLD rooms treated as living rooms.

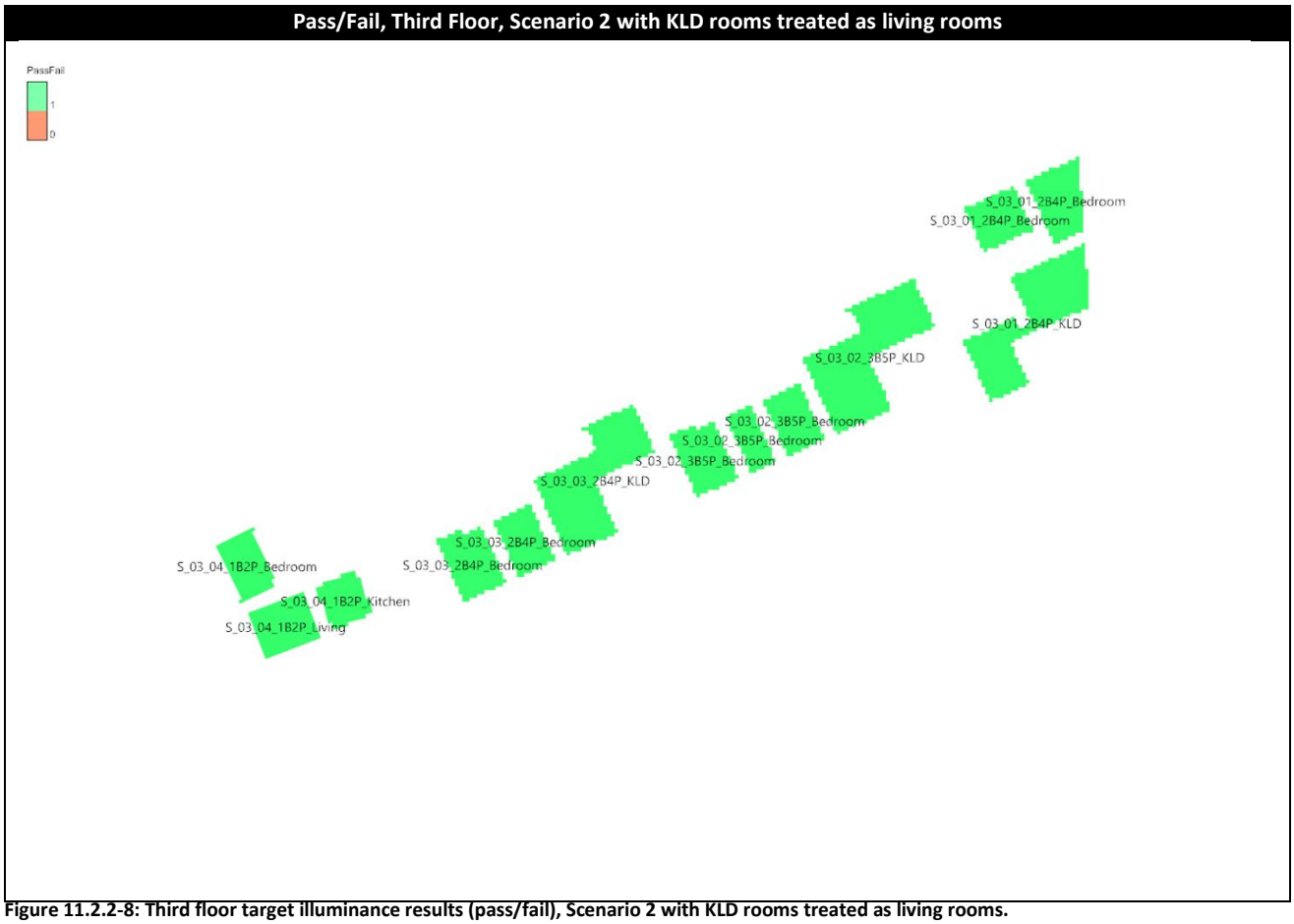


Figure 11.2.2-8: Third floor target illuminance results (pass/fail), Scenario 2 with KLD rooms treated as living rooms.

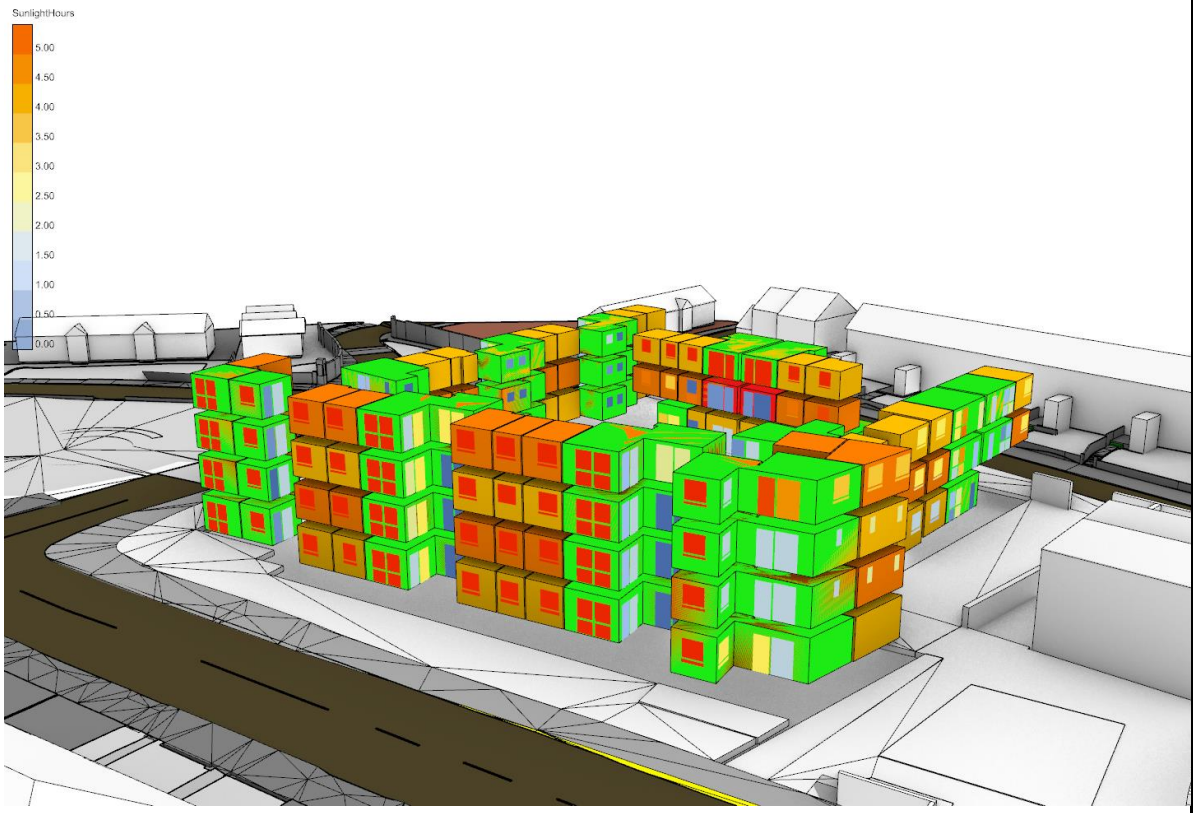
12.0 SUNLIGHT RESULTS

A dwelling will pass this test if it has a main window to a living room or kitchen that receives at least 1.5 hours of direct sunlight on the 21st of March. The results for this test are given below in table 12-1. This gives a pass rate of 36 out of 38 dwellings, or 95%.

The images below show the sunlight hours on every window and a green/red pass/fail colouration for the habitable rooms.

12.1 Results

Hours of Sunlight on Windows of the Proposed Development



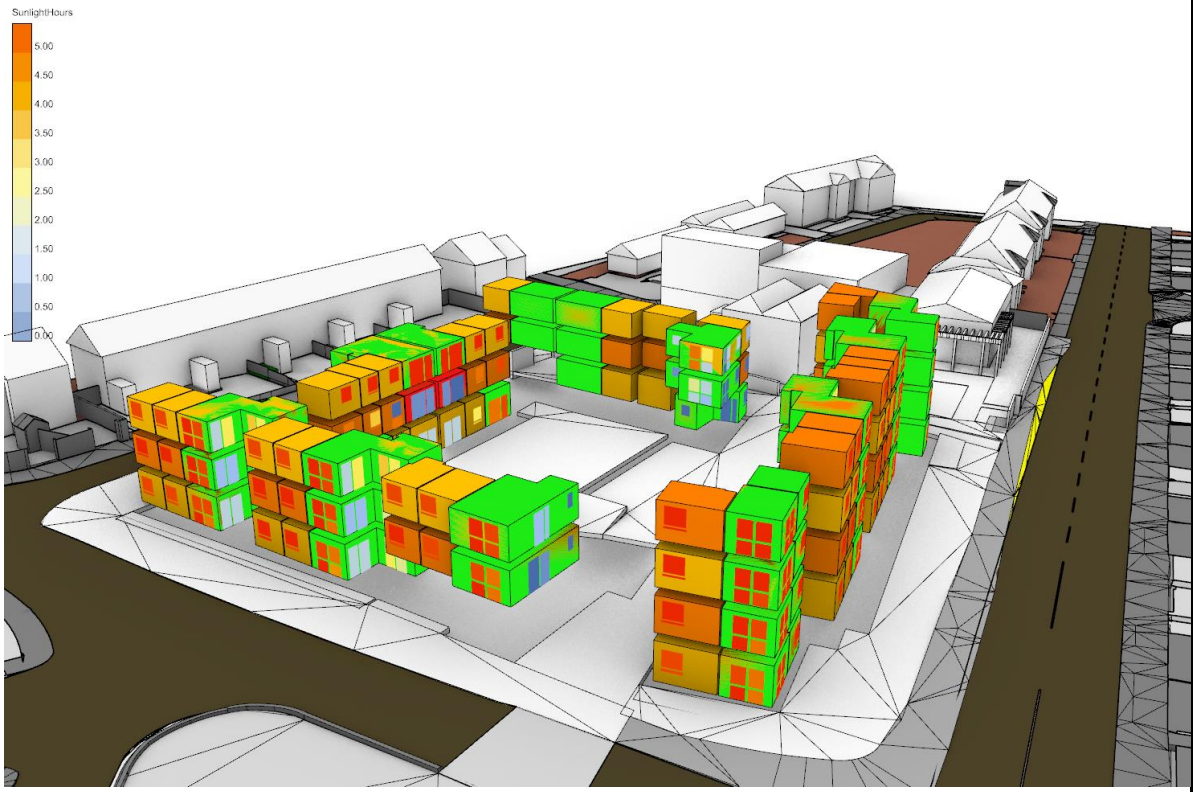


Figure 12.1-1: Sunlight hours and pass-fail visualisation for living rooms in proposed development.

Table 12.1-1: Sunlight hours on windows for living spaces of proposed development on 21st March.

Room Name	Max Sun Hours_(h)	Pass?
S_02_09_2B4P_KLD	6.5	TRUE
E_00_06_1B2P_KLD	2.0	TRUE
S_01_11_2B4P_KLD	7.5	TRUE
W_01_02_2B4P_KLD	5.5	TRUE
N_02_04_3B5P_KLD	8.0	TRUE
E_01_08_2B4P_KLD	2.0	TRUE
E_02_08_2B4P_KLD	4.0	TRUE
E_00_05_1B2P_KLD	2.0	TRUE
E_01_06_1B2P_KLD	1.5	TRUE
N_00_03_2B3P_KLD	3.0	TRUE
N_00_04_2B4P_KLD	4.5	TRUE
W_00_02_2B4P_KLD	5.5	TRUE
W_02_03_2B4P_KLD	6.0	TRUE
W_02_02_2B4P_KLD	6.0	TRUE
W_01_01_2B4P_KLD	5.5	TRUE
W_02_01_2B4P_KLD	6.0	TRUE
S_03_03_2B4P_KLD	7.0	TRUE
S_00_09_2B3P_KLD	7.5	TRUE
S_01_10_3B5P_KLD	7.5	TRUE
S_00_08_3B5P_KLD	7.5	TRUE

Room Name	Max Sun Hours_(h)	Pass?
S_02_10_3B5P_KLD	7.0	TRUE
S_03_02_3B5P_KLD	7.0	TRUE
N_01_04_3B5P_KLD	0.5	FALSE
W_01_03_2B4P_KLD	6.0	TRUE
N_01_05_2B4P_KLD	0.5	FALSE
N_02_05_2B4P_KLD	8.0	TRUE
S_02_11_2B4P_KLD	7.0	TRUE
W_00_01_2B4P_KLD	5.0	TRUE
S_00_07_2B4P_KLD	6.5	TRUE
S_03_01_2B4P_KLD	6.0	TRUE
S_01_09_2B4P_KLD	6.5	TRUE
E_02_06_1B2P_KLD	2.0	TRUE
E_02_07_1B2P_KLD	4.0	TRUE
E_01_07_1B2P_KLD	3.5	TRUE
S_00_10_1B2P_Kitchen	6.5	TRUE
S_03_04_1B2P_Kitchen	6.0	TRUE
S_02_12_1B2P_Kitchen	6.5	TRUE
S_01_12_1B2P_Kitchen	6.5	TRUE
S_03_04_1B2P_Living	6.5	TRUE
S_02_12_1B2P_Living	6.5	TRUE
S_01_12_1B2P_Living	7.0	TRUE
S_00_10_1B2P_Living	7.0	TRUE

13.0 AMENITY SUNLIGHT

13.1 Summary

BRE Amenity Sunlight: The recommendation for an amenity space to receive adequate sunlight is for at least half the area to receive 2 hours of direct sunlight on March 21st. The required communal amenity area for the development is 256m^2 and this is met in a courtyard amenity garden of 268.7m^2. The west of the courtyard is used for facilities (i.e. the visitor cycle parking provision in the shaded area) and therefore has a lower expectation of sunlight than the rest of the courtyard.

13.2 Results

Table 13.2-1: Sunlight hours on CRR Amenity Space

Area Reference	Area Name	Area (m^2)	Average Proposed Sun Hours (h)	% Area Over 2 Hours (proposed)	Pass/Fail
0	0_CRR_CourtyardGarden	268.7	2.2	55.72	Pass
1	1_CRR_FacilityArea	138.8	0.3	0.00	Fail

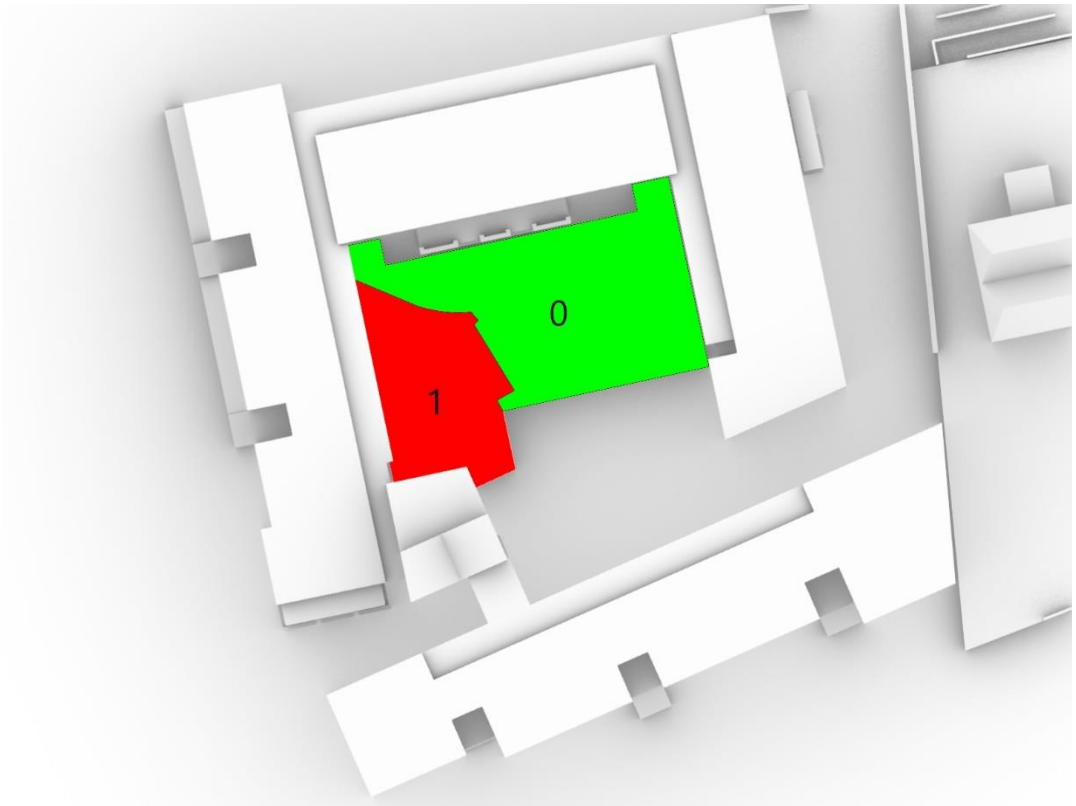


Figure 13.2-1: Pass/fail visualisation for CRR amenity space.

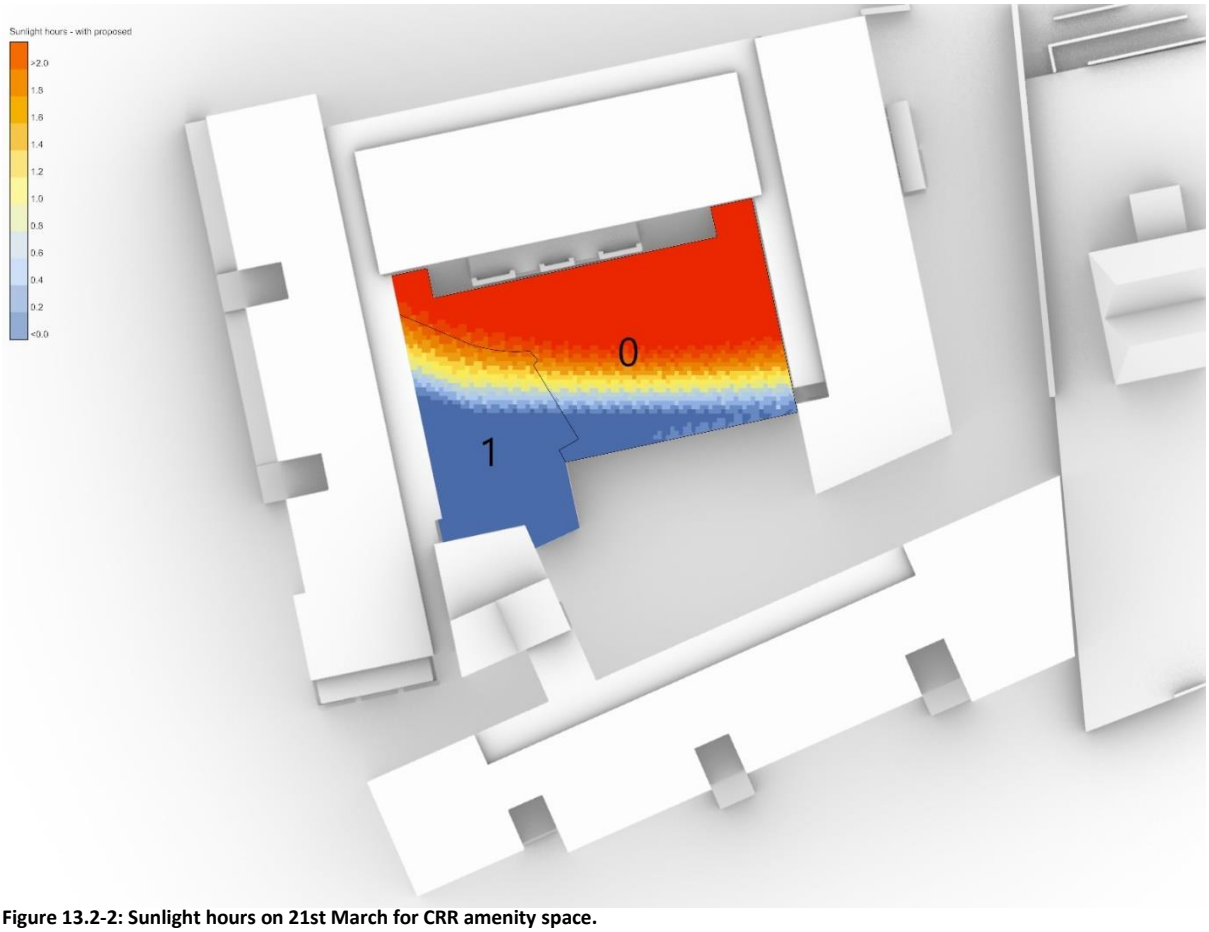


Figure 13.2-2: Sunlight hours on 21st March for CRR amenity space.