digital dimensions

Daylight & Sunlight Assessments of a Proposed New Stadium for Dalymount Park, Dublin 7.

Date: **1st September 2023**

Prepared by John Healy
MSc Environmental Design of Buildings

1 Rathmines Road Upper, Dublin 6, D06 Y5P5 tel 01 4965340 email mail@digitaldimensions.ie
web digitaldimensions.ie Digital Dimensions Ltd trading as Digital Dimensions.

1. Introduction

The proposed development will consist of:

i. The demolition of the existing stadium and structures located on the site;
ii. The development of a new c.8,066 capacity stadium with provision for c. 6,272 seats and c.1,794 standing and new modern floodlighting;
iii. Reorientation of the pitch to a North/South Axis (105m x 68m) and installation of a new sand based grass pitch;
iv. A basement area (640 sq.m) to facilitate competition area changing rooms and facilities;
v. The provision of modern match-day facilities for teams and officials;
vi. Club offices & a merchandise shop for the anchor tenants Bohemian FC;
vii. The provision of a stadium bar/function room;
viii. The provision of 12 car parking spaces and 50 bicycle spaces within the site;
ix. A community facility with an area of 673sq.m over two floors to include a multi-functional community room and a community gym;
x. The provision of a public plaza and public thoroughfare along the eastern boundary to include various eateries only; and
xi. All associated plant, substation, waste storage, landscaping, boundary treatment, lighting and all ancillary site works to facilitate the proposed development.

1.1 Executive Summary

This preliminary report assesses the impact of the proposed development for Daylight and Sunlight on the neighbouring buildings. This analysis is carried out based on the information supplied by IDOM and Gilroy McMahon Architects.

1.2 Impact on adjacent properties

There will be a small reduction to the available daylight and sunlight levels to some of the adjacent dwellings. All the windows assessed retain a VSC level in excess of 27% or the ratio is not reduced below 80% of the existing value if below 27%. The reduction will be minor and meets the recommendations of the BRE guidelines.

There will be a minimal reduction in the available sunlight to some of the adjacent private amenity spaces, notwithstanding this, all private amenity spaces to the adjacent properties retain 2 hours sunlight over 50% of the amenity space on 21st March or the available levels will not be reduced below 80% of the existing value if below this. All areas assessed continue to meet or exceed the recommendations of the BRE guidelines BR209:2022 (third edition).

2. Methodology

2.1 Notes on the use of BRE guidance document BR209 (2022 3rd edition) - Site Layout Planning for Daylight and Sunlight.

Building Research Establishment (BRE) BR209: 2022 “Site Layout Planning for Daylight and Sunlight” (Third edition) was released in June 2022 and supersedes BR209: 2011 (Second edition). It is intended to be used with the interior daylight recommendations of BS EN 17037 British Standard Daylight in Buildings. BR209: 2022 is a comprehensive revision of the 2011 edition of Site Layout Planning for Daylight and Sunlight.

BR209: 2022 sets out that “The guidance here is intended for use in the United Kingdom and in the Republic of Ireland, though recommendations in the Irish Standard IS EN 17037 may vary from those in BS EN17037.”

EN 17037 is a unified daylighting standard published by the European Committee for Standardization (CEN) in 2018. It is applicable across all countries within the EU including Ireland with the Irish edition IS EN17037:2018. The standard is enacted in Britain under BS EN 17037:2018+A1:2021 with a UK National Annex for regional assessments. The daylight and sunlight assessment methods referenced in BR209: 2022 (third edition) for internal daylight and sunlight provision are common to both the Irish Standard Version and the UK version.

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

BR209: 2022 updates guidance in two areas and they are summarised below:

Impact on daylight and sunlight to adjacent buildings.

This is broadly in line with the previous version of the BRE guidelines (2011) and the assessment methods contained within BR 209:2022. The metrics are the same for assessing impact in the areas of Daylight (VSC) and Sunlight (APSH) to adjacent buildings. Sunlight to adjacent amenity space is assessed through the measurement of sunlight availability on the 21st March. Clarity has been provided in a number of areas on the appropriate use of each assessment.

Interior daylight and sunlight to proposed buildings.

The BRE guidelines (2022) recommend the use of BS EN 17037:2018 for assessing the quality of interior spaces in proposed developments, this supersedes BS 8206-2:2008. BS EN 17037 sets out assessment methods for daylight provision and access to sunlight. The use of the Average Daylight Factor (ADF) assessment is no longer recommended. BS EN 17037 is based on the European standard EN 17037 and uses assessment methodologies not directly comparable to BS 8206-2.

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

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

- BR209 2022: Site Layout Planning for Daylight and Sunlight (Third edition).
- BS EN 17037:2018+A1:2021 Daylight in Buildings
- IS EN 17037:2018 Daylight in Buildings

The BRE guidelines (2022) state at the outset that “It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location.”

This is accordance with the most relevant S.28 Ministerial Guidelines including Section 6.6 of the Sustainable Urban Housing: Design Standards for New Apartments (2022), and Section 3.2 of the Urban Development and Building Heights Guidelines for Planning Authorities (2018).

Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2022) states that:

> *Planning authorities should avail of appropriate expert advice where necessary and have regard to quantitative performance approaches to daylight provision outlined in guides like A New European Standard for Daylighting in Buildings IS EN17037:2018, UK National Annex BS EN17037:2019 and the associated BRE Guide 209 2022 Edition (June 2022), or any relevant future standards or guidance specific to the Irish context, when undertaken by development proposers which offer the capability to satisfy minimum standards of daylight provision.*

That the recommendations of the BRE guidelines (2022) are not suitable for rigid application to all developments in all contexts is of particular importance in the context of national and local policies for the consolidation and densification of urban areas.

2.2 Daylight to existing dwellings

BRE guidance document (2022) "Site layout planning for daylight and sunlight" relates to daylight and sunlight to potential impact in neighbouring buildings. As set out above, this is broadly in line with the previous version of the BRE guidelines (2011). The metrics are the same for assessing impact in the areas of Daylight (VSC) and Sunlight (APSH) to adjacent buildings. Sunlight to adjacent amenity space is assessed through the measurement of sunlight availability on the 21st March. Clarity has been provided in a number of areas in BR209:2022 (third edition) on the appropriate use of each assessment.

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

BRE guidelines (2022) recommend that: "*Loss of light to existing windows need not be assessed if the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window."*
The diffuse light of the existing building may be adversely affected if part of a new building measured in a vertical section perpendicular to the main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25º to the horizontal. If a window falls within a 45° angle both in plan and elevation with a new development in place then the window may be affected and should be assessed.

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

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

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

The BRE guidelines (2022) recommend one of two criteria is met when assessing for the Vertical Sky Component:
a) Where the Vertical Sky Component at the centre of the existing window exceeds 27% with the new development in place then enough sky light should still be reached by the existing window.

b) Where the Vertical Sky Component with the new development in place is both less than 27% and less than 0.8 times its former value, then the area lit by the window is likely to appear more gloomy, and electric light will be needed more of the time.

The BRE guidelines (2022) state that if the VSC is:
- At least 27%, then conventional window design will usually give reasonable results;
- Between 15% and 27%, then special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight;
- Between 5% and 15%, then it is very difficult to prove adequate daylight unless very large windows are used;
- Less than 5%, then it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed

This report assesses the percentage of direct sky illuminance that falls on the centre point of neighbouring windows that could be affected by the proposed development, The Vertical Sky Component (VSC) as per the methodologies contained in the BRE guidelines BR209:2022 (third edition).

2.3 Sunlight to existing buildings

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

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

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

Met Éireann Sunlight Hours Data Set 1981-2010													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Average Sunlight Hours/ Day	1:54	2:45	3:36	5:32	6:44	6:40	5:17	5:13	4:16	3:17	2:10	1:44	
Average Sunlight Hours/ Month	58:54	77:00	111:36	166:00	208:44	200:00	163:47	161:43	128:00	101:47	65:00	53:44	1496.25
Total Available Sunlight Hours	252	265	358	412	488	485	496	451	375	320	250	248	4383
Probable Sunlight Hours Ratio	23.37%	29.06%	31.17%	40.29%	42.77%	41.24%	33.02%	35.86%	34.13%	31.81%	26.00%	21.67%	34.14%

Table 1: Average monthly sunlight hours recorded at Dublin Airport - Data set 1981-2010

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

2.4 Daylight in the Proposed Development.

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

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

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

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

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

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

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

The EN17037:2018 Standard deals exclusively with new developments and does not give guidance or metrics on loss of light or sunlight to existing properties. EN 17037:2018 sets out values for Minimum and Target levels to be achieved with a minimum, medium and high compliance level for each. The guideline recommends that the minimum level should be achieved but does not give guidance on the number of units or fraction within a multiple residential unit development that should achieve these values. Additionally it does not differentiate between room use and weighted targets for rooms which would have a lesser requirement. The UK National annex sets out factors for UK specific settings where it is difficult to achieve natural daylighting.

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

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

BS EN 17037 gives three levels of recommendation for daylight provision in an interior space: minimum, medium and high. BR209 (2022 3rd edition) Section C3 recommends for compliance with the standard a space should achieve the minimum level.

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

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

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

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

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

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

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

2.5 Sunlight to proposed developments

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

The BRE guidelines (2022) states that BS EN 17037 should be used to assess for interior access to direct sunlight. BS EN 17037 sets recommendations for access to sunlight in a range achieving compliance from Minimum to High. In dwellings at least one habitable room, preferably a living room, should achieve the minimum of 1.5 direct hours on a specified date between 1st February and 21st March, with a cloudless sky. This assessment uses the 21st March. The guidelines recommends a time step of 5 minutes or less for the assessment interval. The minimum level to achieve is 1.5, the medium level is 3 hours and the high level is 4 hours direct sunlight.

2.6 Sunlight to gardens and open spaces

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

> *"It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March."*

2.7 Calculations of Trees & Hedges

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

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

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

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

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

> *"Where the loss of skylight or sunlight fully meets the guidelines in this book, the impact is assessed as negligible or minor adverse. Where the loss of light is well within the guidelines, or only a small number of windows or limited area of open space lose light (within the guidelines), a classification of negligible impact is more appropriate. Where the loss of light is only just within the guidelines, and a larger number of windows or open space area are affected, a minor adverse impact would be more appropriate, especially if there is a particularly strong requirement for daylight and sunlight in the affected building or open space.*
>
> *Where the loss of skylight or sunlight does not meet the guidelines in this book, the impact is assessed as minor, moderate or major adverse. Factors tending towards a minor adverse impact include:*
>
> - *only a small number of windows or limited area of open space are affected*
> - *the loss of light is only marginally outside the guidelines*
> - *an affected room has other sources of skylight or sunlight*
> - *the affected building or open space only has a low level requirement for skylight or sunlight*
> - *there are particular reasons why an alternative, less stringent, guideline should be applied.*
>
> *Factors tending towards a major adverse impact include:*
>
> - *a large number of windows or large area of open space are affected*
> - *the loss of light is substantially outside the guidelines*
> - *all the windows in a particular property are affected*
> - *the affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight, eg a living room in a dwelling or a children's playground.*
>
> *Beneficial impacts occur when there is a significant increase in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space.*
>
> *Beneficial impacts should be worked out using the same principles as adverse impacts. Thus a tiny increase in light would be classified as a negligible impact, not a minor beneficial impact."*

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

3. Daylight to adjacent buildings.

3.1 Detailed assessment to adjacent school

The BRE guide recommends assessing the Vertical Sky Component (VSC) to adjacent properties. The BRE guideline recommends that if a window retains a VSC in excess of 27% with the proposed development in place then it will still receive enough daylight. If the existing VSC is below 27% or is reduced below 27% and below 0.8 times its former value then the diffuse light maybe adversely affected.

The guidelines sets out which rooms need to be assessed for daylight, it states:

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

The plans of the school are available, the windows that serve sanitary accommodation and circulation areas are noted non-applicable. Test points representing windows are indicated in Figure 2 and the results are shown in Table 6 below.

Test points representing windows in the adjacent dwellings are indicated in Figures 3 - 16. The results are shown in Tables 7 - 14 below.

Figure 1: Google maps of St. Peter's Road locating the school and houses relevant to this study.

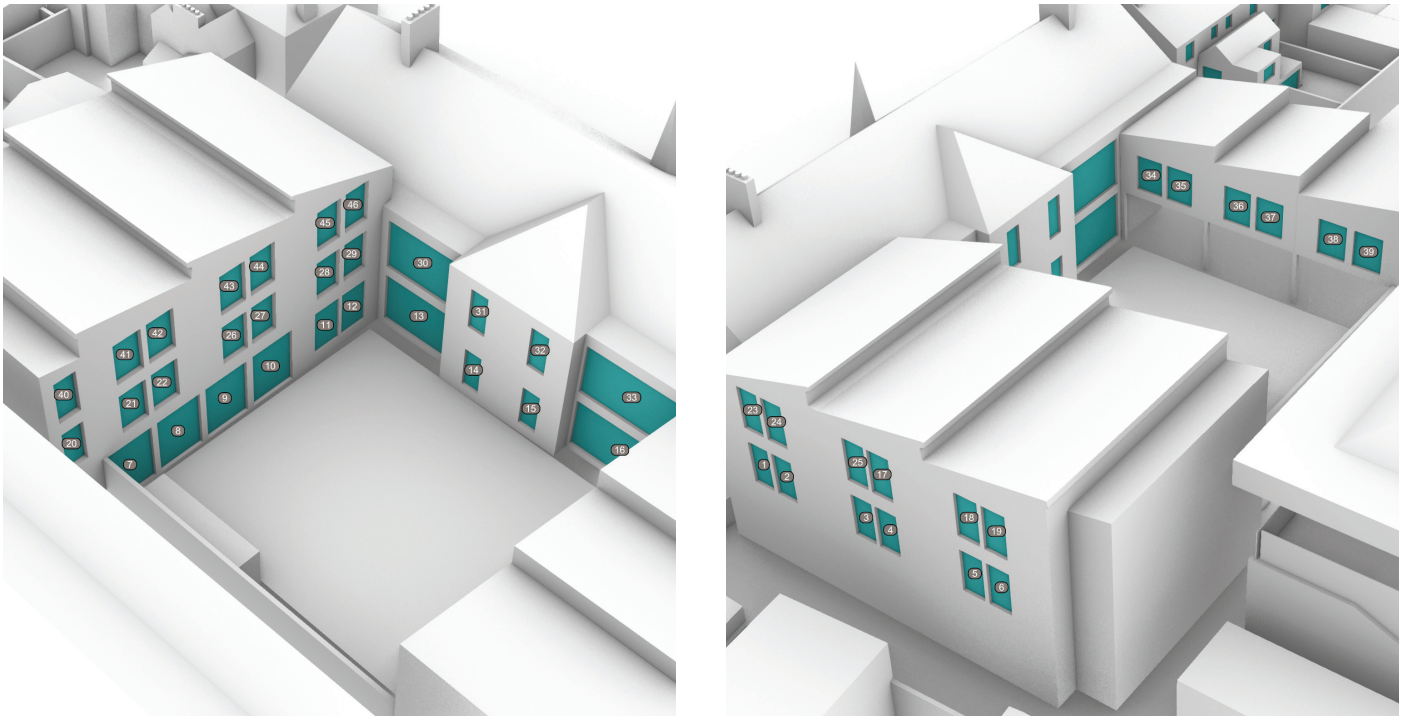


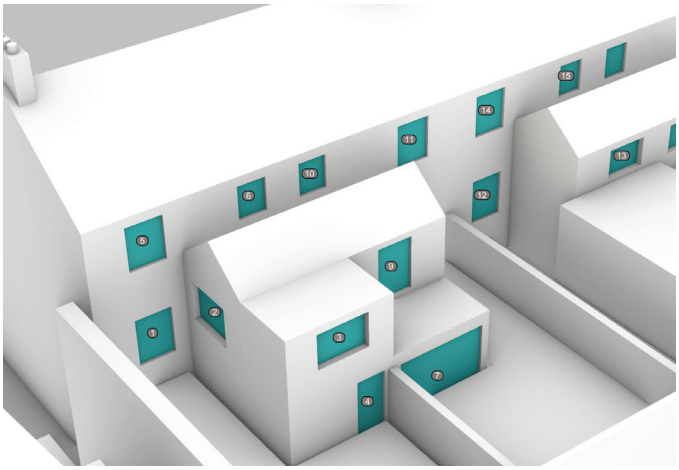
Figure 2: St. Peters NS: View of model locating VSC test points.

Vertical Sky Component					
Location	Use	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
		Existing %	Proposed %		
1	Circulation	35.0	35.0	100.0%	N/A
2	Circulation	35.1	35.1	100.0%	N/A
3	Circulation	35.2	35.2	100.0%	N/A
4	Circulation	35.3	35.3	100.0%	N/A
5	Circulation	35.4	35.4	100.0%	N/A
6	Circulation	35.4	35.4	100.0%	N/A
7	Habitable	23.2	22.0	94.9%	Y
8	Habitable	28.8	24.2	83.9%	Y
9	Habitable	29.0	25.3	87.2%	Y
10	Habitable	27.6	24.9	90.5%	Y
11	Habitable	23.8	22.1	92.9%	Y
12	Habitable	19.7	18.4	93.3%	Y
13	Circulation	20.8	18.1	87.0%	N/A
14	Circulation	25.1	21.9	87.1%	N/A
15	Circulation	25.8	22.7	87.8%	N/A
16	Circulation	21.8	19.4	89.0%	N/A
17	Circulation	36.5	36.5	100.0%	N/A
18	Circulation	36.4	36.4	100.0%	N/A
19	Circulation	36.5	36.5	100.0%	N/A
20	Sanitary Accom.	33.2	25.4	76.3%	N/A
21	Habitable	33.9	28.4	83.9%	Y
22	Habitable	33.6	29.6	88.0%	Y
23	Circulation	36.6	36.6	100.0%	N/A
24	Circulation	36.6	36.6	100.0%	N/A
25	Circulation	36.5	36.5	100.0%	N/A
26	Habitable	32.9	30.6	93.3%	Y
27	Habitable	32.4	30.6	94.5%	Y
28	Habitable	30.6	29.4	96.3%	Y
29	Habitable	26.7	25.7	96.4%	Y
30	Circulation	24.8	23.0	92.8%	N/A
31	Circulation	30.7	28.6	93.4%	N/A
32	Circulation	32.0	30.1	93.9%	N/A
33	Circulation	30.0	28.6	95.2%	N/A
34	Habitable	24.2	23.7	97.8%	Y
35	Circulation	28.2	27.5	97.4%	N/A
36	Sanitary Accom.	30.1	28.8	95.8%	N/A
37	Habitable	30.7	28.8	94.1%	Y
38	Habitable	31.3	27.7	88.5%	Y
39	Habitable	31.8	26.2	82.5%	Y
40	Sanitary Accom.	34.9	33.0	94.7%	N/A
41	Habitable	35.8	33.7	93.9%	Y
42	Habitable	35.8	34.1	95.1%	Y
43	Habitable	35.5	34.4	96.8%	Y
44	Habitable	35.3	34.3	97.0%	Y
45	Habitable	34.7	33.9	97.7%	Y
46	Habitable	34.2	33.5	97.9%	Y

Table 6: Vertical sky component for windows in adjacent St. Peter's National School.

3.2 Comment on St. Peters National School

All windows serving habitable rooms meet the criteria set out in the BRE guidelines (2022).



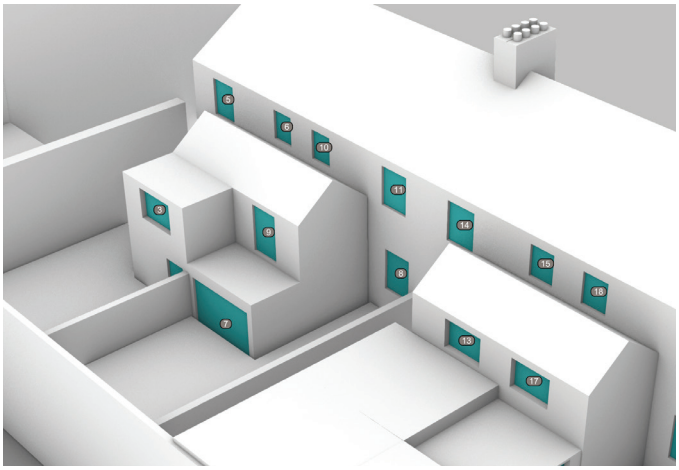


Figure 3: No.10 - 16 St. Peters Road (even numbers): View of model locating VSC test points.

Vertical Sky Component				
Location	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
	Existing %	Proposed %		
1	16.2	15.7	97.0%	Y
2	13.2	13.1	99.4%	Y
3	30.5	26.4	86.7%	Y
4	19.0	18.3	96.1%	Y
5	32.7	30.9	94.6%	Y
6	32.4	31.8	98.2%	Y
7	25.5	23.9	93.5%	Y
8	23.6	20.2	85.5%	Y
9	32.9	28.5	86.6%	Y
10	32.7	32.1	98.2%	Y
11	35.8	32.4	90.5%	Y
12	21.1	19.0	89.9%	Y
13	32.8	27.5	83.9%	Y
14	35.3	32.3	91.4%	Y
15	33.0	32.3	98.0%	Y
16	23.9	20.2	84.5%	Y
17	33.0	27.7	83.8%	Y
18	33.0	32.4	97.9%	Y
19	23.2	23.2	100.0%	Y
20	21.7	21.8	100.1%	Y
21	22.1	21.2	96.2%	Y
22	36.3	32.8	90.5%	Y
23	21.1	17.7	83.6%	Y

Table 7: Vertical sky component for windows in adjacent dwellings in St. Peter's Road.

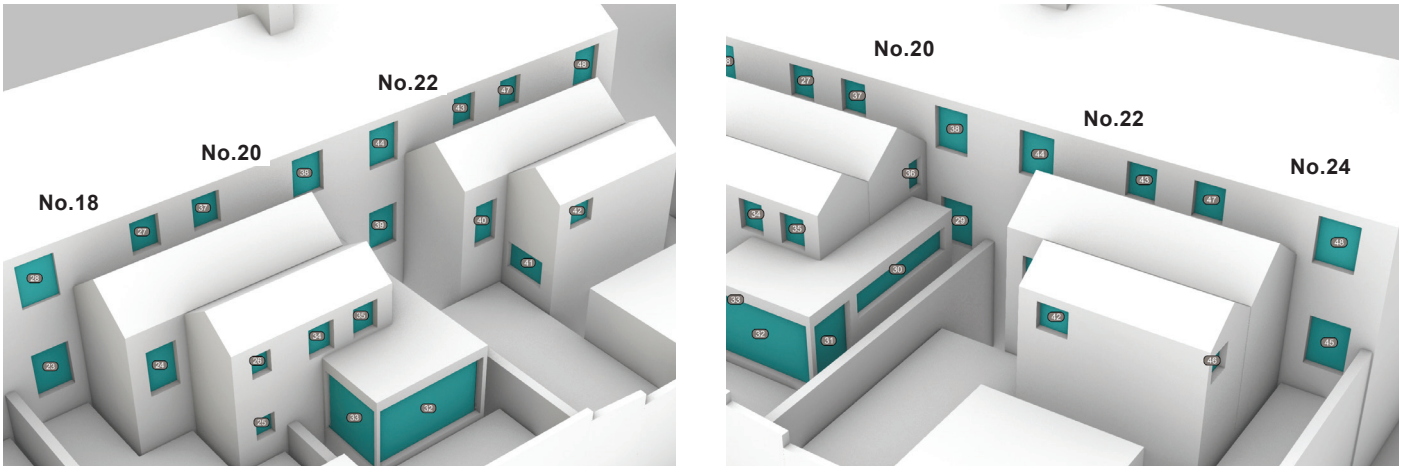


Figure 4: No.18 - 24 St. Peters Road (even numbers): View of model locating VSC test points.

Vertical Sky Component				
Location	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
	Existing %	Proposed %		
24	25.6	21.1	82.6%	Y
25	27.7	23.7	85.6%	Y
26	34.5	28.5	82.6%	Y
27	29.9	28.9	96.7%	Y
28	35.8	32.5	90.9%	Y
29	13.1	12.1	92.7%	Y
30	18.6	17.7	94.9%	Y
31	26.7	25.7	96.1%	Y
32	29.5	26.2	88.8%	Y
33	22.9	22.5	98.2%	Y
34	35.8	29.9	83.4%	Y
35	35.9	30.0	83.6%	Y
36	16.6	16.2	97.5%	Y
37	29.8	28.9	96.9%	Y
38	33.6	31.1	92.4%	Y
39	19.3	16.8	87.0%	Y
40	26.0	21.9	84.3%	Y
41	18.9	17.6	93.2%	Y
42	35.8	30.6	85.5%	Y
43	29.9	28.9	96.8%	Y
44	33.5	30.6	91.4%	Y
45	22.2	20.1	90.8%	Y
46	29.9	29.6	99.2%	Y
47	29.9	29.0	97.1%	Y
48	33.7	31.8	94.2%	Y

Table 8: Vertical sky component for windows in adjacent dwellings in St. Peter's Road.

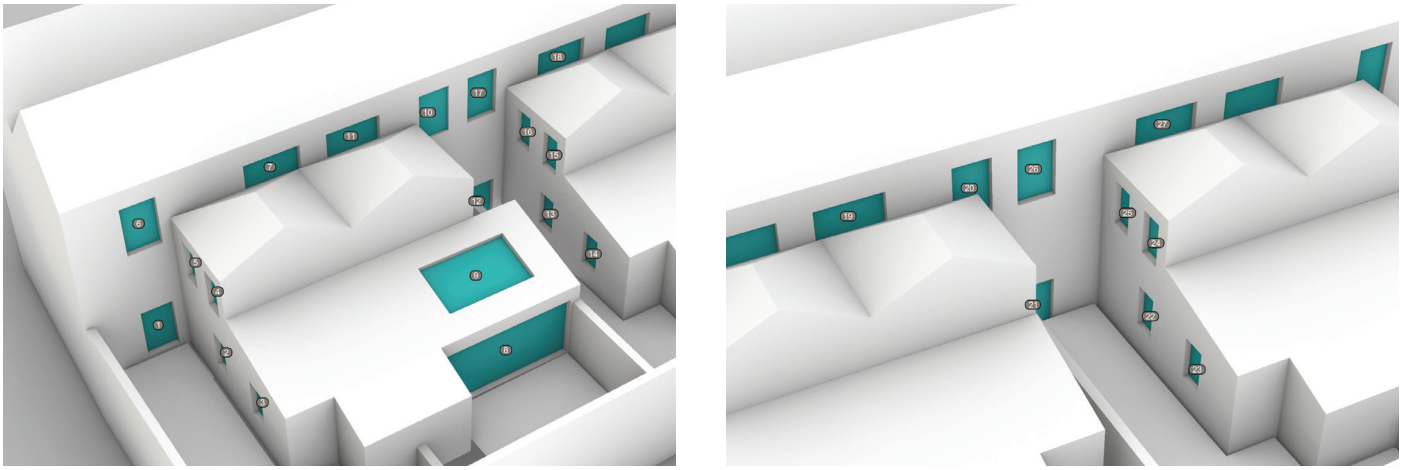


Figure 5: No. 26 - 30 St. Peters Road (even numbers): View of model locating VSC test points.

Vertical Sky Component				
Location	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
	Existing %	Proposed %		
1	17.9	16.1	90.2%	Y
2	24.1	23.1	95.8%	Y
3	28.1	26.9	95.6%	Y
4	28.2	27.0	95.7%	Y
5	22.6	21.5	95.4%	Y
6	34.1	32.1	94.1%	Y
7	30.1	30.0	99.7%	Y
8	29.5	27.4	92.7%	Y
9	87.0	85.6	98.4%	Y
10	35.2	34.5	98.0%	Y
11	27.0	26.9	99.8%	Y
12	11.0	11.0	99.8%	Y
13	10.5	10.4	99.4%	Y
14	15.3	14.6	95.4%	Y
15	24.7	23.5	95.3%	Y
16	19.0	18.2	96.0%	Y
17	33.7	32.7	97.1%	Y
18	26.7	26.7	99.7%	Y
19	30.1	29.6	98.4%	Y
20	31.5	31.4	99.7%	Y
21	14.3	14.3	100.0%	Y
22	14.3	13.9	97.8%	Y
23	20.7	19.8	95.8%	Y
24	24.9	23.9	96.0%	Y
25	19.2	18.6	96.7%	Y
26	33.3	32.9	98.8%	Y
27	26.7	26.6	99.5%	Y

Table 9: Vertical sky component for windows in adjacent dwellings in St. Peter's Road.

Figure 6: Google maps view of Connaught Street locating houses relevant to this study.

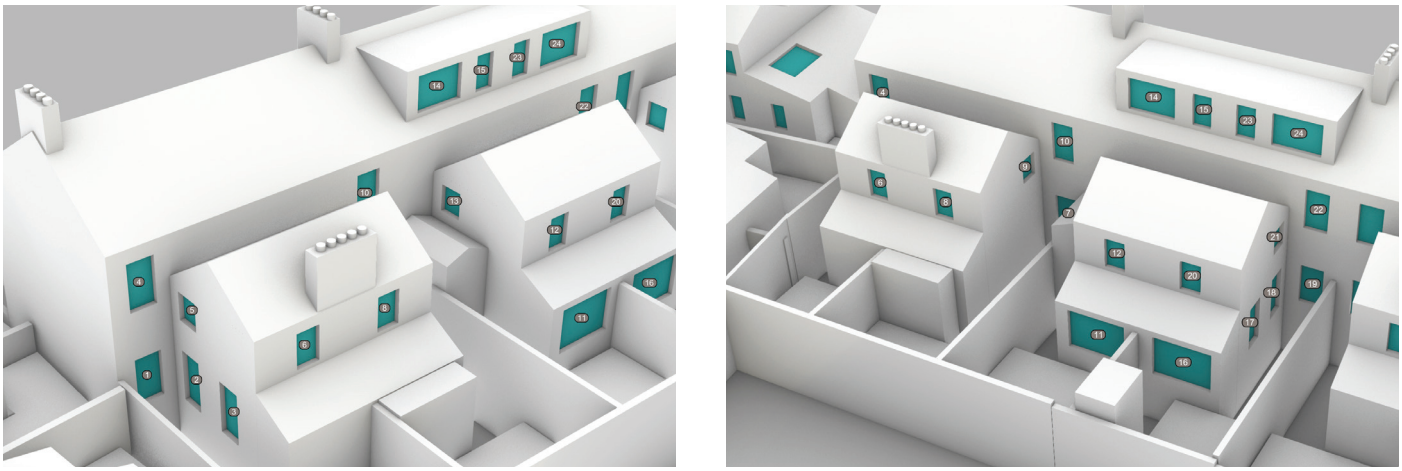


Figure 7: No.53 - 59 Connaught Street (odd numbers): View of model locating VSC & APSH test points.

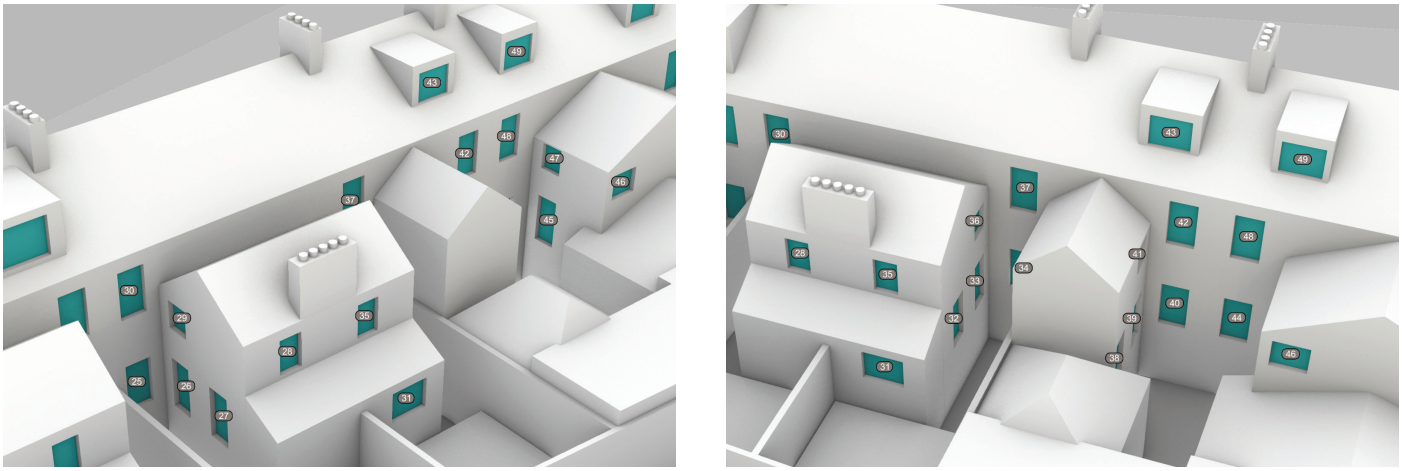


Figure 8: No.45 - 51 Connaught Street (odd numbers): View of model locating VSC & APSH test points.

Vertical Sky Component				
Location	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
	Existing %	Proposed %		
1	18.4	18.4	100.0%	Y
2	16.0	16.0	100.0%	Y
3	21.9	21.9	100.0%	Y
4	29.3	29.2	99.8%	Y
5	19.5	19.5	99.9%	Y
6	32.2	31.0	96.2%	Y
7	14.1	14.0	98.9%	Y
8	32.6	31.3	95.8%	Y
9	17.4	16.8	96.6%	Y
10	29.8	28.8	96.6%	Y
11	28.9	27.9	96.5%	Y
12	33.2	31.4	94.6%	Y
13	17.4	17.4	100.0%	Y
14	36.4	35.7	98.1%	Y
15	34.2	33.4	97.7%	Y
16	27.6	25.0	90.6%	Y
17	15.3	14.8	97.0%	Y
18	10.0	9.6	96.3%	Y
19	15.7	14.2	90.8%	Y
20	33.3	31.3	94.1%	Y
21	17.9	17.6	98.2%	Y
22	29.8	28.4	95.4%	Y
23	34.1	33.4	97.7%	Y
24	36.4	35.5	97.5%	Y
25	15.9	14.9	93.5%	Y
26	10.0	10.0	100.0%	Y
27	14.9	14.9	100.0%	Y
28	33.4	31.0	92.8%	Y
29	17.0	17.0	100.0%	Y
30	29.6	28.7	97.0%	Y
31	32.4	28.0	86.3%	Y
32	13.0	13.0	100.0%	Y
33	6.1	6.1	100.0%	Y
34	10.9	8.8	80.1%	Y
35	33.5	30.9	92.2%	Y
36	15.8	15.8	100.0%	Y
37	29.0	27.3	94.2%	Y
38	18.6	18.6	99.7%	Y
39	14.0	13.7	97.6%	Y
40	19.4	17.3	89.0%	Y
41	21.0	21.0	100.0%	Y
42	32.6	30.9	94.8%	Y
43	37.6	36.6	97.4%	Y
44	20.2	17.7	87.8%	Y
45	12.8	12.7	99.0%	Y
46	33.5	30.7	91.7%	Y
47	19.3	19.2	99.3%	Y
48	33.7	31.9	94.8%	Y
49	37.6	36.5	97.3%	Y

Table 10: Vertical sky component for windows in adjacent dwellings on Connaught Street.

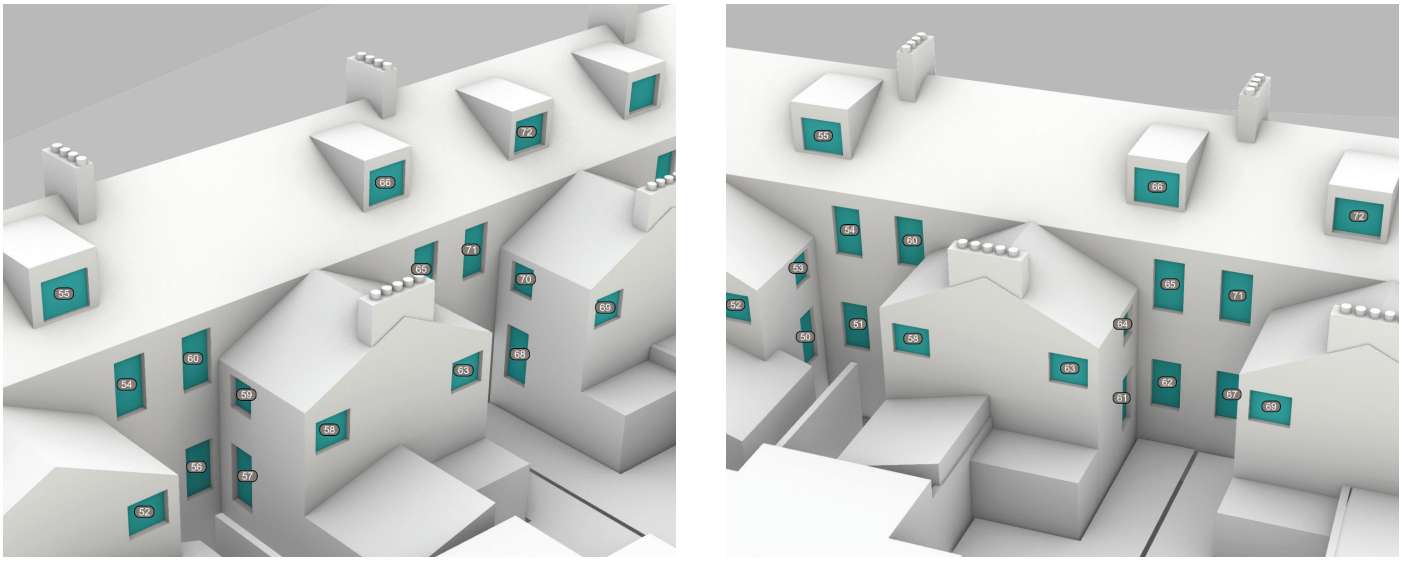


Figure 9: No.37 - 43 Connaught Street (odd numbers): View of model locating VSC & APSH test points.

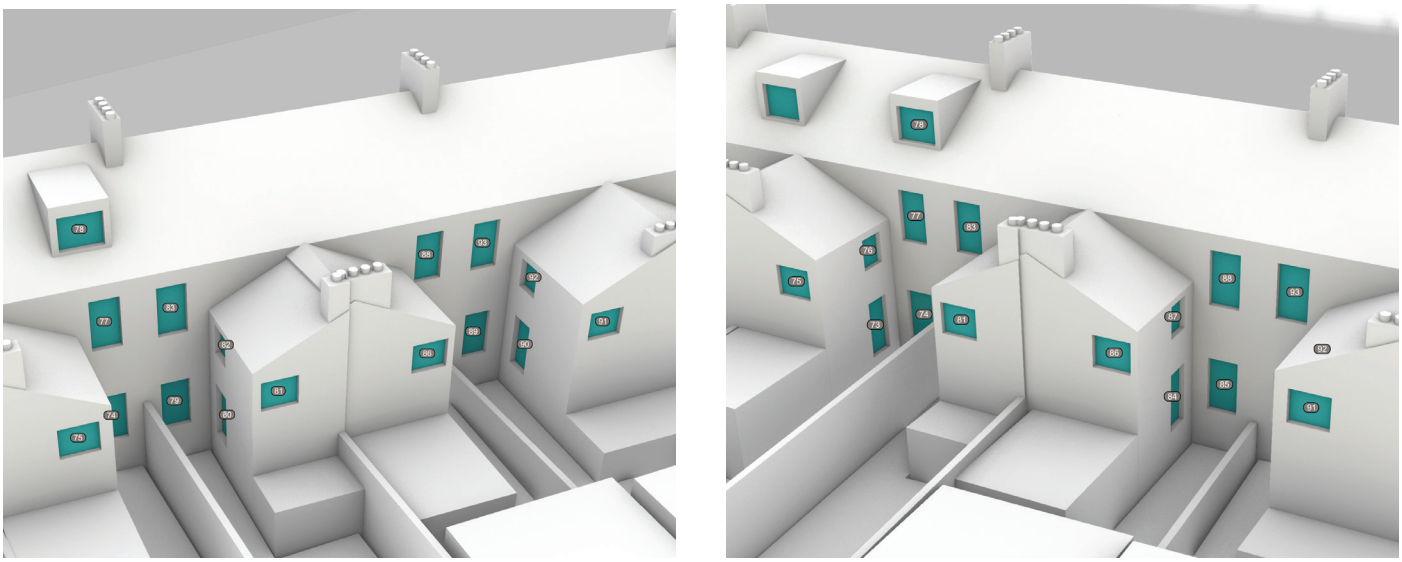


Figure 10: No.29 - 35 Connaught Street (odd numbers): View of model locating VSC & APSH test points.

Vertical Sky Component				
Location	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
	Existing %	Proposed %		
50	12.9	12.8	99.4%	Y
51	19.5	17.8	91.4%	Y
52	33.4	30.9	92.3%	Y
53	19.8	19.8	100.0%	Y
54	33.4	31.9	95.5%	Y
55	37.5	36.6	97.5%	Y
56	17.9	15.6	87.3%	Y
57	12.7	12.2	95.4%	Y
58	34.6	32.4	93.7%	Y
59	19.4	18.9	97.4%	Y
60	32.5	31.1	95.5%	Y
61	12.3	12.6	102.9%	Y
62	18.3	17.4	94.8%	Y
63	34.4	32.6	94.8%	Y
64	19.0	19.0	100.0%	Y
65	32.1	31.5	98.2%	Y
66	37.4	36.8	98.2%	Y
67	19.5	17.3	88.8%	Y
68	13.2	12.2	92.8%	Y
69	33.9	32.8	96.6%	Y
70	19.8	19.0	96.2%	Y
71	32.4	31.5	97.1%	Y
72	35.0	34.5	98.7%	Y
73	12.5	13.0	104.1%	Y
74	17.4	17.7	101.6%	Y
75	33.5	32.9	98.4%	Y
76	19.2	19.6	101.7%	Y
77	31.5	32.0	101.6%	Y
78	34.9	34.6	99.1%	Y
79	18.2	18.1	99.3%	Y
80	12.7	12.1	95.3%	Y
81	32.7	33.0	100.9%	Y
82	19.2	18.5	96.2%	Y
83	31.8	31.9	100.3%	Y
84	12.1	12.5	103.3%	Y
85	16.0	18.0	112.4%	Y
86	31.0	31.9	103.0%	Y
87	19.3	19.3	100.1%	Y
88	31.1	32.1	103.3%	Y
89	17.4	18.3	105.0%	Y
90	13.3	12.4	93.4%	Y
91	30.1	31.8	105.5%	Y
92	19.0	18.4	97.2%	Y
93	31.5	32.3	102.8%	Y

Table 11: Vertical sky component for windows in adjacent dwellings on Connaught Street.

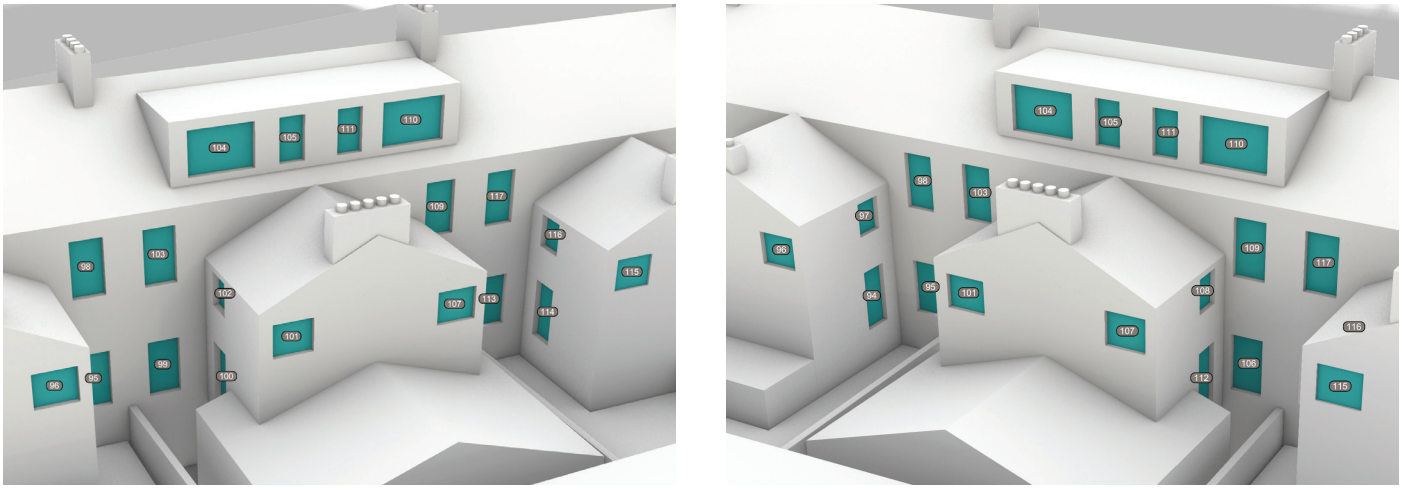


Figure 11: No.21 - 25 Connaught Street (odd numbers): View of model locating VSC & APSH test points.

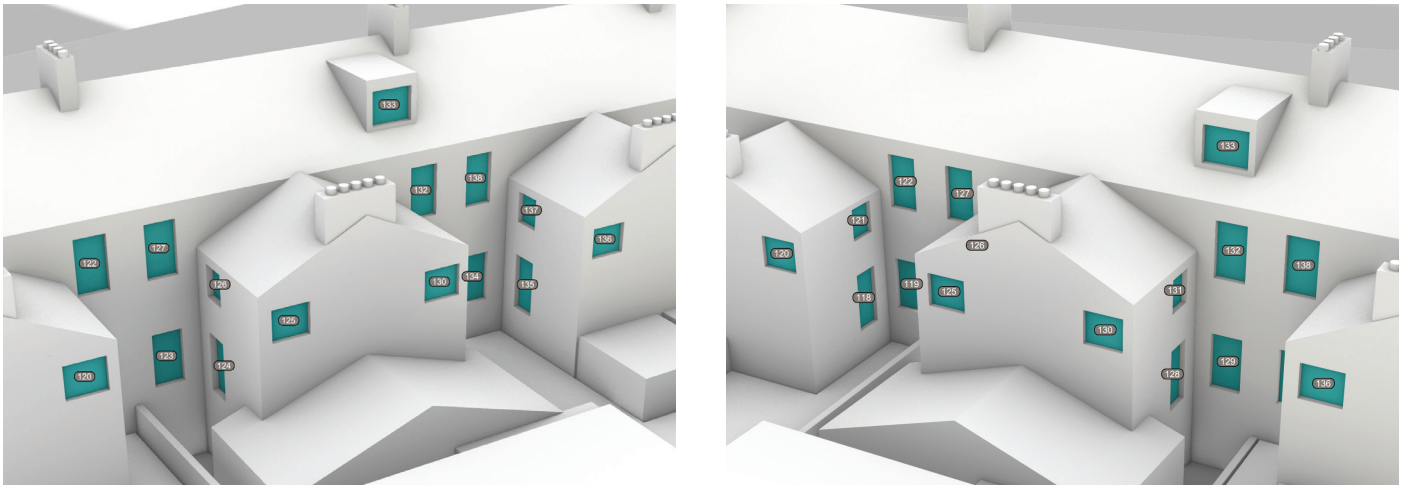


Figure 12: No.13 - 19 Connaught Street (odd numbers): View of model locating VSC & APSH test points.

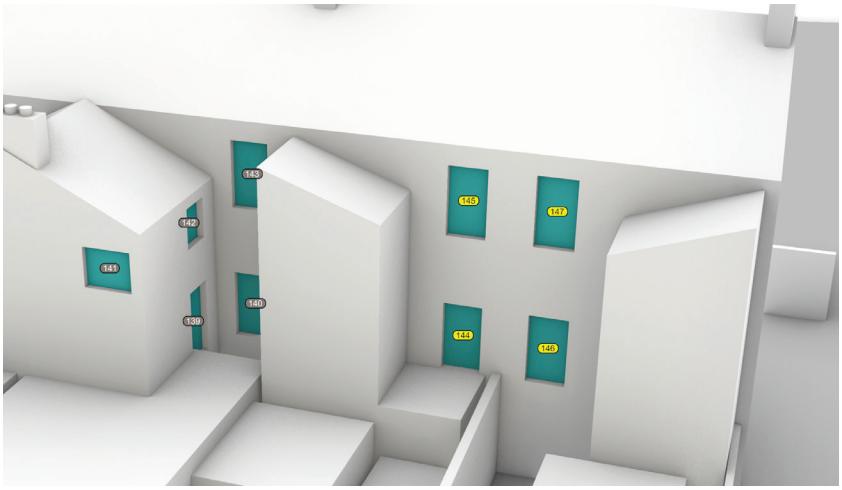


Figure 13: No.7 - 11 Connaught Street (odd numbers): View of model locating VSC & APSH test points.

Vertical Sky Component				
Location	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
	Existing %	Proposed %		
94	13.0	12.8	98.3%	Y
95	16.8	18.8	112.1%	Y
96	30.2	32.1	106.3%	Y
97	18.9	18.6	98.4%	Y
98	30.7	31.8	103.7%	Y
99	17.3	19.6	113.5%	Y

Vertical Sky Component				
Location	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
	Existing %	Proposed %		
100	13.2	13.2	99.8%	Y
101	30.2	32.1	106.0%	Y
102	19.3	19.3	99.9%	Y
103	30.7	32.0	104.0%	Y
104	35.3	35.1	99.2%	Y
105	33.2	32.7	98.7%	Y
106	14.6	15.4	106.0%	Y
107	30.3	32.0	105.6%	Y
108	19.6	19.0	96.9%	Y
109	30.0	30.5	101.6%	Y
110	35.2	34.7	98.5%	Y
111	33.1	32.7	98.6%	Y
112	12.2	11.6	95.3%	Y
113	16.0	18.5	115.2%	Y
114	11.5	12.0	104.3%	Y
115	31.3	32.6	104.2%	Y
116	17.4	17.7	102.0%	Y
117	30.3	30.9	102.1%	Y
118	11.5	11.3	98.4%	Y
119	14.6	14.0	95.4%	Y
120	29.6	30.3	102.3%	Y
121	18.9	18.7	98.7%	Y
122	30.0	29.5	98.6%	Y
123	15.4	16.1	104.5%	Y
124	11.8	12.5	106.1%	Y
125	28.6	28.5	99.7%	Y
126	18.5	19.0	102.9%	Y
127	29.9	29.5	98.8%	Y
128	12.0	12.2	101.7%	Y
129	15.5	15.3	98.5%	Y
130	28.9	28.6	98.9%	Y
131	18.9	19.0	100.4%	Y
132	29.6	28.7	97.1%	Y
133	33.5	32.5	97.0%	Y
134	15.6	15.2	97.4%	Y
135	12.3	12.7	103.7%	Y
136	28.3	27.9	98.5%	Y
137	19.3	19.4	100.5%	Y
138	30.0	29.4	97.9%	Y
139	7.5	7.6	101.9%	Y
140	11.3	11.9	104.9%	Y
141	28.8	28.7	99.7%	Y
142	12.5	12.5	100.2%	Y
143	26.3	26.0	98.6%	Y
144	19.7	20.5	104.1%	Y
145	30.1	30.0	99.5%	Y
146	21.3	22.1	103.7%	Y
147	30.2	30.3	100.2%	Y

Table 12: Vertical sky component for windows in adjacent dwellings on Connaught Street

Figure 15: Google maps view of Dalymount Terrace, North Circular Road locating houses relevant to this study.

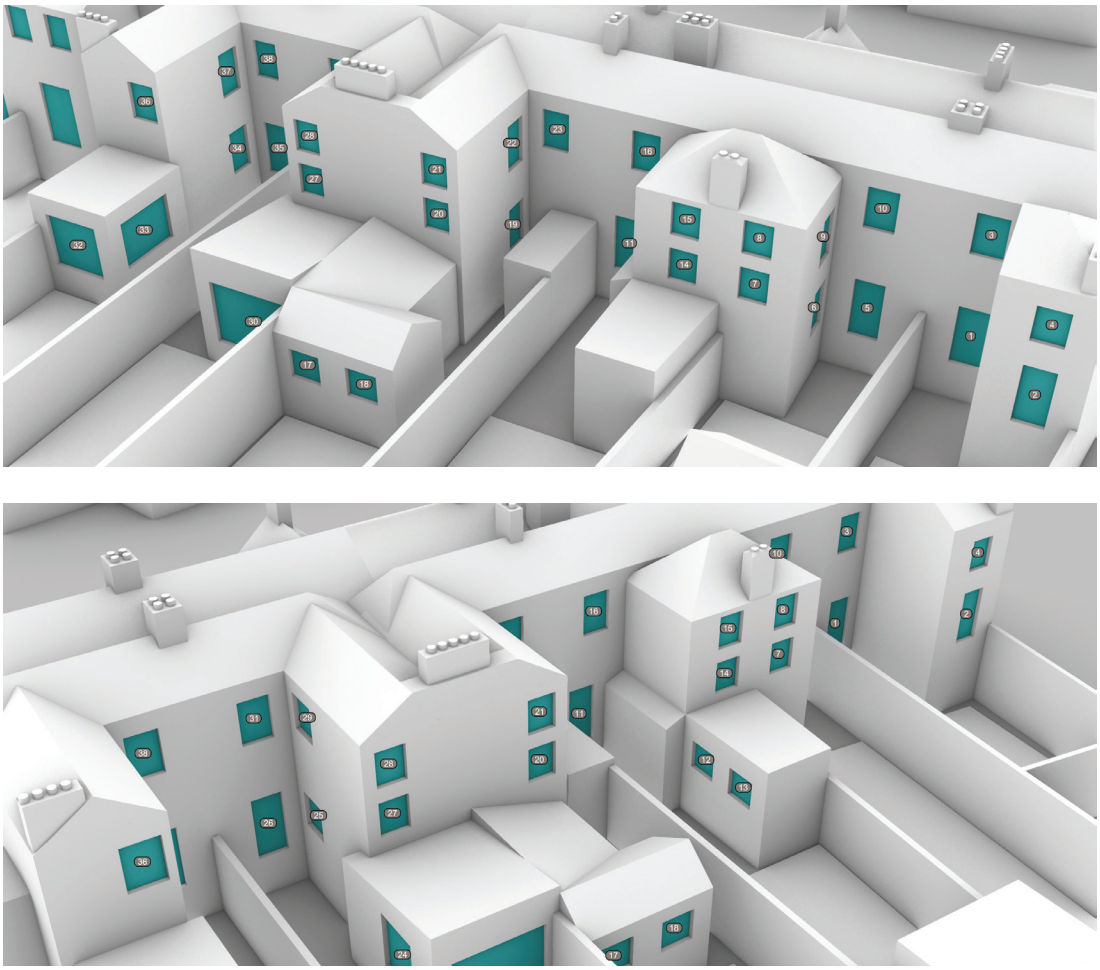


Figure 14: Dalymount Terrace, North Circular Road: View of model locating VSC test points.

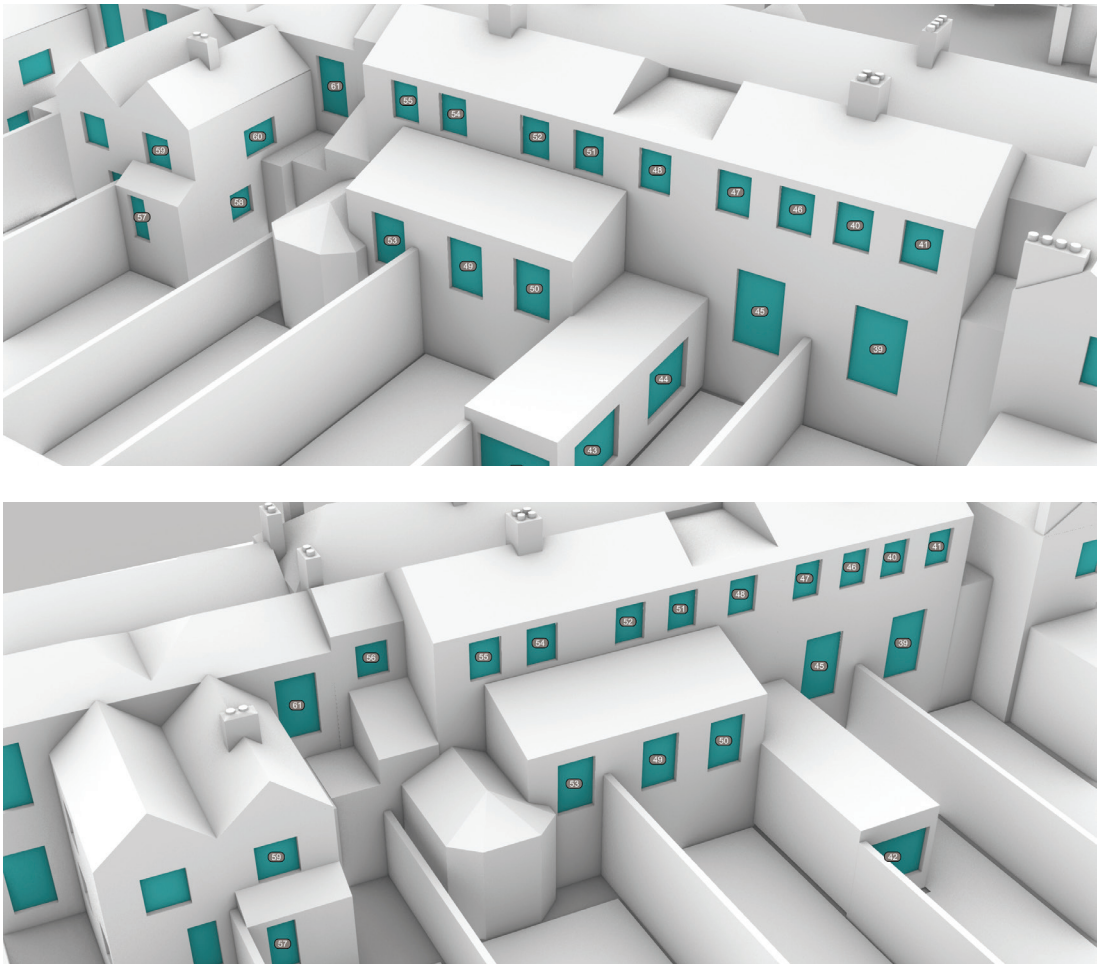


Figure 17: Dalymount Terrace, North Circular Road: View of model locating VSC test points.

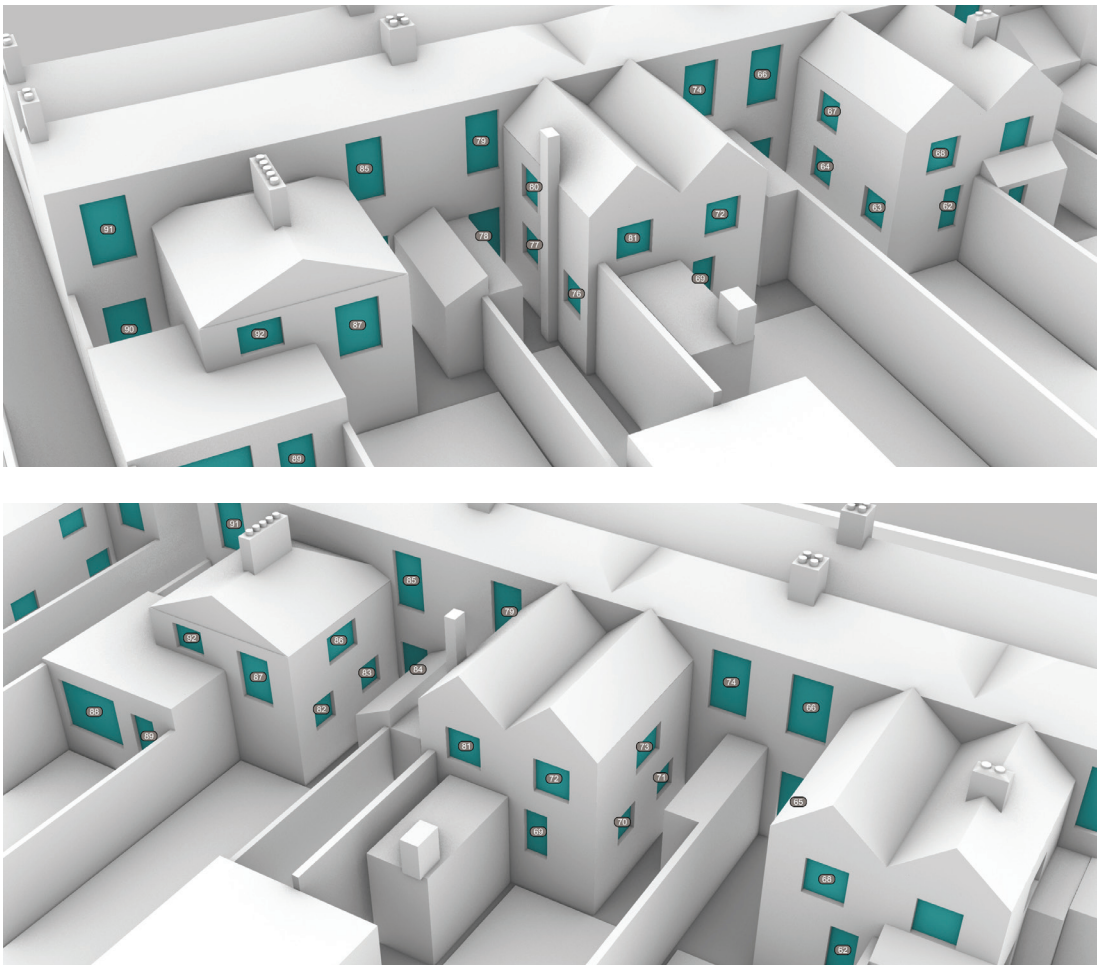


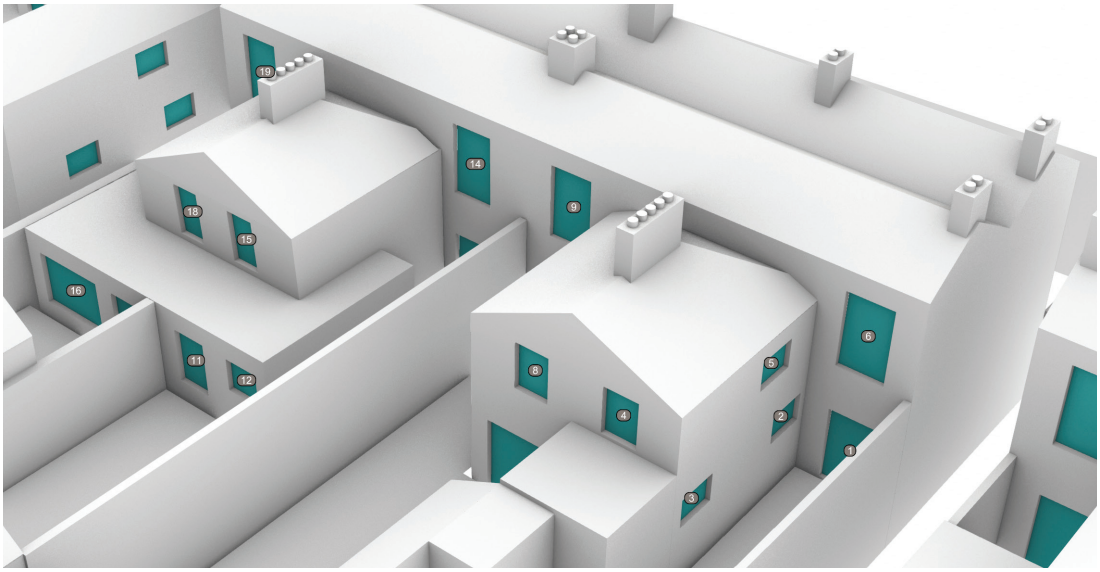
Figure 16: Dalymount Terrace, North Circular Road: View of model locating VSC test points.

Vertical Sky Component				
Location	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
	Existing %	Proposed %		
1	16.4	16.4	100.0%	Y
2	32.6	32.4	99.5%	Y
3	22.9	22.8	99.3%	Y
4	33.4	33.3	99.7%	Y
5	17.8	17.8	100.0%	Y
6	13.4	13.4	100.0%	Y
7	31.2	31.0	99.3%	Y
8	32.8	32.6	99.4%	Y
9	20.4	20.4	100.0%	Y
10	29.1	29.1	100.0%	Y
11	18.7	18.7	100.1%	Y
12	19.7	19.6	99.7%	Y
13	22.4	22.1	98.7%	Y
14	31.4	31.1	99.0%	Y
15	32.9	32.7	99.4%	Y
16	28.9	28.7	99.1%	Y
17	21.9	22.0	100.0%	Y
18	25.9	25.9	99.8%	Y
19	13.2	13.2	100.2%	Y
20	32.0	31.6	98.7%	Y
21	33.3	33.0	98.9%	Y
22	23.7	23.7	99.9%	Y
23	26.0	26.0	99.8%	Y
24	24.8	24.2	97.9%	Y
25	12.6	12.2	97.1%	Y
26	16.3	15.8	97.1%	Y
27	32.3	31.7	98.0%	Y
28	33.5	33.0	98.6%	Y
29	24.6	24.5	99.3%	Y
30	27.0	26.2	97.1%	Y
31	25.6	25.1	97.9%	Y
32	30.7	29.6	96.2%	Y
33	22.5	22.5	100.0%	Y
34	12.0	12.0	100.1%	Y
35	15.7	15.7	99.9%	Y
36	34.3	33.7	98.1%	Y
37	22.0	22.0	100.0%	Y
38	24.8	24.7	99.9%	Y
39	32.9	32.1	97.5%	Y
40	34.8	34.3	98.6%	Y
41	34.0	33.5	98.4%	Y
42	26.0	24.7	95.0%	Y
43	23.0	23.1	100.2%	Y
44	17.8	17.8	100.2%	Y
45	33.5	32.6	97.5%	Y
46	35.0	34.5	98.4%	Y
47	35.0	34.5	98.6%	Y
48	35.1	34.6	98.7%	Y
49	33.7	32.9	97.8%	Y
50	33.7	32.8	97.4%	Y
51	35.1	34.6	98.7%	Y

Vertical Sky Component				
Location	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
	Existing %	Proposed %		
52	35.1	34.7	99.0%	Y
53	33.4	33.0	98.8%	Y
54	35.0	34.8	99.3%	Y
55	35.0	34.8	99.4%	Y
56	26.1	25.9	99.4%	Y
57	25.5	24.8	97.3%	Y
58	18.5	18.3	98.9%	Y
59	32.9	33.4	101.6%	Y
60	22.3	22.0	98.9%	Y
61	28.4	27.7	97.4%	Y
62	23.1	25.0	108.5%	Y
63	19.4	19.6	100.9%	Y
64	14.4	14.6	101.0%	Y
65	12.9	13.4	104.4%	Y
66	29.6	30.6	103.4%	Y
67	22.5	23.0	102.2%	Y
68	32.6	33.5	102.7%	Y
69	23.4	24.4	104.0%	Y
70	16.2	16.2	99.8%	Y
71	10.5	10.4	99.6%	Y
72	32.0	33.8	105.7%	Y
73	24.0	23.7	98.6%	Y
74	29.7	29.9	100.4%	Y
75	2.1	2.1	101.4%	Y
76	23.4	24.0	102.6%	Y
77	16.6	16.8	101.7%	Y
78	10.0	10.4	104.5%	Y
79	27.5	28.7	104.4%	Y
80	24.1	24.5	101.4%	Y
81	31.8	33.9	106.5%	Y
82	18.2	18.4	100.8%	Y
83	13.0	13.1	100.8%	Y
84	12.1	12.8	105.9%	Y
85	30.6	31.6	103.5%	Y
86	23.3	23.3	99.8%	Y
87	31.6	33.8	107.0%	Y
88	24.7	25.9	104.9%	Y
89	24.2	26.0	107.1%	Y
90	10.8	10.8	99.8%	Y
91	31.7	33.3	105.0%	Y
92	30.6	32.7	107.0%	Y

Table 13: Vertical sky component for windows in adjacent dwellings in Dalymount Terrace, North Circular Road.

Figure 19: Plan view of No. 327 - 343 North Circular Road. (odd numbers) locating relevant houses.



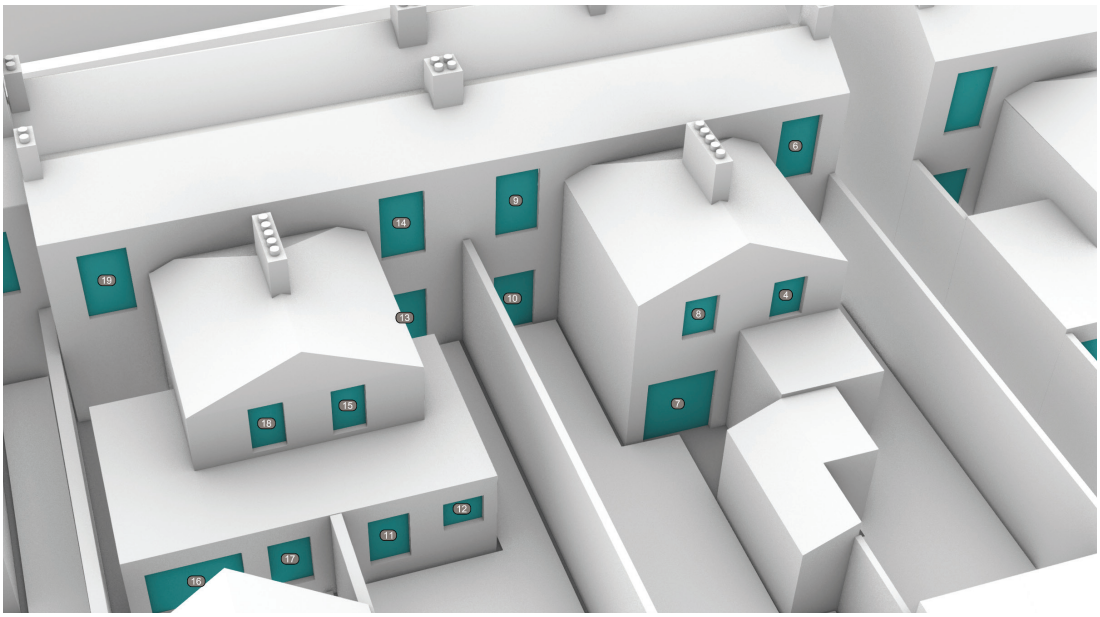


Figure 18: North Circular Road: View of model locating VSC test points.

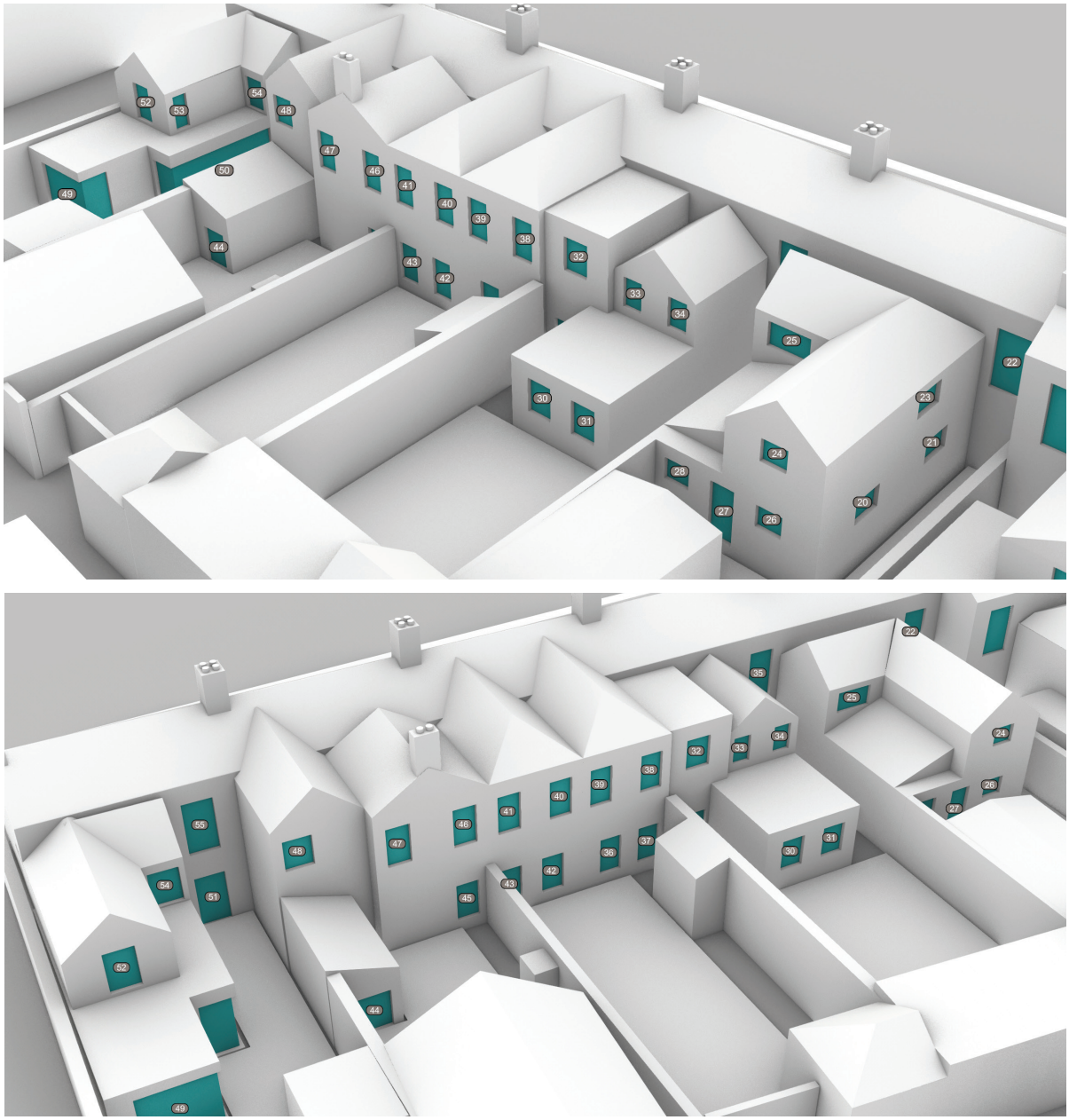


Figure 20: North Circular Road: View of model locating VSC test points.

Vertical Sky Component				
Location	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
	Existing %	Proposed %		
1	12.0	12.7	105.8%	Y
2	13.5	13.5	100.4%	Y
3	19.7	19.8	100.7%	Y
4	30.4	33.5	110.1%	Y
5	23.5	23.6	100.7%	Y
6	31.2	32.6	104.7%	Y
7	18.1	19.7	108.7%	Y
8	30.3	33.5	110.4%	Y
9	30.6	32.2	105.2%	Y
10	11.7	12.7	107.8%	Y
11	19.8	22.1	111.7%	Y
12	20.6	23.2	113.0%	Y
13	11.4	11.7	102.7%	Y
14	30.9	32.8	106.2%	Y
15	26.9	30.1	112.1%	Y
16	16.8	17.0	101.4%	Y

Vertical Sky Component				
Location	Vertical Sky Component Recommended Value > 27%		Ratio: Proposal to Existing Recommended > 80%	Meets criteria if >27% VSC or <27% but >80% Existing Value
	Existing %	Proposed %		
17	14.3	14.3	100.3%	Y
18	26.8	29.8	111.0%	Y
19	30.5	31.8	104.2%	Y
20	19.3	19.4	100.5%	Y
21	11.2	11.4	101.9%	Y
22	22.0	23.2	105.0%	Y
23	21.2	21.6	102.0%	Y
24	27.9	30.3	108.8%	Y
25	27.9	28.6	102.7%	Y
26	22.5	24.2	107.8%	Y
27	17.6	17.6	99.9%	Y
28	18.4	18.5	100.4%	Y
29	11.1	11.4	101.9%	Y
30	25.9	27.2	105.3%	Y
31	26.1	27.6	105.7%	Y
32	32.5	33.5	103.0%	Y
33	29.5	30.6	103.7%	Y
34	30.0	31.2	104.1%	Y
35	22.8	23.1	101.2%	Y
36	24.8	24.8	100.3%	Y
37	13.9	13.9	99.9%	Y
38	32.7	33.5	102.5%	Y
39	32.8	33.5	102.0%	Y
40	33.0	33.5	101.6%	Y
41	33.1	33.5	101.3%	Y
42	27.7	27.9	100.6%	Y
43	21.2	21.4	101.1%	Y
44	14.2	14.3	100.6%	Y
45	20.5	20.5	100.0%	Y
46	33.2	33.5	100.9%	Y
47	33.1	33.3	100.6%	Y
48	32.7	32.9	100.5%	Y
49	27.2	27.6	101.5%	Y
50	13.4	13.3	99.8%	Y
51	12.5	12.7	101.4%	Y
52	31.4	31.5	100.3%	Y
53	26.3	26.6	101.1%	Y
54	24.3	24.4	100.7%	Y
55	23.6	23.6	100.0%	Y

Table 14: Vertical sky component for windows in adjacent dwellings on the North Circular Road.

3.5 Conclusion to VSC in Dwellings

In excess of 400 windows were assessed in the dwellings proximate to the proposed development. All will either retain a VSC in excess of 27% or will not reduced below 80% of the existing VSC value. Some dwellings will see an improvement in access to daylight, as the existing stands close to these homes are demolished.

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

4. Sunlight in Internal School Areas

4.1 Annual Probable Sunlight Hours

The BRE guidelines recommends assessing window walls for the APSH that face within 90º of due south. The guidelines state that *" In housing the main requirement for sunlight is livingrooms, where it is valued at any time of day, but especially in the afternoon. Sunlight is also required in conservatories. It is viewed as less important in bedrooms and in kitchens, where people prefer it in the morning rather than the afternoon."*

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

In St. Peters School, all windows relevant to this study, which face within 90º of due south were assessed. Their location are indicated in Figure 2 and the results are set out in Table 15.

Annual Probable Sunlight Hours - School									
		APSH >25% Target			Sept 21 - Mar 21 WPSH >5% Target			Meets criteria of >25% APSH and >5% WPSH Or <25% or <5% WPSH but >80% Existing Value	
Location ID	Use	Existing	Proposed	Ratio	Existing	Proposed	Ratio		
		% of APSH	% of APSH	If less than 25% APSH Target >80%	% WPSH	% WPSH	If less than 5% WPSH Target >80%	APSH	WPSH
1	Circulation	74.3%	70.8%	95.3%	26.2%	26.0%	99.2%	Y	Y
2	Circulation	74.7%	71.2%	95.3%	26.6%	26.4%	99.2%	Y	Y
3	Circulation	77.2%	73.7%	95.4%	28.7%	28.5%	99.3%	Y	Y
4	Circulation	77.2%	73.6%	95.4%	28.7%	28.5%	99.3%	Y	Y
5	Circulation	78.2%	74.6%	95.4%	29.3%	29.1%	99.4%	Y	Y
6	Circulation	77.7%	74.1%	95.4%	28.9%	28.7%	99.3%	Y	Y
13	Circulation	43.3%	8.4%	19.3%	12.7%	1.0%	7.8%	N	N
14	Circulation	43.0%	17.9%	41.5%	12.9%	0.5%	4.0%	N	N
15	Circulation	40.5%	21.7%	53.7%	12.2%	0.9%	7.5%	N	N
16	Circulation	30.8%	21.1%	68.5%	9.5%	3.1%	32.1%	N	N
17	Circulation	80.6%	76.8%	95.4%	31.3%	31.0%	98.9%	Y	Y
18	Circulation	80.9%	77.2%	95.5%	31.6%	31.3%	99.0%	Y	Y
19	Circulation	80.1%	76.4%	95.3%	31.0%	30.7%	99.0%	Y	Y
23	Circulation	80.0%	76.3%	95.4%	30.8%	30.4%	98.8%	Y	Y
24	Circulation	79.6%	75.8%	95.3%	30.5%	30.1%	98.8%	Y	Y
25	Circulation	80.6%	76.8%	95.4%	31.3%	31.0%	98.9%	Y	Y
30	Circulation	46.8%	13.7%	29.3%	14.7%	0.8%	5.7%	N	N
31	Circulation	46.1%	27.7%	60.0%	14.6%	1.5%	10.5%	Y	N
32	Circulation	45.3%	31.3%	69.1%	14.4%	5.4%	37.4%	Y	Y
33	Circulation	39.1%	31.8%	81.3%	11.7%	6.5%	55.5%	Y	Y
34	Resource	51.1%	41.4%	81.1%	19.1%	11.4%	59.7%	Y	Y
35	Circulation	59.2%	48.5%	82.0%	21.2%	12.8%	60.4%	Y	Y
36	Sanitary	65.5%	53.2%	81.2%	23.1%	14.0%	60.7%	Y	Y
37	Classroom	66.4%	53.1%	80.0%	23.3%	13.9%	59.5%	Y	Y
38	Classroom	67.5%	49.4%	73.3%	24.1%	12.2%	50.4%	Y	Y
39	Classroom	67.9%	46.9%	69.0%	24.3%	12.9%	52.8%	Y	Y

Table 15: Annual Probable Sunlight hours in St. Peter's NS.

4.2 Comment on assessment of APSH and WPSH in St. Peter's NS

Most of the windows that face within 90 of due south are circulation areas. A minor impact would be noted to some windows, mostly in windows that have a low APSH percentage in the existing scenario. The relevant resource and classrooms meet the recommendations in the BRE guidelines for APSH and WPSH.

4.3 Annual Probable Sunlight Hours - Dwellings

The relevant houses on St. Peter's Road and Connaught Street have windows that face within 90º of due south, in some cases these houses have north facing windows in their returns. The relevant windows in Dalymount Terrace and on the North Circular Road face due north, as their direct access to sunlight is not already existing, it cannot be effected by the proposed development.

All relevant windows were assessed regardless of use. Their locations are indicated in Figures 3 - 14 and the results are set out in Tables 16 - 18.

Annual Probable Sunlight Hours- St. Peter's Rd No.s 10 - 24								
	APSH >25% Target			Sept 21 - Mar 21 WPSH >5% Target			Meets criteria of >25% APSH and >5% WPSH Or <25% or <5% WPSH but >80% Existing Value	
Location ID	Existing	Proposed	Ratio	Existing	Proposed	Ratio		
	% of APSH	% of APSH	If less than 25% APSH Target >80%	% WPSH	% WPSH	If less than 5% WPSH Target >80%	APSH	WPSH
1	19.5%	18.6%	95.8%	0.0%	0.0%	100.0%	Y	Y
2	26.0%	25.6%	98.4%	2.3%	2.2%	97.5%	Y	Y
3	35.6%	27.2%	76.4%	4.7%	4.2%	90.3%	Y	Y
4	21.7%	20.4%	94.3%	1.2%	1.2%	100.0%	Y	Y
5	34.6%	31.1%	89.7%	5.4%	4.8%	88.8%	Y	Y
6	35.6%	35.1%	98.7%	8.3%	8.1%	97.9%	Y	Y
7	21.7%	19.1%	88.0%	0.3%	0.3%	100.0%	Y	Y
8	17.0%	10.8%	63.3%	0.0%	0.0%	100.0%	Y	Y
9	33.8%	25.1%	74.2%	3.0%	2.2%	72.6%	Y	N
10	38.0%	37.7%	99.1%	10.3%	10.3%	99.4%	Y	Y
11	45.5%	38.3%	84.2%	12.4%	10.9%	88.1%	Y	Y
12	28.7%	25.8%	89.7%	4.5%	3.1%	70.0%	Y	N
13	44.6%	34.8%	78.1%	12.8%	9.8%	76.5%	Y	Y
14	45.7%	39.5%	86.6%	14.2%	11.9%	83.4%	Y	Y
15	40.3%	39.9%	99.2%	12.2%	12.1%	98.9%	Y	Y
16	19.0%	12.8%	67.4%	0.0%	0.0%	100.0%	Y	Y
17	45.2%	35.0%	77.3%	13.3%	9.8%	73.7%	Y	Y
18	40.3%	39.4%	97.8%	12.2%	11.6%	95.5%	Y	Y
22	46.7%	39.8%	85.1%	13.6%	11.2%	82.4%	Y	Y
23	31.0%	25.5%	82.4%	5.0%	2.8%	55.3%	Y	N
24	42.3%	34.9%	82.5%	14.0%	10.0%	71.7%	Y	Y
25	35.3%	29.5%	83.6%	9.0%	7.8%	86.5%	Y	Y
26	47.2%	35.9%	76.1%	14.3%	9.4%	65.6%	Y	Y
27	37.4%	36.2%	96.7%	9.9%	9.3%	93.9%	Y	Y
28	47.5%	40.3%	84.8%	15.8%	11.8%	74.7%	Y	Y
29	3.5%	0.7%	20.4%	0.0%	0.0%	100.0%	N	Y
32	31.3%	27.0%	86.4%	7.9%	6.7%	85.5%	Y	Y
33	40.0%	38.0%	95.0%	12.0%	11.5%	96.0%	Y	Y
34	47.8%	35.3%	74.0%	14.8%	9.6%	65.1%	Y	Y
35	47.6%	36.3%	76.1%	14.8%	9.6%	65.0%	Y	Y
36	5.0%	2.9%	58.1%	0.0%	0.0%	100.0%	N	Y
37	37.4%	36.4%	97.1%	9.9%	9.4%	94.7%	Y	Y
38	43.3%	38.5%	88.8%	10.9%	9.3%	85.6%	Y	Y
39	27.8%	24.0%	86.5%	2.5%	1.1%	45.5%	Y	N
40	42.4%	34.4%	81.0%	13.8%	8.9%	64.8%	Y	Y
41	37.8%	31.7%	83.9%	11.5%	7.4%	64.6%	Y	Y
42	48.5%	38.0%	78.3%	15.4%	10.4%	67.7%	Y	Y
43	37.4%	35.5%	94.8%	9.9%	9.3%	93.1%	Y	Y
44	45.1%	38.9%	86.2%	14.0%	10.4%	74.4%	Y	Y
45	13.9%	9.6%	68.8%	0.0%	0.0%	100.0%	Y	Y
47	37.4%	36.1%	96.4%	9.9%	9.3%	93.5%	Y	Y
48	43.7%	40.1%	91.9%	11.1%	9.9%	89.7%	Y	Y

Table 16: Annual Probable Sunlight hours- St. Peter's Road No.s 10 - 24

Annual Probable Sunlight Hours- St. Peter's Rd No.s 26 - 30								
	APSH >25% Target			Sept 21 - Mar 21 WPSH >5% Target			Meets criteria of >25% APSH and >5% WPSH Or <25% or <5% WPSH but >80% Existing Value	
Location ID	Existing	Proposed	Ratio	Existing	Proposed	Ratio		
	% of APSH	% of APSH	If less than 25% APSH Target >80%	% WPSH	% WPSH	If less than 5% WPSH Target >80%	APSH	WPSH
1	26.5%	23.8%	89.7%	3.8%	3.0%	78.1%	Y	N
2	45.2%	40.7%	90.1%	18.3%	14.6%	79.8%	Y	Y
3	52.9%	48.0%	90.8%	20.2%	16.3%	80.7%	Y	Y
4	52.5%	48.2%	91.7%	21.5%	17.9%	83.1%	Y	Y
5	43.0%	39.5%	91.8%	18.5%	15.5%	84.2%	Y	Y
6	46.1%	42.4%	92.1%	14.7%	11.9%	81.2%	Y	Y
7	37.7%	37.4%	99.2%	8.6%	8.6%	100.0%	Y	Y
8	31.0%	27.3%	88.0%	5.5%	2.8%	51.2%	Y	N
9	60.2%	55.2%	91.6%	19.9%	15.7%	79.0%	Y	Y
10	42.9%	41.7%	97.2%	11.9%	10.9%	92.2%	Y	Y
11	31.5%	31.5%	100.0%	9.6%	9.6%	100.0%	Y	Y
13	22.3%	21.8%	98.1%	1.4%	1.0%	73.6%	Y	N
14	29.9%	27.7%	92.4%	4.1%	2.4%	57.7%	Y	N
15	45.9%	42.5%	92.6%	16.2%	13.3%	82.5%	Y	Y
16	36.1%	32.7%	90.7%	12.7%	9.9%	78.1%	Y	Y
17	45.6%	42.7%	93.6%	14.5%	12.1%	83.4%	Y	Y
18	30.8%	30.8%	100.0%	9.0%	9.0%	100.0%	Y	Y
19	37.4%	36.4%	97.2%	11.4%	10.6%	92.7%	Y	Y
20	37.4%	37.1%	99.1%	7.9%	7.8%	97.9%	Y	Y
22	28.8%	28.0%	97.1%	6.1%	5.4%	88.5%	Y	Y
23	38.7%	36.4%	94.1%	10.7%	8.8%	82.3%	Y	Y
24	46.2%	43.8%	94.9%	16.4%	14.4%	88.1%	Y	Y
25	36.4%	34.0%	93.4%	12.9%	11.0%	84.6%	Y	Y
26	42.3%	41.4%	97.8%	12.3%	11.6%	94.5%	Y	Y
27	30.9%	30.7%	99.5%	9.6%	9.5%	98.6%	Y	Y

Table 17: Annual Probable Sunlight hours- St. Peter's Road No.s 26 - 30

Annual Probable Sunlight Hours- Connaught St.

Location ID	APSH >25% Target			Sept 21 - Mar 21 WPSH >5% Target			Meets criteria of >25% APSH and >5% WPSH Or <25% or <5% WPSH but >80% Existing Value	
	Existing	Proposed	Ratio	Existing	Proposed	Ratio		
	% of APSH	% of APSH	If less than 25% APSH Target >80%	% WPSH	% WPSH	If less than 5% WPSH Target >80%	APSH	WPSH
1	28.8%	28.8%	100.0%	8.5%	8.5%	100.0%	Y	Y
2	18.7%	18.7%	100.0%	3.3%	3.3%	100.0%	Y	Y
3	18.6%	18.6%	100.0%	3.3%	3.3%	100.0%	Y	Y
4	53.6%	53.4%	99.6%	15.3%	15.1%	98.9%	Y	Y
5	24.5%	24.5%	100.0%	5.0%	5.0%	100.0%	Y	Y
6	63.5%	60.9%	95.9%	23.9%	21.8%	91.0%	Y	Y
7	19.6%	19.0%	96.9%	7.4%	6.8%	93.0%	Y	Y
8	65.1%	62.6%	96.2%	25.1%	23.1%	91.9%	Y	Y
9	31.6%	29.5%	93.1%	10.4%	8.5%	82.6%	Y	Y
10	55.0%	54.8%	99.5%	16.5%	16.2%	98.6%	Y	Y
11	53.6%	52.0%	97.0%	13.6%	12.2%	90.2%	Y	Y
12	66.7%	63.5%	95.1%	26.1%	23.5%	90.0%	Y	Y
13	22.9%	22.9%	100.0%	6.7%	6.7%	100.0%	Y	Y
14	75.5%	74.5%	98.6%	29.9%	29.1%	97.2%	Y	Y
15	70.9%	69.8%	98.6%	29.2%	28.3%	97.1%	Y	Y
16	51.5%	46.4%	90.0%	13.7%	9.7%	70.7%	Y	Y
17	22.8%	19.8%	86.6%	8.4%	5.9%	69.9%	Y	Y
18	18.8%	15.6%	83.1%	7.3%	4.6%	63.7%	Y	N
19	21.8%	19.3%	88.6%	8.6%	6.5%	75.9%	Y	Y
20	67.9%	63.8%	93.9%	26.9%	23.6%	87.7%	Y	Y
21	31.7%	29.2%	92.3%	10.4%	8.3%	80.4%	Y	Y
22	55.2%	54.9%	99.4%	16.6%	16.3%	98.4%	Y	Y
23	70.9%	69.5%	98.0%	29.2%	28.0%	95.9%	Y	Y
24	75.8%	74.4%	98.1%	30.2%	29.0%	96.0%	Y	Y
25	22.9%	21.2%	92.4%	8.6%	7.2%	83.3%	Y	Y
26	15.2%	15.2%	100.0%	5.1%	5.1%	100.0%	Y	Y
27	20.7%	20.6%	99.4%	5.1%	5.0%	98.1%	Y	Y
28	67.7%	63.4%	93.7%	26.5%	23.0%	86.6%	Y	Y
29	23.8%	23.8%	100.0%	7.2%	7.2%	100.0%	Y	Y
30	55.6%	55.6%	99.9%	16.7%	16.7%	99.8%	Y	Y
31	62.8%	54.6%	87.0%	21.2%	14.7%	69.4%	Y	Y
32	23.4%	22.0%	94.3%	8.8%	7.7%	87.5%	Y	Y
33	13.4%	12.8%	96.1%	5.5%	5.1%	92.1%	Y	Y
34	12.8%	9.1%	71.4%	5.8%	2.8%	47.7%	N	N
35	67.5%	62.6%	92.7%	26.4%	22.5%	85.4%	Y	Y
36	26.9%	26.4%	97.9%	7.7%	7.3%	93.9%	Y	Y
37	51.7%	50.0%	96.7%	13.8%	12.4%	89.8%	Y	Y
38	22.3%	22.3%	100.0%	4.6%	4.6%	100.0%	Y	Y
39	26.2%	25.1%	95.8%	9.5%	8.6%	90.4%	Y	Y
40	31.7%	26.4%	83.5%	12.6%	8.6%	67.8%	Y	Y
41	35.3%	35.6%	100.8%	12.0%	12.3%	102.0%	Y	Y
42	61.4%	57.4%	93.5%	23.0%	19.7%	85.7%	Y	Y
43	78.6%	77.3%	98.3%	29.6%	28.5%	96.2%	Y	Y
44	30.0%	26.0%	86.7%	11.3%	8.0%	70.7%	Y	Y
45	18.0%	17.1%	95.2%	4.5%	3.8%	84.1%	Y	Y
46	69.3%	65.7%	94.8%	26.4%	23.4%	88.6%	Y	Y
47	28.3%	26.5%	93.6%	8.2%	6.7%	81.8%	Y	Y
48	63.0%	60.3%	95.7%	23.0%	20.8%	90.3%	Y	Y
49	78.8%	77.8%	98.7%	29.6%	28.8%	97.1%	Y	Y

Annual Probable Sunlight Hours- Connaught St.

Location ID	APSH >25% Target			Sept 21 - Mar 21 WPSH >5% Target			Meets criteria of >25% APSH and >5% WPSH Or <25% or <5% WPSH but >80% Existing Value	
	Existing	Proposed	Ratio	Existing	Proposed	Ratio		
	% of APSH	% of APSH	If less than 25% APSH Target >80%	% WPSH	% WPSH	If less than 5% WPSH Target >80%	APSH	WPSH
50	23.8%	23.0%	96.8%	8.8%	8.2%	92.9%	Y	Y
51	32.8%	29.8%	91.0%	12.6%	10.2%	80.5%	Y	Y
52	69.0%	64.9%	94.1%	26.1%	23.2%	89.1%	Y	Y
53	33.3%	34.1%	102.5%	11.0%	11.7%	106.4%	Y	Y
54	63.1%	59.8%	94.7%	23.3%	20.5%	88.0%	Y	Y
55	79.0%	76.9%	97.3%	29.6%	27.9%	94.1%	Y	Y
56	26.8%	21.5%	80.3%	11.0%	6.4%	58.4%	Y	Y
57	19.6%	16.5%	84.2%	5.9%	3.3%	56.1%	Y	N
58	71.2%	69.1%	97.1%	26.0%	24.3%	93.4%	Y	Y
59	28.4%	25.5%	89.7%	7.8%	5.4%	69.1%	Y	Y
60	61.5%	58.9%	95.7%	21.4%	19.2%	89.7%	Y	Y
61	22.4%	23.1%	103.2%	7.5%	8.1%	107.8%	Y	Y
62	28.0%	27.0%	96.5%	11.2%	10.4%	92.7%	Y	Y
63	71.3%	68.9%	96.6%	26.1%	24.5%	93.8%	Y	Y
64	32.7%	33.6%	102.9%	10.3%	11.1%	107.7%	Y	Y
65	61.0%	58.8%	96.4%	22.2%	20.5%	92.6%	Y	Y
66	79.3%	76.7%	96.7%	29.8%	27.8%	93.0%	Y	Y
67	29.1%	24.2%	83.1%	11.7%	7.6%	65.0%	Y	Y
69	70.3%	68.4%	97.3%	25.3%	23.8%	94.1%	Y	Y
70	28.7%	25.4%	88.5%	8.5%	5.7%	67.8%	Y	Y
71	60.5%	57.7%	95.4%	21.3%	19.1%	89.3%	Y	Y
72	73.3%	71.3%	97.2%	29.1%	27.4%	94.1%	Y	Y
73	21.2%	24.1%	113.8%	6.2%	8.6%	139.1%	Y	Y
74	27.0%	28.0%	104.0%	10.1%	11.0%	108.8%	Y	Y
75	69.7%	68.5%	98.2%	24.8%	24.0%	96.8%	Y	Y
76	32.7%	33.7%	102.9%	10.3%	11.1%	107.7%	Y	Y
77	60.6%	60.3%	99.5%	21.8%	21.6%	98.8%	Y	Y
78	72.8%	70.9%	97.3%	28.7%	27.1%	94.6%	Y	Y
79	26.0%	25.4%	97.7%	8.9%	8.4%	94.4%	Y	Y
80	20.1%	17.0%	84.3%	6.3%	3.9%	62.7%	Y	N
81	68.8%	68.7%	99.8%	24.0%	23.9%	99.5%	Y	Y
82	28.0%	25.2%	89.8%	7.8%	5.8%	74.1%	Y	Y
83	60.4%	58.4%	96.8%	21.2%	19.8%	93.5%	Y	Y
84	20.0%	22.8%	114.2%	5.4%	7.8%	144.3%	Y	Y
85	23.4%	28.8%	122.8%	6.6%	11.0%	167.2%	Y	Y
86	64.9%	66.0%	101.7%	22.3%	23.2%	104.2%	Y	Y
87	32.6%	32.5%	99.9%	10.1%	10.2%	101.3%	Y	Y
88	60.9%	60.2%	98.9%	22.0%	21.6%	97.8%	Y	Y
89	24.9%	25.4%	101.7%	8.2%	8.5%	104.4%	Y	Y
90	19.9%	17.7%	88.8%	6.2%	4.3%	70.0%	Y	N
91	62.2%	65.0%	104.5%	20.0%	22.7%	113.4%	Y	Y
92	27.3%	26.4%	96.8%	7.1%	6.4%	89.9%	Y	Y
93	61.3%	59.8%	97.5%	22.0%	20.8%	94.5%	Y	Y
94	21.4%	22.7%	106.1%	5.7%	6.7%	119.1%	Y	Y
95	26.2%	30.5%	116.2%	6.9%	10.5%	150.8%	Y	Y
96	62.0%	65.7%	106.0%	19.2%	22.5%	116.7%	Y	Y
97	32.0%	31.8%	99.3%	9.5%	9.3%	98.0%	Y	Y
98	60.0%	60.1%	100.2%	20.9%	21.0%	100.7%	Y	Y
99	23.6%	28.7%	121.9%	6.2%	10.4%	169.5%	Y	Y

Annual Probable Sunlight Hours- Connaught St.								
	APSH >25% Target			Sept 21 - Mar 21 WPSH >5% Target			Meets criteria of >25% APSH and >5% WPSH Or <25% or <5% WPSH but >80% Existing Value	
Location ID	Existing	Proposed	Ratio	Existing	Proposed	Ratio		
	% of APSH	% of APSH	If less than 25% APSH Target >80%	% WPSH	% WPSH	If less than 5% WPSH Target >80%	APSH	WPSH
100	17.4%	19.2%	110.4%	4.0%	5.5%	137.1%	Y	Y
101	61.6%	64.9%	105.5%	18.1%	21.7%	120.2%	Y	Y
102	25.9%	27.2%	104.9%	5.8%	7.1%	121.5%	Y	Y
103	59.3%	59.6%	100.5%	19.8%	20.5%	103.3%	Y	Y
104	72.9%	71.2%	97.7%	27.8%	26.6%	95.8%	Y	Y
105	67.7%	66.2%	97.7%	26.6%	25.4%	95.6%	Y	Y
106	22.2%	24.1%	108.5%	5.8%	7.5%	129.0%	Y	Y
107	62.4%	66.4%	106.4%	17.5%	20.8%	118.9%	Y	Y
108	31.3%	30.0%	95.8%	9.0%	7.9%	88.0%	Y	Y
109	58.4%	58.4%	100.0%	19.9%	20.0%	100.5%	Y	Y
110	72.6%	72.1%	99.3%	27.5%	27.1%	98.5%	Y	Y
111	67.7%	65.7%	97.0%	26.5%	24.9%	94.0%	Y	Y
112	19.6%	19.5%	99.4%	5.2%	5.1%	98.2%	Y	Y
113	22.3%	27.7%	123.8%	5.6%	10.1%	180.7%	Y	Y
114	15.7%	19.2%	122.3%	3.0%	5.9%	197.5%	Y	Y
115	62.8%	65.7%	104.7%	16.4%	19.1%	116.4%	Y	Y
116	23.9%	26.6%	111.2%	4.8%	7.0%	146.2%	Y	Y
117	58.0%	57.7%	99.5%	19.1%	19.2%	100.6%	Y	Y
118	17.9%	17.1%	95.8%	4.9%	4.3%	87.3%	Y	Y
119	20.9%	20.0%	95.8%	5.3%	5.0%	92.9%	Y	Y
120	60.6%	61.9%	102.1%	15.9%	17.8%	111.5%	Y	Y
121	30.6%	28.4%	92.6%	8.8%	6.9%	78.7%	Y	Y
122	57.9%	55.6%	95.9%	19.2%	17.3%	90.1%	Y	Y
123	20.4%	24.1%	118.1%	4.6%	7.7%	166.4%	Y	Y
124	15.4%	19.8%	128.5%	2.6%	6.2%	241.2%	Y	Y
125	58.4%	59.6%	102.0%	16.1%	17.3%	107.7%	Y	Y
126	24.1%	27.3%	113.4%	4.5%	7.1%	160.0%	Y	Y
127	57.2%	56.6%	98.9%	18.3%	17.7%	97.1%	Y	Y
128	19.6%	19.1%	97.4%	5.1%	4.6%	91.8%	Y	Y
129	23.3%	22.3%	95.7%	6.9%	6.1%	88.0%	Y	Y
130	58.7%	59.0%	100.5%	15.5%	15.9%	102.1%	Y	Y
131	29.5%	29.1%	98.6%	7.7%	7.3%	95.6%	Y	Y
132	55.7%	53.8%	96.6%	17.7%	16.2%	91.1%	Y	Y
133	69.0%	67.8%	98.3%	25.5%	24.5%	96.1%	Y	Y
134	21.2%	22.1%	104.3%	4.9%	5.8%	119.1%	Y	Y
135	15.8%	18.0%	113.9%	2.8%	5.3%	189.7%	Y	Y
136	58.0%	58.4%	100.6%	16.0%	17.1%	106.5%	Y	Y
137	24.1%	24.6%	102.0%	4.6%	5.9%	126.1%	Y	Y
138	56.6%	55.4%	98.0%	18.0%	17.3%	95.7%	Y	Y
139	16.8%	16.9%	100.4%	5.9%	6.0%	101.0%	Y	Y
140	15.6%	15.5%	99.4%	6.5%	6.4%	98.8%	Y	Y
141	58.7%	58.6%	99.8%	15.9%	16.3%	102.5%	Y	Y
142	20.4%	20.4%	100.0%	6.7%	6.7%	100.0%	Y	Y
143	46.1%	44.9%	97.4%	12.6%	11.6%	92.2%	Y	Y
144	31.1%	30.9%	99.6%	9.8%	9.7%	99.0%	Y	Y
145	56.3%	55.0%	97.7%	17.6%	17.0%	96.4%	Y	Y
146	30.8%	30.9%	100.3%	10.3%	10.7%	104.8%	Y	Y
147	57.2%	56.6%	98.9%	17.7%	17.6%	99.1%	Y	Y

Table 18: Annual Probable Sunlight hours- Connaught Street.

4.4 Conclusion on assessment of APSH and WPSH in dwellings

The BRE guidelines recommends:

> *"To assess loss of sunlight to an existing building, it is suggested that all main living rooms of dwellings, and conservatories, should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun."*

213 no. windows were assessed for APSH & WPSH, regardless of use. Of these 207 no. windows have APSH greater than the recommended 25% (414 hours) or would not be reduced below 80% of their existing value. 200 no. windows have a WPSH greater than 5% in the winter period or would not be reduced below 80% of their existing value.

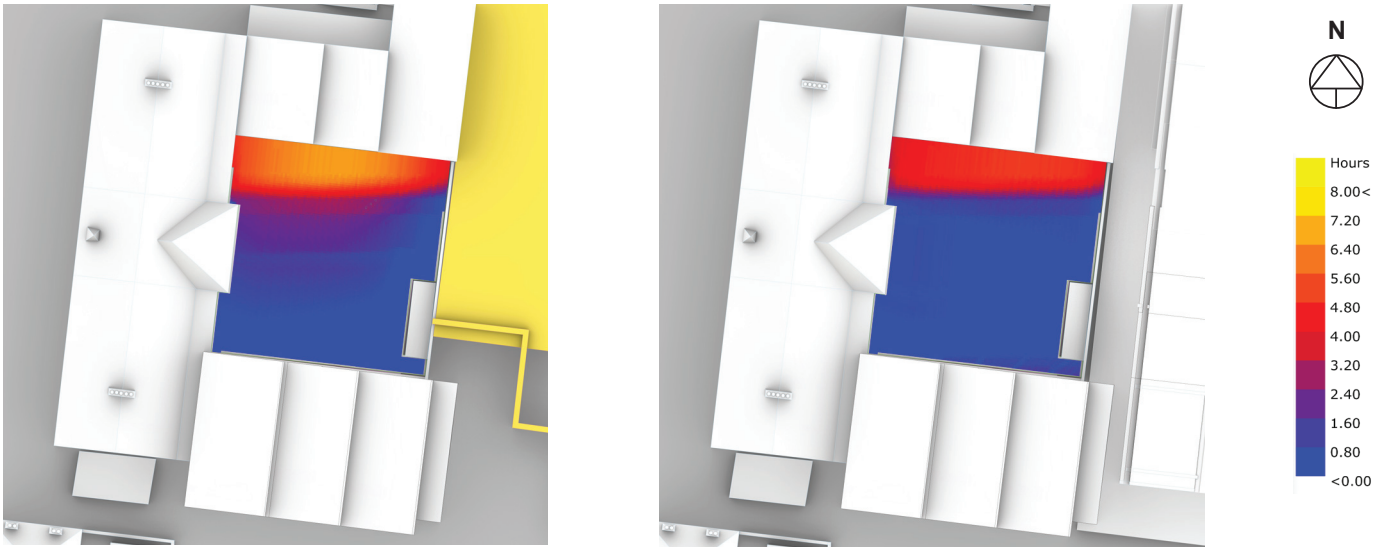
The internal layouts of the surrounding houses is not known and it is not possible to determine the room use of each window. All the houses adjacent to the proposed development have the rear of the house facing the proposal and the majority of houses have the kitchens and bedrooms to the rear. In the windows where an impact is noted, as they exist, they are restricted to the south by return wings in their own or neighbouring dwellings.

5. Sunlight to gardens and open spaces

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

5.1 Amenity space to school.

The amenity space of the adjacent school was assessed for impact on their sun of the ground. The existing and proposed generated analysis and results are shown in the figure 21 and table 19 below.



Existing Plan View **Proposed Plan View**

Figure 21: St. Peters NS: Existing & Proposed Radiation map of amenity area, showing available sunlight on 21st March. The scale represents the percentage of daylight received from 0 - 8 hrs.

Sunlight on the ground - Saint Peter's National School				
No.	Existing	Proposed	Ratio of Proposed: Existing	Meets criteria of >50% area Or if <50% then target >80% Existing Value
	% Area receiving 2 hours sunlight on 21st March			
School	28.6%	23.3%	81.5%	Meets criteria

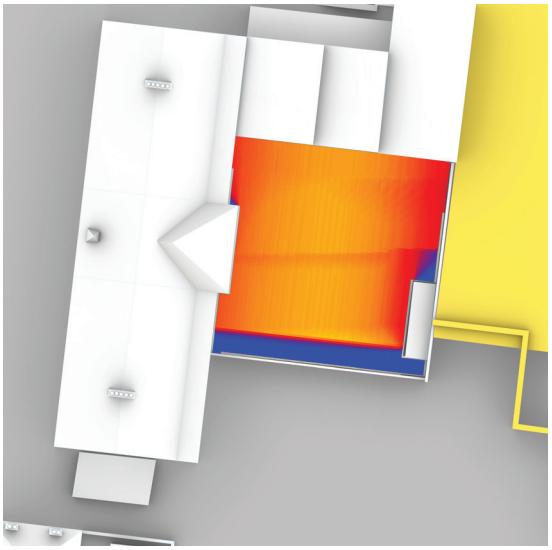
Table 19: Calculation of Sun on the Ground to adjacent amenity area.

5.2 Comment on St. Peter's National School amenity area

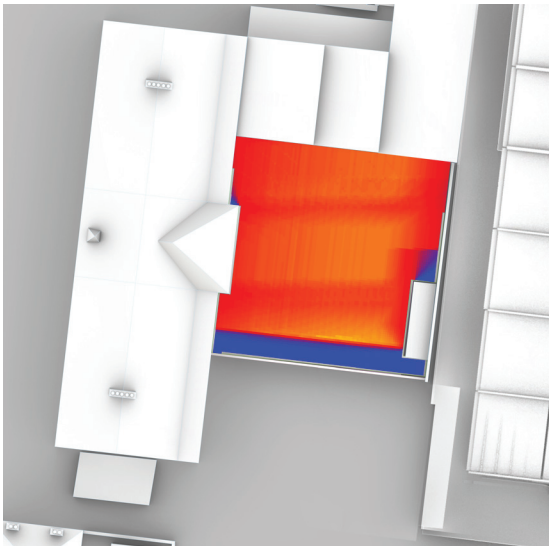
In the existing scenario, the school yard achieves 2 hours of sunlight over 28.6% of the amenity space. This does not meet the criteria for good quality sunlight throughout the year that 50% of the amenity should receive more than 2 hours sunlight on the 21st March.

The proposed development has gone through numerous design iterations to minimise the reduction to the available sunlight at the school yard amenity and the reduction in sunlight has been minimised. With the proposed development in place, the sunlight availability will be reduced to 81.5% of the existing level. This is in-line with the recommendations of the BRE guidelines that if the sunlight availability is less than 50% then the reduction should not be greater than 80% of the existing level.

In the existing scenario the lower levels of sunlight in the amenity space is as a result of the school wing to the South. To demonstrate this, the school was modelled without this wing. The results are shown in Figure 22 and Table 20 below.



Study of school amenity with existing stand in Dalymount



Study of school amenity with proposed stand in Dalymount

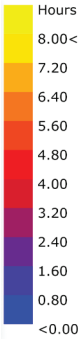


Figure 22: St. Peters Road: Existing & Proposed Radiation map of amenity areas, showing available sunlight on 21st March. The scale represents the percentage of daylight received from 0 - 8 hrs.

Sunlight on the ground - Study of Saint Peter's National School				
No.	Existing	Proposed	Ratio of Proposed: Existing	Meets criteria of >50% area Or if <50% then target >80% Existing Value
	% Area receiving 2 hours sunlight on 21st March			
School without wing to south	89.1%	88.6%	99.4%	Meets criteria

Table 20: Calculation of Sun on the Ground to adjacent amenity area, without wing to south.

5.3 Amenity space to adjacent dwellings.

The amenity space of the adjacent dwellings were assessed for impact on their sun of the ground. The existing and proposed generated analysis in the Figures 23 - 26 and results are shown in Tables 21 - 24 below.

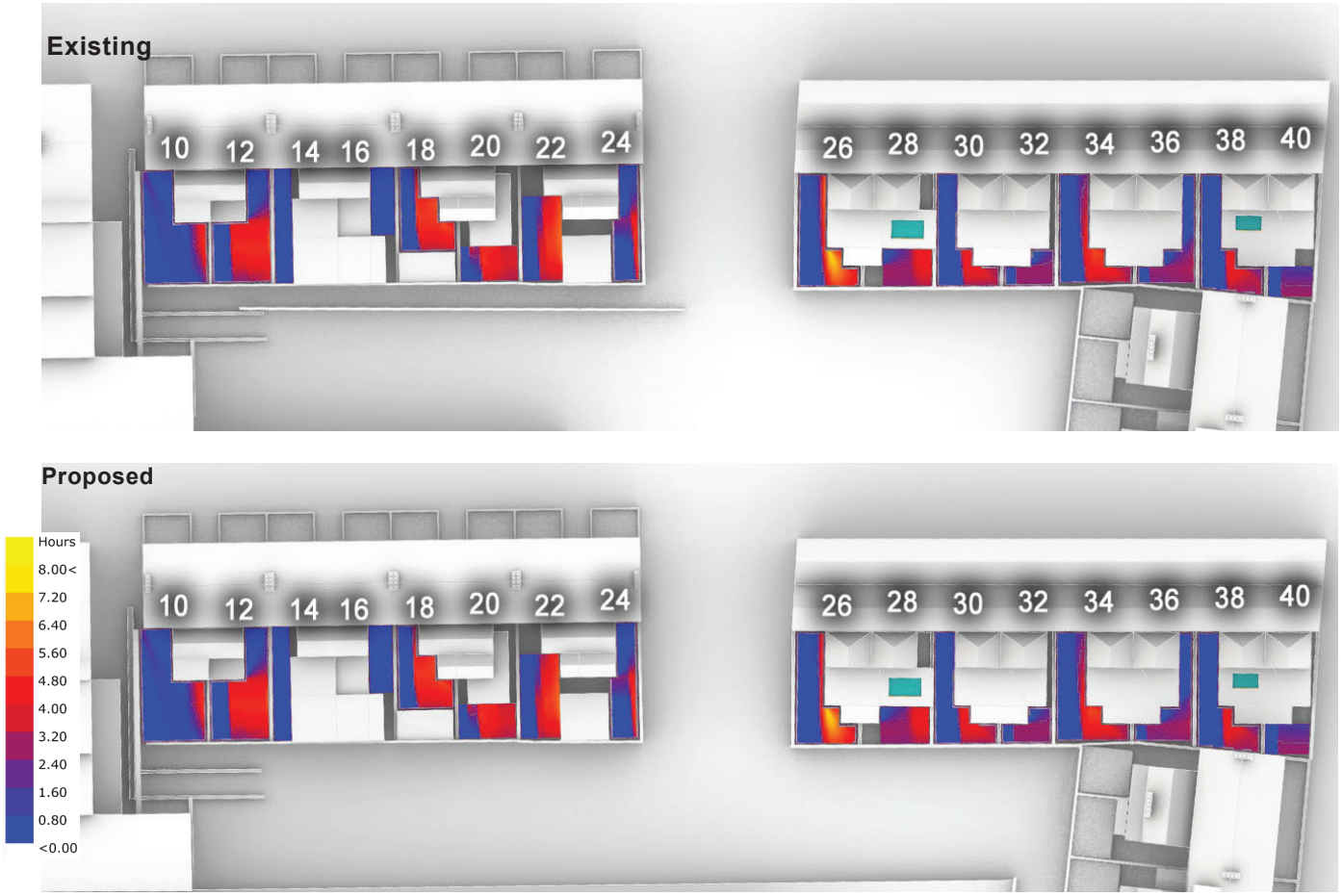


Figure 23: St. Peters Road: Existing & Proposed Radiation map of amenity areas, showing available sunlight on 21st March. The scale represents the percentage of daylight received from 0 - 8 hrs.

Sunlight on the ground - Adjacent properties on Saint Peters Road				
No.	Existing	Proposed	Ratio of Proposed: Existing	Meets criteria of >50% area Or if <50% then target >80% Existing Value
	% Area receiving 2 hours sunlight on 21st March			
No.10	9.2%	9.2%	100.0%	Meets criteria
No.12	56.2%	56.2%	100.0%	Meets criteria
No.14	0.0%	0.0%	100.0%	Meets criteria
No.16	0.0%	0.0%	100.0%	Meets criteria
No.18	57.4%	55.3%	96.3%	Meets criteria
No.20	69.6%	69.6%	100.0%	Meets criteria
No.22	57.8%	55.4%	95.8%	Meets criteria
No.24	15.8%	14.9%	94.3%	Meets criteria
No.26	34.8%	31.4%	90.2%	Meets criteria
No.28	80.5%	80.3%	99.8%	Meets criteria
No.30	26.7%	26.7%	100.0%	Meets criteria
No.32	59.6%	59.6%	100.0%	Meets criteria
No.34	36.5%	36.5%	100.0%	Meets criteria
No.36	36.3%	36.3%	100.0%	Meets criteria
No.38	28.1%	28.1%	100.0%	Meets criteria
No.40	25.8%	25.8%	100.0%	Meets criteria

Table 21: Calculation of Sun on the Ground to adjacent amenity areas

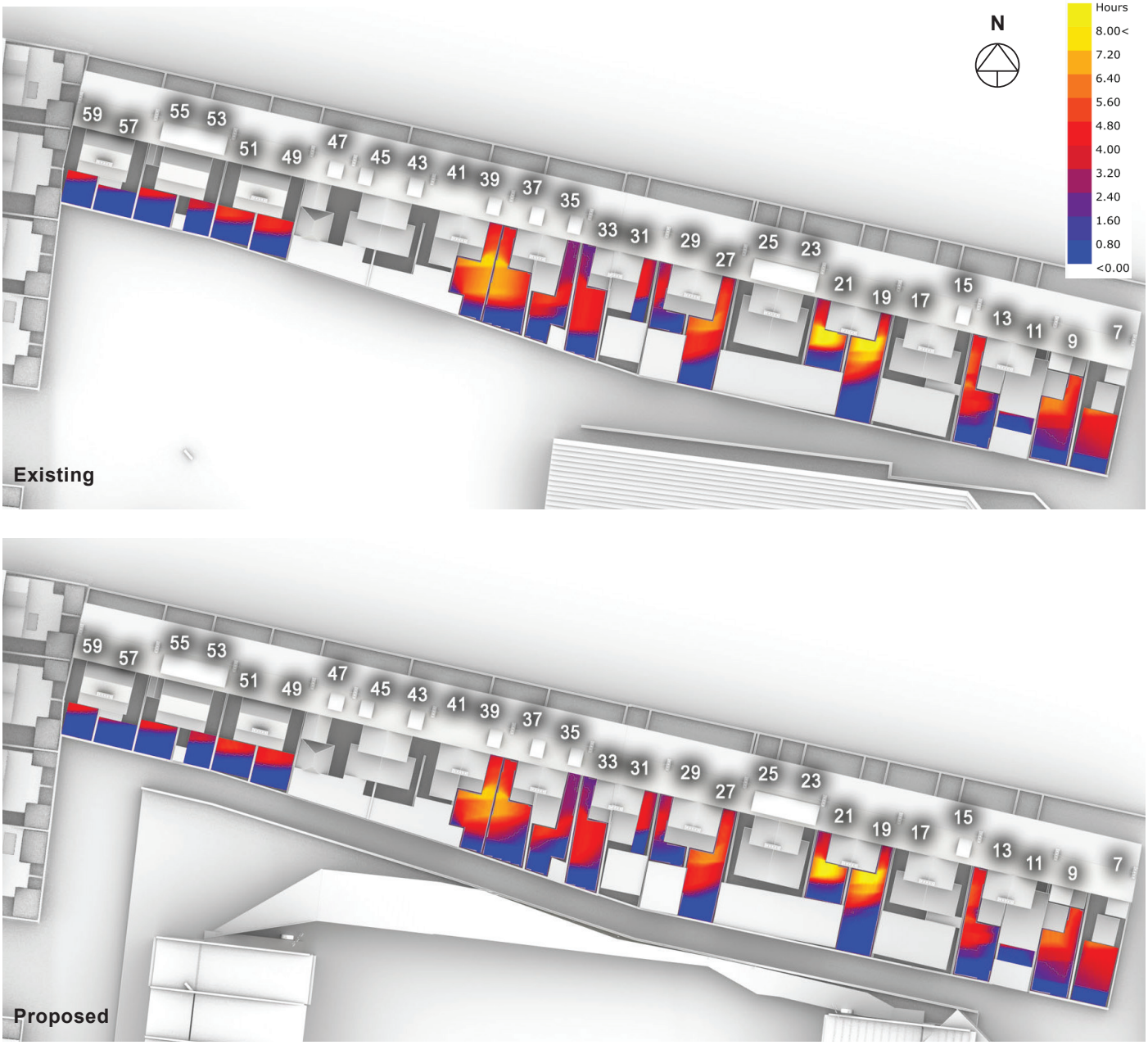


Figure 24: Connaught Street - Existing & Proposed Radiation map of amenity areas, showing available sunlight on 21st March. The scale represents the percentage of daylight received from 0 - 8 hrs.

Sunlight on the ground - Adjacent properties on Connaught Street				
No.	Existing	Proposed	Ratio of Proposed: Existing	Meets criteria of >50% area Or if <50% then target >80% Existing Value
	% Area receiving 2 hours sunlight on 21st March			
No.07	80.0%	80.0%	100.0%	Meets criteria
No.09	82.8%	83.2%	100.5%	Meets criteria
No.11	36.2%	36.2%	100.0%	Meets criteria
No.13	64.9%	74.5%	114.8%	Meets criteria
No.15	0.0%	0.0%	100.0%	Meets criteria
No.17	0.0%	0.0%	100.0%	Meets criteria
No.19	55.3%	54.8%	99.1%	Meets criteria
No.21	64.0%	64.0%	100.0%	Meets criteria
No.23	0.0%	0.0%	100.0%	Meets criteria
No.25	0.0%	0.0%	100.0%	Meets criteria
No.27	67.3%	61.2%	90.9%	Meets criteria
No.29	40.1%	40.1%	100.0%	Meets criteria
No.31	63.1%	63.1%	100.0%	Meets criteria
No.33	65.6%	64.1%	97.7%	Meets criteria
No.35	63.4%	53.8%	84.9%	Meets criteria
No.37	71.6%	64.5%	90.0%	Meets criteria
No.39	85.0%	84.7%	99.6%	Meets criteria
No.41	0.0%	0.0%	100.0%	Meets criteria
No.43	0.0%	0.0%	100.0%	Meets criteria
No.45	0.0%	0.0%	100.0%	Meets criteria
No.47	0.0%	0.0%	100.0%	Meets criteria
No.49	43.6%	43.6%	100.0%	Meets criteria
No.51	39.7%	39.7%	100.0%	Meets criteria
No.53	25.6%	25.6%	100.0%	Meets criteria
No.55	22.0%	22.0%	100.0%	Meets criteria
No.57	4.3%	4.3%	100.0%	Meets criteria
No.59	21.4%	21.4%	100.0%	Meets criteria

Table 22: Calculation of Sun on the Ground to adjacent amenity areas

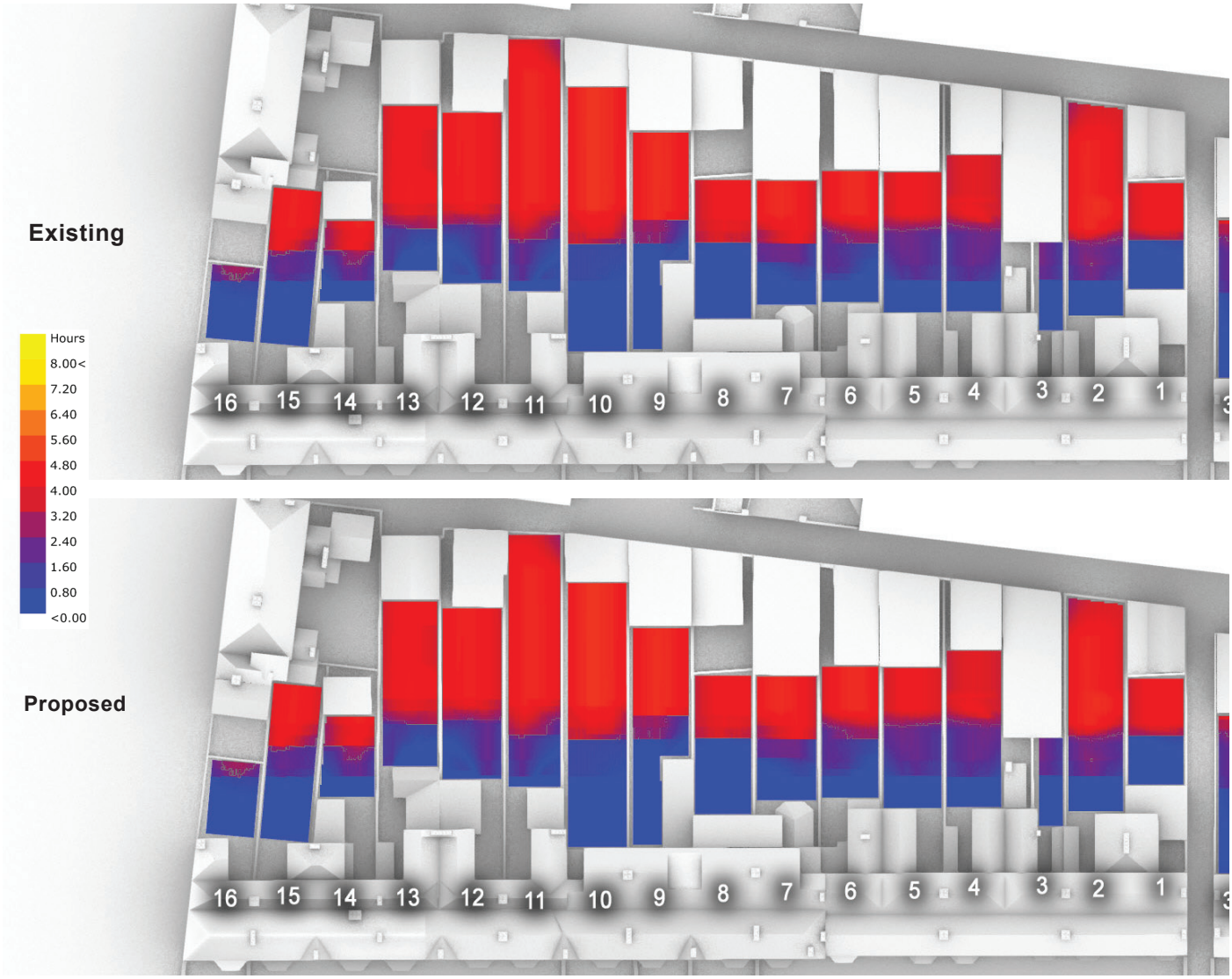


Figure 25: Dalymount Terrace, North Circular Road: Existing & Proposed Radiation map of amenity areas, showing available sunlight on 21st March.
The scale represents the percentage of daylight received from 0 - 8 hrs.

Sunlight on the ground - Adjacent properties in Dalymount				
No.	Existing	Proposed	Ratio of Proposed: Existing	Meets criteria of >50% area Or if <50% then target >80% Existing Value
	% Area receiving 2 hours sunlight on 21st March			
No.01	53.9%	53.9%	100%	Meets criteria
No.02	64.7%	64.7%	100%	Meets criteria
No.03	0.0%	0.0%	100%	Meets criteria
No.04	46.6%	46.6%	100%	Meets criteria
No.05	40.5%	40.5%	100%	Meets criteria
No.06	50.9%	50.9%	100%	Meets criteria
No.07	50.6%	50.6%	100%	Meets criteria
No.08	45.1%	45.1%	100%	Meets criteria
No.09	57.5%	57.5%	100%	Meets criteria
No.10	58.9%	58.9%	100%	Meets criteria
No.11	77.9%	77.9%	100%	Meets criteria
No.12	65.2%	65.2%	100%	Meets criteria
No.13	73.4%	73.4%	100%	Meets criteria
No.14	40.4%	40.4%	100%	Meets criteria
No.15	39.9%	39.9%	100%	Meets criteria
No.16	7.0%	7.0%	100%	Meets criteria

Table 23: Calculation of Sun on the Ground to adjacent amenity areas

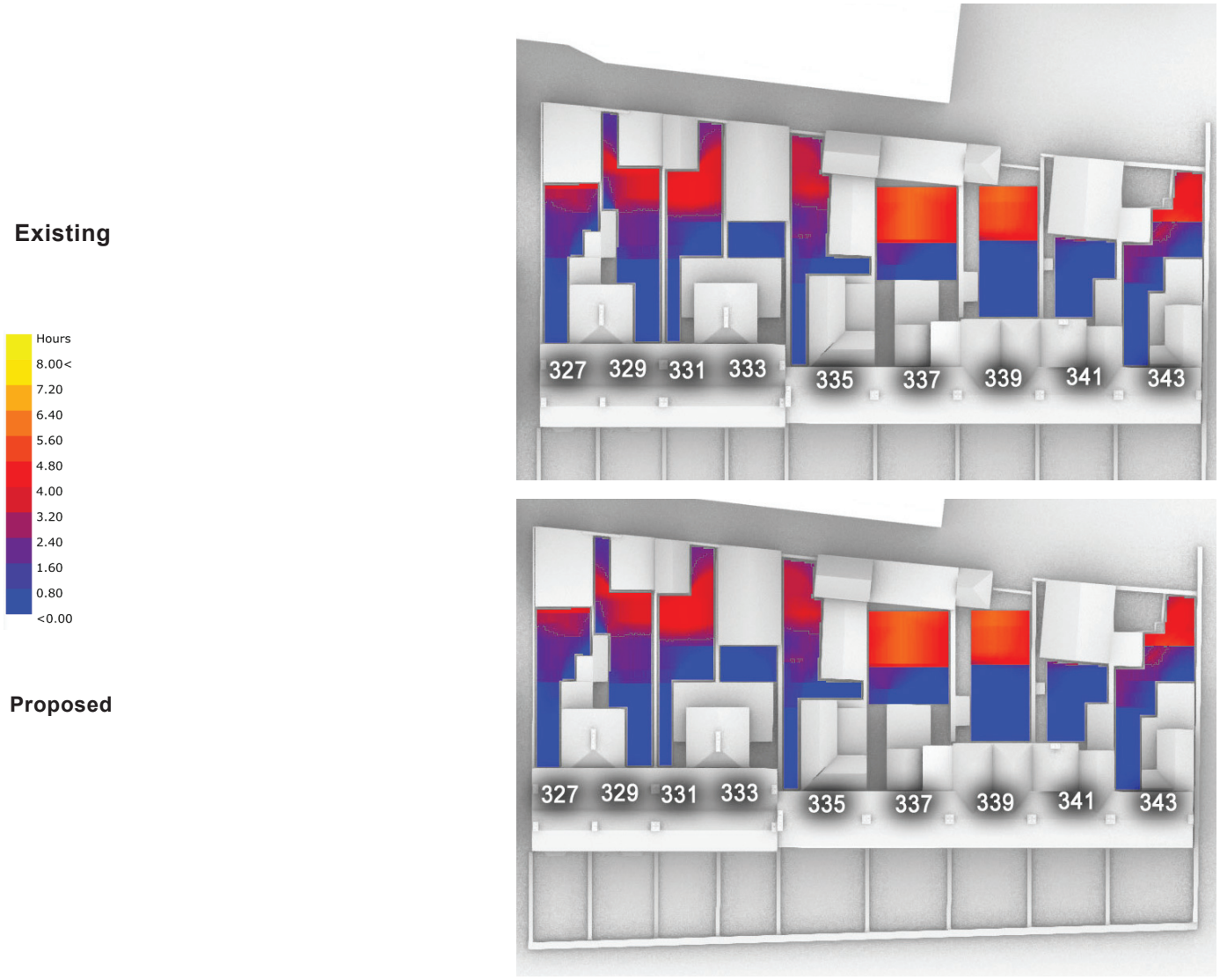


Figure 26: North Circular Road: Existing & Proposed Radiation map of amenity areas, showing available sunlight on 21st March. The scale represents the percentage of daylight received from 0 - 8 hrs.

Sunlight on the ground - Adjacent properties on North Circular Road				
No.	Existing	Proposed	Ratio of Proposed: Existing	Meets criteria of >50% area Or if <50% then target >80% Existing Value
	% Area receiving 2 hours sunlight on 21st March			
No.01	53.9%	53.9%	100%	Meets criteria
No.02	64.7%	64.7%	100%	Meets criteria
No.03	0.0%	0.0%	100%	Meets criteria
No.04	46.6%	46.6%	100%	Meets criteria
No.05	40.5%	40.5%	100%	Meets criteria
No.06	50.9%	50.9%	100%	Meets criteria
No.07	50.6%	50.6%	100%	Meets criteria
No.08	45.1%	45.1%	100%	Meets criteria
No.09	57.5%	57.5%	100%	Meets criteria
No.10	58.9%	58.9%	100%	Meets criteria
No.11	77.9%	77.9%	100%	Meets criteria
No.12	65.2%	65.2%	100%	Meets criteria
No.13	73.4%	73.4%	100%	Meets criteria
No.14	40.4%	40.4%	100%	Meets criteria
No.15	39.9%	39.9%	100%	Meets criteria
No.16	7.0%	7.0%	100%	Meets criteria

Table 24: Calculation of Sun on the Ground to adjacent amenity areas

5.4 Conclusion on sun on the ground amenity in dwellings.

All the private amenity space to the surrounding properties were assessed for sunlight in accordance with the recommendations set out in BR209:2022. All the amenity spaces will retain 2 hours sunlight over 50% of the amenity space or will not be reduced below 80% of the existing levels. The proposed development meets the recommendations of the BRE guidelines.

6. Shadow Diagrams

6.1 BRE Guidance on Shadow Studies

Shadow diagrams are a visual aid to understand where possible shading may occur. The BRE guidelines recommend using the March Equinox due the equal length of the day and night time. It states:

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

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

Equinox: between 8:30 and 17:30
Summer Solstice: Between 6:30 and 20:00
Winter Solstice: Between 10:30 and 14:00

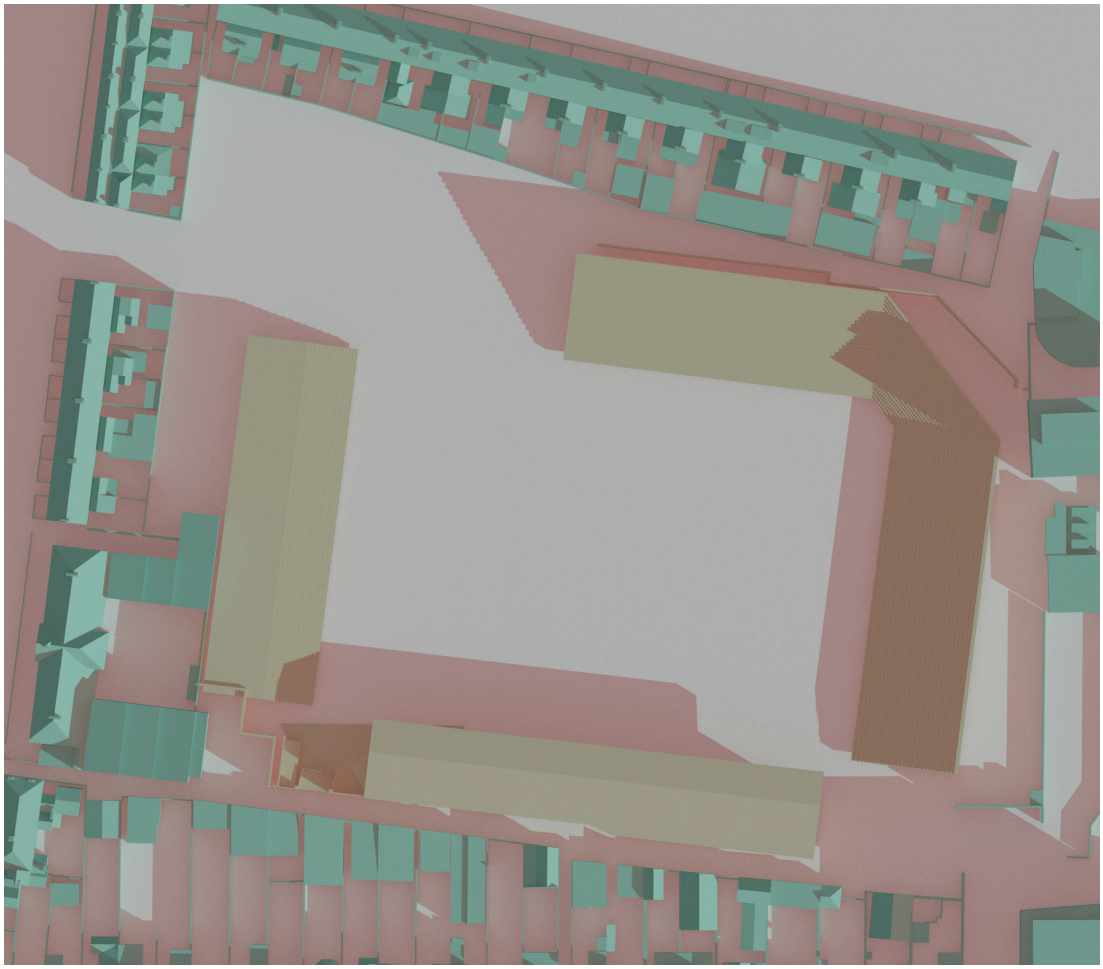
Section 6.2 shows the existing and proposed shadow diagrams for the Equinox on the 21st March at 2 hourly intervals during the day between 09:00 and 17:00.
Section 6.3 shows the existing and proposed shadow diagrams for the Summer Solstice on the 21st June at 2 hourly intervals during the day between 09:00 and 19:00.
Section 6.4 shows the existing and proposed shadow diagrams for the Equinox on the 21st September at 2 hourly intervals during the day between 09:00 and 17:00.
Section 6.5 shows the existing and proposed shadow diagrams for the Winter Solstice on the 21st December at 2 hourly intervals during the day between 09:00 and 15:00.

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

6.2 Shadow Casting diagrams March Equinox

N

Existing



Proposed

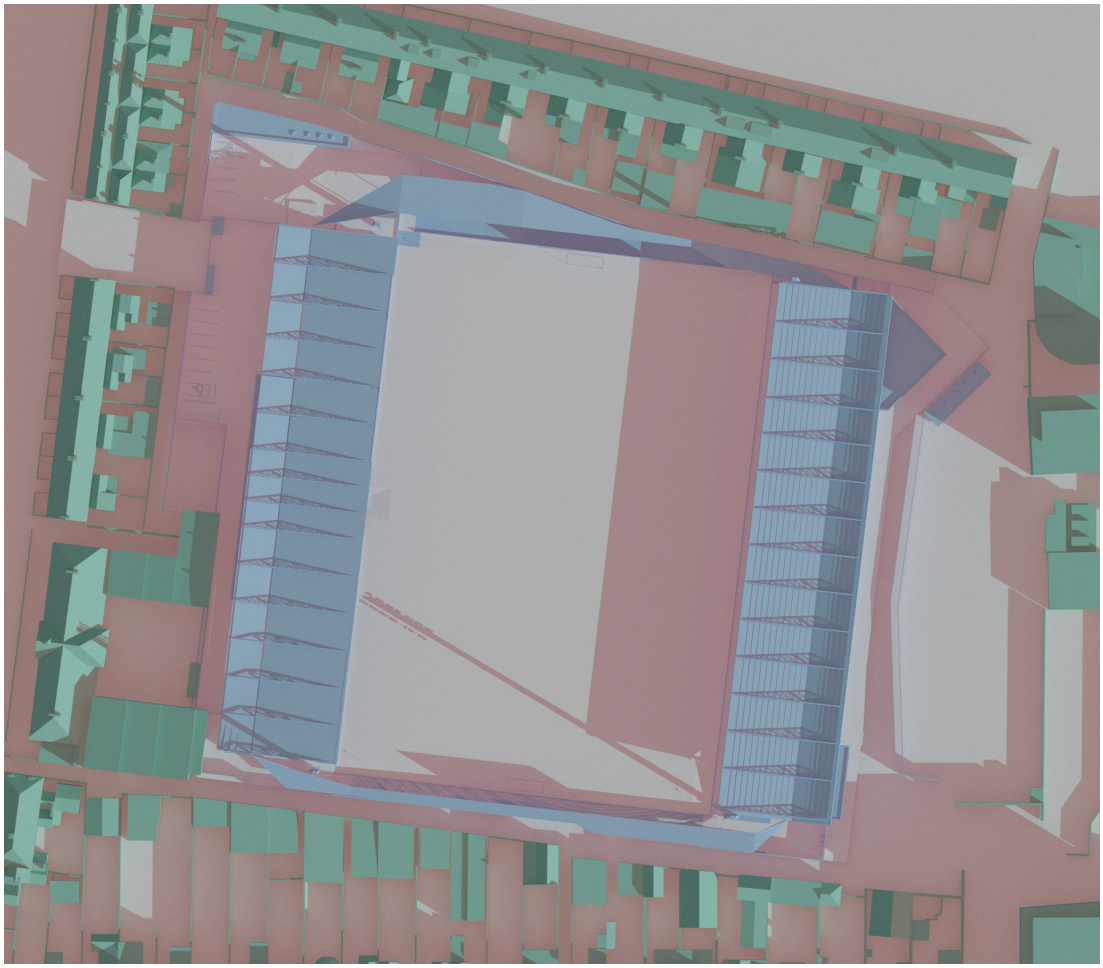
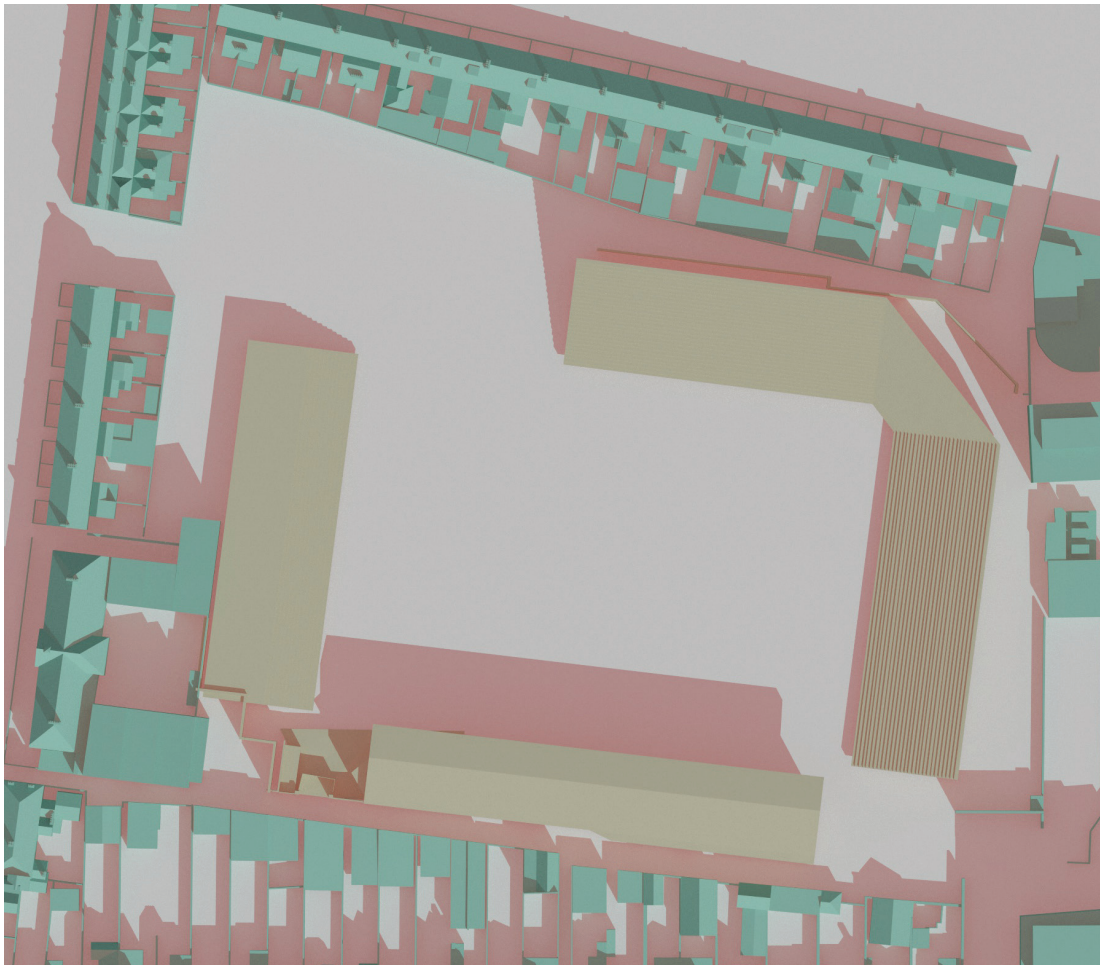
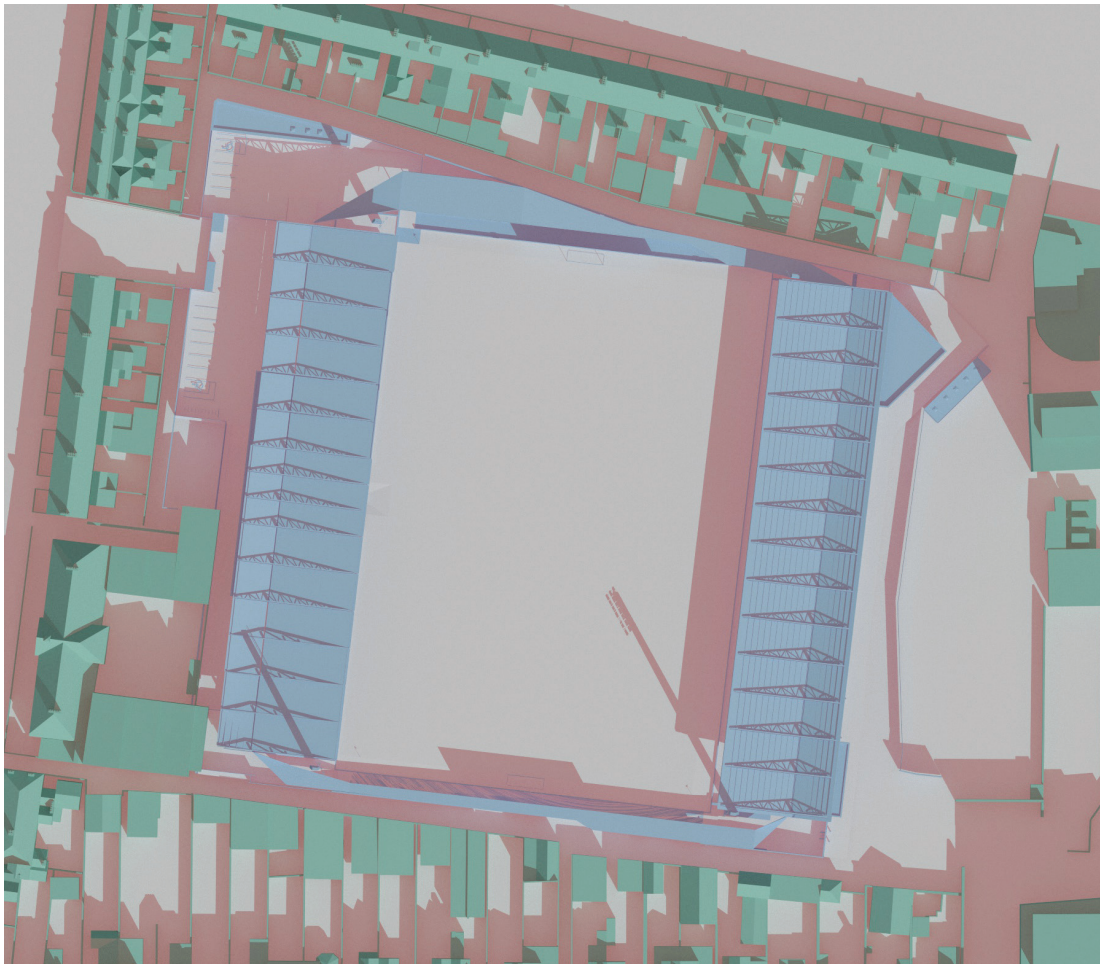


Figure 27: Shadow diagrams 21 March 09:00 UTC

N



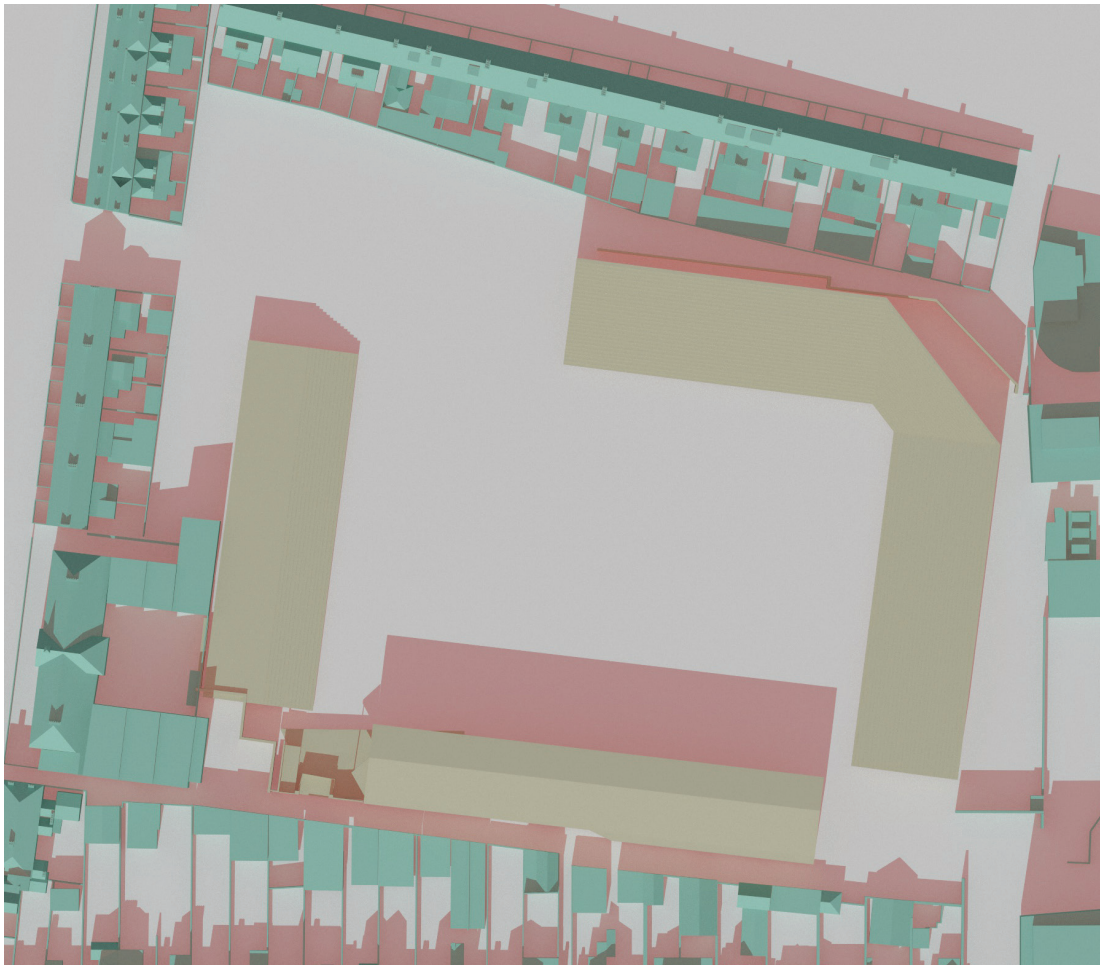
Existing



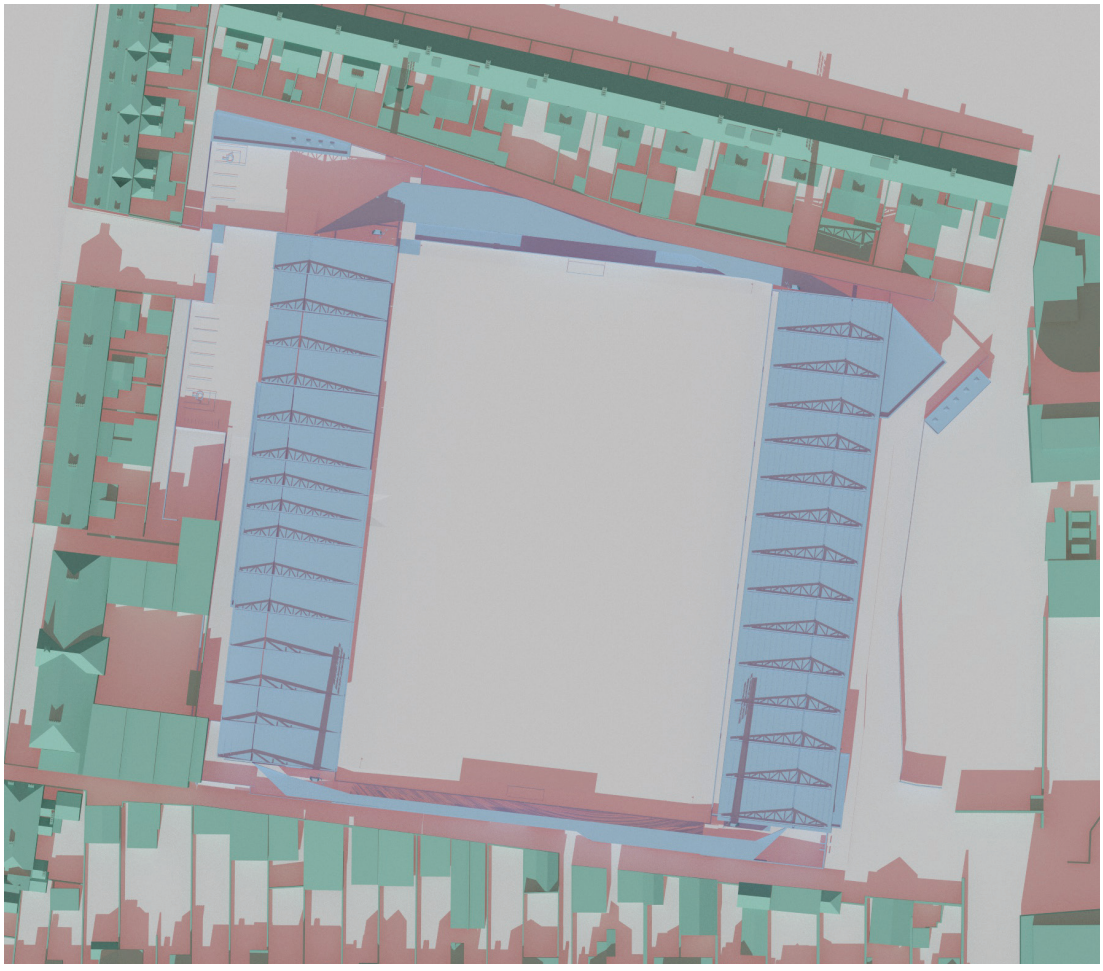
Proposed

Figure 28: Shadow diagrams 21 March 11:00 UTC

N



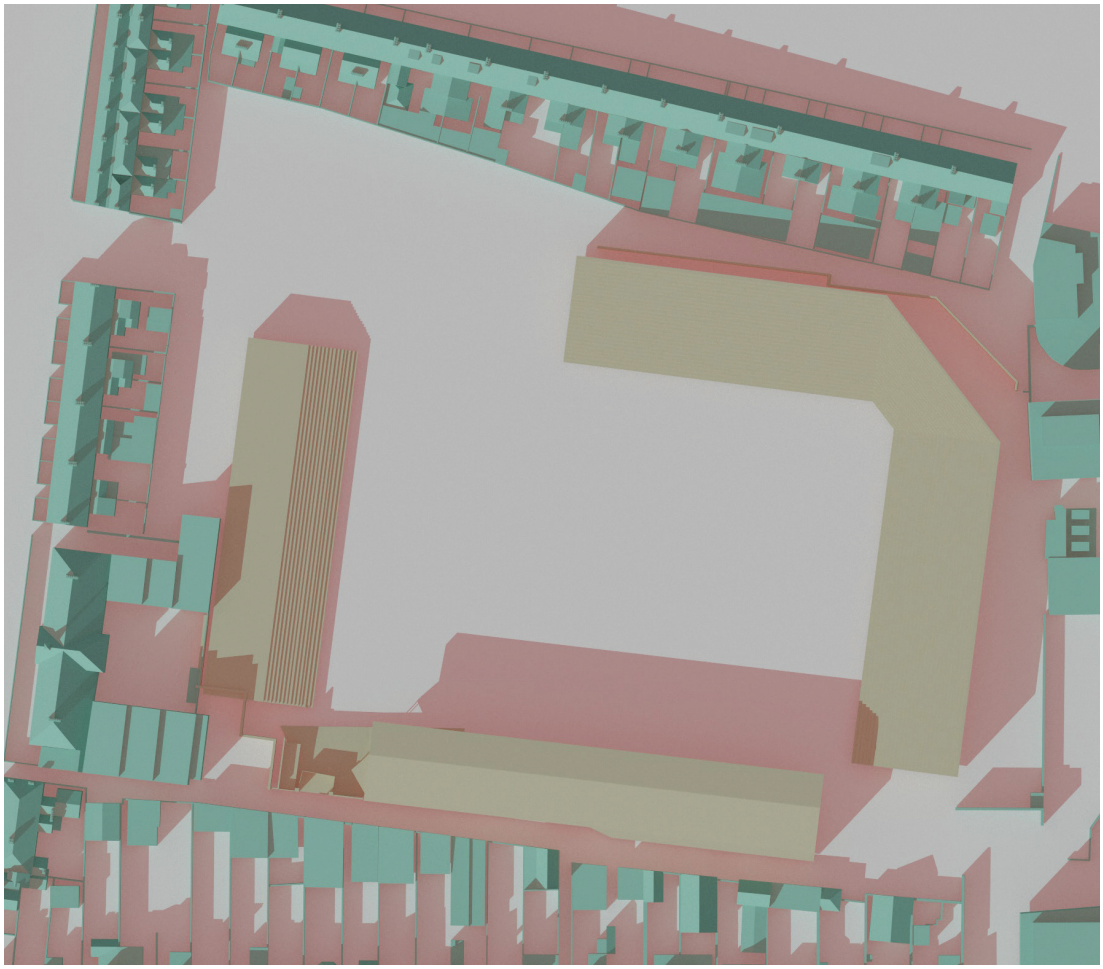
Existing



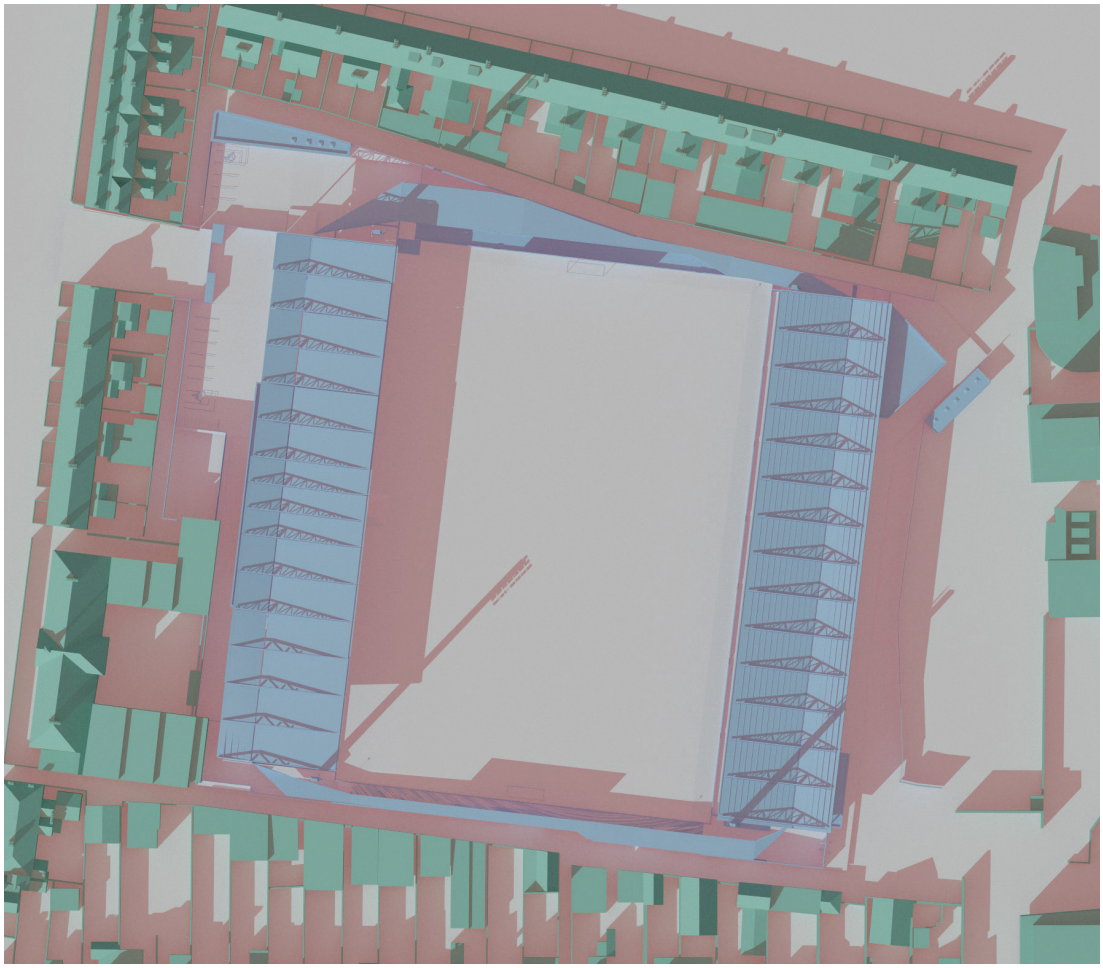
Proposed

Figure 29: Shadow diagrams 21 March 13:00 UTC

N



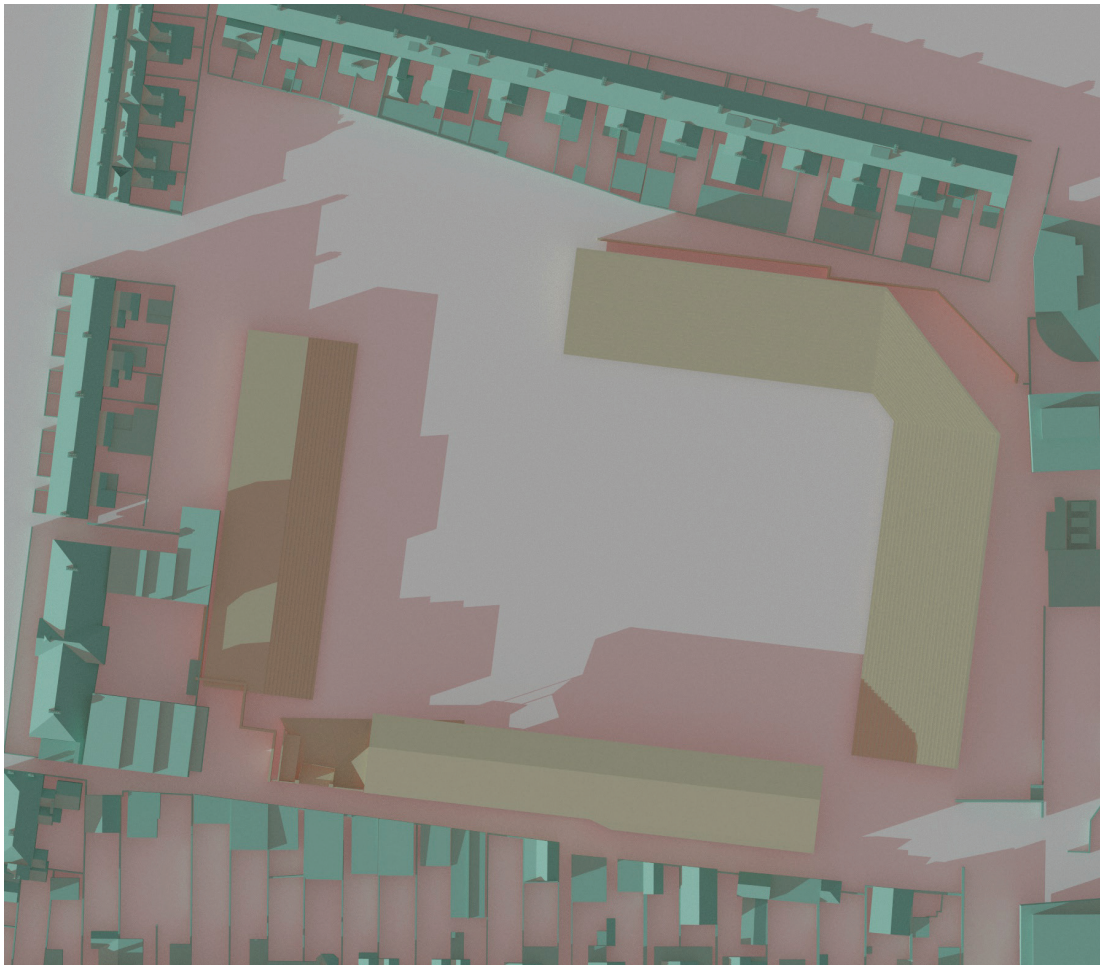
Existing



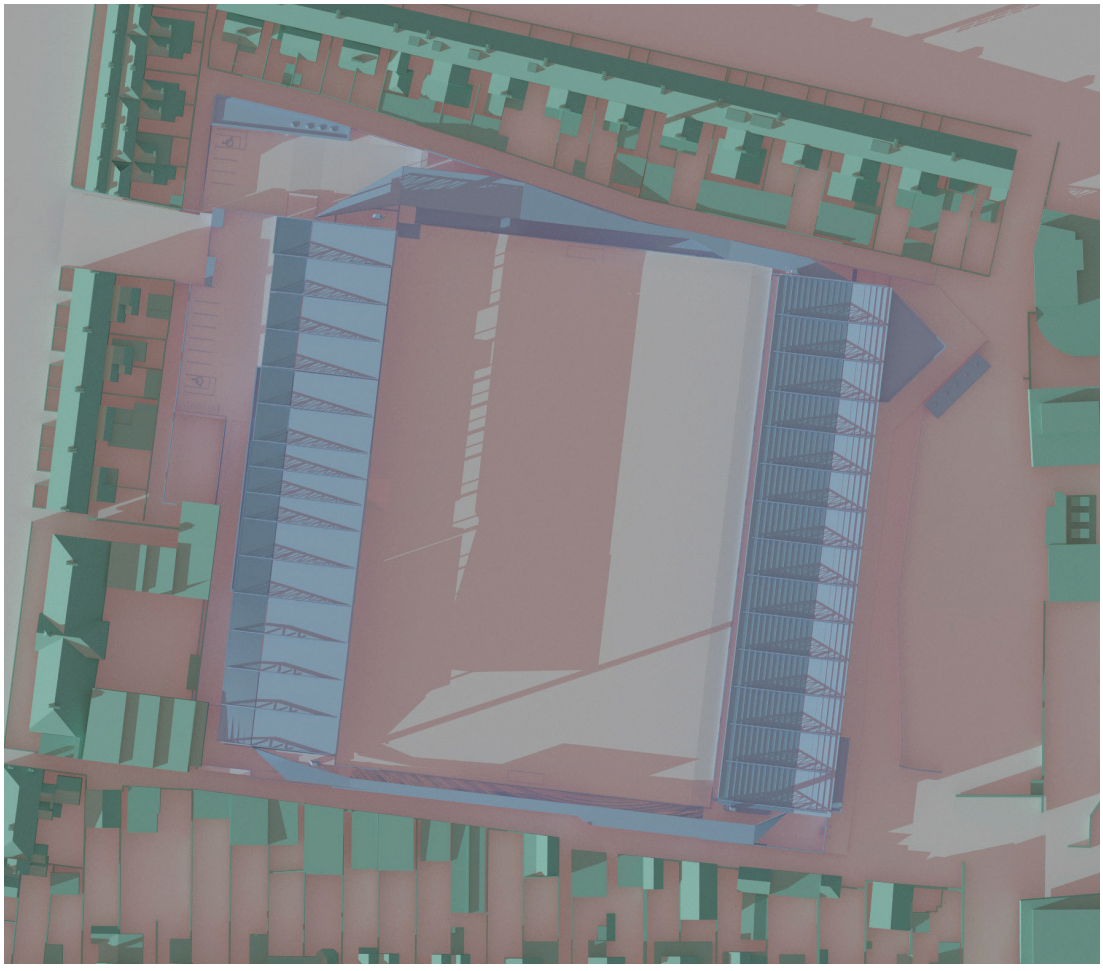
Proposed

Figure 30: Shadow diagrams 21 March 15:00 UTC

N



Existing



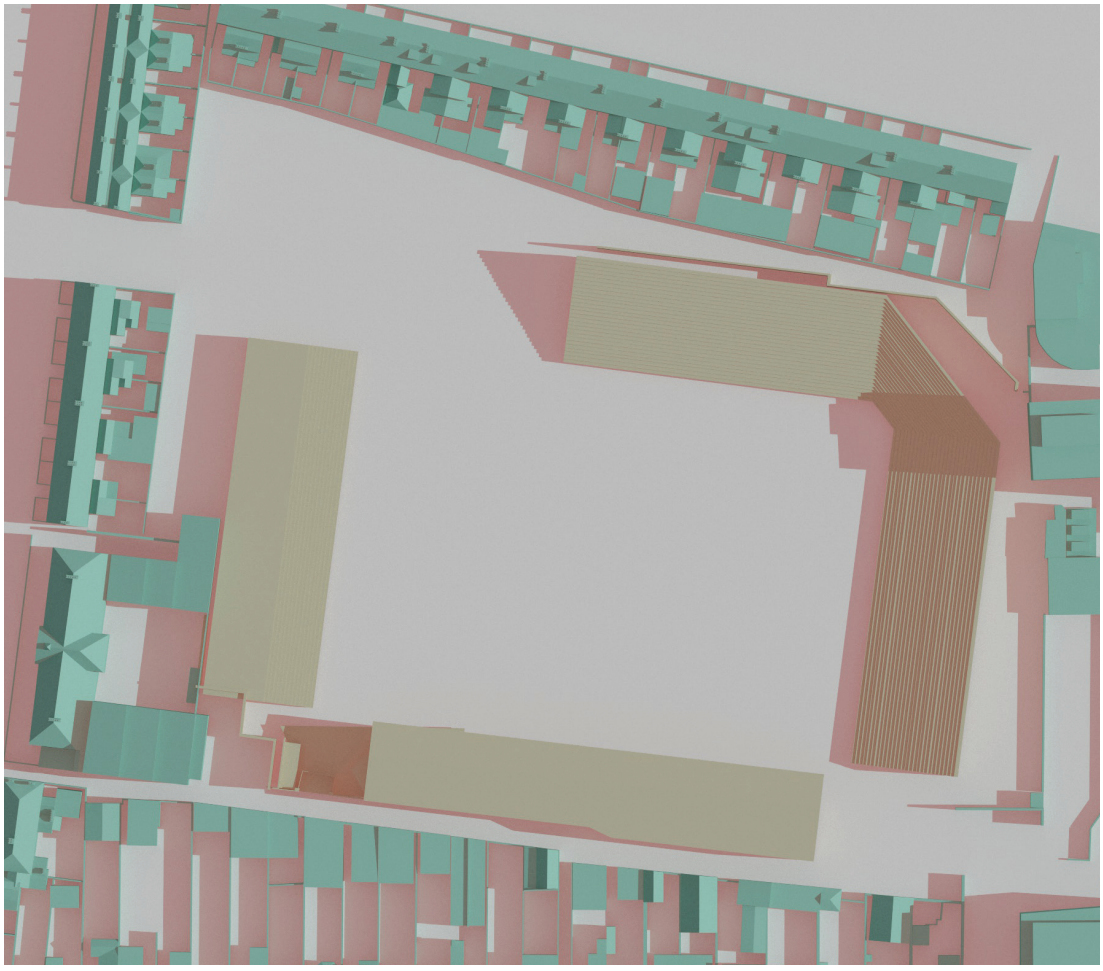
Proposed

Figure 31: Shadow diagrams 21 March 17:00 UTC

6.3 Shadow Casting diagrams June Solstice

N

Existing



Proposed

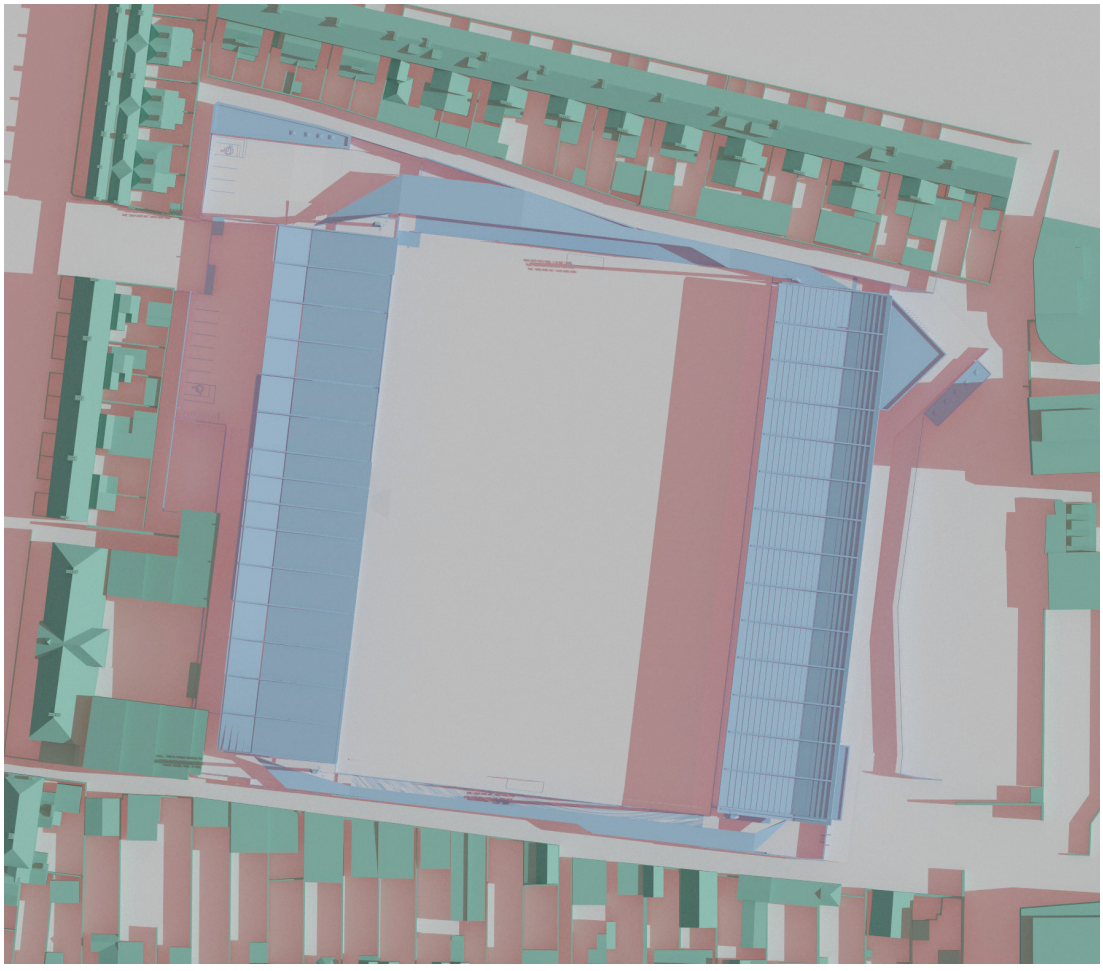
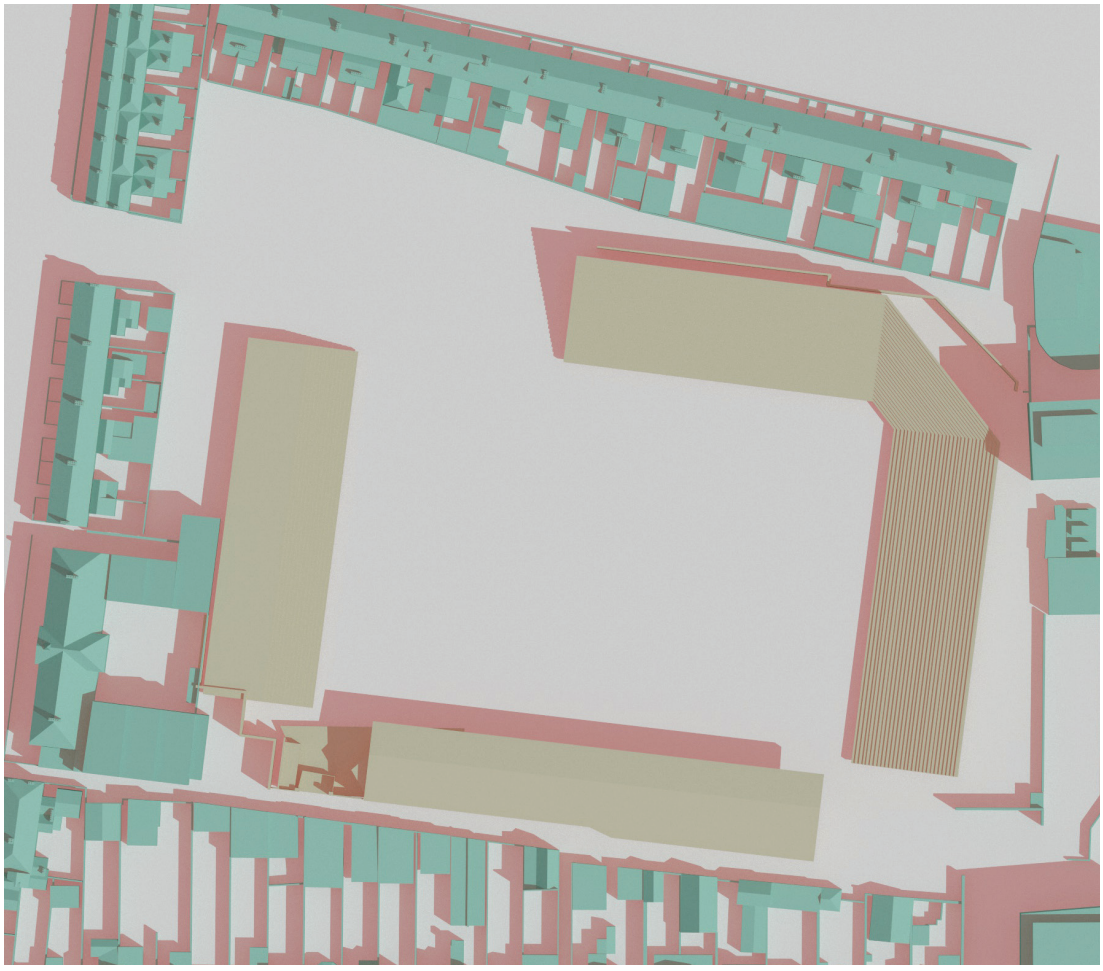
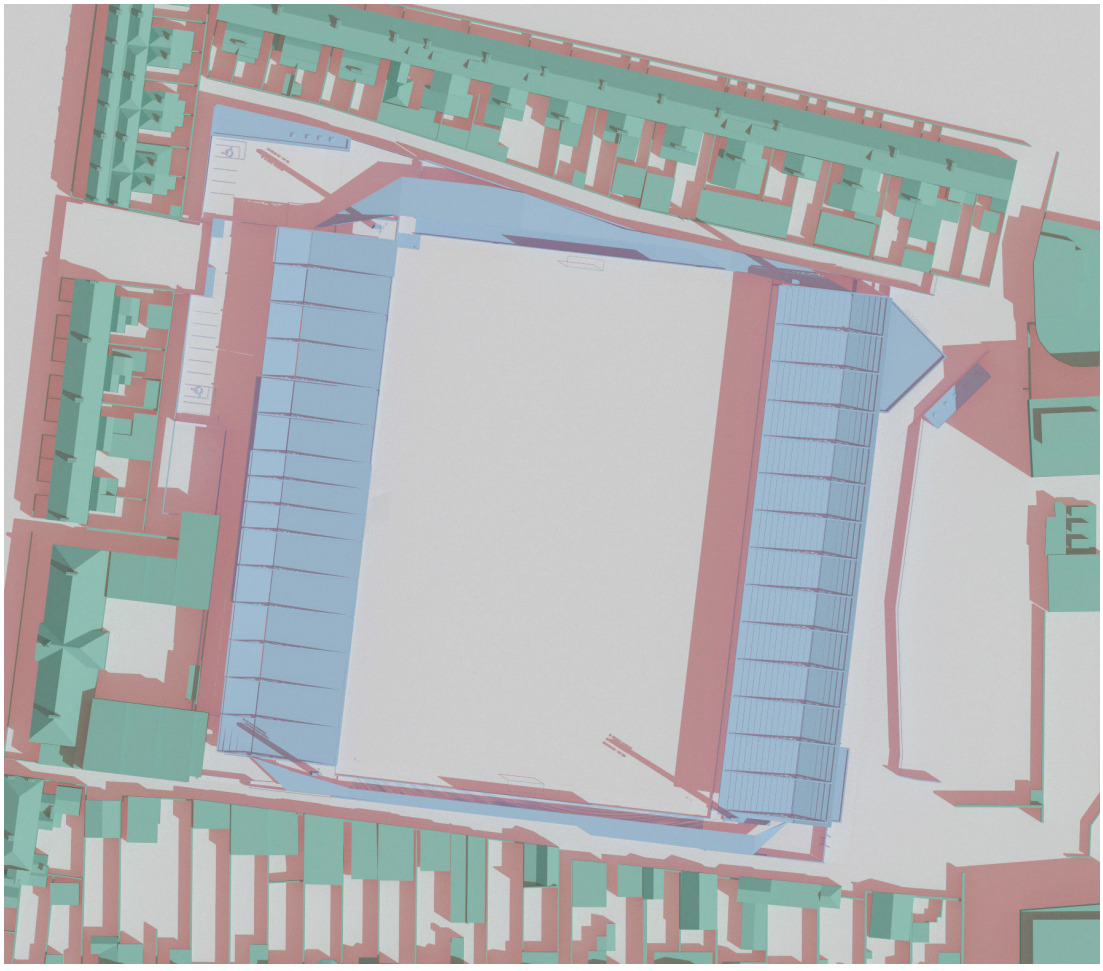


Figure 32: Shadow diagrams 21 June 09:00 UTC+1

N



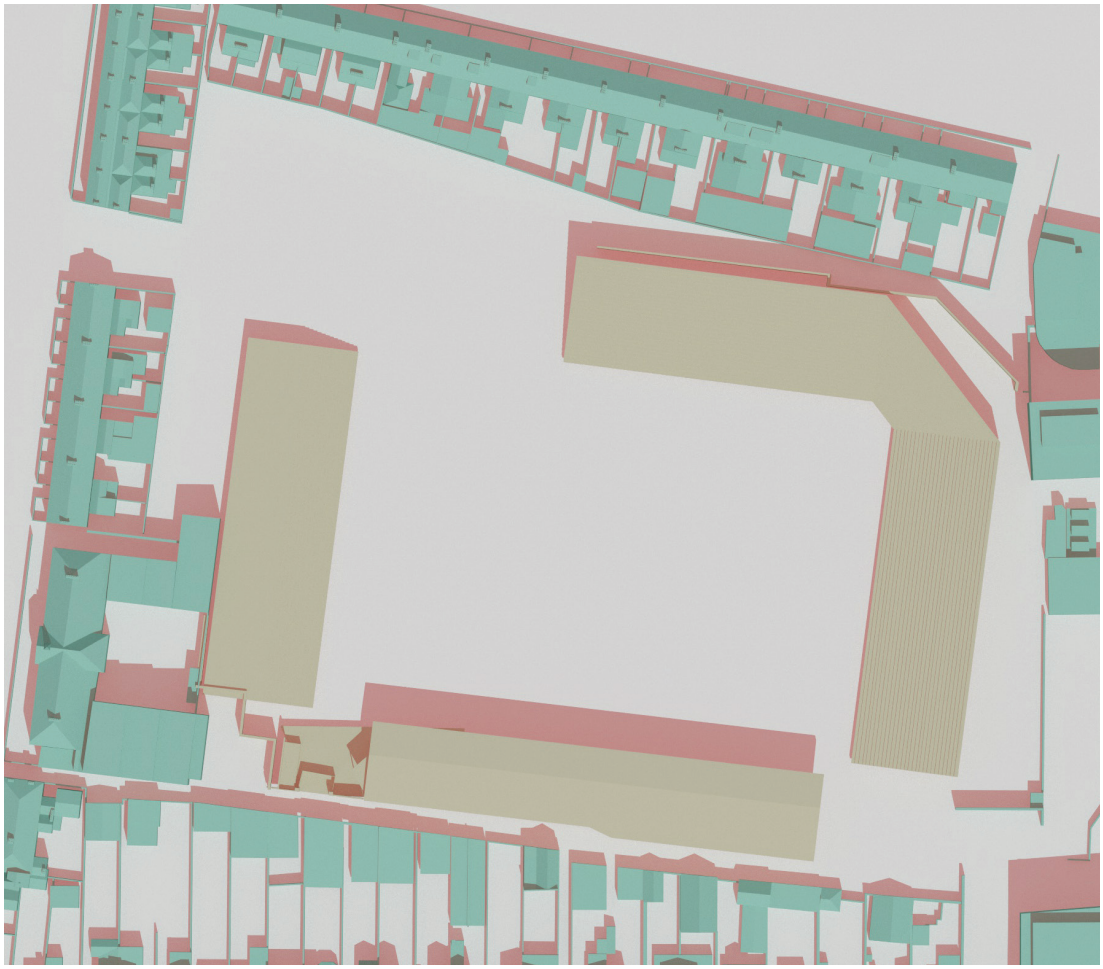
Existing



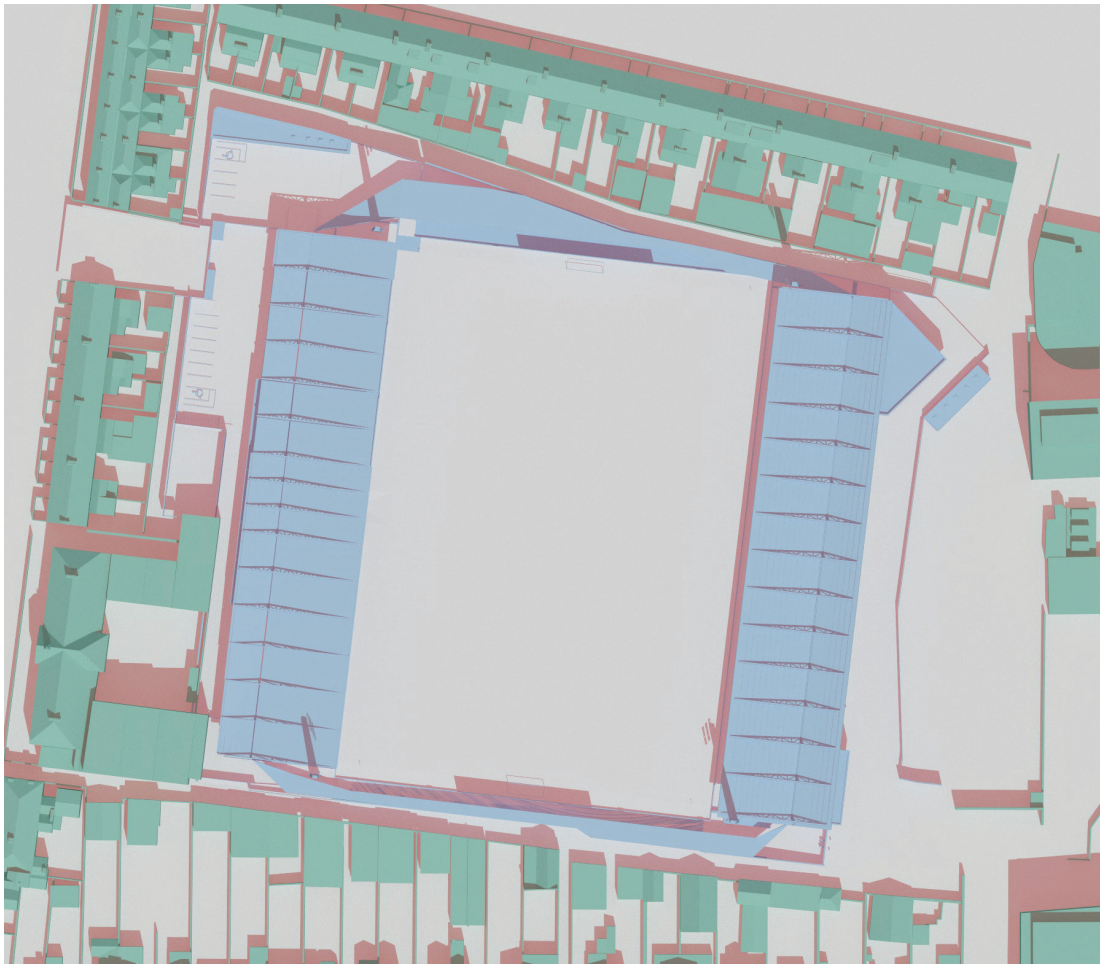
Proposed

Figure 33: Shadow diagrams 21 June 11:00 UTC+1

N



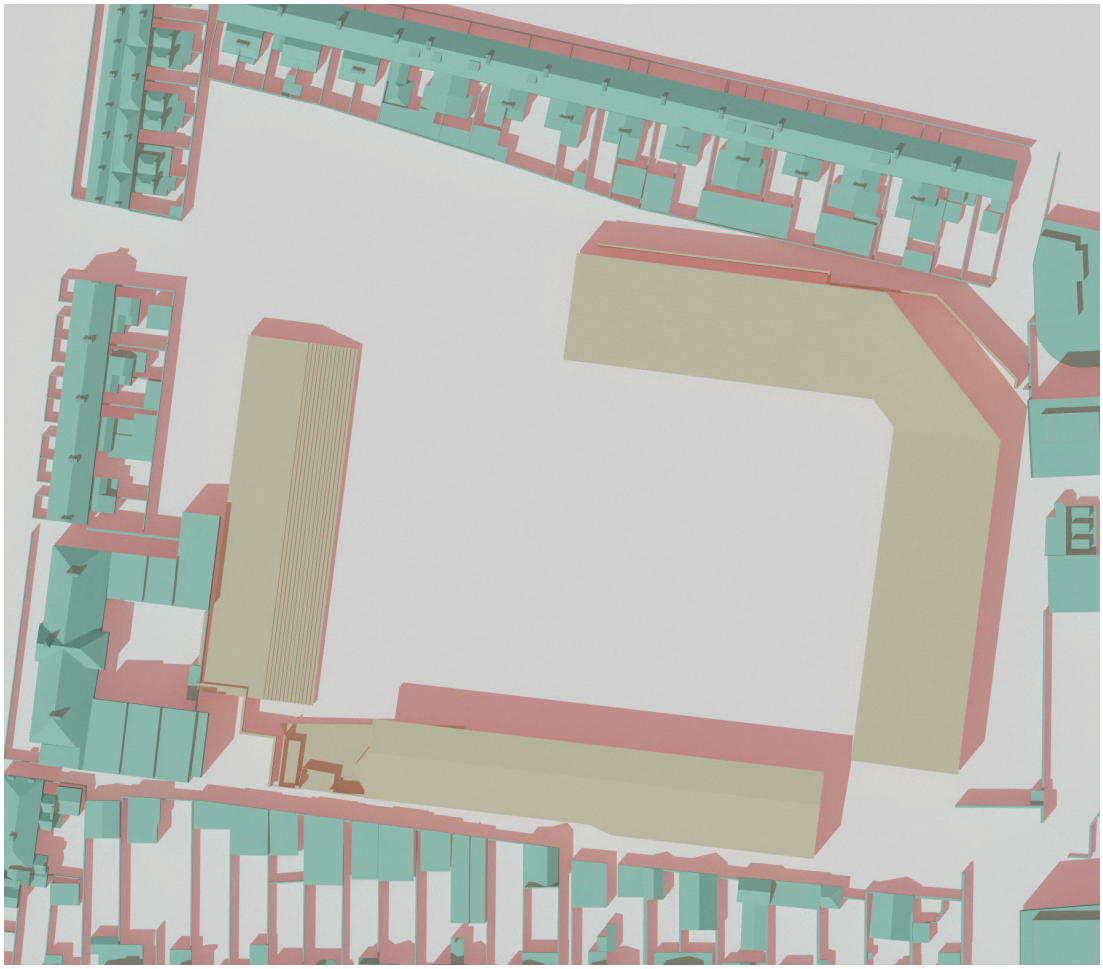
Existing



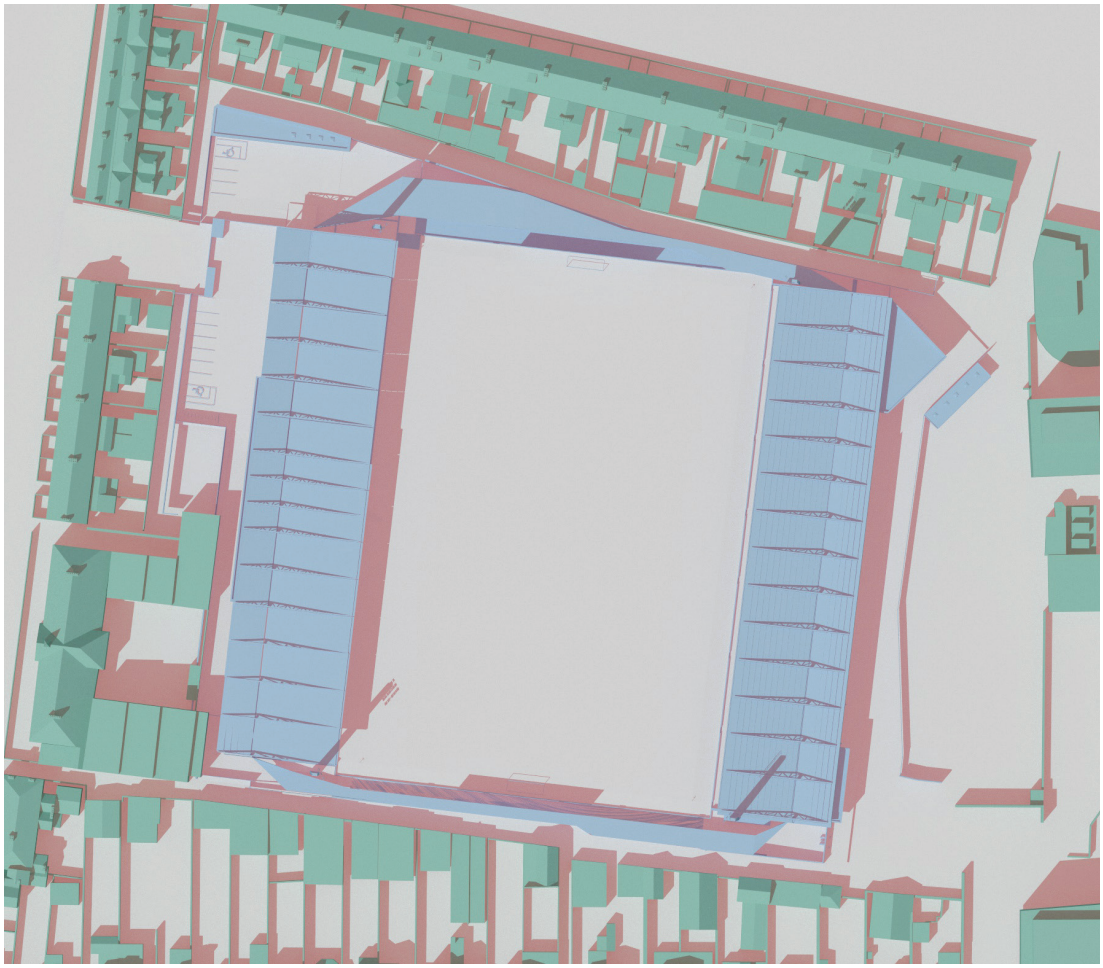
Proposed

Figure 34: Shadow diagrams 21 June 13:00 UTC+1

N



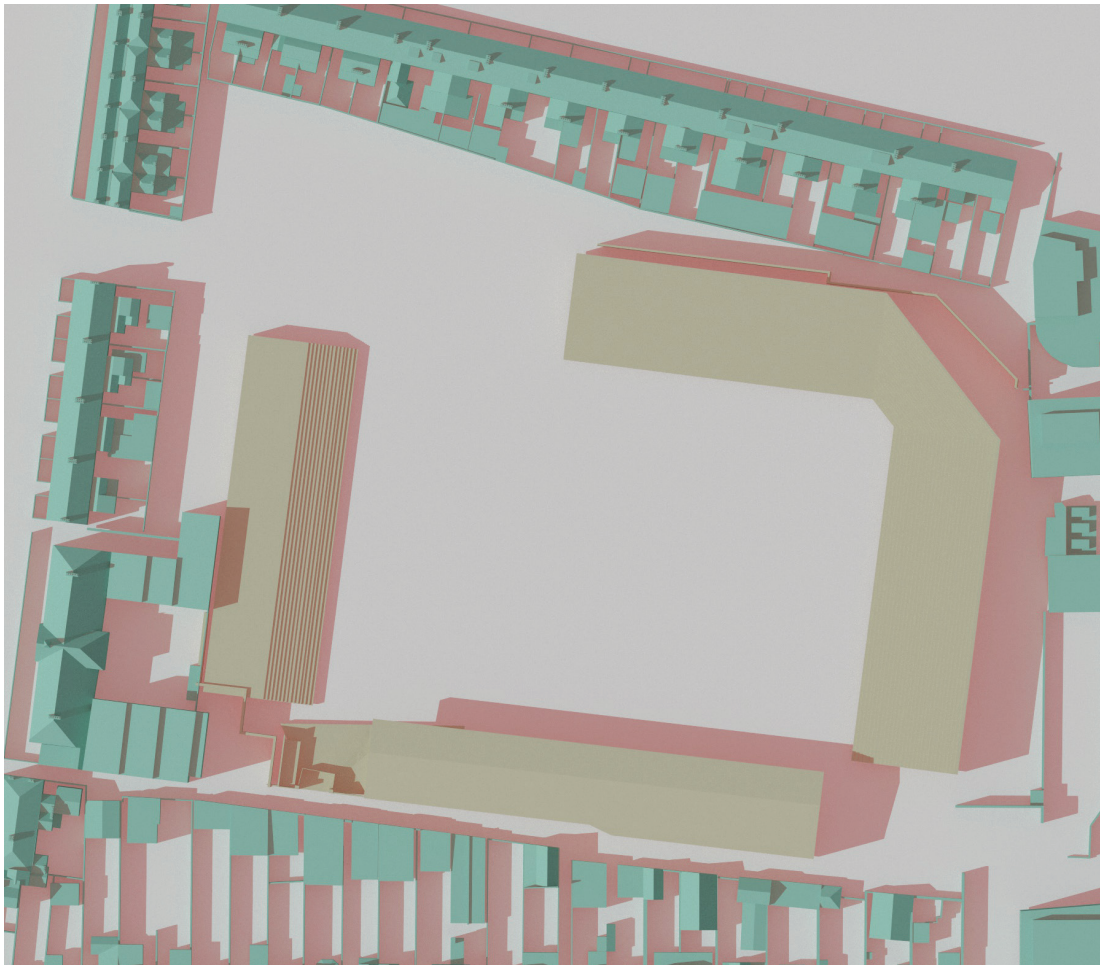
Existing



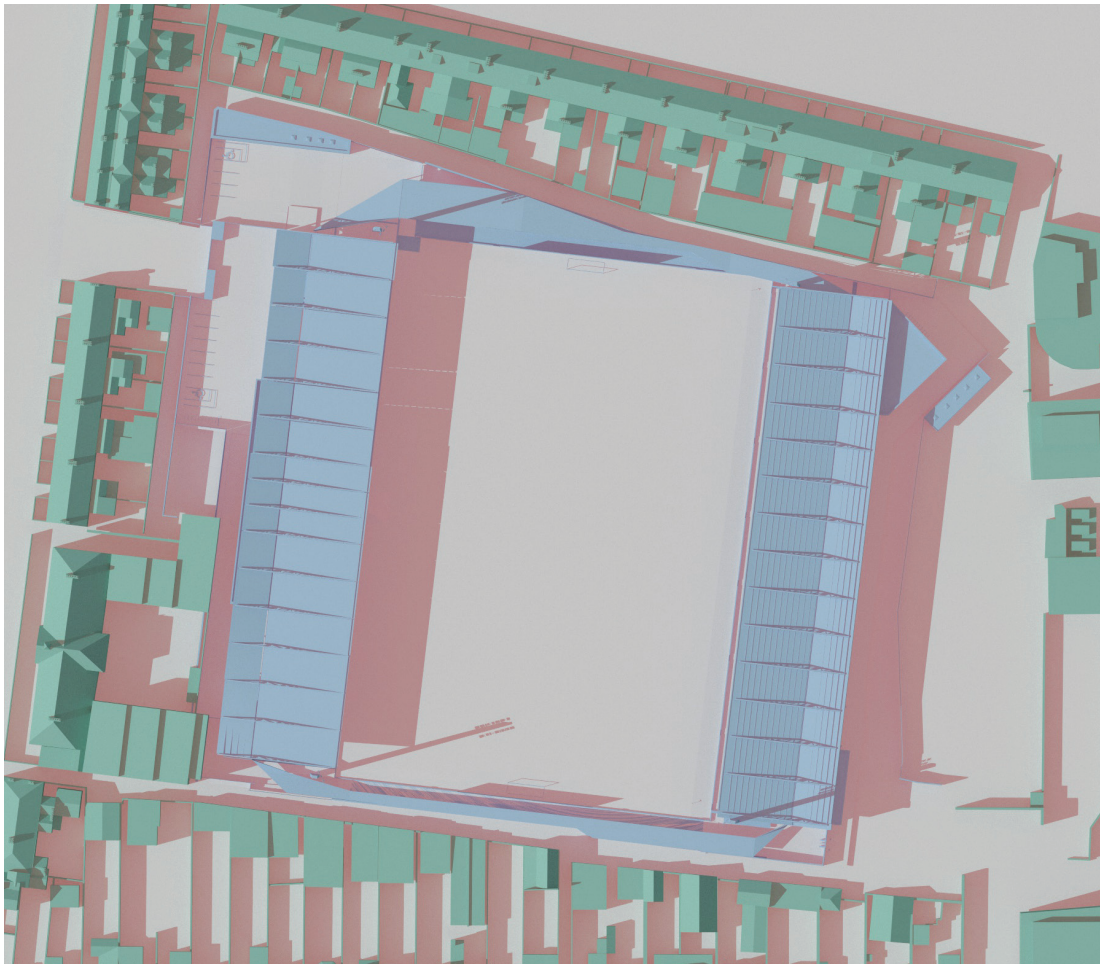
Proposed

Figure 35: Shadow diagrams 21 June 15:00 UTC+1

N



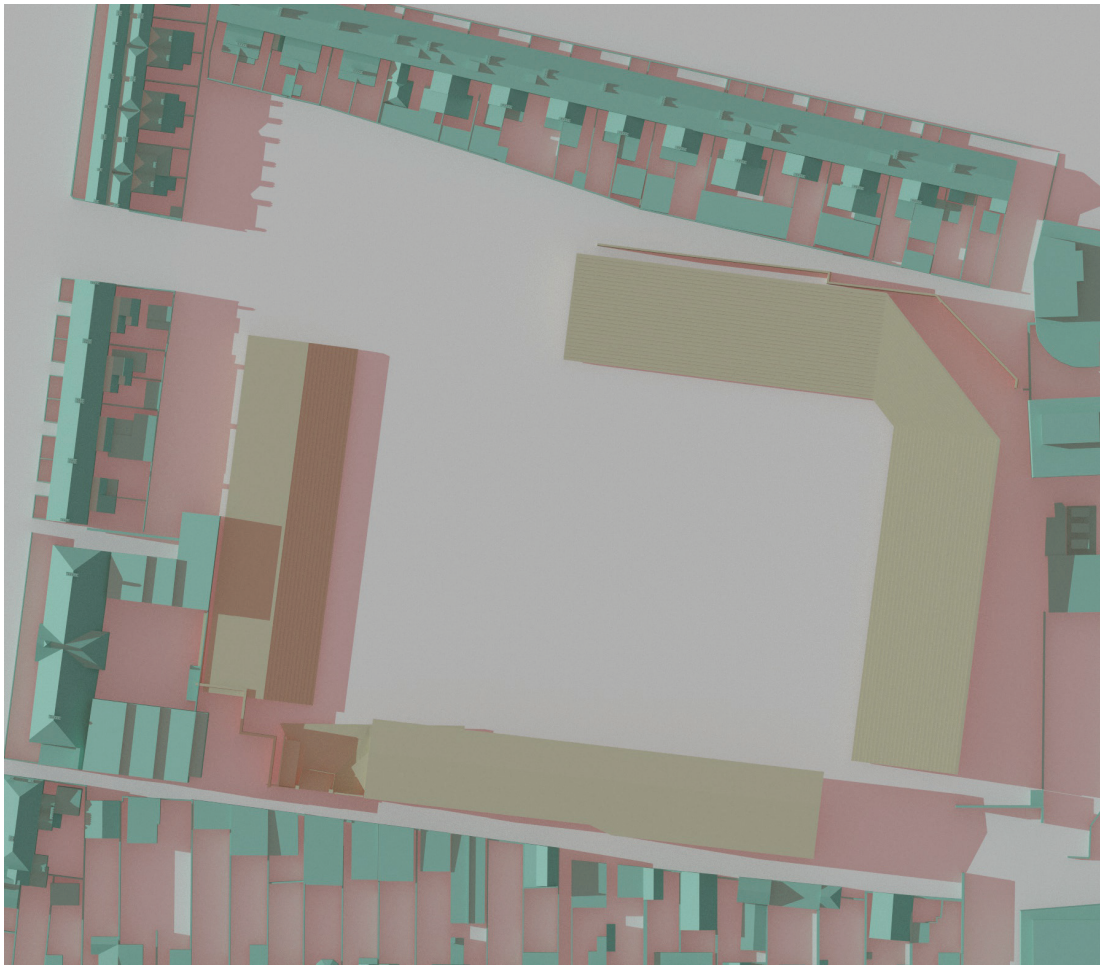
Existing



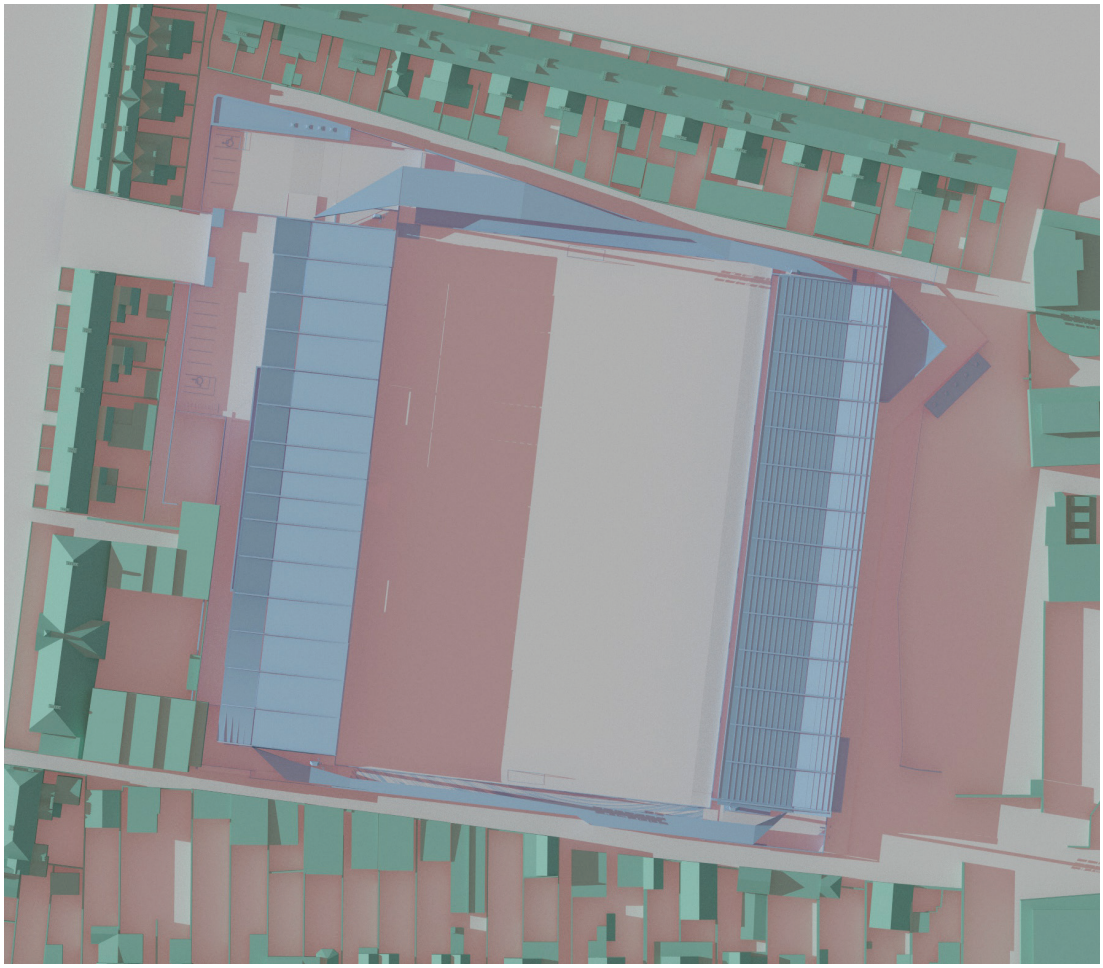
Proposed

Figure 36: Shadow diagrams 21 June 17:00 UTC+1

N



Existing



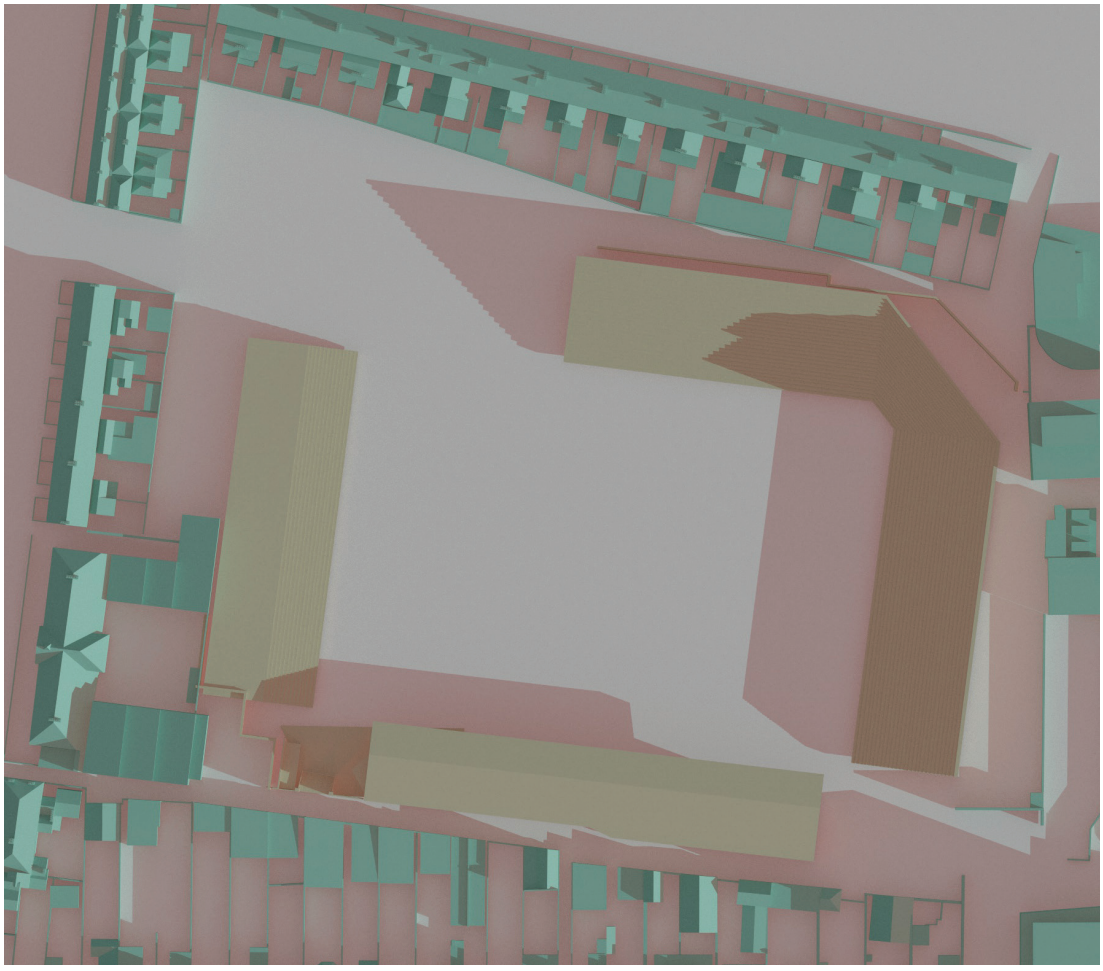
Proposed

Figure 37: Shadow diagrams 21 June 19:00 UTC+1

6.4 Shadow Casting diagrams September Equinox

N

Existing



Proposed

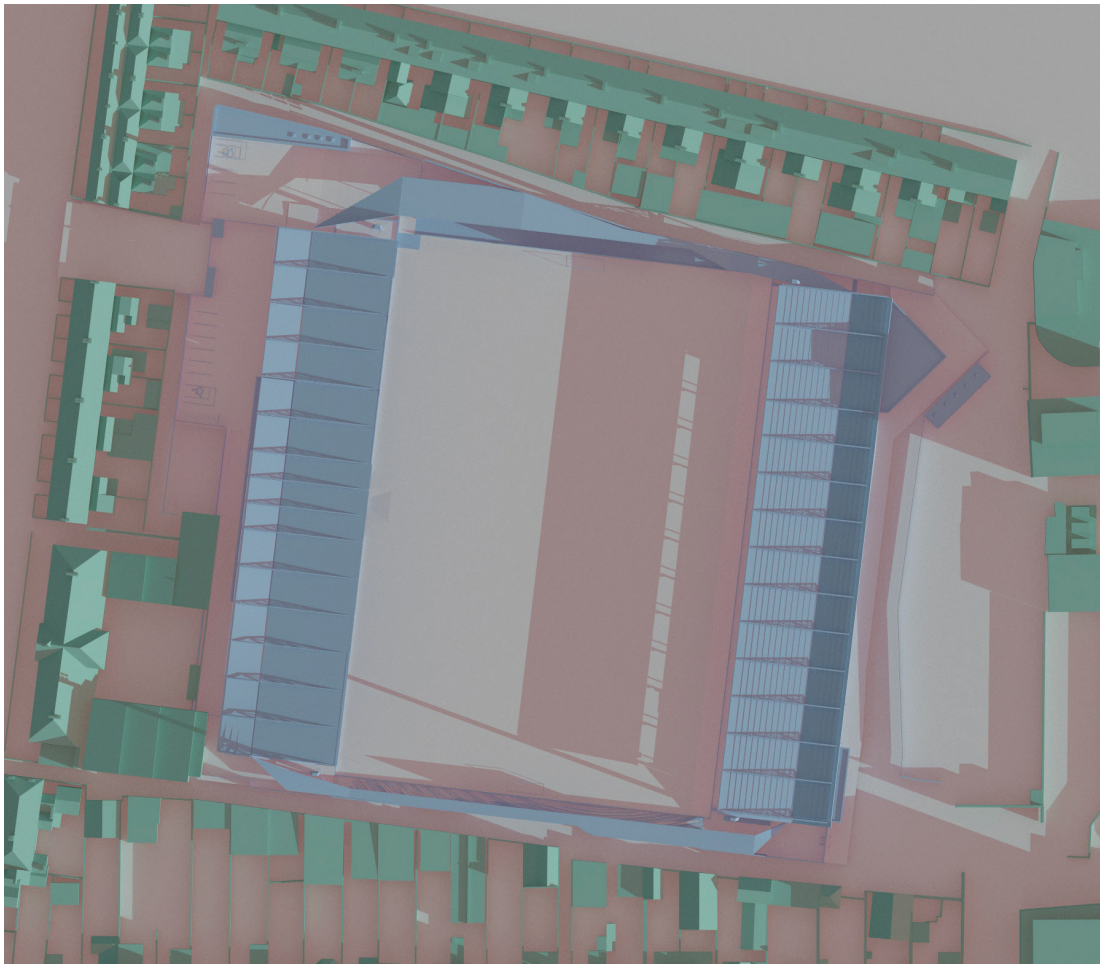
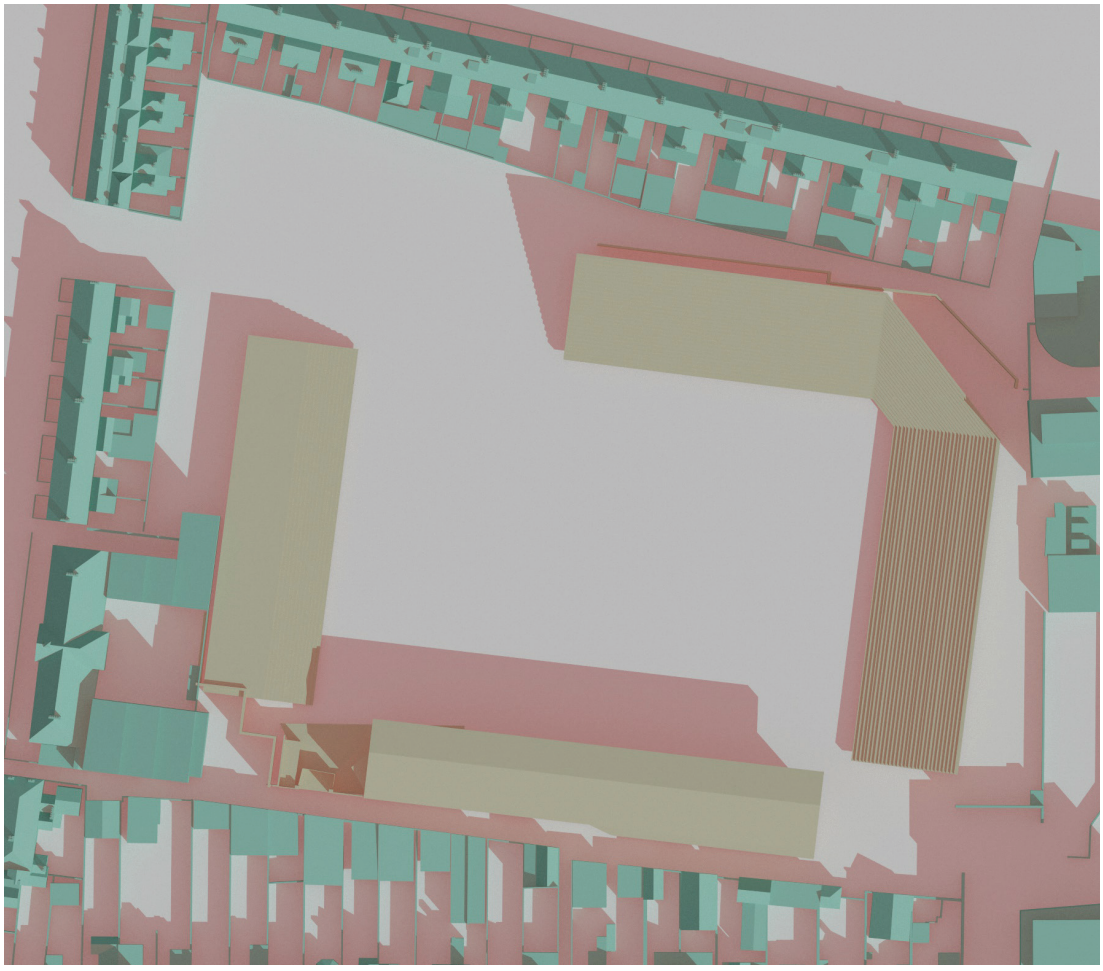
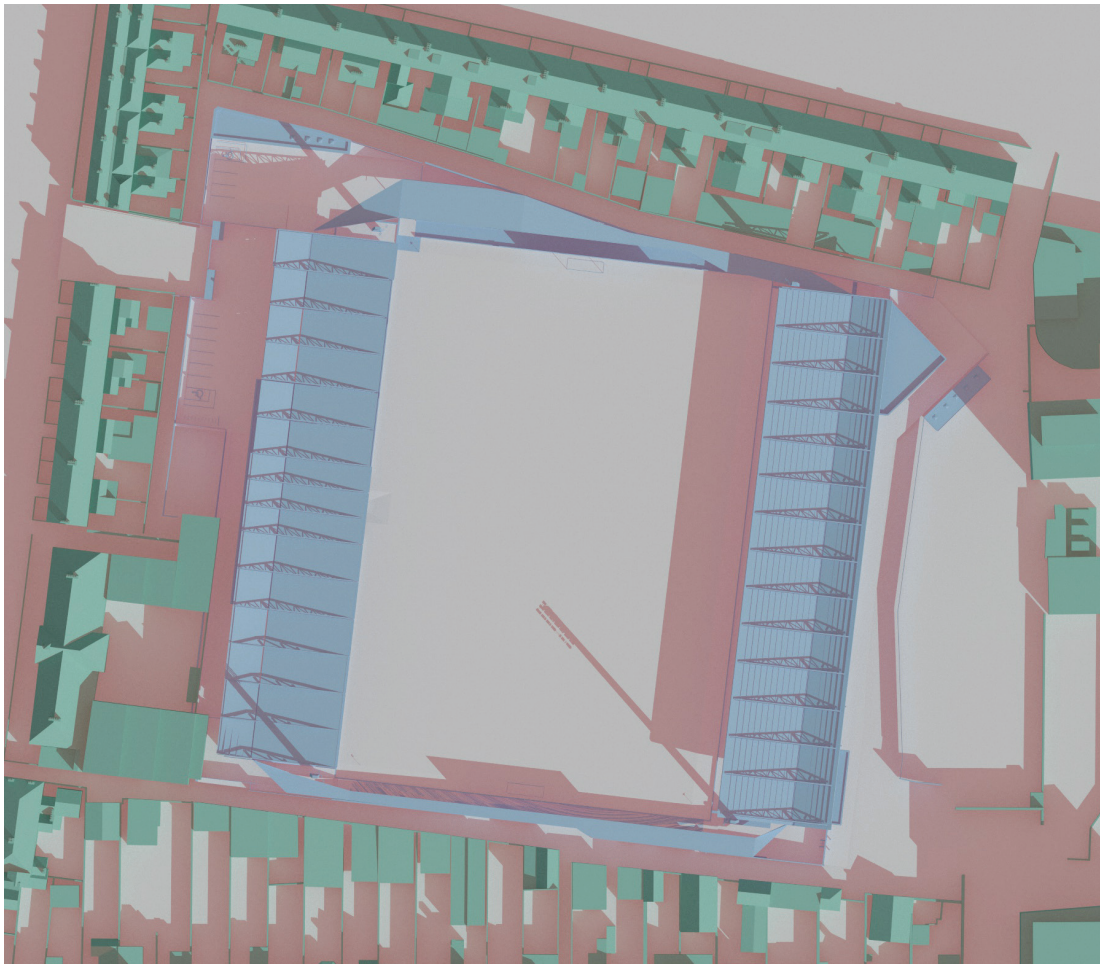


Figure 38: Shadow diagrams 21 September 09:00 UTC+1

N



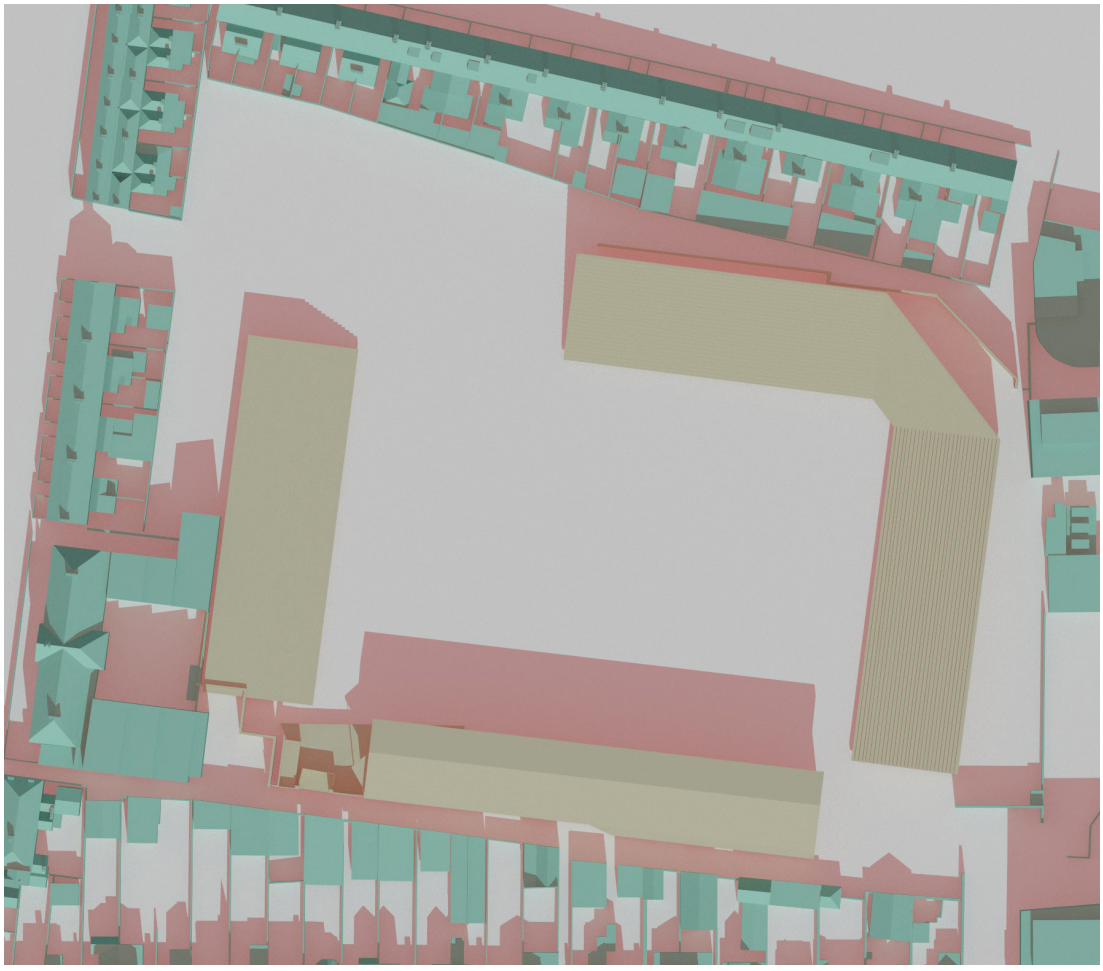
Existing



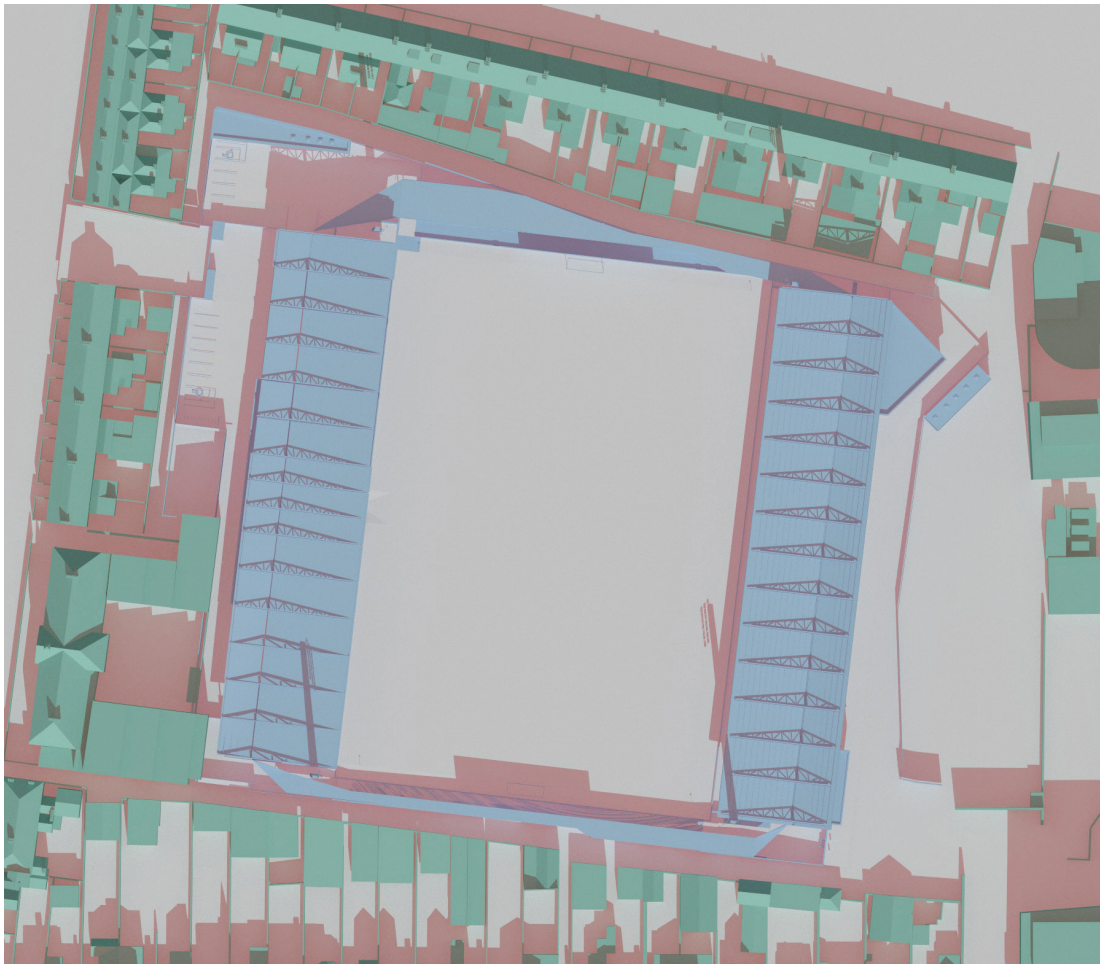
Proposed

Figure 39: Shadow diagrams 21 September 11:00 UTC+1

N



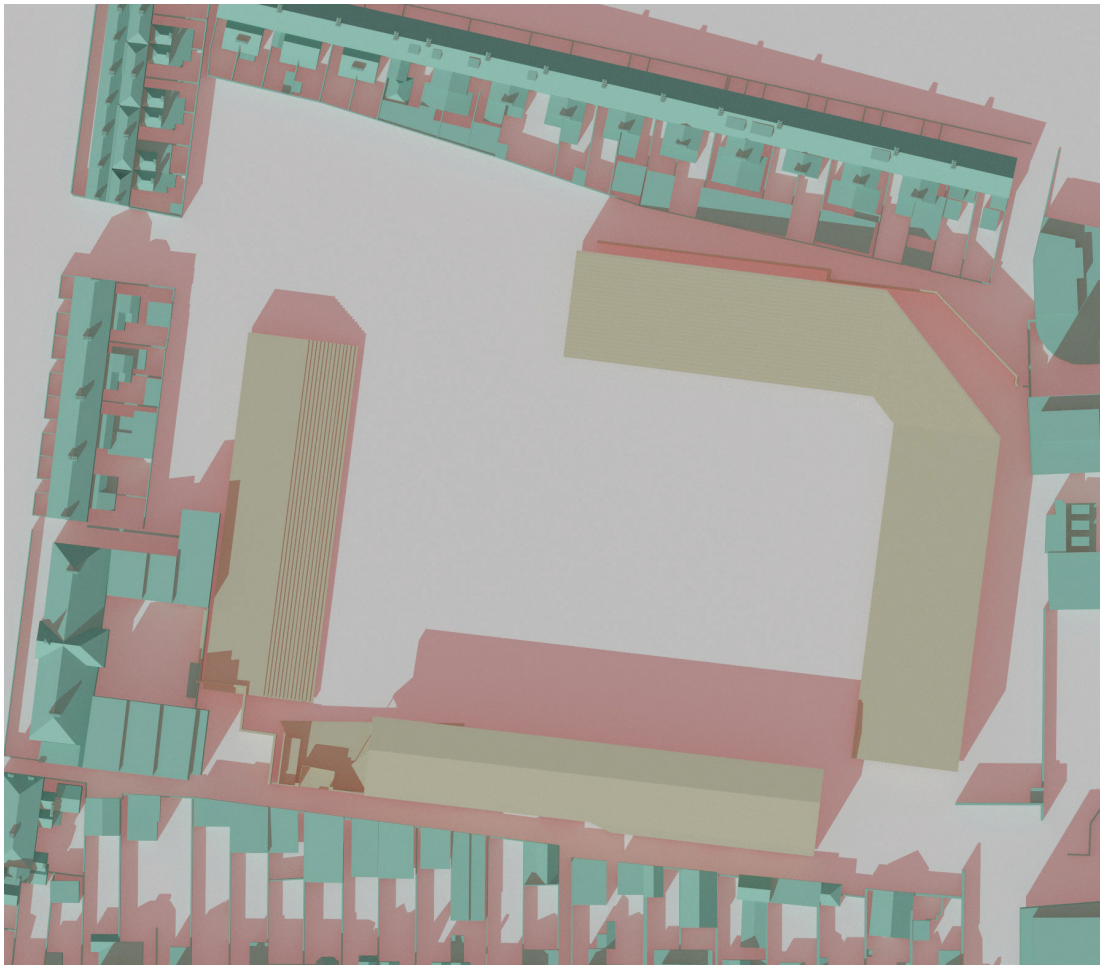
Existing



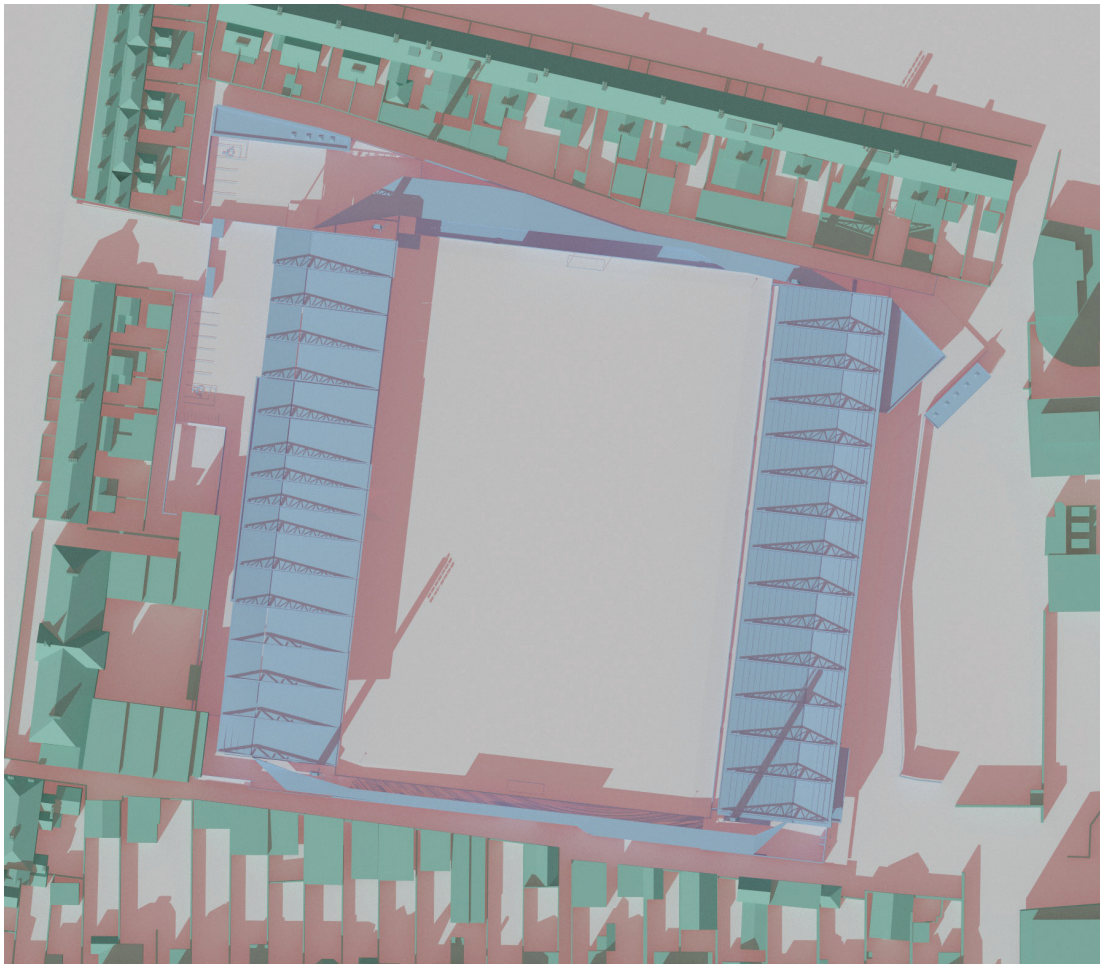
Proposed

Figure 40: Shadow diagrams 21 September 13:00 UTC+1

N



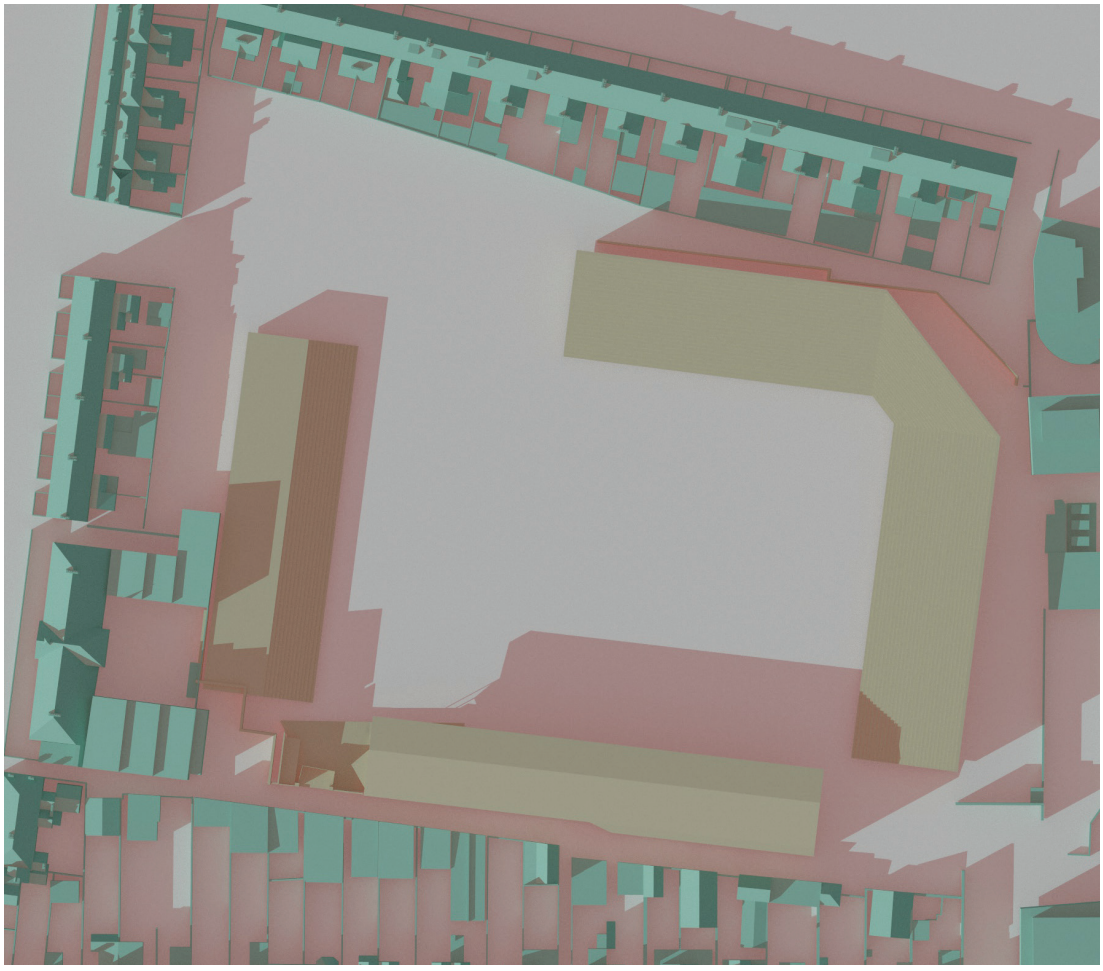
Existing



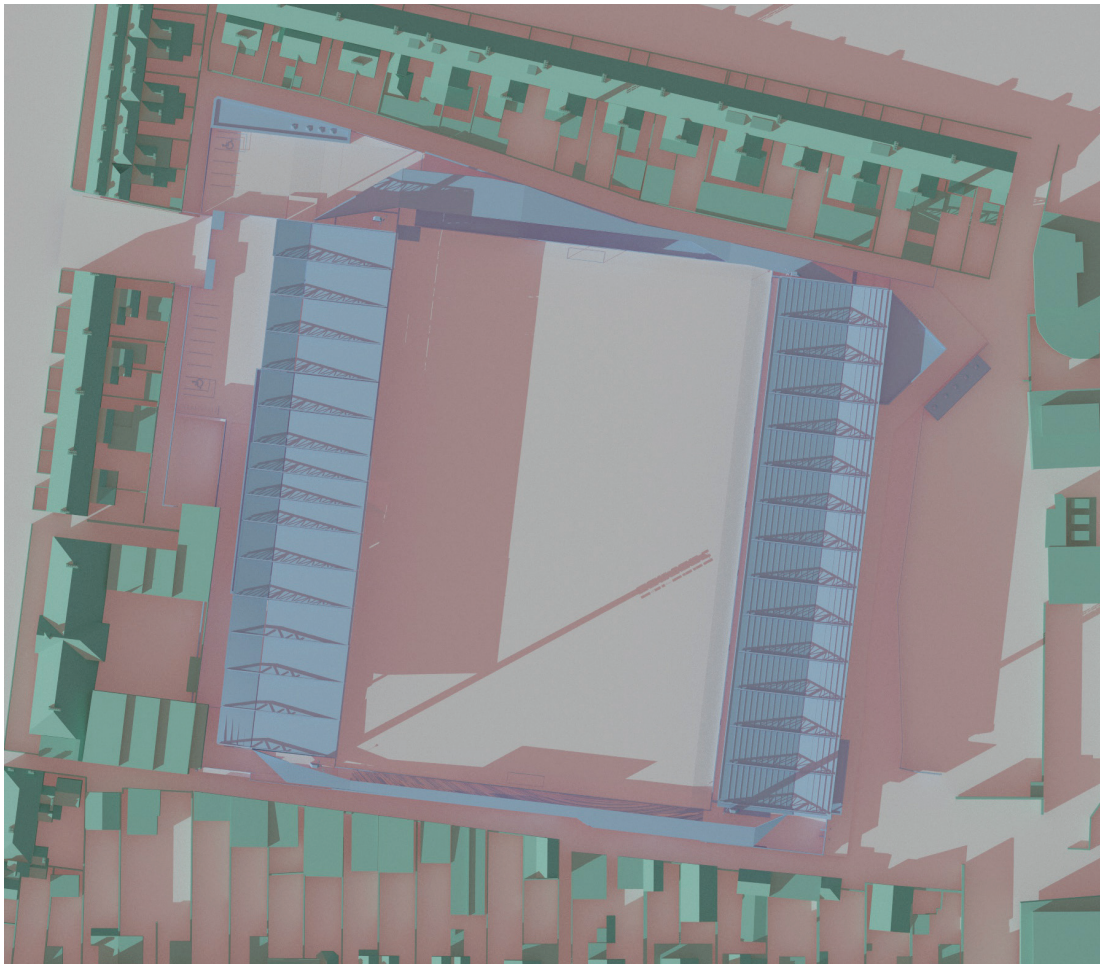
Proposed

Figure 41: Shadow diagrams 21 September 15:00 UTC+1

N



Existing



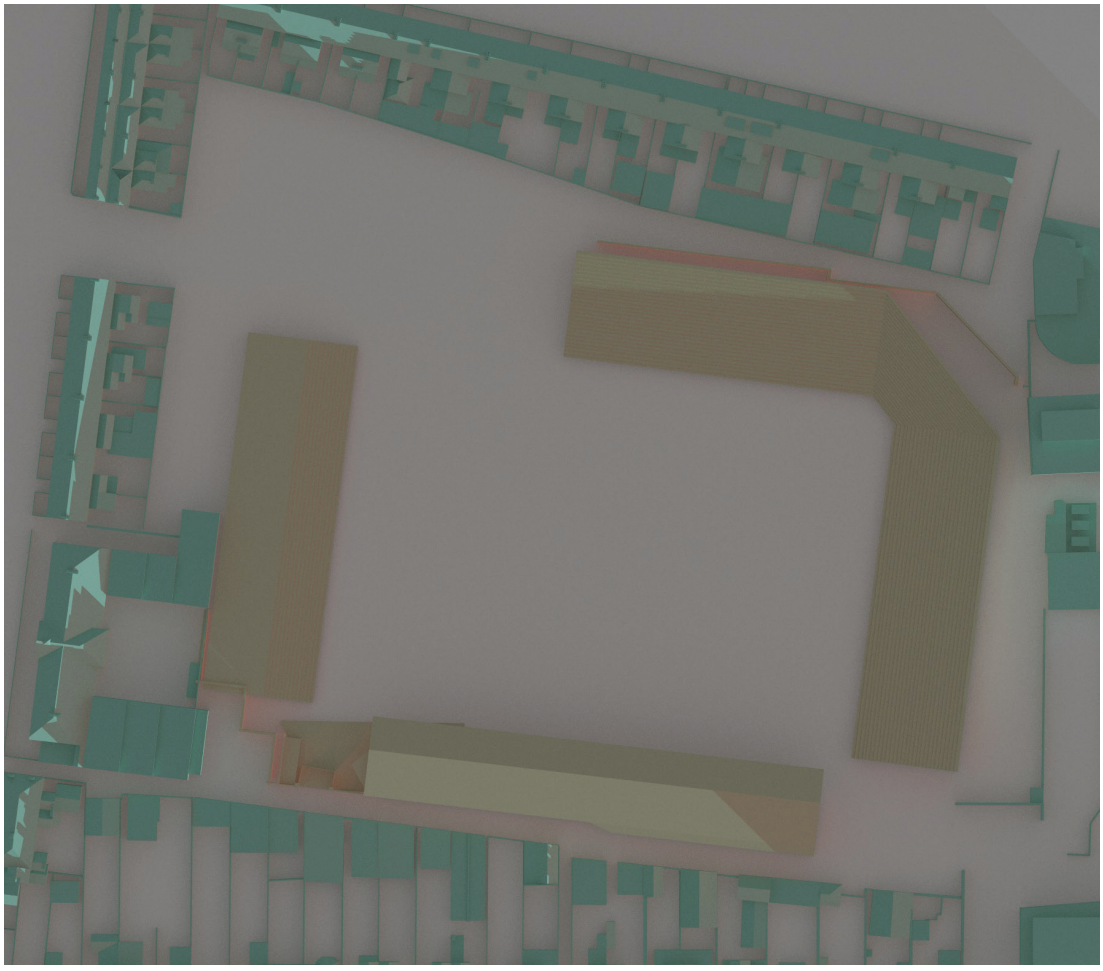
Proposed

Figure 42: Shadow diagrams 21 September 17:00 UTC+1

6.5 Shadow Casting diagrams December Solstice

N

Existing



Proposed

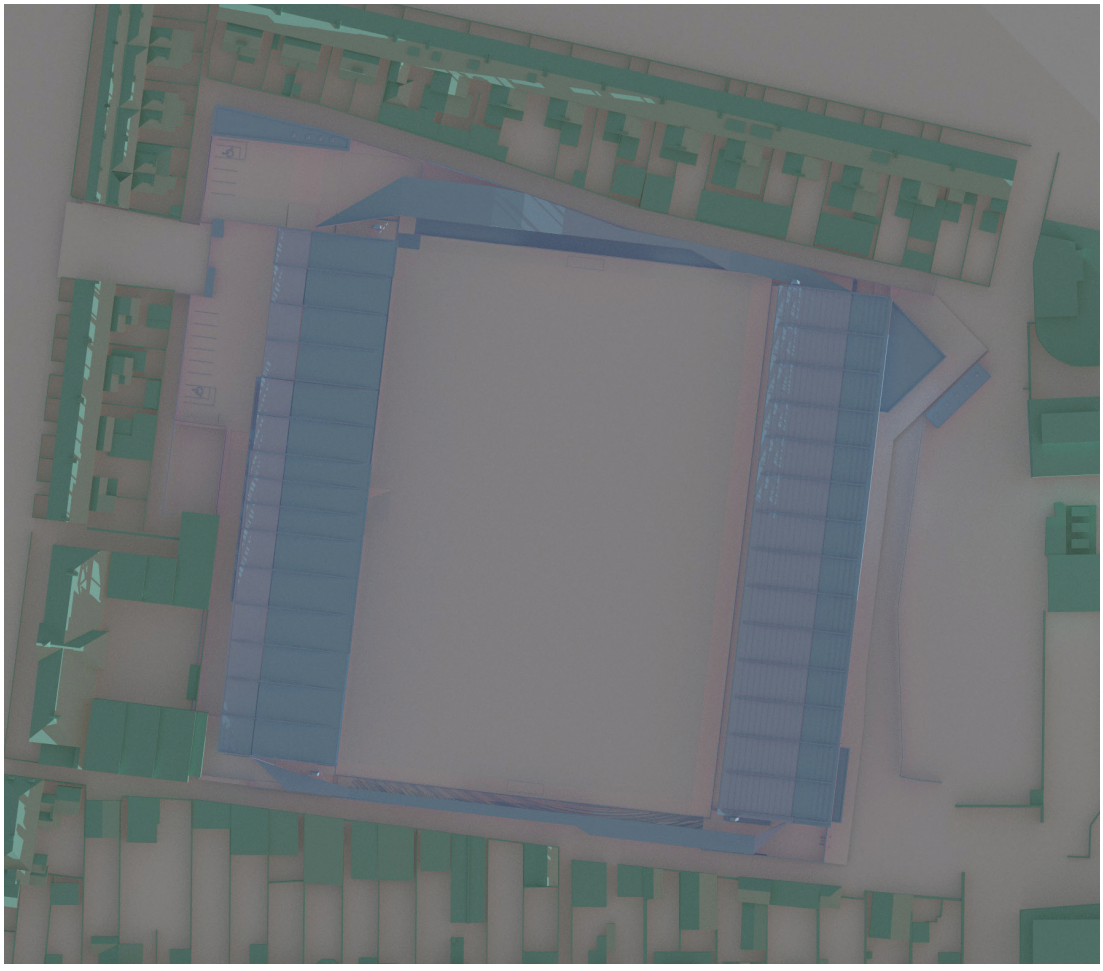
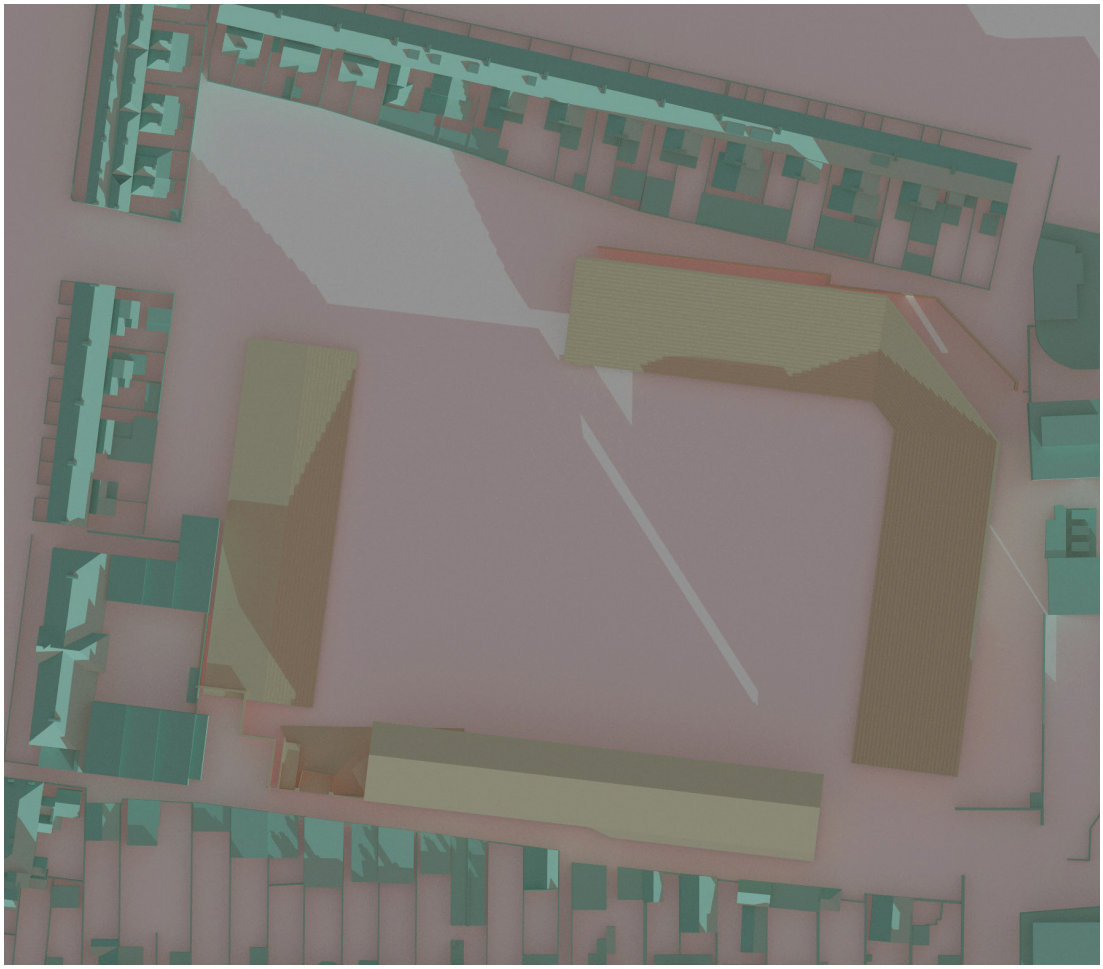
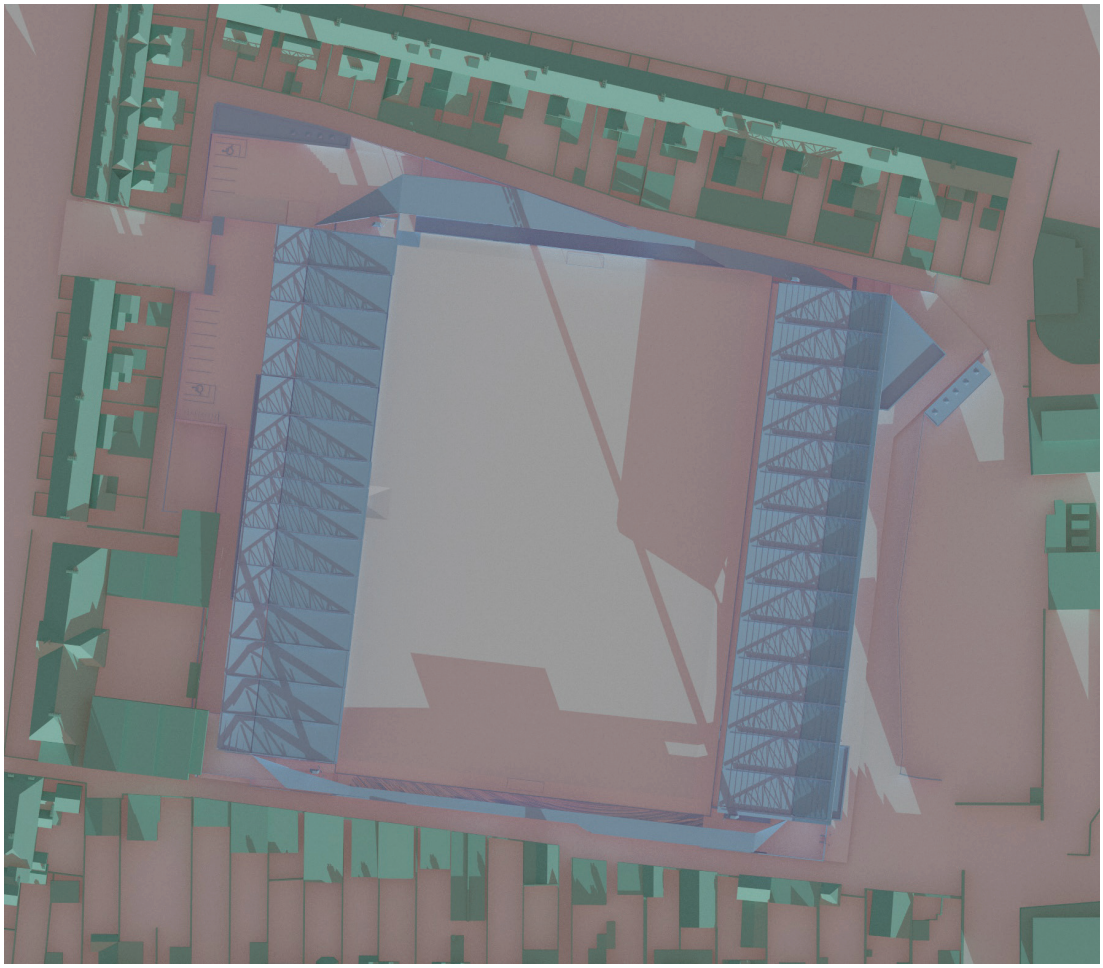


Figure 43: Shadow diagrams 21 December 09:00 UTC

N



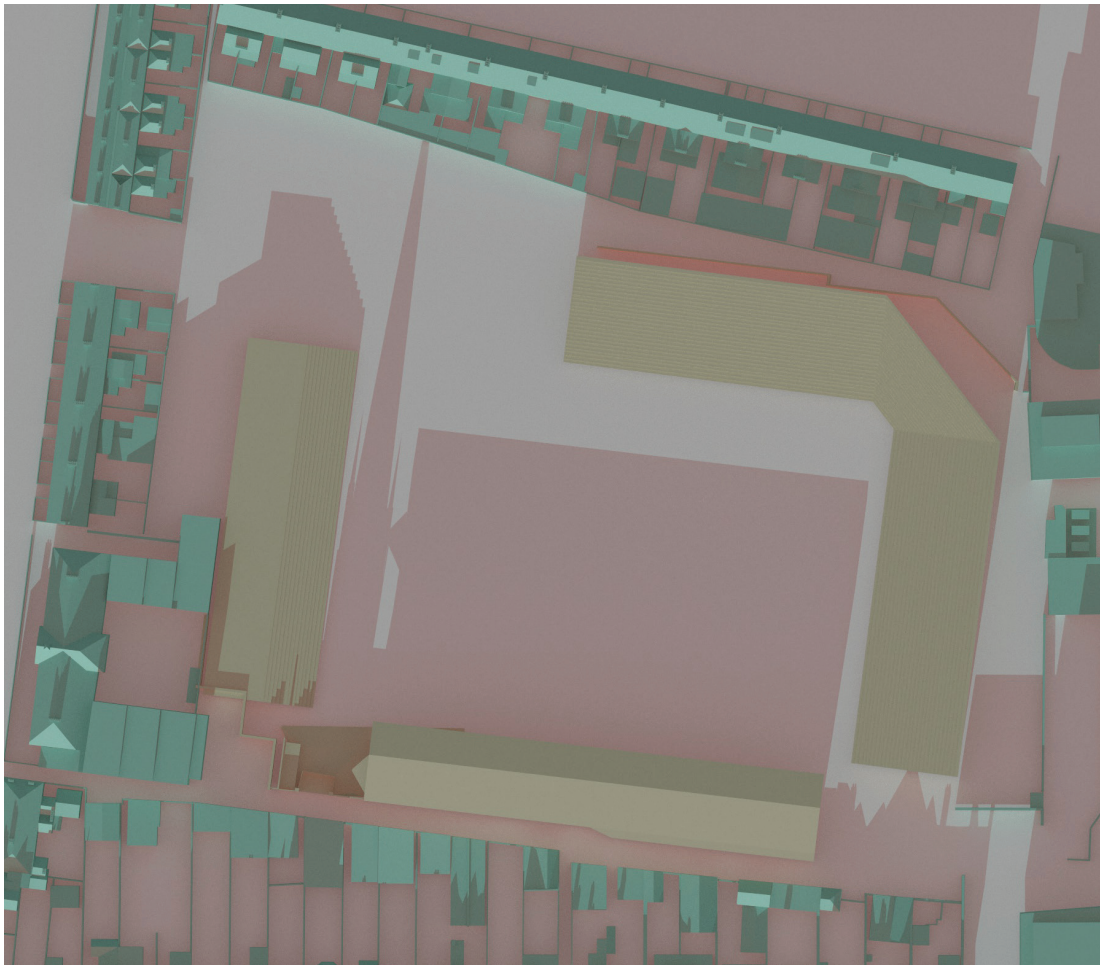
Existing



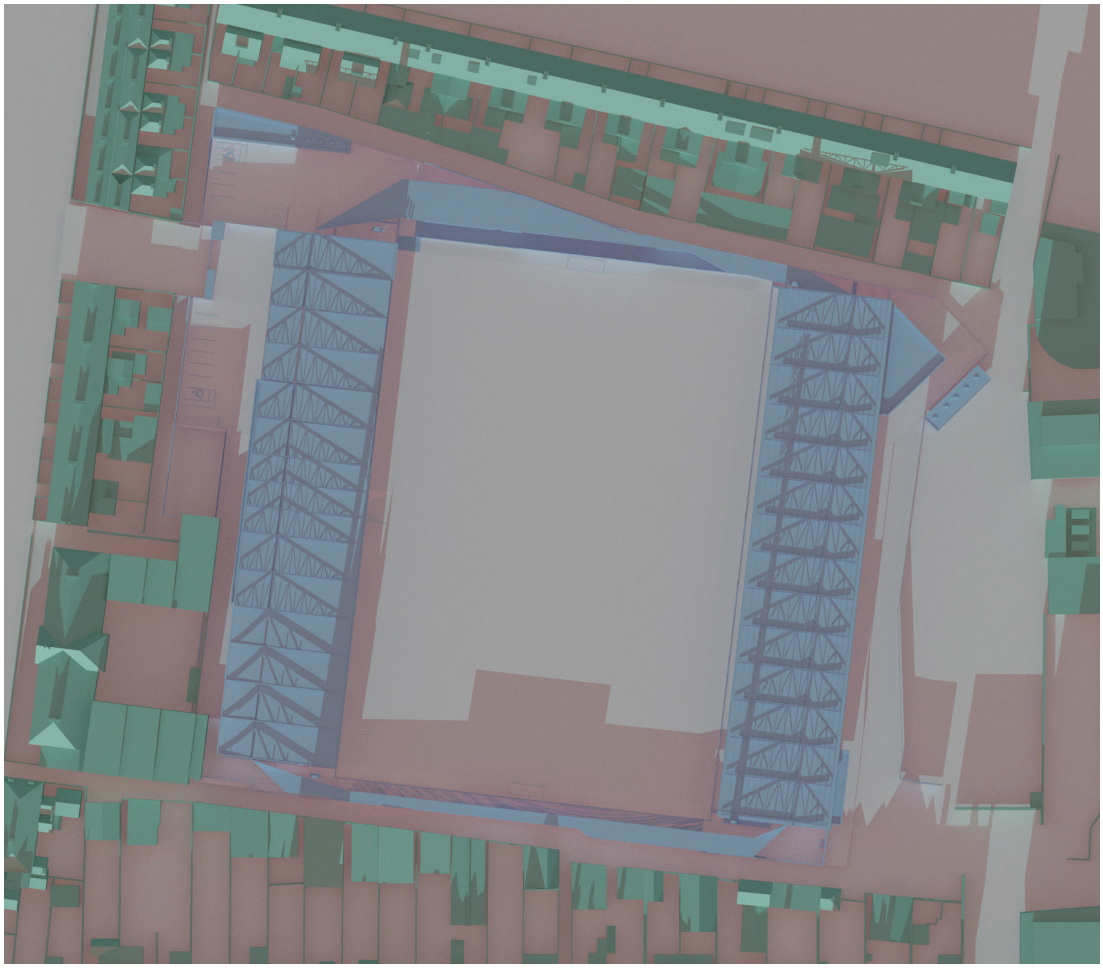
Proposed

Figure 44: Shadow diagrams 21 December 11:00 UTC

N



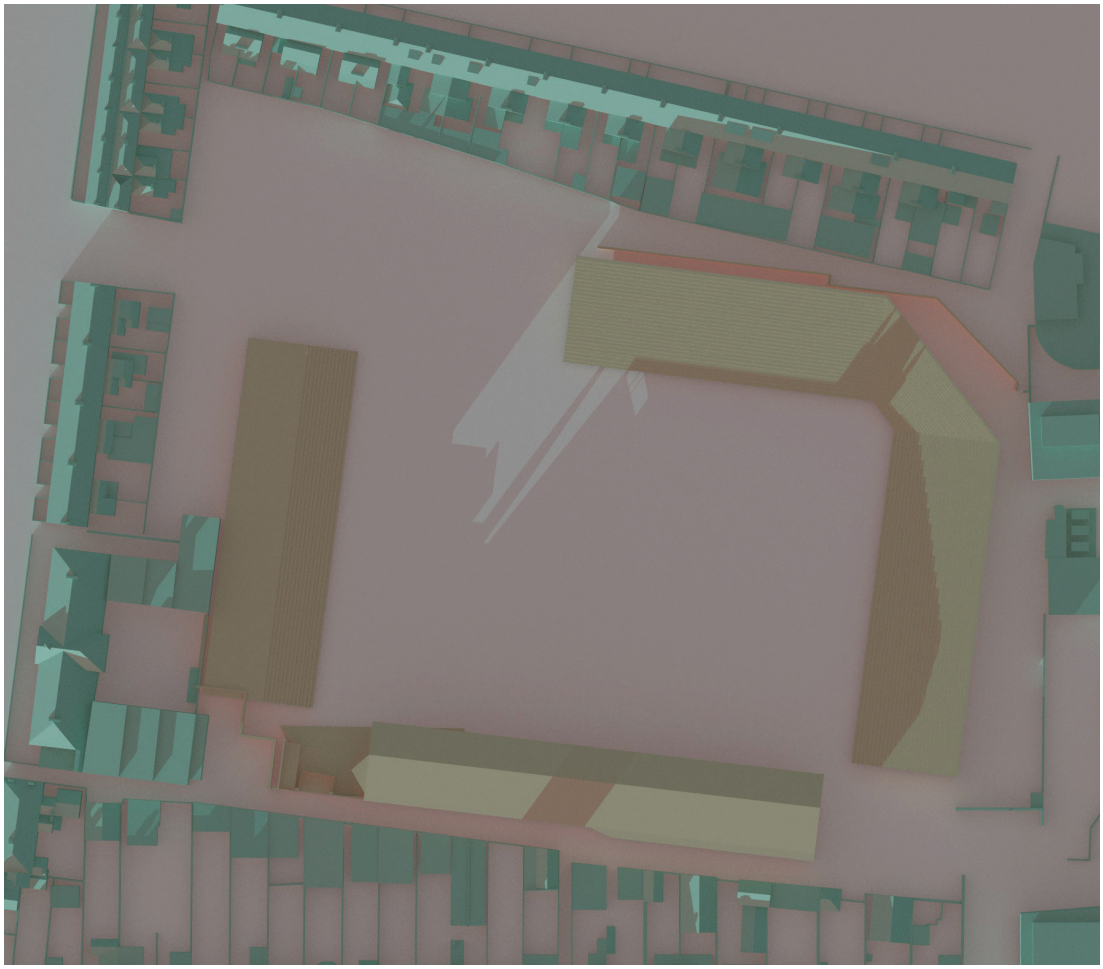
Existing



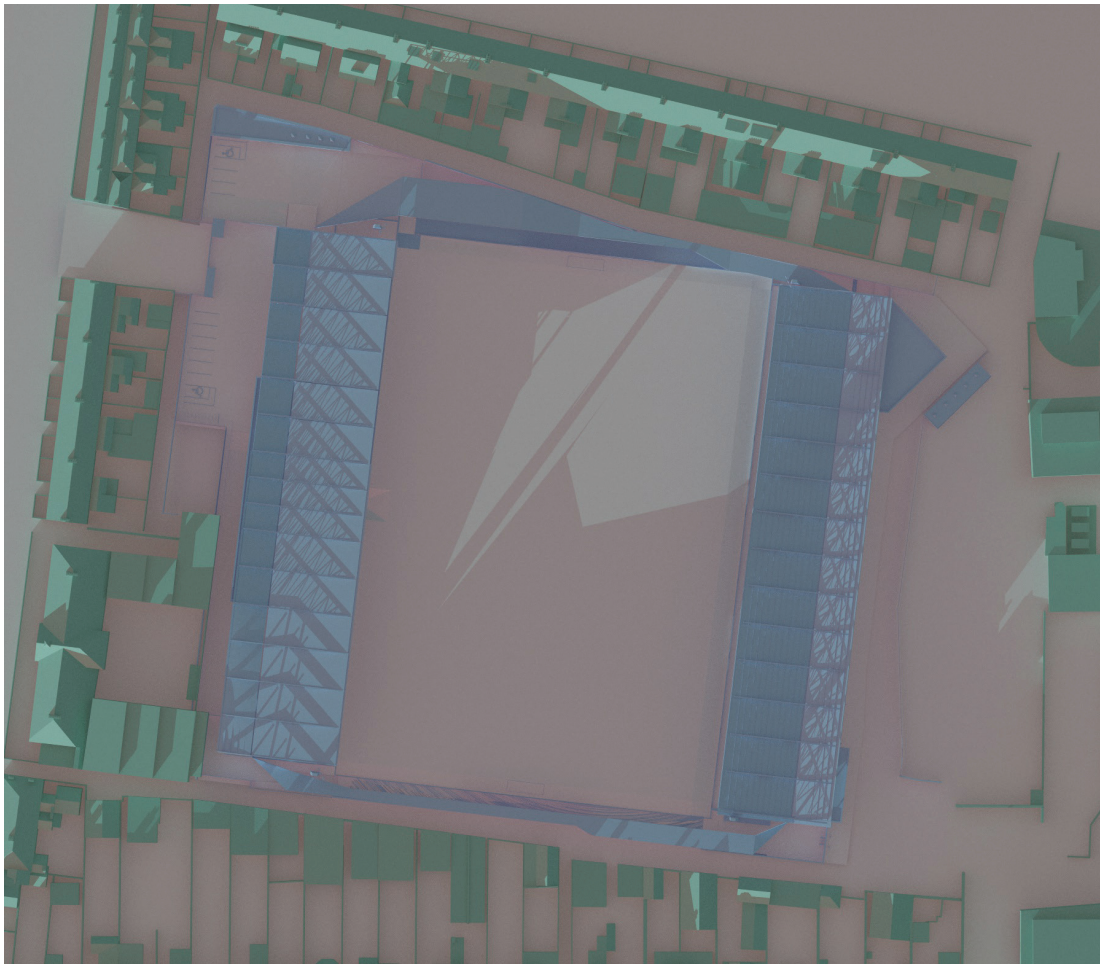
Proposed

Figure 45: Shadow diagrams 21 December 13:00 UTC

N



Existing



Proposed

Figure 46: Shadow diagrams 21 December 15:00 UTC