Daylight and Sunlight Analysis

Proposed Development at Galway Port

Prepared by Model Works Ltd

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MODEL WORKS

Executive Summary

Model Works was commissioned to carry out a Daylight, Sunlight, and Overshadowing assessment on the proposed residential development at Galway Port.

The report assesses the proposal with respect to daylight and sunlight provision to the proposed development. 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 performs very well with 89% of the 911 rooms assessed achieving compliance with the BRE criteria for daylight when assessed without trees and 87% when assessed with trees.

Sunlight

Again, the scheme performs very well with 100% of the 356 units achieving compliance with the BRE criteria for sunlight when assessed without trees and 98% when assessed with trees.

Amenity Area

The scheme includes seven amenity spaces, four communal opens spaces, two public open spaces, and a creche activity area, totalling circa 6,000sqm and all seven areas achieve compliance for sun on the ground.

Neighbouring Environment

The scheme is located on a brown field site in the docklands area with very few neighbouring buildings. Only one of which required assessment, the Texaco fuel station to the northwest of the site and only one window on the first floor facing the proposal was assessed.

Daylight

The one window which was assessed failed to meet the BRE guide for daylight, however the room it serves is a staff room which would only be in occasional use throughout the day and so the impact is assessed as **Minor**.

Sunlight

Like the daylight assessment, only the Texaco fuel station required a detailed assessment, and it achieved the BRE criteria for both Annual and Winter Probable Sunlight Hours, therefore the impact is **Negligible**.

Amenity Areas

The site location is currently an industrial area and there are no private or public amenity areas within the vicinity which required assessment.

Galway Port Masterplan

A supplementary assessment was also carried out to determine the potential impact the proposed development may have on the overall Galway Port masterplan. This analysis concluded that while the adjacent masterplan building would experience an impact, as would be expected of any medium to high density development, the magnitude would be assessed as minor to moderate. This indicates that the impact on the masterplan buildings by the proposed scheme would, *"alters the character of the environment in a manner that is consistent with existing and emerging baseline trends."*

Contents

1.0 Introduction

The Land Development Agency intends to apply to Galway City Council for permission for a 'Large-Scale Residential Development' (LRD) at a site of 1.621 Ha in Galway Port at Dock Road and Lough Atalia Road, Galway City, and extending to include parts of both roads for road infrastructure works and water services infrastructure works.

The proposed development principally consists of: the demolition of the existing office / bus depot building (370.2 sq m) and ancillary building (26.0 sq m); the partial demolition of the existing ESB sub-station and ancillary building (67.4 sq m); the demolition of existing boundary walls at the south-west and north-west; and the construction of a mixed-use development.

The proposed mixed-use development primarily comprises: 356 No. residential apartments (172 No. 1-bed, 169 No. 2-bed and 15 No. 3-bed); crèche (255.9 sq m); 2 No. café/restaurant units (totalling 428.4 sq m); and 1 No. retail unit (156.0 sq m).

The development has a total floor area of 32,096.0 sq m and is primarily proposed in 4 No. blocks (identified as A–D) that generally range in height from 6 No. to 13 No. storeys: Block A ranges from 6 No. to 9 No. storeys; Block B ranges from 6 No. to 11 No. storeys; Block C is 6 No. storeys; and Block D ranges from 6 No. to 13 No. storeys.

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

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). **(Apartment Guidelines)**
- Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024) **(Sustainable Residential Development)**
- 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 (as amended). **(Urban Development and Building Heights)**
- Galway City Development Plan 2023-2029 (2023) (**Galway City 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."[1]

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."[2]

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."[3]

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

[1] BRE Guide: Summary
[2] BRE Guide: 1.6
[3] BRE Guide: 1.7

2.2. British Standard 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 it 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."[4]

2.3. Irish Standard IS 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. 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."[5]

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."[6]

[4] BS EN 17037: NA1

[5] Planning Design Standards for Apartments: 3.4

[6] Planning Design Standards for Apartments: 6.1

2.5. 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."[7]

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."

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'."[8] (Note, this version of the BRE guideline has been superseded by the 2022 edition)

2.7. Galway City Development Plan 2023-2029

The Galway City Development Plan 2023 – 2029 sets out the vision for the development of Galway city over the lifetime of the plan. It includes Development Standards and how they should be monitored and implemented. In relation to Daylight and Sunlight Assessment it states:

"An assessment of all visual and environmental impacts including microclimate, daylight and sunlight, overlooking, overshadowing, impact on skyline and views, ecological assets and green spaces and the provision of appropriate mitigation where required."[9]

And

"…development shall be guided by the quantitative performance approaches and recommendations under the 'Site Layout Planning for Daylight and Sunlight' (2nd edition): A Guideline to Good Practice (BRE 2011) and BS 8206-2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting' or any updated guidance."[10]

[7] Sustainable Residential Development 5.3.7

[8] Urban Development and Building Heights 3.2

[9] Galway City Development Plan: Section 8.8

[10] Galway City Development Plan: Section 11.3.1 (e)

The 2011 BRE Guide has been withdrawn and replaced with the 2022 Guide, refer to 2.1 above. We will therefore use the current 2022 BRE Guide as the reference guide 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

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.

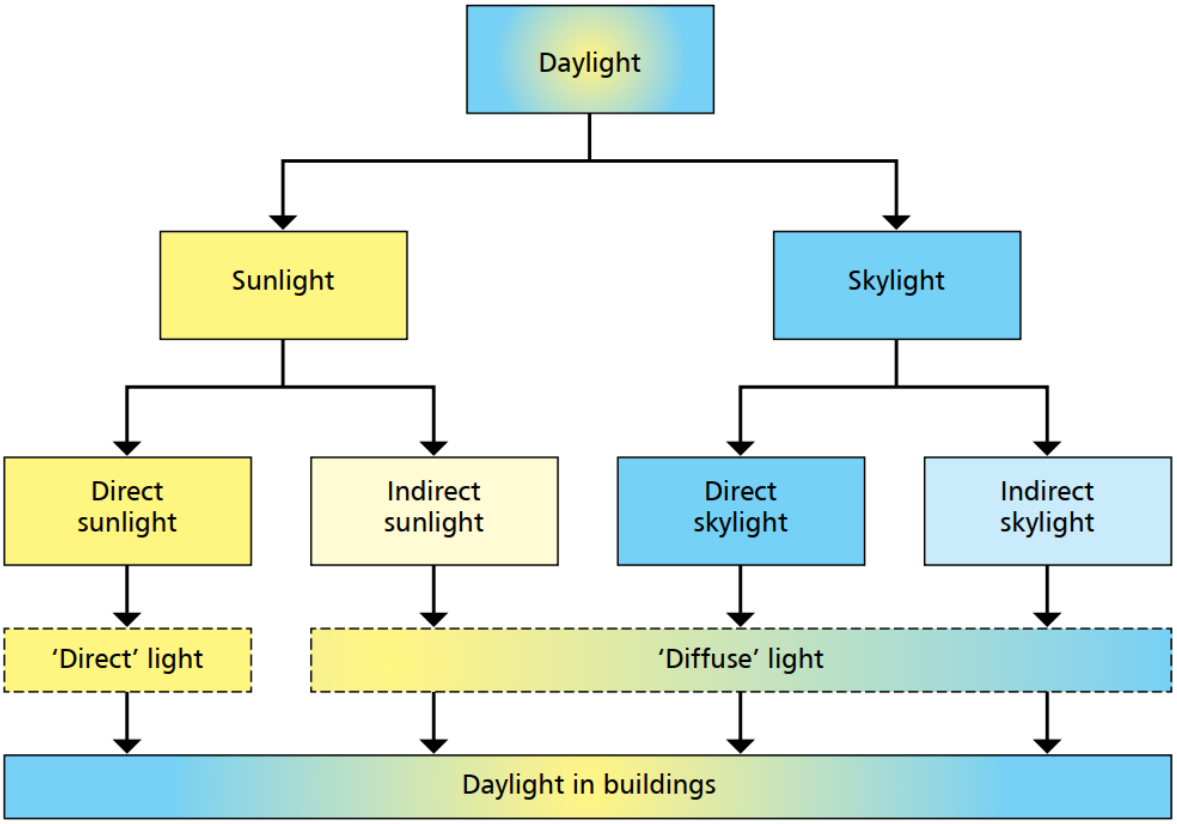


Figure 2 Contributions to Daylight in Buildings

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

The 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 New 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 Galway (IRL_NW_Galway.039640_TMYx.epw) was used for daylight calculations, Galway 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

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:

[12] EN 17037 : 5.1.1

[13] BRE Guide : C22

"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 (BRE/BS EN 17037)

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.[17] 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.

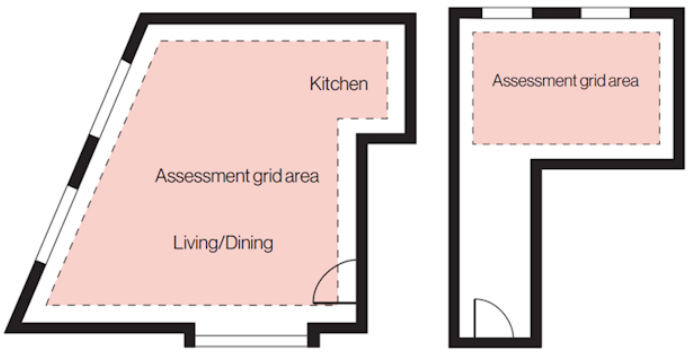


Figure 3 Assessment area examples for various room shapes.

[14] BRE Guide: G2.3
[15] BRE Guide: G2.4
[16] BRE Guide: C16
[17] BRE Guide: C28

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 performs well for daylight provision with 89% of all rooms meeting the BRE criteria when assessed without trees and 87% when trees are included. It is inevitable in any medium-high density apartment scheme that individual blocks will have an impact on the light reaching other blocks and result in some rooms failing to achieve compliance with the BRE Guidelines. As stated in the BRE Guide *"Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design."*[18]

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

Block	Number of Units	Habitable Rooms	Meets Criteria with Trees	Meets Criteria no Trees
All Blocks	356	911	87%	89%
Individual Blocks				
Block A	**81**	**209**	**95%**	**96%**
- LKD		81	89%	89%
- Bedrooms		128	99%	100%
Block B	**105**	**269**	**86%**	**87%**
- LKD		100	78%	79%
- Bedrooms		169	90%	91%
Block C	**66**	**166**	**70%**	**72%**
- LKD		66	65%	70%
- Bedrooms		100	73%	73%
Block D	**104**	**267**	**94%**	**97%**
- LKD		100	89%	92%
- Bedrooms		167	98%	100%

Where units have failed to achieve compliance with the BRE Guidelines, the designers have included compensatory design measure, refer to section 7.0.

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:

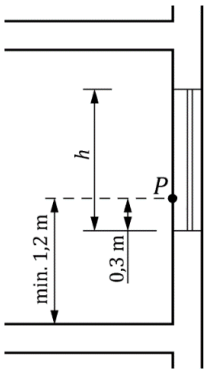
- *at least one main window wall faces within 90° of due south and*
- *a habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 March. This is assessed at the inside centre of the window(s); sunlight received by different windows can be added provided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

[18] BRE Guide: 1.6

[19] BRE Guide: 3.1.15

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

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

5.2.3. Summary of Results

The scheme performs excellently for sunlight provision with 100% of all units achieving compliance with the BRE criteria when assessed without trees and 98% with trees.

Table 8 Sunlight Exposure Results Summary

Dwelling Type	Units	Achieved BRE Target – with Trees (%)	Achieved BRE Target – No Trees (%)
All Blocks	356	98%	100%
Individual Blocks			
Block A	81	100%	100%
Block B	105	100%	100%
Block C	66	100%	100%
Block D	104	93%	100%

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

[20] BRE Guide: G3.2

[21] BRE Guide: G3.4

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)."*[22] [Emphasis added.]

5.3.2. Summary of Results

The scheme includes seven amenity spaces, four communal opens spaces (COS), two public open spaces (POS), and a creche activity area, totalling circa 6,000sqm and all seven areas achieve compliance for sun on the ground.

Tab le 9 Sunlight Provision to Amenity Spaces

Amenity Area	Area m²	Area Receiving 2 Hrs of Sunlight - Proposed %	Meets BRE Criteria
COS 01	470	99%	Yes
COS 02	271	52%	Yes
COS 03	1,053	63%	Yes
COS 04	388	100%	Yes
Creche	74	65%	Yes
POS 01	3,335	100%	Yes
POS 02	468	89%	Yes

Despite all amenity areas achieving compliance with the BRE Guide, a supplementary assessment was carried out to determine the level of sunlight reaching the spaces later in the year. Table 10 displays the percentages of the areas receiving at least two hours of sunlight on 21st April, a month later than the BRE assessment date of 21st March. COS 1 and 4 continue to perform very well, and COS 3, containing the toddler playground, sees a material improvement in its result, indicating increased levels of sunlight in the warmer months when it is likely to be in greatest use.

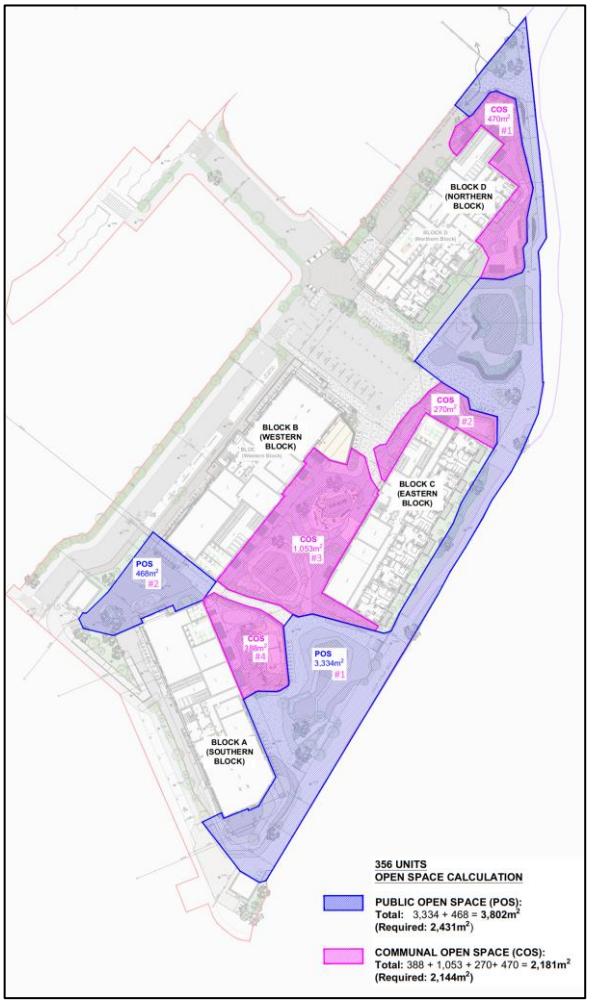


Figure 4 Amenity Areas

[22] BRE Guide 2022 : G4.1

Table 10 Sunlight Provision– 21st April

Amenity Area	Area m²	Area Receiving 2 Hrs of Sunlight - Proposed %
COS 01	470	99%
COS 02	271	69%
COS 03	1,053	91%
COS 04	388	100%
Creche	74	65%
POS 01	3,335	100%
POS 02	468	93%

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

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

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 and the reference point is in the external plane of the window 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."[23] 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."[24] Refer to Figure 7 *below.*

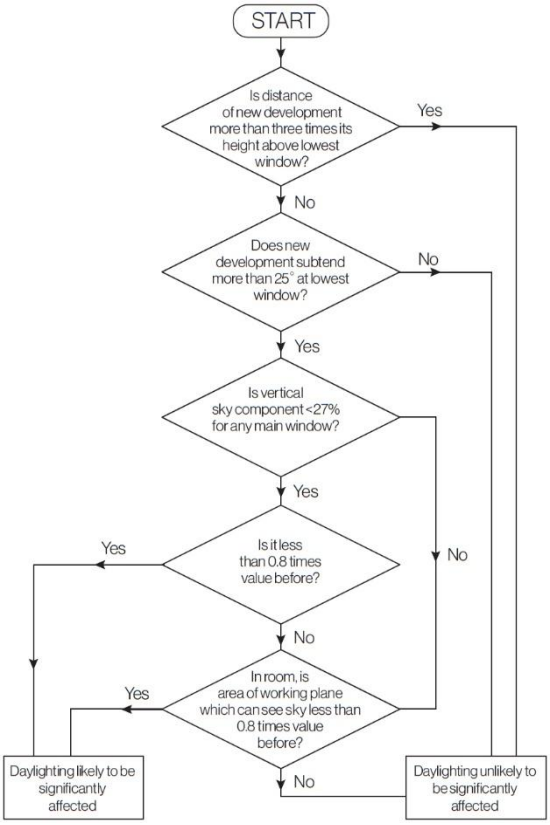


Figure 5 Decision chart: diffuse daylight in existing buildings

[23] BRE Guide: 2.2.4

[24] BRE Guide: 2.2.5

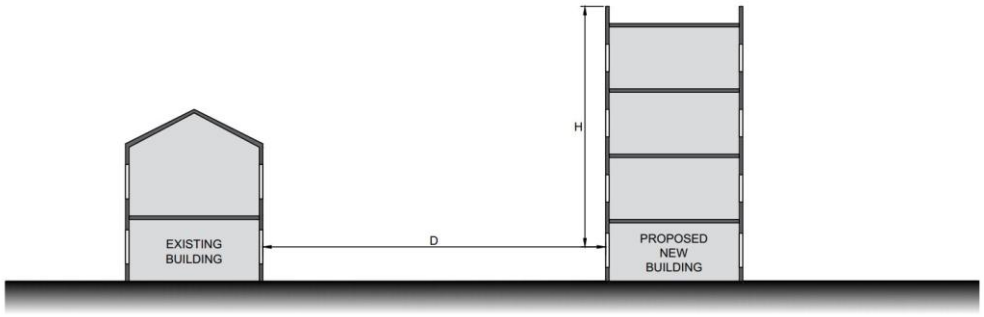


Figure 6 Distance test for Daylight Impact to Existing Buildings (Is D > 3xH)

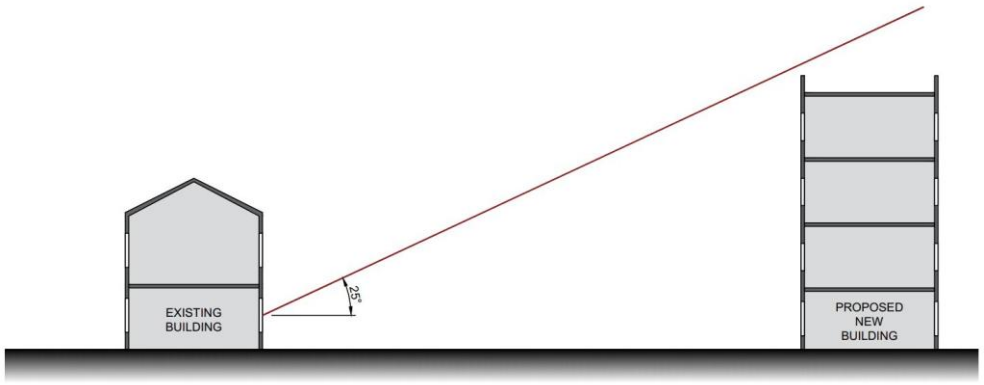


Figure 7 25° Angle test for Daylight Impact to Existing Buildings

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."*[25] [Emphasis added.]

6.1.2. Assessment Criteria

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

- 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 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.

[25] BRE Guide: G1.2

6.1.3. **Summary of Results**

This proposed development is on a brownfield site. The surrounding land is proposed for regeneration and is predominantly vacant. The few 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. The proposal is on a brownfield site within an industrial area of the docklands, with very few neighbouring buildings. There is a Galway Bay Seafood warehouse to the southwest but given its use it does not require assessment. A Texaco fuel station is situated to the northwest of the site, and it has two windows on the first floor facing the proposal which were assessed. One window serves a corridor, and therefore does not need to be assessed, the second serves a staff room, refer to Figure 8 below. This window failed to meet the BRE guide for daylight, however given its function, it would only be in occasional use throughout the day and so the impact is assessed as **Minor**.

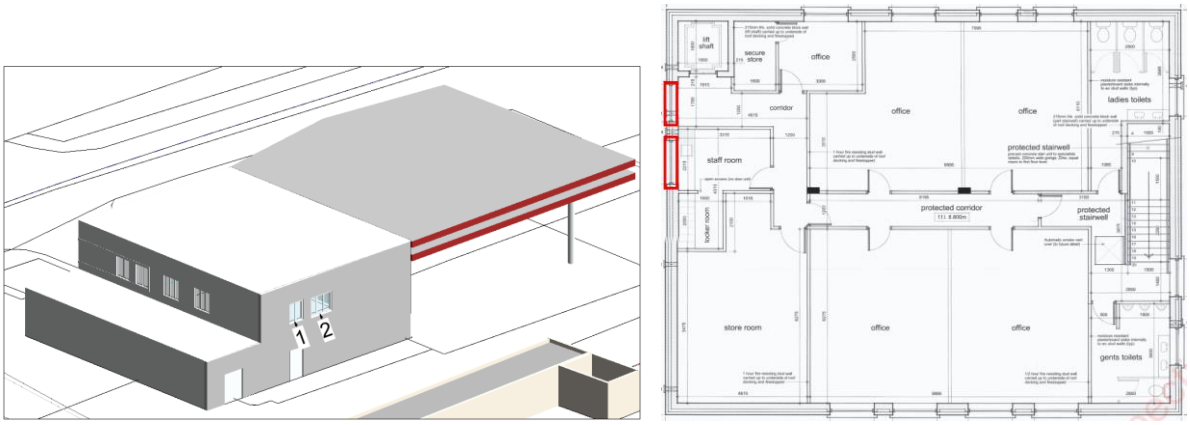


Figure 8 Texaco Building

Table 11 Daylight Provision to Existing Buildings

Building Reference	Window Ref	VSC Existing	VSC Proposed	Ratio of VSC Proposed to VSC Existing	Meets BRE Criteria	Building Use	Impact Assessment
Texaco	2	40%	15%	0.37	No	Fuel Station & Shop	Minor

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

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."*[26]

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 and it subtends an angle greater than 25° to the horizontal, measured 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 and less than 0.8 times its former annual value; or less than 5% of annual probable sunlight 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."*[27]

6.2.3. Summary of Results

Like the VSC assessment, only the Texaco fuel station required a detailed assessment, and it achieved the BRE criteria for both Annual and Winter Probable Sunlight Hours, therefore the impact is **Negligible**.

Table 12 Sunlight Provision to Existing Buildings Spaces Results Summary

Buildings	No. of Windows	Meet APSH Criteria	Meet WPSH Criteria	Meet Both Criteria	Building Use	Impact Assessment
Texaco Fuel Station	1	100%	100%	100%	Fuel Station & Shop	Negligible

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

[26] BRE Guide: 3.2.4

[27] BRE Guide: 3.2.9

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)."*[28] [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."[29]

6.3.3. Summary of Results

The site location is currently an industrial area and there are no private or public amenity area within the vicinity which required assessment.

7.0 Compensatory Design Measures

Where apartments have a room which falls below the minimum recommended level for daylight, as per the BRE Guidelines, the designers have included compensatory design measures, refer to Table 13 below.

Table 13 Compensatory Design Measures

Block	Floor	Unit Number	Report Unit Ref.	Dual Aspect	Larger Floor Area	Floor to Ceiling Heights	Overlooking Amenity Area
Block A	1	A-04	BA-004	*	*	*	*
	1	A-05	BA-005		*	*	*
	1	A-06	BA-006			*	*
	1	A-07	BA-007			*	*
	2	A-05	BA-017		*	*	*
	2	A-06	BA-018			*	*
	2	A-07	BA-019			*	*
	3	A-06	BA-030			*	*
	3	A-07	BA-031			*	*
	4	A-06	BA-042			*	*
Block B	1	B-04	BB-004	*		*	*
	1	B-05	BB-005		*	*	*
	1	B-06	BB-006			*	*
	1	B-07	BB-007			*	*
	1	B-08	BB-008		*	*	*
	1	B-11	BB-011		*	*	*
	2	B-04	BB-016			*	*

[28] BRE Guide 2022 : G4.1

[29] BRE Guide 2022 : 3.3.17

Block	Floor	Unit Number	Report Unit Ref.	Dual Aspect	Larger Floor Area	Floor to Ceiling Heights	Overlooking Amenity Area
	2	B-05	BB-017		*	*	*
	2	B-06	BB-018			*	*
	2	B-07	BB-019			*	*
	2	B-08	BB-020		*	*	*
	2	B-11	BB-023		*	*	*
	3	B-04	BB-028	*		*	*
	3	B-05	BB-029		*	*	*
	3	B-06	BB-030			*	*
	3	B-07	BB-031			*	*
	3	B-08	BB-032		*	*	*
	3	B-11	BB-035		*	*	*
	4	B-05	BB-041		*	*	*
	4	B-06	BB-042			*	*
	4	B-07	BB-043			*	*
	5	B-05	BB-053		*	*	*
	5	B-06	BB-054			*	*
	5	B-07	BB-055			*	*
Block C	0	C-03	BC-003			*	*
	0	C-04	BC-004			*	*
	1	C-01	BC-007		*	*	*
	1	C-02	BC-008		*	*	*
	1	C-06	BC-012			*	*
	1	C-10	BC-016	*		*	*
	1	C-11	BC-017		*	*	*
	1	C-12	BC-018		*	*	*
	2	C-01	BC-019		*	*	*
	2	C-02	BC-020		*	*	*
	2	C-10	BC-028	*		*	*
	2	C-11	BC-029		*	*	*
	2	C-12	BC-030		*	*	*
	3	C-01	BC-031		*	*	*
	3	C-02	BC-032		*	*	*
	3	C-10	BC-040	*		*	*
	3	C-11	BC-041		*	*	*
	3	C-12	BC-042		*	*	*
	4	C-01	BC-043		*	*	*
	4	C-02	BC-044		*	*	*
	4	C-10	BC-052	*		*	*
	4	C-11	BC-053		*	*	*
	4	C-12	BC-054		*	*	*
	5	C-01	BC-055		*	*	*
	5	C-02	BC-056		*	*	*
	5	C-10	BC-064	*		*	*
	5	C-11	BC-065		*	*	*
	5	C-12	BC-066		*	*	*
Block D	0	D-01	BD-001		*	*	*
	0	D-02	BD-002	*	*	*	*
	1	D-04	BD-008			*	*
	1	D-05	BD-009			*	*
	1	D-06	BD-010		*	*	*
	1	D-07	BD-011	*	*	*	*
	2	D-05	BD-019			*	*
	3	D-05	BD-029			*	*
	8	D-04	BD-078			*	*
	8	D-05	BD-079			*	*
	9	D-04	BD-088			*	*
	10	D-04	BD-093			*	*
	11	D-04	BD-098			*	*

Dual Aspect

Many apartments are dual aspect, offering enhanced views, and greater opportunity for natural light to be received into the rooms.

Larger Floor Area

The apartment size is more than 10% greater than the minimum standard included in the 2025 Apartment Guidelines.

Floor to Ceiling

The ceiling height is 2.5m, the Apartment Guidelines requiring a minimum of 2.4m, thereby offering the residence a greater sense of space in the rooms.

Overlooking Amenity Area

There is circa 6,000sqm of landscaped public and communal open space included in the development offering the residence a pleasant view out of their apartments. Some units are orientated to the southwest, providing views over Lough Atalia.

8.0 Proposed Development and Galway Port Masterplan

The LRD Opinion issued by Galway City Council, included the comment in item 17 in relation to overshadowing/daylight/sunlight analysis that *"Any analysis shall take account of and address the impact of the proposed development on the vacant lands surrounding the site which are also zoned CC and may facilitate future residential/mixed use development."* In order to respond to this comment, we have reviewed the Galway Port masterplan for these lands and selected the four closest buildings for assessment, their use being three commercial blocks and one hotel. This supplementary assessment treated these buildings as part of the receiving environment, and the Vertical Sky Component (VSC) and Annual Probable Sunlight Hours (APSH) methods were used to assess the potential impact to the daylight and sunlight received by these buildings. VSC and APSH methods typically assess light received by the windows of existing building, however, as the masterplan is still at an early design stage, floor layouts and window locations are not available, therefore a façade analysis has been conducted. The façade analysis calculates the quantity of daylight or sunlight received at point across the entire facade.

Blocks A, B, and D of the proposed development are located along the proposed internal street and Dock Road and may impact the masterplan buildings. All three block include retail or utility/service volumes at ground floor. It has been assumed that the masterplan buildings facing these blocks will also include retail or service volumes at their ground floors and therefore the ground floors have been omitted from the façade analysis.

Table 14 and Figure 9 below detail the daylight reaching the façades of the masterplan buildings. Points having a VSC of 27% and above are assessed, according to the BRE Guide, as not experiencing an adverse impact to their daylight. Points having a VSC of 15% - 27% are assessed as experiencing Moderate to Minor impacts. When VSC values of 15% and above are combined, reflecting a range of moderate to negligible impact, they represent 78%, 96%, 100%, and 100% of the façade areas for blocks 1-4 respectively. This indicates that the impact on the masterplan buildings by the proposed scheme would, *"alters the character of the environment in a manner that is consistent with existing and emerging baseline trends."* [30]

The façade heatmap shown in Figure 9 below highlights that the masterplan buildings also impact each other, as would be expected with any large development. The heatmap on the face of block 3 displays the impact of block 4 on the daylight it receives.

Table 14 Potential Impact to Daylight on Future Masterplan Blocks

Vertical Sky Component	Area of Façade Receiving Daylight (VSC)			
	Block 1 - Commercial	Block 2 - Hotel	Block 3 - Commercial	Block 4 - Commercial
VSC 27% + *	14%	52%	58%	73%
VSC 15% - 27% **	64%	44%	42%	27%
VSC 5% - 15%	22%	4%	0%	0%
VSC > 15%	***78%***	***96%***	***100%***	***100%***

* Not experiencing an adverse impact to their daylight.
** Experiencing Moderate to Minor impact to their daylight.

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

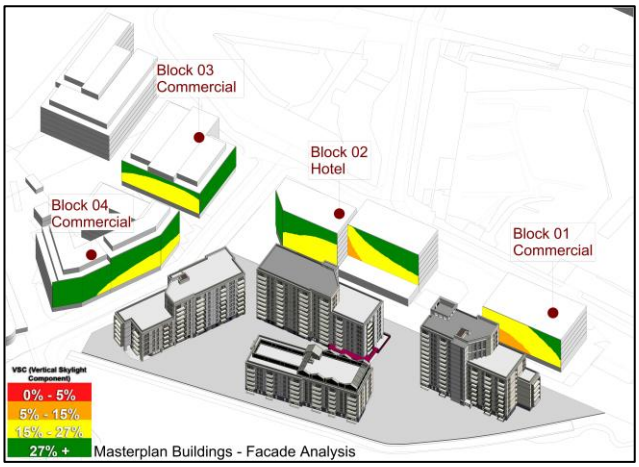


Figure 9 Daylight Heatmap of Adjacent Masterplan Buildings

Table 15 and Figure 10 below detail the sunlight reaching the façades of the masterplan buildings. Points having a APSH of 25% and above are assessed, according to the BRE Guide, as not experiencing an adverse impact to their sunlight. Points having a APSH of 15% - 25% are assessed as experiencing Moderate to Minor impacts. Buildings 1 and 2 of the masterplan experience only minor to negligible impact to their sunlight. Buildings 3 and 4 have weaker results for sunlight, however, this is a consequence of the orientation of the blocks, not the impact of the proposed scheme. Two of their façades face predominantly north-east and this restricts the annual sunlight they can receive; the two facades can be clearly seen in the heatmap figure. In contrast, the façade of block 4 which faces the proposed scheme experiences minimal impact to its sunlight, as almost its entire façade has a APSH of 25% or greater.

Table 15 Potential Impact to Sunlight on Future Masterplan Blocks

Annual Probable Sunlight Hours	Area of Façade Receiving Sunlight (APSH)			
	Block 1 - Commercial	Block 2 - Hotel	Block 3 - Commercial	Block 4 - Commercial
APSH 25% + *	85%	91%	55%	75%
APSH 15% - 20% **	14%	4%	2%	5%
APSH 10% - 15%	1%	3%	31%	8%
APSH 0% - 10%	0%	2%	12%	6%
APSH > 15%	***99%***	***95%***	***57%***	***80%***

* Not experiencing an adverse impact to their sunlight.
** Experiencing Moderate to Minor impact to their sunlight.

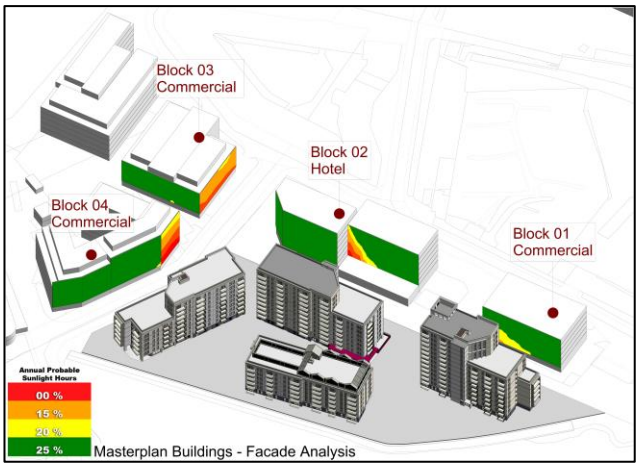


Figure 10 Sunlight Heatmap of Adjacent Masterplan Buildings

The adjacent masterplan buildings comprise three commercial blocks and a hotel. The BRE Guide assigns a higher priority to resident dwellings receiving high quality natural lighting; *"In mixed use developments commercial uses may occupy the less well daylit areas, allowing residential parts to have better access to light."*[31] Commercial buildings typically have deep floorplates so that natural lighting will not reach many areas and they rely predominantly on artificial lighting. Hotel guest rooms are most frequently occupied in the evening and only intermittently during daylight hours. Therefore, given the building uses, they would have a lower requirement for natural lighting than residential blocks.

It should be noted than in any urban environment, particularly medium to high density ones, buildings will impact each other and effect the light being received. This is a characteristic of all urban environments and is evident in the nearby Bonham Quay scheme or the permitted Ceannt Station Development (Galway City Council Reg. Ref. 20/47, An Bord Pleanála Ref. No. ABP-310568-21).

9.0 Conclusion

The proposed mixed-use development comprises: 356 apartments; crèche; café/restaurant units; and a retail unit. The residential dwellings were the focus of the assessment, and they achieve a high level of compliance with the BRE Guidelines; 88% of habitable rooms achieved compliance for daylight, and 98% of the units were compliant for sunlight. The scheme includes a generous provision of amenity spaces, totalling circa 6,000sqm over seven areas and all achieved compliance.

The receiving environment is predominantly a brownfield area targeted for redevelopment over the coming years. Only one building required a detailed assessment for potential effect to its daylight and sunlight due to its proximity to the site, and the impact was assessed to be Minor.

A supplementary assessment was also carried out to determine the potential impact the proposed development may have on the overall Galway Port masterplan. This analysis concluded that while the adjacent masterplan building would experience an impact, as would be expected of any medium to high density development, the magnitude would be assessed as minor to moderate. This indicates that the impact on the masterplan buildings by the proposed scheme would, *"alters the character of the environment in a manner that is consistent with existing and emerging baseline trends."*[32]

[31] BRE Guide 2022: 2.1.14

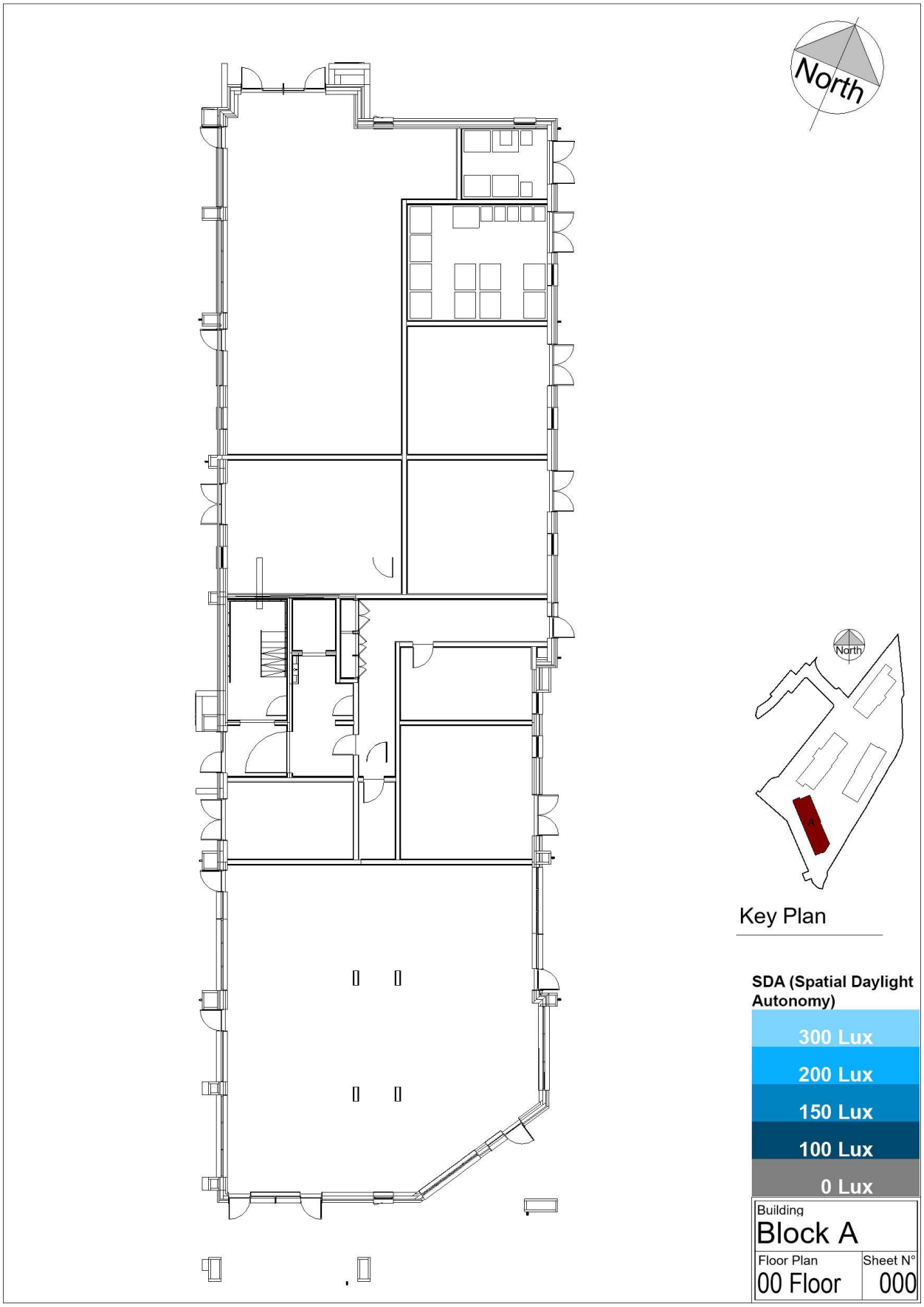
[32] Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, pg. 50, Table 3.4

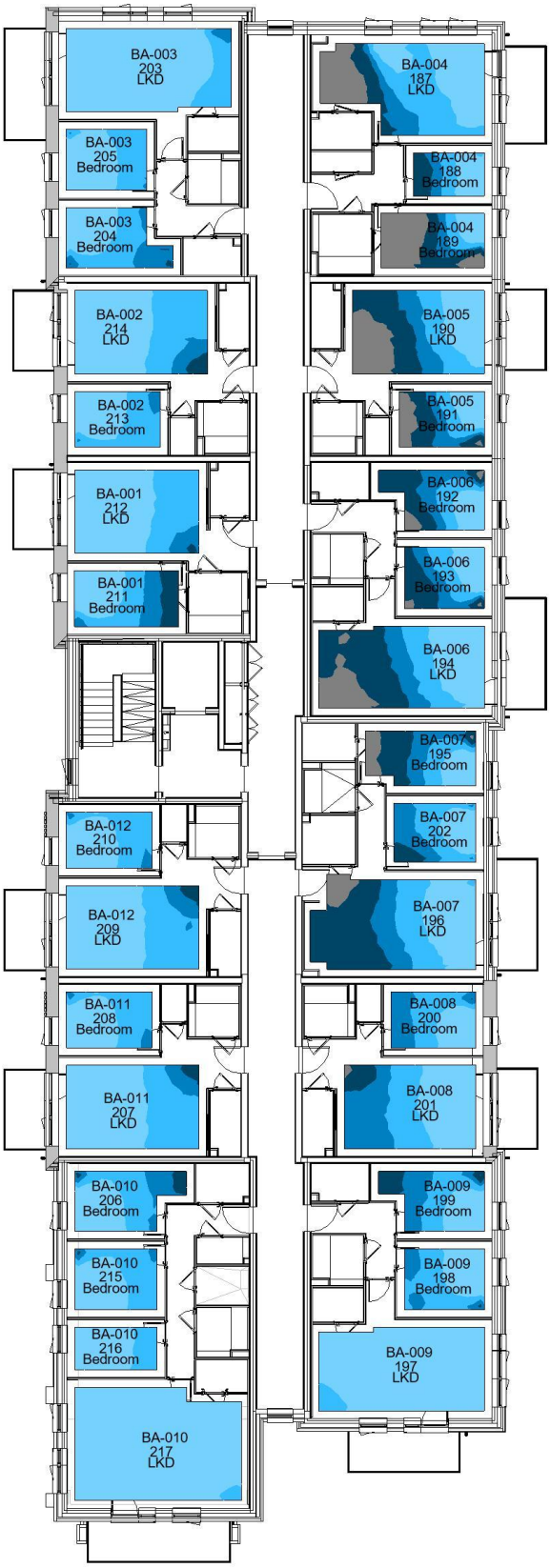
Appendix A – Site Plan

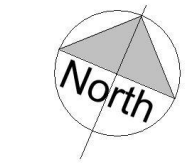
Figure 11 Site Plan

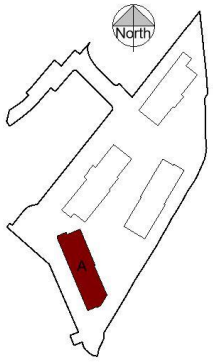
Appendix B – Floor Plans with Room Reference Numbers

Figure 12 Block A Floor Plans with Daylight Heatmaps (without Trees)







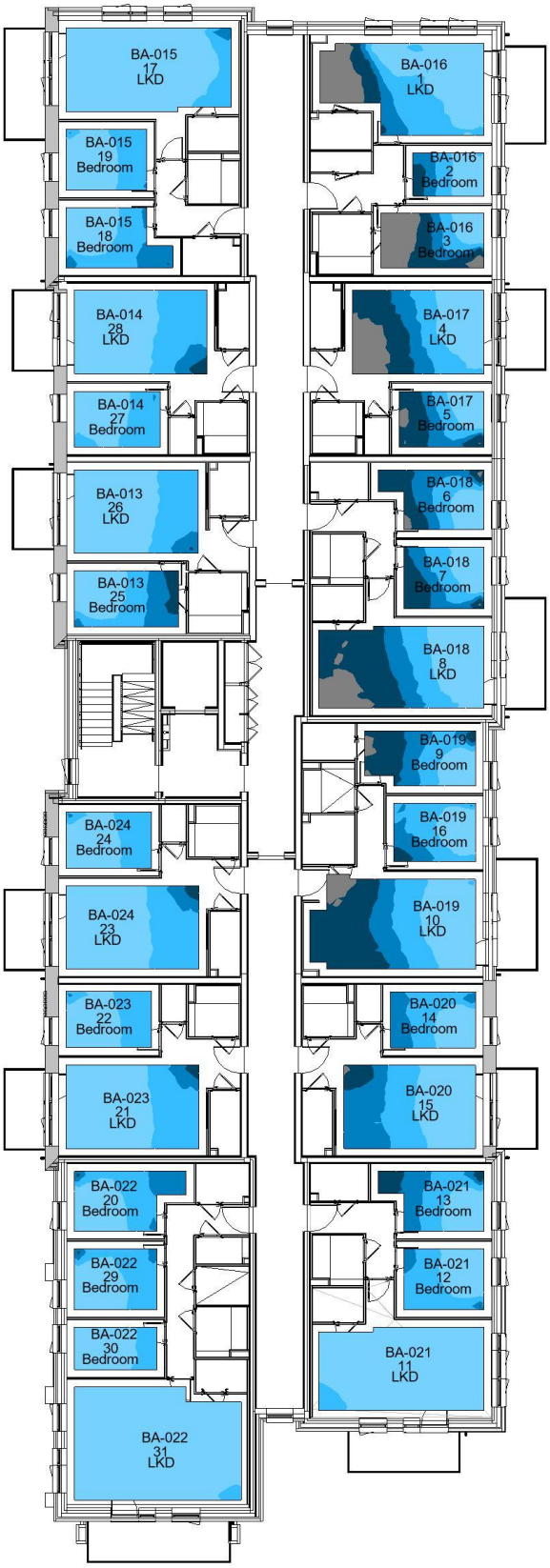


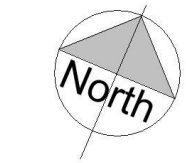
Key Plan

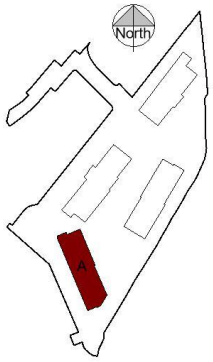
SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block A	
Floor Plan	Sheet N°
01 Floor	001





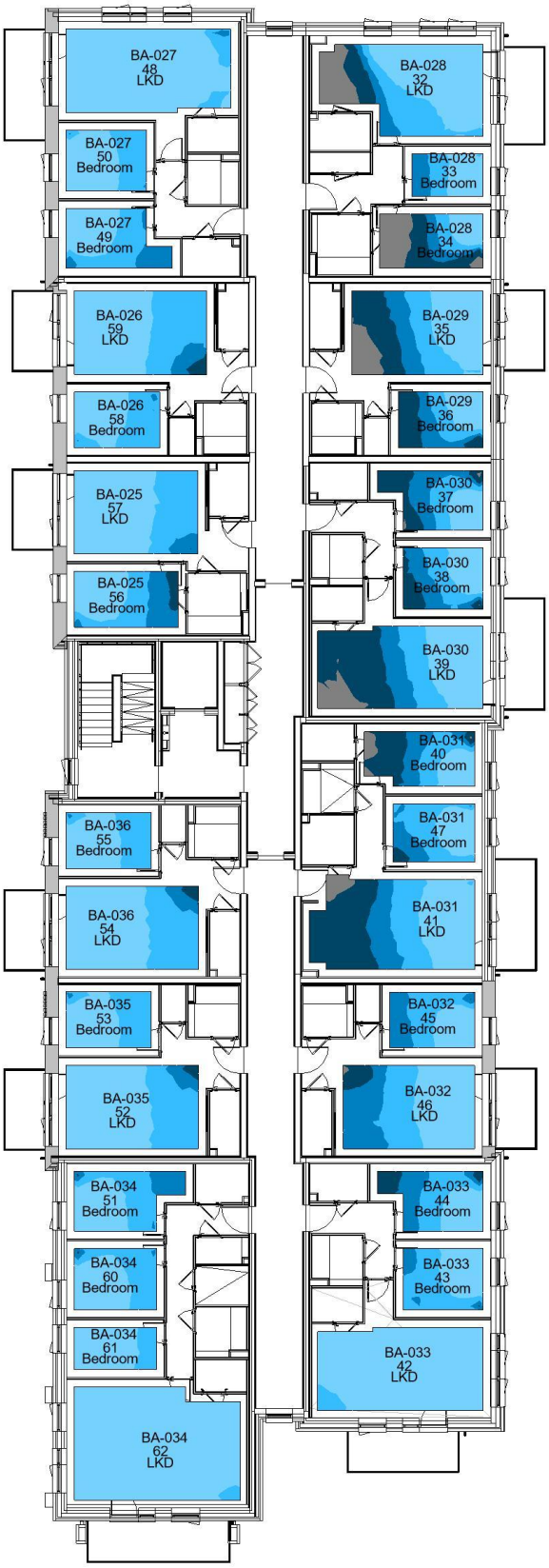


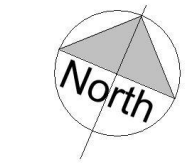
Key Plan

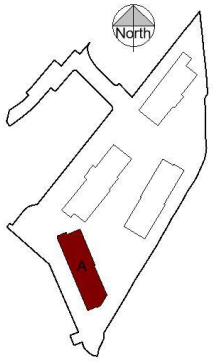
SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block A	
Floor Plan	Sheet N°
02 Floor	002





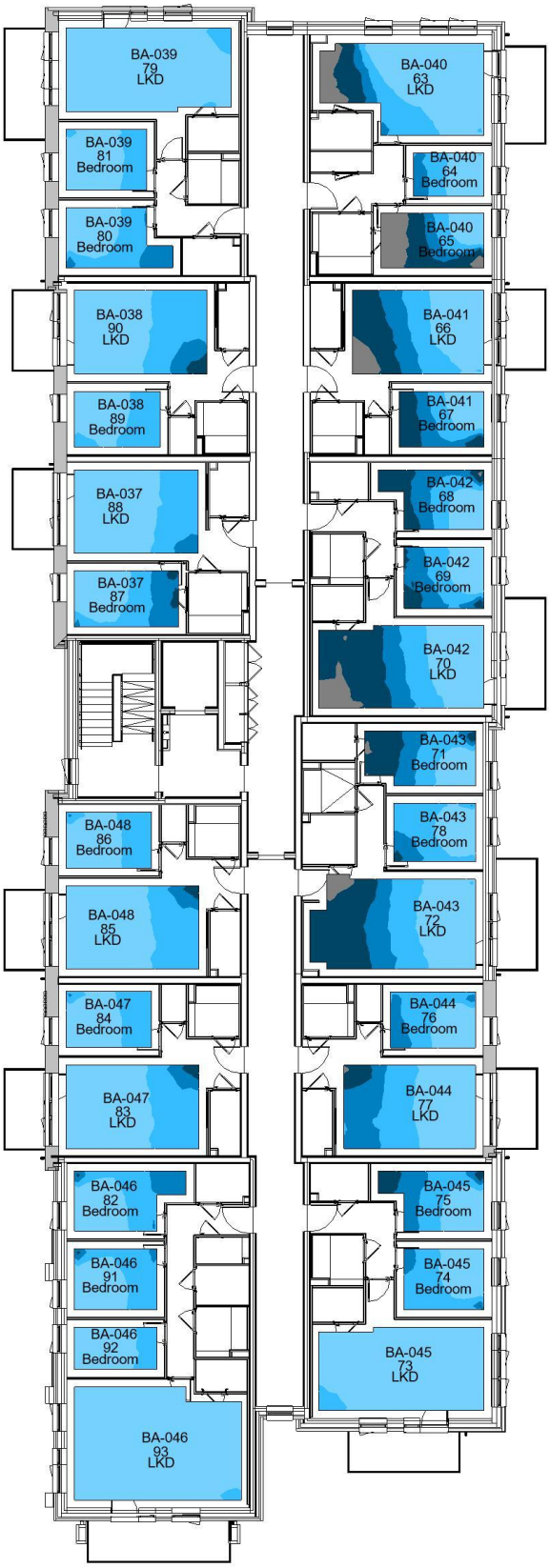


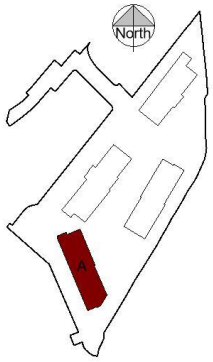
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block A	
Floor Plan	Sheet N°
03 Floor	003



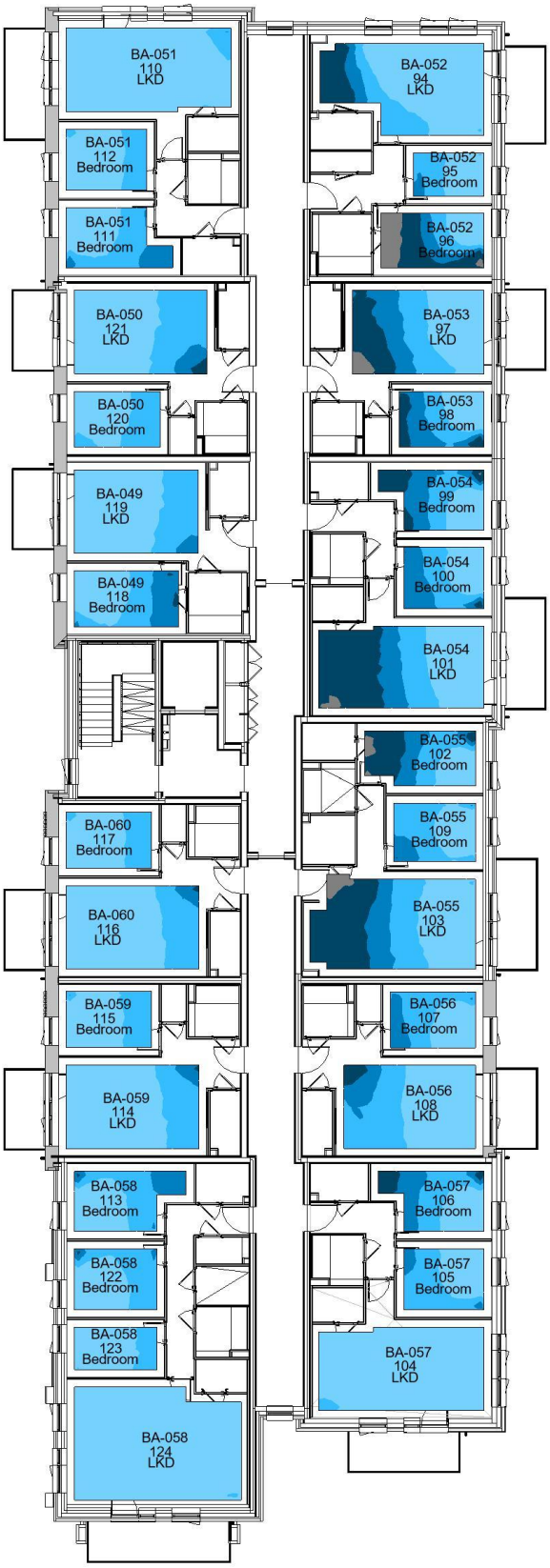


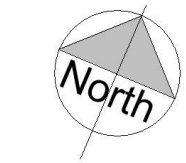
Key Plan

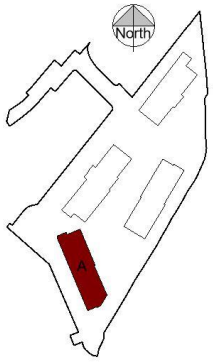
SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block A	
Floor Plan	Sheet N°
04 Floor	004





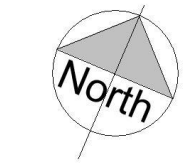


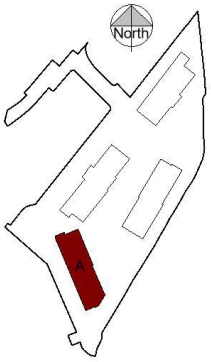
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block A	
Floor Plan	Sheet N°
05 Floor	005



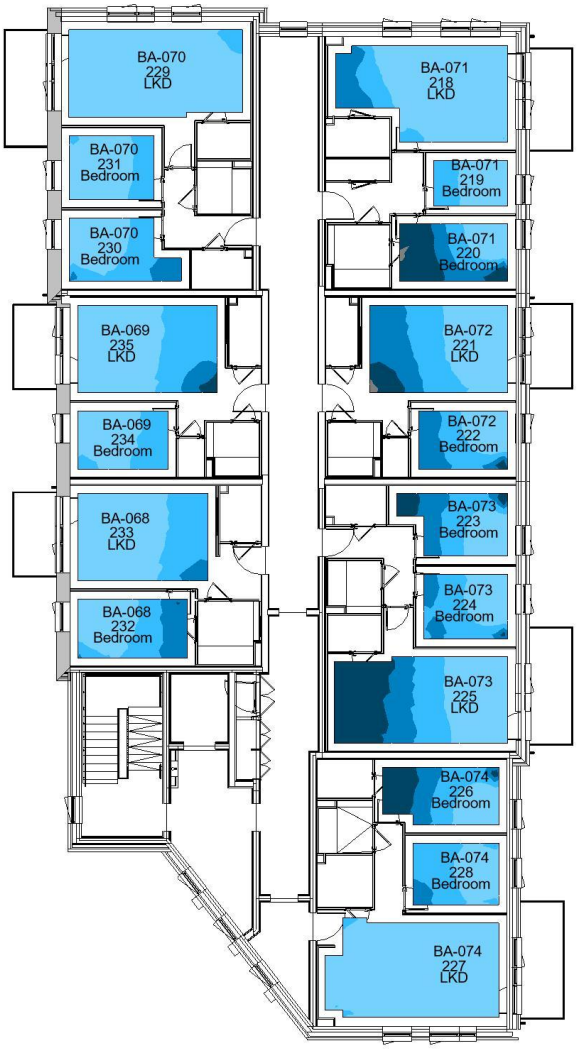


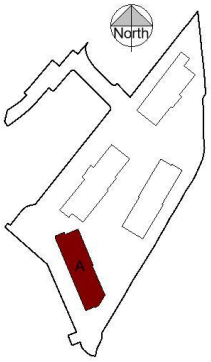
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block A	
Floor Plan	Sheet N°
06 Floor	006



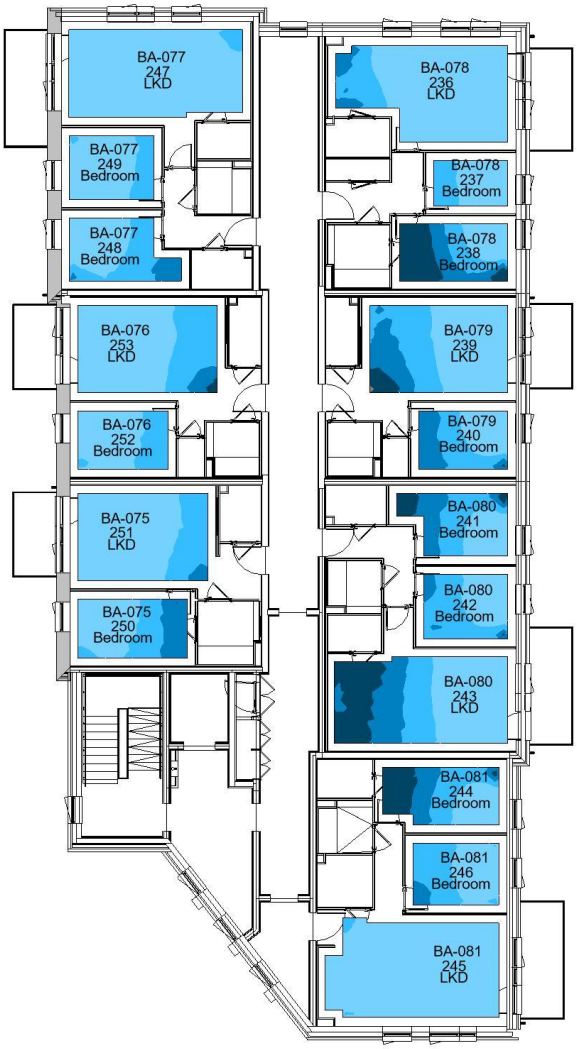


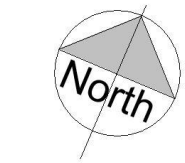
Key Plan

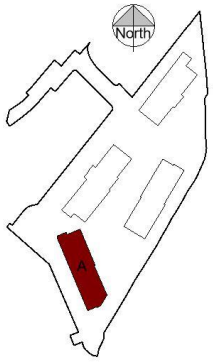
SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block A	
Floor Plan	Sheet N°
07 Floor	007







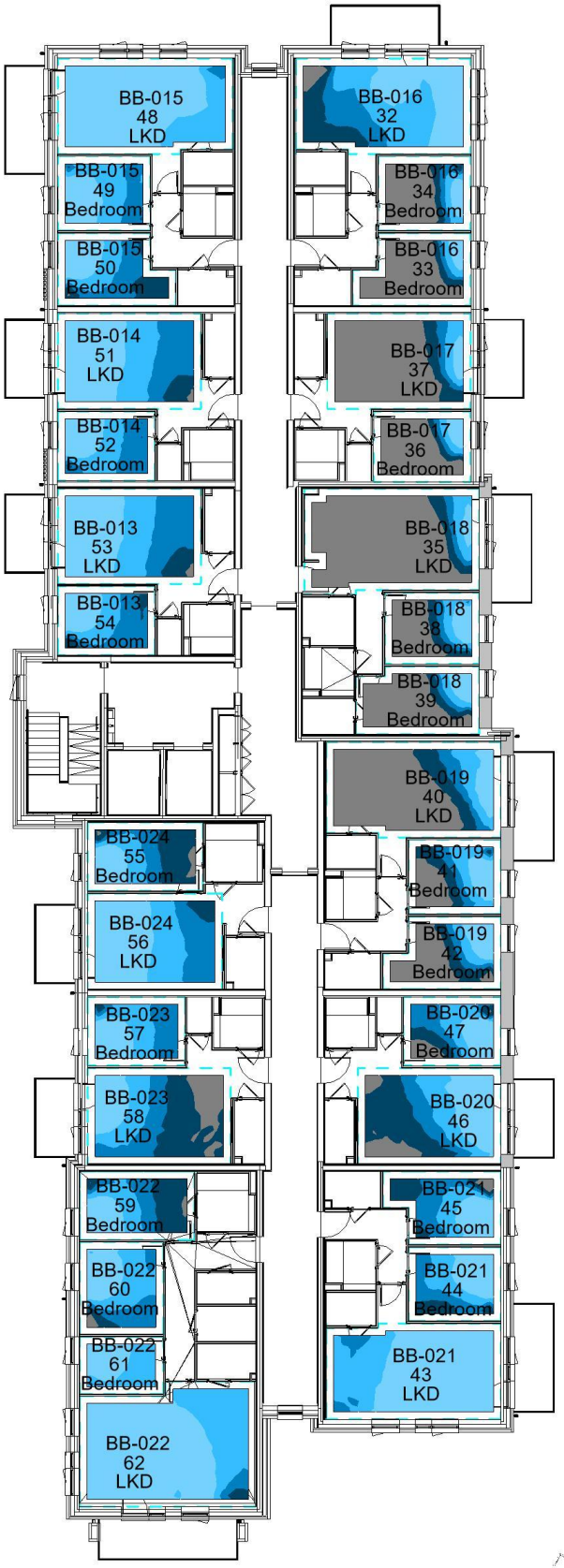
Key Plan

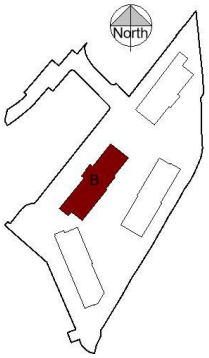
SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block A	
Floor Plan	Sheet N°
08 Floor	008

Figure 13 Block B Floor Plans with Daylight Heatmaps (without Trees)





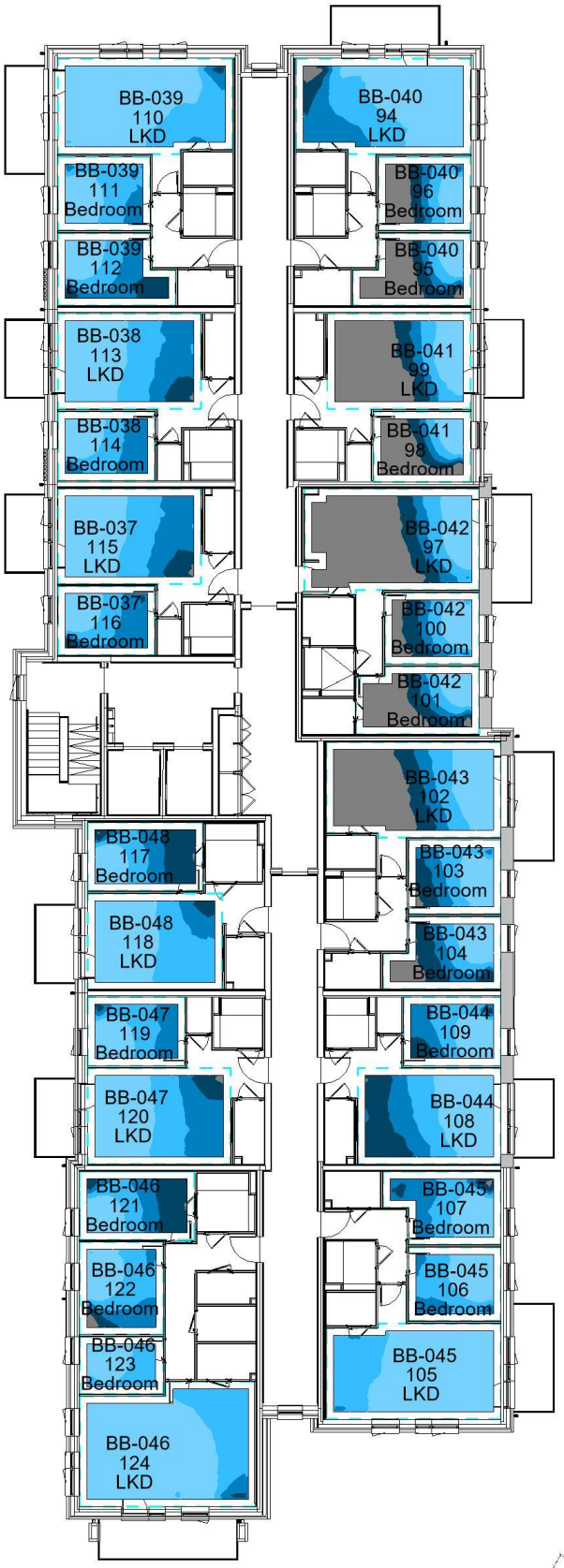
Key Plan

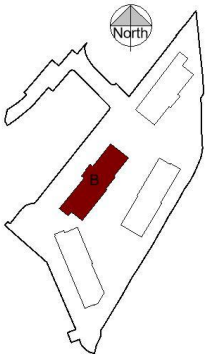
SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block B	
Floor Plan	Sheet N°
02 Floor	002


North
BB-027 203 LKD
BB-027 204 Bedroom
BB-027 205 Bedroom
BB-026 206 LKD
BB-026 207 Bedroom
BB-025 208 LKD
BB-025 209 Bedroom
BB-036 210 Bedroom
BB-036 211 LKD
BB-035 212 Bedroom
BB-035 213 LKD
BB-034 214 Bedroom
BB-034 215 Bedroom
BB-034 216 Bedroom
BB-034 217 LKD
BB-028 187 LKD
BB-028 189 Bedroom
BB-028 188 Bedroom
BB-029 192 LKD
BB-029 191 Bedroom
BB-030 190 LKD
BB-030 193 Bedroom
BB-030 194 Bedroom
BB-031 195 LKD
BB-031 196 Bedroom
BB-031 197 Bedroom
BB-032 202 Bedroom
BB-032 201 LKD
BB-033 200 Bedroom
BB-033 199 Bedroom
BB-033 198 LKD
North
B
Key Plan
SDA (Spatial Daylight Autonomy)
300 Lux
200 Lux
150 Lux
100 Lux
0 Lux
Building
Block B
Floor Plan
03 Floor
Sheet N°
003





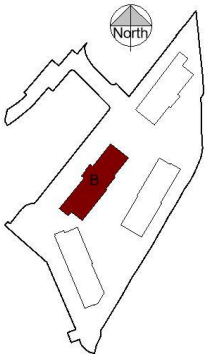
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block B	
Floor Plan	Sheet N°
04 Floor	004


North
BB-051 79 LKD
BB-051 80 Bedroom
BB-051 81 Bedroom
BB-050 82 LKD
BB-050 83 Bedroom
BB-049 84 LKD
BB-049 85 Bedroom
BB-060 86 Bedroom
BB-060 87 LKD
BB-059 88 Bedroom
BB-059 89 LKD
BB-058 90 Bedroom
BB-058 91 Bedroom
BB-058 92 Bedroom
BB-058 93 LKD
BB-052 63 LKD
BB-052 65 Bedroom
BB-052 64 Bedroom
BB-053 68 LKD
BB-053 67 Bedroom
BB-054 66 LKD
BB-054 69 Bedroom
BB-054 70 Bedroom
BB-055 71 LKD
BB-055 72 Bedroom
BB-055 73 Bedroom
BB-056 78 Bedroom
BB-056 77 LKD
BB-057 76 Bedroom
BB-057 75 Bedroom
BB-057 74 LKD
North
B
Key Plan
SDA (Spatial Daylight Autonomy)
300 Lux
200 Lux
150 Lux
100 Lux
0 Lux
Building
Block B
Floor Plan
05 Floor
Sheet N°
005

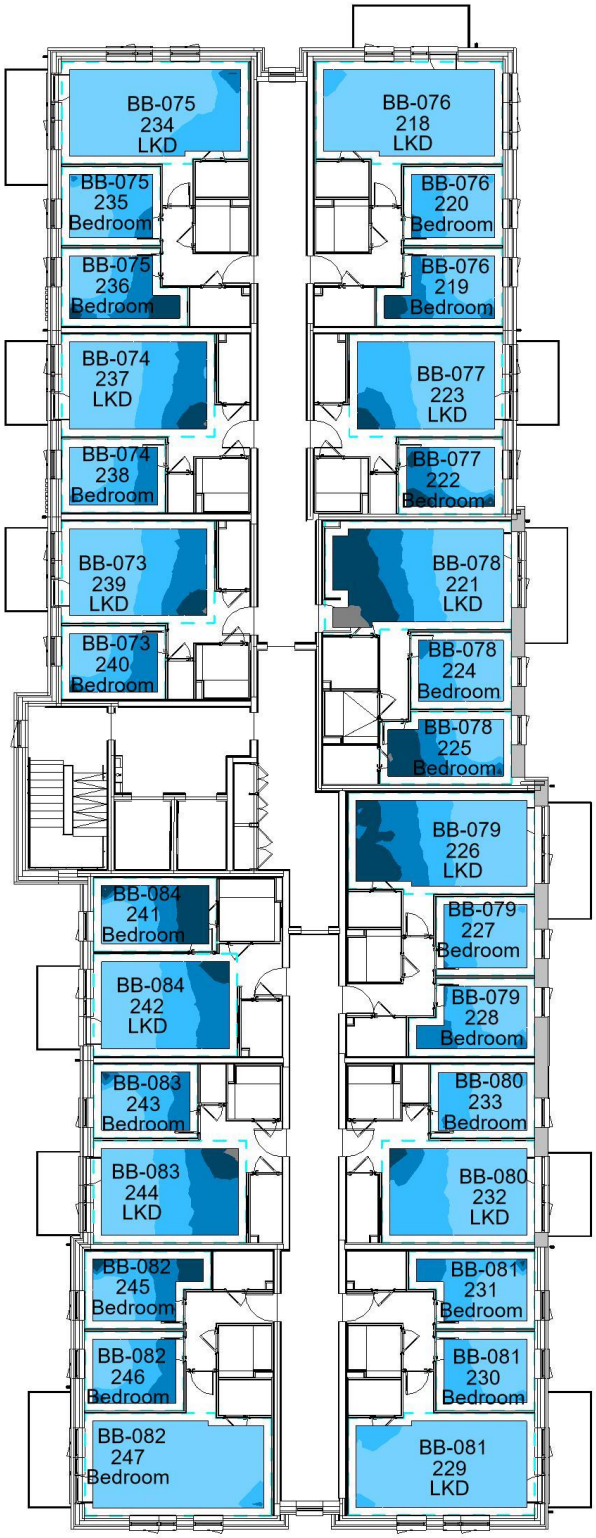


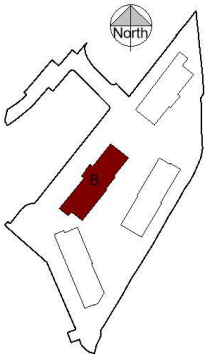
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block B	
Floor Plan	Sheet N°
06 Floor	006



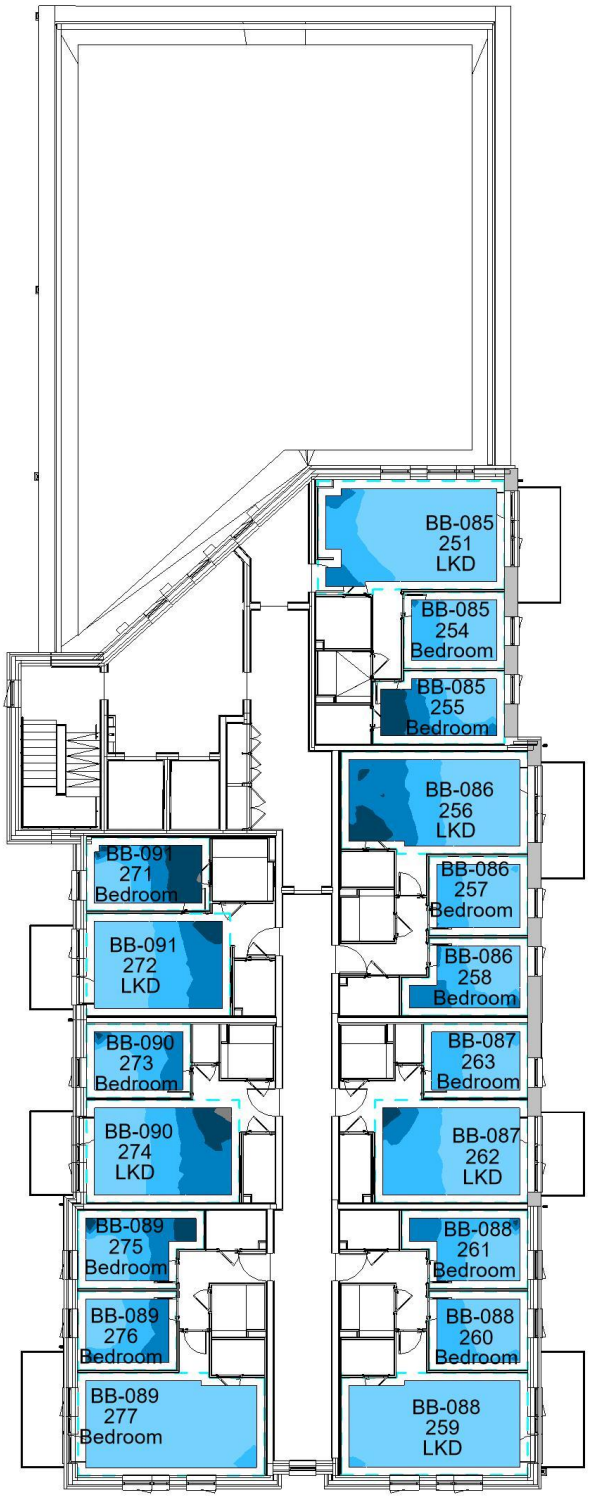


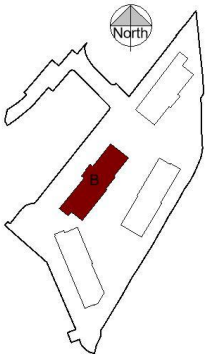
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block B	
Floor Plan	Sheet N°
07 Floor	007



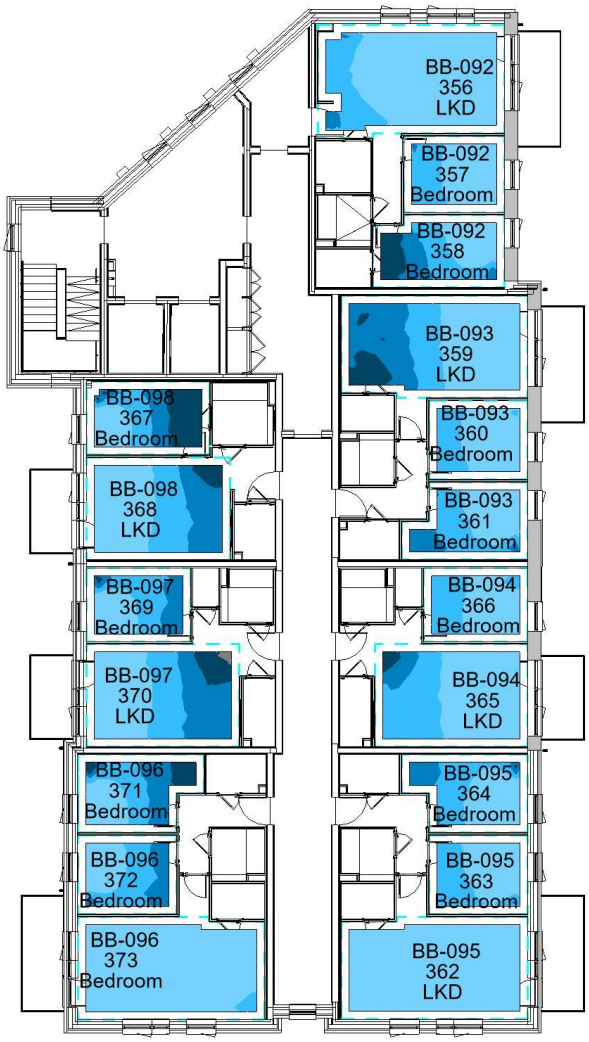


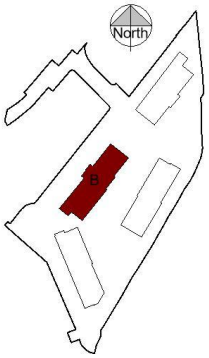
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block B	
Floor Plan	Sheet N°
08 Floor	008



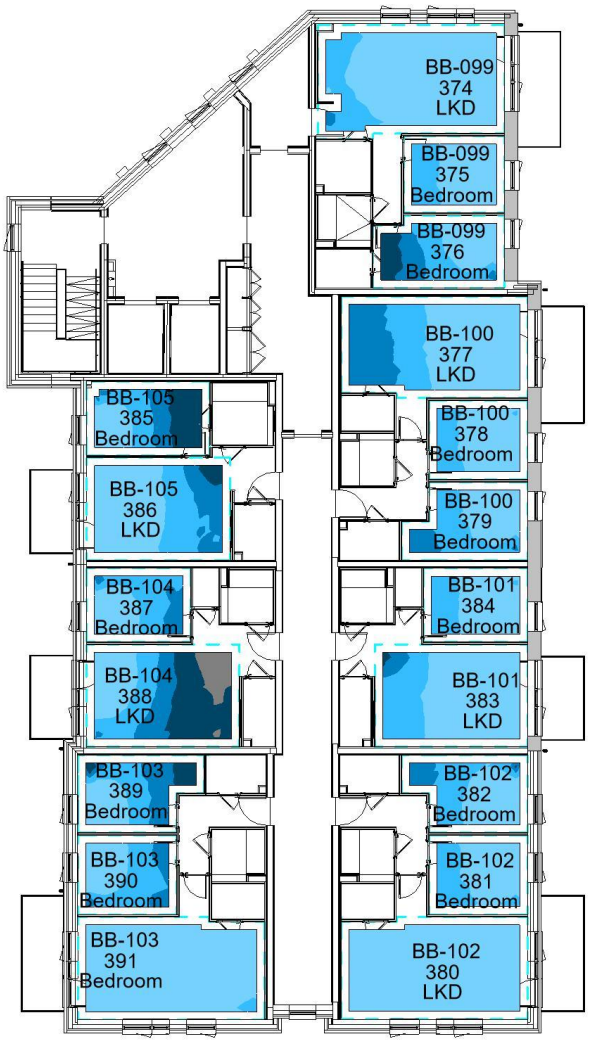


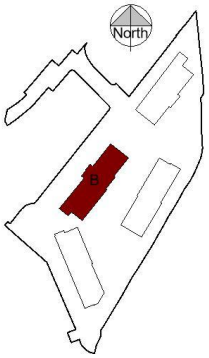
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block B	
Floor Plan	Sheet N°
09 Floor	009





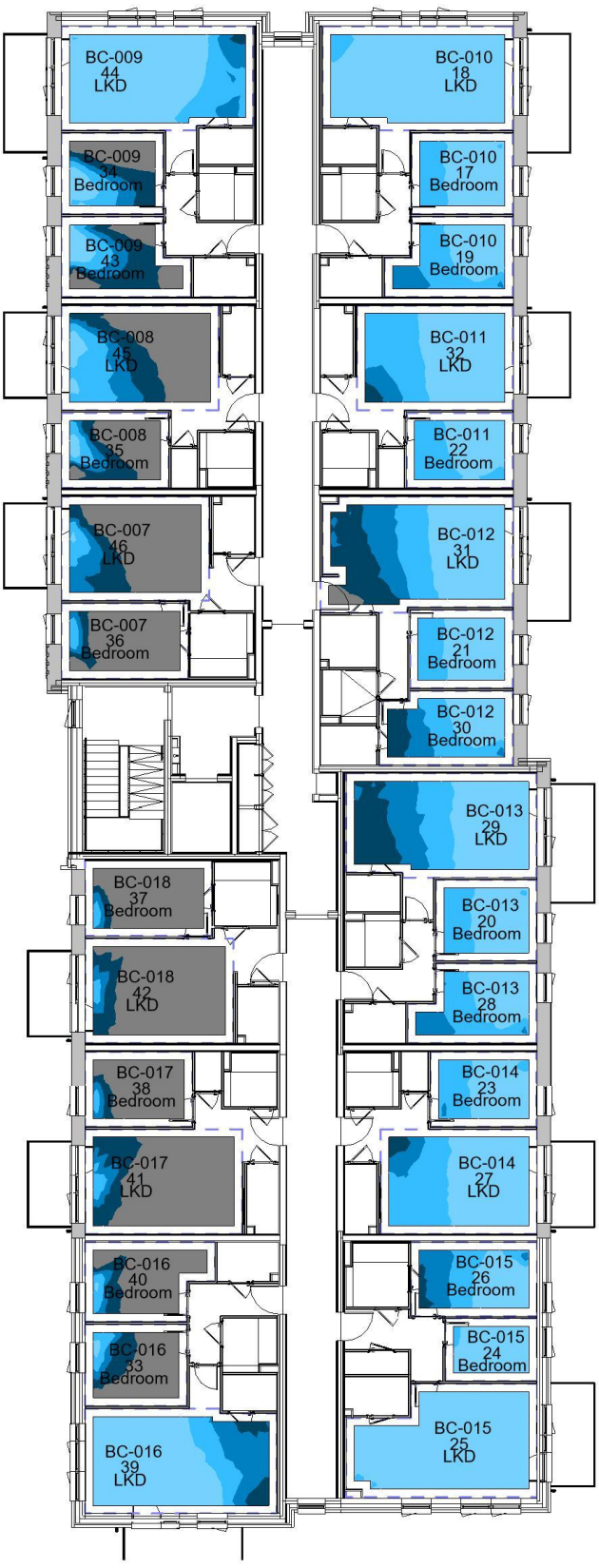
Key Plan

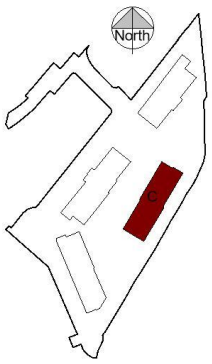
SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block B	
Floor Plan	Sheet N°
10 Floor	010

Figure 14 Block C Floor Plans with Daylight Heatmaps (without Trees)



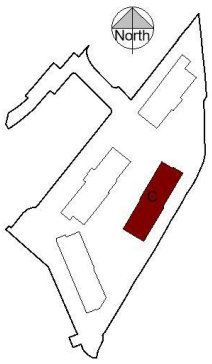


Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block C	
Floor Plan	Sheet N°
01 Floor	001

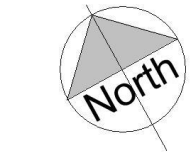


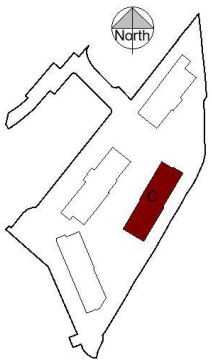
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block C	
Floor Plan	Sheet N°
02 Floor	002



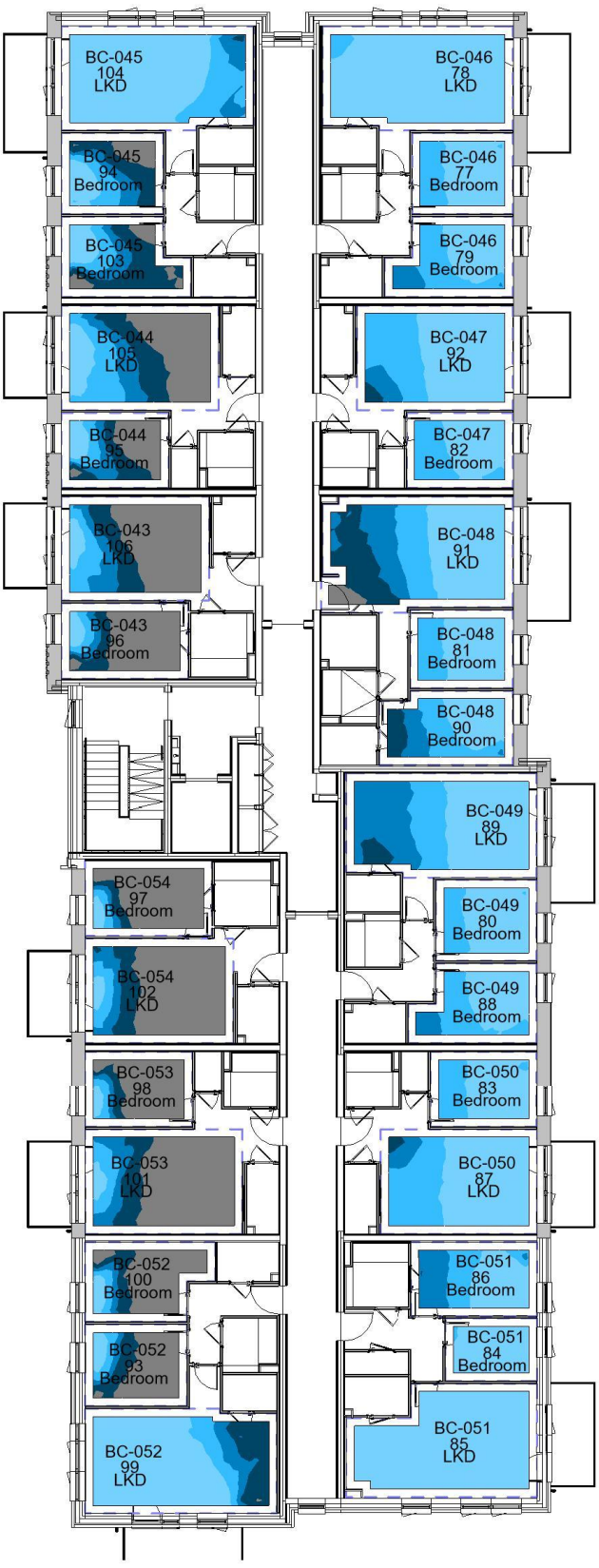


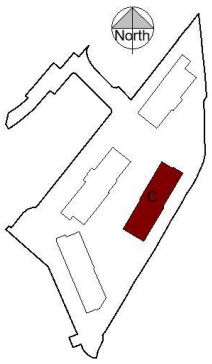
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block C	
Floor Plan	Sheet N°
03 Floor	003



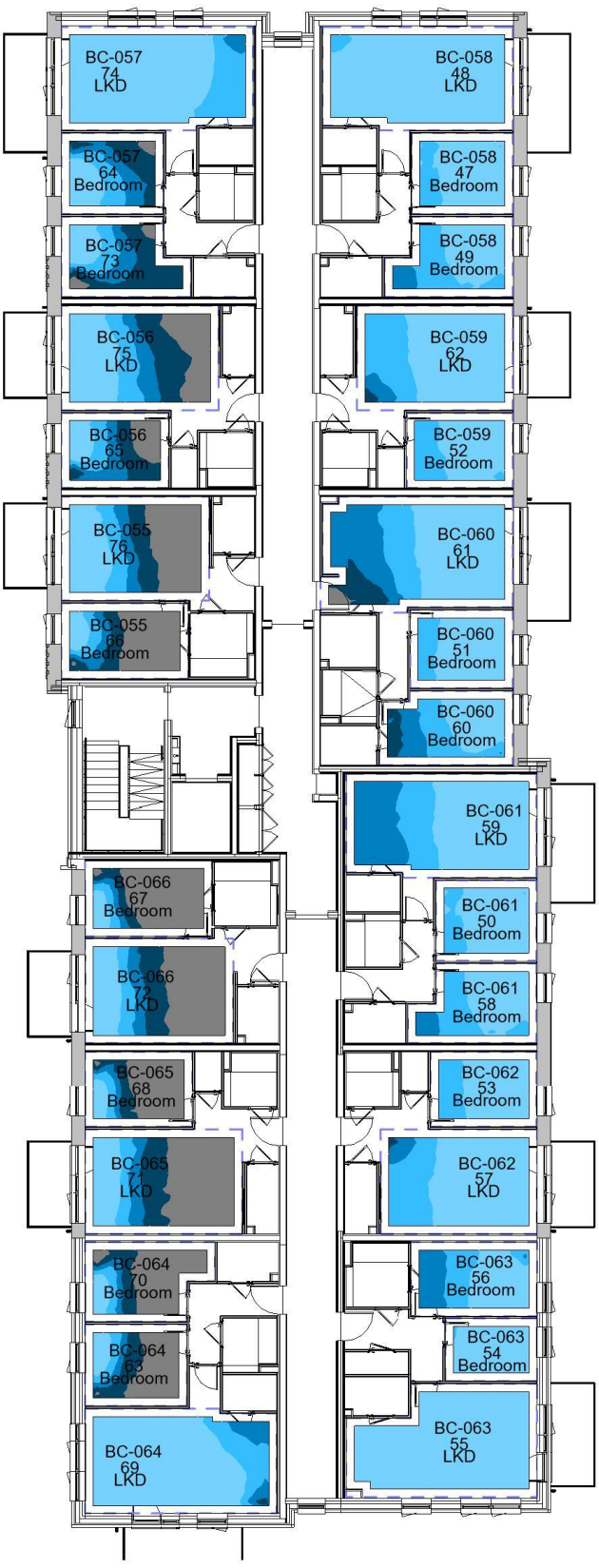


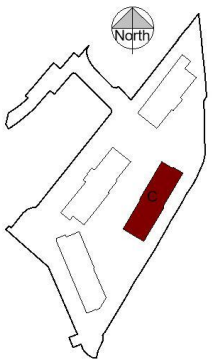
Key Plan

SDA (Spatial Daylight Autonomy)

300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

Building	
Block C	
Floor Plan	Sheet N°
04 Floor	004





Key Plan

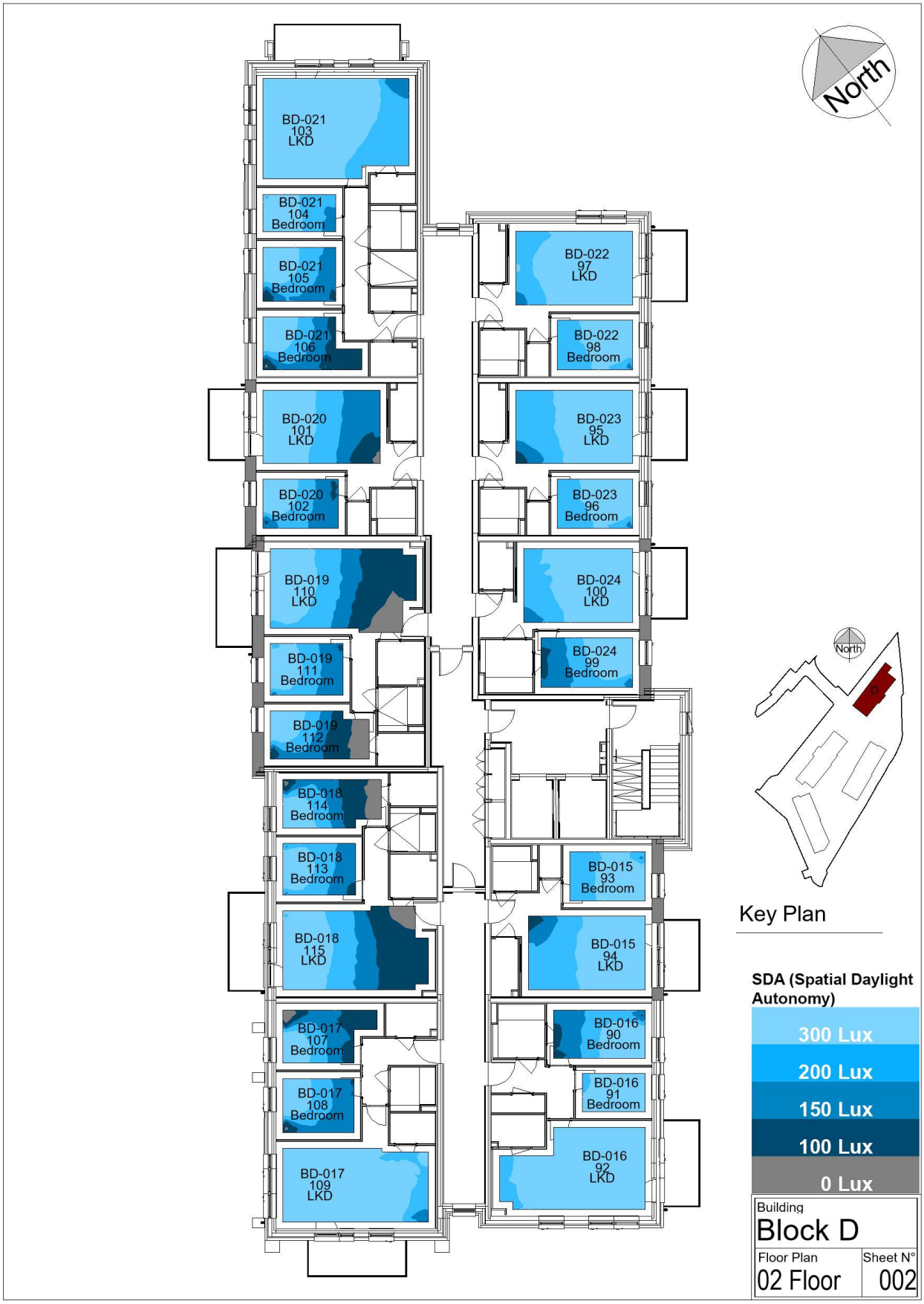
SDA (Spatial Daylight Autonomy)

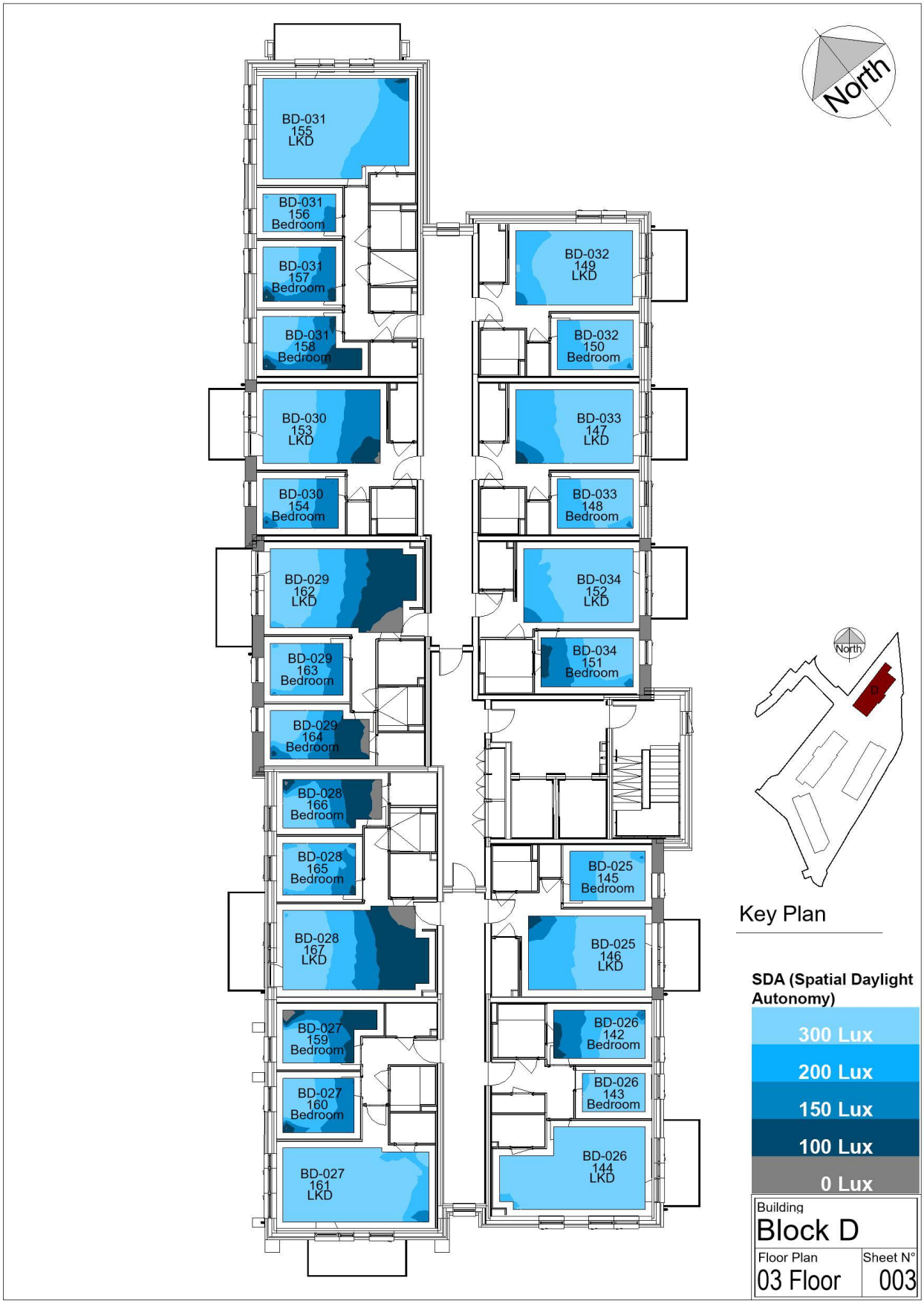
300 Lux
200 Lux
150 Lux
100 Lux
0 Lux

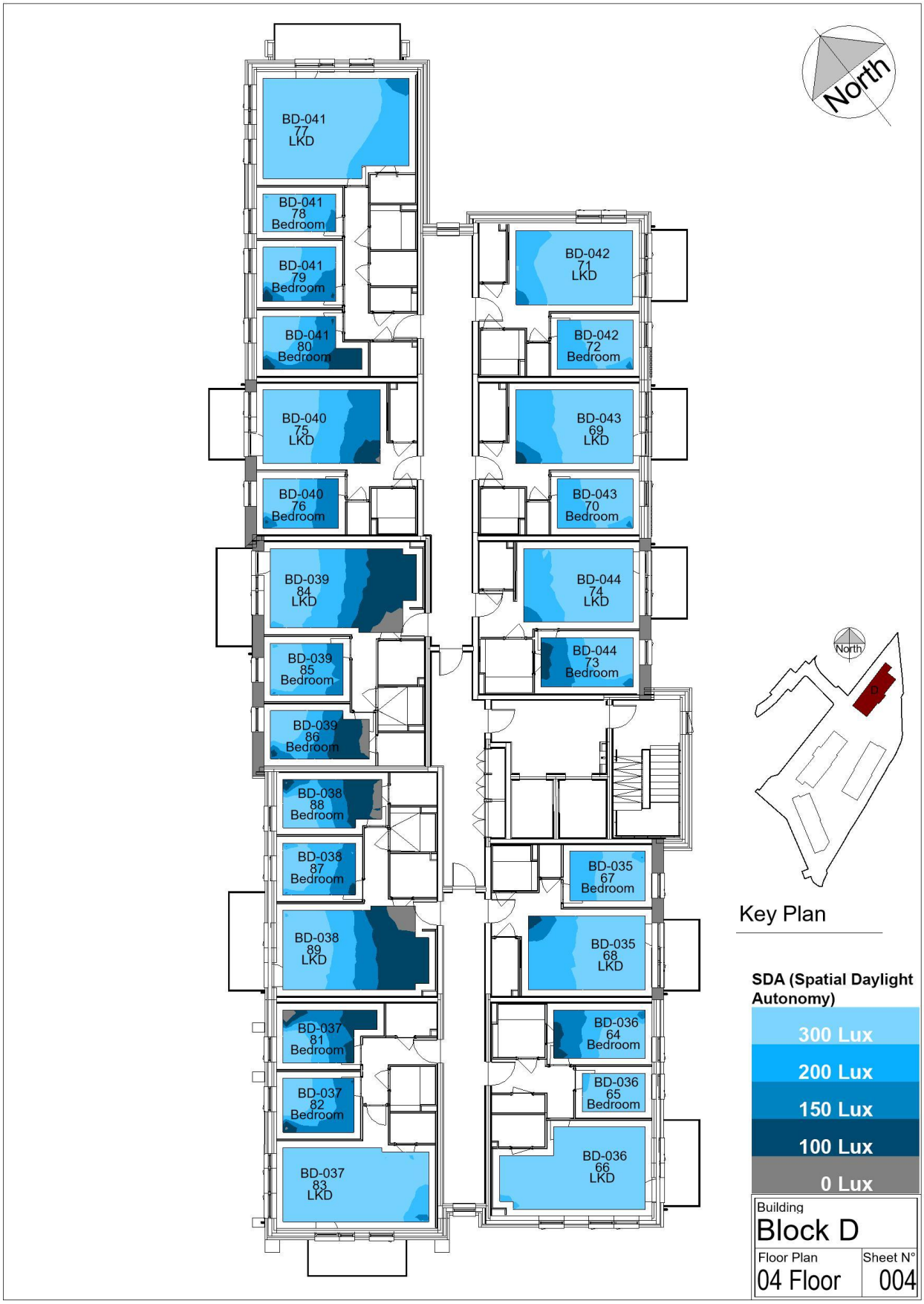
Building	
Block C	
Floor Plan	Sheet N°
05 Floor	005

Figure 15 Block D Floor Plans with Daylight Heatmaps (without Trees)


North
BD-011 25 LKD
BD-011 26 Bedroom
BD-011 27 Bedroom
BD-011 28 Bedroom
BD-010 23 LKD
BD-010 24 Bedroom
BD-009 32 LKD
BD-009 33 Bedroom
BD-009 34 Bedroom
BD-008 36 Bedroom
BD-008 35 Bedroom
BD-008 37 LKD
BD-007 29 Bedroom
BD-007 30 Bedroom
BD-007 31 LKD
BD-012 19 LKD
BD-012 20 Bedroom
BD-013 17 LKD
BD-013 18 Bedroom
BD-014 22 LKD
BD-014 21 Bedroom
BD-005 15 Bedroom
BD-005 16 LKD
BD-006 12 Bedroom
BD-006 13 Bedroom
BD-006 14 LKD
North
D
Key Plan
SDA (Spatial Daylight Autonomy)
300 Lux
200 Lux
150 Lux
100 Lux
0 Lux
Building
Block D
Floor Plan
01 Floor
Sheet N°
001


North
BD-021 103 LKD
BD-021 104 Bedroom
BD-021 105 Bedroom
BD-021 106 Bedroom
BD-020 101 LKD
BD-020 102 Bedroom
BD-019 110 LKD
BD-019 111 Bedroom
BD-019 112 Bedroom
BD-018 114 Bedroom
BD-018 113 Bedroom
BD-018 115 LKD
BD-017 107 Bedroom
BD-017 108 Bedroom
BD-017 109 LKD
BD-022 97 LKD
BD-022 98 Bedroom
BD-023 95 LKD
BD-023 96 Bedroom
BD-024 100 LKD
BD-024 99 Bedroom
BD-015 93 Bedroom
BD-015 94 LKD
BD-016 90 Bedroom
BD-016 91 Bedroom
BD-016 92 LKD
North
D
Key Plan
SDA (Spatial Daylight Autonomy)
300 Lux
200 Lux
150 Lux
100 Lux
0 Lux
Building
Block D
Floor Plan
02 Floor
Sheet N°
002


North
BD-031 155 LKD
BD-031 156 Bedroom
BD-031 157 Bedroom
BD-031 158 Bedroom
BD-030 153 LKD
BD-030 154 Bedroom
BD-029 162 LKD
BD-029 163 Bedroom
BD-029 164 Bedroom
BD-028 166 Bedroom
BD-028 165 Bedroom
BD-028 167 LKD
BD-027 159 Bedroom
BD-027 160 Bedroom
BD-027 161 LKD
BD-032 149 LKD
BD-032 150 Bedroom
BD-033 147 LKD
BD-033 148 Bedroom
BD-034 152 LKD
BD-034 151 Bedroom
BD-025 145 Bedroom
BD-025 146 LKD
BD-026 142 Bedroom
BD-026 143 Bedroom
BD-026 144 LKD
North
D
Key Plan
SDA (Spatial Daylight Autonomy)
300 Lux
200 Lux
150 Lux
100 Lux
0 Lux
Building
Block D
Floor Plan
03 Floor
Sheet N°
003


North
BD-041 77 LKD
BD-041 78 Bedroom
BD-041 79 Bedroom
BD-041 80 Bedroom
BD-040 75 LKD
BD-040 76 Bedroom
BD-039 84 LKD
BD-039 85 Bedroom
BD-039 86 Bedroom
BD-038 88 Bedroom
BD-038 87 Bedroom
BD-038 89 LKD
BD-037 81 Bedroom
BD-037 82 Bedroom
BD-037 83 LKD
BD-042 71 LKD
BD-042 72 Bedroom
BD-043 69 LKD
BD-043 70 Bedroom
BD-044 74 LKD
BD-044 73 Bedroom
BD-035 67 Bedroom
BD-035 68 LKD
BD-036 64 Bedroom
BD-036 65 Bedroom
BD-036 66 LKD
North
D
Key Plan
SDA (Spatial Daylight Autonomy)
300 Lux
200 Lux
150 Lux
100 Lux
0 Lux
Building
Block D
Floor Plan
04 Floor
Sheet N°
004