Delap & Waller

Clongriffin - Blocks 5 & 6

Daylight & Sunlight Impact Assessment
Associated with a Proposed Development at
Clongriffin, Blocks 5 & 6
Report 2 of 2
12/08/2024

Contents

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Revision History

Revision	Date	By	Checked	Approved
00	14/05/2024	RR/DN/RY	DN	RY
01	20/05/2024	RR/DN/RY	DN	RY
02	21/05/2024	RR/DN/RY	DN	RY
03	01/07/2024	RY/DN/RR	DN	RY
04	04/07/2024	RY/DN/RR	DN	RY
05	22/07/2024	RY/DN/RR	DN	RY
06	24/07/2024	RY/DN/RR	DN	RY
07	06/08/2024	RY/DN/RR	DN	RY
08	09/08/2024	RY/DN/RR	DN	RY
09	12/08/2024	RY/DN/RR	DN	RY

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1.0 Executive Summary

This report has been prepared by Delap and Waller for the Land Development Agency (LDA) to assess the impact that the proposed Clongriffin Blocks 5 & 6 development will have on the Daylight and Sunlight levels to the neighbouring environment. Appendix 16 of the Dublin City Council's Development Plan 2022-2028, recommends that Daylight and Sunlight assessments should consist of two parts. The first part should assess the daylight and sunlight performance of the proposed development and the second report assessing the impact of the proposed development on the existing nearby environment.

For this reason, the Daylight and Sunlight assessment is split into two reports. This report is the second of two reports for the development, the first report assesses the daylight and sunlight performance of the proposed development, and must be read in conjunction with this report. The daylighting analysis has been carried out as per guidelines and recommendations within The Building Research Establishment (BRE) guidelines 'site layout planning for Daylight and Sunlight: A Guide to Good Practice (2022) and BS EN17037 – provide useful guidance on avoiding unacceptable loss of light and ensuring developments provide minimum standards of daylight for new units.' The analysis includes the relevant assessments as outlined in Appendix 16 of the Dublin City Development Plan 2022-2028.These analysis include; Vertical Sky Component impact, Sun hours on ground impact to private amenity spaces, Annual Probable Sunlight Hours, Winter Probable Sunlight Hours and Impact on solar generating technologies.

Clongriffin Blocks 5 & 6 are two number three to seven storey residential accommodation building. Block 5 consists of 138 and block 6 consists of 270 accommodation units respectfully, each with bedroom/living areas, bathrooms and circulation space. All apartments have been selected as part of the daylighting assessment for the purpose of the planning submission.

The Vertical Sky Component analysis demonstrates that the dwellings at 43-61 Park Street and 31-41 Belltree Avenue, would experience a minor to moderate impact on their daylight access as a result of the proposed development. However, all other receptors would experience compliant levels of VSC reduction.

As is normal with larger developments, phases can be completed before adjacent areas commence. In this case there are houses constructed to the north and west of Block 6. However the massing, heights, block configurations and street pattern (the majority of which is already constructed) of the proposed scheme are consistent with the extant SHD planning permissions for Blocks 5 and 6 under ABP Refs. 305319-19 and 305316-19, respectively.

The APSH and WPSH analysis demonstrates that 38.00% of the relevant assessed windows meet the recommended Annual Probable Sunlight Hours target and 34.00% of the windows meet the Winter sunlight hours recommendation. The results and commentary for APSH should be viewed in conjunction with VSC results in section 5.1 of this report. It should be noted that the existing condition for which the reduction in APSH and WPSH is assessed, is based on the current existing condition which is a vacant site, rather than the proposed and previously granted scheme, therefore a reduction in sunlight is expected.

When assessing the reduction of sunlight to the receptor's private gardens, The analysis shows that (with the exception of 29 Belltree Avenue and 43 Belltree Avenue) amenity spaces of the nearest sensitive receptors achieve compliance with BRE's recommendations for Sun Hours on Ground. The two dwellings which fall below the recommendations, 29 and 43 Belltree Avenue are classified with a minor and moderate impact respectively. These two dwellings still receive compliant sunlight hours during the summer months, when the garden is more likely to be used.

Given the presence of solar thermal arrays to the dwellings 29-43 Belltree Avenue, where a proposed development may result in loss of radiation to existing solar panels, an assessment should be carried out. The assessment demonstrates while the proposed development will result in a minor loss of radiation, this extent of reduction is within acceptable levels in accordance with the recommended minimum ratios of solar radiation received as per BRE ‘site layout planning for Daylight and Sunlight: A Guide to Good Practice (2022).

It is important that the guidelines that exist in relation to daylight and sunlight are read in the correct context and are not viewed as mandatory requirements. Requirements for daylight should be balanced against other elements of the design such as energy performance, access to private space, and balancing the risk of overheating. Daylighting is one element of the building design and performance Consideration should always be given to the holistic the design and performance of dwellings such as energy efficiency, Home Performance Index requirements, overheating risk and compliance with Part L of the building regulations.

2.0 Assessment Methodology

2.1 Architectural Design

The dynamic simulation model was generated using the site plan, floor plans, sections, elevations provided by CCK Architects for Clongriffin blocks 5 & 6. The tables below summarises the schedule of drawings for the two apartment blocks.

Block 5			
Title	Drawing Number	Revision	Date
Floor Plans	CLN-CCK-B5-01-M2-A-000100-Block_5_L0/L1/L2/L3/L4/L5LR	P01	19/07/2024
Elevations	CLN-CCK-B5-ZZ-M2-A-000200-Block_5_Elevations	P01	19/07/2024
Sections	Section A-A/B-B/C-C/D-D	P01	19/07/2024

Table 1: Architectural design Block 5

Block 6			
Title	Drawing Number	Revision	Date
Floor Plans	CLN-CCK-B6-01-M2-A-000100-Block_6_L0/L1/L1/L3/L4/L5/L6/LR	P01	19/07/2024
Elevations	CLN-CCK-B6-ZZ-M2-A-000200-Block_6_Elevations	P01	19/07/2024
Sections	Section A-A/B-B	P01	19/07/2024

Table 2: Architectural design Block 6

2.2 Software

The modelling was carried out using IES Virtual Environment Software Version 2023 for the Building Regulation assessments, this software complies with the requirements of the Chartered Institute of Building Services Engineers (CIBSE), which has been validated under the CIBSE TM33, and has been approved by the Ministry of Housing, Communities and Local Government for such calculations.

2.3 Simulation Weather Data

The daylight analysis has been carried out using average weather data appropriate to the location of the proposed dwelling. In accordance with the requirements of EN17037 and BR209 2022 the weather file 'DublinIWEC.fwt' has been used as per the Building Research Establishment (BRE) guidelines site layout planning for Daylight and Sunlight: A Guide to Good Practice (2022)

2.4 Assessment Scope

The daylighting impact on the nearest sensitive receptors, analyses the following metrics as per BRE guidelines 'site layout planning for Daylight and Sunlight: A Guide to Good Practice (2022) and Appendix 16 of the Dublin City Council's Development Plan 2022-2028. These metrics include; Vertical Sky Component, Sun Hours on Ground, Annual Probable Sunlight Hours and Solar Energy Generating Technology impact.

2.5 Sensitive Receptors

According to the BRE guide, when evaluating the potential impact of a proposed development on existing buildings, only windows and rooms with a 'reasonable expectation' of receiving daylight and sunlight should be considered. These are termed 'sensitive receptors'. Paragraph 2.2.2 of the BRE guide specifies that:"The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed. The guidelines may also be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight; this would normally include schools, hospitals, hotels and hostels, small workshops and some offices."

2.6 Dublin City Development Plan 2022-2028

Appendix 16 of the Dublin City Development Plan 2022-2018, sets out the required assessments that should be carried out when preparing daylight and sunlight assessments for planning. The text below is extracted from this Appendix.

Assessment Methodologies

The following section outlines the expected methodology for daylight and sunlight reports to be submitted with planning applications. Daylight and sunlight assessments will generally consist of two parts, being (a) how the proposed development performs and (b) how the proposed development impacts levels of daylight and sunlight availability in surrounding existing buildings. Until such time when BR 209 is updated and all relevant and required information is included (i.e. removal of reference to BS 8206-2 and inclusion of metrics within BS EN 17037), the planning authority will request metrics from both BS 8206-2 and BS EN 17037. These are outlined below for clarity.

Performance of the Proposed Development:

- *Annual Probable Sunlight Hours on all relevant windows*
- *Winter Sunlight Hours on all relevant windows.*
- *Sunlight on Ground in all amenity spaces*
- *Average Daylight Factor in all habitable rooms.*
- *No Sky Line in all habitable rooms.*
- *Target Illuminance in all habitable rooms*

Impact on the Surrounding Properties:

- *Vertical Sky Component on all relevant surrounding windows*
- *Annual Probable Sunlight Hours on all relevant surrounding windows*
- *Winter Sunlight Hours on all relevant surrounding windows*
- *Sunlight on Ground in all surrounding amenity spaces*

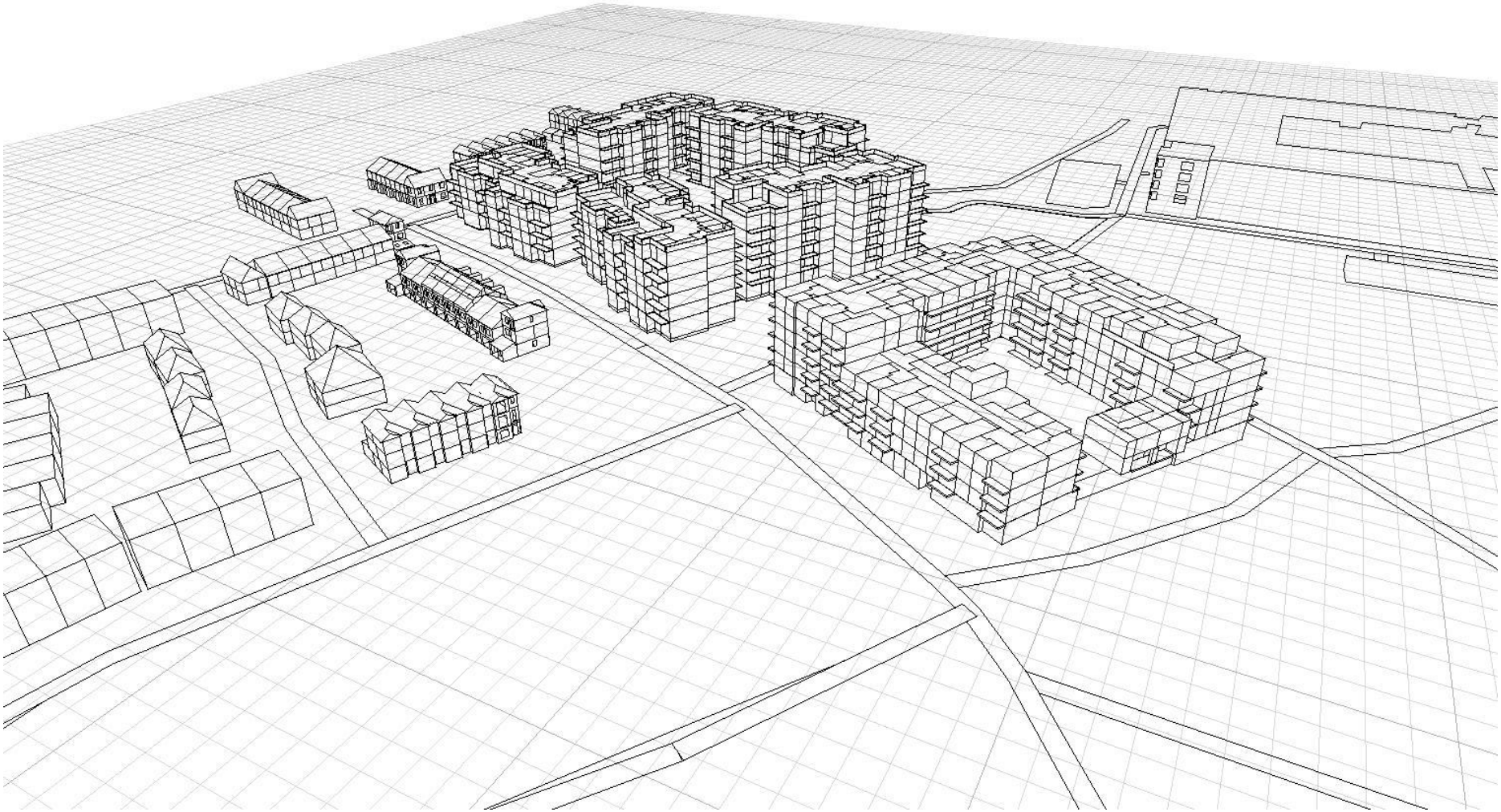


Figure 1: Clongriffin, Blocks 5 and 6 IES Model View

3.0 Assessment Criteria

The analysis and assessments are based on the guidelines set out in the BRE guide “Site Layout for Daylight and Sunlight, A Guide to Good Practice” 2022 3rd Edition. The guidelines in this documents are intended to be used in conjunction with recommendation in BS EN17037, and CIBSE Lighting Guide (LG10): daylighting and window design. In addition to this, Appendix 16 of Dublin City Council’s Development Plan 2022-2028 sets out the required assessments that should be carried out when preparing daylight and sunlight assessments for planning. These analysis include; Vertical Sky Component impact, Sun hours on ground impact to private amenity spaces, Annual Probable Sunlight Hours, Winter Probable Sunlight Hours and Impact on solar generating technologies.

Daylighting performance is not a statutory requirement within Building Regulations and the numerical requirements within the above documents are guidelines. The results of which should be interpreted flexibly since natural lighting is only one of many factors in the site layout design, such as energy performance and thermal comfort. The following sub-sections outline the methodology and assessment criteria used.

3.1 Impact on Existing Buildings

To assess the impact of the proposed development on existing buildings, particularly focusing on sensitive receptors with respect to daylight, the following methodologies are employed.

3.1.1 Vertical Sky Component (VSC)

The analysis and assessments are based on the guidelines set out in the BRE guide (BR 209) “Site Layout for Daylight and Sunlight, A Guide to Good Practice” 2022 3rd Edition. The guidelines in this documents are intended to be used in conjunction with recommendation in BS EN 17037, and CIBSE Lighting Guide (LG10): daylighting and window design.

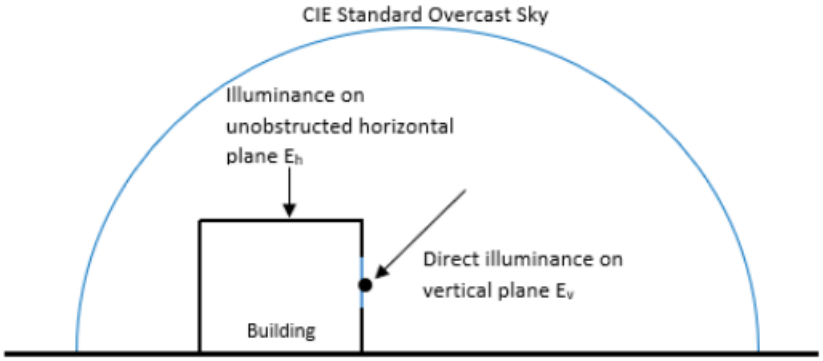


Figure 2:Vertical Sky Component

The impact on the residential buildings that are in close proximity to the proposed development will be considered by comparing vertical sky component (VSC). Vertical Sky Component is the ratio of direct sky illuminance falling on a vertical wall / window at a reference point, to the simultaneous horizontal illuminance under an unobstructed sky (%).

BRE Site layout planning for daylight and sunlight a guide to good practice 3rd Edition 2022, sets out criteria for classification for assessment of impact where a new development affects a number of existing buildings or open spaces in relation to an Environmental Impact Assessment. This guidance is detailed in Appendix H: Environmental Impact Assessment. The guide does not give a specific range of impact or percentages. But the guidance is set out in full below.

"H1 The guidelines in this book may be used as the basis for environmental impact assessment, where the skylight and sunlight impact of a new development on its surroundings are taken into account.

H2 Where a new development affects a number of existing buildings or open spaces, the clearest approach is usually to assess the impact on each one separately. It is also clearer to assess skylight and sunlight impacts separately.

H3 Adverse impacts occur when there is a significant decrease in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space.

H4 The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied.

H5 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 limited area of open space lose light (within the guidelines), a classification of negligible impact is more appropriate. Where the loss of light is only just within the guidelines, and a larger number of windows or open space area are affected, a minor adverse impact would be more appropriate, especially if there is a particularly strong requirement for daylight and sunlight in the affected building or open space.

H6 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.

H7 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.

H8 Beneficial impacts occur when there is a significant increase in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space. Beneficial impacts should be worked out using the same principles as adverse impacts. Thus a tiny increase in light would be classified as a negligible impact, not a minor beneficial impact.

H9 An adverse impact on one property cannot be balanced against negligible or beneficial impacts on other properties. In these situations it is more appropriate to quote a range of impacts.

H10 The provision of new dwellings, or commercial or industrial buildings, or private gardens that meet the skylight or sunlight guidance in this document should not be classified as a beneficial daylight or sunlight impact on the local environment. However, the provision of community buildings or public open spaces with good skylight and/or sunlight could be classed as a beneficial impact."

As Appendix H of BRE guideline (2022 3rd Edition) does not set out specific values ranges for the different classification in impact level for Negligible, Minor, Moderate and Major to each window, for the purpose of this report, the following classification levels will be applied. The evaluation of the impact should be considered in conjunction with other holistic factors when determining the overall impact level to a property.

Impact Classification	Percentage Reduction
Negligible Impact (1)	A reduction in the VSC level but it retains a VSC >27% or <27% but >80% of the existing value.
Minor Impact (2)	A reduction below <27%VSC and <80% of the existing value but greater than 20% VSC.
Moderate Impact (3)	A reduction below <20%VSC and <80% of the existing value but greater than 10% VSC.
Major Reduction (4)	A reduction below <10%VSC and <80% of the existing value.

Table 3: Daylight Impact Classification

3.1.2 Sunlight to Amenities & Open spaces

Effective site layout planning for daylight and sunlight should go beyond ensuring natural lighting within buildings. Sunlight in the spaces between buildings significantly enhances the overall appearance and ambiance of a development.

“It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.” (Littlefair, 2022) The analysis is carried out for the private garden spaces of the closest sensitive receptors.

3.1.3 Shadow Study

The BRE guide states: “Where a large building is proposed which may affect a number of gardens or open spaces it is often illustrative to plot a shadow plan showing the location of shadows at different times of day and year.”

'Before' and 'after' shadow plots illustrate the impact of the proposed buildings. It is important to note that almost all structures will introduce new shadows, and some level of overshadowing is normal. Shadow plots were generated for March 21st , June 21st and December 21st . March 21st, the equinox, represents the average shadowing level. June 21st , the summer solstice, shows the least shadow, while December 21st , the winter solstice, depicts long shadows even from low buildings. In densely built areas, extensive ground shadowing is typical in December. These shadow plots are purely illustrative and are presented in Appendix A.

3.1.4 Annual Probable Sunlight Hours

To assess loss of sunlight to an existing building, it is suggested that all main living rooms of dwellings, and conservatories, should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun. Normally loss of sunlight need not be analysed to kitchens and bedrooms, except for bedrooms that also comprise a living space, for example a bed sitting room in an old people’s home. In non-domestic buildings any spaces that are deemed to have a special requirement for sunlight should be checked; they will normally face within 90° of due south anyway

To calculate the loss of sunlight over the year, a different metric, the annual probable sunlight hours (APSH), is used. Here ‘probable sunlight hours’ means the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for the location in question (based on sunshine probability data. The sunlight reaching a window is quantified as a percentage of this unobstructed annual total.

If a room can receive more than one quarter of annual probable sunlight hours (APSH), including at least 5% of APSH in the winter months between 21 September and 21 March, then it should still receive enough sunlight. Also, if the overall annual loss of APSH is 4% or less, the loss of sunlight is small. Any reduction in sunlight access below these levels should be kept to a minimum. If the available sunlight hours are both less than the amount above and less than 0.80 times their former value, either over the whole year or just in the winter months (21 September to 21 March), and the overall annual loss is greater

than 4% of APSH, then the occupants of the existing building will notice the loss of sunlight; the room may appear colder and less cheerful and pleasant. In presenting results, ratios of sunlight hours should be given to at least two decimal places (for example 0.79 or 0.81) or as the equivalent percentage loss (for example 21% or 19%).

3.1.5 Solar Energy Generating Technologies

Where a proposed development may result in loss of radiation to existing solar panels, an assessment should be carried out. For solar thermal collectors, the loss of radiation falling on the collector is approximately proportional to the loss of renewable heat generation. For example, a collector that has a 25% loss of radiation on its surface would see roughly a 25% reduction in instantaneous performance.

The assessment on solar radiation reduction should include both direct solar and diffuse sky radiation; over a whole year. The modelling should take account of the effects of cloud in reducing direct solar radiation across the year. If over the whole year the ratio of total solar radiation received within the new development, to the existing value is less than the values given in the table below, then the loss of radiation is significant.

Slope of solar panel in degrees to horizontal	Recommended minimum ratio of radiation received after/before
0.00 – 30.00°	0.90
30.01 – 59.99	0.85
60.00 – 90.00	0.80

Table 4: Recommended minimum ratios of solar radiation received. (BRE, 2022)

Note the numerical values given here are purely advisory. Different criteria may be used based on the requirements for solar energy in an area viewed against other site layout constraints. The assessment calculates the amount of solar energy the solar thermal array receives over the course of a year with and without the proposed Clongriffin development.

4.0 Daylighting Methodology

The daylighting assessment at Clongriffin, has been modelled using IES Virtual Environment software's Radiance IES module. Radiance is internationally recognised as one of the leading lighting simulation tools available. A three-dimensional geometric model of the physical environment, generating a photo-realistic colour image is produced detailing the spectral radiance values.

4.1 Model Conditions

The analysis is carried out using Climate Based Daylight Modelling (CBDM). CBDM is the prediction of various radiant or luminous quantities using daylight conditions derived from standard meteorological datasets. Climate-based modelling delivers predictions of absolute quantities (e.g. illuminance) that are dependent on the location and the building orientation, in addition to the building's composition and configuration.

4.2 Working Plane

This is the horizontal, vertical or inclined plane in which a visual task lies. For residential daylighting assessments the working plane is taken as 0.85m horizontal from the floor level.

4.3 Building Fabric

The table below details the surface reflectance properties that were used in the spatial daylight autonomy (sDA) analysis.

Material Surface	Reflectance Value	Glazing Information
Internal Walls	0.75	-
Internal Ceilings	0.85	-
Internal Floor	0.35	-
External Wall	0.50	-
External Roof	0.50	-
External Ground	0.35	-
Window Light Transmittance / Frame Factor	-	71.00% / 20.00%

Table 5: Surface Reflectance Values

4.3.1 Spatial Daylight Autonomy (sDA)

Spatial Daylight Autonomy (sDA) metric which assess how much of an area receives sufficient daylight on a working plane during daylight hours on an annual basis, it is a climatic based daylight assessment.

EN 17037:2018 outlines the following recommendations for daylight provision within a space. “A space is considered to provide adequate daylight if a target illuminance level is achieved across a fraction of the reference plane within a space for at least half of the daylight hours. In addition, for spaces with vertical or inclined daylight openings, a minimum target illuminance level is also to be achieved across the reference plane. The reference plane of the space is located 0.85m above the floor, unless otherwise specified. A small fraction of the reference plane may be disregarded to account for singularities. A supplementary SDA calculation is included within this analysis to provide additional context to the estimated lux levels within the existing habitable rooms. This SDA calculation should be used for reference only.

5.0 Impact on Existing Buildings

As outlined in section 3.1, the impact of the proposed Blocks 5 & 6 on the nearest closest receptors daylight access, is assessed by means of VSC, Sunlight to Gardens and shadow analysis. The figure below identifies the nearest residential receptors to Clongriffin Blocks 5 & 6.

Address	
43-63 Park Street	
29–43 Belltree Avenue	
31 Park Terrace North	
Block 12 Apartments	

Table 6:Nearest sensitive receptors

Figure 3: Site Plan showing nearest sensitive receptor locations relative to the proposed development.

5.1 Vertical Sky Component

The impact on the residential buildings that are in close proximity to the proposed development will be considered by comparing vertical sky component (VSC). Vertical Sky Component is the ratio of direct sky illuminance falling on a vertical wall / window at a reference point, to the simultaneous horizontal illuminance under an unobstructed sky (%). BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight which states the following in Section 2.2.7.;

"if this VSC is greater than 27% then enough skylight should still be reaching the window of the existing building. Any reduction below this level should be kept to a minimum. If the VSC, with the new development in place, is both less than 27% and less than 0.80 times its former value, occupants of the existing building will notice the reduction in the amount of skylight. The area lit by the window is likely to appear more gloomy, and electric lighting will be needed more of the time."

BRE Site layout planning for daylight and sunlight a guide to good practice 3rd Edition 2022, sets out criteria for classification for assessment of impact where a new development affects a number of existing buildings or open spaces in relation to an Environmental Impact Assessment. This guidance is detailed in Appendix H: Environmental Impact Assessment. The guide does not give a specific range of impact or percentages. As Appendix H of BRE guideline (2022 3rd Edition) does not set out specific values ranges for the different classification in impact level for Minor, Moderate and Major to each window, for the purpose of this report, the following classification levels will be applied. The evaluation of the impact should be considered in conjunction with other holistic factors when determining the overall impact level to a property.

It should be noted that the existing condition for which the reduction in VSC is assessed, is based on the current existing condition which is a vacant site, rather than the proposed and previously granted scheme. To provide additional context to the daylight levels within the habitable spaces of the existing, an SDA calculation was carried out based on the proposed development. The SDA analysis for these spaces uses the methodology as detailed in Section 4.0.

Impact Classification	Legend	Percentage Reduction
Compliant (1)		A reduction in the VSC level but it retains a VSC >27% or <27% but >80% of the existing value.
Minor Impact (2)		A reduction below <27%VSC and <80% of the existing value but greater than 20% VSC.
Moderate Impact (3)		A reduction below <20%VSC and <80% of the existing value but greater than 10% VSC.
Major Reduction (4)		A reduction below <10%VSC and <80% of the existing value.

Table 7:VSC reduction classification

As is normal with larger developments, phases can be completed before adjacent areas commence. In this case these houses were constructed to the north and west of Block 6 which has an existing permission reflecting the street pattern which is already constructed, and the anticipated housing typologies, heights and density. The existing dwelling windows most affected are the street side windows of 43-63 Park Street and 29-43 Belltree Avenue. As houses, naturally all are dual aspect and the rear garden side is unaffected.

43 – 63 Park Street

Figure 4: Composite Elevation 43-63 Park Street

29 – 43 Belltree Avenue

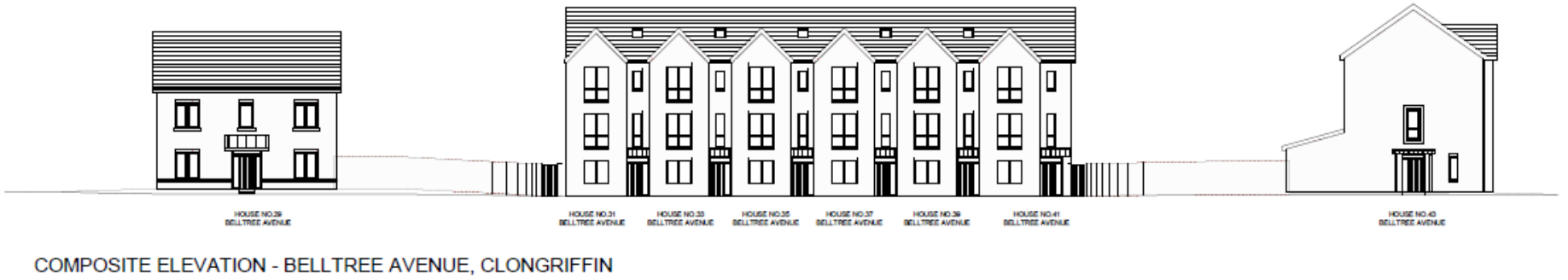
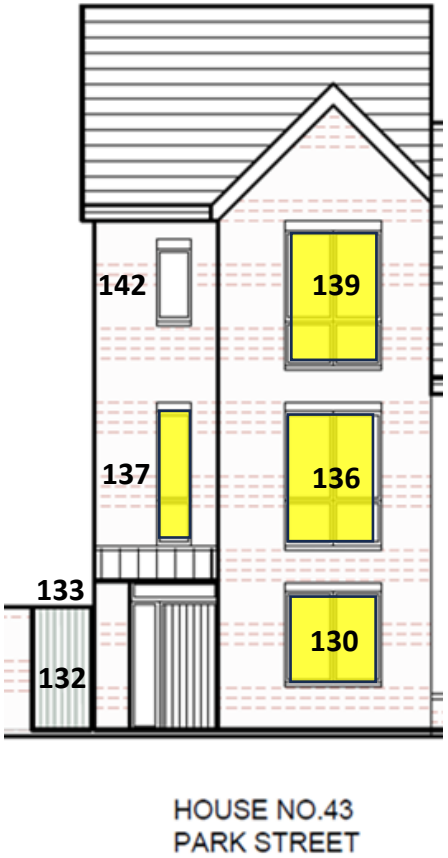
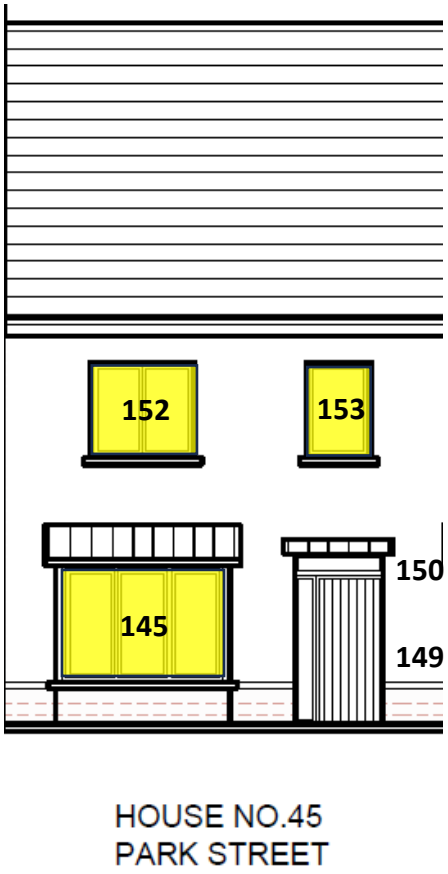


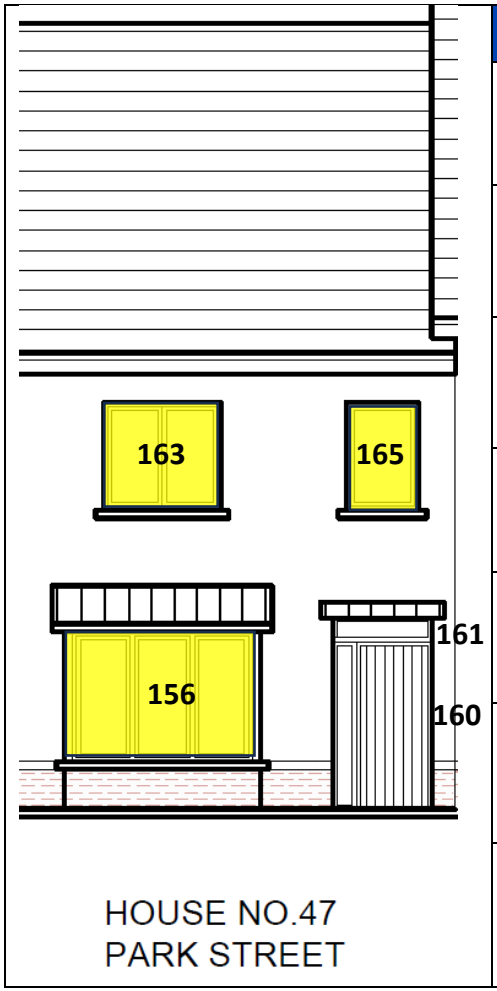
Figure 5: Composite Elevation 29-43 Belltree Avenue



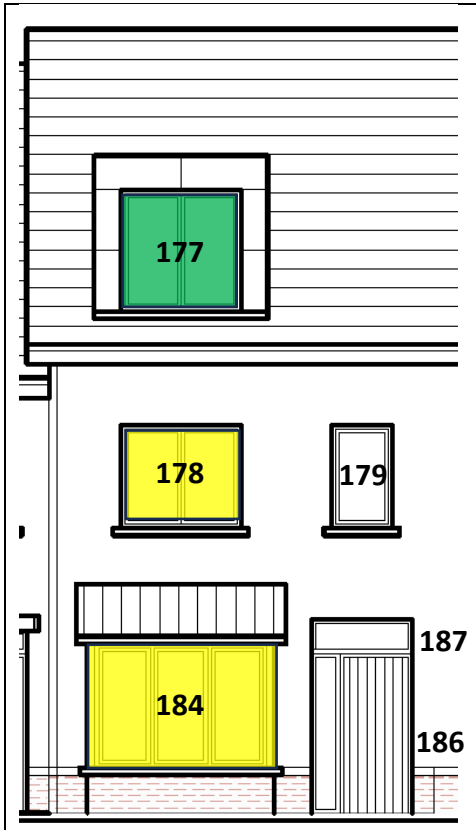
Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
130	Ground Floor Living Room	39.68	20.96	Minor Impact	3 storey dual aspect house which forms bookend to terrace. Lowest front facing room is planned as a secondary living area or additional bedroom. The main living room, with two windows, spans the width of the house at first floor. The kitchen dining looks west onto the rear garden. 32.50% of room achieving >200lux for more than 50% of the year.
132	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
133	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
136	First Floor Living	39.56	23.24	Minor Impact	3 storey dual aspect house which forms bookend to terrace. Lowest front facing room is planned as a secondary living area or additional bedroom. The main living room, with two windows, spans the width of the house at first floor. The kitchen dining looks west onto the rear garden. 43.50% of room achieving >200lux for more than 50% of the year.
137	First Floor Living	36.81	20.77	Minor Impact	
139	Bedroom 01	39.95	26.42	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time. 86.67% of room achieving >100lux for more than 50% of the year.
142	Ensuite	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			



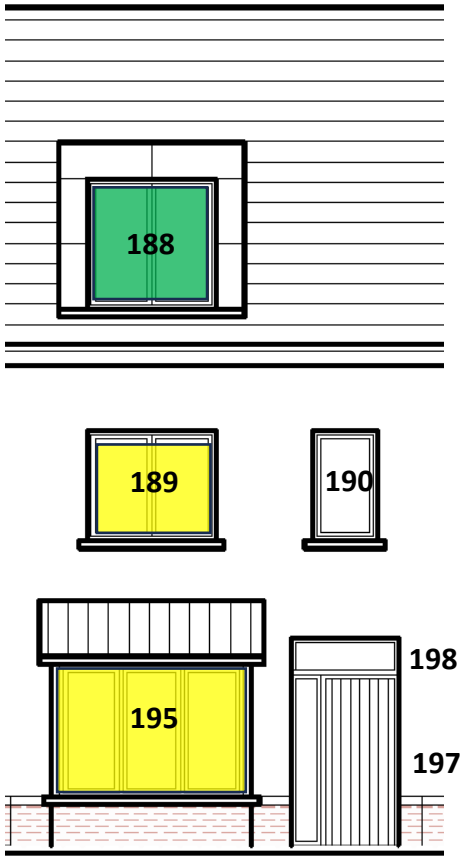
Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
144 (Side Bay)	Ground Floor Living Room	20.87	16.78	Moderate Impact	Mid-terrace dual aspect house. The ground floor living room faces the street and has a bay window. The side panels of the bay are not obstructed are exposed to direct unobstructed southern sunlight down the street for a period in the day. The kitchen living area will get evening sun from the garden side and front will get late morning sun until lunch time Room will still achieve compliant levels of daylight distribution with 95.68% of room achieving >200lux for more than 50% of the year.
145	Ground Floor Living Room	39.64	21.36	Minor Impact	
146 (Side Bay)	Ground Floor Living Room	14.13	7.83	Major Impact	
149	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
150	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
152	Bedroom 02	38.56	23.13	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time .100.00% of room achieving >100lux for more than 50% of the year.
154	Bedroom 03	39.72	24.26	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time. 94.34% of room achieving >100lux for more than 50% of the year.



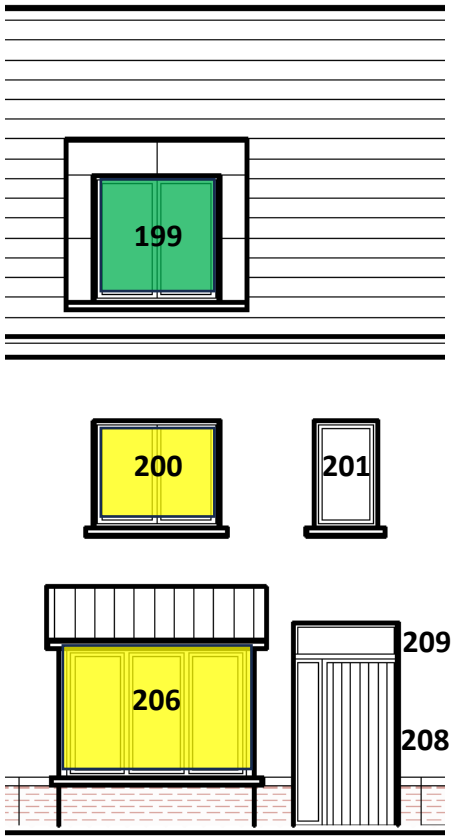
Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
155 (Side Bay)	Ground Floor Living Room	20.28	16.08	Moderate Impact	Mid-terrace dual aspect house. The ground floor living room faces the street and has a bay window. The side panels of the bay are not obstructed are exposed to direct unobstructed southern sunlight down the street for a period in the day. The kitchen living area will get evening sun from the garden side and front will get late morning sun until lunch time. Room will still achieve reasonable levels of daylight distribution with 28.06% of room achieving >200lux for more than 50% of the year.
156	Ground Floor Living Room	39.52	21.85	Minor Impact	
157 (Side Bay)	Ground Floor Living Room	20.09	13.60	Moderate Impact	
160	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
161	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
163	Bedroom 02	39.63	24.81	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time. 100.00% of room achieving >100lux for more than 50% of the year.
165	Bedroom 03	39.42	25.11	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time. 98.15% of room achieving >100lux for more than 50% of the year.



Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
177	Bedroom 01	39.88	28.74	Compliant	Proposed VSC remains above 27.
178	Bedroom 03	39.55	25.66	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time. 67.50% of room achieving >100lux for more than 50% of the year.
179	Store	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
183 (Side Bay)	Kitchen / Dining	20.70	16.13	Moderate Impact	Mid-terrace dual aspect house. Dormer bedroom at second floor level. The kitchen/dining area faces the front with the table in the bay window, bedrooms above including a dormer level. The west facing rear living room is unaffected.
184	Kitchen / Dining	39.75	22.55	Minor Impact	
185 (Side Bay)	Kitchen / Dining	21.14	14.76	Moderate Impact	
186	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
187	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			

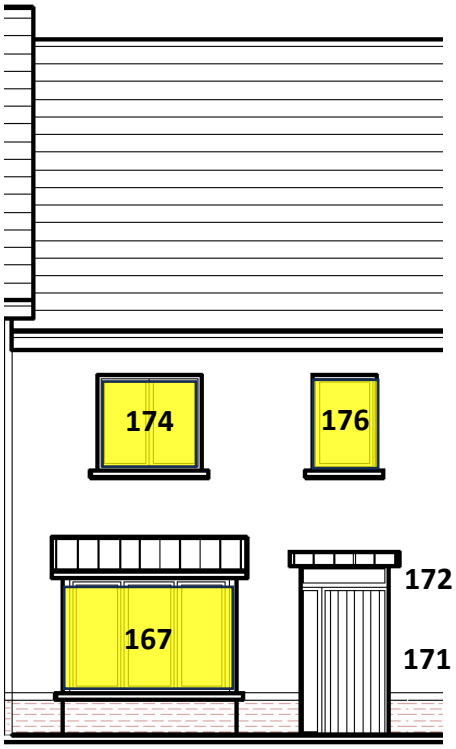


Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
188	Bedroom 01	39.80	29.18	Compliant	Proposed VSC remains above 27.
189	Bedroom 03	39.51	26.25	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time. 86.25% of room achieving >100lux for more than 50% of the year.
190	Store	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
194 (Side Bay)	Kitchen / Dining	20.51	16.37	Moderate Impact	Mid-terrace dual aspect house. Dormer bedroom at second floor level. The kitchen/dining area faces the front with the table in the bay window, bedrooms above including a dormer level. The west facing rear living room is unaffected. Room will still achieve reasonable levels of daylight distribution with 31.62% of room achieving >200lux for more than 50% of the year.
195	Kitchen / Dining	39.53	23.46	Minor Impact	
196 (Side Bay)	Kitchen / Dining	20.58	14.29	Moderate Impact	
197	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
198	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			



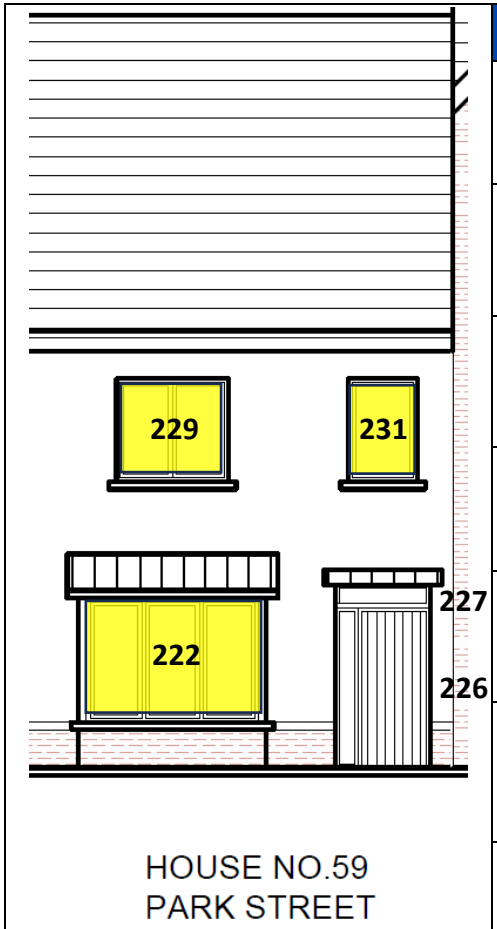
Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
199	Bedroom 01	39.62	29.63	Compliant	Proposed VSC remains above 27.
200	Bedroom 03	39.52	29.62	Minor Impact	Proposed VSC remains above 27.
201	Store	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
205 (Side Bay)	Kitchen / Dining	20.35	16.44	Moderate Impact	Mid-terrace dual aspect house. Dormer bedroom at second floor level. The kitchen/dining area faces the front with the table in the bay window, bedrooms above including a dormer level. The west facing rear living room is unaffected. Room will still achieve reasonable levels of daylight distribution with 31.85% of room achieving >200lux for more than 50% of the year.
206	Kitchen / Dining	39.39	23.73	Minor Impact	
207 (Side Bay)	Kitchen / Dining	20.68	14.43	Moderate Impact	
208	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
209	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			

Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
210	Bedroom 01	39.77	29.86	Compliant	Proposed VSC remains above 27.
211	Bedroom 03	39.64	26.93	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time. 92.50% of room achieving >100lux for more than 50% of the year.
212	Store	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
216 (Side Bay)	Kitchen / Dining	21.12		Moderate Impact	Mid-terrace dual aspect house. Dormer bedroom at second floor level. The kitchen/dining area faces the front with the table in the bay window, bedrooms above including a dormer level. The west facing rear living room is unaffected. Room will still achieve reasonable levels of daylight distribution with 33.82% of room achieving >200lux for more than 50% of the year.
217	Kitchen / Dining	39.39	17.46	Minor Impact	
218 (Side Bay)	Kitchen / Dining	20.48	24.09	Moderate Impact	
219	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
220	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			

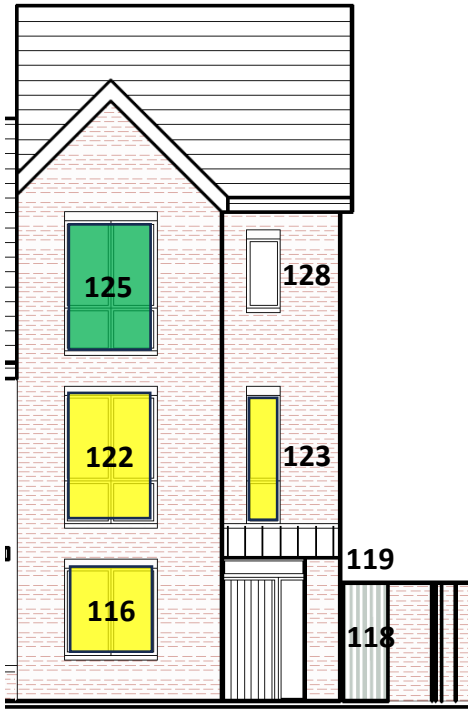


HOUSE NO.57
PARK STREET

Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
166 (Side Bay)	Living Room	20.46	16.96	Moderate Impact	Mid-terrace dual aspect house. The ground floor living room faces the street and has a bay window. The side panels of the bay are not obstructed are exposed to direct unobstructed southern sunlight down the street for a period in the day. The kitchen living area will get evening sun from the garden side and front will get late morning sun until lunch time. Room will still achieve compliant levels of daylight distribution with 100.00% of room achieving >200lux for more than 50% of the year.
167	Living Room	39.43	24.15	Minor Impact	
168 (Side Bay)	Living Room	20.35	14.79	Moderate Impact	
171	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
172	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
174	Bedroom 02	39.46	26.90	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time.100.00% of room achieving >100lux for more than 50% of the year.
176	Bedroom 03	39.47	26.86	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time. 100.00% of room achieving >100lux for more than 50% of the year.

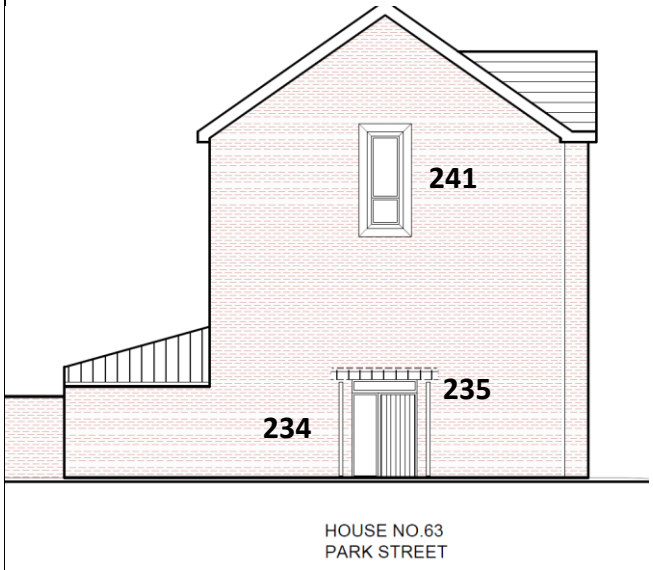


Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
221 (Side Bay)	Living Room	20.91	17.71	Moderate Impact	Mid-terrace dual aspect house. The ground floor living room faces the street and has a bay window. The side panels of the bay are not obstructed are exposed to direct unobstructed southern sunlight down the street for a period in the day. The kitchen living area will get evening sun from the garden side and front will get late morning sun until lunch time. Room will still achieve reasonable levels of daylight distribution with 34.53% of room achieving >200lux for more than 50% of the year.
222	Living Room	39.26	23.57	Minor Impact	
223 (Side Bay)	Living Room	20.97	15.65	Moderate Impact	
226	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
227	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
229	Bedroom 02	39.51	26.52	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time. 100.00% of room achieving >100lux for more than 50% of the year.
231	Bedroom 03	39.57	26.67	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time. 100.00% of room achieving >100lux for more than 50% of the year.



HOUSE NO.61
PARK STREET

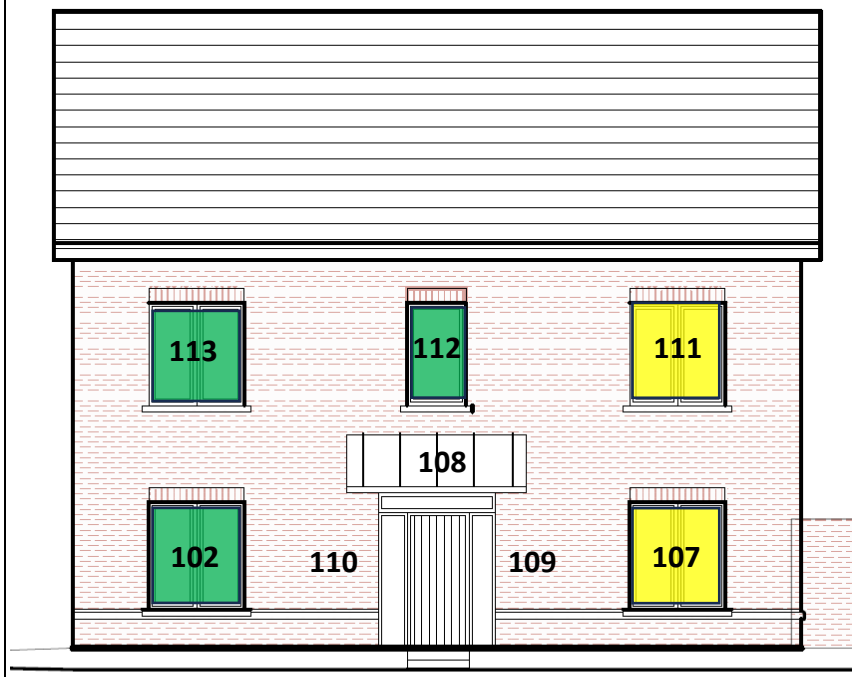
Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
116	Ground Floor Living Room	39.33	24.25	Minor Impact	Room will still achieve reasonable levels of daylight distribution with 45.45% of room achieving >200lux for more than 50% of the year.
118	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
119	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
122	First Floor Living	39.45	26.93	Minor Impact	3 storey dual aspect house which forms bookend to terrace. Lowest front facing room is planned as a secondary living area or additional bedroom. The main living room, with two windows, spans the width of the house at first floor. The kitchen dining looks west onto the rear garden. Room will still achieve compliant levels of daylight distribution with 62.71% of room achieving >200lux for more than 50% of the year.
123	First Floor Living	36.43	25.00	Minor Impact	
125	Bedroom 01	39.79	29.71	Compliant	Proposed VSC remains above 27.
128	Ensuite	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			



Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
234	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
235	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
241	Store	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			

43-61 Park Street consists of a terrace of 10 houses. 43 and 61 are three storey bookends similar to the Belltree Avenue terrace, with a secondary living room or addition bedroom facing the street at ground level, and main living room at first floor. The kitchen/dining/family room faces west onto the rear garden.45-59 are mid-terrace, four dwellings having a dormer bedroom. The ground floor living room faces the street and has an obstruction angle c.35'. In the 25' to 45' band, a larger window is recommended and in this case a bay window is provided to all these living rooms. For these dwellings, all of the habitable rooms will either experience a negligible or minor impact in terms of VSC reduction. The only windows which will experience a "moderate" impact, are those serving the entrance hall which are not classed a regularly occupied space.

While the VSC impact provides a classification of the expected reduction in daylight the window will receive, it does not accurately measure the internal daylight distribution. With the benefit of floor plans for43-63 Park Street, an sDA assessment was carried out to the habitable rooms facing the proposed development. Spatial Daylight Autonomy (sDA) metric which assess how much of an area receives sufficient daylight on a working plane during daylight hours on an annual basis, it is a climatic based daylight assessment. While this assessment is typically carried out for new build developments, it provides additional context to the daylight impact of 43-61 Park Street. The assessment demonstrates that all habitable rooms receive either reasonable or compliant internal daylight levels in accordance with BS EN 17037:2018 Daylight in buildings. BS EN 17037.



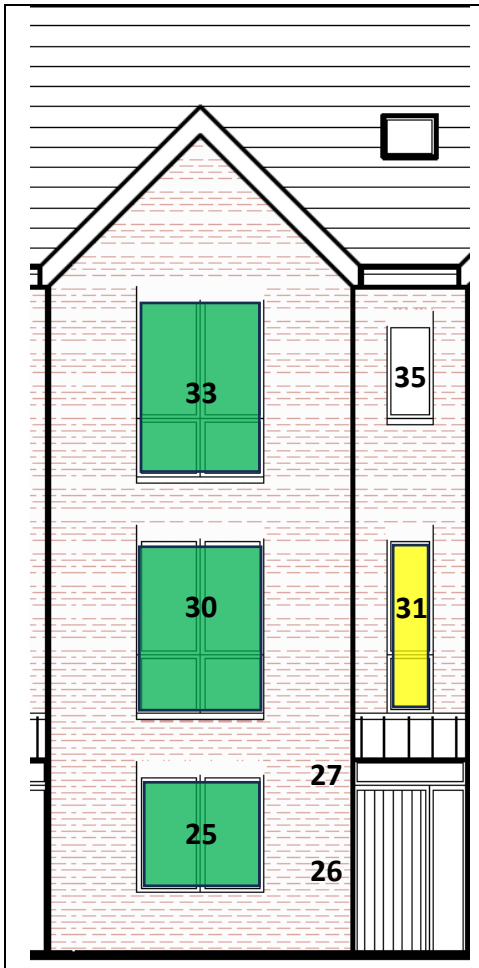
HOUSE NO.29
BELLTREE AVENUE

Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
102	Living Room	38.26	27.52	Compliant	Corner 2-storey house. Triple aspect. The two living areas each have a window south to the street, the main kitchen/dining window is east to the back garden while the living room has two windows west to the front garden. Three bedrooms face the street, one dual aspect with a main west window. Proposed VSC remains above 27. Room will still achieve compliant levels of daylight distribution with 100.00% of room achieving >200lux for more than 50% of the year.
107	Kitchen/Dining	38.52	24.45	Minor Impact	Room will still achieve compliant levels of daylight distribution with 100.00% of room achieving >200lux for more than 50% of the year.
108	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.				
109	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.				
110	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.				

	111	Bedroom 01	37.68	26.26	Minor Impact	Bedroom, although habitable. is predominantly used for sleeping purposes, therefore requiring dimmed light during the day or darkness during the night time .100.00% of room achieving >200lux for more than 50% of the year.
	112	Bedroom 03	37.70	27.91	Compliant	Proposed VSC remains above 27.
	113	Bedroom 02	38.11	29.25	Compliant	Proposed VSC remains above 27.

HOUSE NO.31
BELLTREE AVENUE

Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
13	Ground Floor Living Room	38.69	27.12	Compliant	Proposed VSC remains above 27. Room will still achieve compliant levels of daylight distribution with 50.50% of room achieving >200lux for more than 50% of the year.
14	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
15	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
18	First Floor Living	38.92	29.49	Compliant	Mid-terrace 3-storey dual aspect house. The lowest front facing room is a small secondary living area or additional bedroom. The main living room, with two windows, spans the width of the house at first floor. Room will still achieve compliant levels of daylight distribution with 76.80% of room achieving >200lux for more than 50% of the year.
19	First Floor Living	32.13	23.49	Minor Impact	
21	Bedroom 01	39.53	31.82	Compliant	Proposed VSC remains above 27.
23	Ensuite	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			

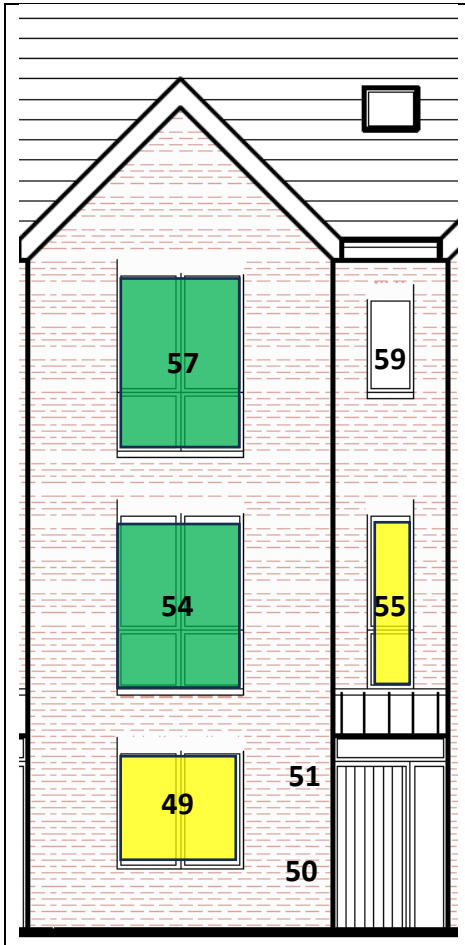


HOUSE NO.33
BELLTREE AVENUE

Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
25	Ground Floor Living Room	38.84	27.35	Compliant	Proposed VSC remains above 27. Room will still achieve compliant levels of daylight distribution with 90.10% of room achieving >200lux for more than 50% of the year.
26	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
27	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
30	First Floor Living	39.20	29.02	Compliant	Mid-terrace 3-storey dual aspect house. The lowest front facing room is a small secondary living area or additional bedroom. The main living room, with two windows, spans the width of the house at first floor. Room will still achieve compliant levels of daylight distribution with 89.50% of room achieving >200lux for more than 50% of the year.
31	First Floor Living	32.81	22.73	Minor Impact	
33	Bedroom 01	39.50	31.46	Compliant	Proposed VSC remains above 27.
35	Ensuite	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			

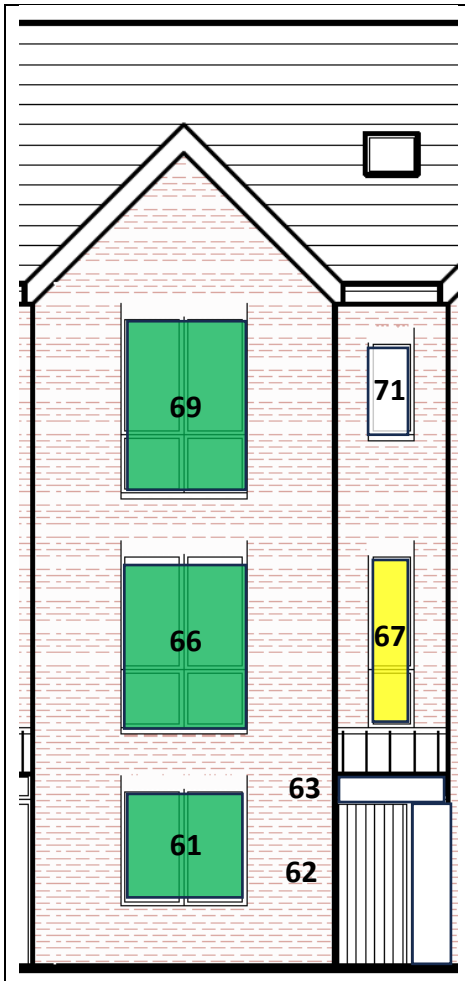
HOUSE NO.35
BELLTREE AVENUE

Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
37	Ground Floor Living Room	38.97	27.25	Compliant	Proposed VSC remains above 27. Room will still achieve compliant levels of daylight distribution with 67.33% of room achieving >200lux for more than 50% of the year.
38	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
39	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
42	First Floor Living	39.35	28.84	Compliant	Mid-terrace 3-storey dual aspect house. The lowest front facing room is a small secondary living area or additional bedroom. The main living room, with two windows, spans the width of the house at first floor. Room will still achieve compliant levels of daylight distribution with 89.50% of room achieving >200lux for more than 50% of the year.
43	First Floor Living	32.28	22.23	Minor Impact	
45	Bedroom 01	39.68	31.17	Compliant	Proposed VSC remains above 27.
47	Ensuite	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			



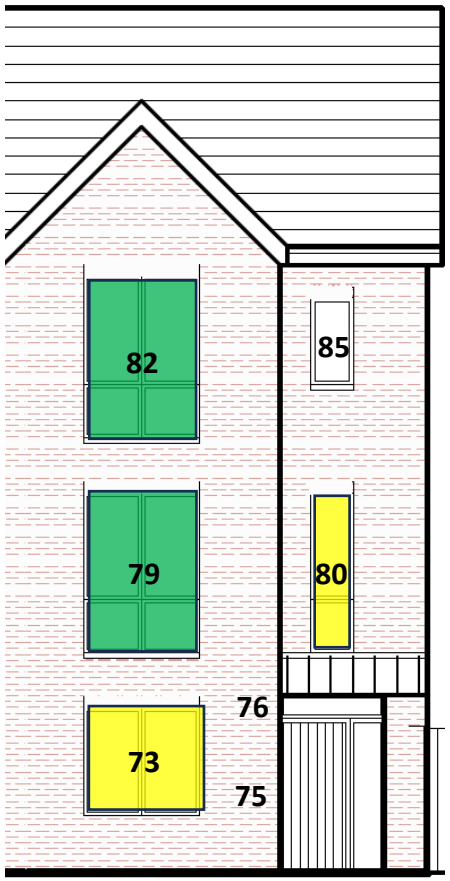
HOUSE NO.37
BELLTREE AVENUE

Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
49	Ground Floor Living Room	39.23	26.80	Minor Impact	Room will still achieve compliant levels of daylight distribution with 64.36% of room achieving >200lux for more than 50% of the year.
50	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
51	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
54	First Floor Living	39.49	28.72	Compliant	Mid-terrace 3-storey dual aspect house. The lowest front facing room is a small secondary living area or additional bedroom. The main living room, with two windows, spans the width of the house at first floor. Room will still achieve compliant levels of daylight distribution with 80.66% of room achieving >200lux for more than 50% of the year.
55	First Floor Living	32.29	22.00	Minor Impact	
57	Bedroom 01	39.67	30.95	Compliant	Proposed VSC remains above 27.
59	Ensuite	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			



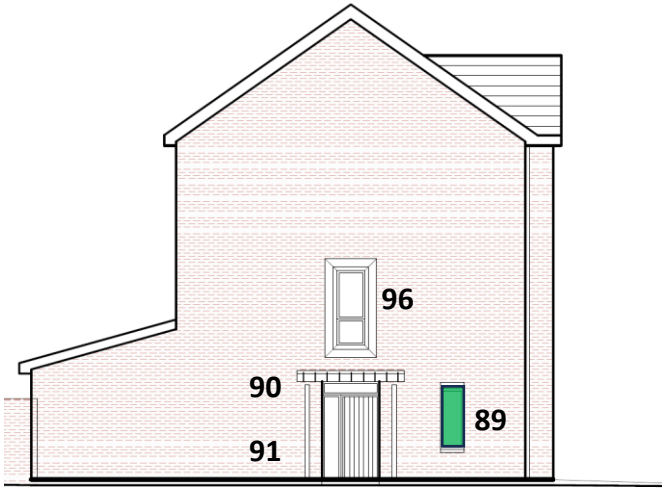
HOUSE NO.39
BELLTREE AVENUE

Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
61	Ground Floor Living Room	39.32	28.60	Compliant	Proposed VSC remains above 27. Room will still achieve compliant levels of daylight distribution with 55.45% of room achieving >200lux for more than 50% of the year.
62	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
63	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
66	First Floor Living	39.45	28.22	Compliant	Mid-terrace 3-storey dual aspect house. The lowest front facing room is a small secondary living area or additional bedroom. The main living room, with two windows, spans the width of the house at first floor. Room will still achieve compliant levels of daylight distribution with 69.61% of room achieving >200lux for more than 50% of the year.
67	First Floor Living	32.48	21.38	Minor Impact	
69	Bedroom 01	39.64	30.44	Compliant	Proposed VSC remains above 27.
71	Ensuite	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			



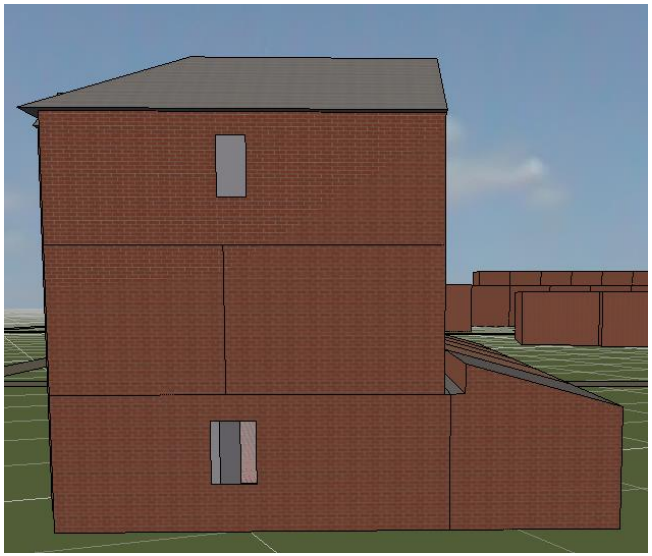
HOUSE NO.41
BELLTREE AVENUE

Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
73	Ground Floor Living Room	39.05	26.10	Minor Impact	Room will still achieve compliant levels of daylight distribution with 50.50% of room achieving >200lux for more than 50% of the year.
75	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
76	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
79	First Floor Living	39.47	27.87	Compliant	Mid-terrace 3-storey dual aspect house. The lowest front facing room is a small secondary living area or additional bedroom. The main living room, with two windows, spans the width of the house at first floor. Room will still achieve compliant levels of daylight distribution with 62.43% of room achieving >200lux for more than 50% of the year.
80	First Floor Living	36.44	25.17	Minor Impact	
82	Bedroom 01	39.66	30.30	Compliant	Proposed VSC remains above 27.
85	Ensuite	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			



HOUSE NO.43
BELLTREE AVENUE

Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
89	Family Room	39.47	27.04	Compliant	Proposed VSC remains above 27.
90	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
91	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
96	Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			



27 Park Street N

Window Reference	Room	Existing VSC	Proposed VSC	Classification	Comment
247	Entrance Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			
257	Hall	Window not required to be analysed by having regard to Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022) as daylight is not required for the function of this room.			

When assessing the results in the following pages the general advantages of the Clongriffin area in terms of facilities and compactness need to be noted also. Clongriffin is planned as a highly sustainable mixed use neighbourhood centred on key public transport interchanges with a distinct identity and sense of place. The central area will be an urban town centre and this has been expressed in successive planning permissions for a compact urban centre with a quality public realm. This application closely follows the form of the permitted development on this site. Benefits for all residents flow from the increased urbanity in the centre, it brings with it a convenience and diversity of facilities. The viability, and so the available offer, of retail, hospitality and service facilities is improved with the additional population and the diversity of dwelling typologies and occupants that comes with urban scale. The location is within 500m of the Dart and Bus transport hub, the Town Square and the emerging retail, supermarket and services, and all with high quality parks and greenways at hand.

29 Belltree Avenue is a corner house. While the two main living areas have a window south to the street, the main window to the kitchen /dining is east to the back garden and the living room has two windows west to the front garden. Three bedroom windows face the street, one of which is dual aspect with its main window to the west. The net effect is really to the two bedrooms.

31-41 is a terrace of six three storey houses. Block 6 is directly south and at the equinox the sun will shine on the front gardens and all of the street facing windows. The lowest front facing room is a small secondary living area or additional bedroom. The main living room, with two windows, spans the width of the house at first floor. The bedroom (top) floor has an obstruction angle of less than 25', while the main living room with large windows has an obstruction angle marginally over 25'. Both floors would be considered to have good light exposure and all floors receive direct sunlight at the equinox.43 Belltree Avenue is a corner house with no habitable rooms windows facing Belltree Avenue.

For these dwellings, all of the habitable rooms will either experience a compliant or minor impact in terms of VSC reduction. The only windows which will experience a "moderate" impact, are those serving the entrance hall or second floor ensuite which are not classed a regularly occupied space.

While the VSC impact provides a classification of the expected reduction in daylight the window will receive, it does not accurately measure the internal daylight distribution. With the benefit of floor plans for43-63 Park Street, an sDA assessment was carried out to the habitable rooms facing the proposed development. Spatial Daylight Autonomy (sDA) metric which assess how much of an area receives sufficient daylight on a working plane during daylight hours on an annual basis, it is a climatic based daylight assessment. While this assessment is typically carried out for new build developments, it provides additional context to the daylight impact of 43-61 Park Street. The assessment demonstrates that all habitable rooms receive either reasonable or compliant internal daylight levels in accordance with BS EN 17037:2018 Daylight in buildings. BS EN 17037.

It will be seen that the impact classification is higher as the baseline considered assumes a vacant site opposite. The high VSC existing is a direct result of the other side of the road being unbuilt and ergo the difference in lighting levels is influenced by its temporary status as a vacant site. However the BRE metrics for classification, whereby a drop in lighting level to less than 80% is considered an impact, applies as a guideline to a new development built for example on disused sports grounds which had an established use over time and therefore impacts on existing houses that had an expectation of that lighting level. In the case of master planned lands however, an expectation that the undeveloped parts of the masterplan designated for building would remain undeveloped would be counter to the established plans for the area, particularly where planning permission already exists confirming a baseline development as pertains here.

It is important to consider the various contexts within which the guidelines are to be interpreted, and the BRE introduction is a good reference point in this regard.

5.2 Annual Probable Sunlight Hours Impact

To assess loss of sunlight to an existing building, it is suggested that all main living rooms of dwellings, and conservatories, should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun. Normally loss of sunlight need not be analysed to kitchens and bedrooms, except for bedrooms that also comprise a living space, for example a bed sitting room in an old people's home. In non-domestic buildings any spaces that are deemed to have a special requirement for sunlight should be checked; they will normally face within 90° of due south anyway

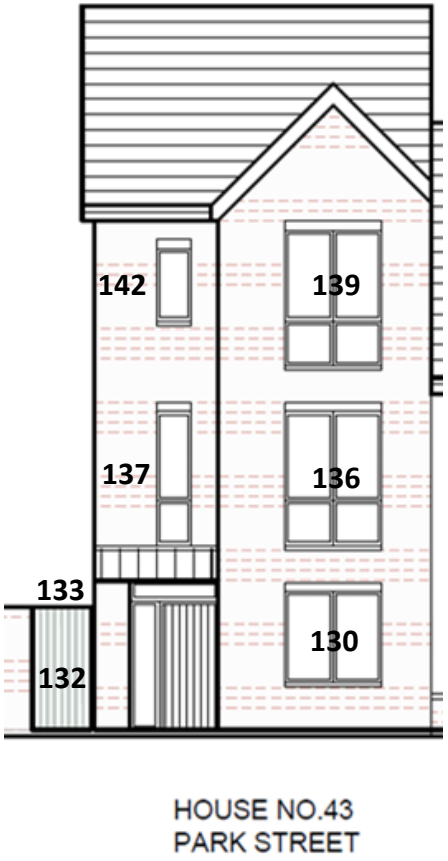
To calculate the loss of sunlight over the year, a different metric, the annual probable sunlight hours (APSH), is used. Here 'probable sunlight hours' means the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for the location in question (based on sunshine probability data. The sunlight reaching a window is quantified as a percentage of this unobstructed annual total.

If a room can receive more than one quarter of annual probable sunlight hours (APSH), including at least 5% of APSH in the winter months between 21 September and 21 March, then it should still receive enough sunlight. Also, if the overall annual loss of APSH is 4% or less, the loss of sunlight is small. Any reduction in sunlight access below these levels should be kept to a minimum. If the available sunlight hours are both less than the amount above and less than 0.80 times their former value, either over the whole year or just in the winter months (21 September to 21 March), and the overall annual loss is greater than 4% of APSH, then the occupants of the existing building will notice the loss of sunlight; the room may appear colder and less cheerful and pleasant. In presenting results, ratios of sunlight hours should be given to at least two decimal places (for example 0.79 or 0.81) or as the equivalent percentage loss (for example 21% or 19%).

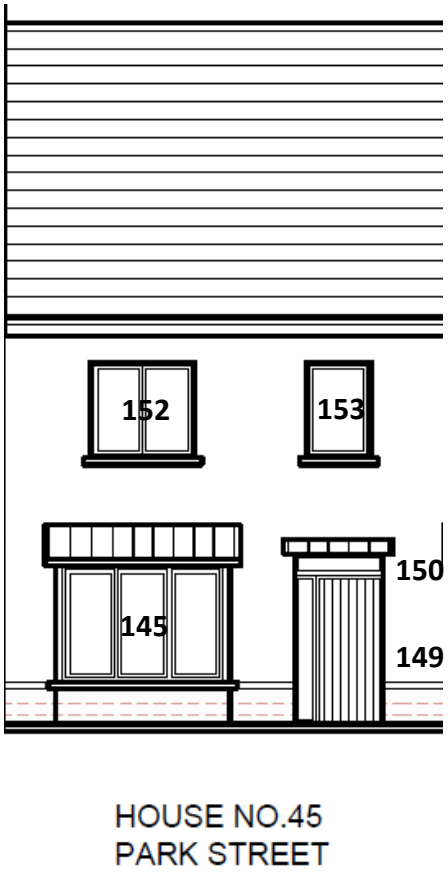
It is not always necessary to do a full calculation to check sunlight potential. The guideline above is met provided either of the following is true:

- If the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window
- The window wall faces within 90° of due south and no obstruction, measured in the section perpendicular to the window wall, subtends an angle of more than 25° to the horizontal (Figure 14 in section 2.2). Again, obstructions within 90° of due north of the existing window need not be counted.
- The window wall faces within 20° of due south and the reference point has a VSC (section 2.1) of 27% or more.

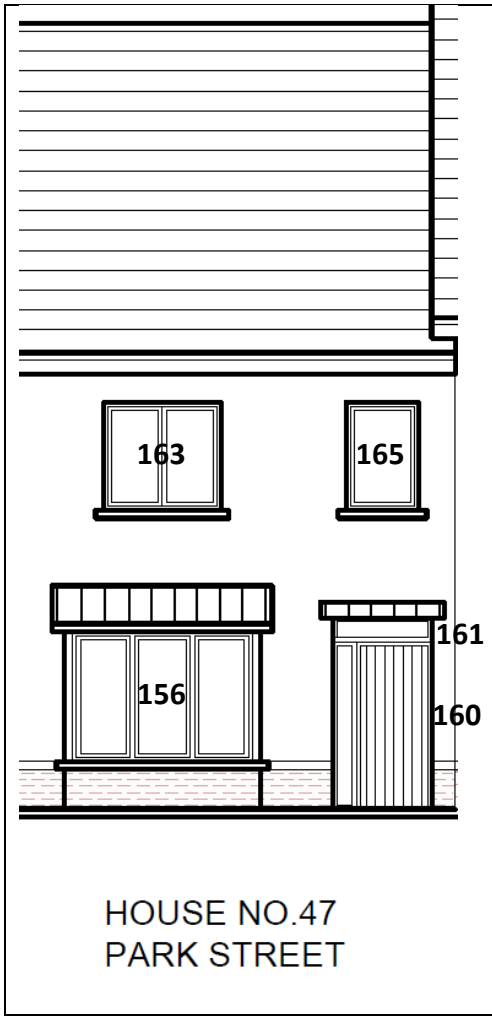
The existing adjacent dwellings have a mixture of northerly, south easterly and southerly glazing. The table 14 below identifies each existing dwellings APSH prior to the development and the subsequent impact of the development. If the assessment point of a window can receive more than 25% of APSH, including at least 5% of APSH in the winter months, then the room should receive enough sunlight. When measuring the effect a proposed development will have on the APSH of an existing window, the APSH value should not drop below the absolute values of 25% annually or winter 5% during winter months. If the available sunlight the available sunlight hours are both less than the annual and winter BRE guidelines and less than 0.8 times their former value then the occupants of the existing dwelling will notice a loss of sunlight or if the overall annual loss is greater than 4% of ASPH, the room may appear colder and less pleasant. The analysis demonstrates that 38.00% of the relevant assessed windows meet the recommended Annual Probable Sunlight Hours target and 34.00% of the windows meet the Winter sunlight hours recommendation. The results and commentary for APSH should be viewed in conjunction with VSC results in section 5.1 of this report. It should be noted that the existing condition for which the reduction in APSH and WPSH is assessed, is based on the current existing condition which is a vacant site, rather than the proposed and previously granted scheme, therefore a reduction in sunlight is expected.



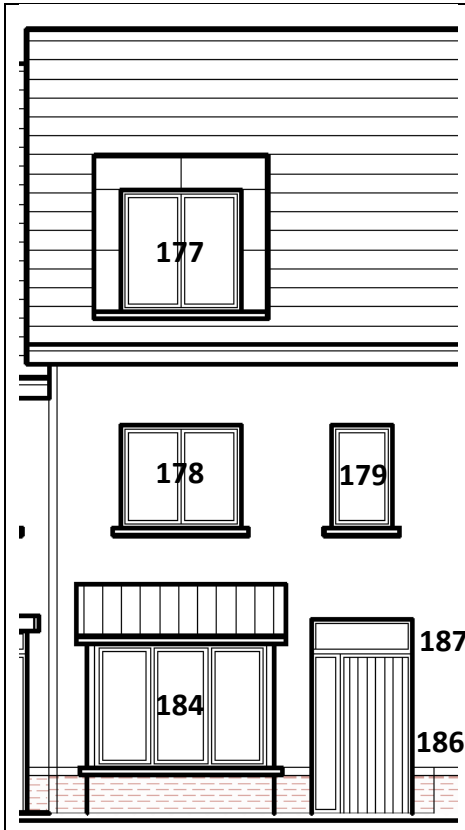
Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
130	Ground Floor Living Room	28.67	13.50	12.59	4.20	0.47	0.33	N
132	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
133	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
136	First Floor Living	28.67	15.62	12.59	4.68	0.54	0.37	N
137	First Floor Living	0.00	0.00	0.00	0.00	1.00	1.00	Y
139	Bedroom 01	28.58	17.48	12.50	5.59	0.61	0.45	Y
142	Ensuite	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						



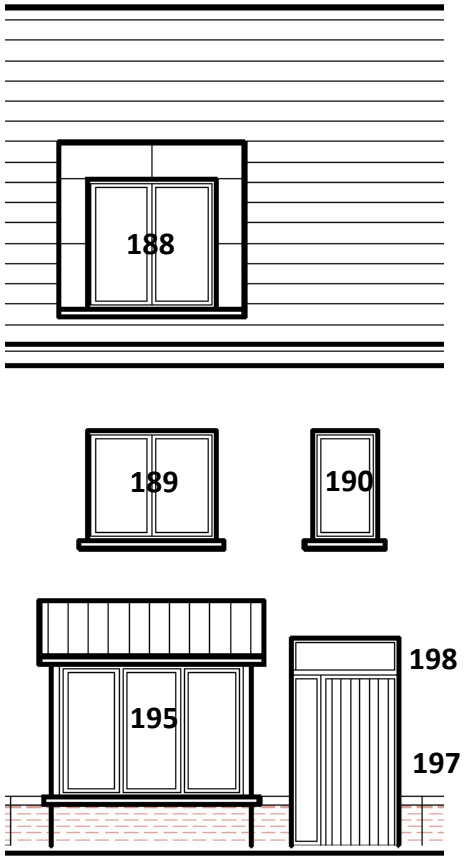
Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
144 (Side Bay)	Ground Floor Living Room	0.00	0.00	0.00	0.00	1.00	1.00	Y
145	Ground Floor Living Room	28.67	13.98	12.59	3.84	0.49	0.31	N
146 (Side Bay)	Ground Floor Living Room	0.00	0.00	0.00	0.00	1.00	1.00	Y
149	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
150	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
152	Bedroom 02	23.91	10.1	10.14	1.92	0.42	0.19	N
154	Bedroom 03	0.00	0.00	0.00	0.00	1.00	1.00	Y



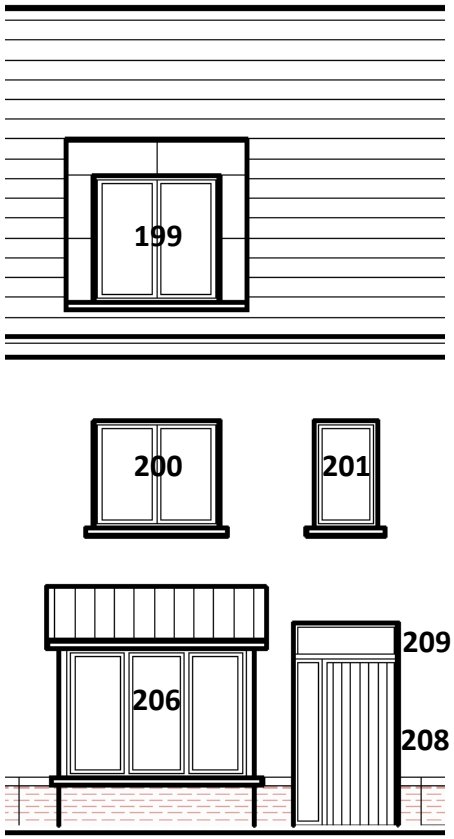
Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
155 (Side Bay)	Ground Floor Living Room	0.00	0.00	0.00	0.00	1.00	1.00	Y
156	Ground Floor Living Room	28.67	13.22	12.59	3.50	0.46	0.28	N
157 (Side Bay)	Ground Floor Living Room	0.00	0.00	0.00	0.00	1.00	1.00	Y
160	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
161	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
163	Bedroom 02	28.30	15.84	12.21	3.50	0.56	0.29	N
165	Bedroom 03	0.00	0.00	0.00	0.00	1.00	1.00	Y



Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
177	Bedroom 01	27.97	18.07	11.89	4.73	0.65	0.40	N
178	Bedroom 03	27.97	16.51	11.89	4.07	0.59	0.34	N
179	Store	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
183 (Side Bay)	Kitchen / Dining	0.00	0.00	0.00	0.00	1.00	1.00	Y
184	Kitchen / Dining	27.97	14.94	11.89	3.27	0.53	0.28	N
185 (Side Bay)	Kitchen / Dining	0.00	0.00	0.00	0.00	1.00	1.00	Y
186	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
187	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						



Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
188	Bedroom 01	27.97	18.61	11.89	4.64	0.67	0.39	N
189	Bedroom 03	27.97	16.03	11.89	3.53	0.57	0.30	N
190	Store	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
194 (Side Bay)	Kitchen / Dining	0.00	0.00	0.00	0.00	1.00	1.00	Y
195	Kitchen / Dining	27.97	14.42	11.89	2.80	0.52	0.24	N
196 (Side Bay)	Kitchen / Dining	0.00	0.00	0.00	0.00	1.00	1.00	Y
197	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
198	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						

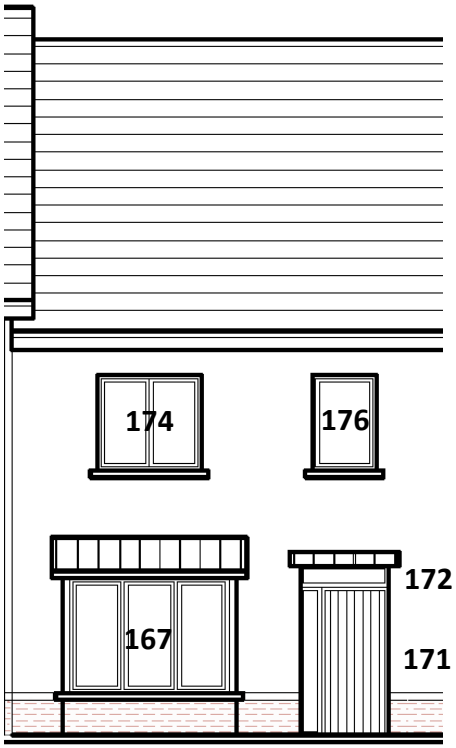


HOUSE NO.53
PARK STREET

Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
199	Bedroom 01	27.97	18.04	11.89	4.75	0.64	0.40	N
200	Bedroom 03	27.97	15.92	11.89	3.50	0.57	0.29	N
201	Store	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
205 (Side Bay)	Kitchen / Dining	0.00	0.00	0.00	0.00	1.00	1.00	Y
206	Kitchen / Dining	27.97	14.73	11.89	2.80	0.53	0.24	N
207 (Side Bay)	Kitchen / Dining	0.00	0.00	0.00	0.00	1.00	1.00	Y
208	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
209	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						

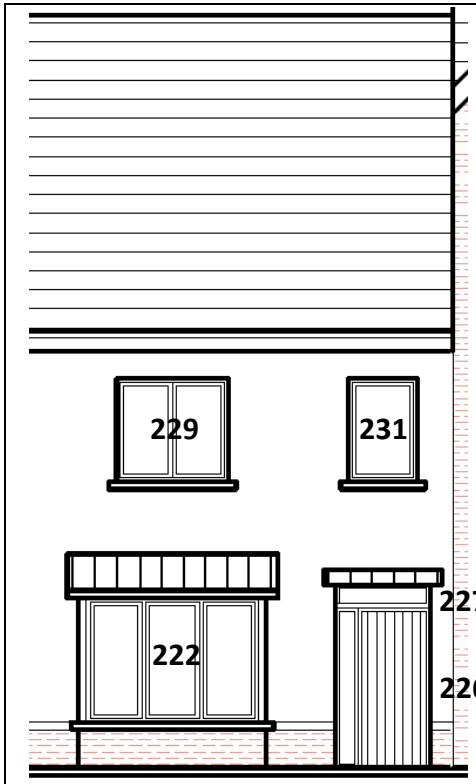
HOUSE NO.55
PARK STREET

Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
210	Bedroom 01	27.97	18.85	11.89	5.56	0.67	0.47	Y
211	Bedroom 03	27.97	16.19	11.89	4.20	0.58	0.35	N
212	Store	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
216 (Side Bay)	Kitchen / Dining	0.00	0.00	0.00	0.00	1.00	1.00	Y
217	Kitchen / Dining	27.97	14.56	11.89	2.80	0.52	0.24	N
218 (Side Bay)	Kitchen / Dining	0.00	0.00	0.00	0.00	1.00	1.00	Y
219	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
220	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						

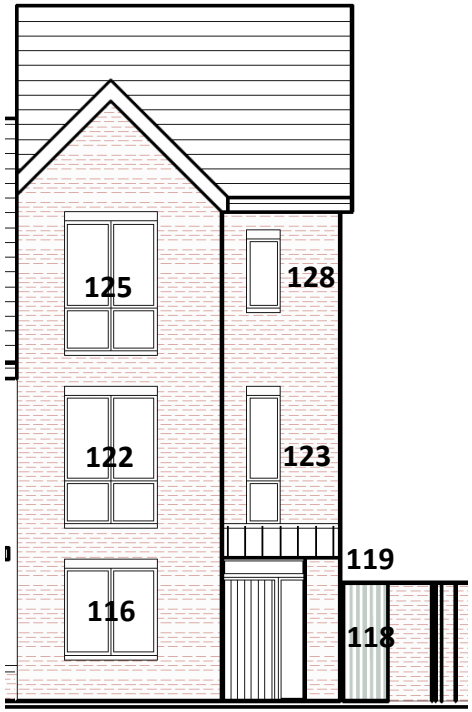


HOUSE NO.57
PARK STREET

Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
166 (Side Bay)	Living Room	0.00	0.00	0.00	0.00	1.00	1.00	Y
167	Living Room	28.67	15.76	12.59	4.14	0.55	0.33	N
168 (Side Bay)	Living Room	0.00	0.00	0.00	0.00	1.00	1.00	Y
171	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
172	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
174	Bedroom 02	28.67	16.08	12.59	4.20	0.56	0.33	N
176	Bedroom 03	0.00	0.00	0.00	0.00	1.00	1.00	Y

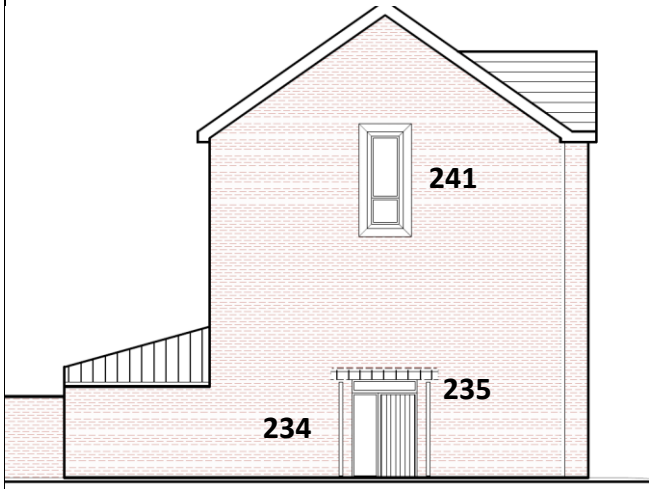


Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
221 (Side Bay)	Living Room	0.00	0.00	0.00	0.00	1.00	1.00	N/A
222	Living Room	28.67	15.12	12.59	3.88	0.53	0.31	Y
223 (Side Bay)	Living Room	0.00	0.00	0.00	0.00	1.00	1.00	N/A
226	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
227	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
229	Bedroom 02	28.67	16.41	12.59	4.52	0.57	0.36	N
231	Bedroom 03	0.00	0.00	0.00	0.00	1.00	1.00	N

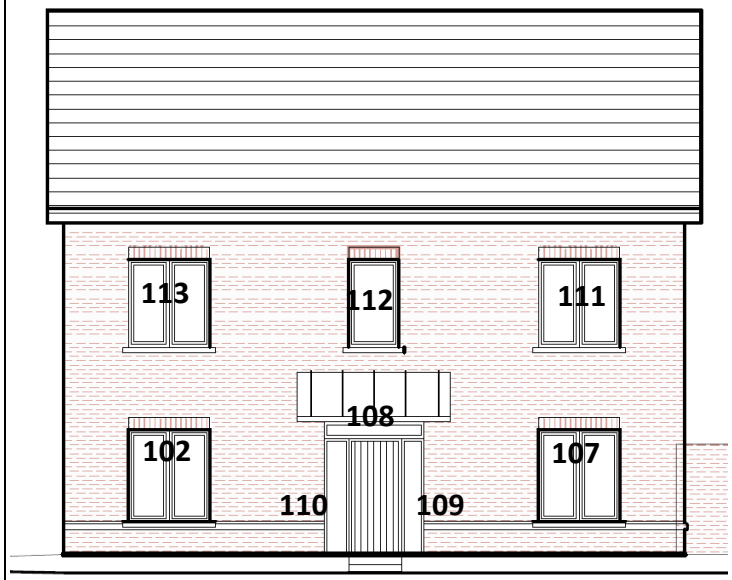


HOUSE NO.61
PARK STREET

Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
116	Ground Floor Living Room	28.50	15.58	12.41	4.02	0.55	0.32	N
118	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
119	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
122	First Floor Living	28.67	16.67	12.59	4.68	0.58	0.37	N
123	First Floor Living	0.00	0.00	0.00	0.00	1.00	1.00	N/A
125	Bedroom 01	28.67	19.33	12.59	6.18	0.67	0.49	N
128	Ensuite	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						

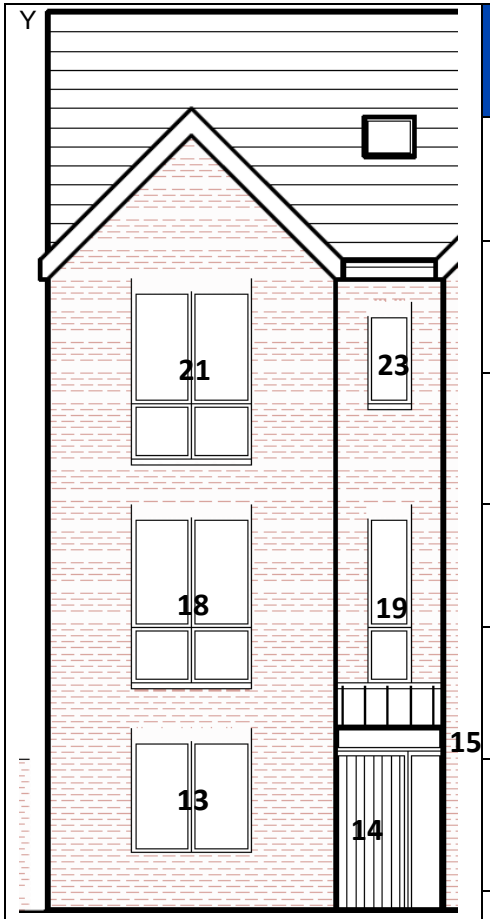


Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
234	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
235	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
241	Store	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						



HOUSE NO.29
BELLTREE AVENUE

Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
102	Living Room	37.61	24.54	15.93	3.50	0.65	0.22	N
107	Kitchen/Dining	38.07	24.89	15.69	3.25	0.65	0.21	N
108	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
109	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
110	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
111	Bedroom 01	34.78	22.52	15.31	3.39	0.65	0.22	N
112	Bedroom 03	34.18	23.28	15.12	4.21	0.68	0.28	N
113	Bedroom 02	35.36	23.84	16.08	4.57	0.67	0.28	N



Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
13	Ground Floor Living Room	37.76	26.34	15.38	3.96	0.70	0.26	N
14	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
15	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
18	First Floor Living	38.46	28.96	16.08	6.58	0.75	0.41	Y
19	First Floor Living	0.00	0.00	0.00	0.00	1.00	1.00	N/A
21	Bedroom 01	38.46	32.10	16.08	9.72	0.83	0.60	Y
23	Ensuite	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						

HOUSE NO.33
BELLTREE AVENUE

Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
25	Ground Floor Living Room	38.46	27.85	16.08	5.47	0.72	0.34	Y
26	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
27	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
30	First Floor Living	38.46	29.38	16.08	7.00	0.76	0.44	Y
31	First Floor Living	0.00	0.00	0.00	0.00	1.00	1.00	N/A
33	Bedroom 01	38.46	32.67	16.08	10.29	0.85	0.64	Y
35	Ensuite	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						

HOUSE NO.35
BELLTREE AVENUE

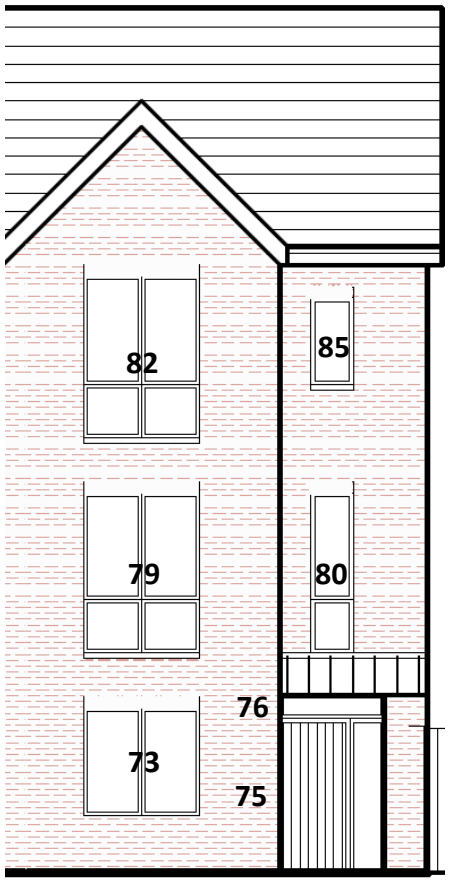
Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
37	Ground Floor Living Room	37.78	27.36	15.41	5.00	0.72	0.32	Y
38	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
39	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
42	First Floor Living	38.46	29.65	16.08	7.27	0.77	0.45	Y
43	First Floor Living	0.00	0.00	0.00	0.00	1.00	1.00	N/A
45	Bedroom 01	38.46	32.28	16.08	9.90	0.84	0.62	Y
47	Ensuite	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						

HOUSE NO.37
BELLTREE AVENUE

Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
49	Ground Floor Living Room	37.76	26.52	15.38	4.14	0.70	0.27	Y
50	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
51	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
54	First Floor Living	37.76	27.53	15.38	5.15	0.73	0.33	Y
55	First Floor Living	0.00	0.00	0.00	0.00	1.00	1.00	N/A
57	Bedroom 01	37.76	30.70	15.38	8.32	0.81	0.54	Y
59	Ensuite	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						

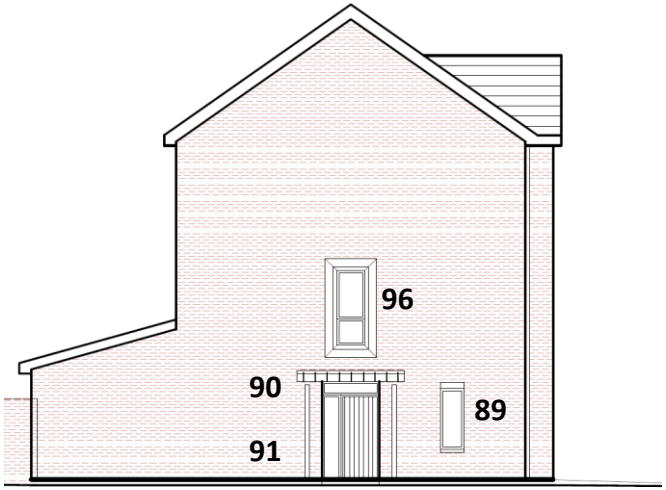
HOUSE NO.39
BELLTREE AVENUE

Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
61	Ground Floor Living Room	37.76	26.58	15.38	4.20	0.70	0.27	Y
62	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
63	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
66	First Floor Living	37.76	27.57	15.38	5.19	0.73	0.34	Y
67	First Floor Living	0.00	0.00	0.00	0.00	1.00	1.00	N/A
69	Bedroom 01	37.76	31.66	15.38	9.28	0.84	0.60	Y
71	Ensuite	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						



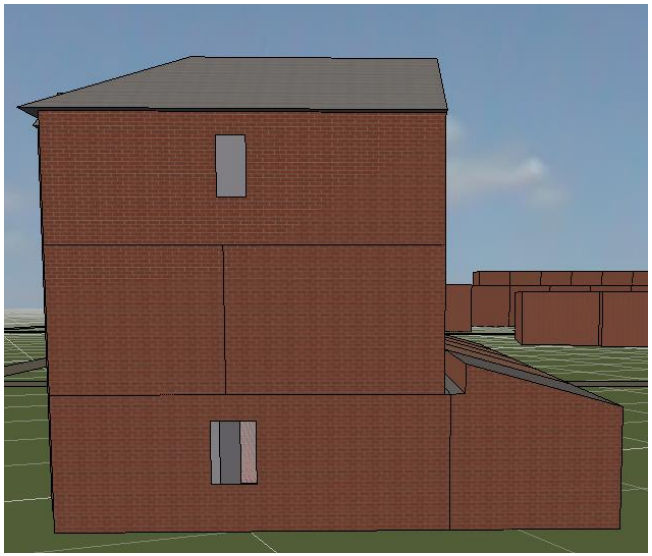
HOUSE NO.41
BELLTREE AVENUE

Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
73	Ground Floor Living Room	37.06	26.97	14.69	4.60	0.73	0.31	Y
75	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
76	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
79	First Floor Living	37.06	27.62	14.69	5.24	0.75	0.36	Y
80	First Floor Living	0.00	0.00	0.00	0.00	1.00	1.00	N/A
82	Bedroom 01	37.76	30.95	15.38	8.57	0.82	0.56	Y
85	Ensuite	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						



HOUSE NO.43
BELLTREE AVENUE

Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
89	Family Room	0.00	0.00	0.00	0.00	1.00	1.00	N/A
90	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
91	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
96	Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						



27 Park Street N

Window Reference	Room	Annual APSH Target >25%		Winter APSH Target >5%		Proposed APSH as ratio of Existing APSH		Impact of Proposed meet BRE Guidelines
		Existing	Proposed	Existing	Proposed	Annual	Winter	
247	Entrance Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						
257	Hall	Window not analysed. See Section 2.2.2 of BRE Site layout planning for daylight and sunlight (2022)						

In the case of Park Street, the orientation is almost 90' from south, the limit at which sunlight analysis is recommended. This means that the APSH at best is low, and that most of the available sunlight is at a very low angle over a now vacant development site. Any obstruction here has a stronger effect when most of the available sun is at such a low angle, and winter sunlight all the more so. The mitigating factors on Park Street are that there are bay windows where side panels can pick up some southern exposure, and that ground floor west facing rooms have access to the garden which is sunlit in the afternoon and evening.

Belltree Avenue faces almost due south and as a result has a higher compliance rate as the sun is higher in the sky. In the few rooms which indicate less compliance, the issue is mainly caused by low angle winter sun. This is mitigated by the sunny first floor living rooms, or in the case No.29, the living rooms affected being dual aspect.
In both cases the advantages of being almost in the town centre mean that all the facilities, shops, supermarket, town square, transport hub etc are within 500mm. These facilities are made possible by being part of a compact urban place with a mix of housing typologies including that now proposed.

5.3 Sun Hours on Ground

Effective site layout planning for daylight and sunlight should go beyond ensuring natural lighting within buildings. Sunlight in the spaces between buildings significantly enhances the overall appearance and ambiance of a development.

“It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.” (Littlefair, 2022) The analysis is carried out for the private garden spaces of the closest sensitive receptors. The figure below highlights the private amenity spaces of the closest sensitive receptors analysed.

Address	
2, King’s Walk, 28 – 30 Park Terrace North	A
43 – 61 Park Street	B
14 King’s Walk, 60-70 Belltree Avenue, 63 Park Street	C
13 – 19 Belltree Lane, 29 Belltree Avenue	D
31 – 41 Belltree Avenue	E
43 Belltree Avenue, 2 – 10 Lake Street	F

Table 8:Nearest sensitive receptors

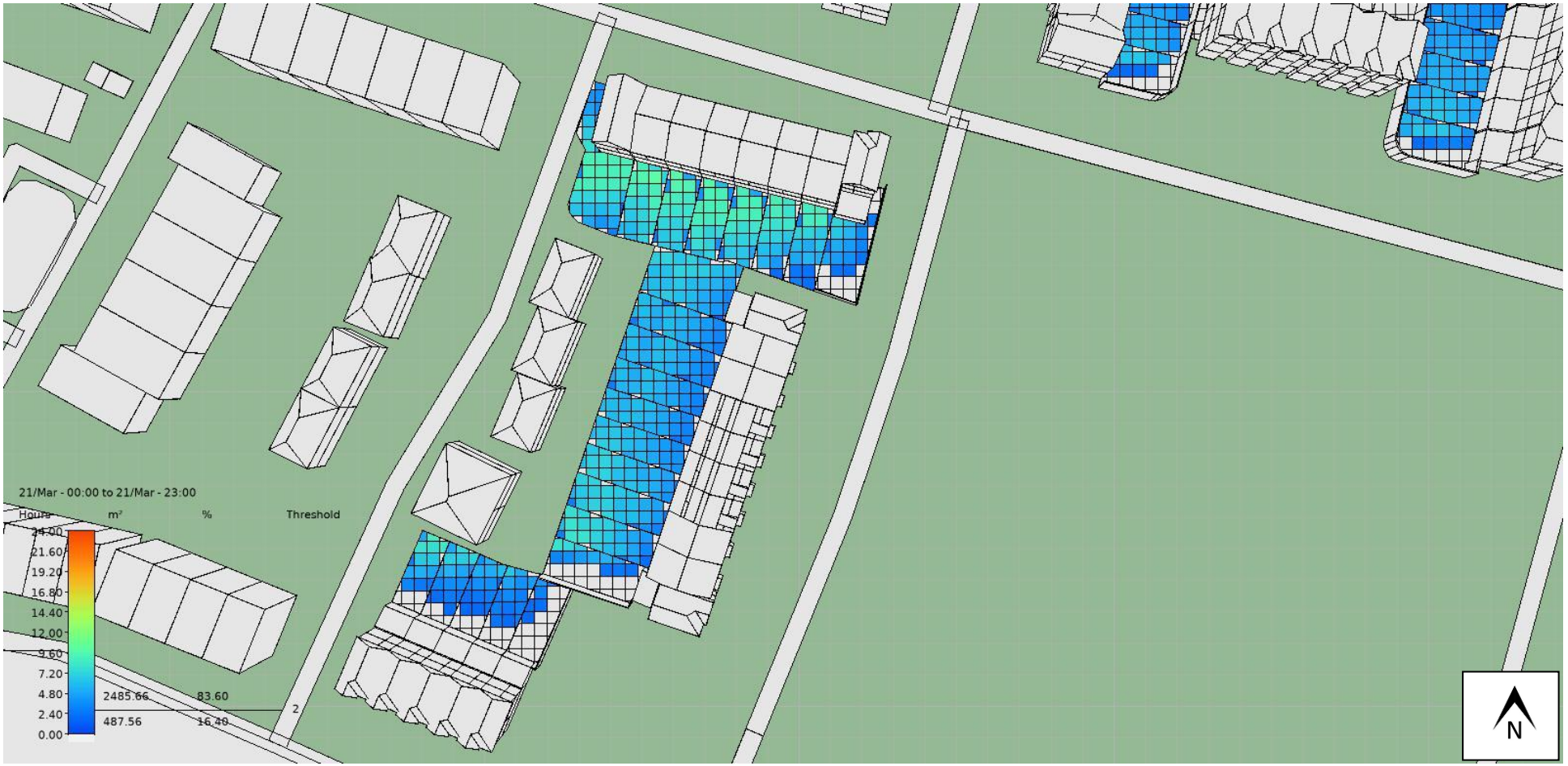
BRE Site layout planning for daylight and sunlight a guide to good practice 3rd Edition 2022, sets out criteria for classification for assessment of impact where a new development affects open spaces in relation to an Environmental Impact Assessment. This guidance is detailed in Appendix H: Environmental Impact Assessment. The guide does not give a specific range of impact or percentages. As Appendix H of BRE guideline (2022 3rd Edition) does not set out specific values ranges for the different classification in impact level for Minor, Moderate and Major to each garden space. For the purpose of this report, the classification in Table 9 will be applied. The evaluation of the impact should be considered in conjunction with other holistic factors when determining the overall impact level to a property.

It should be noted that the existing condition for which the reduction in SHOG is assessed, is based on the current existing condition which is a vacant site, rather than the proposed and previously granted scheme.

Figure 6: Site Plan showing nearest sensitive receptor locations relative to the proposed development

5.3.1 Park Terrace N and Park Street SHOG

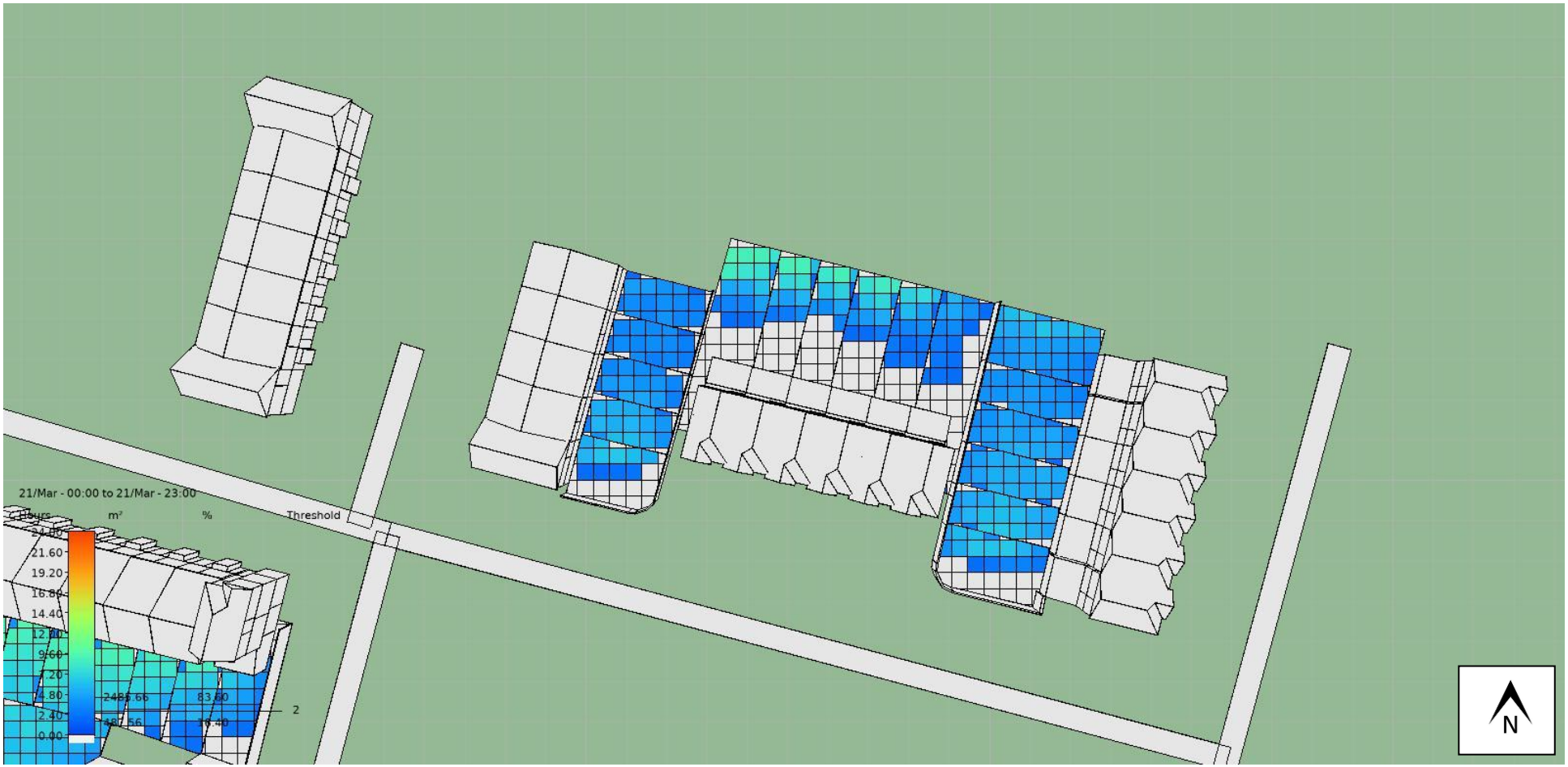
Existing Sun Hours on Ground



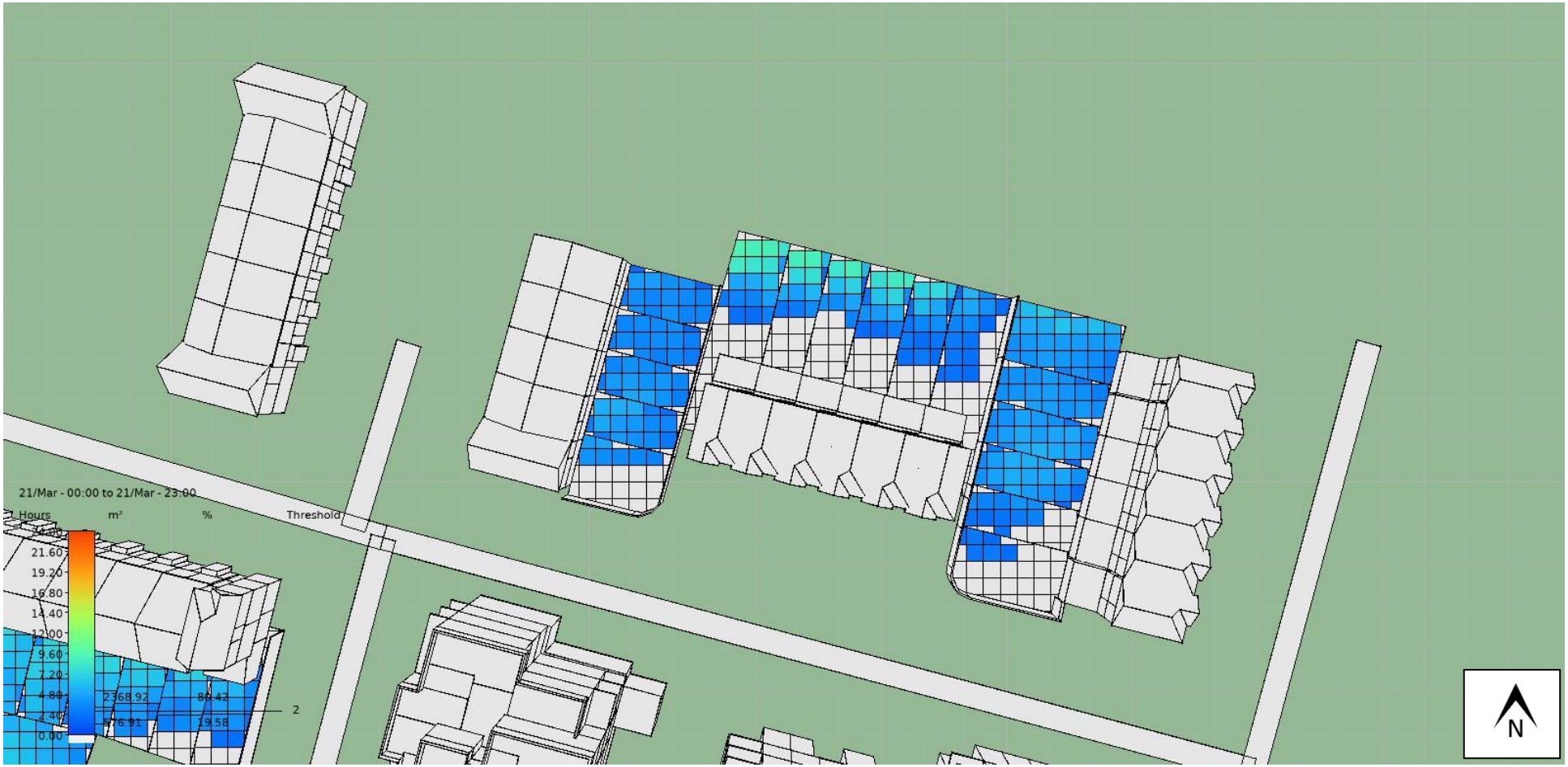
Proposed Sun Hours on Ground

5.3.2 Belltree Avenue, Belltree Lane and Lake Street

Existing Sun Hours on Ground



Proposed Sun Hours on Ground



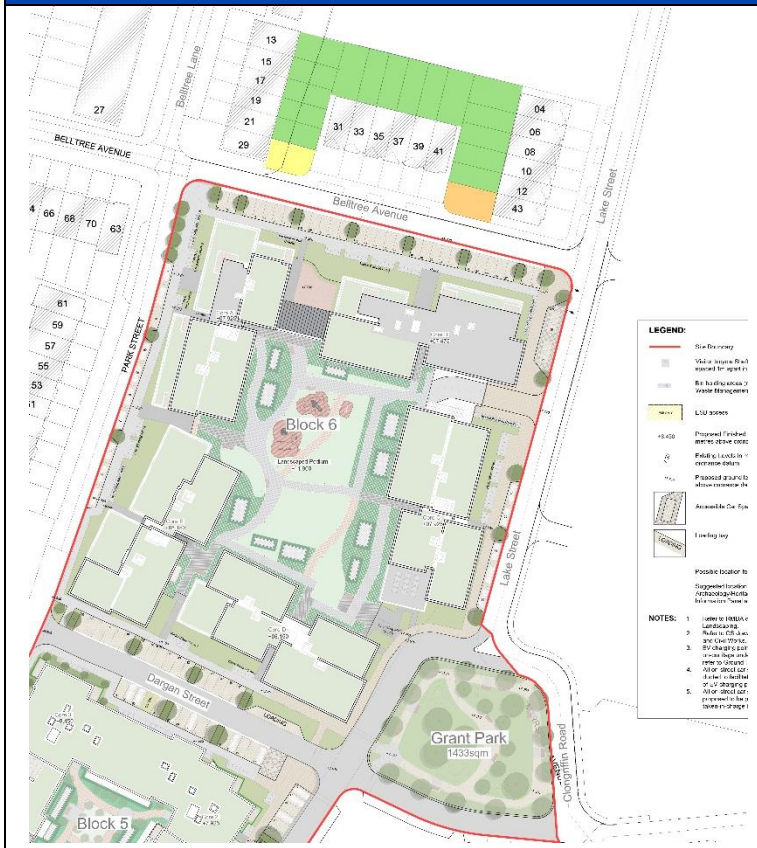
BRE Site layout planning for daylight and sunlight a guide to good practice 3rd Edition 2022, sets out criteria for classification for assessment of impact where a new development affects a number of existing buildings or open spaces in relation to an Environmental Impact Assessment. This guidance is detailed in Appendix H: Environmental Impact Assessment. The guide does not give a specific range of impact or percentages. As Appendix H of BRE guideline (2022 3rd Edition) does not set out specific values ranges for the different classification in impact level for Minor, Moderate and Major to each garden space. For the purpose of this report, the following classification levels will be applied. The evaluation of the impact should be considered in conjunction with other holistic factors when determining the overall impact level to a property.

It should be noted that the existing condition for which the reduction in SHOG is assessed, is based on the current existing condition which is a vacant site, rather than the proposed and previously granted scheme.

Impact Classification	Legend	Percentage Reduction
Compliant (1)		Amenity space receives ≥50% of sun for 2 hours on 21st March and / or reduction in sun hours is ≥80% of existing
Minor Impact (2)		Amenity space receives ≥35 - 49% of sun for 2 hours on 21st March and reduction in sun hours is <80% of existing
Moderate Impact (3)		Amenity space receives ≥20 - 34% of sun for 2 hours on 21st March and reduction in sun hours is <80% of existing
Major Reduction (4)		Amenity space receives <20% of sun for 2 hours on 21st March and reduction in sun hours is <80% of existing

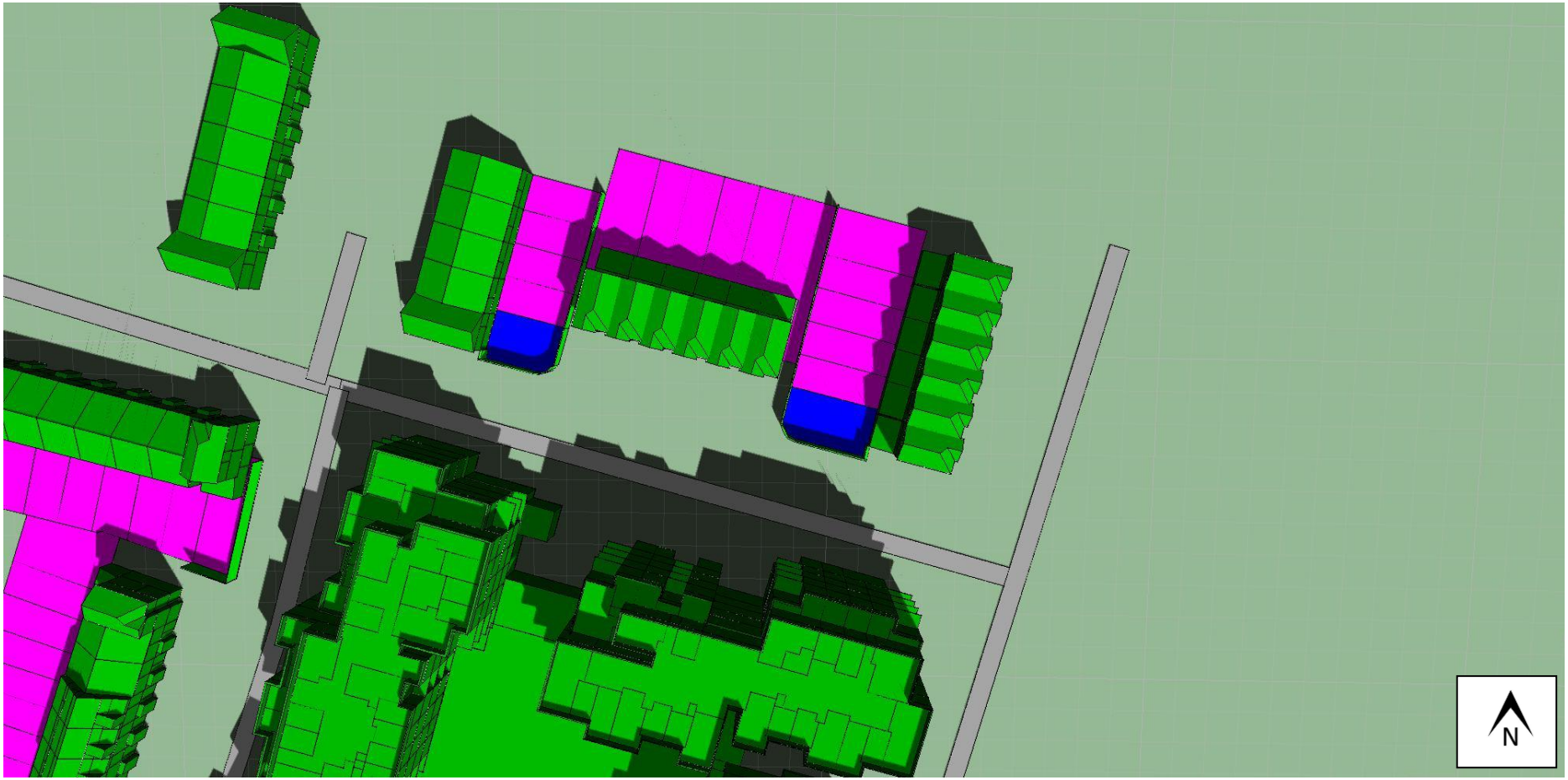
Table 9:SHOG reduction classification

Sun Hours on Ground Impact Classification	Address	Existing Condition % area receiving ≥2 hours sunlight on 21st March	Proposed Condition % area receiving ≥2 hours sunlight on 21st March	Impact Classification
	2 King's Walk	100.00%	100.00%	Compliant
	28 Park Terrace N	81.11%	73.85%	Compliant
	29 Park Terrace N	73.67%	73.67%	Compliant
	30 Park Terrace N	57.57%	57.57%	Compliant
	31 Park Terrace N	27.02%	27.02%	Compliant
	43 Park Street	57.29%	57.29%	Compliant
	45 Park Street	92.90%	92.90%	Compliant
	47 Park Street	96.42%	96.42%	Compliant
	49 Park Street	98.41%	98.41%	Compliant
	51 Park Street	96.39%	96.39%	Compliant
	53 Park Street	96.32%	96.32%	Compliant
	55 Park Street	98.24%	98.24%	Compliant
	57 Park Street	98.99%	98.99%	Compliant
	59 Park Street	96.12%	96.12%	Compliant
	61 Park Street	93.75%	93.75%	Compliant
	14 Kings Walk	95.47%	95.47%	Compliant
	60 Belltree Avenue	96.20%	96.20%	Compliant
	62 Belltree Avenue	100.00%	100.00%	Compliant
	64 Belltree Avenue	98.99%	98.99%	Compliant
	66 Belltree Avenue	96.48%	96.48%	Compliant
	68 Belltree Avenue	90.95%	86.20%	Compliant
	70 Belltree Avenue	95.74%	74.22%	Compliant
	63 Park Street	66.27%	66.27%	Compliant

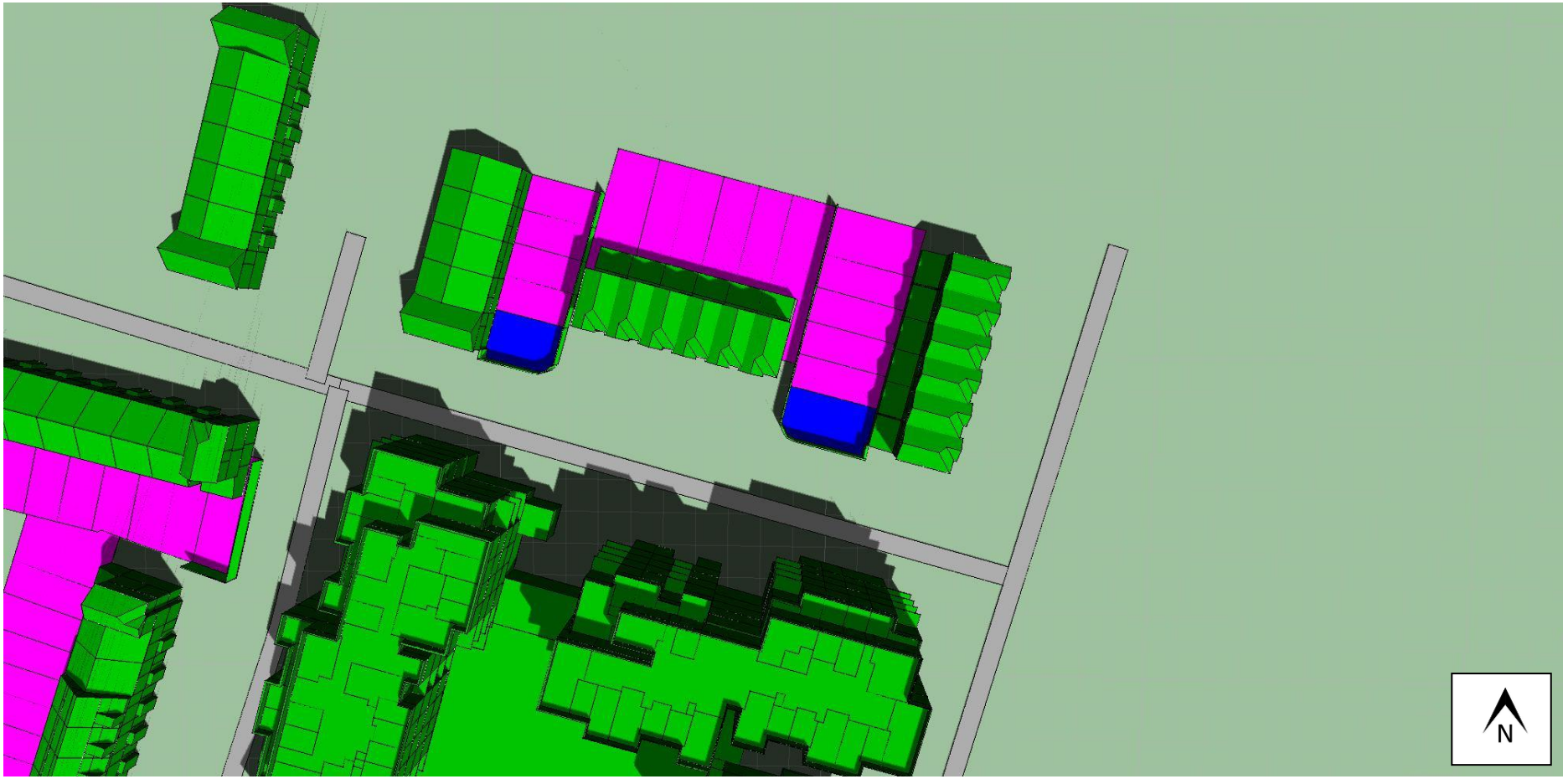
Sun Hours on Ground Impact Classification	Address	Existing Condition % area receiving ≥2 hours sunlight on 21st March	Proposed Condition % area receiving ≥2 hours sunlight on 21st March	Impact Classification
	13 Belltree Lane	94.92%	94.92%	Compliant
	15 Belltree Lane	90.92%	90.92%	Compliant
	17 Belltree Lane	90.77%	90.77%	Compliant
	19 Belltree Lane	92.99%	92.99%	Compliant
	29 Belltree Avenue	59.54%	35.66%	Minor Impact
	31 Belltree Avenue	57.57%	57.57%	Compliant
	33 Belltree Avenue	65.85%	65.85%	Compliant
	35 Belltree Avenue	50.54%	50.54%	Compliant
	37 Belltree Avenue	63.13%	63.13%	Compliant
	39 Belltree Avenue	82.97%	82.97%	Compliant
	41 Belltree Avenue	53.49%	53.49%	Compliant
	43 Belltree Avenue	57.63%	21.11%	Moderate Impact
	10 Lake Street	94.44%	58.75%	Compliant
	8 Lake Street	98.12%	98.12%	Compliant
	6 Lake Street	96.24%	96.24%	Compliant
	4 Lake Street	94.51%	94.51%	Compliant
	2 Lake Street	100.00%	100.00%	Compliant

The analysis shows that with the exception of 29 Belltree Avenue and 43 Belltree Avenue, all amenity spaces of the nearest sensitive receptors achieve compliance with BRE's recommendations for Sun Hours on Ground. The two dwellings which fall below the recommendations, 29 and 43 Belltree Avenue are classified with a minor and moderate impact respectively. However, consideration should be given to the time of year in which the garden spaces will be mostly used, as during late spring and summer, the garden spaces to 29 and 43 Belltree Avenue will receive compliant levels of sunlight. The images below show the shadow analysis for these spaces on the 21st of April, May, June, July, August and September at 12noon.

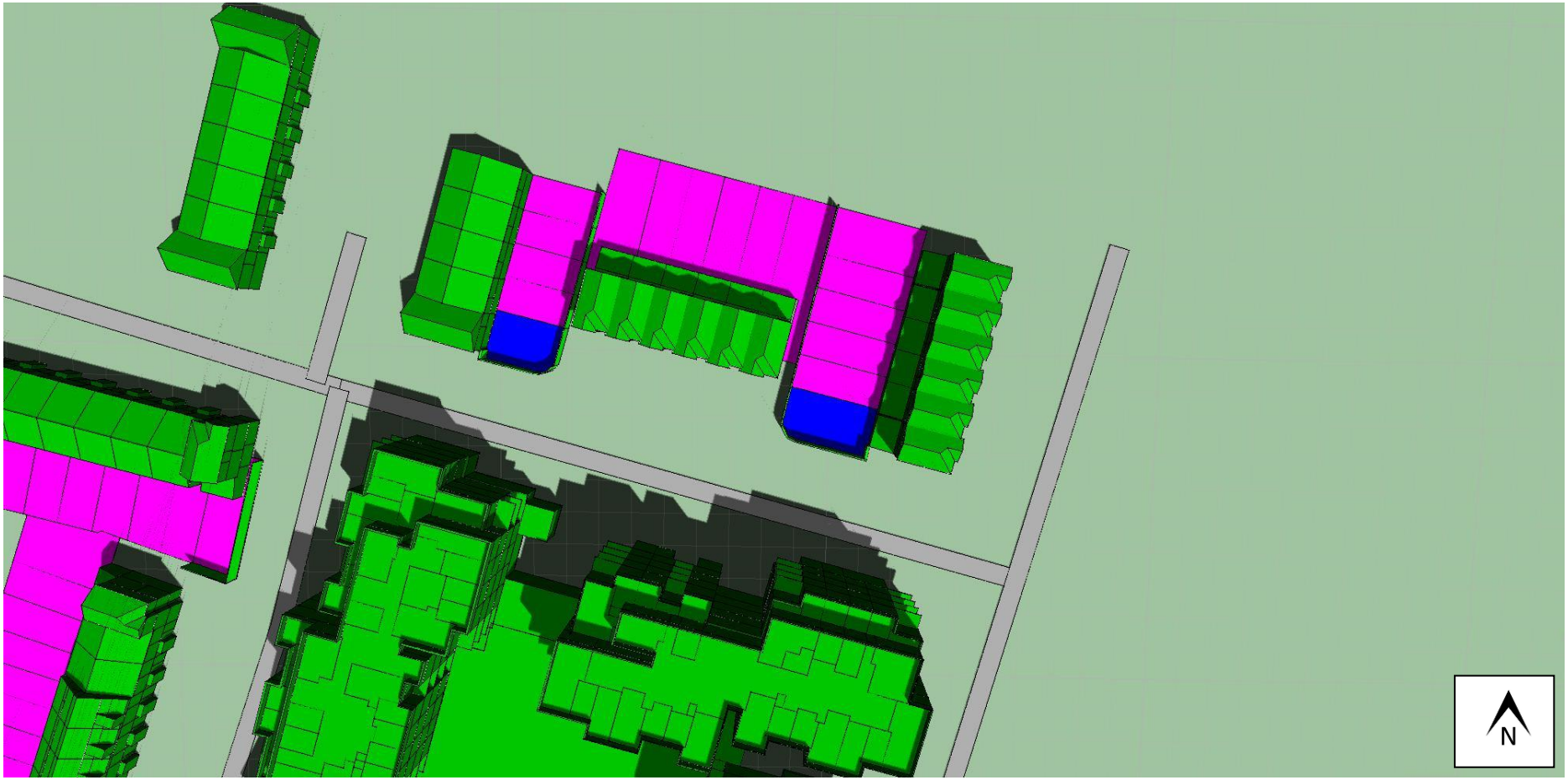
Garden Sunlight on 21st April at 12noon



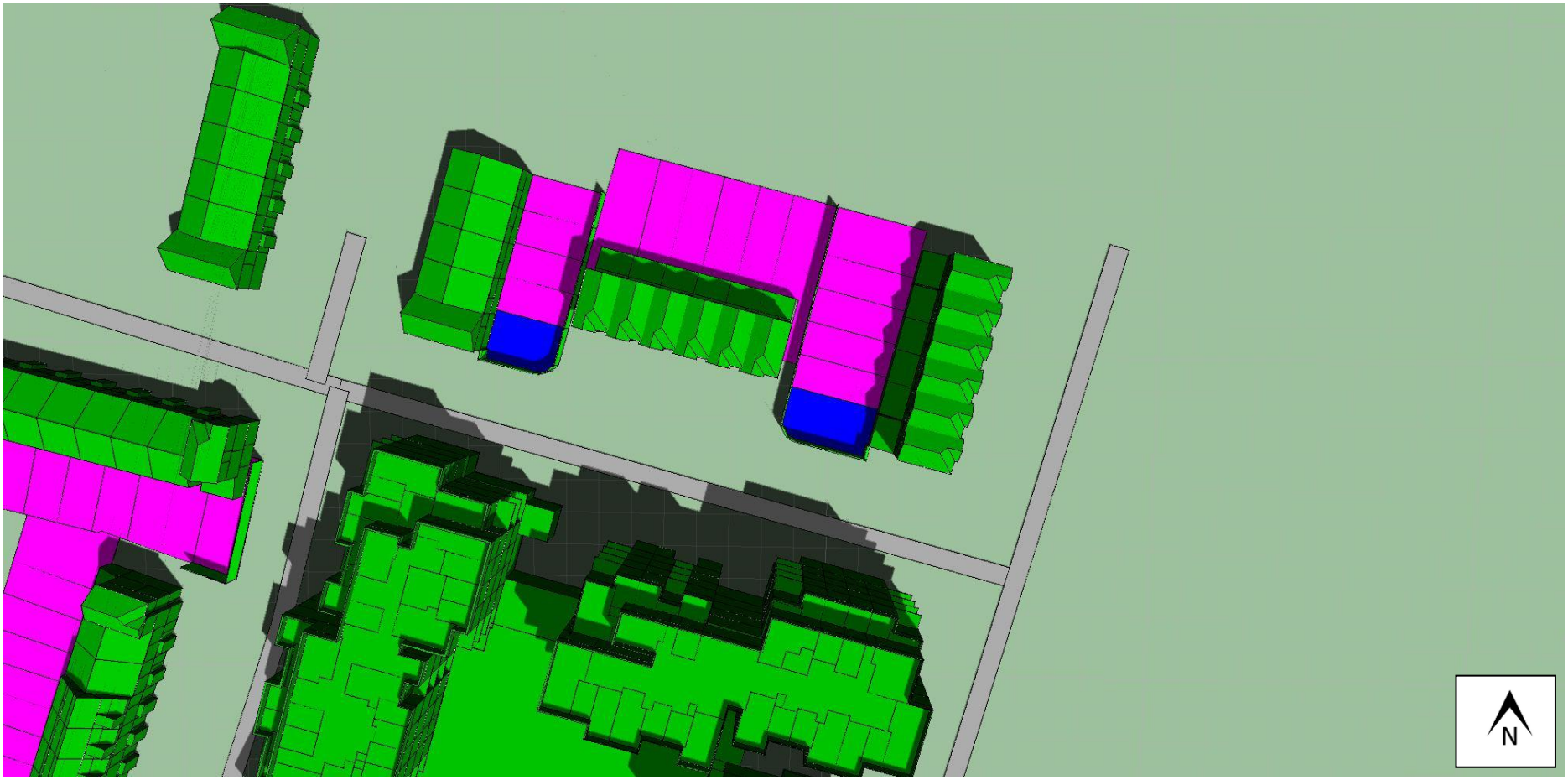
Garden Sunlight on 21st May at 12noon



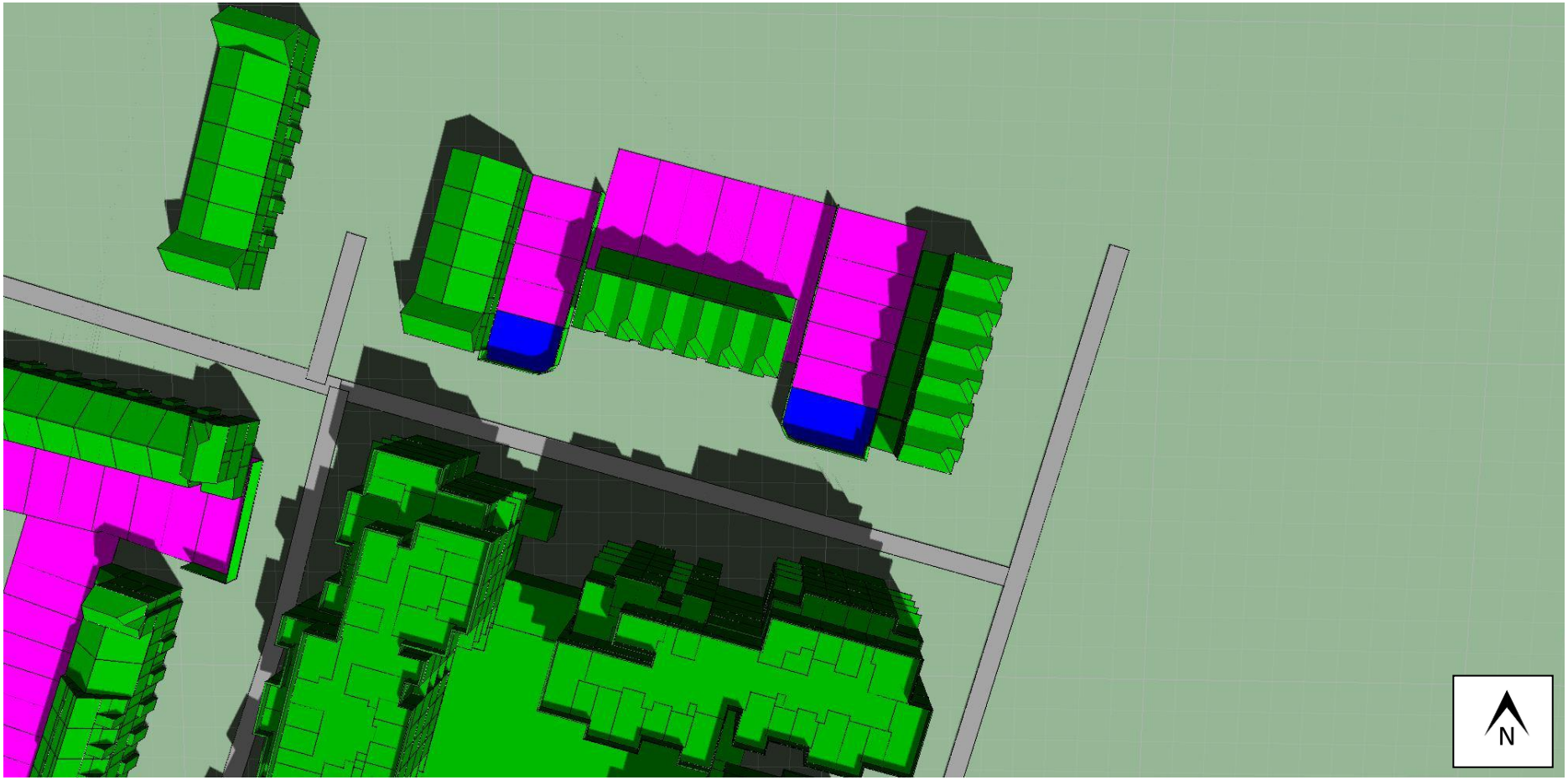
Garden Sunlight on 21st June at 12noon



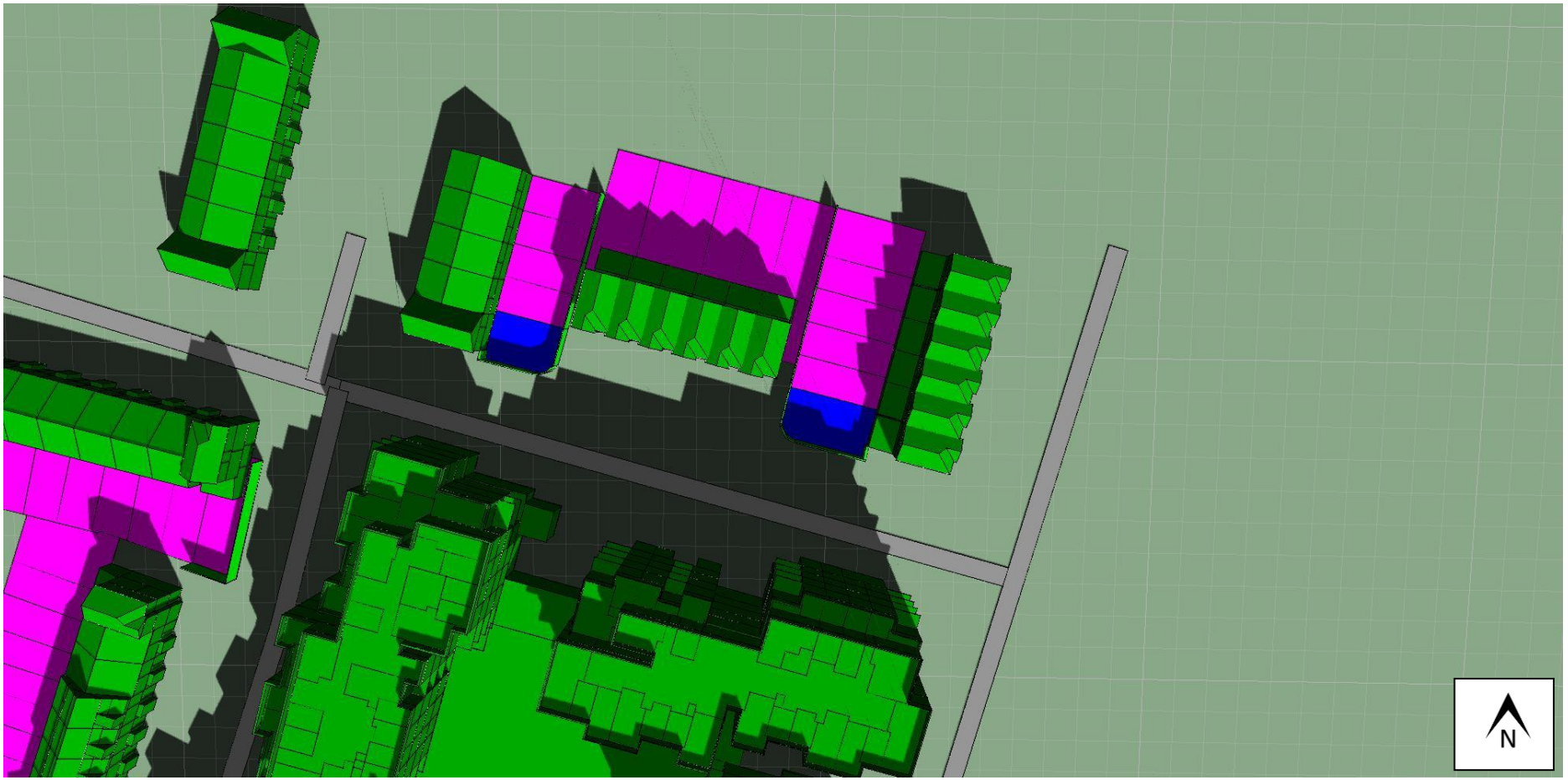
Garden Sunlight on 21st July at 12noon



Garden Sunlight on 21st August at 12noon



Garden Sunlight on 21st September at 12noon



5.4 Impact on Solar Thermal

29 – 43 Belltree Avenue have solar thermal arrays installed on their roof respective roof areas, the solar thermal installed would have been installed to provide a 10.00% renewable energy contribution as required in Technical Guidance Document Part L 2011.Overshadowing typically has less impact on the performance of solar thermal installations than on other solar technologies. Overshadowing / solar gain analysis can still be valuable where there are sizeable obstructions. Where a proposed development of any type is near to an existing solar installation or a building designed to make use of solar radiation, it is good practice to try to minimise any loss of that solar radiation.

Where a proposed development may result in loss of radiation to existing solar panels, an assessment should be carried out. For solar thermal collectors, the loss of radiation falling on the collector is approximately proportional to the loss of renewable heat generation. For example, a collector that has a 25% loss of radiation on its surface would see roughly a 25% reduction in instantaneous performance.

The assessment on solar radiation reduction should include both direct solar and diffuse sky radiation; over a whole year. The modelling should take account of the effects of cloud in reducing direct solar radiation across the year. If over the whole year the ratio of total solar radiation received within the new development, to the existing value is less than the values given in the table below, then the loss of radiation is significant.

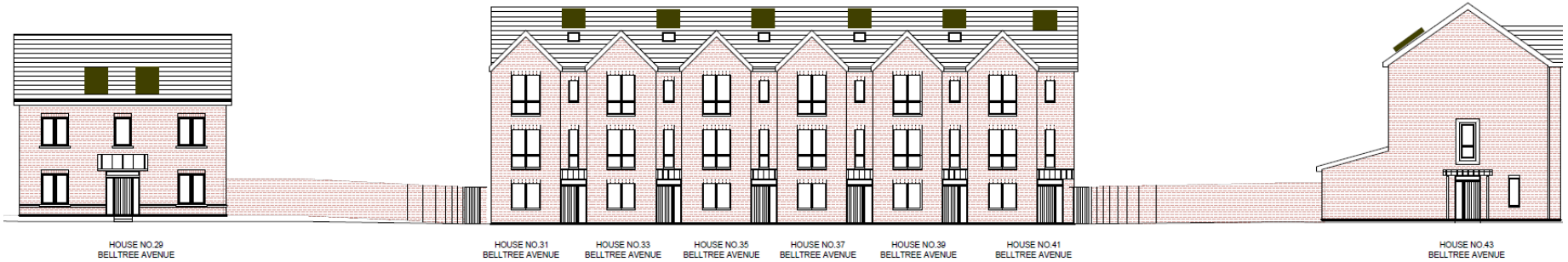
Slope of solar panel in degrees to horizontal	Recommended minimum ratio of radiation received after/before
0.00 – 30.00°	0.90
30.01 – 59.99	0.85
60.00 – 90.00	0.80

Table 9: Recommended minimum ratios of solar radiation received. (BRE, 2022)

Note the numerical values given here are purely advisory. Different criteria may be used based on the requirements for solar energy in an area viewed against other site layout constraints. The assessment calculates the amount of solar energy the solar thermal array receives over the course of a year with and without the proposed Clongriffin development. All of the solar panels have been installed on roofs with 35° pitch.

The assessment demonstrates while the proposed development will result in a minor loss of radiation, this extent of reduction is within acceptable levels in accordance with the recommended minimum ratios of solar radiation received. (BRE, 2022).

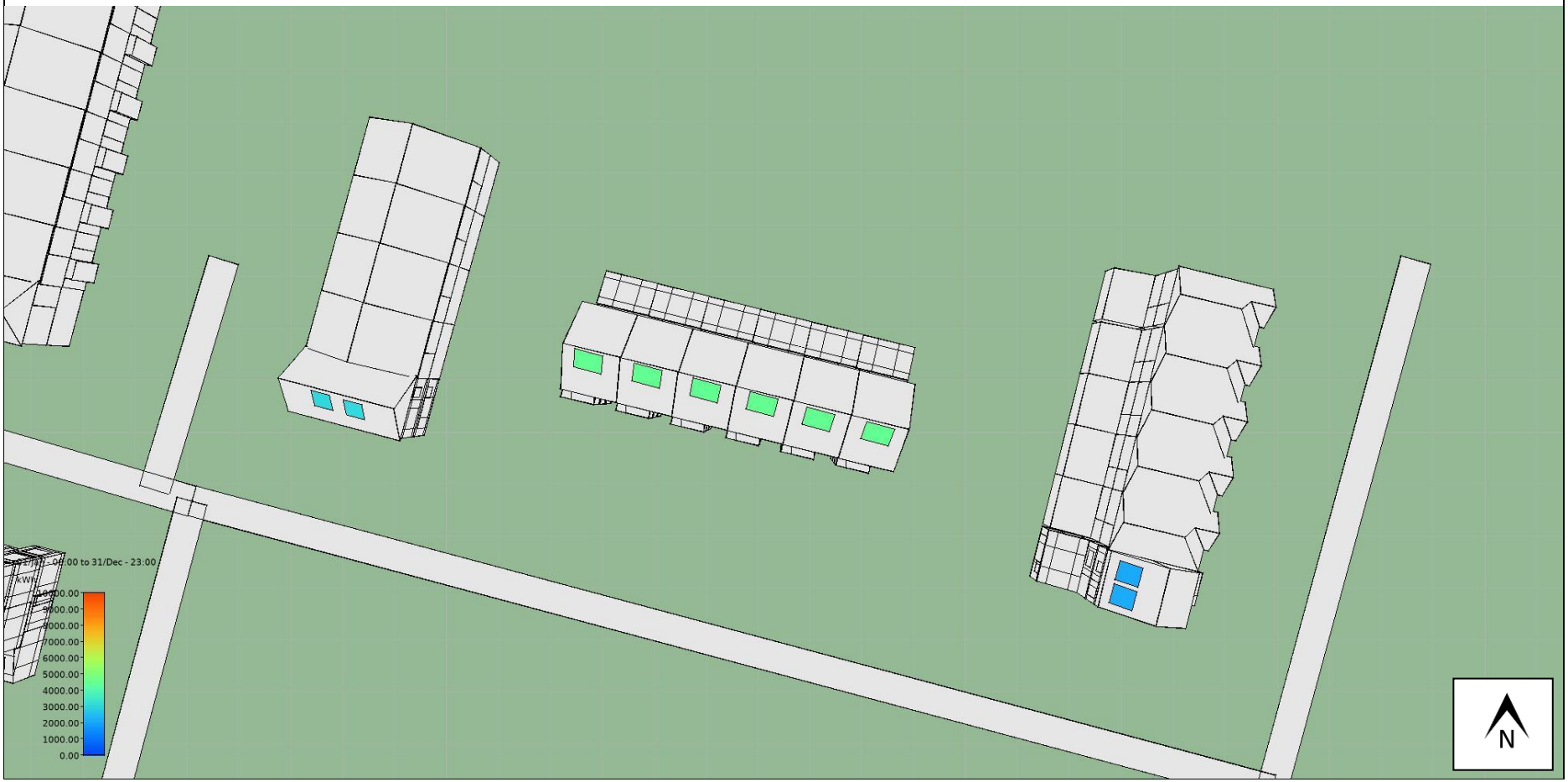
Beltree Avenue Composite Elevation showing solar thermal locations



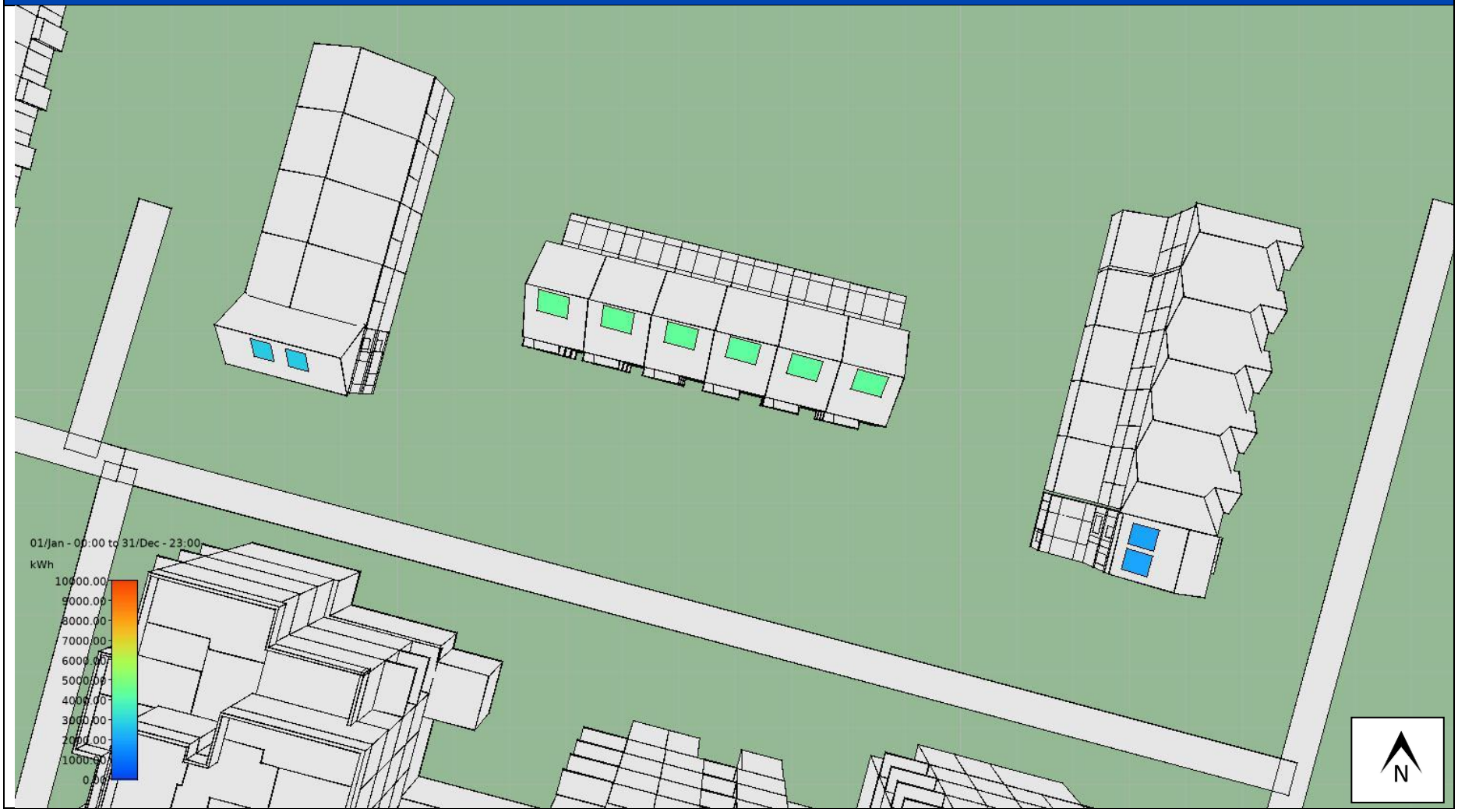
Address	29 Beltree Avenue	31 Beltree Avenue	33 Belltree Avenue	35 Belltree Avenue	37 Belltree Avenue	39 Belltree Avenue	41 Belltree Avenue	41 Belltree Avenue
Area of Solar Thermal (m^2)	6.72	4.84	4.84	4.84	4.84	4.84	4.84	6.72
Array Orientation	SSW	SSW	SSW	SSW	SSW	SSW	SSW	WNW
Existing Solar Irradiance Received (kWh/annum)	3000	4500	4500	4500	4500	4500	4500	2200
Proposed Solar Irradiance Received (kWh/annum)	2700	4300	4300	4300	4200	4200	4300	1900
Ratio of Radiation received.	0.90	0.96	0.96	0.96	0.93	0.93	0.96	0.86
Compliance with BRE Standards	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Table 10: Solar thermal analysis results table

Solar Radiation on Solar Thermal Array to Belltree Avenue - Existing



Solar Radiation on Solar Thermal Array to Belltree Avenue - Proposed



7.0 Conclusion

This report has been prepared by Delap and Waller for the Land Development Agency (LDA) to assess the impact that the proposed Clongriffin Blocks 5 & 6 development will have on the Daylight and Sunlight levels to the neighbouring environment. Appendix 16 of the Dublin City Council's Development Plan 2022-2028, recommends that Daylight and Sunlight assessments should consist of two parts. The first part should assess the daylight and sunlight performance of the proposed development and the second report assessing the impact of the proposed development on the existing nearby environment.

For this reason, the Daylight and Sunlight assessment is split into two reports. This report is the second of two reports for the development, the first report assesses the daylight and sunlight performance of the proposed development, and must be read in conjunction with this report. The daylighting analysis has been carried out as per guidelines and recommendations within The Building Research Establishment (BRE) guidelines 'site layout planning for Daylight and Sunlight: A Guide to Good Practice (2022) and BS EN17037 – provide useful guidance on avoiding unacceptable loss of light and ensuring developments provide minimum standards of daylight for new units.' The analysis includes the relevant assessments as outlined in Appendix 16 of the Dublin City Development Plan 2022-2028.These analysis include; Vertical Sky Component impact, Sun hours on ground impact to private amenity spaces, Annual Probable Sunlight Hours, Winter Probable Sunlight Hours and Impact on solar generating technologies.

Clongriffin Blocks 5 & 6 are two number three to seven storey residential accommodation building. Block 5 consists of 138 and block 6 consists of 270 accommodation units respectfully, each with bedroom/living areas, bathrooms and circulation space. All apartments have been selected as part of the daylighting assessment for the purpose of the planning submission.

The Vertical Sky Component analysis demonstrates that the dwellings at 43-61 Park Street and 31-41 Belltree Avenue, would experience a minor to moderate impact on their daylight access as a result of the proposed development. However, all other receptors would experience compliant levels of VSC reduction.

As is normal with larger developments, phases can be completed before adjacent areas commence. In this case there are houses constructed to the north and west of Block 6. However the massing, heights, block configurations and street pattern (the majority of which is already constructed) of the proposed scheme are consistent with the extant SHD planning permissions for Blocks 5 and 6 under ABP Refs. 305319-19 and 305316-19, respectively.

The APSH and WPSH analysis demonstrates that 38.00% of the relevant assessed windows meet the recommended Annual Probable Sunlight Hours target and 34.00% of the windows meet the Winter sunlight hours recommendation. The results and commentary for APSH should be viewed in conjunction with VSC results in section 5.1 of this report. It should be noted that the existing condition for which the reduction in APSH and WPSH is assessed, is based on the current existing condition which is a vacant site, rather than the proposed and previously granted scheme, therefore a reduction in sunlight is expected.

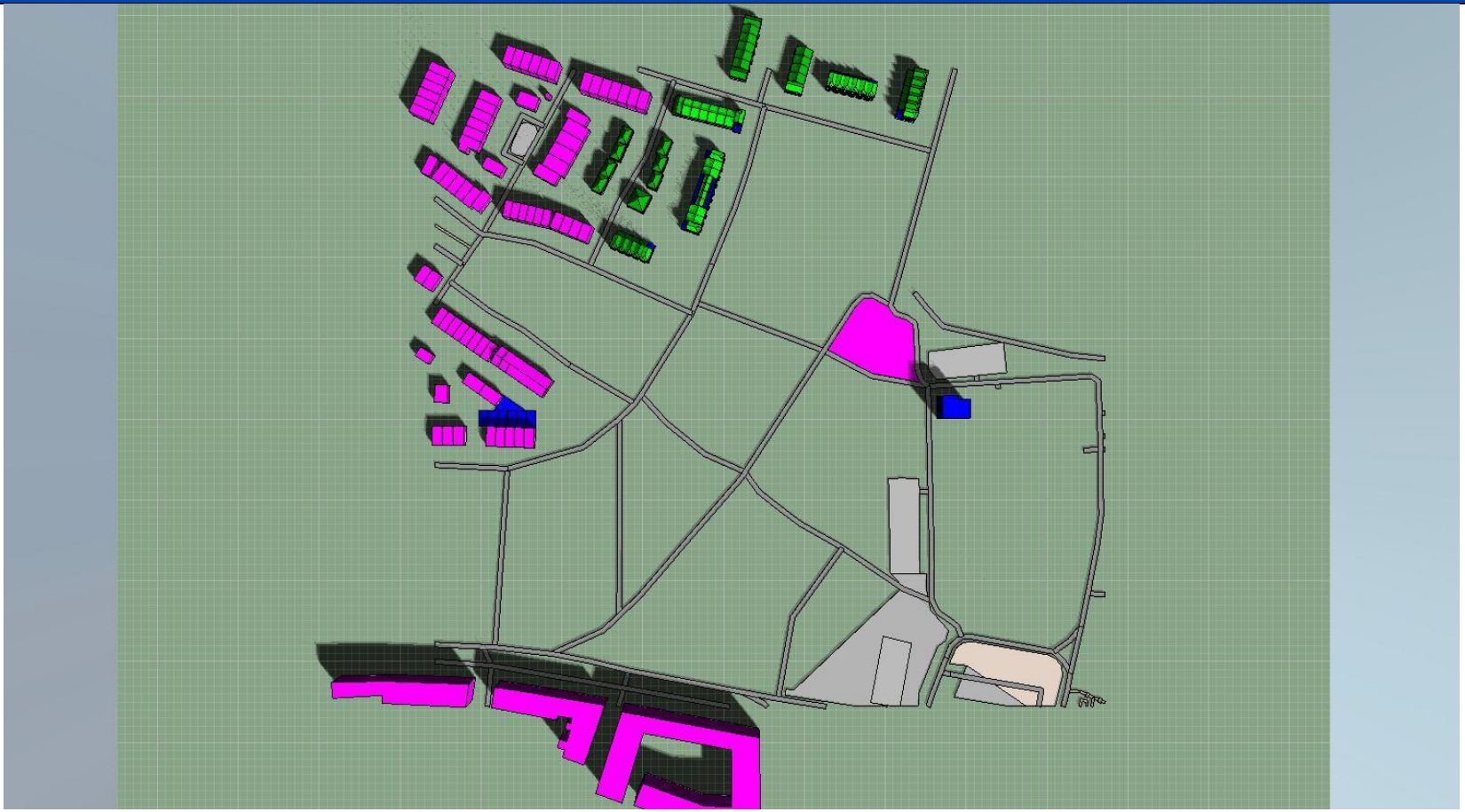
When assessing the reduction of sunlight to the receptor's private gardens, The analysis shows that (with the exception of 29 Belltree Avenue and 43 Belltree Avenue) amenity spaces of the nearest sensitive receptors achieve compliance with BRE's recommendations for Sun Hours on Ground. The two dwellings which fall below the recommendations, 29 and 43 Belltree Avenue are classified with a minor and moderate impact respectively. These two dwellings still receive compliant sunlight hours during the summer months, when the garden is more likely to be used.

Given the presence of solar thermal arrays to the dwellings 29-43 Belltree Avenue, where a proposed development may result in loss of radiation to existing solar panels, an assessment should be carried out. The assessment demonstrates while the proposed development will result in a minor loss of radiation, this extent of reduction is within acceptable levels in accordance with the recommended minimum ratios of solar radiation received as per BRE ‘site layout planning for Daylight and Sunlight: A Guide to Good Practice (2022).

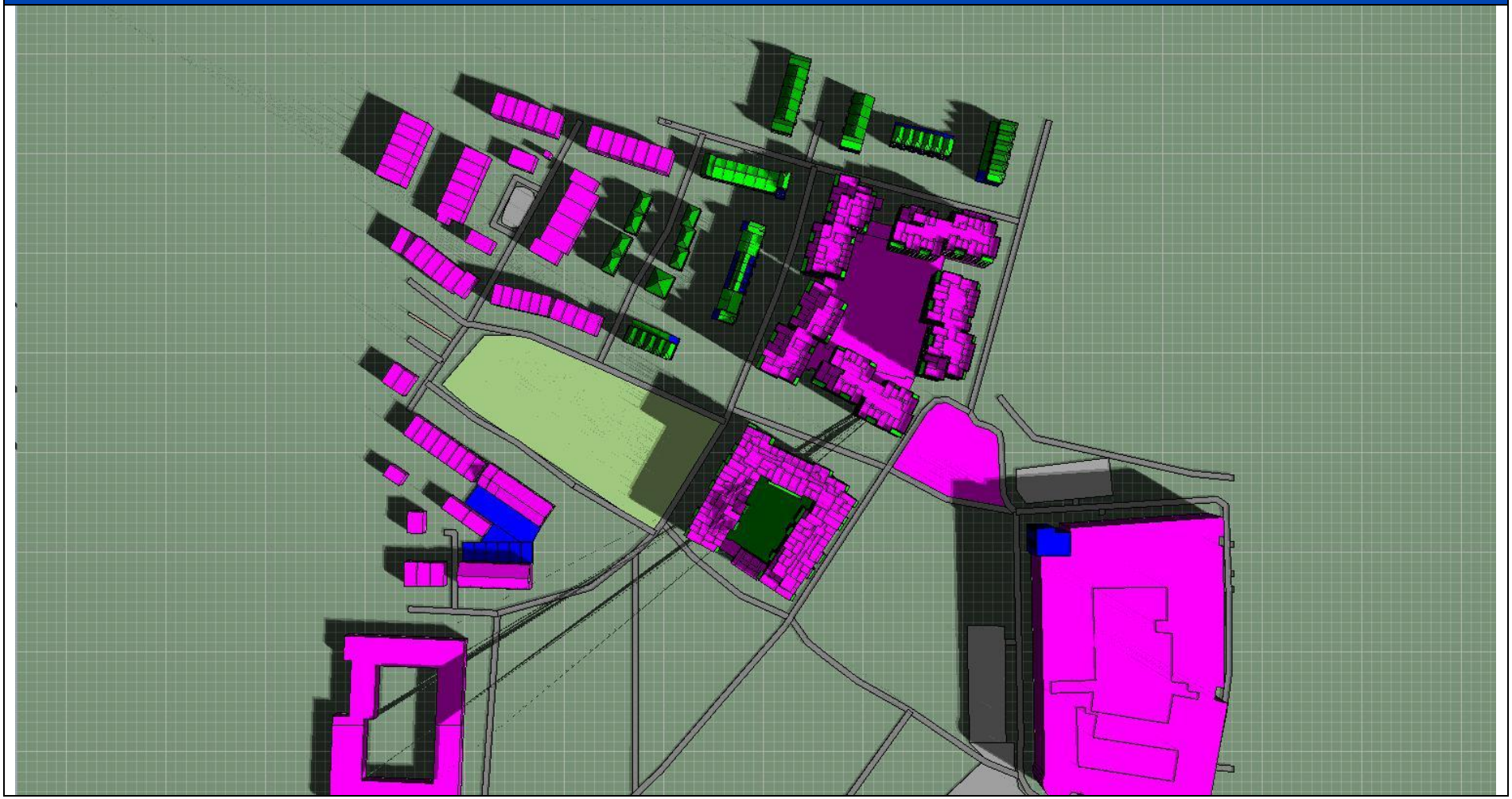
It is important that the guidelines that exist in relation to daylight and sunlight are read in the correct context and are not viewed as mandatory requirements. Requirements for daylight should be balanced against other elements of the design such as energy performance, access to private space, and balancing the risk of overheating. Daylighting is one element of the building design and performance Consideration should always be given to the holistic the design and performance of dwellings such as energy efficiency, Home Performance Index requirements, overheating risk and compliance with Part L of the building regulations.

Appendix A: Shadow Images

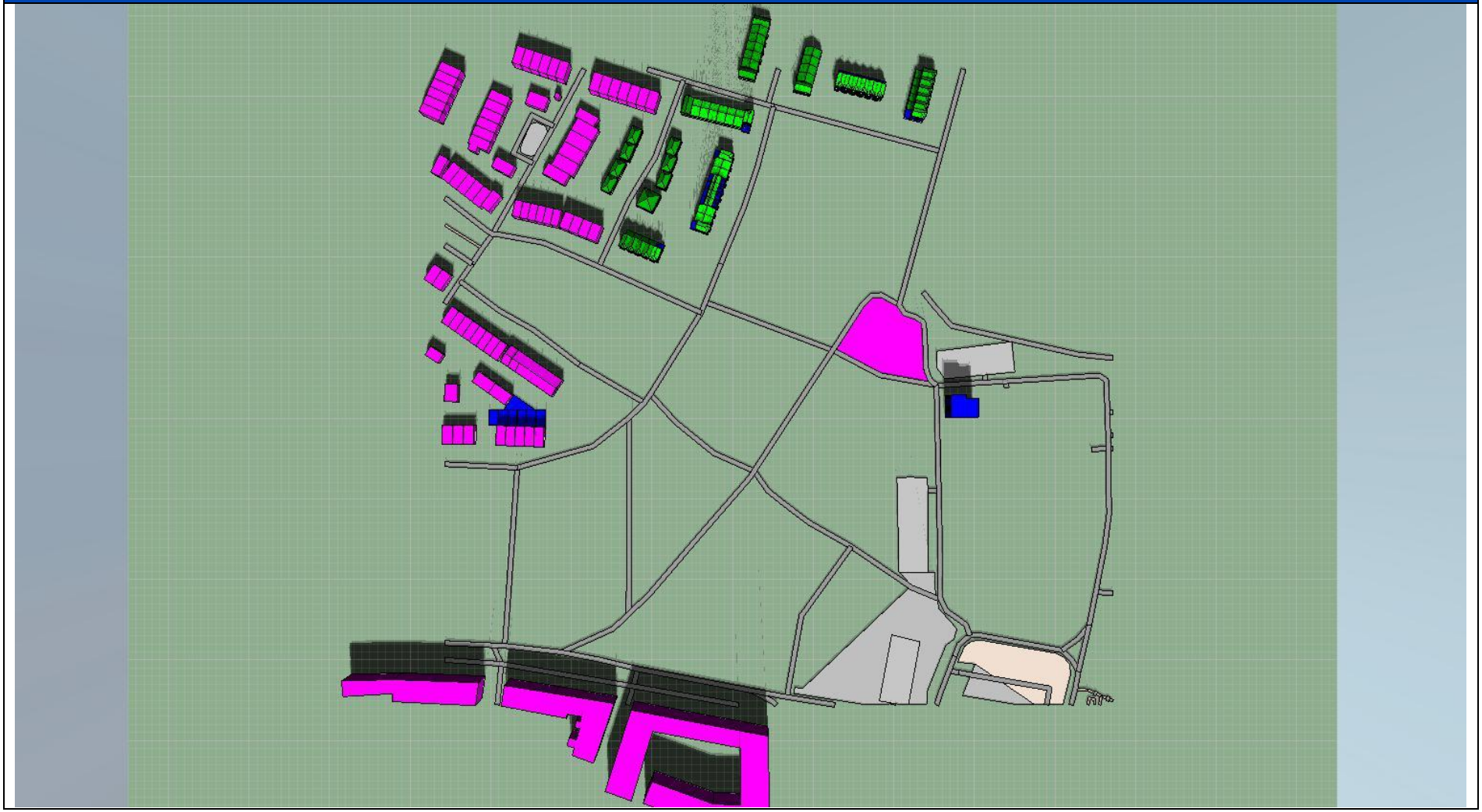
10:00 21st March - Existing



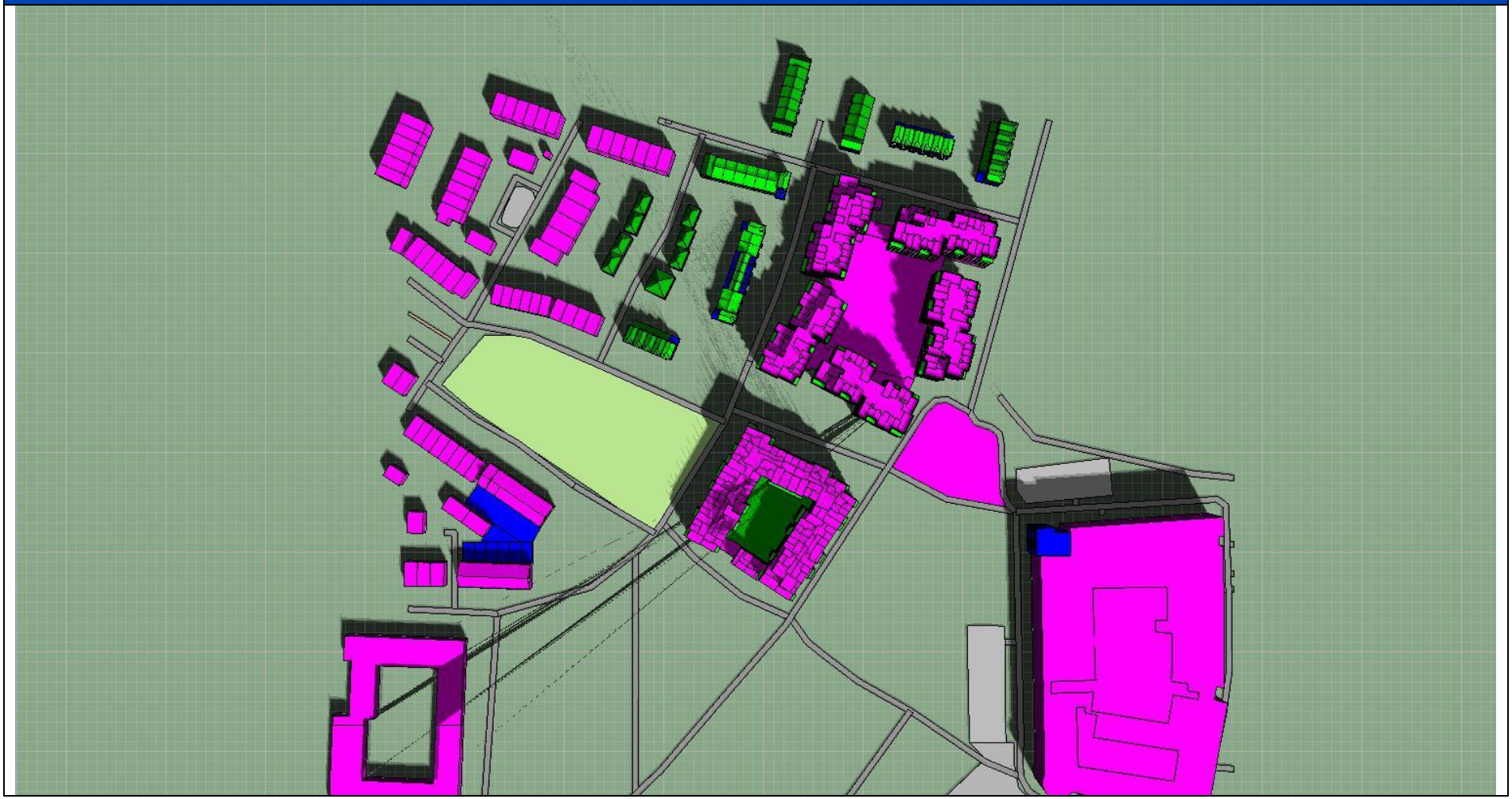
10:00 21st March - Proposed



12:00 21st March - Existing

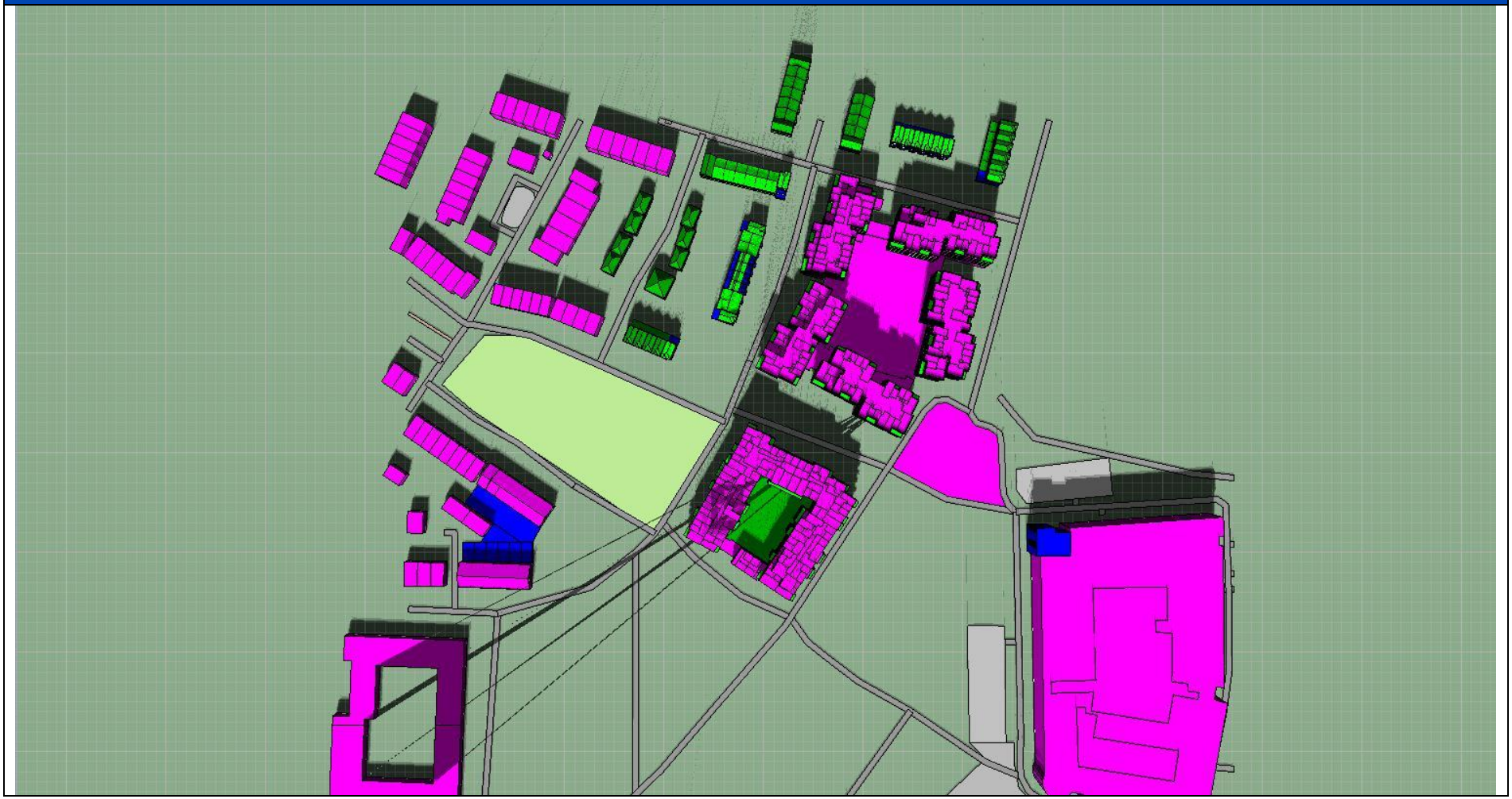


12:00 21st March - Proposed

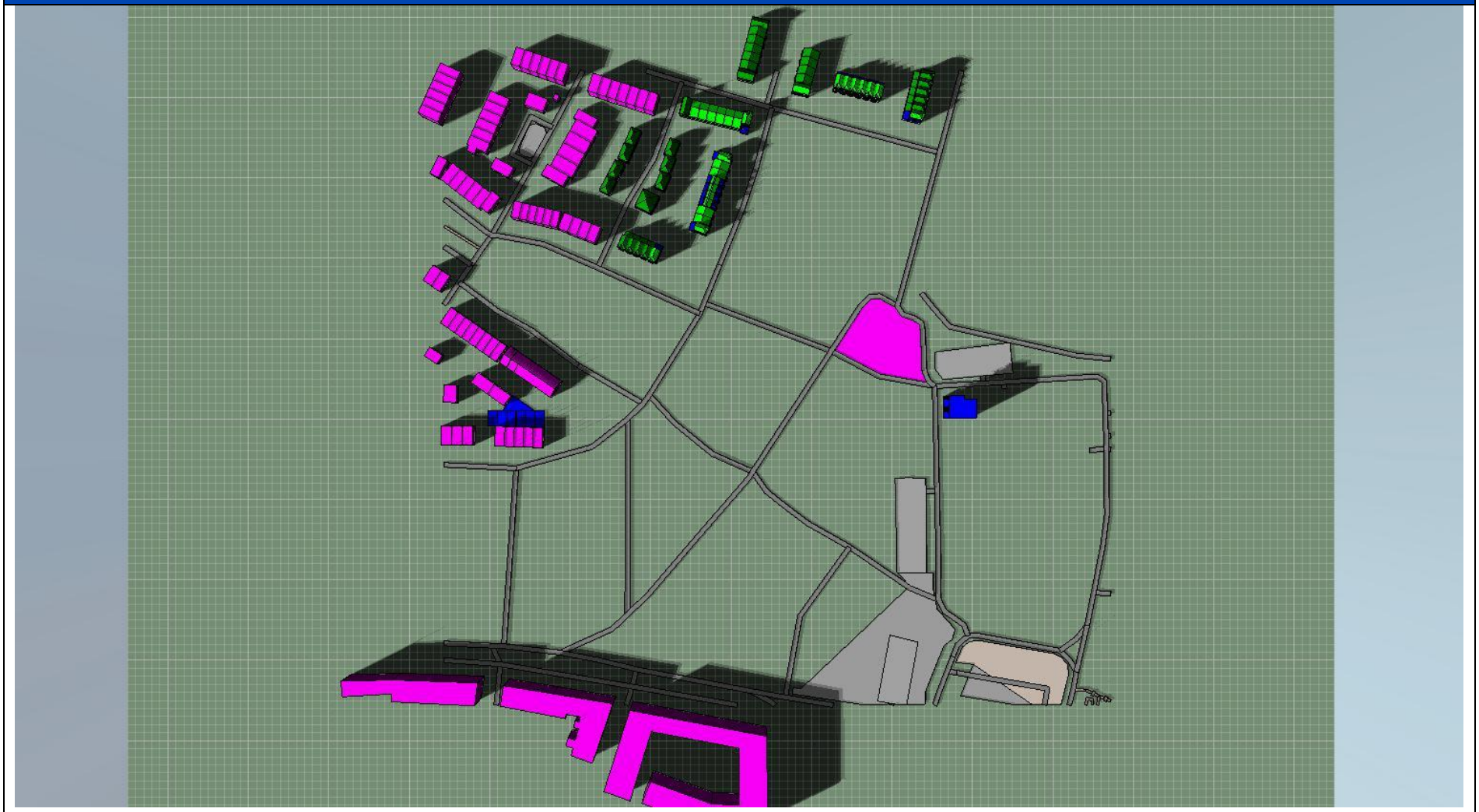


14:00 21st March - Existing

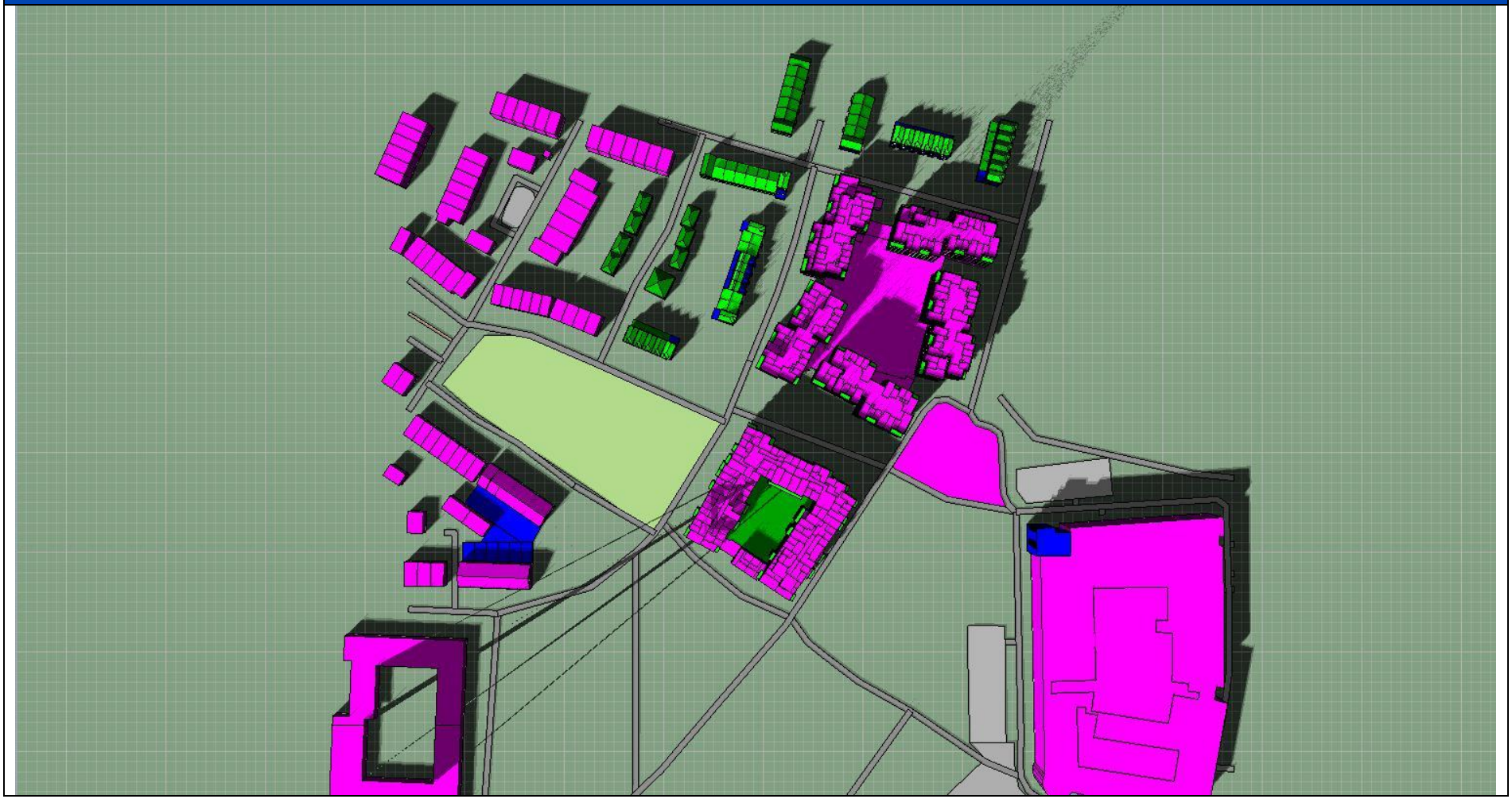
14:00 21st March - Proposed



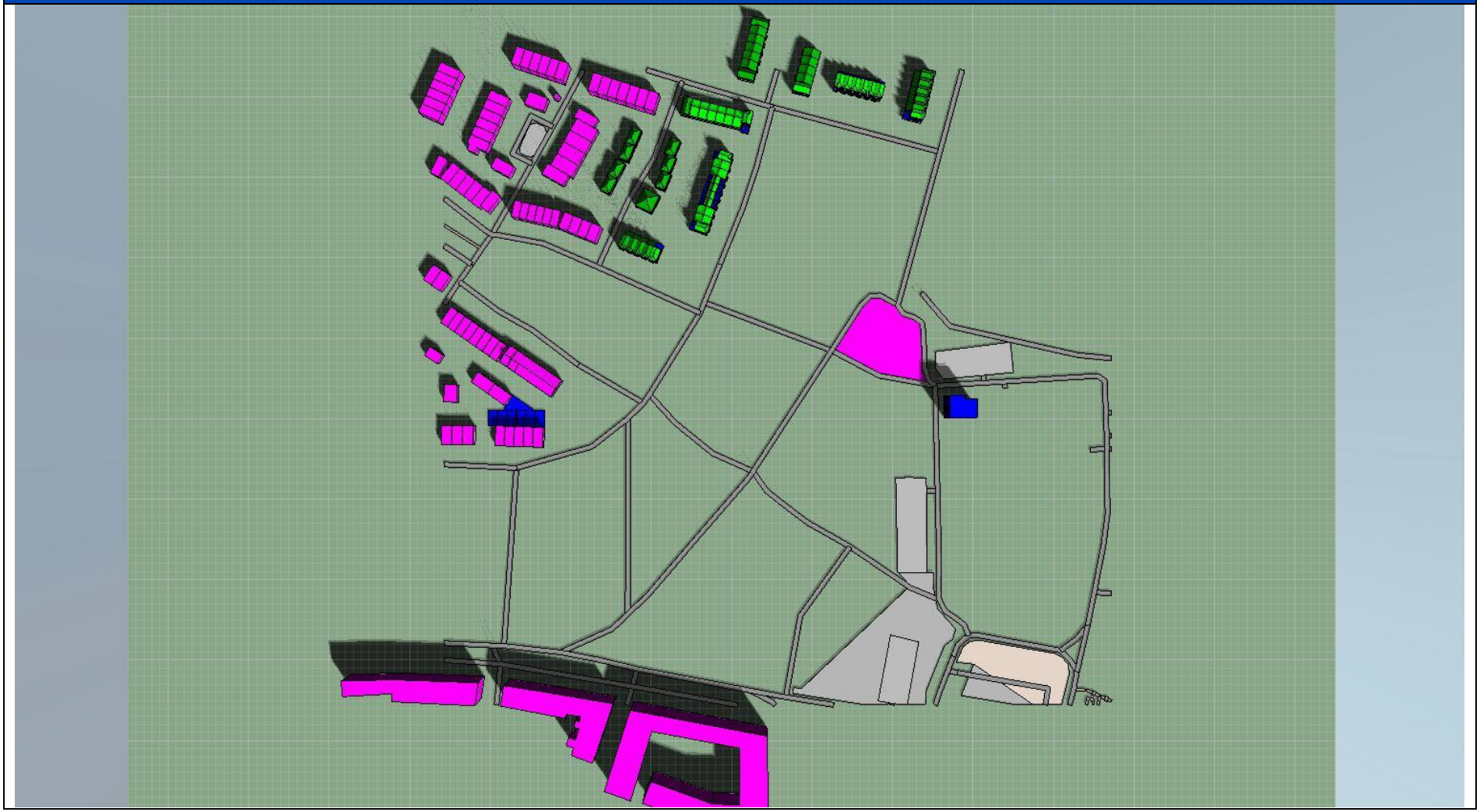
16:00 21st March - Existing



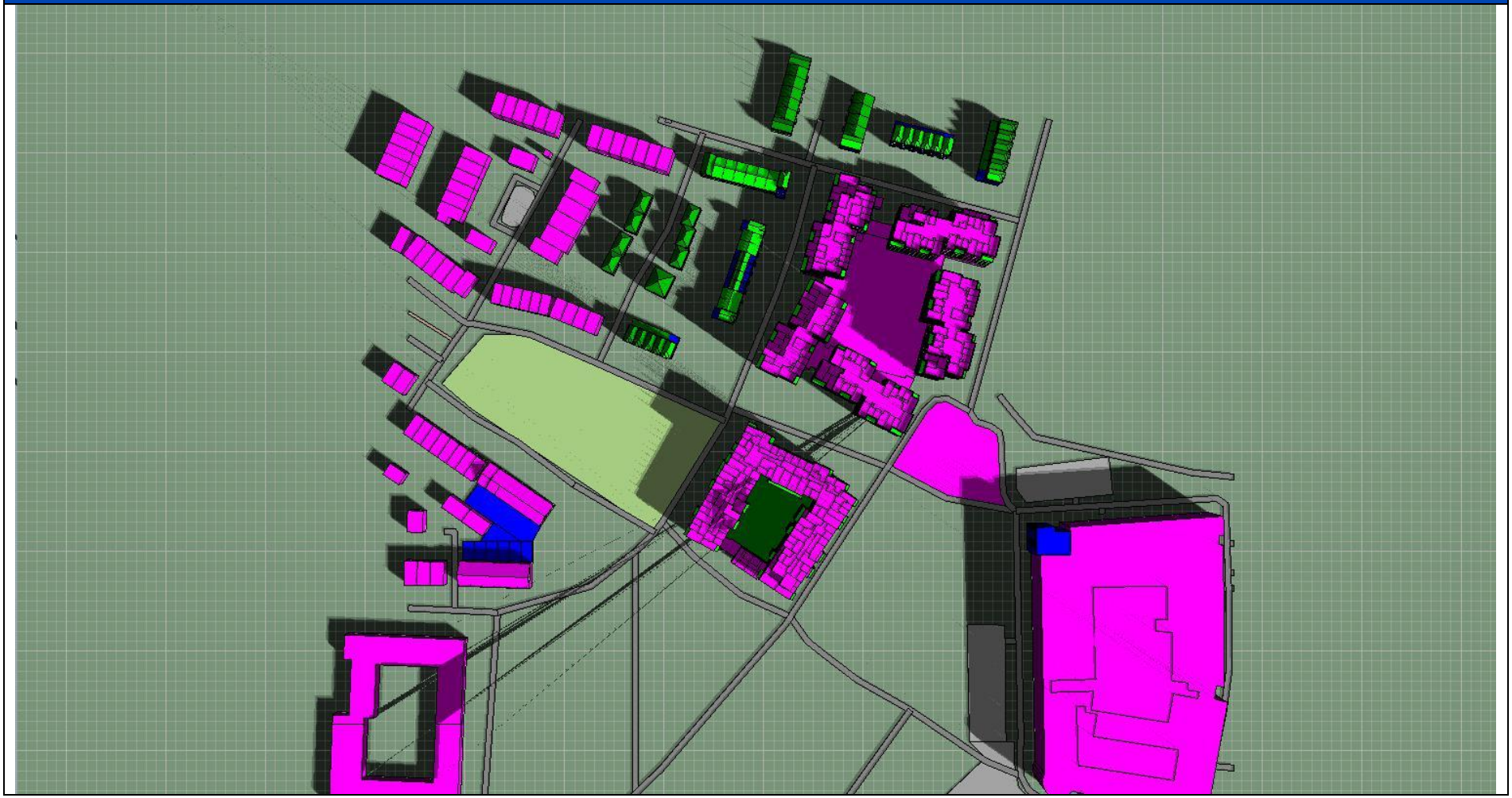
16:00 21st March - Proposed



10:00 21st September - Existing

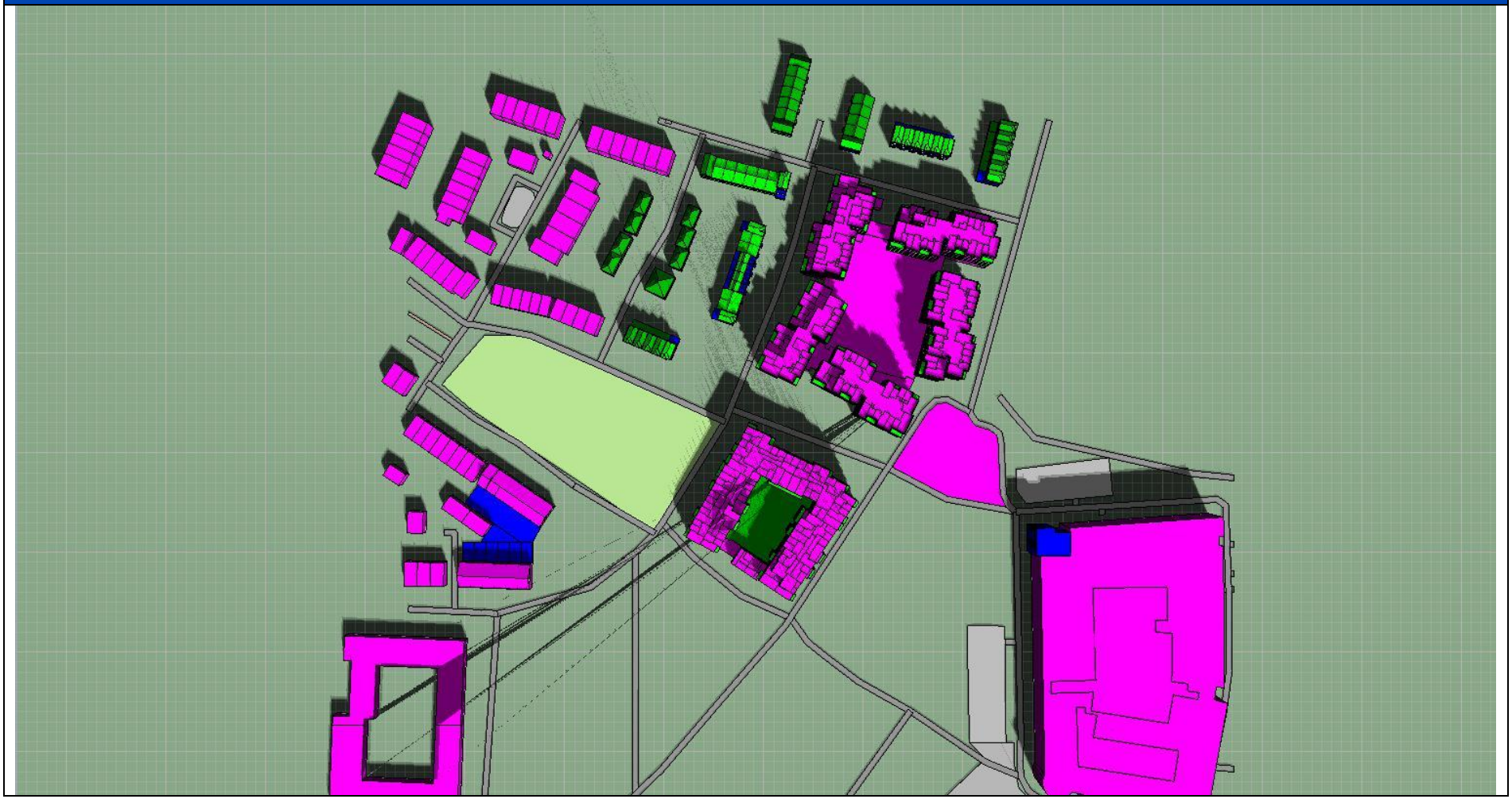


10:00 21st September - Proposed



12:00 21st September - Existing

12:00 21st September - Proposed



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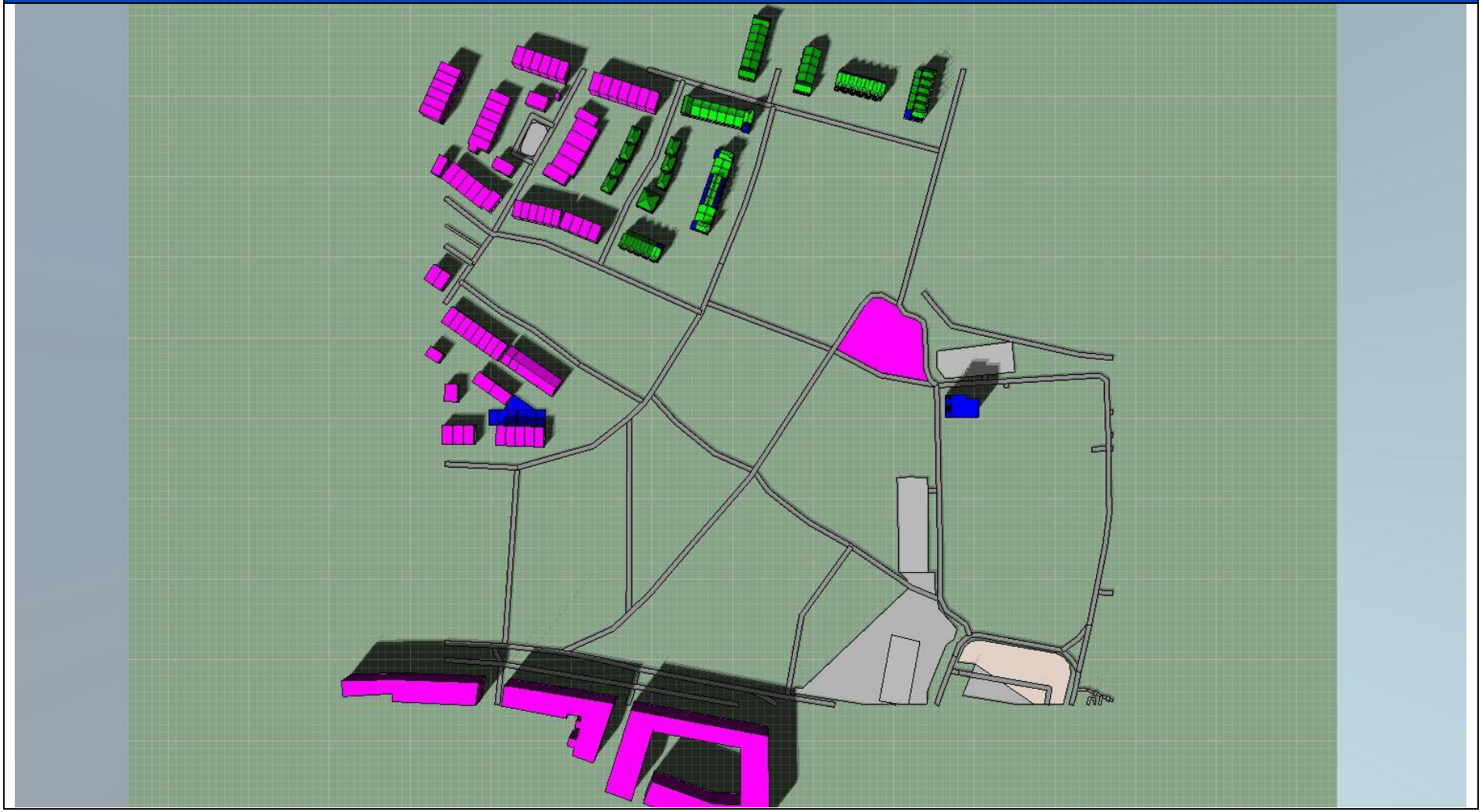

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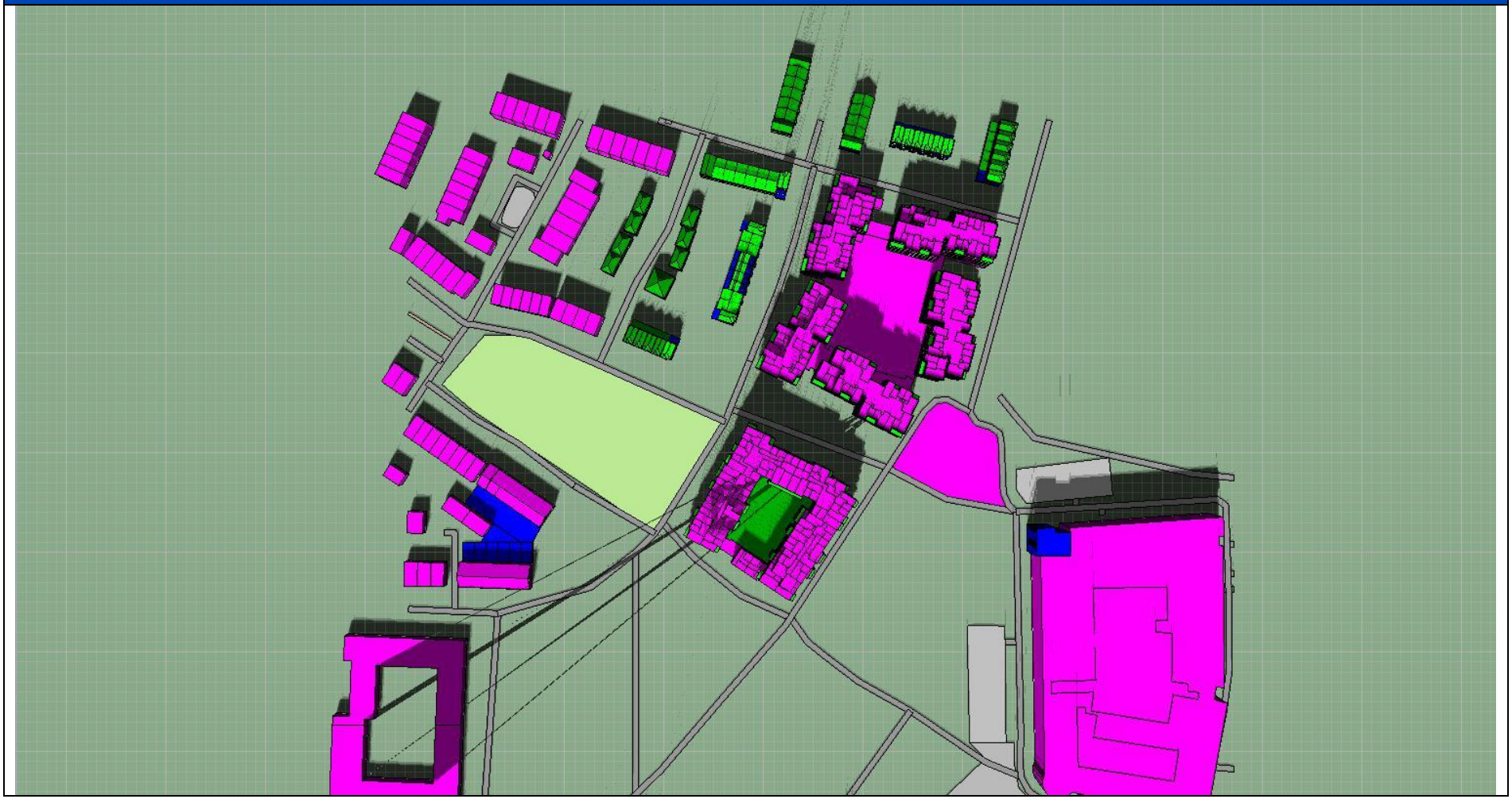

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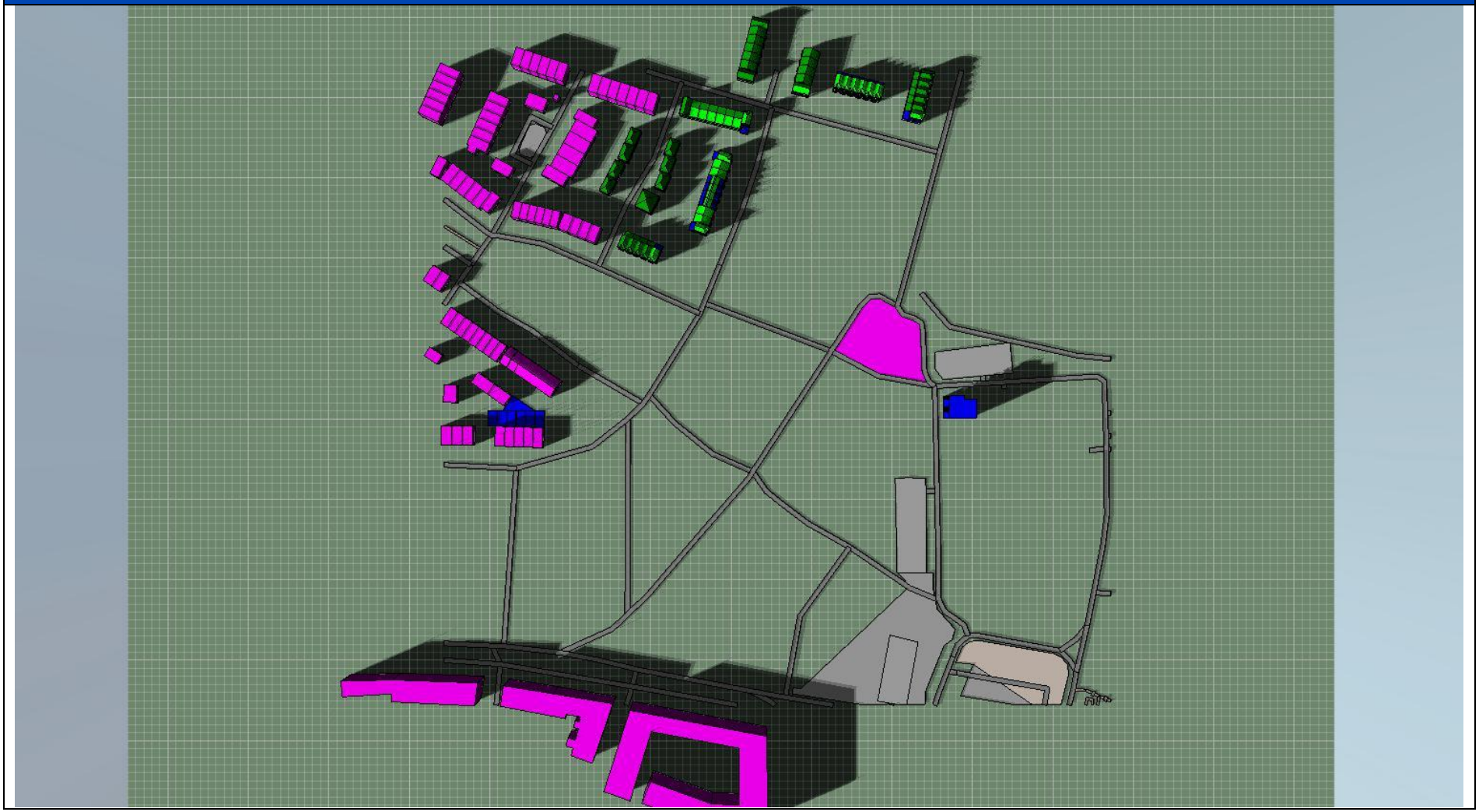

16:00 21st September - Proposed