Daylight and Sunlight Analysis

Proposed Development at Kilnahue, Gorey, Co. Wexford

Prepared by Model Works Ltd

Date 17th December 2025

MODEL WORKS

Executive Summary

Model Works was commissioned to carry out a Daylight, Sunlight and Overshadowing assessment on the proposed development at Kilnahue, Gorey, County Wexford.

The report assesses the proposed multi-unit dwellings and amenity areas within the scheme with respect to daylight and sunlight provision. Also assessed is the potential impact to daylight and sunlight of the proposal on neighbouring properties. The assessment was carried out in accordance with the BRE Site Layout Planning for Daylight and Sunlight: A guide to good practice, 3rd edition 2022, which incorporate the target values as set out in BS EN 17037 National Annex.

Proposed Development

Daylight
The scheme achieved excellent results for daylight provision, with 100% of the rooms meeting the BRE Guide when assessed both with and without trees.

Sunlight
The scheme also achieved excellent results for sunlight provision, with 100% of the units meeting the BRE Guide when assessed both with and without trees.

Sunlight to Amenity Areas
The scheme has a generous provision of circa 7,700m^2 of open space, three communal open spaces and four public open spaces, and all individual areas meet the BRE Guide for sun on the ground.

Neighbouring Environment

Given the low-rise nature of the proposed development and the separation distances between it and the surrounding existing dwellings, there would be no/negligible impact on the daylight or sunlight provision to these buildings. There would also be no/negligible impact on the sunlight to their gardens.

This report can conclude that the proposed development will receive excellent levels of daylight and sunlight and there would be minimal impact on the receiving environment.

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1.0 Introduction

Glenveagh Homes Ltd. intend to apply for permission for development at Kilnahue, Gorey, Co. Wexford.

The proposed Large Scale Residential Development (LRD) comprises the construction of 413 no. residential units (349 no. houses and 64 no. apartments), a creche, landscaping and open spaces, a cycle/pedestrian route and raised pedestrian crossing on Kilnahue Lane, and drainage infrastructure upgrade works at Kilnahue, Gorey, Co. Wexford.

Model Works was commissioned to carry out a Daylight, Sunlight and Overshadowing assessment on the proposed scheme. The report has been compiled by Barry Murphy, Managing Director of Model Works, he holds a B Eng (hons) in Mechanical Engineering, is a member of Institute of Engineers Ireland and has 20 years' experience in the industry.

This analysis will assess the performance of the proposed multi-unit dwellings, specifically the 5 no. duplex blocks totalling 56 units and 8 no. maisonette units, as recommended by the Compact Settlements Guidelines[1]. It will also assess the proposed amenity spaces and the potential impact to the receiving environment resulting from the proposed development.

Specialist 3D software (Waldram Tools for Revit, Version 7) was used to analyse the proposal based on the 3D models, survey information and design details provided to Model Works by the project architects and other qualified professionals on the design team.



Figure 1: Site Plan

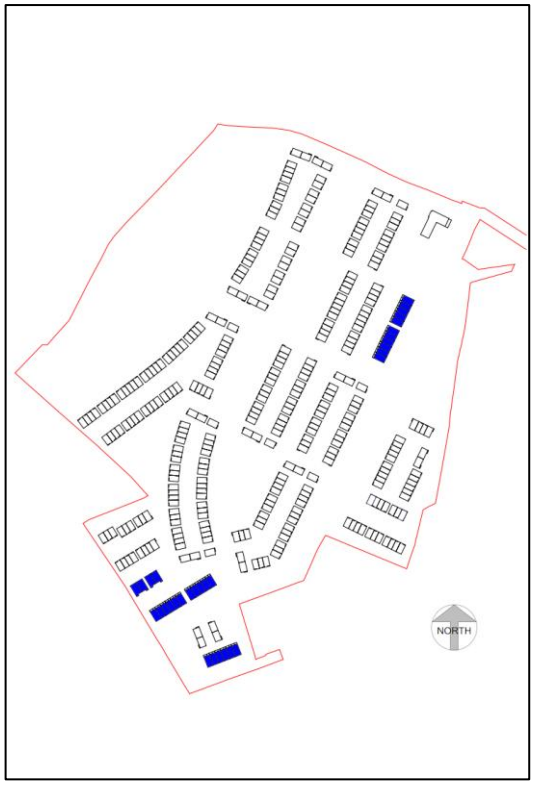


Figure 2: Key Plan – Units to be Assessed

[1] Compact Settlements Guidelines 5.3.7

2.0 Standards and Guides Used in the Assessment

The following standards and guides will be used and referenced throughout the report.

- Building Research Establishment - BRE Site Layout Planning for Daylight and Sunlight: A guide to good practice, 3rd edition 2022 (**BRE Guide**)
- British Standard BS EN 17037:2018 – Daylight in Buildings. (**BS EN 17037**)
- Irish Standard EN 17037:2018 – Daylight in Buildings. (**EN 17037**)
- Planning Design Standards for Apartments - Guidelines for Planning Authorities, (2025). **(Design Standards for Apartment)**
- Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024) **(Compact Settlements Guidelines)**
- Urban Development and Building Heights: Guidelines for Planning Authorities (2018). These are guidelines issued under section 28 of the 2000 Planning and Development Act 2000. **(Urban Development and Building Heights)**
- Wexford County Development Plan 2022-2028 **(Wexford County Development Plan)**

2.1. BRE Guide 2022

The BRE (Building Research Establishment) Guide to Daylight and Sunlight was first published in 1991 and has become the primary reference document for local authorities in Ireland and the UK for the assessment of Daylight and Sunlight. The 2022 edition is the third and most recent edition of the guide.

The BRE Guide's summary states:

"This guide gives advice on site layout planning to achieve good sunlighting and daylighting, both within buildings and in the open spaces between them. It is intended to be used in conjunction with the interior daylight recommendations for new buildings in the British Standard Daylight in buildings, BS EN 17037. It contains guidance on site layout to provide good natural lighting within a new development; safeguarding of daylight and sunlight within existing buildings nearby; and the protection of daylighting of adjoining land for future development."[2]

It also notes that it should be interpreted with a degree of flexibility, depending on the specifics of the development being assessed.

"The guide is intended for building designers and their clients, consultants, and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design. In special circumstances the developer or planning authority may wish to use different target values."[3]

The introduction also states that:
"The guidance here is intended for use in the United Kingdom and in the Republic of Ireland, though recommendations in the Irish Standard IS EN 17037 may vary from those in BS EN 17037."[4]

The BRE Guide will be the primary reference document used in this report.

[2] BRE Guide, Summary
[3] BRE Guide, 1.6
[4] BRE Guide, 1.7

2.2. BS EN 17037:2018+A1:2021 – Daylight in Buildings.

In 2018, a new European wide standard for daylight was introduced, being EN 17037. In the UK, this standard was published as BS EN 17037 and importantly, it contains a national annex. The national annex in BS EN 17037 (2018) attempts to align the guidance and expectations of the new European standard with the now superseded BS 8206-2. It gave daylight illuminance recommendations of 100 lux in bedrooms, 150 lux in living rooms and 200 lux in kitchens, which were to be exceeded over at least 50% of the assessment points in the room for at least half of the daylight hours.

The standard explains its reasoning behind the annex with:
"The UK committee supports the recommendations for daylight in buildings given in BS EN 17037:2018; however, it is the opinion of the UK committee that the recommendations for daylight provision in a space (see Clause A.2) may not be achievable for some buildings, particularly dwellings. The UK committee believes this could be the case for dwellings with basement rooms or those with significant external obstructions (for example, dwellings situated in a dense urban area or with tall trees outside), or for existing buildings being refurbished or converted into dwellings. This National Annex therefore provides the UK committee's guidance on minimum daylight provision in all UK dwellings."[5]

2.3. EN 17037:2018+A1:2021 – Daylight in Buildings.

Prior to 2018, Ireland had no standard for daylight. In 2018, the National Standards Authority of Ireland adopted EN 17037 to directly become IS EN 17037 and importantly it was not amended to include an equivalent to the BS National Annex. The Irish standard sets a target daylight illuminance of 300 lux which should be achieved across at least half of the reference plane in a daylit space for at least half of the daylight hours and an illuminance of 100 lux which should also be achieved across 95% of the reference plane for at least half of the daylight hours. These targets apply to all room types, regardless of use; kitchen, living, bedroom, office, commercial are all assessed to the same standard.

2.4. Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024)

These guidelines set national planning policy and guidance in relation to the planning and development of urban and rural settlements, with a focus on sustainable residential development and the creation of compact settlements.

In relation to daylight provision, it states:

"In cases where a technical assessment of daylight performance is considered by the planning authority to be necessary regard should be had to quantitative performance approaches to daylight provision outlined in guides like A New European Standard for Daylighting in Buildings IS EN17037:2018, UK National Annex BS EN17037:2019 and the associated BRE Guide 209 2022 Edition (June 2022), or any relevant future standards or guidance specific to the Irish context."[6]

and

"In drawing conclusions in relation to daylight performance, planning authorities must weigh up the overall quality of the design and layout of the scheme and the measures proposed to maximise daylight provision, against the location of the site and the general presumption in favour of increased scales of urban residential development. Poor performance may arise due to design constraints associated with the site or location and there is a need to balance that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution."

[5] BS EN 17037, NA1

[6] Compact Settlements Guidelines 5.3.7

2.5. Planning Design Standards for Apartments - Guidelines for Planning Authorities, (2025).

The guidelines set out policy and guidance in relation to the planning and development of apartments in all housing or mixed-use developments and provides guidance to planners in relation to the built environment including Daylight and Sunlight.

"The amount of sunlight reaching the interior of an apartment, depending on design and layout considerations, can significantly affect the amenities of the occupants. (…) Where single aspect apartments are provided, the number of south facing units should be maximised, with west or east facing single aspect units also being acceptable. Living spaces in apartments should provide for direct sunlight for some part of the day. North facing single aspect apartments may be considered, where overlooking a significant amenity such as a public park, communal space or some other amenity feature."[7]

And

"The provision of acceptable levels of natural light in new apartment developments is an important planning consideration as it contributes to the liveability and amenity enjoyed by apartment residents. It is also important to safeguard against a detrimental impact on the amenity of other sensitive occupiers of adjacent properties. Section 5.3.7 of the SRDCSGs outlines requirements for the provision of acceptable levels of daylight in new residential developments and adjoining properties."[8]

2.6. Urban Development and Building Heights: Guidelines for Planning Authorities (2018 version)

This document is intended to set out national planning policy guidelines on building heights in relation to urban areas.

"Appropriate and reasonable regard should be taken of quantitative performance approaches to daylight provision outlined in guides like the Building Research Establishment's 'Site Layout Planning for Daylight and Sunlight' (2nd edition) or BS 8206-2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting'."[9] (Note, this version of the BRE guideline has been superseded by the 2022 edition)

2.7. Wexford County Development Plan 2022 – 2028

The Wexford County Development Plan 2022-2028 sets out the overall strategy for the proper planning and sustainable development of County Wexford for the plan period and beyond.

In relation to Daylight and Sunlight Assessment it states:

"Siting, layout and design should ensure that the development would not give rise to undue overshadowing of properties in the vicinity, in particular, residential properties such as private residences, nursing/retirement/residential care homes, schools and childcare facilities.

Daylight and sunlight levels, as a minimum, should be in accordance with Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (Bre 2011) and British Standard (BS 8206) Lighting for Buildings, Part 2 Code for Practice for Daylighting or any update on these documents"[10]

[7] Planning Design Standards for Apartments, 3.4

[8] Planning Design Standards for Apartments, 6.1

[9] Urban Development and Building Heights 3.2

[10] Wexford County Development Plan: Section 2.6

The 2nd edition of the BRE Guide (2011) has been withdrawn and replaced with the 3rd edition (2022), refer to 2.1 above. Therefore, it is the current 2022 BRE Guide which will be used as the reference document in this assessment.

2.8. Summary of Standards and Guides

IS EN 17037 and BS EN 17037 provide different criteria for the assessment of daylight provision, however, the Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024), which in turn is referenced by the Planning Design Standards for Apartments (2025), explicitly states that planning authorities should have regard to the UK National Annex in BS EN 17037. Therefore, having reviewed all the applicable standards and guidelines it is Model Works' professional opinion that the assessment for daylight, sunlight and overshadowing be carried out in accordance with the BRE Guidelines (2022) which incorporate the target values as set out in BS EN 17037 National Annex.

2.9. Impact Assessment

BRE Guide

Appendix H of the BRE Guide provides guidance on the classification of environmental impact assessment. It recommends that 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.

Table 1 BRE Guide Classification of Environmental Impact Assessment

Impact	Description
Negligible	• Loss of skylight or sunlight fully meets the BRE guidelines • Where the loss of light is well within the guidelines • Only a small number of windows or limited area of open space lose light (within the guidelines)
Minor Adverse	Where loss of light is only just within the guidelines, and: • A larger number of windows or open space area are affected Where the loss of skylight or sunlight does not meet the guidelines, and: • 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.
Major Adverse	• 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.
Beneficial	• 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.

Note: when buildings are assessed to fall between Minor and Major, they are categorised as Moderate.

Environmental Protection Agency

When assessing the impact on the receiving environment, this report also has regard to the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* prepared by the Environmental Protection Agency (2022) on the assessment of the likely effects of certain public and private projects on the environment. The list of definitions given below is taken from this document[11]. Some comment is also given on what these definitions might imply in the case of impact on daylight and sunlight access. The definitions from the EPA document are in italics.

Table 2 EPA Classification of Environmental Impact Assessment

Impact	Description
Imperceptible	*An effect capable of measurement but without significant consequences.* The definition implies that the development would cause a change in the daylight/sunlight received at a location, capable of measurement, but not noticeable to the casual observer. If the development caused no change in daylight/sunlight access, there could be no effect.
Not Significant	*An effect which causes noticeable changes* in *the character of the environment but without significant consequence.* The definition implies that the development would cause a change in the daylight/sunlight received at a location, which is capable of measurement and capable of being noticed by an observer. Examples of "Not Significant" impacts on daylight/sunlight access would include a scenario where the proposed development is predicted to reduce the amount of daylight or sunlight received by a sample window, but the window will continue to receive the relevant recommended level of Vertical Sky Component (VSC) or Annual Probable Sunlight Hours (APSH) after the construction of the proposed development (per the BRE Guide threshold for an adverse impact).
Slight	*An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.* For this definition to apply, the amount of daylight/sunlight received at a location would be changed by the construction of the development to an extent that is both capable of measurement and is noticeable to a minor degree. However, the daylight/sunlight environment within an existing building should remain largely unchanged. An example of a "slight" impact would be a scenario where, although the impact of the proposed development is not predicted to reduce the amount of daylight/sunlight received by a sample window to less than 0.8 times its former value, the amount of light received by the sample window is predicted to fall below a key recommended level, whether that is the BRE Guide recommended target value or an alternative target value. A further example of a "slight" impact would be where, although the construction of the proposed development is predicted to reduce the amount of light received to a level below the BRE Guide threshold for an adverse impact, the predicted reduction is just outside that BRE Guide threshold (e.g. the amount of light received by a sample window falls to not less than 0.7 times its existing value). A "slight" impact could also occur where there is a more considerable reduction in daylight/sunlight by a sample window within an existing building, but only a small number of windows within that property are affected to that extent.
Moderate	*An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.* In this case, a development must bring about a change in the daylight/sunlight environment within an existing building; and this change must be consistent with a pattern of change that is already occurring or is likely to occur. A moderate effect would occur where other developments were bringing about changes in daylight/sunlight access of similar extent in the area. A "moderate" impact might also be considered to occur where the level of daylight received by a sample window falls below the BRE Guide recommended level and to between 0.5 and 0.7 times its existing value, subject to consideration of other factors.

[11] Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, pg 50, Table 3.4

Impact	Description
Significant	*An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of* the *environment.* The definition implies that the existence of the development would change the extent of daylight/sunlight access in a manner that is not *"consistent with existing and emerging baseline trends".* For example, a development resulting in a *"significant"* diminution of daylight/sunlight access would reduce daylight/sunlight to the extent that minimum standards for daylighting are not met, and artificial lighting is required for part of the day. A "significant" impact could occur where the predicted reduction in daylight/sunlight access is greater than what is envisaged to occur if the application site were developed in line with existing and emerging baseline trends. Subject to consideration of other factors, a "significant" impact could occur where daylight/sunlight access to the sample window falls to between 0.25 and 0.5 times its former value.
Very Significant	An *effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.* The definition implies that the existence of the development would change the extent of daylight/sunlight access to a considerable degree and in a manner that is not "consistent *with existing and emerging baseline trends".* For example, a *"very significant"* effect would occur where a development would result in daylight/sunlight received in a room falling well below the minimum standards and where artificial lighting would be required in that room as the principal source of lighting all the time. A "very significant" impact could occur where the predicted reduction in daylight/sunlight access is considerably greater than what is envisaged to occur if the application site were developed in line with existing and emerging baseline trends. Subject to consideration of other factors, a "very significant" impact could occur where daylight access to the sample window falls to between 0.01 and 0.25 times its former value.
Profound	*An effect which obliterates sensitive characteristics.* Examples of development resulting in a *"profound"* effect on daylight/sunlight access would include the removal of all access to daylight/sunlight within an existing building.

This assessment report does not form part of an EIAR, however, the definitions of impact prescribed by the EPA help inform how impacts are assessed. While there is no direct conversion between the BRE and EPA guidelines on assessment of impact, the author has used their professional judgment to offer a comparison between the two guides, refer to Table 3 below.

Table 3 Comparison of Impact Assessment Classifications

BRE Guide	EPA Environmental Impact Assessment
Negligible	Imperceptible
Minor Adverse	Not Significant/Slight
Moderate	Moderate
Major Adverse	Significant/Very Significant/Profound

The classification of impacts in this report will use the BRE Guide definitions.

3.0 Lighting in Buildings

Understanding Direct and Diffuse Daylight

Daylight is generally taken to be the totality of visible radiation originating from the sky, and when visible, the sun, during the hours of daytime. The source of all daylight is in fact the sun. Scattering of sunlight in the atmosphere by air, water vapour, dust, and so on gives the sky the appearance of a self-luminous hemispherical source of light. Sunlight is commonly referred to as direct light since it appears to originate from a small source and can be highly luminous, casting sharp shadows. The sky, however, is an extended source of illumination that casts only soft shadows, and so skylight is commonly referred to as diffuse light.

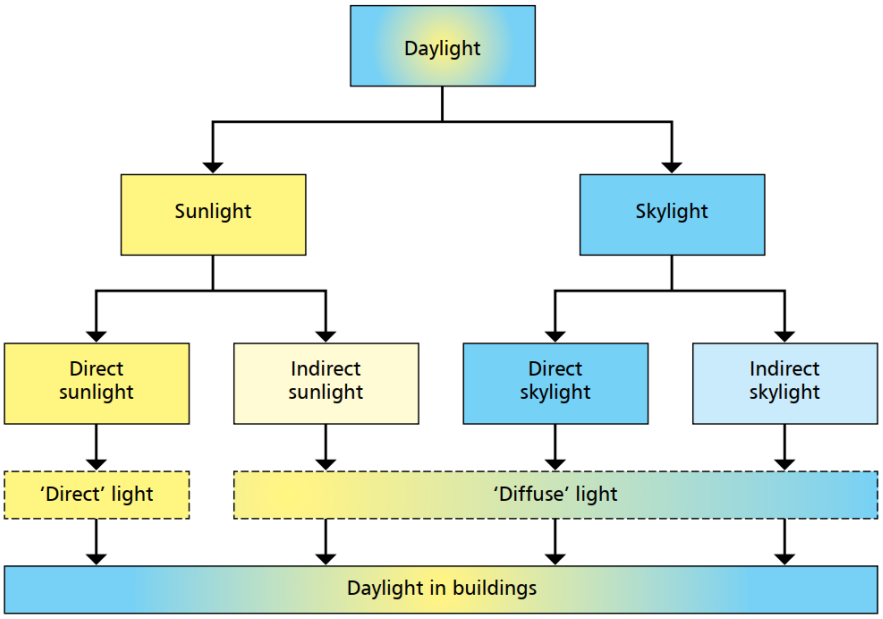


Figure 3 Contributions to Daylight in Buildings

4.0 Glossary

Term	Definition
Lumen	The lumen (symbol: lm) is the unit for luminous flux. It measures the total amount of light emitted by a light source in all directions. For reference, a standard 100-watt incandescent light bulb produces about 1,500-1,700 lumens.
Lux	The lux (symbol: lx), Latin for light, is a unit of illumination: 1 lux is the illuminance produced by 1 candela on a surface perpendicular to the light rays at a distance of 1 meter from the source.
Candela	Brightness is indicated by the candela (symbol: cd). The light intensity indicates how much light is in each piece of a light beam.
Luminance	The amount of light emitted, passing through or reflected from a surface.
Illuminance	A measure of the amount of light falling on a surface, usually measured in lux.
Target illuminance (ET)	Illuminance from daylight that should be achieved for at least half of annual daylight hours across a specified fraction of the reference plane in a daylit space.
Minimum target illuminance (E_{TM})	Illuminance from daylight that should be achieved for at least half of annual daylight hours across 95% of the reference plane in spaces with vertical and/or inclined daylight apertures
Daylight, natural light	Combined skylight and sunlight.
Climate Based Daylight Modelling (CBDM)	Climate-based daylight modelling (CBDM) is the predicted luminous levels within a space using sun and sky conditions that are derived from standard meteorological datasets. CBDM delivers predictions of absolute quantities (e.g. illuminance) that are dependent both on the building location (i.e. geographically-specific climate data is used) and the building orientation (i.e. the illumination effect of the sun and non-overcast sky conditions are included), in addition to the building's composition and configuration.
Spatial Daylight Autonomy (sDA)	Spatial Daylight Autonomy (sDA) uses CBDM to assesses whether a space receives sufficient daylight on a work plane during standard operating hours on an annual basis. The target is a percentage of floor area that exceeds a specified illuminance level (e.g. 200 lux) for a specified amount of annual hours (e.g. 50% of daylight hours).
CIE standard overcast sky	A completely overcast sky, such that light received by north facing windows is similar to that received by south facing windows. A Commission Internationale d'Eclairage (CIE) standard overcast sky is darkest at the horizon and brightest at the zenith (vertically overhead).
Annual Probable Sunlight Hours (APSH)	The 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).
Winter Probable Sunlight Hours (WPSH)	Winter probable sunlight hours' means the total number of hours between 21 September and 21 March that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for the location in question.
Vertical Sky Component (VSC)	The amount of skylight falling on a vertical wall or window can be quantified as the vertical sky component (VSC). The VSC for existing buildings is the illuminance on the outside of a window, divided by the illuminance falling on an unobstructed horizontal plane, under overcast sky conditions. The standard overcast sky is used, and the ratio is usually expressed as a percentage. The maximum value is almost 40% for a completely unobstructed vertical wall.
EPA	Environmental Protection Authority
No Sky Line	The outline on the working plane of the area from which no sky can be seen.

5.0 Daylight and Sunlight Assessment of the Proposed Development

There are three assessments that must be made to determine daylight and sunlight that the dwellings and amenity space of a new development will enjoy:

1. Daylight provision in new development
2. Sunlight provision in new development
3. Sunlight Provision to amenity spaces in new development

5.1. Daylight Provision in Proposed Development

"Daylight can contribute significantly to the lighting needs of any type of building. This means that daylight openings should have appropriate areas to provide sufficient daylight throughout the year."[12]

5.1.1. Assessment Method

This report will use the Illuminance Method to assess daylight provision. This method uses Climate Based Daylight Modelling (CBDM) with specific climatic data for the location of the site to calculate the illuminance from daylight across a grid on the reference plane at hourly, or sub-hourly, intervals for a typical year. The Perez all-weather sky model for Rosslare IRL_ST_Rosslare.039570_TMYx.epw) was used for daylight calculations, Rosslare being the location closest to the site for which there was a data set available. The Perez all-weather sky model is a mathematical model for describing the luminance distribution of the sky dome. It represents a range of sky conditions, from clear to overcast, and relies on data collected from weather stations worldwide to accurately represent sky conditions for specific locations, dates, and times.

Specialist 3D software is used to carry out a Spatial Daylight Autonomy (sDA) assessment which uses CBDM to assesses whether a space receives sufficient daylight on a work plane during normal daylight hours on an annual basis. The work plane is a horizontal surface normally be 0.85m from the floor level. The target is a percentage of the reference plane area that exceeds a specified illuminance level (e.g. 200 lux) for a specified number of annual hours, normally 50% of daylight hours.

"Internal and exterior surfaces and obstructions need to be modelled including appropriate surface reflectances. Fixtures and fittings need not be included. If trees would impact the daylight to the new development, they should be taken into account."[13]

The surface reflectance and glazing transmissibility values used in the calculations are shown in the table below.

Table 4 Reflectance & Transmittance Values

Surface Type	Reflectance
Interior walls	0.7
Ceilings	0.8
Floors	0.3
Exterior walls and obstructions	0.2
Exterior ground	0.2
Glazing	
Transmittance	0.68
Maintenance Factor	0.96

[12] EN 17037, 5.1.1

[13] BRE Guide, C22

Trees

Trees can have an impact on the daylight received by new developments and must be considered when making the assessment. The BRE Guide states:

"The calculation model should account for the obstruction to daylight caused by the trees. This needs to be done by modelling a representative shape of the trees."[14] and *"The assessment should account for the transparency and reflectance of the trees, which can vary across the seasons."*[15]

The BRE Guide includes transparency and reflectance values, both summer and winter states, for typical tree species found in Ireland and the UK. These values are included in the software's calculation methods, with summer and winter states each assigned to six months of the year.

5.1.2. Assessment Criteria

The assessment will be carried out in line with the guidance in BRE Guide and BS EN17037 National Annex: *"The UK National Annex gives illuminance recommendations of 100 lux in bedrooms, 150 lux in living rooms and 200 lux in kitchens. These are the median illuminances, to be exceeded over at least 50% of the assessment points in the room for at least half of the daylight hours. The recommended levels over 95% of a reference plane need not apply to dwellings in the UK."*[16]

Table 5 Daylight Provision Target Illuminance[17]

Room Type	Target Illuminance E_T (lx)
Bedroom	100
Living Room	150
Kitchen or Living Kitchen Dining (LKD)	200

The reference plane is at a height of 0.85m above the floor and offset from the perimeter of the room by 300mm.[18] This plane is then divided into grid points, at 250mm spacings, at which the lux levels are calculated, the median level is then used for assessment.

Areas to be excluded/exceptions:

- In a room with a corridor, or annex entrance, this space need not be included in the assessment.
- Floor to ceiling cupboards can be excluded from the assessment area, but not kitchen units incorporating worktops.
- For a combined living/dining/kitchen area, the kitchen should always be included as part of the room area in the calculations, even in cases where the kitchen is deemed non-habitable and the living room criterion is applied to the whole space.

[14] BRE Guide, G2.3
[15] BRE Guide, G2.4
[16] BRE Guide, C16
[17] BS EN 17037, Table NA.1
[18] BRE Guide, C28

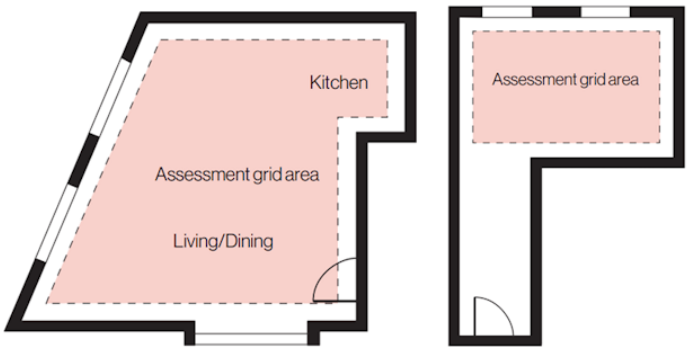


Figure 4 Assessment area examples for various room shapes.

5.1.3. Summary of Results

Daylight Provision summary of results based on BRE Guidelines/BS EN 17037: rooms meeting minimum target of 100 lux for bedrooms, 150 lux for living rooms and 200 lux for kitchens or LKD over 50% of the reference plane for at least half of the daylight hours.

The scheme achieved excellent results for daylight provision, with 100% of the rooms meeting the BRE Guide when assessed both with and without trees.

Table 6 Daylight Provision Results Summary (BRE/BS EN 17037)

Building	No. of Units	No. of Rooms	Meets BRE Criteria - with Trees	Meets BRE Criteria - without Trees
All Dwellings	64	184	100%	100%
Individual Buildings				
D 094-103 Duplex	10	30	100%	100%
D 104-115 Duplex	12	36	100%	100%
D 376-387 Duplex	12	36	100%	100%
D 388-397 Duplex	10	30	100%	100%
D 402-413 Duplex	12	36	100%	100%
D 368-375 Maisonettes	8	16	100%	100%

Refer to **Appendix C** for a full schedule of results.

5.2. Sunlight Exposure in the Proposed Development

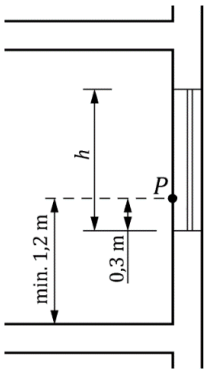
The BRE Guide states:

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

- *at least one main window wall faces within 90° of due south and*
- *a habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 March. This is assessed at the inside centre of the window(s); sunlight received by different windows can be added provided they occur at different times and sunlight hours are not double counted."*[19]

5.2.1. Assessment Method

The assessment for **Sunlight Exposure** (SE) should be conducted for each opening of a space for a reference point P located on the inner surface of the aperture. Reference point P is located at the centre of the opening width and a minimum of 1.2m above the floor and 0.3m above the sill of the daylight opening. Where there is multiple opening of a space, it is possible to cumulate the time of sunlight availability if not occurring at the same time.



Trees

To assess the sunlight provision for new buildings BS EN 17037 recommends the calculation of sunlight hours be carried out on 21st March. At this time of the year deciduous trees will not be in full leaf and some sunlight would be expected to penetrate. However, it would be impossible to calculate this accurately. The BRE Guide recommends:

"It is therefore recommended that where trees may affect sunlight provision, the calculations should first be carried out with deciduous trees as opaque objects …. The calculations could then be repeated without deciduous trees entirely. This gives the range of potential sunlight hours. Buildings and other solid objects should always be included. Evergreen trees where no light can penetrate all year round should also always be included as solid."[20]

and

"If the minimum recommendation is met with opaque trees then sunlight would be adequate. If the minimum recommendation is not reached with either opaque trees or no trees then sunlight would be considered inadequate. For a room where the recommendation is exceeded without trees, but not with opaque trees, sunlight provision may be adequate, but the trees will have some effect on the sunlight received."[21]

5.2.2. Assessment Criteria

The BRE Guide recommends that a space should receive possible sunlight for a duration of a minimum of 1.5 hours on a selected date between February 1st and March 21st. The normal date used for the assessment is March 21st.

Table 7 Sunlight Exposure Recommendations Values[22]

Level of Recommendation for Exposure to Sunlight	Sunlight Exposure
Minium	1.5 hrs
Medium	3.0 hrs
High	4.0 hrs

[19] BRE Guide, 3.1.15
[20] BRE Guide, G3.2
[21] BRE Guide, G3.4
[22] BS EN 17037, Table A.6

5.2.3. Summary of Results

The scheme also achieved excellent results for sunlight provision, with 100% of the units meeting the BRE Guide when assessed both with and without trees

Table 8 Sunlight Exposure Results Summary

Building	No. of Units	No. of Rooms	Meets BRE Criteria - with Trees	Meets BRE Criteria - without Trees
All Dwellings	64	184	100%	100%
Individual Buildings				
D 094-103 Duplex	10	30	100%	100%
D 104-115 Duplex	12	36	100%	100%
D 376-387 Duplex	12	36	100%	100%
D 388-397 Duplex	10	30	100%	100%
D 402-413 Duplex	12	36	100%	100%
D 368-375 Maisonettes	8	16	100%	100%

Refer to **Appendix D** for a full schedule of results.

5.3. Sunlight Provision to Amenity Spaces in the Proposed Development

5.3.1. Assessment Method

BRE Guidelines recommend that for an external garden or amenity area to appear adequately sunlit throughout the year, at least half of the space should receive at least 2 hours of sunlight on 21st March, the equinox.

Trees

In general, trees do not need to be considered when assessing potential loss of light to gardens and amenity spaces as stated in the BRE Guide.

"In assessing the impact of buildings on sunlight in gardens …, ***trees and shrubs are not normally included in the calculation*** *unless a dense belt or group of evergreens is specifically planned as a windbreak or for privacy purposes. This is partly because the dappled shade of a tree is more pleasant than the deep shadow of a building (this applies especially to deciduous trees)."*[23] [Emphasis added.]

5.3.2. Summary of Results

The scheme has a generous provision of circa 7,700m^2 of open space, three communal open spaces (COS) and four public open spaces (POS), and all individual areas meet the BRE Guide for sun on the ground.

[23] BRE Guide 2022, G4.1

Table 9 Sunlight Provision to Amenity Spaces Results Summary

Amenity Area	Area m²	Area Receiving 2 Hours Light (%)	Meets BRE Criteria
All Amenity Areas	7707	99%	Yes
Individual Areas			
COS 01	224	70%	Yes
COS 02	236	99%	Yes
COS 03	416	100%	Yes
POS 04	1584	100%	Yes
POS 05	2862	100%	Yes
POS 06	1534	100%	Yes
POS 07	851	100%	Yes

Refer to **Appendix E** for a full schedule of results.

5.4. Compensatory Design Measures

All units achieve compliance with the BRE Guide for both daylight and sunlight, therefore compensatory measures ae not required.

6.0 Daylight and Sunlight Impacts on Existing Buildings

There are three assessments that must be made to determine if a proposal adversely affects the daylight and sunlight to existing buildings.

1. Daylight access to existing buildings
2. Sunlight access to existing buildings
3. Sunlight access to neighbouring amenity areas

In cases where a proposed development has received planning permission, irrespective of whether construction has commenced, it is included in the assessment of the receiving environment and treated as an "existing" scheme.

6.1. Loss of daylight to existing buildings

6.1.1. Assessment Method

The amount of skylight falling on a vertical wall or window can be quantified as the **Vertical Sky Component** (VSC). The VSC for existing buildings is the illuminance on the outside of a window, divided by the illuminance falling on an unobstructed horizontal plane, under overcast sky conditions. The standard Commission Internationale d'Eclairage (CIE) overcast sky is used, and the ratio is usually expressed as a percentage. The maximum value is almost 40% for a completely unobstructed vertical wall.

"Loss of light to existing windows need not be analysed 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. In these cases the loss of light will be small." [24] Refer to Figure 6 below.

"Measure the angle to the horizontal subtended by the new development at the level of the centre of the lowest window. If this angle is less than 25° for the whole of the development then it is unlikely to have a substantial effect on the diffuse skylight enjoyed by the existing building. If, for any part of the new development, this angle is more than 25°, a more detailed check is needed to find the loss of skylight to the existing building."[25] Refer to Figure 7 *below.*

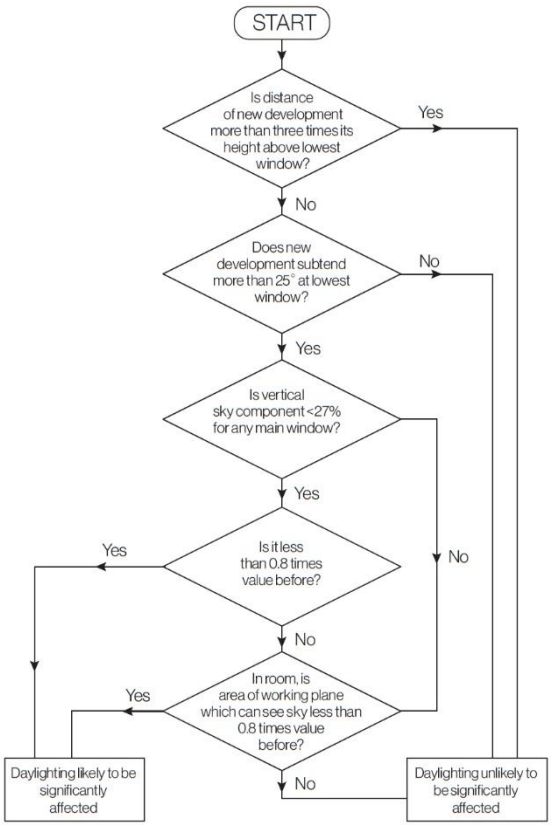


Figure 5 Decision chart: diffuse daylight in existing buildings

[24] BRE Guide, 2.2.4

[25] BRE Guide, 2.2.5

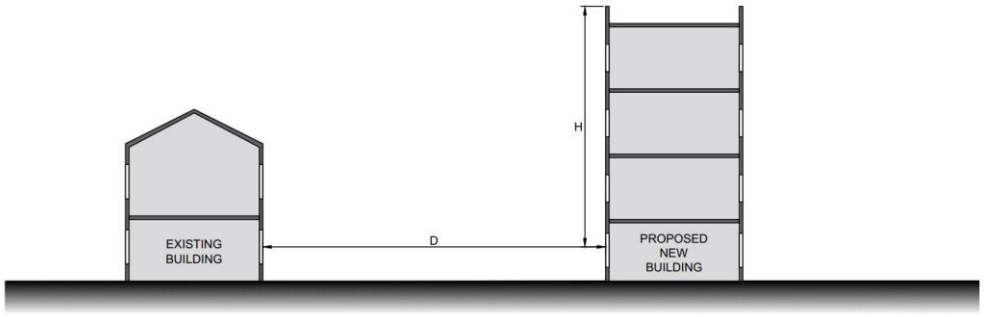


Figure 6 Distance test for Daylight Impact to Existing Buildings (Is D > 3xH)

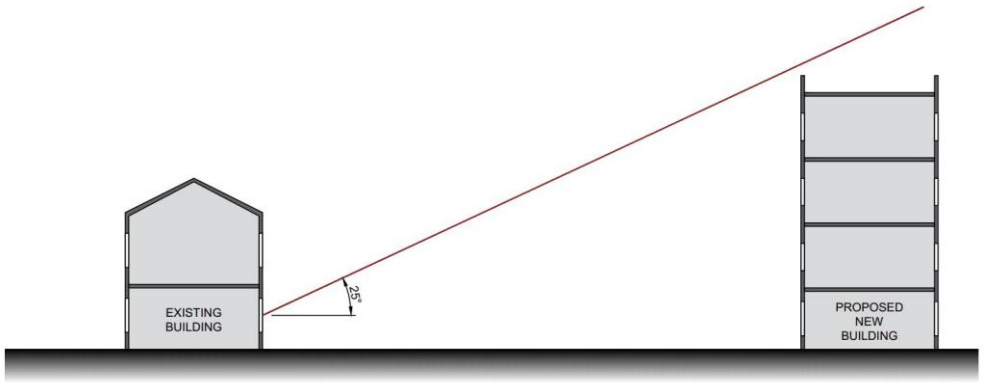


Figure 7 25° Angle test for Daylight Impact to Existing Buildings

6.1.1.1. Weighted Average VSC

"If there would be a significant loss of light to the main window but the room also has one or more smaller windows, an overall VSC may be derived by weighting each VSC element in accordance with the proportion of the total glazing area represented by its window. For example, a room has a main window of area 2 m2 whose VSC would drop from 24% to 18%, 0.75 times the value before. However, it also has a smaller window, area 1 m2, for which the VSC would be unchanged at 30%. The area weighted VSC 'before' would be (24x2+30)/3 = 26%. 'After' it would be (18x2+30)/3 = 22%, 0.85 times the value 'before'. Thus, loss of VSC to the room as a whole would meet the guideline."[26]

6.1.1.2. Trees

While the potential impact of existing trees must be considered when assessing the daylight to proposed dwellings, trees do not need to be considered for existing buildings, unless a dense belt or group of evergreens is specifically planned as a windbreaker or for privacy purposes, as stated in the BRE Guide.

"It is generally more difficult to calculate the effects of trees on daylight because of their irregular shapes and because some light will generally penetrate through the tree crown. ***Where the effect of a new building on existing buildings nearby is being analysed, it is usual to ignore the effect of existing trees.*** *This is because daylight is at its scarcest and most valuable in winter when most trees will not be in leaf."*[27] [Emphasis added.]

6.1.2. Assessment Criteria

The daylight to an existing building may be adversely affected if:

[26] BRE Guide, 2.2.8

[27] BRE Guide, G1.2

- the VSC measured at the centre of an existing main window is less than 27%, and less than 0.80 times its former value. The reference point is in the external plane of the window wall.
- the area of the working plane, 0.85m high, in a room which can receive direct skylight is reduced to less than 0.80 times its former value.

The line that divides the points on the working plane which can and cannot see the sky is known as the No Sky Line (NSL). The NSL test can only be carried out when the internal room layout is known, which is seldom the case when assessing existing buildings.

6.1.3. **Summary of Results**

The neighbouring buildings in the vicinity of the proposal were reviewed using the Decision Chart referenced in Figure 5 above to determine which ones required a more detailed assessment for potential loss of daylight. Given the low-rise nature of the proposed development and the separation distances between it and the surrounding existing dwellings, none required a detailed assessment. Therefore, as per the BRE Guide, there would be no/negligible impact on these buildings.

6.2. Loss of sunlight to existing buildings

6.2.1. Assessment Method

To determine the possible loss of sunlight to existing buildings the **Annual Probable Sunlight Hours** (APSH) is calculated. *"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."*[28]

It is recommended that all living rooms and conservatory windows of existing dwellings be assessed if the new development is positioned within 90° of due south, refer to Figure 8. 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.

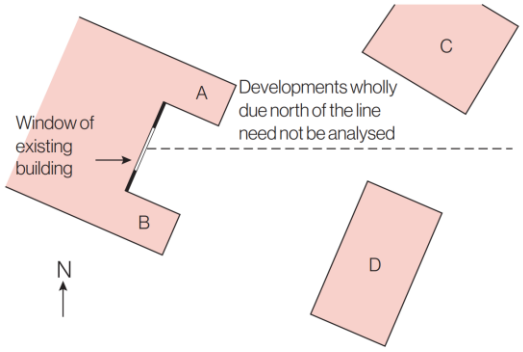


Figure 8 In analysing the sunlighting impact on the existing window, no check need be made for proposed extension A and new building C, as they lie within 90° of due north of the window. Proposed extension B should be checked, as should new building D if it subtends more than 25° to the horizontal, measured in section from the centre of the window.

The reference point is the centre of the window, or 1.6m above the floor for floor to ceiling windows or patio doors, on the plane of the outside surface of the wall.

Trees

Similar to the VSC assessment above, trees are not included, unless a dense belt or group of evergreens is specifically planned as a windbreaker or for privacy purposes.

6.2.2. Assessment Criteria

The sun lighting of an existing dwelling may be adversely affected, if the centre of the window:

- receives less than 25% of annual probable sunlight hours (APSH) and less than 0.8 times its former annual value; or less than 5% of winter probable sunlight (WPSH) hours between 21 September and 21 March and less than 0.80 times its former value during that period;
- and also has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.

"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 (note: obstructions within 90° of due north of the existing window need not count here).*
- *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. 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 of 27% or more."*[29]

[28] BRE Guide, 3.2.4

[29] BRE Guide, 3.2.9

6.2.3. Summary of Results

As discussed in 6.1.3 above, given the low-rise nature of the proposed development and the separation distances between it and the surrounding existing dwellings, none required a detailed assessment. Therefore, as per the BRE Guide, there would be no/negligible impact on these buildings.

6.3. Loss of sunlight to existing gardens and amenity areas

6.3.1. Assessment Method

BRE Guidelines recommend that for an existing garden or amenity area to appear adequately sunlit throughout the year, at least half of the space should receive at least 2 hours of sunlight on 21 March, the equinox.

Trees
In general, trees do not need to be considered when assessing potential loss of light to existing gardens and amenity spaces.

"In assessing the impact of buildings on sunlight in gardens …, ***trees and shrubs are not normally included in the calculation*** *unless a dense belt or group of evergreens is specifically planned as a windbreak or for privacy purposes. This is partly because the dappled shade of a tree is more pleasant than the deep shadow of a building (this applies especially to deciduous trees)."*[30] [Emphasis added.]

6.3.2. Assessment Criteria

"If as a result of a new development an existing garden or amenity area does not meet the above, and the area that can receive two hours of sun on 21 March is less than 0.80 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March."[31]

6.3.3. Summary of Results

The private gardens adjacent to the proposed development were reviewed for potential impact to their sunlight. Given the low-rise nature of the proposed development and the separation distances between it and the surrounding existing dwellings and gardens, it was concluded that the only possible impact would be to the gardens located to the north of the development site. These five gardens were assessed and it was determined that there would be no impact to their sunlight.

Table 10 Sunlight to Existing Amenity Areas Results Summary.

Amenity Area	Area m²	Area Receiving 2 Hrs of Sunlight - Proposed %	Meets BRE Criteria
Highfield Lodge – Y25 Y179	1059	100%	Yes
Kilnahue Ln 1A – Y25 PX99	1326	100%	Yes
Kilnahue Ln 1B – Y25 PX99	542	100%	Yes
Muskerry House – Y25 D288	2195	100%	Yes
Avonlea – Y25 RX89	1937	100%	Yes

Refer to **Appendix I** for a full schedule of results.

[30] BRE Guide 2022, G4.1

[31] BRE Guide 2022, 3.3.17

Appendix A – Site Plan

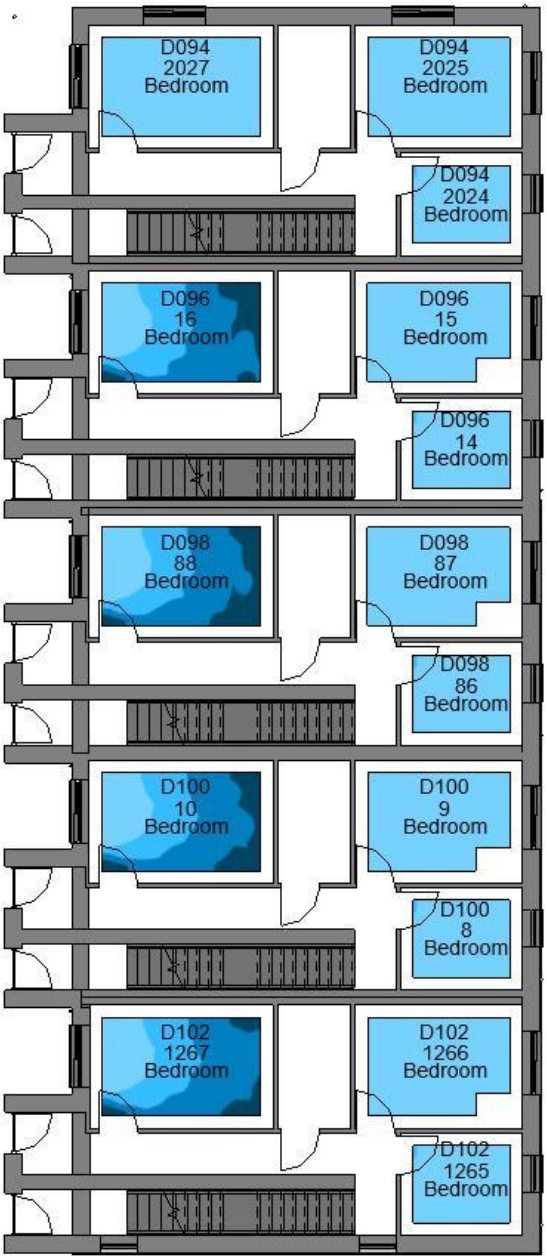
Figure 9 Site Plan

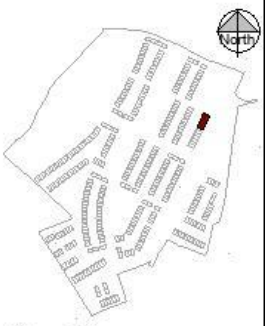


Appendix B – Floor Plans with Room Reference Numbers

Figure 10 Floor Plans with Daylight Heatmaps





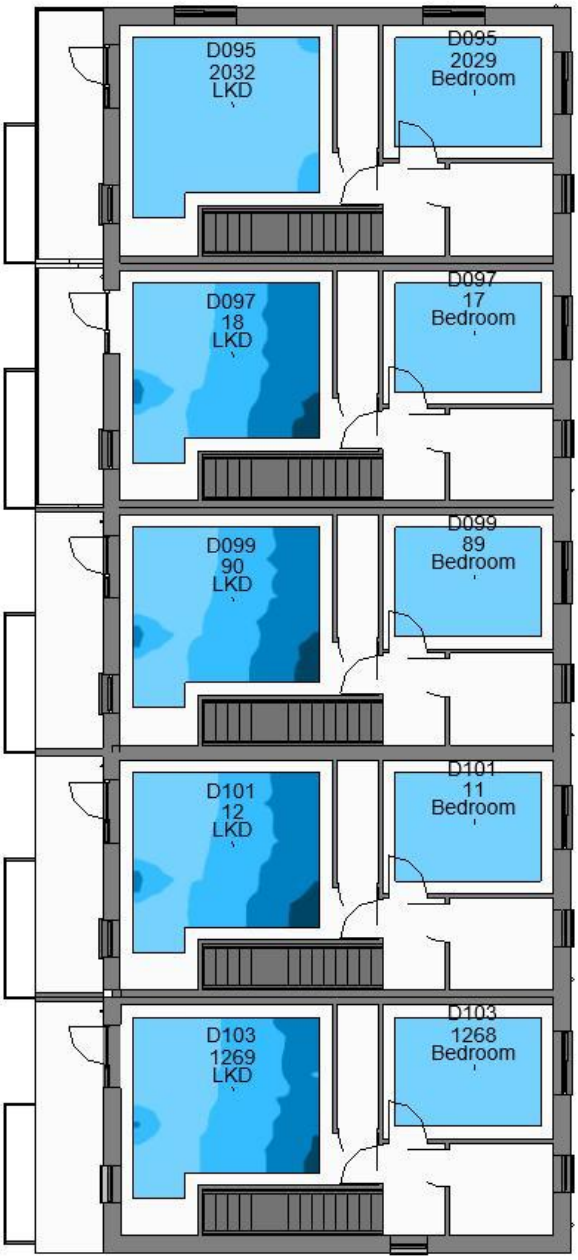


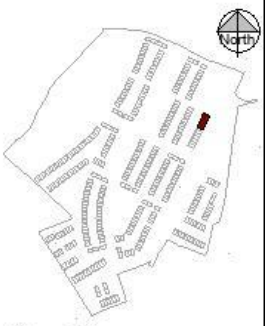
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
D 094-103	
Floor Plan	Sheet N°
01 Floor	001





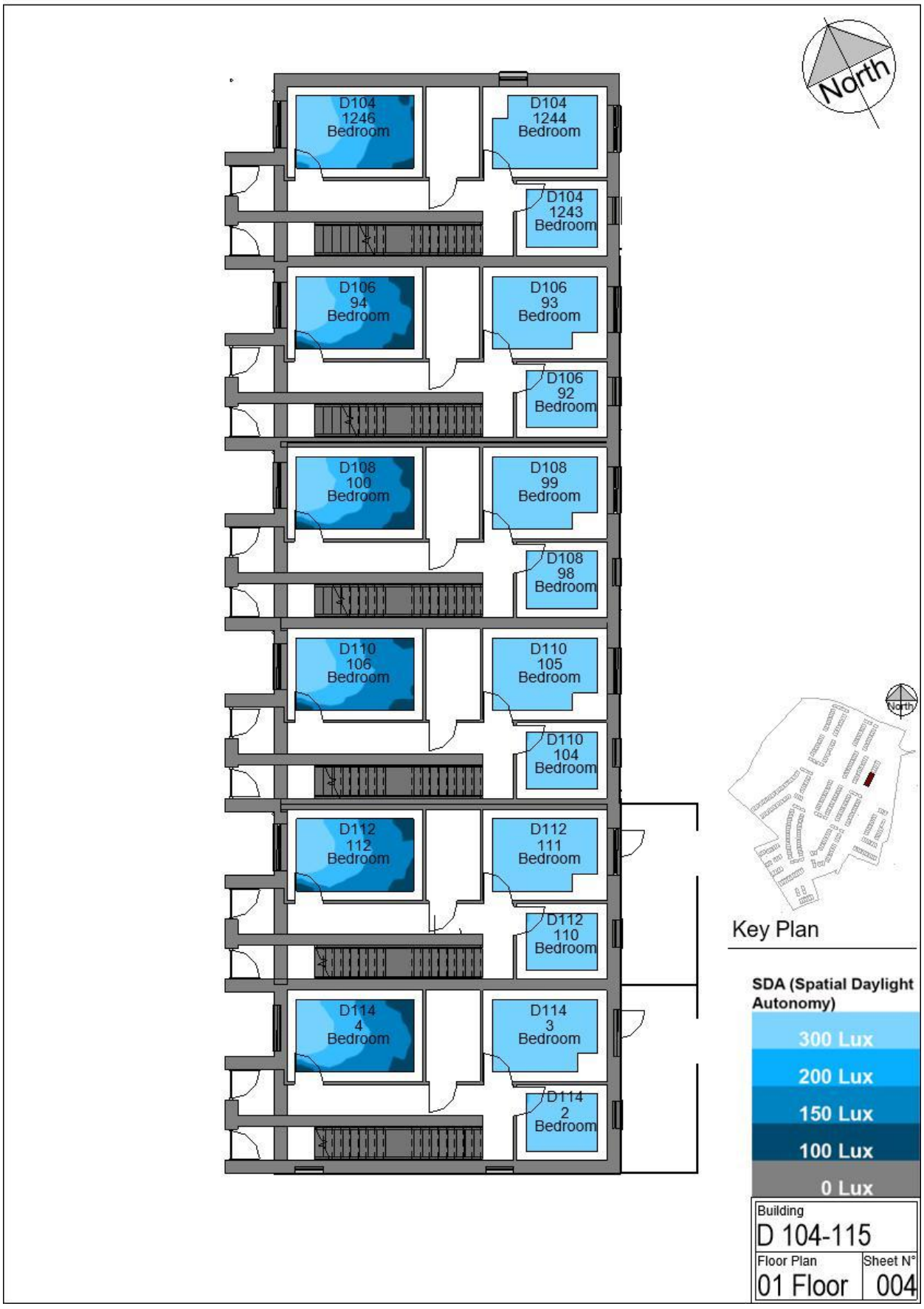
Key Plan

SDA (Spatial Daylight Autonomy)

- 300 Lux
- 200 Lux
- 150 Lux
- 100 Lux
- 0 Lux

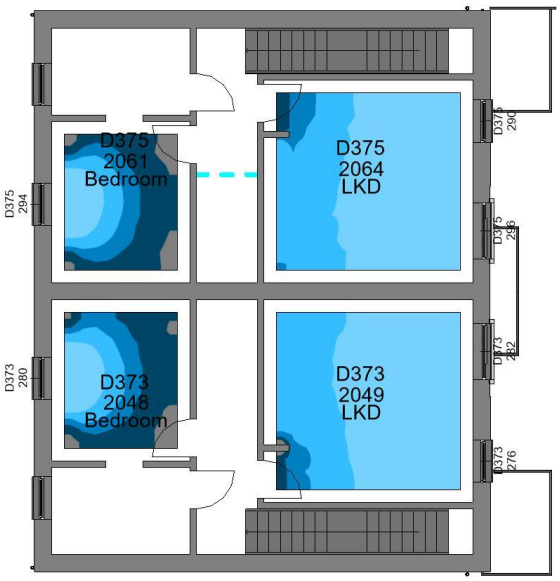
Building	
D 094-103	
Floor Plan	Sheet N°
02 Floor	002

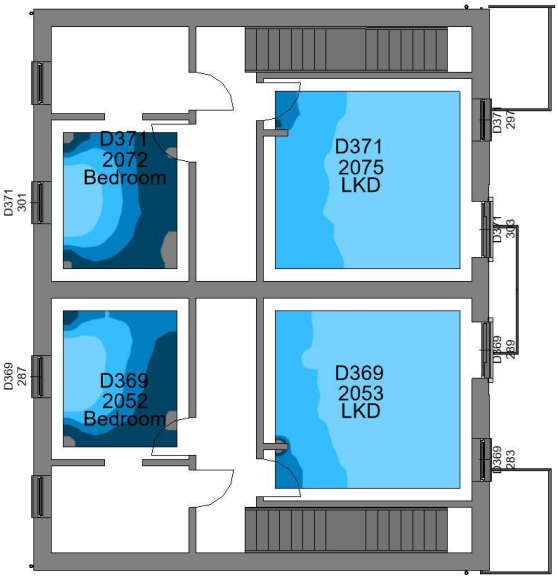

North
D104
1238
LKD
D106
91
LKD
D108
97
LKD
D110
103
LKD
D112
109
LKD
D114
1
LKD
North
Key Plan
SDA (Spatial Daylight Autonomy)
300 Lux
200 Lux
150 Lux
100 Lux
0 Lux
Building
D 104-115
Floor Plan
00 Floor
Sheet N°
003

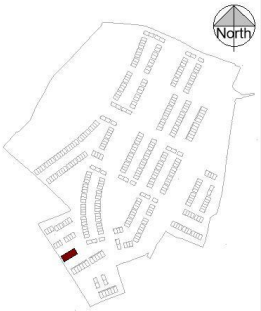

North
D104
1246
Bedroom
D104
1244
Bedroom
D104
1243
Bedroom
D106
94
Bedroom
D106
93
Bedroom
D106
92
Bedroom
D108
100
Bedroom
D108
99
Bedroom
D108
98
Bedroom
D110
106
Bedroom
D110
105
Bedroom
D110
104
Bedroom
D112
112
Bedroom
D112
111
Bedroom
D112
110
Bedroom
D114
4
Bedroom
D114
3
Bedroom
D114
2
Bedroom
North
Key Plan
SDA (Spatial Daylight Autonomy)
300 Lux
200 Lux
150 Lux
100 Lux
0 Lux
Building
D 104-115
Floor Plan
01 Floor
Sheet N°
004


North
D105
1251
LKD
D105
1248
Bedroom
D107
96
LKD
D107
95
Bedroom
D109
102
LKD
D109
101
Bedroom
D111
108
LKD
D111
107
Bedroom
D113
114
LKD
D113
113
Bedroom
D115
6
LKD
D115
5
Bedroom
North
Key Plan
SDA (Spatial Daylight Autonomy)
300 Lux
200 Lux
150 Lux
100 Lux
0 Lux
Building
D 104-115
Floor Plan
02 Floor
Sheet N°
005


North
D374 293
D374 2055 LKD
D374 2054 Bedroom
D374 291
D374 468
D372 438
D372 2047 LKD
D372 2046 Bedroom
D372 277
D372 279
D370 300
D370 2066 LKD
D370 2065 Bedroom
D370 298
D370 475
D368 451
D368 2051 LKD
D368 2050 Bedroom
D368 284
D368 286
North
Key Plan
SDA (Spatial Daylight Autonomy)
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200 Lux
150 Lux
100 Lux
0 Lux
Building
D 368-375
Floor Plan
00 Floor
Sheet N°
006







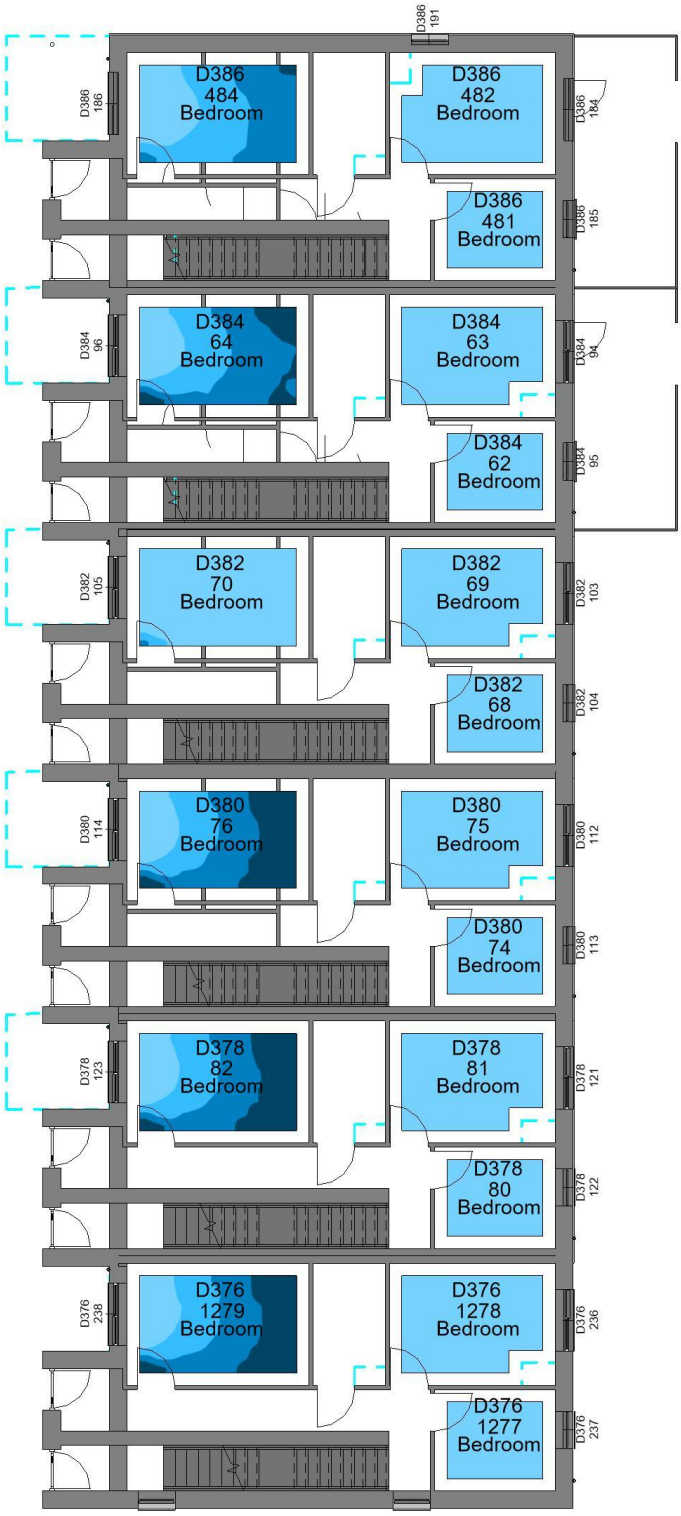
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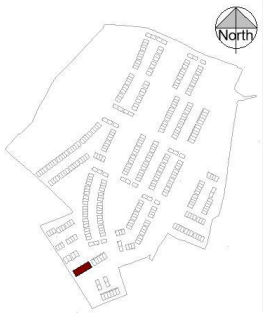
SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
D 368-375	
Floor Plan	Sheet N°
01 Floor	007


North
D386
190
D386
476
LKD
D386
194
D386
183
D384
61
LKD
D384
101
D384
93
D382
67
LKD
D382
110
D382
102
D380
73
LKD
D380
119
D380
111
D378
79
LKD
D378
128
D378
120
D376
1276
LKD
D376
246
D376
235
D376
245
North
Key Plan
SDA (Spatial Daylight Autonomy)
300 Lux
200 Lux
150 Lux
100 Lux
0 Lux
Building
D 376-387
Floor Plan
00 Floor
Sheet N°
008



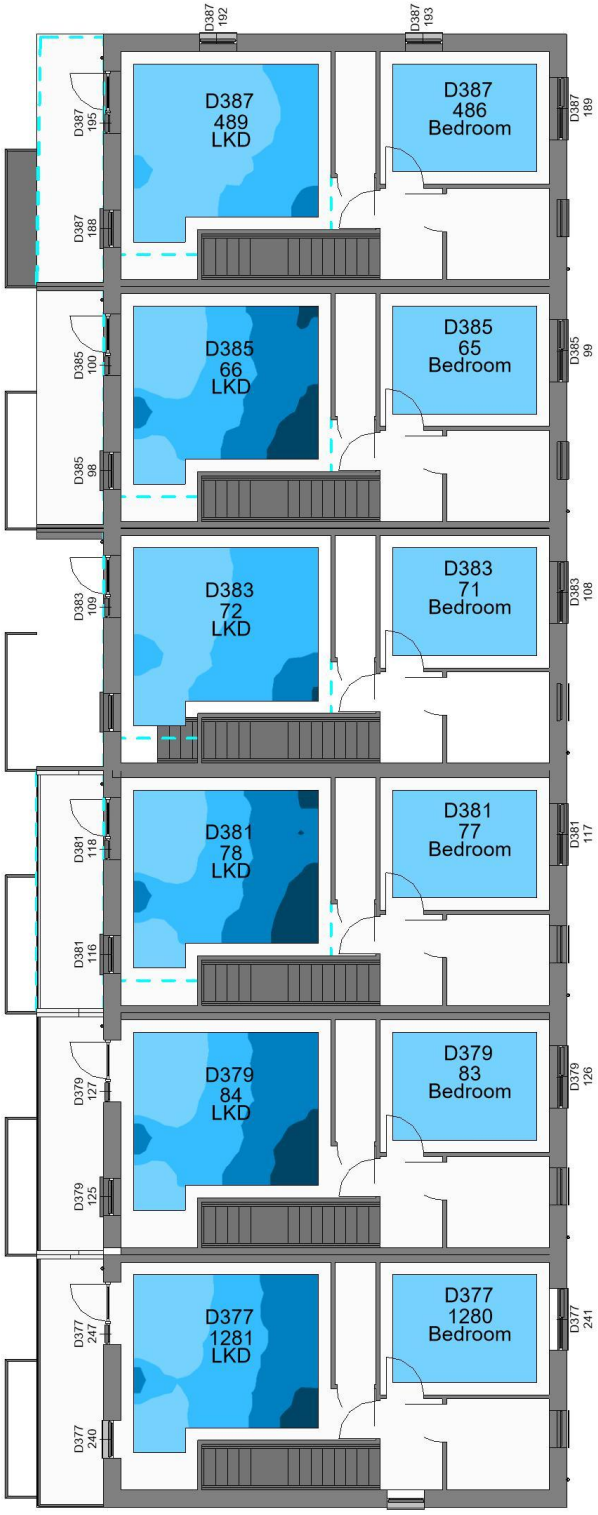


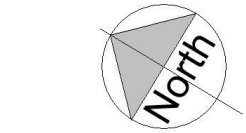
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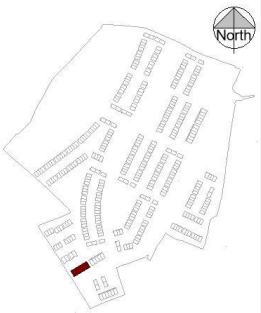
SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
D 376-387	
Floor Plan	Sheet N°
01 Floor	009





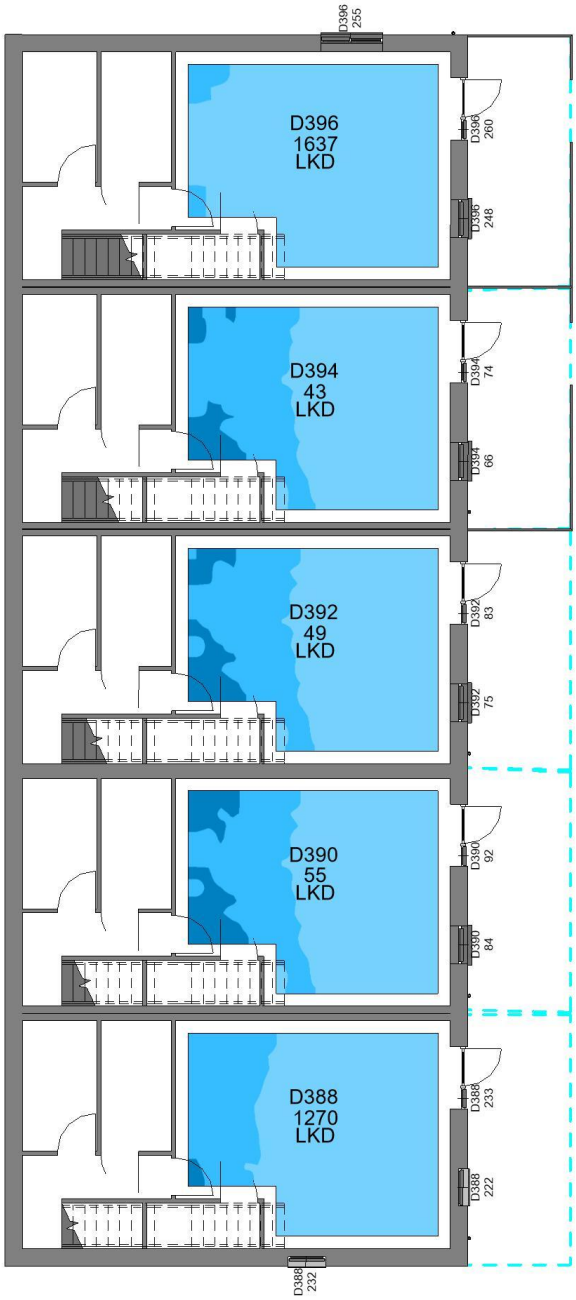


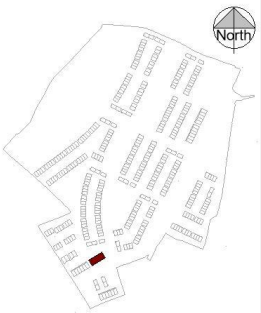
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
D 376-387	
Floor Plan	Sheet N°
02 Floor	010



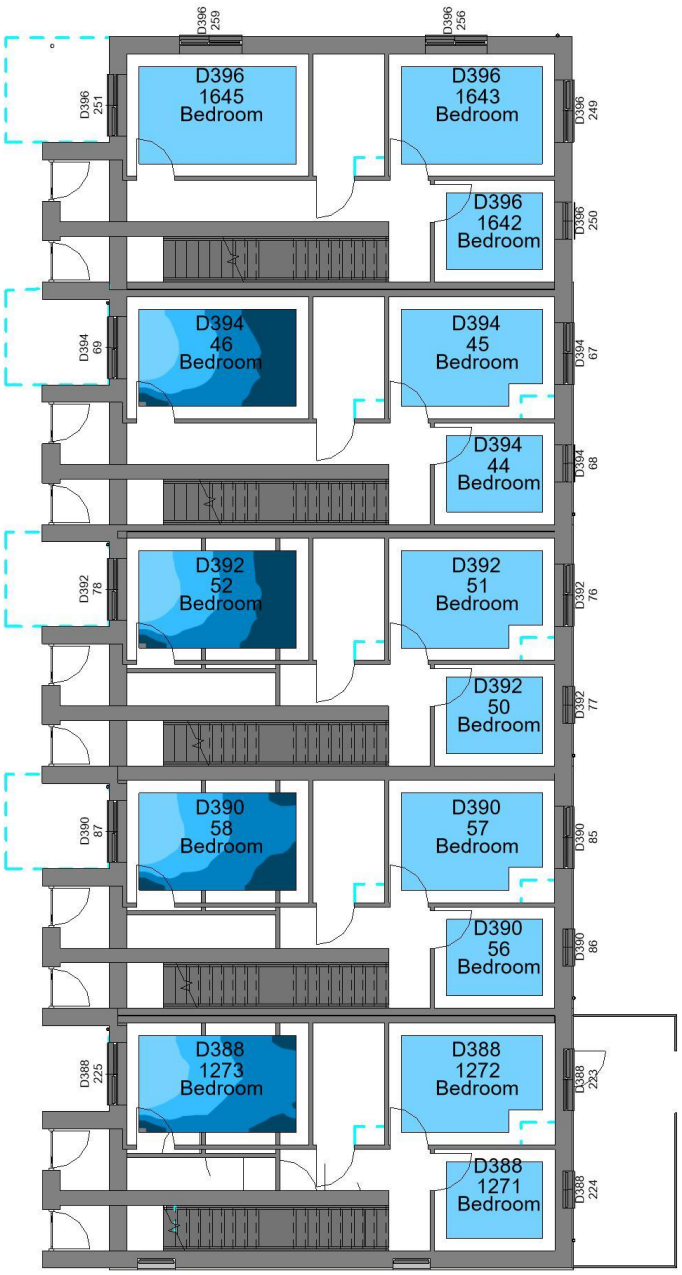


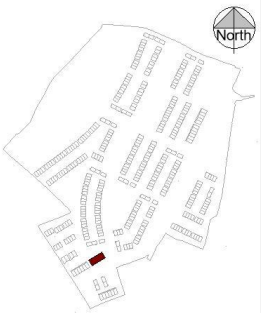
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
D 388-397	
Floor Plan	Sheet N°
00 Floor	011



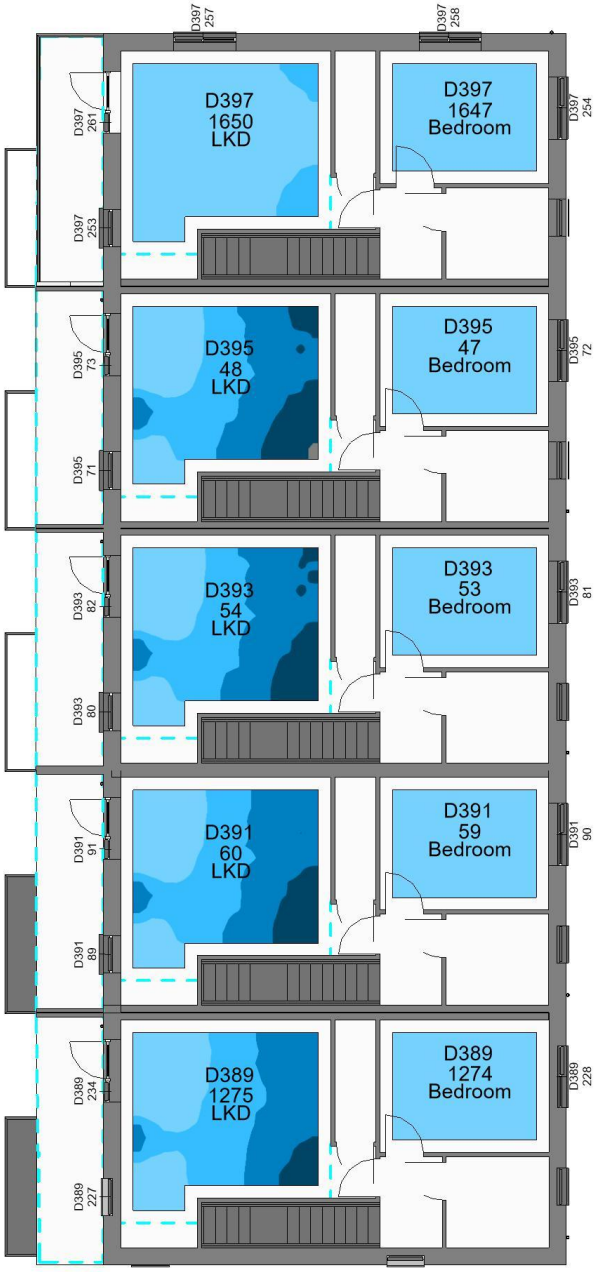


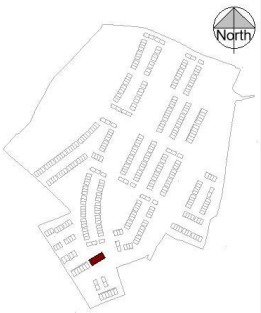
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
D 388-397	
Floor Plan	Sheet N°
01 Floor	012



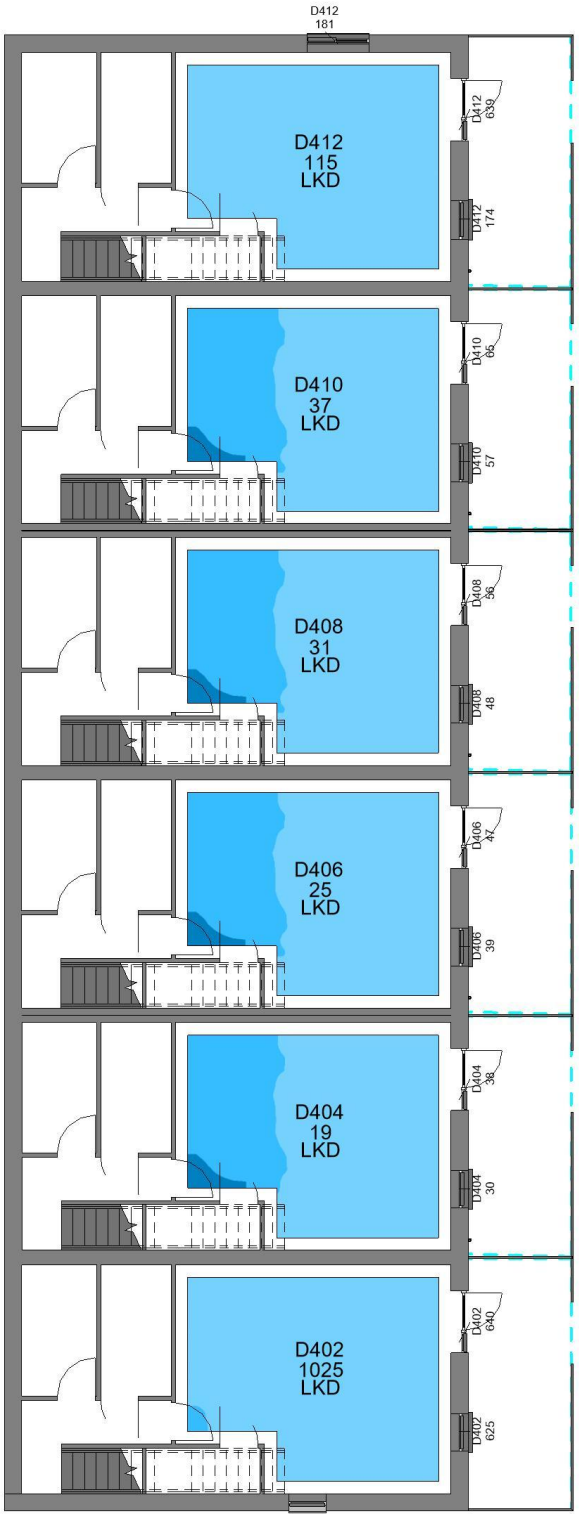


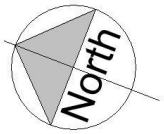
Key Plan

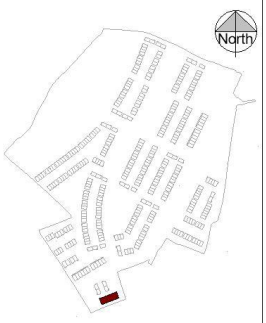
SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
D 388-397	
Floor Plan	Sheet N°
02 Floor	013







Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux

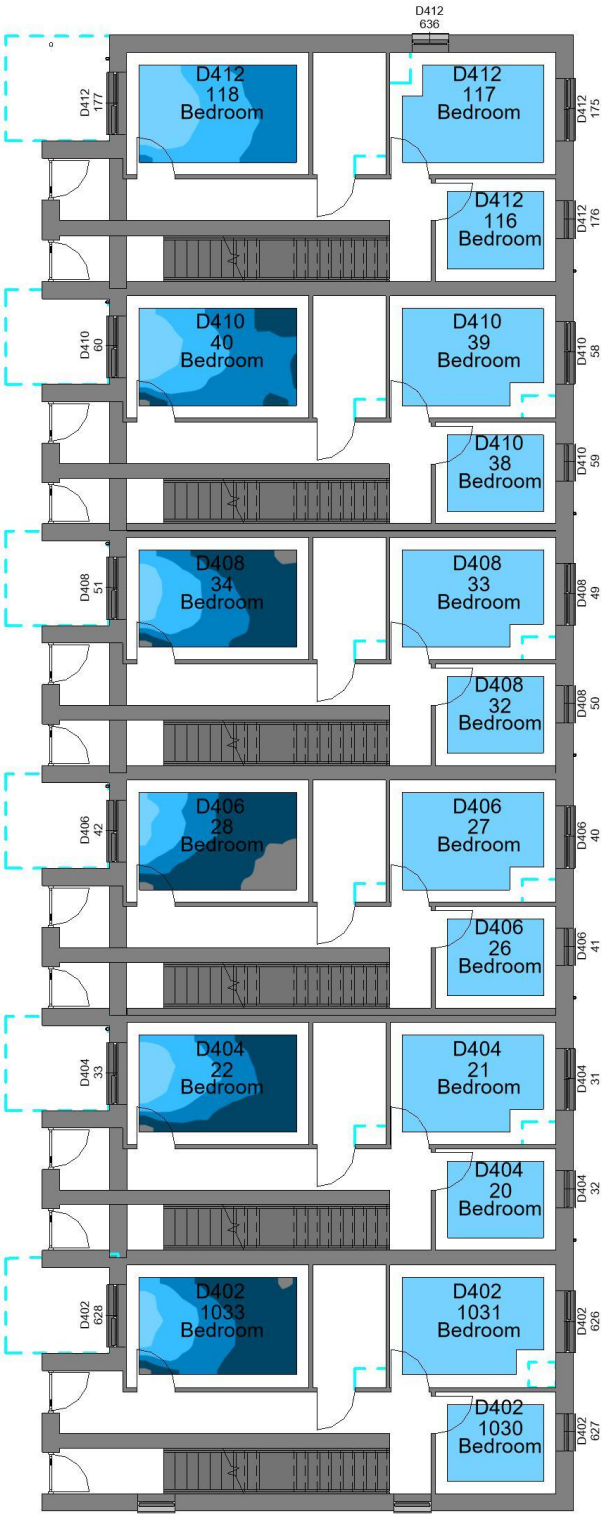
200 Lux

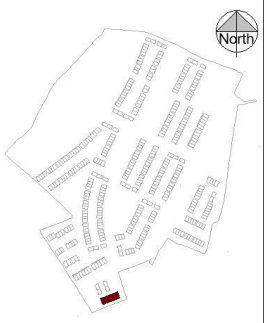
150 Lux

100 Lux

0 Lux

Building	
D 402-413	
Floor Plan	Sheet N°
00 Floor	014



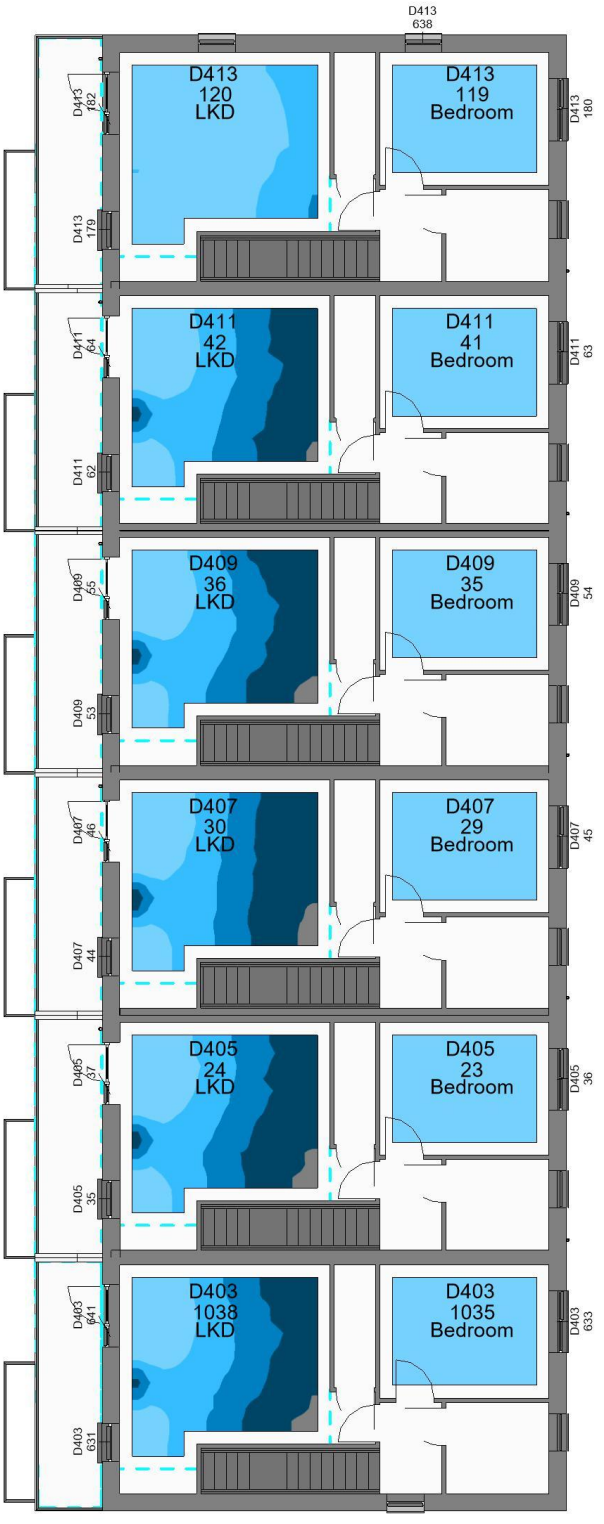


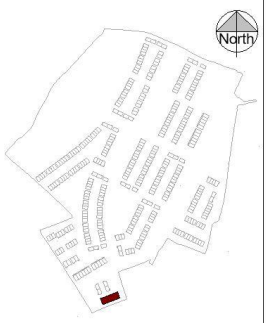
Key Plan

SDA (Spatial Daylight Autonomy)

- 300 Lux
- 200 Lux
- 150 Lux
- 100 Lux
- 0 Lux

Building	
D 402-413	
Floor Plan	Sheet N°
01 Floor	015





Key Plan

SDA (Spatial Daylight Autonomy)

- 300 Lux
- 200 Lux
- 150 Lux
- 100 Lux
- 0 Lux

Building	
D 402-413	
Floor Plan	Sheet N°
02 Floor	016

Appendix C – Daylight Provision in New Development Detailed Results

Table 11 Daylight Provision Results

Unit Ref.	Room No.	Floor	Type Use	Req Lux	Meets BRE Criteria With Trees		Meets BRE Criteria Without Trees	
					% of Area Meeting Req Lux	Meets BRE Criteria	% of Area Meeting Req Lux	Meets BRE Criteria
D094	2019	0	LKD	200	97%	Yes	100%	Yes
D094	2024	1	Bedroom	100	100%	Yes	100%	Yes
D094	2025	1	Bedroom	100	100%	Yes	100%	Yes
D094	2027	1	Bedroom	100	100%	Yes	100%	Yes
D095	2029	2	Bedroom	100	100%	Yes	100%	Yes
D095	2032	2	LKD	200	100%	Yes	100%	Yes
D096	13	0	LKD	200	72%	Yes	91%	Yes
D096	14	1	Bedroom	100	100%	Yes	100%	Yes
D096	15	1	Bedroom	100	100%	Yes	100%	Yes
D096	16	1	Bedroom	100	100%	Yes	100%	Yes
D097	17	2	Bedroom	100	100%	Yes	100%	Yes
D097	18	2	LKD	200	69%	Yes	69%	Yes
D098	85	0	LKD	200	65%	Yes	91%	Yes
D098	86	1	Bedroom	100	100%	Yes	100%	Yes
D098	87	1	Bedroom	100	100%	Yes	100%	Yes
D098	88	1	Bedroom	100	99%	Yes	100%	Yes
D099	89	2	Bedroom	100	100%	Yes	100%	Yes
D099	90	2	LKD	200	70%	Yes	71%	Yes
D100	7	0	LKD	200	68%	Yes	92%	Yes
D100	8	1	Bedroom	100	100%	Yes	100%	Yes
D100	9	1	Bedroom	100	100%	Yes	100%	Yes
D100	10	1	Bedroom	100	100%	Yes	100%	Yes
D101	11	2	Bedroom	100	100%	Yes	100%	Yes
D101	12	2	LKD	200	69%	Yes	70%	Yes
D102	1264	0	LKD	200	89%	Yes	98%	Yes
D102	1265	1	Bedroom	100	100%	Yes	100%	Yes
D102	1266	1	Bedroom	100	100%	Yes	100%	Yes
D102	1267	1	Bedroom	100	100%	Yes	100%	Yes
D103	1268	2	Bedroom	100	100%	Yes	100%	Yes
D103	1269	2	LKD	200	78%	Yes	78%	Yes
D104	1238	0	LKD	200	100%	Yes	100%	Yes
D104	1243	1	Bedroom	100	100%	Yes	100%	Yes
D104	1244	1	Bedroom	100	100%	Yes	100%	Yes
D104	1246	1	Bedroom	100	100%	Yes	100%	Yes
D105	1248	2	Bedroom	100	100%	Yes	100%	Yes
D105	1251	2	LKD	200	98%	Yes	98%	Yes
D106	91	0	LKD	200	77%	Yes	91%	Yes
D106	92	1	Bedroom	100	100%	Yes	100%	Yes
D106	93	1	Bedroom	100	100%	Yes	100%	Yes
D106	94	1	Bedroom	100	100%	Yes	100%	Yes
D107	95	2	Bedroom	100	100%	Yes	100%	Yes
D107	96	2	LKD	200	70%	Yes	70%	Yes
D108	97	0	LKD	200	82%	Yes	90%	Yes
D108	98	1	Bedroom	100	100%	Yes	100%	Yes
D108	99	1	Bedroom	100	100%	Yes	100%	Yes
D108	100	1	Bedroom	100	100%	Yes	100%	Yes
D109	101	2	Bedroom	100	100%	Yes	100%	Yes
D109	102	2	LKD	200	69%	Yes	69%	Yes
D110	103	0	LKD	200	77%	Yes	90%	Yes
D110	104	1	Bedroom	100	100%	Yes	100%	Yes
D110	105	1	Bedroom	100	100%	Yes	100%	Yes
D110	106	1	Bedroom	100	100%	Yes	100%	Yes
D111	107	2	Bedroom	100	100%	Yes	100%	Yes

Unit Ref.	Room No.	Floor	Type Use	Req Lux	Meets BRE Criteria With Trees		Meets BRE Criteria Without Trees	
					% of Area Meeting Req Lux	Meets BRE Criteria	% of Area Meeting Req Lux	Meets BRE Criteria
D111	108	2	LKD	200	69%	Yes	69%	Yes
D112	109	0	LKD	200	73%	Yes	90%	Yes
D112	110	1	Bedroom	100	100%	Yes	100%	Yes
D112	111	1	Bedroom	100	100%	Yes	100%	Yes
D112	112	1	Bedroom	100	100%	Yes	100%	Yes
D113	113	2	Bedroom	100	100%	Yes	100%	Yes
D113	114	2	LKD	200	70%	Yes	70%	Yes
D114	1	0	LKD	200	99%	Yes	100%	Yes
D114	2	1	Bedroom	100	100%	Yes	100%	Yes
D114	3	1	Bedroom	100	100%	Yes	100%	Yes
D114	4	1	Bedroom	100	100%	Yes	100%	Yes
D115	5	2	Bedroom	100	100%	Yes	100%	Yes
D115	6	2	LKD	200	72%	Yes	71%	Yes
D368	2050	0	Bedroom	100	100%	Yes	100%	Yes
D368	2051	0	LKD	200	99%	Yes	99%	Yes
D369	2052	1	Bedroom	100	99%	Yes	99%	Yes
D369	2053	1	LKD	200	96%	Yes	97%	Yes
D370	2065	0	Bedroom	100	100%	Yes	100%	Yes
D370	2066	0	LKD	200	100%	Yes	100%	Yes
D371	2072	1	Bedroom	100	99%	Yes	99%	Yes
D371	2075	1	LKD	200	96%	Yes	98%	Yes
D372	2046	0	Bedroom	100	98%	Yes	100%	Yes
D372	2047	0	LKD	200	97%	Yes	97%	Yes
D373	2048	1	Bedroom	100	98%	Yes	99%	Yes
D373	2049	1	LKD	200	88%	Yes	96%	Yes
D374	2054	0	Bedroom	100	87%	Yes	100%	Yes
D374	2055	0	LKD	200	98%	Yes	98%	Yes
D375	2061	1	Bedroom	100	97%	Yes	97%	Yes
D375	2064	1	LKD	200	94%	Yes	96%	Yes
D376	1276	0	LKD	200	100%	Yes	100%	Yes
D376	1277	1	Bedroom	100	100%	Yes	100%	Yes
D376	1278	1	Bedroom	100	100%	Yes	100%	Yes
D376	1279	1	Bedroom	100	100%	Yes	100%	Yes
D377	1280	2	Bedroom	100	100%	Yes	100%	Yes
D377	1281	2	LKD	200	72%	Yes	73%	Yes
D378	79	0	LKD	200	83%	Yes	97%	Yes
D378	80	1	Bedroom	100	100%	Yes	100%	Yes
D378	81	1	Bedroom	100	100%	Yes	100%	Yes
D378	82	1	Bedroom	100	100%	Yes	100%	Yes
D379	83	2	Bedroom	100	100%	Yes	100%	Yes
D379	84	2	LKD	200	63%	Yes	64%	Yes
D380	73	0	LKD	200	77%	Yes	96%	Yes
D380	74	1	Bedroom	100	100%	Yes	100%	Yes
D380	75	1	Bedroom	100	100%	Yes	100%	Yes
D380	76	1	Bedroom	100	100%	Yes	100%	Yes
D381	77	2	Bedroom	100	100%	Yes	100%	Yes
D381	78	2	LKD	200	62%	Yes	63%	Yes
D382	67	0	LKD	200	78%	Yes	95%	Yes
D382	68	1	Bedroom	100	100%	Yes	100%	Yes
D382	69	1	Bedroom	100	100%	Yes	100%	Yes
D382	70	1	Bedroom	100	100%	Yes	100%	Yes
D383	71	2	Bedroom	100	100%	Yes	100%	Yes
D383	72	2	LKD	200	96%	Yes	97%	Yes
D384	61	0	LKD	200	79%	Yes	95%	Yes
D384	62	1	Bedroom	100	100%	Yes	100%	Yes
D384	63	1	Bedroom	100	100%	Yes	100%	Yes
D384	64	1	Bedroom	100	100%	Yes	100%	Yes
D385	65	2	Bedroom	100	100%	Yes	100%	Yes

Unit Ref.	Room No.	Floor	Type Use	Req Lux	Meets BRE Criteria With Trees		Meets BRE Criteria Without Trees	
					% of Area Meeting Req Lux	Meets BRE Criteria	% of Area Meeting Req Lux	Meets BRE Criteria
D385	66	2	LKD	200	64%	Yes	64%	Yes
D386	476	0	LKD	200	100%	Yes	100%	Yes
D386	481	1	Bedroom	100	100%	Yes	100%	Yes
D386	482	1	Bedroom	100	100%	Yes	100%	Yes
D386	484	1	Bedroom	100	100%	Yes	100%	Yes
D387	486	2	Bedroom	100	100%	Yes	100%	Yes
D387	489	2	LKD	200	99%	Yes	98%	Yes
D388	1270	0	LKD	200	95%	Yes	99%	Yes
D388	1271	1	Bedroom	100	100%	Yes	100%	Yes
D388	1272	1	Bedroom	100	100%	Yes	100%	Yes
D388	1273	1	Bedroom	100	100%	Yes	100%	Yes
D389	1274	2	Bedroom	100	100%	Yes	100%	Yes
D389	1275	2	LKD	200	71%	Yes	72%	Yes
D390	55	0	LKD	200	76%	Yes	93%	Yes
D390	56	1	Bedroom	100	100%	Yes	100%	Yes
D390	57	1	Bedroom	100	100%	Yes	100%	Yes
D390	58	1	Bedroom	100	100%	Yes	100%	Yes
D391	59	2	Bedroom	100	100%	Yes	100%	Yes
D391	60	2	LKD	200	63%	Yes	65%	Yes
D392	49	0	LKD	200	74%	Yes	96%	Yes
D392	50	1	Bedroom	100	100%	Yes	100%	Yes
D392	51	1	Bedroom	100	100%	Yes	100%	Yes
D392	52	1	Bedroom	100	99%	Yes	100%	Yes
D393	53	2	Bedroom	100	100%	Yes	100%	Yes
D393	54	2	LKD	200	59%	Yes	65%	Yes
D394	43	0	LKD	200	79%	Yes	96%	Yes
D394	44	1	Bedroom	100	100%	Yes	100%	Yes
D394	45	1	Bedroom	100	100%	Yes	100%	Yes
D394	46	1	Bedroom	100	99%	Yes	100%	Yes
D395	47	2	Bedroom	100	100%	Yes	100%	Yes
D395	48	2	LKD	200	58%	Yes	64%	Yes
D396	1637	0	LKD	200	100%	Yes	100%	Yes
D396	1642	1	Bedroom	100	100%	Yes	100%	Yes
D396	1643	1	Bedroom	100	100%	Yes	100%	Yes
D396	1645	1	Bedroom	100	100%	Yes	100%	Yes
D397	1647	2	Bedroom	100	100%	Yes	100%	Yes
D397	1650	2	LKD	200	100%	Yes	100%	Yes
D402	1025	0	LKD	200	100%	Yes	100%	Yes
D402	1030	1	Bedroom	100	100%	Yes	100%	Yes
D402	1031	1	Bedroom	100	100%	Yes	100%	Yes
D402	1033	1	Bedroom	100	98%	Yes	99%	Yes
D403	1035	2	Bedroom	100	100%	Yes	100%	Yes
D403	1038	2	LKD	200	51%	Yes	57%	Yes
D404	19	0	LKD	200	98%	Yes	98%	Yes
D404	20	1	Bedroom	100	100%	Yes	100%	Yes
D404	21	1	Bedroom	100	100%	Yes	100%	Yes
D404	22	1	Bedroom	100	98%	Yes	99%	Yes
D405	23	2	Bedroom	100	100%	Yes	100%	Yes
D405	24	2	LKD	200	53%	Yes	54%	Yes
D406	25	0	LKD	200	98%	Yes	98%	Yes
D406	26	1	Bedroom	100	100%	Yes	100%	Yes
D406	27	1	Bedroom	100	100%	Yes	100%	Yes
D406	28	1	Bedroom	100	82%	Yes	98%	Yes
D407	29	2	Bedroom	100	100%	Yes	100%	Yes
D407	30	2	LKD	200	50%	Yes	53%	Yes
D408	31	0	LKD	200	98%	Yes	98%	Yes
D408	32	1	Bedroom	100	100%	Yes	100%	Yes
D408	33	1	Bedroom	100	100%	Yes	100%	Yes

Unit Ref.	Room No.	Floor	Type Use	Req Lux	Meets BRE Criteria With Trees		Meets BRE Criteria Without Trees	
					% of Area Meeting Req Lux	Meets BRE Criteria	% of Area Meeting Req Lux	Meets BRE Criteria
D408	34	1	Bedroom	100	89%	Yes	99%	Yes
D409	35	2	Bedroom	100	100%	Yes	100%	Yes
D409	36	2	LKD	200	51%	Yes	56%	Yes
D410	37	0	LKD	200	98%	Yes	98%	Yes
D410	38	1	Bedroom	100	100%	Yes	100%	Yes
D410	39	1	Bedroom	100	100%	Yes	100%	Yes
D410	40	1	Bedroom	100	99%	Yes	99%	Yes
D411	41	2	Bedroom	100	100%	Yes	100%	Yes
D411	42	2	LKD	200	53%	Yes	59%	Yes
D412	115	0	LKD	200	100%	Yes	100%	Yes
D412	116	1	Bedroom	100	100%	Yes	100%	Yes
D412	117	1	Bedroom	100	100%	Yes	100%	Yes
D412	118	1	Bedroom	100	100%	Yes	100%	Yes
D413	119	2	Bedroom	100	100%	Yes	100%	Yes
D413	120	2	LKD	200	98%	Yes	100%	Yes
Total Meeting Criteria				**Yes**	**184**	**100%**	**184**	**100%**
				No	**0**	**0%**	**0**	**0%**
Total Rooms Analysed					**184**		**184**	

Appendix D – Sunlight Provision in New Development Detailed Results

Table 12 Sunlight Provision Results

Unit. Ref.	Room No.	Floor	Type Use	Meets BRE Criteria With Trees			Meets BRE Criteria Without Trees		
				Sunlight Exposure (Hours)	SE Rating	Compliance	Sunlight Exposure (Hours)	SE Rating	Compliance
D094	2019	0	LKD	5.8	High	Yes	5.8	High	Yes
D094	2024	1	Bedroom	3.8	Medium		3.8	Medium	
D094	2025	1	Bedroom	4.6	High		4.6	High	
D094	2027	1	Bedroom	0	Below Minimum		0	Below Minimum	
D095	2032	2	LKD	3	Medium	Yes	3	Medium	Yes
D095	2029	2	Bedroom	4.6	High		4.6	High	
D096	13	0	LKD	5.8	High	Yes	5.8	High	Yes
D096	14	1	Bedroom	3.8	Medium		3.8	Medium	
D096	15	1	Bedroom	4.6	High		4.6	High	
D096	16	1	Bedroom	0	Below Minimum		0	Below Minimum	
D097	18	2	LKD	2.7	Minimum	Yes	2.7	Minimum	Yes
D097	17	2	Bedroom	4.6	High		4.6	High	
D098	85	0	LKD	5.2	High	Yes	5.8	High	Yes
D098	86	1	Bedroom	3.8	Medium		3.8	Medium	
D098	87	1	Bedroom	4.6	High		4.6	High	
D098	88	1	Bedroom	0	Below Minimum		0	Below Minimum	
D099	90	2	LKD	2.7	Minimum	Yes	2.7	Minimum	Yes
D099	89	2	Bedroom	4.6	High		4.6	High	
D100	7	0	LKD	5.8	High	Yes	5.8	High	Yes
D100	8	1	Bedroom	3.8	Medium		3.8	Medium	
D100	9	1	Bedroom	4.6	High		4.6	High	
D100	10	1	Bedroom	0	Below Minimum		0	Below Minimum	
D101	12	2	LKD	2.7	Minimum	Yes	2.7	Minimum	Yes
D101	11	2	Bedroom	4.6	High		4.6	High	
D102	1264	0	LKD	5.5	High	Yes	5.8	High	Yes
D102	1265	1	Bedroom	3.8	Medium		3.8	Medium	
D102	1266	1	Bedroom	4.4	High		4.6	High	
D102	1267	1	Bedroom	0	Below Minimum		0	Below Minimum	
D103	1269	2	LKD	2.7	Minimum	Yes	2.7	Minimum	Yes
D103	1268	2	Bedroom	4.6	High		4.6	High	
D104	1238	0	LKD	5.8	High	Yes	5.8	High	Yes
D104	1243	1	Bedroom	3.8	Medium		3.8	Medium	
D104	1244	1	Bedroom	4.6	High		4.6	High	
D104	1246	1	Bedroom	0	Below Minimum		0	Below Minimum	
D105	1251	2	LKD	2.7	Minimum	Yes	2.7	Minimum	Yes
D105	1248	2	Bedroom	4.6	High		4.6	High	
D106	91	0	LKD	5.7	High	Yes	5.8	High	Yes
D106	92	1	Bedroom	3.8	Medium		3.8	Medium	
D106	93	1	Bedroom	4.4	High		4.6	High	
D106	94	1	Bedroom	0	Below Minimum		0	Below Minimum	
D107	96	2	LKD	2.7	Minimum	Yes	2.7	Minimum	Yes
D107	95	2	Bedroom	4.6	High		4.6	High	
D108	97	0	LKD	5.8	High	Yes	5.8	High	Yes
D108	98	1	Bedroom	3.8	Medium		3.8	Medium	
D108	99	1	Bedroom	4.6	High		4.6	High	
D108	100	1	Bedroom	0	Below Minimum		0	Below Minimum	
D109	102	2	LKD	2.7	Minimum	Yes	2.7	Minimum	Yes
D109	101	2	Bedroom	4.6	High		4.6	High	
D110	103	0	LKD	5.8	High	Yes	5.8	High	Yes
D110	104	1	Bedroom	3.8	Medium		3.8	Medium	
D110	105	1	Bedroom	4.6	High		4.6	High	
D110	106	1	Bedroom	0	Below Minimum		0	Below Minimum	
D111	108	2	LKD	2.6	Minimum	Yes	2.6	Minimum	Yes

Unit. Ref.	Room No.	Floor	Type Use	Meets BRE Criteria With Trees			Meets BRE Criteria Without Trees		
				Sunlight Exposure (Hours)	SE Rating	Compliance	Sunlight Exposure (Hours)	SE Rating	Compliance
D111	107	2	Bedroom	4.6	High		4.6	High	
D112	109	0	LKD	5.4	High	Yes	5.8	High	Yes
D112	110	1	Bedroom	3.7	Medium		3.8	Medium	
D112	111	1	Bedroom	4	Medium		4.6	High	
D112	112	1	Bedroom	0	Below Minimum		0	Below Minimum	
D113	114	2	LKD	2.7	Minimum	Yes	2.7	Minimum	Yes
D113	113	2	Bedroom	4.6	High		4.6	High	
D114	1	0	LKD	7.2	High	Yes	9.3	High	Yes
D114	2	1	Bedroom	3.8	Medium		3.8	Medium	
D114	3	1	Bedroom	4.6	High		4.6	High	
D114	4	1	Bedroom	0	Below Minimum		0	Below Minimum	
D115	6	2	LKD	3	Medium	Yes	3	Medium	Yes
D115	5	2	Bedroom	4.6	High		4.6	High	
D368	2051	0	LKD	0.4	Below Minimum	Yes	0.4	Below Minimum	Yes
D368	2050	0	Bedroom	5.1	High		5.8	High	
D369	2053	1	LKD	5.9	High	Yes	5.9	High	Yes
D369	2052	1	Bedroom	0	Below Minimum		0	Below Minimum	
D370	2066	0	LKD	0.4	Below Minimum	Yes	0.4	Below Minimum	Yes
D370	2065	0	Bedroom	3.9	Medium		5.3	High	
D371	2075	1	LKD	5.2	High	Yes	5.9	High	Yes
D371	2072	1	Bedroom	0	Below Minimum		0	Below Minimum	
D372	2047	0	LKD	0.4	Below Minimum	Yes	0.4	Below Minimum	Yes
D372	2046	0	Bedroom	4.9	High		5.8	High	
D373	2049	1	LKD	5.9	High	Yes	5.9	High	Yes
D373	2048	1	Bedroom	0	Below Minimum		0	Below Minimum	
D374	2055	0	LKD	0.4	Below Minimum	Yes	0.4	Below Minimum	Yes
D374	2054	0	Bedroom	4.2	High		5.3	High	
D375	2064	1	LKD	5.9	High	Yes	5.9	High	Yes
D375	2061	1	Bedroom	0	Below Minimum		0	Below Minimum	
D376	1276	0	LKD	8.9	High	Yes	9.5	High	Yes
D376	1277	1	Bedroom	5.6	High		5.6	High	
D376	1278	1	Bedroom	6.3	High		6.3	High	
D376	1279	1	Bedroom	0	Below Minimum		0	Below Minimum	
D377	1281	2	LKD	0.8	Below Minimum	Yes	0.8	Below Minimum	Yes
D377	1280	2	Bedroom	6.3	High		6.3	High	
D378	79	0	LKD	7.6	High	Yes	7.8	High	Yes
D378	80	1	Bedroom	5.6	High		5.6	High	
D378	81	1	Bedroom	6.3	High		6.3	High	
D378	82	1	Bedroom	0	Below Minimum		0	Below Minimum	
D379	84	2	LKD	0.8	Below Minimum	Yes	0.8	Below Minimum	Yes
D379	83	2	Bedroom	6.3	High		6.3	High	
D380	73	0	LKD	7.5	High	Yes	7.8	High	Yes
D380	74	1	Bedroom	5.6	High		5.6	High	
D380	75	1	Bedroom	6.3	High		6.3	High	
D380	76	1	Bedroom	0	Below Minimum		0	Below Minimum	
D381	78	2	LKD	0.8	Below Minimum	Yes	0.8	Below Minimum	Yes
D381	77	2	Bedroom	6.3	High		6.3	High	
D382	67	0	LKD	7.8	High	Yes	7.8	High	Yes
D382	68	1	Bedroom	5.6	High		5.6	High	
D382	69	1	Bedroom	6.3	High		6.3	High	
D382	70	1	Bedroom	0	Below Minimum		0	Below Minimum	
D383	72	2	LKD	0.8	Below Minimum	Yes	0.8	Below Minimum	Yes
D383	71	2	Bedroom	6.3	High		6.3	High	
D384	61	0	LKD	7.5	High	Yes	7.8	High	Yes
D384	62	1	Bedroom	5.6	High		5.6	High	
D384	63	1	Bedroom	6.3	High		6.3	High	
D384	64	1	Bedroom	0	Below Minimum		0	Below Minimum	
D385	66	2	LKD	0.8	Below Minimum	Yes	0.8	Below Minimum	Yes
D385	65	2	Bedroom	6.3	High		6.3	High	

Unit. Ref.	Room No.	Floor	Type Use	Meets BRE Criteria With Trees			Meets BRE Criteria Without Trees		
				Sunlight Exposure (Hours)	SE Rating	Compliance	Sunlight Exposure (Hours)	SE Rating	Compliance
D386	476	0	LKD	7.8	High	Yes	7.8	High	Yes
D386	481	1	Bedroom	5.6	High		5.6	High	
D386	482	1	Bedroom	6.3	High		6.3	High	
D386	484	1	Bedroom	0	Below Minimum		0	Below Minimum	
D387	489	2	LKD	0.8	Below Minimum	Yes	0.8	Below Minimum	Yes
D387	486	2	Bedroom	6.3	High		6.3	High	
D388	1270	0	LKD	7.6	High	Yes	7.8	High	Yes
D388	1271	1	Bedroom	5.6	High		5.6	High	
D388	1272	1	Bedroom	6.3	High		6.3	High	
D388	1273	1	Bedroom	0	Below Minimum		0	Below Minimum	
D389	1275	2	LKD	0.8	Below Minimum	Yes	0.8	Below Minimum	Yes
D389	1274	2	Bedroom	6.3	High		6.3	High	
D390	55	0	LKD	7.8	High	Yes	7.8	High	Yes
D390	56	1	Bedroom	5.6	High		5.6	High	
D390	57	1	Bedroom	6.3	High		6.3	High	
D390	58	1	Bedroom	0	Below Minimum		0	Below Minimum	
D391	60	2	LKD	0.8	Below Minimum	Yes	0.8	Below Minimum	Yes
D391	59	2	Bedroom	6.3	High		6.3	High	
D392	49	0	LKD	7.5	High	Yes	7.8	High	Yes
D392	50	1	Bedroom	5.6	High		5.6	High	
D392	51	1	Bedroom	6.3	High		6.3	High	
D392	52	1	Bedroom	0	Below Minimum		0	Below Minimum	
D393	54	2	LKD	0.8	Below Minimum	Yes	0.8	Below Minimum	Yes
D393	53	2	Bedroom	6.3	High		6.3	High	
D394	43	0	LKD	7.7	High	Yes	7.8	High	Yes
D394	44	1	Bedroom	5.6	High		5.6	High	
D394	45	1	Bedroom	6.3	High		6.3	High	
D394	46	1	Bedroom	0	Below Minimum		0	Below Minimum	
D395	48	2	LKD	0.8	Below Minimum	Yes	0.8	Below Minimum	Yes
D395	47	2	Bedroom	6.3	High		6.3	High	
D396	1637	0	LKD	7.5	High	Yes	7.8	High	Yes
D396	1642	1	Bedroom	5.6	High		5.6	High	
D396	1643	1	Bedroom	6.3	High		6.3	High	
D396	1645	1	Bedroom	0.4	Below Minimum		1.1	Below Minimum	
D397	1650	2	LKD	1.8	Minimum	Yes	2	Minimum	Yes
D397	1647	2	Bedroom	6.3	High		6.3	High	
D402	1025	0	LKD	9.4	High	Yes	9.4	High	Yes
D402	1030	1	Bedroom	5.6	High		5.6	High	
D402	1031	1	Bedroom	6.9	High		6.9	High	
D402	1033	1	Bedroom	0	Below Minimum		0	Below Minimum	
D403	1038	2	LKD	0.1	Below Minimum	Yes	0.1	Below Minimum	Yes
D403	1035	2	Bedroom	6.9	High		6.9	High	
D404	19	0	LKD	8.5	High	Yes	8.5	High	Yes
D404	20	1	Bedroom	5.6	High		5.6	High	
D404	21	1	Bedroom	6.9	High		6.9	High	
D404	22	1	Bedroom	0	Below Minimum		0	Below Minimum	
D405	24	2	LKD	0.1	Below Minimum	Yes	0.1	Below Minimum	Yes
D405	23	2	Bedroom	6.9	High		6.9	High	
D406	25	0	LKD	8.5	High	Yes	8.5	High	Yes
D406	26	1	Bedroom	5.6	High		5.6	High	
D406	27	1	Bedroom	6.9	High		6.9	High	
D406	28	1	Bedroom	0	Below Minimum		0	Below Minimum	
D407	30	2	LKD	0.1	Below Minimum	Yes	0.1	Below Minimum	Yes
D407	29	2	Bedroom	6.9	High		6.9	High	
D408	31	0	LKD	8.5	High	Yes	8.5	High	Yes
D408	32	1	Bedroom	5.6	High		5.6	High	
D408	33	1	Bedroom	6.9	High		6.9	High	
D408	34	1	Bedroom	0	Below Minimum		0	Below Minimum	
D409	36	2	LKD	0.1	Below Minimum	Yes	0.1	Below Minimum	Yes

Unit. Ref.	Room No.	Floor	Type Use	Meets BRE Criteria With Trees			Meets BRE Criteria Without Trees		
				Sunlight Exposure (Hours)	SE Rating	Compliance	Sunlight Exposure (Hours)	SE Rating	Compliance
D409	35	2	Bedroom	6.9	High		6.9	High	
D410	37	0	LKD	8.5	High	Yes	8.5	High	Yes
D410	38	1	Bedroom	5.6	High		5.6	High	
D410	39	1	Bedroom	6.9	High		6.9	High	
D410	40	1	Bedroom	0	Below Minimum		0	Below Minimum	
D411	42	2	LKD	0.1	Below Minimum	Yes	0.1	Below Minimum	Yes
D411	41	2	Bedroom	6.9	High		6.9	High	
D412	115	0	LKD	8.3	High	Yes	8.5	High	Yes
D412	116	1	Bedroom	5.6	High		5.6	High	
D412	117	1	Bedroom	6.9	High		6.9	High	
D412	118	1	Bedroom	0	Below Minimum		0	Below Minimum	
D413	120	2	LKD	0.9	Below Minimum	Yes	0.9	Below Minimum	Yes
D413	119	2	Bedroom	6.9	High		6.9	High	
Total Units Assessed						**64**	**Total Units Assessed**		**64**
Units Compliant w/ Trees						**64**	**Units Compliant w/o Trees**		**64**
Units Compliant (%) w/ Trees						**100%**	**Units Compliant (%) w/o Trees**		**100%**

Appendix E – Sunlight to Amenity Areas within New Development

Table 13 Sunlight to Amenity areas Results

Amenity Area	Area m²	Area Receiving 2 Hours Light %	Meets BRE Criteria
All Amenity Areas	7707	99%	Yes
Individual Areas			
COS 01	224	70%	Yes
COS 02	236	99%	Yes
COS 03	416	100%	Yes
POS 04	1584	100%	Yes
POS 05	2862	100%	Yes
POS 06	1534	100%	Yes
POS 07	851	100%	Yes



Figure 11 Sunlight to Courtyard on 21st March

Appendix F – Loss of Sunlight to Existing Amenity Areas

Table 14 Sunlight Access to Neighbouring Amenity Areas

Amenity Area	Area m²	Area Receiving 2 Hrs of Sunlight - Proposed %	Meets BRE Criteria
Highfield Lodge – Y25 Y179	1059	100%	Yes
Kilnahue Ln 1A – Y25 PX99	1326	100%	Yes
Kilnahue Ln 1B – Y25 PX99	542	100%	Yes
Muskerry House – Y25 D288	2195	100%	Yes
Avonlea – Y25 RX89	1937	100%	Yes

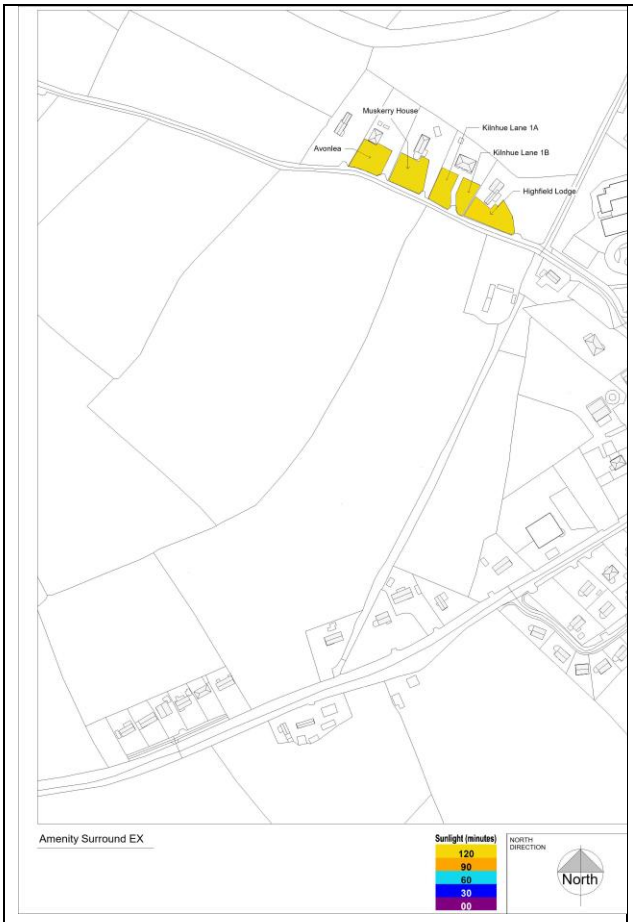


Figure 12 Amenity Area - Existing



Figure 13 Amenity Area - Proposed

Appendix G – Site Shadow Diagrams

A shadow study was conducted to indicate the shadows cast by the proposal throughout the year. The analysis was run at hourly intervals during daylight hours on:

- 21st March – Spring Equinox
- 21st June – Summer Solstice
- 21st December – Winter Solstice

The BRE Guide recommends:

"If a space is used all year round, the equinox (21 March) is the best date for which to prepare shadow plots as it gives an average level of shadowing. Lengths of shadows at the autumn equinox (21 September) will be the same as those for 21 March, so a separate set of plots for September is not required."[32]

And

"As an optional addition, plots for summertime (for example 21 June) may be helpful as they will show the reduced shadowing then, although it should be borne in mind that 21 June represents the best case of minimum shadow, and that shadows for the rest of the year will be longer. Conversely if winter shadows (e.g. 21 December) are plotted, even low buildings will cast long shadows. In a built-up area, it is common for large areas of the ground to be in shadow in December."[33]

See Next Page.

[32] BRE Guide, 3.3.14

[33] BRE Guide, 3.3.15

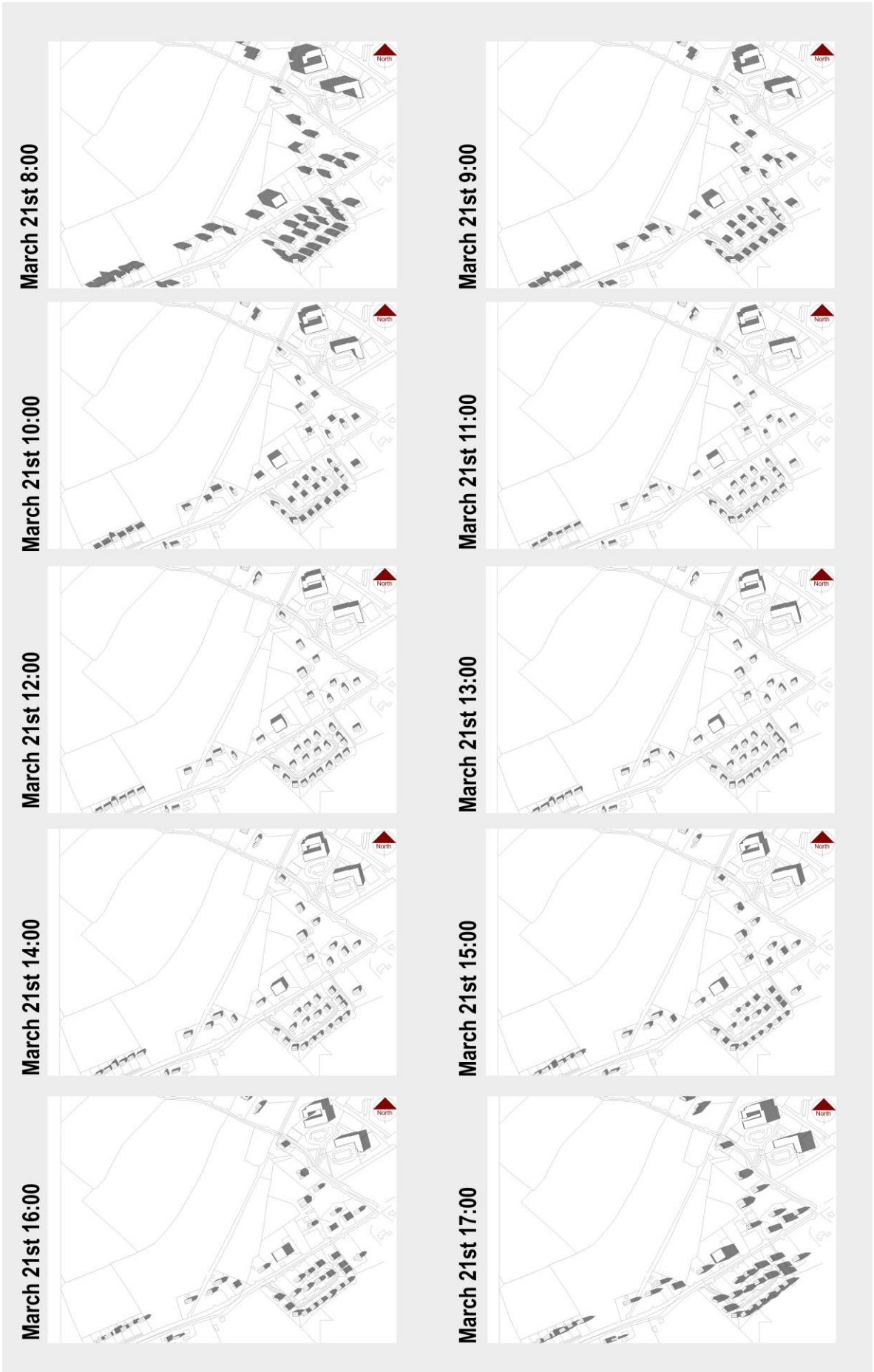


Figure 14 Shadow Diagrams - Existing- March 21st Spring Equinox

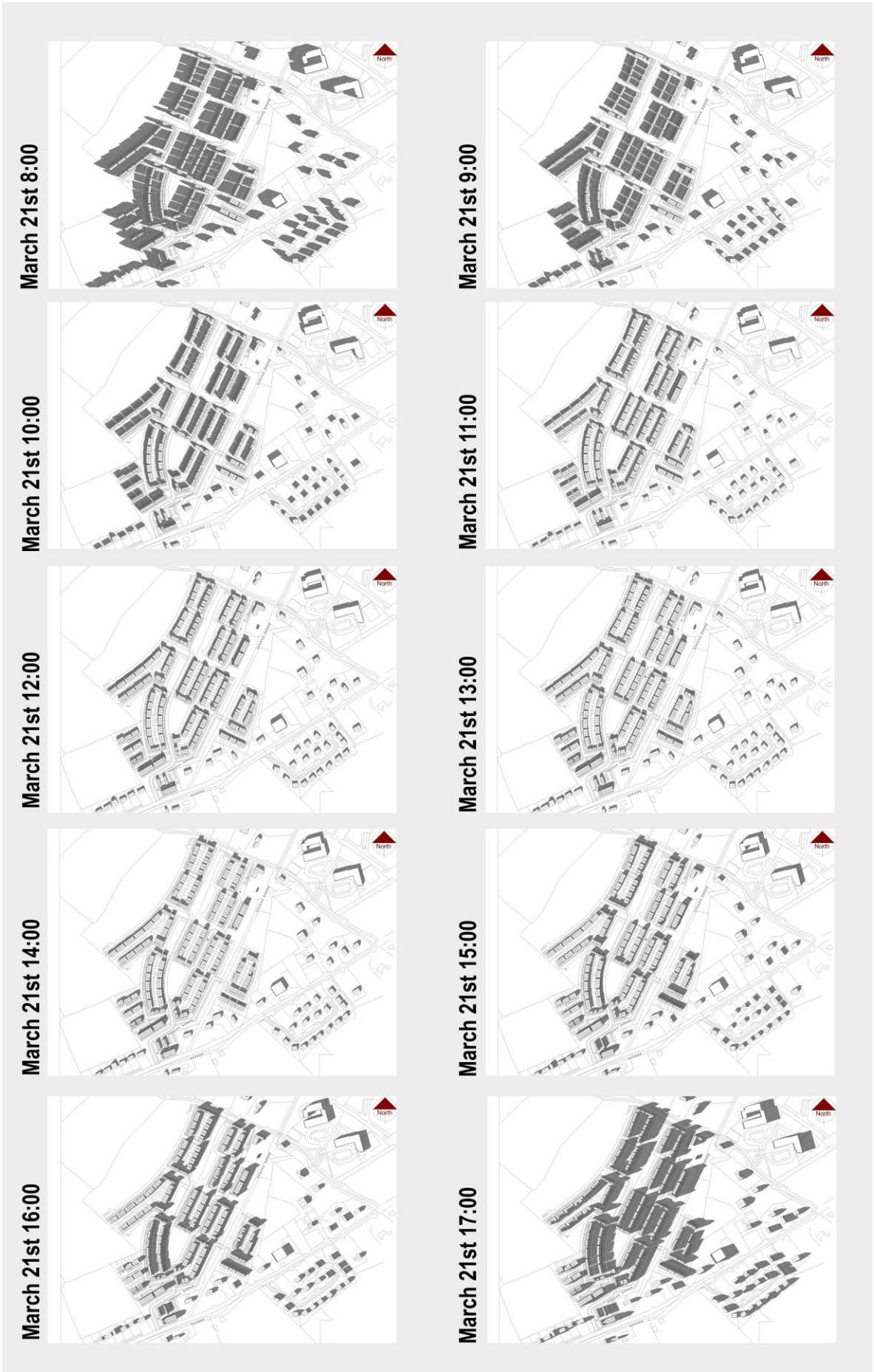


Figure 15 Shadow Diagrams – Proposed - March 21st Spring Equinox

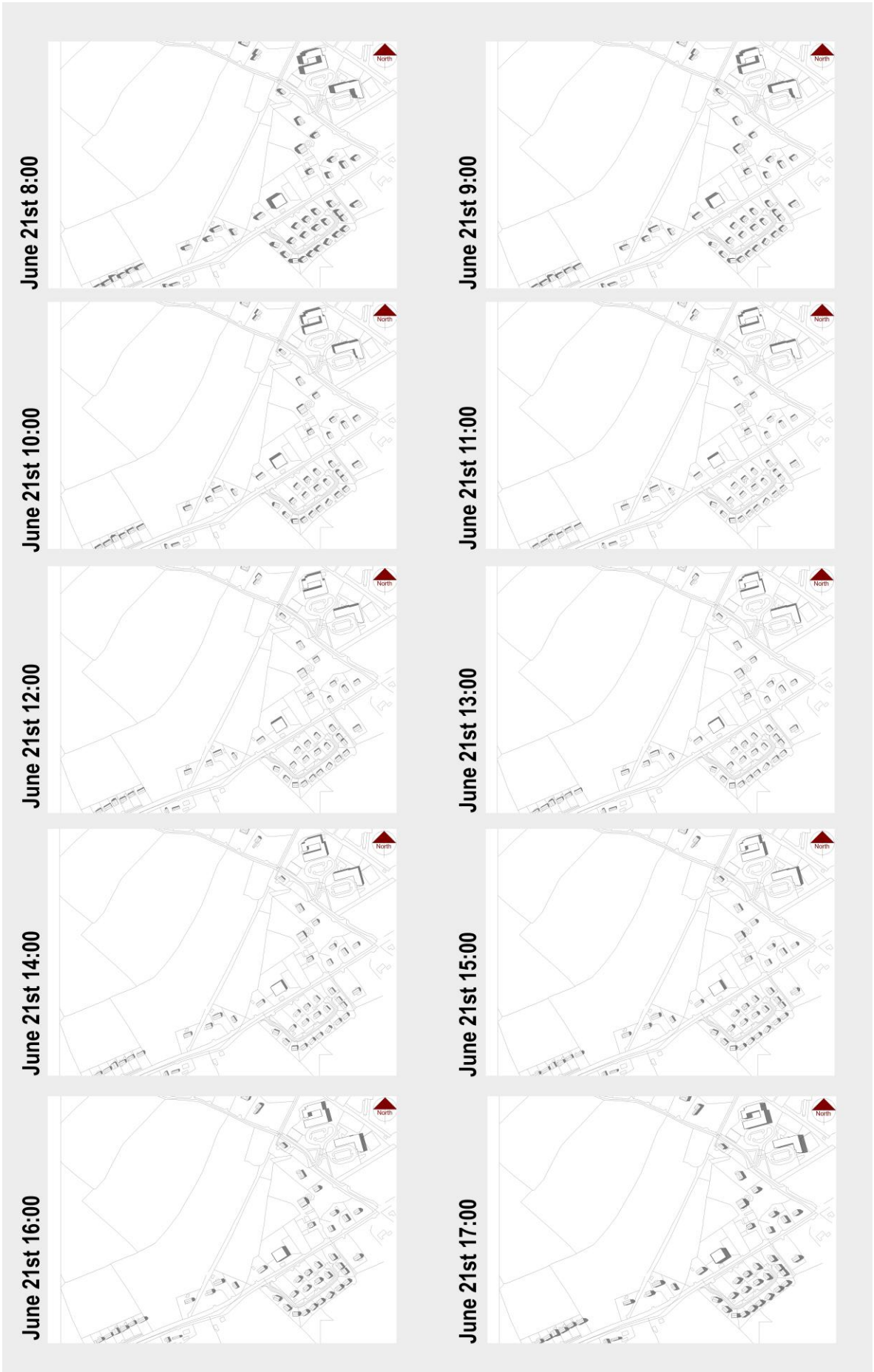


Figure 16 Shadow Diagrams - Existing - June 21st Summer Solstice

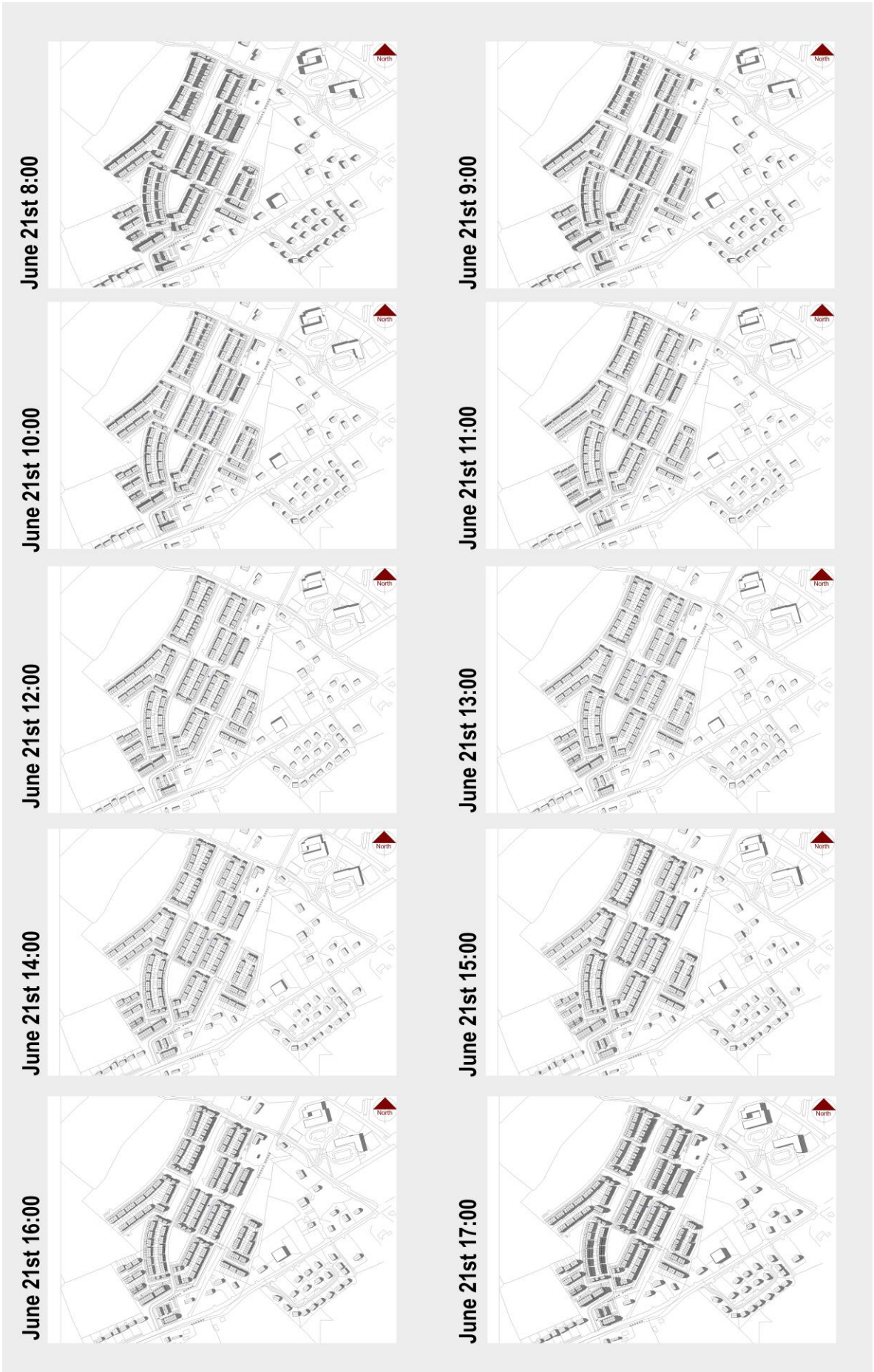


Figure 17 Shadow Diagrams - Proposed - June 21st Summer Solstice

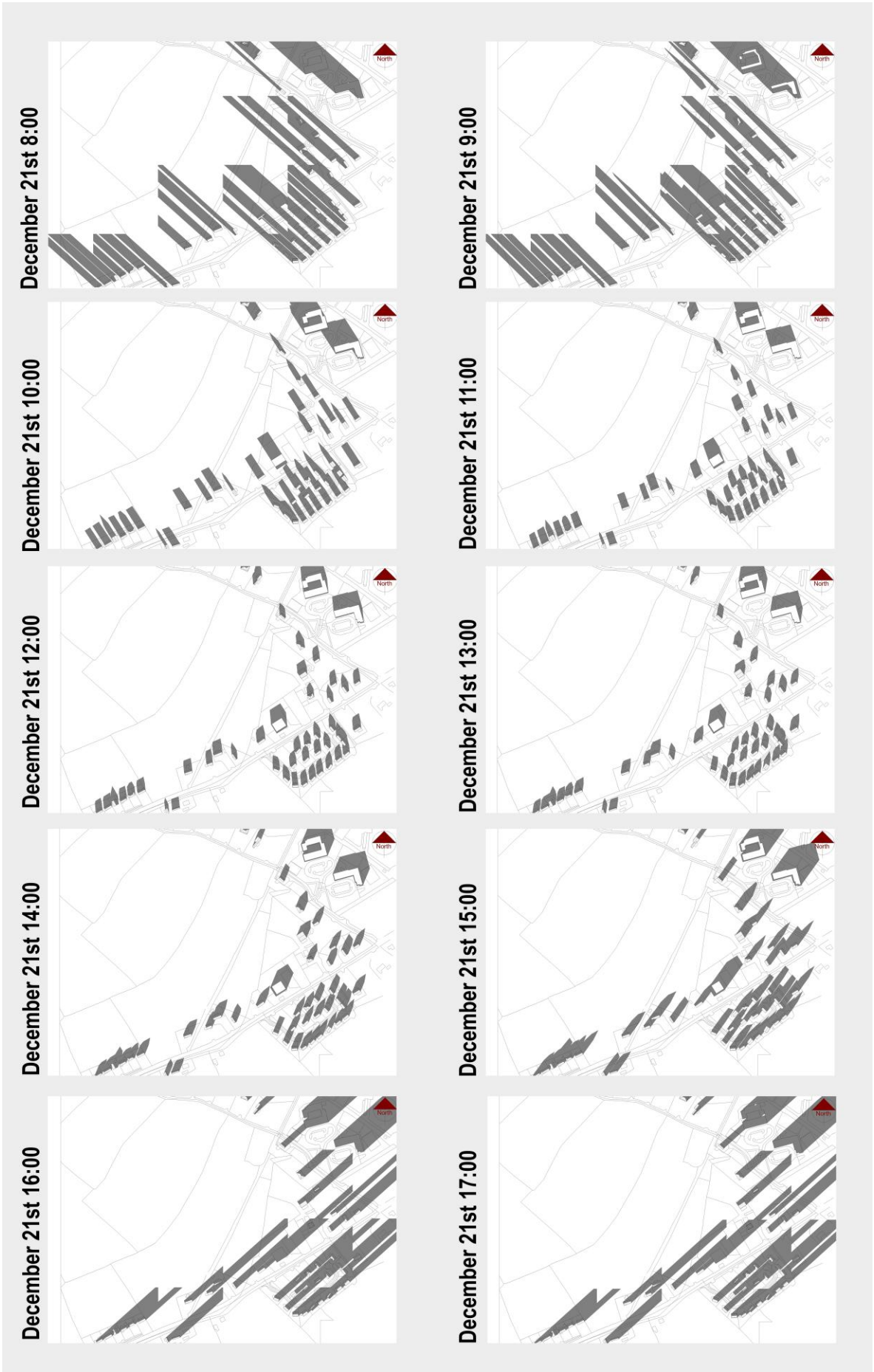


Figure 18 Shadow Diagrams - Existing – December 21st Winter Solstice

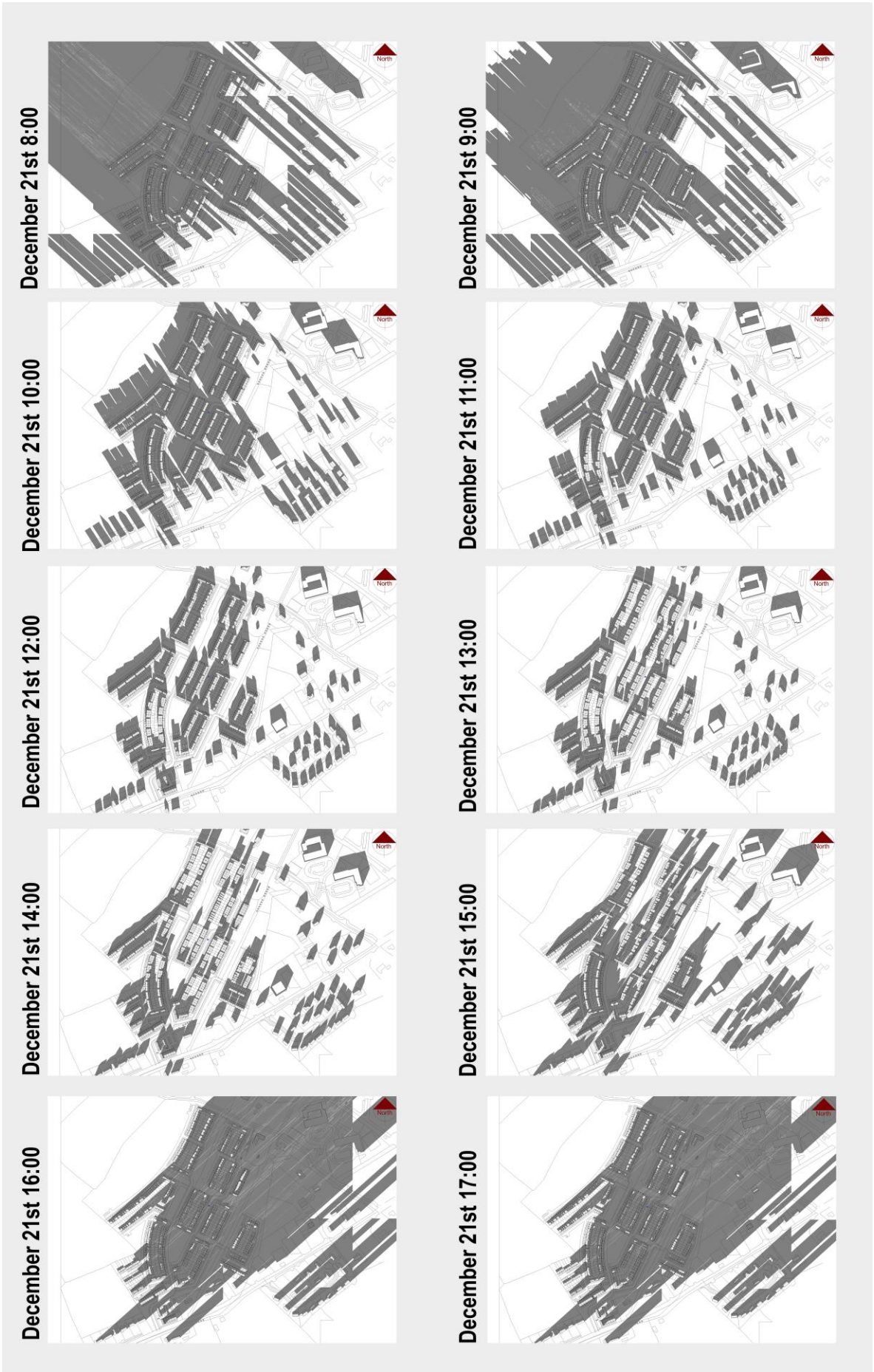


Figure 19 Shadow Diagrams - Proposed – December 21st Winter Solstice

End of Report