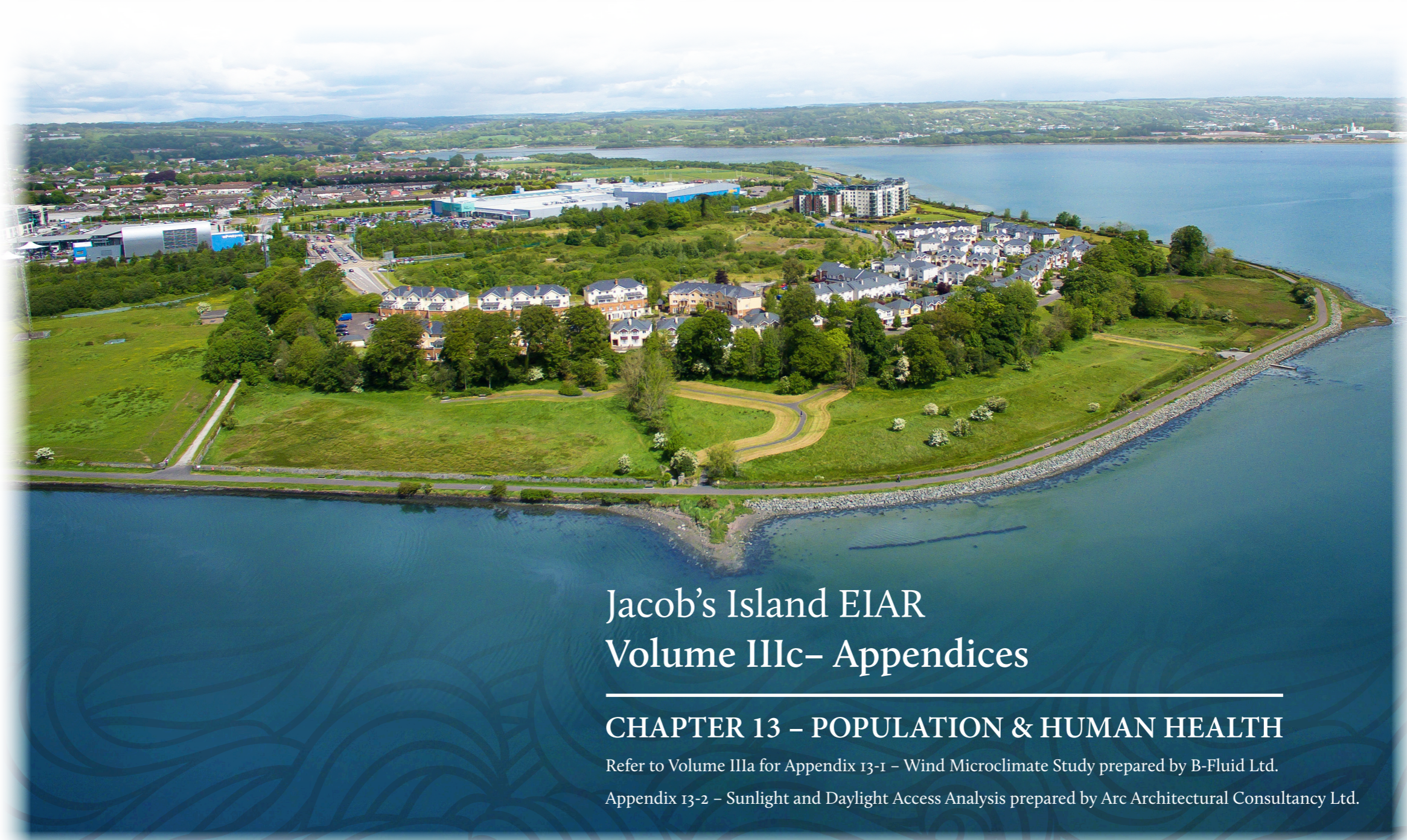




JACOBS ISLAND



Jacob's Island EIAR Volume IIIc- Appendices

CHAPTER 13 – POPULATION & HUMAN HEALTH

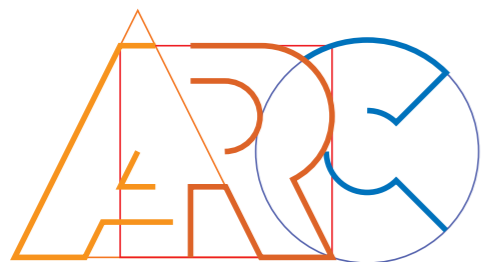
Refer to Volume IIIa for Appendix 13-1 – Wind Microclimate Study prepared by B-Fluid Ltd.

Appendix 13-2 – Sunlight and Daylight Access Analysis prepared by Arc Architectural Consultancy Ltd.



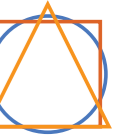


SUNLIGHT AND DAYLIGHT ACCESS ANALYSIS
OF
THE PROPOSED DEVELOPMENT
ON
LANDS AT JACOB'S ISLAND, CORK



ARC Architectural
Consultants Limited
30 Dalkey Park, Dalkey
County Dublin
T: 01 235 0525 e: info@arc.ie

JUNE 2022



1.0 INTRODUCTION

ARC Architectural Consultants Ltd has been retained by the Applicant to prepare this Sunlight and Daylight Access Analysis of the proposed development on lands at Jacob's Island, Cork.

This report considers the following:

- Section 2.0: Assessment of the Impact of Shadows cast by the Proposed Development on Sunlight Access.** This section considers the impact of shadows cast by the proposed development on sunlight access as follows:
 - Section 2.1: An overview of the impact of shadows cast by the proposed development on sunlight access to lands surrounding the application site, including lands on which new residential development has been permitted.
 - Section 2.2: Detailed analysis of the potential impact of shadows cast by the proposed development on sunlight access to existing buildings and on existing gardens and amenity areas on lands outside the application site.
- Section 3.0: Assessment of the Impact of the Proposed Development on Daylight Access.** This section considers the impact of the proposed development on daylight access within existing buildings as follows:
 - Section 3.1: An overview of the impact of the proposed development on daylight access to lands surrounding the application site, including lands on which new residential development has been permitted.
 - Section 3.2: Detailed analysis of the potential impact of the proposed development on daylight access within existing buildings on lands outside the application site.
 - Section 3.3: Detailed analysis of the potential daylight access within the permitted residential development (which has not yet been constructed) at Jacob's Island after the construction of the proposed development.
- Section 4.0: Assessment of Sunlight Access within Proposed Open Spaces.** This section considers the likely sunlight access to open spaces and amenity areas proposed as part of the subject development.
- Section 5.0: Assessment of Daylight Access within the Proposed Development.** This section considers the likely daylight access within the development now proposed.
- Appendix A: Daylight Access Analysis under IS EN 17037: Daylight in Buildings.** In addition to the principal assessment of daylight access within the proposed development set out in Section 5.0, Appendix A provides the results of assessment of daylight access within habitable rooms with reference to *IS EN 17037: Daylight in Buildings* in the interests of completeness.
- Technical Appendix.** In order to avoid repetition, the sections outlining the relevant recommendations of technical and guidance documents and the methodologies used in undertaking this assessment have been set out in the Technical Appendix at the end of the written section of this report.

1.1 Receiving Environment

The application site comprises a large greenfield site at Jacob's Island to the south of the N40 National Primary Route, the Cork South Ring Road. The site is bounded to the north by lands also within the ownership of the Applicant, which are the subject of a separate planning application (Cork City Council Reg. Ref. 22/40809) for a one to ten storey hotel (Block 16) and four to seven storey office block (Block 17).

Over the past twenty years, the area has undergone major redevelopment with the construction of Mahon Park Shopping Centre and Mahon Point Retail Park, as well as a number of residential developments at Longshore Avenue and Longshore Drive as follows:

- The existing three to four storey residential development at The Haven at Longshore Drive, which is located on lands to the south of the application site;
- The existing two storey residential development at The Courtyard at Longshore Drive, which is located on lands to the south of the site.



Figure 2.1: Overview diagram showing the application lands in the context of surrounding roads and developments (Imagery ©2021 Google, Map data ©2022 Google)

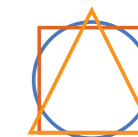
- The existing development of detached and semi-detached, two storey houses at Longshore Drive (Nos. 1-82), which is located on lands to the south and east of the application site;
- The existing detached and semi-detached houses at Longshore Avenue (Nos. 1-15), which are located on lands to the east of the application site;
- The existing residential development at The Sanctuary in four blocks ranging in height from six to eight storeys in height, which is located to on lands to the northeast of the application site;
- The not yet constructed residential development at Longshore Avenue permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21. This development comprises 6 no. blocks: Block 3 (twenty-five storeys), Block 4 (eight storeys), Block 7 (seven storeys), Block 8 (six storeys), Block 9 (six storeys) and Block 10 (six storeys).

A public park, Joe McHugh Park, is located to the south of the existing residential developments at The Haven and Nos. 1-82 Longshore Drive.

1.2 Relevant Characteristics of the Proposed Development

The development will consist of:

- The construction of a Strategic Housing Development of 489 no. apartments, creche and offices in 5 no. buildings ranging in height from part-1 to part-8 no. storeys over lower ground and basement levels.
- Blocks 12 and 13 will contain ancillary commercial areas including a creche (381 sq m) and offices (4,112 sq m). The development will also contain supporting internal resident amenity spaces (588 sq m) and external communal amenity spaces.
- Block 11 is part-5 to part-8 no. storeys over basement and will contain 101 no. apartments.



- Block 12 is part-1 to part-5 no. storeys over basement and lower ground level office building (4,112 sq m) comprising 2,934 sq m of office floor area.
- Block 13 ranges in height from part-2 to part-8 no. storeys and will contain a creche over 2 no. levels (381 sq m) and 39 no. apartments.
- Block 14 is part-4 to part-7 no. storeys over lower ground level and contains 130 no. apartments.
- Block 15 ranges in height from part-5 to part-7 no. storeys over lower ground levels and contains 219 no. apartments and ancillary resident amenity spaces (588 sq m).

The proposed development also provides for hard and soft landscaping, boundary treatments, public realm works, car parking, bicycle parking, bin stores, signage, lighting, PV panels, sprinkler and water tank, substations, plant rooms and all ancillary site development works above and below ground.

2.0 ASSESSMENT OF THE IMPACT OF SHADOWS CAST BY THE PROPOSED DEVELOPMENT ON SUNLIGHT ACCESS

Sunlight is not defined in *Site layout planning for daylight and sunlight: a guide to good practice for the Building Research Establishment* (2022, 3rd ed.). The Commission Internationale de L'Éclairage / International Commission on Illumination defines sunlight as meaning the "part of direct solar radiation capable of causing a visual sensation" (Source: 17-29-103, CIE S 017:2020 ILV: *International Lighting Vocabulary*, 2nd edition). For the purpose of this analysis, Section 2.0 assesses the impact of the construction of the proposed development on the rays of the sun reaching defined opes in existing buildings (e.g. windows or other openings in existing buildings, such as patio doors) and reaching neighbouring gardens or amenity spaces. Shadow study diagrams illustrated the shadow environment surrounding the application site at several times of the day at the summer and winter solstices, and at the equinox are appended to this report.

In assessing the impact of a development on sunlight access, comments set out in *Site layout planning for daylight and sunlight: a guide to good practice* (the BRE Guide) should be taken into consideration. The BRE Guide states that "it must be borne in mind that nearly all structures will create areas of new shadow, and some degree of transient overshadowing of a space is to be expected."

The statistics of Met Eireann, the Irish Meteorological Service, indicate that the sunniest months in Ireland are May and June. During December, Cork receives a mean daily duration of 1.7 hours of sunlight out of a potential 7.6 hours sunlight each day (i.e., only 22% of potential sunlight hours). This can be compared with a mean daily duration of 6.2 hours of sunlight out of a potential 15.5 hours each day received by Cork during May (i.e., 40% of potential sunlight hours). Therefore, impacts caused by overshadowing are generally most noticeable during the summer months and least noticeable during the winter months. Due to the low angle of the sun in mid winter, the shadow environment in all urban and suburban areas is generally dense throughout winter.

2.1 Overview of the potential impact of shadows cast by the proposed development on sunlight access to the surrounding area

ARC's analysis of the potential impact of shadows cast by the proposed development assesses the impact of the proposed development on sunlight access over the course of the year. However, please note that the shadow diagrams provided with this report (see pages 50-85) were prepared for a number of representative days of the year: the summer and winter solstices, and at the equinox (taken as 21st March for the purposes of this report).

This assessment considers the potential impact of shadows cast by the proposed development, in combination with shadows cast by the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21 and by the development envisaged under Cork City Council Reg. Ref. 22/40809, to result in impacts on sunlight access to neighbouring lands and buildings in order to present a worst case scenario.

Having regard to the shape, layout and orientation of the application site and to the scale of the development now proposed, the potential of the proposed development, in combination with other permitted and envisaged developments, to result in overshadowing of lands outside the application site is limited.

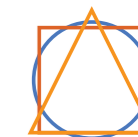
To the west, shadows cast by the cumulative scenario for the proposed development are likely to extend to the public road to a small extent during the mornings throughout the year. There is also a potential for shadows cast by the cumulative scenario to extend to lands (which appears to accommodate telecommunications infrastructure) for a short time during the very early mornings throughout the year. The potential cumulative impact of the proposed development, in combination with permitted developments on the site as well as the development envisaged under Cork City Council Reg. Ref. 22/40809, on sunlight access to lands to the west of the site is also likely to fall within "imperceptible" ranges under a worst case scenario.

To the north, the proposed development, in combination with nearby permitted and envisaged developments, has the potential to result in additional overshadowing of the Cork South Ring Road (N40) during the mornings and early afternoons of the autumn, winter and summer months, with shadows extending across the N40 to the Mahon Point Shopping Centre lands during the winter months. The potential impact of shadows cast by the proposed development under a cumulative scenario on the Cork South Ring Road (N40) and the Mahon Point Shopping Centre Lands is assessed as "imperceptible" to "not significant" in extent.

To the northeast, the application site is bounded by lands associated with the existing residential development at The Sanctuary. Under a cumulative scenario, shadows cast by the proposed development, together with nearby permitted and envisaged development will extend to The Sanctuary during the afternoons and evenings throughout the year. However, any additional overshadowing occurring under a cumulative scenario is unlikely to result in any undue adverse impacts on sunlight access to The Sanctuary. Windows facing towards proposed new structures within the blocks named The Falcon and The Kingfisher at The Sanctuary are likely to continue to receive a level of sunlight access considerably in excess of the recommendations of the BRE Guide. The potential cumulative impact of the proposed development, in combination with permitted developments on the site as well as the development envisaged under Cork City Council Reg. Ref. 22/40809, on sunlight access to existing buildings and lands at The Sanctuary is assessed as ranging from none to "imperceptible" to "not significant".

To the east, shadows cast by new development under a cumulative scenario are likely to extend to the westernmost houses at Longshore Avenue during the evenings throughout the year. The potential cumulative impact of the proposed development, in combination with permitted developments on the site as well as the development envisaged under Cork City Council Reg. Ref. 22/40809, on sunlight access to north-facing windows in these houses is likely to range from "imperceptible" to "moderate". Under a cumulative scenario, new development is unlikely to result in undue adverse impacts on sunlight access to south or rear-facing windows in these houses or on sunlight access to rear gardens.

To the east and south, the application site and neighbouring development lands at Jacobs Island are opposed by north or northwest-facing windows in residences at Longshore Drive, The Courtyard and The Haven. Shadows cast by new development under a cumulative scenario are unlikely to result in any undue adverse impacts on sunlight access to existing residences or gardens at Longshore Drive, The Courtyard or The Haven. The potential cumulative impact of the proposed development, in combination with permitted developments on the site as well as the development envisaged under Cork City Council Reg. Ref. 22/40809, on sunlight access to residential lands at Longshore Drive, The Courtyard and The Haven is likely to range from none to "imperceptible" to "slight".



2.2 Detailed analysis of the potential impact of shadows cast by the proposed development on sunlight access to lands outside the application site

This report assesses the impact of the proposed development to all potential receptors surrounding the application site - these impacts are described in Section 2.1 above. However, by way of example in order to illustrate briefly the findings outlined in the overview section, ARC detailed quantitative analysis of the potential for the proposed development to result in impacts on sunlight access to buildings and amenity spaces on lands outside the application site

2.2.1 Detailed analysis of the potential impact of shadows cast by the proposed development on sunlight access to existing buildings on lands outside the application site

2.2.1.1 Overview of and rationale for methodology for detailed quantitative analysis of the potential impact of shadows cast by the proposed development on existing buildings on lands outside the application site

In assessing sunlight and daylight access, Irish practitioners tend to refer to the Building Research Establishment's *Site layout planning for daylight and sunlight: a guide to good practice* (BR209, the BRE Guide; the third edition of which was published in June 2022).

Section 1.7 of the BRE Guide (2011) provides: "The guidance here is intended for use in the UK and in the Republic of Ireland". Its use in assessing impacts on sunlight and daylight access as part of the planning process is supported by national government planning policy including the *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas*, which, at Section 7.2 states: "Planning authorities should require that daylight and shadow projection diagrams be submitted in all such proposals. The recommendations of "Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice" (B.R.E. 1991) or B.S. 8206 "Lighting for Buildings, Part 2 1992: Code of Practice for Daylighting" should be followed in this regard."

It should be noted that the BRE Guide (2022) does not set out rigid standards or limits and is preceded by the following very clear warning as to how the design advice contained therein should be used: "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." [Emphasis added.] This should be borne in mind when interpreting the results of analysis set out in this section.

In identifying receptors particularly sensitive to changes in the shadow environment, ARC considered two factors:

- (i) **the use of receptors (i.e. buildings) surrounding the application site:** buildings in residential use (and, particularly, the living rooms of residences) would be considered to be sensitive to changes in the shadow environment. Section 3.2.1 of the BRE Guide states: "In designing a new development or extension to a building, care should be taken to safeguard the access to sunlight both for existing dwellings, and for any nearby non-domestic buildings where there is a particular requirement for sunlight. People are particularly likely to notice a loss of sunlight to their homes...". Section 3.2.3 recommends checking the impact of shadows cast by development on all main living rooms of dwellings in particular;
- (ii) **the location of receptors relative to the application site:** as set out in section 3.2.2 of the BRE Guide "obstruction to sunlight may become an issue if some part of a new development is situated within 90° of due south of a main windows wall of an existing building" and if "in the section drawn perpendicular to this existing window wall, the new development subtends an angle greater than 25° to the horizontal measured from the centre of the **lowest window** to a main living room" (Emphasis added).

Section 3.2.13 of the *Site layout planning for daylight and sunlight: a guide to good practice* (the BRE Guide) provides as follows in relation to the assessment of the impact of development on sunlight access to existing buildings.

"If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:

- receives less than 25% of annual probable sunlight hours and less than 0.80 times its former annual value, or less

than 5% of annual probable sunlight hours between 21 September and 21 March and less than 0.8 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."** [Emphasis added]

Section 3.2.9 of the BRE Guide states:

"It is not always necessary to do a full calculation to check sunlight potential. The guidelines 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 (NB 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."*

Applying the tests set out in Section 3.2.13 and 3.2.9 of the BRE Guide (2022), ARC identified a number of windows in residences at The Sanctuary and Longshore Drive for assessment. ARC also assessed a number of north-facing windows at The Haven, The Courtyard and Longshore Drive - while many of these windows do not fall under the tests outlined in the BRE Guide, these windows were included in the interests of completeness. Please see Figures 2.2-2.5 below.

For further detail on the technical elements of the methodology, please refer to the Technical Appendix at the end of the written section of this report.

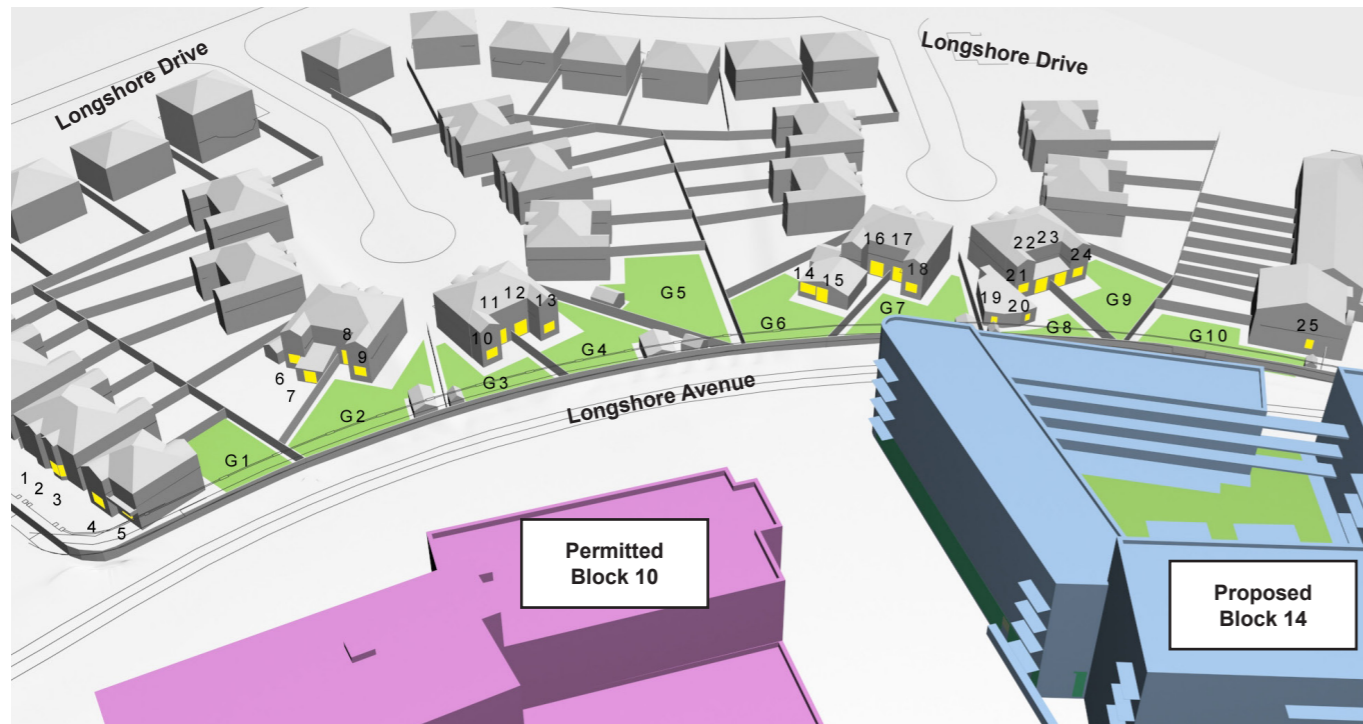
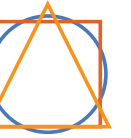


Figure 2.2: Indicative diagram showing location of sample windows (in yellow) assessed as part of this analysis.

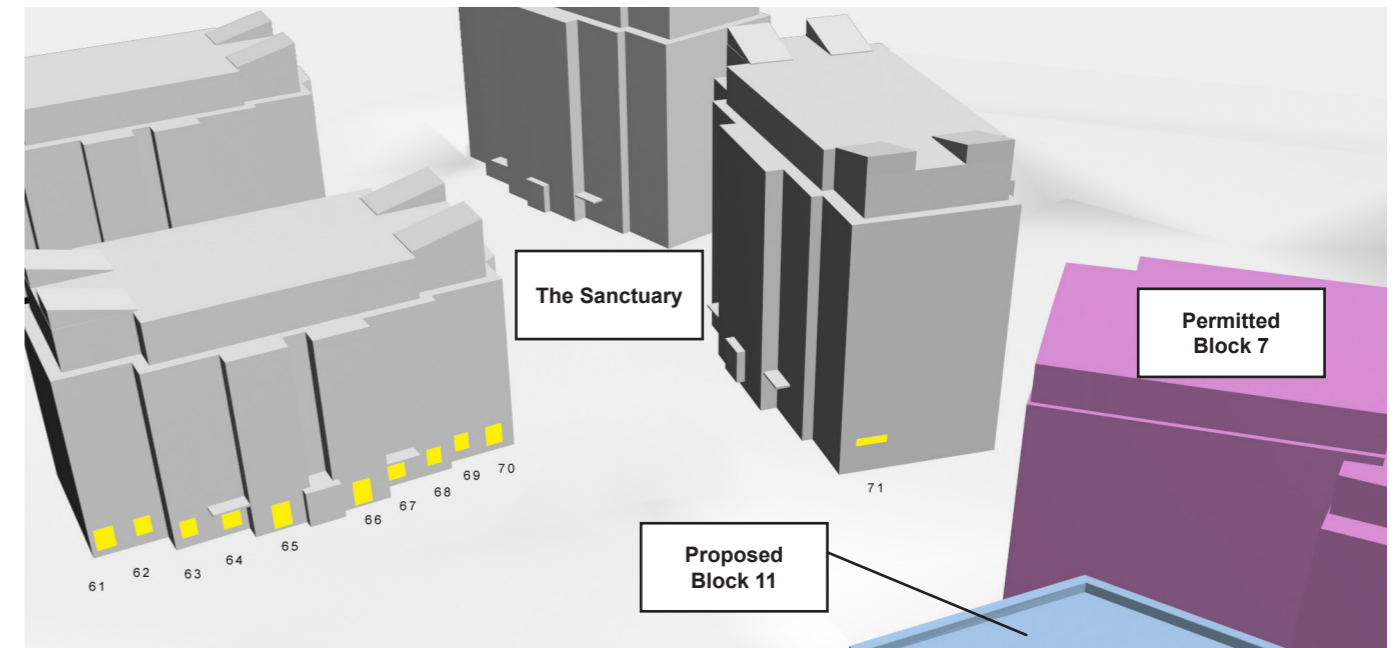


Figure 2.4: Indicative diagram showing location of sample windows (in yellow) assessed as part of this analysis.

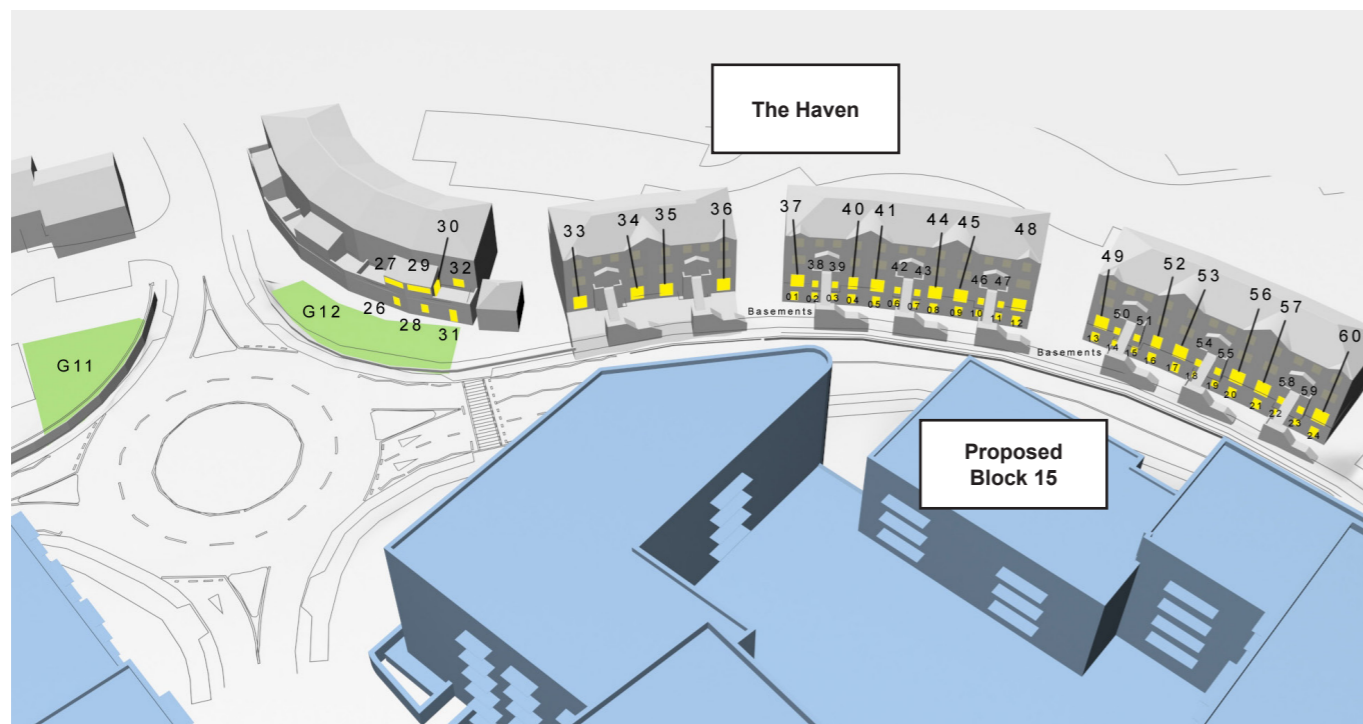
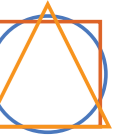


Figure 2.3: Indicative diagram showing location of sample windows (in yellow) assessed as part of this analysis.



Figure 2.5: Indicative overview diagram showing location of sample windows (red dot) and gardens (green) assessed as part of this analysis.



2.2.1.2 *Format of the detailed quantitative analysis of the potential impact of shadows cast by the proposed development on existing buildings on lands outside the application site*

The results of ARC's analysis are set out in Table 2.1 below. This table indicates:

- The Annual Probable Sunlight Hours received by each sample receptor (i.e. window) under the following scenarios:
 - **Existing:** The "Existing" scenario considers only buildings in existence at the time of writing the report. This scenario assumes that permitted and envisaged developments have yet to be constructed.
 - **Proposed:** The "Proposed" scenario assumes that the development now proposed has been constructed.
 - **Proposed Cumulative:** The "Proposed Cumulative" scenario assumes that the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, the development envisaged under Cork City Council Reg. Ref. 22/40809 and the development now proposed has been constructed.

- Whether the studied sample window faces within 90° of due south.

- The extent of change to the studied sample window from the "Existing" scenario to the "Proposed Cumulative" scenario under the criteria outlined at section 3.2.1 of the BRE Guide. Specifically:
 - Would the window receive less than 25% of annual probable sunlight hours, or less than 5% of Annual Probable Sunlight Hours between 21st September and 21st March, after the construction of the proposed development?
 - Would the amount of Annual Probable Sunlight Hours received by the window fall to less than 0.8 times its former value over the course of the year?
 - Would the amount of Annual Probable Sunlight Hours received by the window fall to less than 0.8 times its former value during the winter period (e.g. between 21st September and 21st March)?
 - Would the reduction in sunlight received over the whole year be greater than 4% of annual probable sunlight hours?

- A description of the potential impact of the "Proposed Cumulative" development on each "Existing" sample receptor / window and a comment interpreting the results.

Please refer to Table 2.1 below.

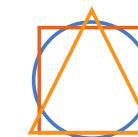
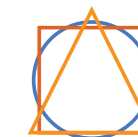
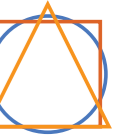


Table 2.1: Impact of the proposed development on sunlight access (Annual Probable Sunlight Hours) to sample windows** in existing buildings on lands outside the application site

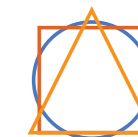
Location	Annual Probable Sunlight Hours															Potential Impact	Comment
	Existing (% APSH)			Proposed (% APSH)			Proposed Cumulative* (% APSH)			Does window face 90° of due south?	BRE Guide - Section 3.2.1 Criteria "Proposed Cumulative" Scenario ONLY						
	Annual	Summer*	Winter*	Annual	Summer*	Winter*	Annual	Summer*	Winter*		Does window achieve 25% APSH, incl. 5% APSH in winter after construction of proposed development?	Annual Change under proposed scenario expressed as "times existing value"	Winter Change under proposed scenario expressed as "times existing value"	Is reduction greater than 4% over the course of the year?			
Longshore Avenue																	
Zone 01	2.72	2.72	0.00	2.72	2.72	0.00	2.25	2.25	0.00	No	No	0.83	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window are not likely fall to less than 0.8 times their former value during either period after the construction of the proposed development.	
Zone 02	11.50	11.50	0.00	11.42	11.42	0.00	7.61	7.61	0.00	No	No	0.66	1.00	No	Imperceptible to Moderate	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours after the construction of the proposed development. Noting that many of the windows on the northern facade of this building are already overshadowed due to the orientation and the density of the shadow environment, taking a conservative approach, this impact is assessed as ranging from "imperceptible" to "moderate" or consistent with emerging trends under a worst case scenario.	
Zone 03	4.82	4.82	0.00	4.66	4.66	0.00	1.40	1.40	0.00	No	No	0.29	1.00	No	Imperceptible to Moderate	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours after the construction of the proposed development. Noting that many of the windows on the northern facade of this building are already overshadowed due to the orientation and the density of the shadow environment, taking a conservative approach, this impact is assessed as ranging from "imperceptible" to "moderate" or consistent with emerging trends under a worst case scenario.	
Zone 04	11.81	11.81	0.00	11.66	11.66	0.00	7.46	7.46	0.00	No	No	0.63	1.00	Yes	Slight to Moderate	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "slight" as the reduction in Annual Probable Sunlight Hours received by this window over the course of the year falls just within noticeable ranges (e.g. a reduction of just above 4% of annual probable sunlight hours). Noting that many of the windows on the northern facade of this building are already overshadowed due to the orientation and the density of the shadow environment, taking a conservative approach, this impact is assessed as ranging from "slight" to "moderate" or consistent with emerging trends under a worst case scenario.	
Zone 05	6.14	6.14	0.00	5.83	5.83	0.00	1.86	1.86	0.00	No	No	0.30	1.00	Yes	Slight to Moderate	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "slight" as the reduction in Annual Probable Sunlight Hours received by this window over the course of the year falls just within noticeable ranges (e.g. a reduction of just above 4% of annual probable sunlight hours). Noting that many of the windows on the northern facade of this building are already overshadowed due to the orientation and the density of the shadow environment, taking a conservative approach, this impact is assessed as ranging from "slight" to "moderate" or consistent with emerging trends under a worst case scenario.	
Longshore Drive																	
Zone 06	6.84	6.84	0.00	6.84	6.84	0.00	6.84	6.84	0.00	No	No	1.00	1.00	0.00	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone 07	12.20	12.20	0.00	12.20	12.20	0.00	12.20	12.20	0.00	No	No	1.00	1.00	0.00	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone 08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No	No	1.00	1.00	0.00	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	



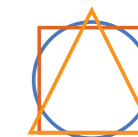
Location	Annual Probable Sunlight Hours															
	Existing (% APSH)			Proposed (% APSH)			Proposed Cumulative* (% APSH)			Does window face 90° of due south?	BRE Guide - Section 3.2.1 Criteria "Proposed Cumulative" Scenario ONLY			Potential Impact	Comment	
	Annual	Summer*	Winter*	Annual	Summer*	Winter*	Annual	Summer*	Winter*		Does window achieve 25% APSH, incl. 5% APSH in winter after construction of proposed development?	Annual Change under proposed scenario expressed as "times existing value"	Winter Change under proposed scenario expressed as "times existing value"			Is reduction greater than 4% over the course of the year?
Longshore Drive																
Zone 09	17.64	17.17	0.47	16.39	16.00	0.39	15.70	15.31	0.39	No	No	0.89	0.83	No	Imperceptible to Not Significant	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant".
Zone 10	47.16	34.49	12.67	45.30	33.18	12.12	44.60	32.48	12.12	No	Yes	0.95	0.96	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development.
Zone 11	34.34	31.39	2.95	32.63	29.83	2.80	32.63	29.83	2.80	No	No	0.95	0.95	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window are not likely fall to less than 0.8 times their former value during either period after the construction of the proposed development.
Zone 12	12.82	12.82	0.00	11.03	11.03	0.00	11.03	11.03	0.00	No	No	0.86	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window are not likely fall to less than 0.8 times their former value during either period after the construction of the proposed development.
Zone 13	47.16	34.49	12.67	44.83	32.24	12.59	44.83	32.24	12.59	No	Yes	0.95	0.99	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development.
Zone 14	12.82	12.82	0.00	9.40	9.40	0.00	9.40	9.40	0.00	No	No	0.73	1.00	No	Imperceptible to Not Significant	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours after the construction of the proposed development. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant".
Zone 15	12.82	12.82	0.00	9.40	9.40	0.00	9.40	9.40	0.00	No	No	0.73	1.00	No	Imperceptible to Not Significant	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours after the construction of the proposed development. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant".
Zone 16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.



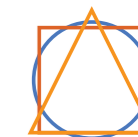
Location	Annual Probable Sunlight Hours															Potential Impact	Comment
	Existing (% APSH)			Proposed (% APSH)			Proposed Cumulative* (% APSH)			Does window face 90° of due south?	BRE Guide - Section 3.2.1 Criteria "Proposed Cumulative" Scenario ONLY			"Proposed Cumulative" Scenario on "Existing" Scenario ONLY			
	Annual	Summer*	Winter*	Annual	Summer*	Winter*	Annual	Summer*	Winter*		Does window achieve 25% APSH, incl. 5% APSH in winter after construction of proposed development?	Annual Change under proposed scenario expressed as "times existing value"	Winter Change under proposed scenario expressed as "times existing value"		Is reduction greater than 4% over the course of the year?		
Longshore Drive																	
Zone 18	13.29	13.29	0.00	9.87	9.87	0.00	9.87	9.87	0.00	No	No	0.74	1.00	No	Imperceptible to Not Significant	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours after the construction of the proposed development. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant".	
Zone 19	18.34	17.80	0.54	15.23	14.69	0.54	15.23	14.69	0.54	No	No	0.83	1.00	No	Imperceptible to Not Significant	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant".	
Zone 20	40.95	33.34	7.61	37.84	30.23	7.61	37.84	30.23	7.61	No	Yes	0.92	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development.	
Zone 21	37.92	30.85	7.07	34.50	27.43	7.07	34.50	27.43	7.07	No	Yes	0.91	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development.	
Zone 22	33.64	30.45	3.19	30.23	27.04	3.19	30.23	27.04	3.19	No	No	0.90	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window are not likely fall to less than 0.8 times their former value during either period after the construction of the proposed development.	
Zone 23	36.99	30.70	6.29	34.89	28.60	6.29	34.89	28.60	6.29	No	Yes	0.94	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development.	
Zone 24	36.75	30.46	6.29	35.59	29.30	6.29	35.59	29.30	6.29	No	Yes	0.97	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development.	
The Courtyard																	
Zone 25	15.46	15.46	0.00	14.37	14.37	0.00	14.37	14.37	0.00	No	No	0.93	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.	



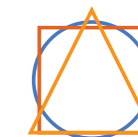
Location	Annual Probable Sunlight Hours															Potential Impact	Comment
	Existing (% APSH)			Proposed (% APSH)			Proposed Cumulative* (% APSH)			Does window face 90° of due south?	BRE Guide - Section 3.2.1 Criteria "Proposed Cumulative" Scenario ONLY						
	Annual	Summer*	Winter*	Annual	Summer*	Winter*	Annual	Summer*	Winter*		Does window achieve 25% APSH, incl. 5% APSH in winter after construction of proposed development?	Annual Change under proposed scenario expressed as "times existing value"	Winter Change under proposed scenario expressed as "times existing value"	Is reduction greater than 4% over the course of the year?			
The Haven																	
Zone 26	16.71	15.86	0.85	16.71	15.86	0.85	16.71	15.86	0.85	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone 27	16.94	15.77	1.17	16.94	15.77	1.17	16.94	15.77	1.17	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone 28	12.12	11.96	0.16	11.81	11.65	0.16	11.81	11.65	0.16	No	No	0.97	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.	
Zone 29	12.12	11.96	0.16	11.81	11.65	0.16	11.81	11.65	0.16	No	No	0.97	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.	
Zone 30	0.78	0.78	0.00	0.62	0.62	0.00	0.62	0.62	0.00	No	No	0.79	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window are not likely to fall to less than 0.8 times their former value during either period after the construction of the proposed development.	
Zone 31	11.81	11.65	0.16	11.81	11.65	0.16	11.81	11.65	0.16	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone 32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B01	2.25	2.25	0.00	2.25	2.25	0.00	2.25	2.25	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B02	3.34	3.34	0.00	3.34	3.34	0.00	3.34	3.34	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B03	3.88	3.88	0.00	3.88	3.88	0.00	3.88	3.88	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B04	3.65	3.65	0.00	3.65	3.65	0.00	3.65	3.65	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B05	4.66	4.66	0.00	4.66	4.66	0.00	4.66	4.66	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B06	3.57	3.57	0.00	3.57	3.57	0.00	3.57	3.57	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B07	3.11	3.11	0.00	3.11	3.11	0.00	3.11	3.11	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B08	3.88	3.88	0.00	3.88	3.88	0.00	3.88	3.88	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B09	4.43	4.43	0.00	4.43	4.43	0.00	4.43	4.43	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B10	4.20	4.20	0.00	4.20	4.20	0.00	4.20	4.20	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B11	4.43	4.43	0.00	4.43	4.43	0.00	4.43	4.43	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	



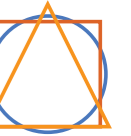
Location	Annual Probable Sunlight Hours															Potential Impact	Comment
	Existing (% APSH)			Proposed (% APSH)			Proposed Cumulative* (% APSH)			Does window face 90° of due south?	BRE Guide - Section 3.2.1 Criteria "Proposed Cumulative" Scenario ONLY						
	Annual	Summer*	Winter*	Annual	Summer*	Winter*	Annual	Summer*	Winter*		Does window achieve 25% APSH, incl. 5% APSH in winter after construction of proposed development?	Annual Change under proposed scenario expressed as "times existing value"	Winter Change under proposed scenario expressed as "times existing value"	Is reduction greater than 4% over the course of the year?			
The Haven																	
Zone B12	5.91	5.91	0.00	4.97	4.97	0.00	4.97	4.97	0.00	No	No	0.84	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B13	8.31	8.31	0.00	8.31	8.31	0.00	8.31	8.31	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B14	12.51	12.51	0.00	12.04	12.04	0.00	12.04	12.04	0.00	No	No	0.96	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B15	7.69	7.69	0.00	7.54	7.54	0.00	7.54	7.54	0.00	No	No	0.98	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B16	7.23	7.23	0.00	7.23	7.23	0.00	7.23	7.23	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B17	6.37	6.37	0.00	6.37	6.37	0.00	6.37	6.37	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B18	11.03	11.03	0.00	10.18	10.18	0.00	10.18	10.18	0.00	No	No	0.92	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.	
Zone B19	9.79	9.79	0.00	7.38	7.38	0.00	7.38	7.38	0.00	No	No	0.75	1.00	No	Imperceptible to Not Significant	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours after the construction of the proposed development. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant".	
Zone B20	8.39	8.39	0.00	8.39	8.39	0.00	8.39	8.39	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B21	8.08	7.85	0.23	8.08	7.85	0.23	8.08	7.85	0.23	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone B22	11.73	11.50	0.23	10.57	10.34	0.23	10.57	10.34	0.23	No	No	0.90	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.	
Zone B23	9.87	9.71	0.16	8.39	8.23	0.16	8.39	8.23	0.16	No	No	0.85	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.	
Zone B24	8.16	7.77	0.39	8.16	7.77	0.39	8.16	7.77	0.39	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone 33	3.19	3.19	0.00	3.19	3.19	0.00	3.19	3.19	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone 34	4.35	4.35	0.00	4.35	4.35	0.00	4.35	4.35	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	



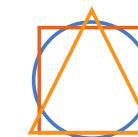
Location	Annual Probable Sunlight Hours															
	Existing (% APSH)			Proposed (% APSH)			Proposed Cumulative* (% APSH)			Does window face 90° of due south?	BRE Guide - Section 3.2.1 Criteria "Proposed Cumulative" Scenario ONLY			Potential Impact "Proposed Cumulative" Scenario on "Existing" Scenario ONLY	Comment Impact of "Proposed Cumulative" Scenario on "Existing" Scenario ONLY	
	Annual	Summer*	Winter*	Annual	Summer*	Winter*	Annual	Summer*	Winter*		Does window achieve 25% APSH, incl. 5% APSH in winter after construction of proposed development?	Annual Change under proposed scenario expressed as "times existing value"	Winter Change under proposed scenario expressed as "times existing value"			Is reduction greater than 4% over the course of the year?
The Haven																
Zone 35	0.31	0.31	0.00	0.31	0.31	0.00	0.31	0.31	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 36	2.95	2.95	0.00	2.95	2.95	0.00	2.95	2.95	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 37	5.28	5.28	0.00	5.28	5.28	0.00	5.28	5.28	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 38	8.78	8.78	0.00	8.78	8.78	0.00	8.78	8.78	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 39	8.94	8.94	0.00	8.94	8.94	0.00	8.94	8.94	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 40	1.24	1.24	0.00	1.24	1.24	0.00	1.24	1.24	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 41	4.58	4.58	0.00	4.58	4.58	0.00	4.58	4.58	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 42	10.33	10.33	0.00	10.33	10.33	0.00	10.33	10.33	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 43	6.92	6.92	0.00	6.92	6.92	0.00	6.92	6.92	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 44	0.23	0.23	0.00	0.23	0.23	0.00	0.23	0.23	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 45	6.53	6.53	0.00	6.53	6.53	0.00	6.53	6.53	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 46	10.57	10.57	0.00	10.41	10.41	0.00	10.41	10.41	0.00	No	No	0.98	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.
Zone 47	7.30	7.30	0.00	6.60	6.60	0.00	6.60	6.60	0.00	No	No	0.90	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.
Zone 48	0.16	0.16	0.00	0.16	0.16	0.00	0.16	0.16	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.
Zone 49	14.06	14.06	0.00	13.13	13.13	0.00	13.13	13.13	0.00	No	No	0.93	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.
Zone 50	15.93	15.85	0.08	15.00	14.92	0.08	15.00	14.92	0.08	No	No	0.94	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.



Location	Annual Probable Sunlight Hours															Potential Impact	Comment
	Existing (% APSH)			Proposed (% APSH)			Proposed Cumulative* (% APSH)			Does window face 90° of due south?	BRE Guide - Section 3.2.1 Criteria "Proposed Cumulative" Scenario ONLY						
	Annual	Summer*	Winter*	Annual	Summer*	Winter*	Annual	Summer*	Winter*		Does window achieve 25% APSH, incl. 5% APSH in winter after construction of proposed development?	Annual Change under proposed scenario expressed as "times existing value"	Winter Change under proposed scenario expressed as "times existing value"	Is reduction greater than 4% over the course of the year?			
The Haven																	
Zone 51	5.28	5.20	0.08	5.28	5.20	0.08	5.28	5.20	0.08	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone 52	3.34	3.34	0.00	3.34	3.34	0.00	3.34	3.34	0.00	No	No	1.00	1.00	No	None	ARC's analysis indicates that the proposed development is not likely to result in any change in sunlight access at this window.	
Zone 53	14.53	14.53	0.00	12.28	12.28	0.00	12.28	12.28	0.00	No	No	0.85	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.	
Zone 54	17.79	17.40	0.39	15.23	14.84	0.39	15.23	14.84	0.39	No	No	0.86	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.	
Zone 55	4.51	3.89	0.62	4.35	3.73	0.62	4.35	3.73	0.62	No	No	0.96	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.	
Zone 56	4.74	4.74	0.00	3.11	3.11	0.00	3.11	3.11	0.00	No	No	0.66	1.00	No	Imperceptible to Not Significant	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours after the construction of the proposed development. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant".	
Zone 57	16.71	16.55	0.16	12.74	12.58	0.16	12.74	12.58	0.16	No	No	0.76	1.00	No	Imperceptible to Not Significant	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours after the construction of the proposed development. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant".	
Zone 58	19.74	18.50	1.24	15.77	14.53	1.24	15.77	14.53	1.24	No	No	0.80	1.00	No	Imperceptible to Not Significant	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours after the construction of the proposed development. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant".	
Zone 59	4.58	3.10	1.48	4.51	3.03	1.48	4.51	3.03	1.48	No	No	0.98	1.00	No	Imperceptible	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as sunlight received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours or fall to less than 0.8 times the former amount of annual probable sunlight hours during either period after the construction of the proposed development.	



Location	Annual Probable Sunlight Hours															Potential Impact	Comment
	Existing (% APSH)			Proposed (% APSH)			Proposed Cumulative* (% APSH)			Does window face 90° of due south?	BRE Guide - Section 3.2.1 Criteria "Proposed Cumulative" Scenario ONLY						
	Annual	Summer*	Winter*	Annual	Summer*	Winter*	Annual	Summer*	Winter*		Does window achieve 25% APSH, incl. 5% APSH in winter after construction of proposed development?	Annual Change under proposed scenario expressed as "times existing value"	Winter Change under proposed scenario expressed as "times existing value"	Is reduction greater than 4% over the course of the year?			
The Haven																	
Zone 60	6.99	6.91	0.08	4.82	4.74	0.08	4.82	4.74	0.08	No	No	0.69	1.00	No	Imperceptible to Not Significant	This window faces within 90° of due north. However, applying the Section 3.2.1 criteria for windows facing within 90° of due south, the BRE Guide would suggest the impact of the proposed development on this window would be "imperceptible" as Annual Probable Sunlight Hours received by this window is not likely to experience a reduction in sunlight over the whole year greater than 4% of annual probable sunlight hours after the construction of the proposed development. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant".	
The Sanctuary																	
Zone 61	65.81	43.82	21.99	61.93	43.98	17.95	60.14	44.06	16.08	Yes	Yes	0.91	0.73	Yes	Imperceptible to Not Significant	As this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development, the BRE Guide would suggest that the impact of the proposal is not likely to be noticeable. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant"	
Zone 62	50.35	35.74	14.61	46.70	35.90	10.80	46.70	35.90	10.80	Yes	Yes	0.93	0.74	No	Imperceptible to Not Significant	As this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development, the BRE Guide would suggest that the impact of the proposal is not likely to be noticeable. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant"	
Zone 63	68.53	45.69	22.84	64.41	45.76	18.65	62.32	45.85	16.47	Yes	Yes	0.91	0.72	Yes	Imperceptible to Not Significant	As this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development, the BRE Guide would suggest that the impact of the proposal is not likely to be noticeable. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant"	
Zone 64	39.01	23.63	15.38	34.89	23.70	11.19	34.89	23.70	11.19	Yes	Yes	0.89	0.73	Yes	Imperceptible to Not Significant	As this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development, the BRE Guide would suggest that the impact of the proposal is not likely to be noticeable. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant"	
Zone 65	72.18	49.10	23.08	67.99	49.19	18.80	65.42	49.26	16.16	Yes	Yes	0.91	0.70	Yes	Imperceptible to Not Significant	As this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development, the BRE Guide would suggest that the impact of the proposal is not likely to be noticeable. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant"	
Zone 66	73.66	49.96	23.70	69.54	50.04	19.50	65.42	50.19	15.23	Yes	Yes	0.89	0.64	Yes	Imperceptible to Not Significant	As this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development, the BRE Guide would suggest that the impact of the proposal is not likely to be noticeable. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant"	
Zone 67	35.66	13.75	21.91	32.17	13.83	18.34	28.21	13.91	14.30	Yes	Yes	0.79	0.65	Yes	Imperceptible to Not Significant	As this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development, the BRE Guide would suggest that the impact of the proposal is not likely to be noticeable. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant"	

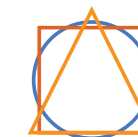


Location	Annual Probable Sunlight Hours															
	Existing (% APSH)			Proposed (% APSH)			Proposed Cumulative* (% APSH)			Does window face 90° of due south?	BRE Guide - Section 3.2.1 Criteria "Proposed Cumulative" Scenario ONLY			Potential Impact	Comment	
	Annual	Summer*	Winter*	Annual	Summer*	Winter*	Annual	Summer*	Winter*		Does window achieve 25% APSH, incl. 5% APSH in winter after construction of proposed development?	Annual Change under proposed scenario expressed as "times existing value"	Winter Change under proposed scenario expressed as "times existing value"			Is reduction greater than 4% over the course of the year?
The Sanctuary																
Zone 68	71.33	49.34	21.99	67.75	49.41	18.34	64.10	49.49	14.61	Yes	Yes	0.90	0.66	Yes	Imperceptible to Not Significant	As this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development, the BRE Guide would suggest that the impact of the proposal is not likely to be noticeable. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant"
Zone 69	65.81	45.61	20.20	61.93	45.69	16.24	57.73	45.84	11.89	Yes	Yes	0.88	0.59	Yes	Imperceptible to Not Significant	As this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development, the BRE Guide would suggest that the impact of the proposal is not likely to be noticeable. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant"
Zone 70	67.21	48.02	19.19	63.01	48.09	14.92	58.51	48.25	10.26	Yes	Yes	0.87	0.53	Yes	Imperceptible to Not Significant	As this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development, the BRE Guide would suggest that the impact of the proposal is not likely to be noticeable. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant"
Zone 71	71.87	45.84	26.03	68.22	44.29	23.93	47.01	35.98	11.03	Yes	Yes	0.65	0.42	Yes	Imperceptible to Not Significant	As this window will continue to receive more than 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development, the BRE Guide would suggest that the impact of the proposal is not likely to be noticeable. If noticeable, shadows cast by the proposed development are not likely to result in "significant consequences" for the character of the sunlight environment. This impact is assessed as "imperceptible" to "not significant"

* For the purposes of this calculation, summer is taken to mean the period between March and September; and winter is considered to be the period between September and March.

** While Section 3.2.1 of the BRE Guide refers to assessing the impact on living room windows, the windows assessed as part of this analysis have been chosen on the basis of potential for impact on sunlight access rather than the use of rooms.

* The "Proposed Cumulative" scenario assumes that the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, the development envisaged under Cork City Council Reg. Ref. 22/40809 and the development now proposed has been constructed.



2.2.2 Detailed analysis of the potential impact of shadows cast by the proposed development on existing gardens and amenity areas on lands outside the application site

2.2.2.1 Overview of and rationale for methodology for detailed quantitative analysis of the potential impact of shadows cast by the proposed development on existing gardens / amenity areas outside the application site

Insofar as amenity spaces / gardens are concerned, Section 3.3.17 of the BRE Guide provides that “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.” [Emphasis added.] This suggests that where a garden or amenity area can receive two hours of sun over half its area on 21 March notwithstanding the construction of a proposed development, loss of sunlight as a result of additional overshadowing is not likely to be noticed.

Section 3.3.8 provides that “Locations that can and cannot receive two or more hours of sunlight on 21 March may be found using specialist software. The space is divided into a grid of points with a recommended spacing of 0.3 m or less, and the proportion of these points that can receive two hours of sunlight on March 21 is computed.”

Please note that, in determining whether or not to include existing and proposed substantial trees in the three dimensional model for the purposes of this quantitative analysis, ARC made reference to the BRE Guide (as updated in 2022), which states that the “question of whether trees or fences should be included in the calculation depends upon the type of shade they produce. Normally trees and shrubs need not be included, partly because their shapes are almost impossible to predict, and partly because the dappled shade of a tree is more pleasant than the deep shadow of a building (this applies especially to deciduous trees).” Given this, ARC did not include the shadows cast by any landscape planting in the assessment model.

Having regard to the criteria for identifying receptors particularly sensitive to changes in the shadow environment discussed above, ARC undertook detailed quantitative analysis of the gardens and amenity areas most likely to be affected by shadows cast by the proposed development on 21st March (i.e. those at Longshore Avenue, Longshore Drive, The Courtyard and The Haven - see Figure 2.5 on page 5). Table 2.2 sets out the likely proportion of neighbouring gardens in sunlight before and after the construction of the proposed development throughout the day on 21st March.

2.2.2.2 Format of the detailed quantitative analysis of the potential impact of shadows cast by the proposed development on existing gardens / amenity areas outside the application site

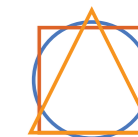
The results of ARC’s analysis are set out in Table 2.2 below. This table indicates:

- The proportion of the space (i.e. the proportion of grid points at a space of 0.3 m) capable of receiving at least two hours of sunlight on 21st March under each of the following scenarios:
 - **Existing:** The “Existing” scenario considers only buildings in existence at the time of writing the report. This scenario assumes that permitted and envisaged developments have yet to be constructed.
 - **Proposed:** The “Proposed” scenario assumes that the development now proposed has been constructed.
 - **Proposed Cumulative:** The “Proposed Cumulative” scenario assumes that the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, the development envisaged under Cork City Council Reg. Ref. 22/40809 and the development now proposed has been constructed.
- The extent of change to the studied sample window (under “Cumulative Proposed” scenario expressed as “times existing value”).
- A description of the potential impact of the “Cumulative Proposed” development on each “Existing” garden / amenity space with reference to the criteria outlined in the Technical Appendix.

Table 2.2: Potential impact of the proposed development on sunlight access to sample neighbouring gardens

Zone	Proportion of space (grid points) capable of receiving two hours of sunlight on 21st March			Change Change under “Cumulative Proposed” Scenario expressed as “times existing value”	Potential Impact “Proposed Cumulative” Scenario on “Existing” Scenario ONLY
	Existing	Proposed	Cumulative Proposed*		
Garden 1 (121 sq m) Longshore Avenue	88.50%	88.50%	88.20%	0.997	Imperceptible
Garden 2 (190 sq m) Longshore Drive	98.20%	98.20%	98.20%	1.00	None
Garden 3 (109 sq m) Longshore Drive	78.80%	74.80%	74.80%	0.95	Imperceptible
Garden 4 (159 sq m) Longshore Drive	87.90%	87.30%	87.30%	0.99	Imperceptible
Garden 5 (260 sq m) Longshore Drive	99.10%	99.10%	99.10%	1.00	None
Garden 6 (180 sq m) Longshore Drive	98.10%	98.10%	98.10%	1.00	None
Garden 7 (164 sq m) Longshore Drive	91.00%	91.00%	91.00%	1.00	None
Garden 8 (58 sq m) Longshore Drive	80.60%	80.60%	80.60%	1.00	None
Garden 9 (152 sq m) Longshore Drive	84.00%	84.00%	84.00%	1.00	None
Garden 10 (165 sq m) Longshore Drive	75.20%	75.20%	75.20%	1.00	None
Garden 11 (192 sq m) The Courtyard	100.00%	100.00%	100.00%	1.00	None
Garden 12 (194 sq m) The Haven	98.20%	98.20%	98.20%	1.00	None

* The “Proposed Cumulative” scenario assumes that the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, the development envisaged under Cork City Council Reg. Ref. 22/40809 and the development now proposed has been constructed.



3.0 ASSESSMENT OF THE IMPACT OF THE PROPOSED DEVELOPMENT ON DAYLIGHT ACCESS

Daylight is defined in *Site layout planning for daylight and sunlight: a guide to good practice* for the Building Research Establishment (the BRE Guide) as “combined skylight and sunlight”. For the purpose of this analysis, Section 3.0 assesses the impact of the construction of the proposed development on daylight reaching defined opes in existing buildings (e.g. windows or other openings in existing buildings, such as patio doors) when the weather is overcast.

3.1 Overview of the potential impact of the proposed development on daylight access to existing buildings in the surrounding area

This assessment considers the potential impact of the proposed development, in combination with the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21 and the development envisaged under Cork City Council Reg. Ref. 22/40809, to result in impacts on daylight access in neighbouring existing buildings.

ARC's analysis indicates that the potential impact of the proposed development, in combination with neighbouring permitted and envisaged developments, on daylight access within neighbouring existing buildings in proximity to the application site (e.g. at The Haven, The Courtyard and Longshore Drive) is likely to range from none to “imperceptible” to “moderate”. Similarly, the proposed development has the potential to result in “imperceptible” to “slight” impacts on daylight access within houses at Longshore Avenue and at The Sanctuary, with a potential for “slight” to “moderate” impacts to occur in the case of a small number of windows in close proximity to new structures. Under a worst case scenario, the potential impact of the proposed development, in combination with neighbouring permitted and envisaged developments, on daylight access within neighbouring existing buildings is likely to be consistent with emerging trends for development in the area.

Given that the potential for development to result in impacts on daylight access diminishes with distance, it is the finding of ARC's analysis the proposed development will have no undue adverse impact on daylight access within buildings in the wider area surrounding the application site.

3.2 Detailed analysis of the potential impact of the proposed development on daylight access to existing buildings on lands outside the application site

This report assesses the impact of the proposed development to all potential receptors surrounding the application site; - these impacts are described in Section 3.1 above. However, by way of example in order to illustrate briefly the findings outlined in the overview section, ARC conducted detailed analysis of the potential for the proposed development to result in impacts on daylight access to a representative sample of sensitive receptors (i.e. rooms) in existing buildings on lands outside the application site (please see Figures 3.1-3.4 below).

3.2.1 Overview of and rationale for methodology for detailed quantitative analysis of the potential impact of the proposed development on daylight access within existing buildings on lands outside the application site

In assessing sunlight and daylight access, Irish practitioners tend to refer to the Building Research Establishment's *Site layout planning for daylight and sunlight: a guide to good practice* (BR209, the BRE Guide; the third edition of which was published in June 2022).

Section 1.7 of the BRE Guide (2022) provides: “The guidance here is intended for use in the UK and in the Republic of Ireland”. Its use in assessing impacts on sunlight and daylight access as part of the planning process is supported by national government planning policy including the *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas*, which, at Section 7.2 states: “Planning authorities should require that daylight and shadow projection diagrams be submitted in all such proposals. The recommendations of “*Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice*” (B.R.E. 1991)¹ or B.S. 8206 “*Lighting for Buildings, Part 2 1992: Code of Practice for Daylighting*” should be followed in this regard.”

It should be noted that the BRE Guide (2022) does not set out rigid standards or limits and is preceded by the following very clear warning as to how the design advice contained therein should be used: “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.” [Emphasis added.] This should be borne in mind when interpreting the results of analysis set out in this section.

In identifying receptors particularly sensitive to changes in the shadow environment, ARC considered two factors:

- (i) **the use of receptors (i.e. buildings) surrounding the application site:** Section 2.2.2 of the BRE Guide provides: “The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas, and garages need not be analysed. The guidelines may also be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight; this would normally include schools, hospitals, hotels and hostels, small workshops and some offices”;
- (ii) **the location of receptors relative to the application site:** as set out in section 2.2.23 of the BRE Guide “If any part of a new building or extension, measured in vertical section perpendicular to a main window wall of an existing building, from the centre of the **lowest window**, subtends to an angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected.” (Emphasis added).

Section 2.2.23 of the BRE Guide suggests that:

“If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if ...

- the VSC measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value
- the area of the working plane in a room which can receive direct skylight is reduced to less than 0.80 times its former value.”

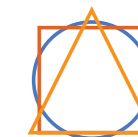
[PLEASE NOTE: calculation of the area of the working plane in a room within an existing building, which can receive direct skylight, can only be carried “where room layouts are known (for example if they are available on the local authority's planning portal).”]

Section 2.2.4 of the BRE Guide states: “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. Thus if the new development were 10 m tall, and a typical existing ground floor window would be 1.5 m above the ground, the effect on existing buildings more than $3 \times (10 - 1.5) = 25.5$ m away need not be analysed.”

Applying the tests set out in Sections 2.2.23 and 2.2.4 of the BRE Guide (2022), ARC identified a number of windows in residences at The Haven, The Courtyard, Longshore Drive, Longshore Avenue and The Sanctuary for assessment. In general, existing windows were omitted from the sample where in a section drawn perpendicular to this existing window wall, the proposed development subtended an angle greater than 25° to the horizontal measured from the centre of the window. However, some windows, which do not fall under the tests outlined under Section 2.2.21 and 2.2.4, were included in the interests of completeness.

The BRE Guide acknowledges that application of a requirement for 27% Vertical Sky Component will not be appropriate in all contexts. At Appendix F: Setting Alternative Target Values for Skylight and Sunlight Access, it states: “Sections 2.1, 2.2 and 2.3 give numerical target values in assessing how much light from the sky is blocked by obstructing buildings. These values are purely advisory and different targets may be used based on the special requirements of the proposed development or its location... Whatever the targets chosen for a particular development, it is important that they should be self-consistent. Table F1 can be used to ensure this.” Table F1 goes on to describe what Vertical Sky Component would correspond to which building height to space ratio. In order to help inform interpretation of the results set out in Table 3.1, the following information may be of assistance:

¹ The *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas* refer to the first edition of the BRE Guide as published in 1991. A third edition of the Guide was published in June 2022.



- Assuming a street width of 12.5 m (e.g. 3 m wide footpath + 3.25 m lane + 3.25 m lane + 3 m wide footpath, as set out in the *Design Manual for Urban Roads and Streets*), a Vertical Sky Component of approximately 13% would occur in ground floor rooms of opposing residential buildings of approximately five storeys (approximately 15 m) in height.
- Assuming a street width of 12.5 m (e.g. 3 m wide footpath + 3.25 m lane + 3.25 m lane + 3 m wide footpath, as set out in the *Design Manual for Urban Roads and Streets*), a Vertical Sky Component of approximately 16% would occur in ground floor rooms of opposing residential buildings of approximately four storeys (approximately 12 m) in height.
- Assuming a street width of 12.5 m (e.g. 3 m wide footpath + 3.25 m lane + 3.25 m lane + 3 m wide footpath, as set out in the *Design Manual for Urban Roads and Streets*), a Vertical Sky Component of approximately 21% would occur in ground floor rooms of opposing residential buildings of approximately three storeys (approximately 9 m) in height.

Adherence to the recommendations of the BRE Guide with regard to achieving a Vertical Sky Component of 27% has been shown to lead to low densities of development. Given this and given that Vertical Sky Component offers an incomplete measurement of daylight access within a room (e.g. given that it does not take into account the size and shape of the room, the size of the window relative to the size of the room or the effect of internally or externally reflected light), **the results of assessment of the impact of development on daylight access using Vertical Sky Component must be interpreted with caution.**

3.2.2 *Format of the detailed quantitative analysis of the potential impact of the proposed development on daylight access within existing buildings on lands outside the application site*

The results of ARC's analysis are set out in Table 3.1 below. This table indicates:

- The Vertical Sky Component received by each sample receptor (i.e. window) for each of the following scenarios:
 - **Existing:** The "Existing" scenario considers only buildings in existence at the time of writing the report. This scenario assumes that permitted and envisaged developments have yet to be constructed.
 - **Proposed:** The "Proposed" scenario assumes that the development now proposed has been constructed.
 - **Proposed Cumulative:** The "Proposed Cumulative" scenario assumes that the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, the development envisaged under Cork City Council Reg. Ref. 22/40809 and the development now proposed has been constructed.
 - **Extent of change:** The last column under this section of the table considers the extent of change in Vertical Sky Component at the studied sample window (under "Cumulative Proposed" scenario expressed as "times existing value")
- The area of the working plane, which can receive direct skylight, received by each sample receptor (i.e. room) - this is expressed a percentage of the area of the room. PLEASE NOTE: this calculation can only be carried "where room layouts are known (for example if they are available on the local authority's planning portal)" (see Section 2.2.10 of the BRE Guide). As such, this calculation has only been carried out for Zones 1-5 (Cork City Council Reg. Ref. 1436170), Zones 17 and 18 (Cork City Council Reg. Ref. 0833089), Zones 19, 20, 21, 22 (Cork City Council Reg. Ref. 1536307), and Zone 71 (Cork City Council Reg. Ref. 0529373). The table addresses the following scenarios:
 - **Existing:** The "Existing" scenario considers only buildings in existence at the time of writing the report. This scenario assumes that permitted and envisaged developments have yet to be constructed.
 - **Proposed:** The "Proposed" scenario assumes that the development now proposed has been constructed.
 - **Proposed Cumulative:** The "Proposed Cumulative" scenario assumes that the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, the development envisaged under Cork City Council Reg. Ref. 22/40809 and the development now proposed has been constructed.
 - **Extent of change:** The last column under this section of the table considers the extent of change in the area of the working plane, which can receive direct skylight, received by each sample receptor (i.e. room) (under "Cumulative Proposed" scenario expressed as "times existing value")
- A description of the potential impact of the "Cumulative Proposed" development on each "Existing" sample receptor / window and a comment interpreting the results.

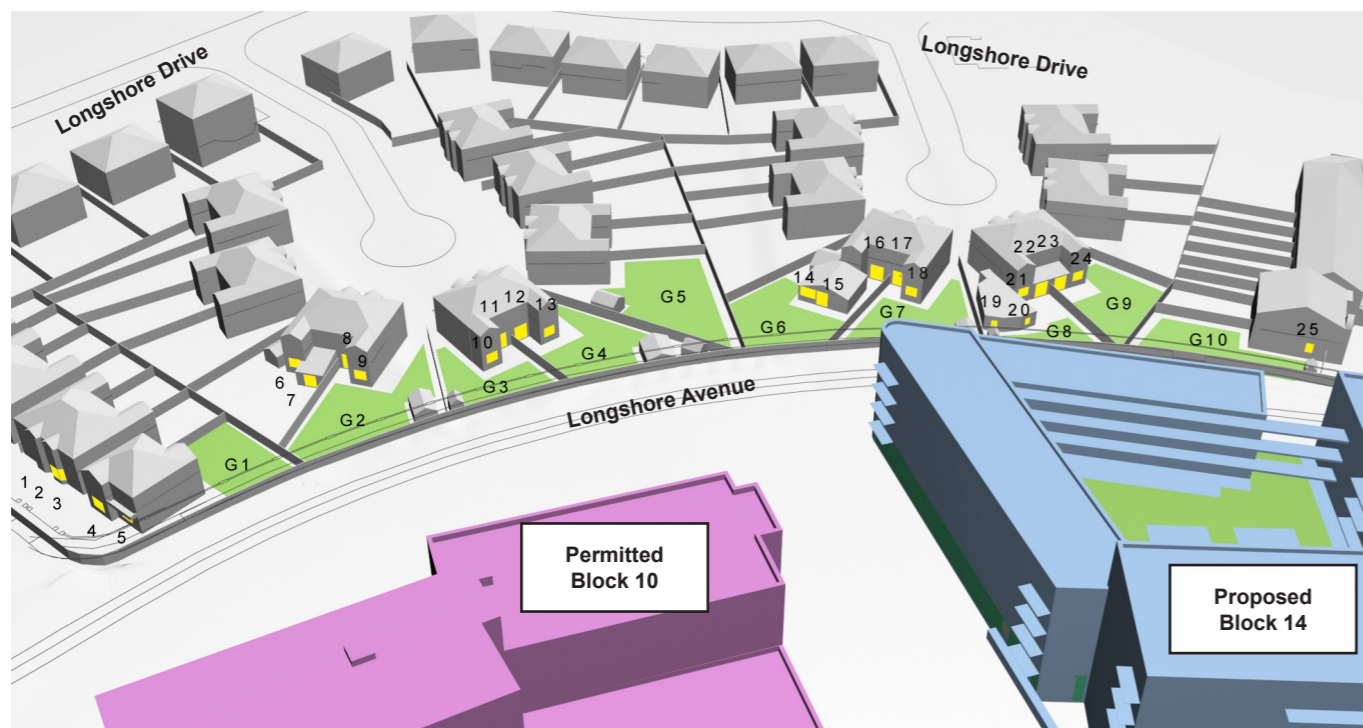
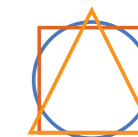


Figure 3.1: Indicative diagram showing location of sample windows (in yellow) assessed as part of this analysis.

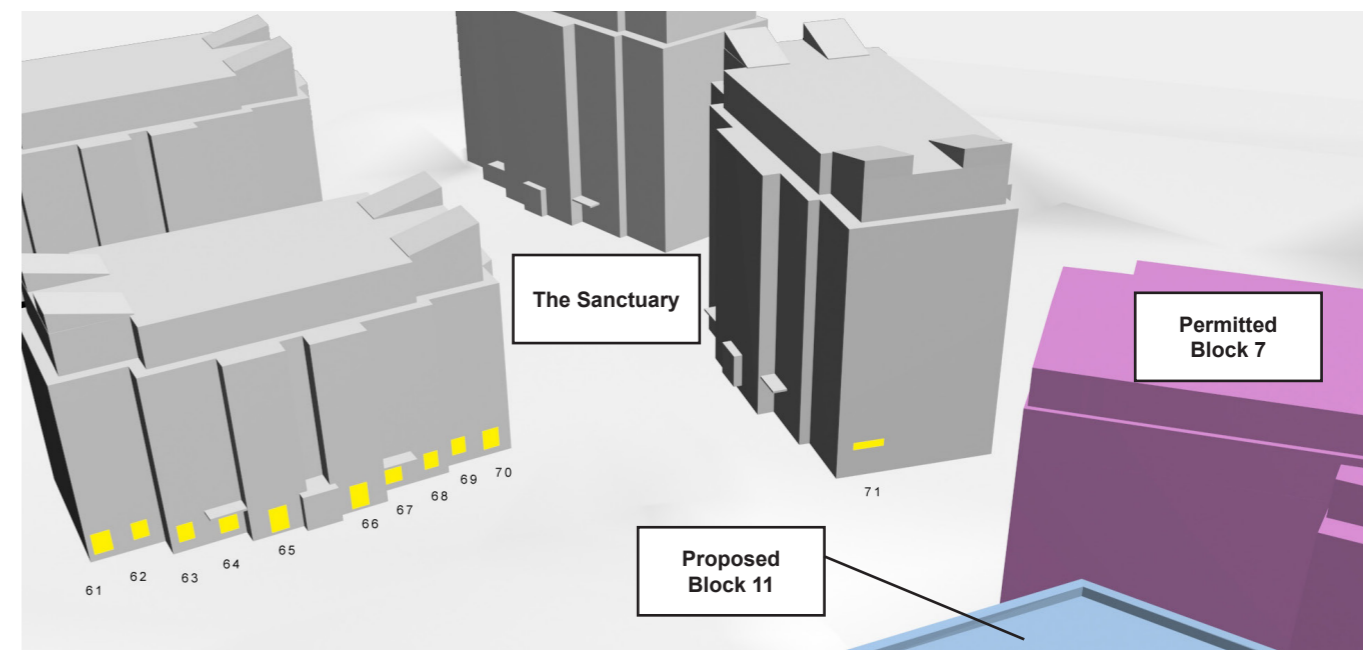


Figure 3.3: Indicative diagram showing location of sample windows (in yellow) assessed as part of this analysis.

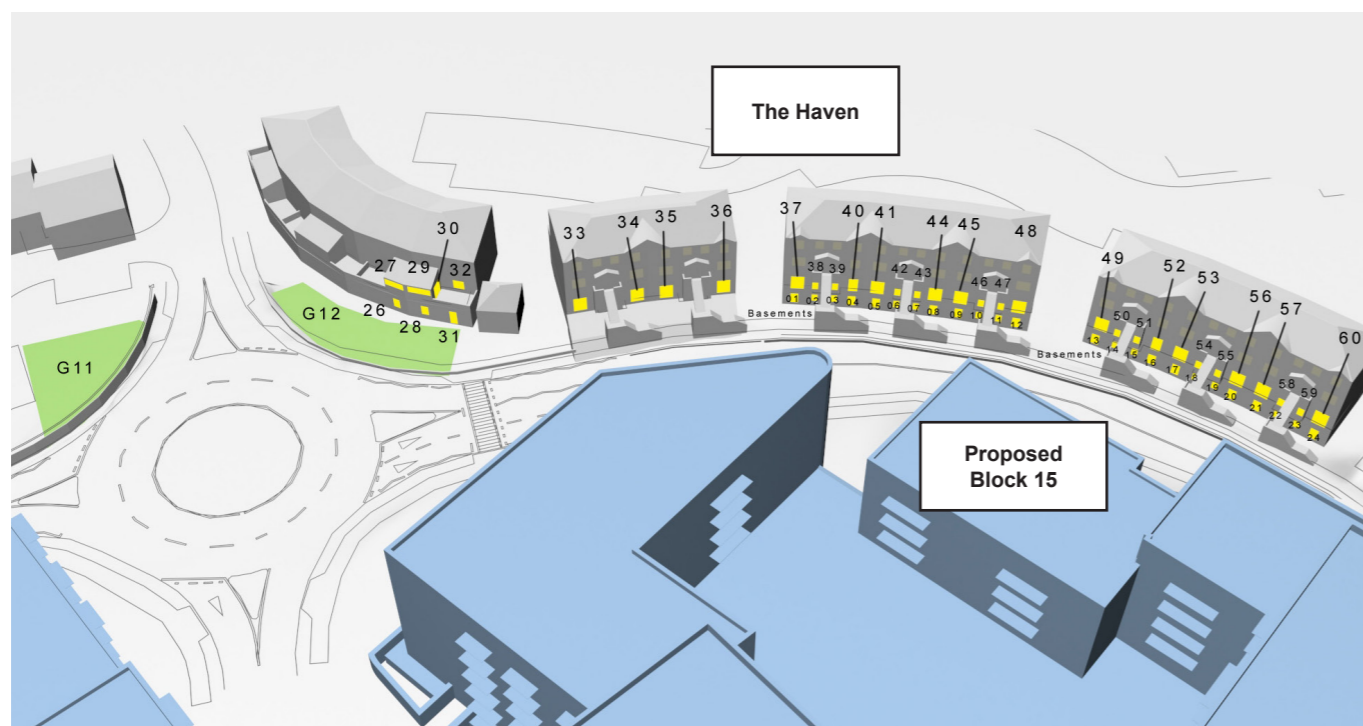


Figure 3.2: Indicative diagram showing location of sample windows (in yellow) assessed as part of this analysis.



Figure 3.4: Indicative overview diagram showing location of sample windows (red dot) assessed as part of this analysis.

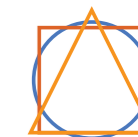
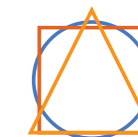
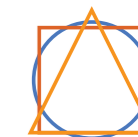


Table 3.1: Potential impact of the proposed development on daylight access to sample windows in existing buildings on lands outside the application site

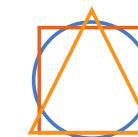
Location	Vertical Sky Component				Area of the working plane in a room which can receive direct skylight				Potential Impact "Proposed Cumulative" Scenario on "Existing" Scenario ONLY	Comment Impact of "Proposed Cumulative" Scenario on "Existing" Scenario ONLY
	Existing (% VSC)	Proposed (% VSC)	Cumulative Proposed ⁺ (% VSC)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"	Existing (% of area receiving direct skylight)	Proposed (% of area receiving direct skylight)	Cumulative Proposed ⁺ (% of area receiving direct skylight)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"		
Longshore Avenue										
Zone 01	28.64%	28.23%	22.40%	0.78	97.00%	95.30%	59.40%	0.61	Slight to Moderate	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent, while the likely reduction in the area of the working plane, which can receive direct skylight to between 0.5-0.7 times its former value is assessed as "moderate" in extent. Please note that the impact on this window under the "cumulative proposed" scenario arises largely due to the permitted and envisaged developments rather than the development now proposed.
Zone 02	37.63%	35.21%	28.21%	0.75						
Zone 03	32.25%	29.10%	24.61%	0.76						
Zone 04	37.67%	34.74%	28.98%	0.77	99.00%	96.90%	83.50%	0.84	Imperceptible to Not Significant	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development or where the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component and as the area of the working plane which can receive direct skylight will not be reduced to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible". If noticeable, the potential reduction in daylight access is not likely to result in "significant consequences" for the character of the daylight environment within the room. This impact is assessed as ranging from "imperceptible" to "not significant".
Zone 05	27.14%	24.01%	18.78%	0.69	99.60%	94.60%	88.70%	0.89	Slight to Moderate	While the area of the working plane that can receive direct skylight will not be reduced to an adverse extent, having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to just below 0.7 times its former value is assessed as "slight" to "moderate" in extent.
Longshore Drive										
Zone 06	33.27%	32.43%	31.00%	0.93	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 07	33.01%	31.93%	30.55%	0.93	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 08	21.20%	20.04%	19.16%	0.90	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 09	37.05%	34.47%	31.95%	0.86	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 10	38.01%	34.26%	32.04%	0.84	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 11	25.07%	22.83%	22.03%	0.88	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 12	23.83%	21.70%	20.75%	0.87	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 13	38.03%	34.19%	32.57%	0.86	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".



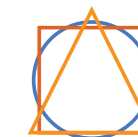
Location	Vertical Sky Component				Area of the working plane in a room which can receive direct skylight				Potential Impact "Proposed Cumulative" Scenario on "Existing" Scenario ONLY	Comment Impact of "Proposed Cumulative" Scenario on "Existing" Scenario ONLY
	Existing (% VSC)	Proposed (% VSC)	Cumulative Proposed ⁺ (% VSC)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"	Existing (% of area receiving direct skylight)	Proposed (% of area receiving direct skylight)	Cumulative Proposed ⁺ (% of area receiving direct skylight)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"		
Zone 14	37.49%	33.71%	32.40%	0.86	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 15	36.82%	33.15%	31.88%	0.87	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 16	22.23%	20.04%	19.50%	0.88	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Longshore Drive										
Zone 17	23.04%	21.47%	20.79%	0.90	95.20%	91.20%	89.00%	0.93	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development or where the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value. As the Vertical Sky Component at this window and the area of the working plane in this room, which can receive direct skylight, is not likely to fall to less than 0.8 times their respective values, the potential impact of the proposed development on this window/room is assessed as "imperceptible".
Zone 18	37.32%	31.41%	30.65%	0.82	98.70%	92.90%	73.50%	0.74	Imperceptible to Slight	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development or where the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value. As the Vertical Sky Component at this window is likely to remain well above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible". However, noting that the area of the working plane within the room that can receive direct skylight is likely to fall to between 0.7-0.8 times its former value after the construction of the proposed development, this impact is assessed as "imperceptible" to "slight" in extent.
Zone 19	29.34%	23.49%	23.49%	0.80	100.00%	100.00%	100.00%	1.00	Imperceptible to Slight	This room is served by several windows, only two of which were assessed for impacts on Vertical Sky Component (i.e. those windows facing towards the proposed development, while Vertical Sky Component of the side windows or Horizontal Sky Component of the large sky light was not assessed). The impact of the construction of the proposed development on Vertical Sky Component at Windows 19 and 20 is assessed as "imperceptible" to "slight" out of an abundance of caution. However, please note that, as this room is served by a large skylight, the construction of the proposed development is unlikely to reduce the area of the working plane receiving direct skylight. Given this, it is unlikely that the construction of the proposed scenario or the cumulative proposed scenario will result in noticeable impacts on daylight access within this room.
Zone 20	34.58%	26.74%	26.74%	0.77						
Zone 21	34.58%	29.02%	29.02%	0.84	95.10%	57.30%	57.30%	0.60	Moderate	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide and to the likely reduction in the area of the working plane, which can receive direct skylight to between 0.5-0.7 times its former value, the potential impact of the proposed development on daylight access to this room is assessed as "moderate" in extent. Please note, however, that the window serving this room will continue to receive considerably more than the BRE Guide recommendation of 27% Vertical Sky Component after the construction of the proposed development.
Zone 22	32.74%	26.80%	26.79%	0.82	81.70%	41.90%	41.90%	0.51	Moderate	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide and to the likely reduction in the area of the working plane, which can receive direct skylight to between 0.5-0.7 times its former value, the potential impact of the proposed development on daylight access to this room is assessed as "moderate" in extent.
Zone 23	31.24%	26.76%	26.75%	0.86	-	-	-	-	Imperceptible to Not Significant	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component decreases to not less than 0.8 times its former value after the construction of a development. While the BRE Guide would suggest that an impact of this extent is not likely to be noticeable, taking a conservative approach, this impact is assessed as "imperceptible" to "not significant" as the construction of the proposal is likely to reduce Vertical Sky Component at the window from above the recommended 27% Vertical Sky Component to just below it.
Zone 24	36.66%	30.38%	30.35%	0.83	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
The Courtyard										
Zone 25	35.41%	26.62%	26.57%	0.75	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent. Please note that only the gable windows at No. 1 The Courtyard face north towards the application site at close proximity.



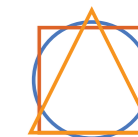
Location	Vertical Sky Component				Area of the working plane in a room which can receive direct skylight				Potential Impact "Proposed Cumulative" Scenario on "Existing" Scenario ONLY	Comment Impact of "Proposed Cumulative" Scenario on "Existing" Scenario ONLY
	Existing (% VSC)	Proposed (% VSC)	Cumulative Proposed ⁺ (% VSC)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"	Existing (% of area receiving direct skylight)	Proposed (% of area receiving direct skylight)	Cumulative Proposed ⁺ (% of area receiving direct skylight)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"		
The Haven										
Zone 26	37.67%	31.79%	31.54%	0.84	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 27	38.35%	33.40%	33.14%	0.86	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 28	37.62%	30.09%	29.87%	0.79	-	-	-	-	Imperceptible to Not Significant	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible". If noticeable, the potential reduction in Vertical Sky Component at this window is not likely to result in "significant consequences" for the character of the daylight environment within the room. This impact is assessed as ranging from "imperceptible" to "not significant".
Zone 29	38.43%	32.02%	31.78%	0.83	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 30	23.11%	18.33%	18.28%	0.79	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 31	36.63%	28.99%	28.84%	0.79	-	-	-	-	Imperceptible to Not Significant	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible". If noticeable, the potential reduction in Vertical Sky Component at this window is not likely to result in "significant consequences" for the character of the daylight environment within the room. This impact is assessed as ranging from "imperceptible" to "not significant".
Zone 32	34.99%	28.29%	28.10%	0.80	-	-	-	-	Imperceptible to Not Significant	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible". If noticeable, the potential reduction in Vertical Sky Component at this window is not likely to result in "significant consequences" for the character of the daylight environment within the room. This impact is assessed as ranging from "imperceptible" to "not significant".
The Haven										
Zone B01	28.19%	21.00%	20.99%	0.74	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone B02	20.86%	15.15%	15.14%	0.73	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone B03	18.54%	15.87%	15.90%	0.86	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B04	22.79%	20.11%	20.09%	0.88	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B05	24.15%	20.26%	20.26%	0.84	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".



Location	Vertical Sky Component				Area of the working plane in a room which can receive direct skylight				Potential Impact "Proposed Cumulative" Scenario on "Existing" Scenario ONLY	Comment Impact of "Proposed Cumulative" Scenario on "Existing" Scenario ONLY
	Existing (% VSC)	Proposed (% VSC)	Cumulative Proposed ⁺ (% VSC)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"	Existing (% of area receiving direct skylight)	Proposed (% of area receiving direct skylight)	Cumulative Proposed ⁺ (% of area receiving direct skylight)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"		
The Haven										
Zone B06	19.44%	15.61%	15.64%	0.80	-	-	-	-	Imperceptible to Slight	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component decreases to not less than 0.8 times its former value after the construction of a development. While the BRE Guide would suggest that an impact of this extent is not likely to be noticeable, taking a conservative approach, this impact is assessed as "imperceptible" to "slight" as the construction of the proposal is likely to reduce Vertical Sky Component to the threshold for adverse impacts described in the BRE Guide.
Zone B07	17.95%	14.88%	14.88%	0.83	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B08	22.88%	20.15%	20.16%	0.88	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B09	24.29%	20.11%	20.09%	0.83	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B10	19.46%	15.92%	15.96%	0.82	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B11	18.58%	15.73%	15.74%	0.85	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B12	24.28%	20.96%	20.93%	0.86	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B13	26.77%	21.45%	21.46%	0.80	-	-	-	-	Imperceptible to Slight	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component decreases to not less than 0.8 times its former value after the construction of a development. While the BRE Guide would suggest that an impact of this extent is not likely to be noticeable, taking a conservative approach, this impact is assessed as "imperceptible" to "slight" as the construction of the proposal is likely to reduce Vertical Sky Component to the threshold for adverse impacts described in the BRE Guide.
Zone B14	20.14%	15.71%	15.73%	0.78	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone B15	17.92%	15.25%	15.29%	0.85	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B16	22.31%	19.64%	19.64%	0.88	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B17	23.23%	19.92%	19.94%	0.86	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B18	18.79%	15.06%	15.05%	0.80	-	-	-	-	Imperceptible to Slight	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component decreases to not less than 0.8 times its former value after the construction of a development. While the BRE Guide would suggest that an impact of this extent is not likely to be noticeable, taking a conservative approach, this impact is assessed as "imperceptible" to "slight" as the construction of the proposal is likely to reduce Vertical Sky Component to the threshold for adverse impacts described in the BRE Guide.



Location	Vertical Sky Component				Area of the working plane in a room which can receive direct skylight				Potential Impact "Proposed Cumulative" Scenario on "Existing" Scenario ONLY	Comment Impact of "Proposed Cumulative" Scenario on "Existing" Scenario ONLY
	Existing (% VSC)	Proposed (% VSC)	Cumulative Proposed ⁺ (% VSC)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"	Existing (% of area receiving direct skylight)	Proposed (% of area receiving direct skylight)	Cumulative Proposed ⁺ (% of area receiving direct skylight)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"		
The Haven										
Zone B19	17.48%	13.90%	13.84%	0.79	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone B20	22.23%	18.96%	18.95%	0.85	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B21	22.92%	19.56%	19.59%	0.85	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B22	18.48%	15.52%	15.38%	0.83	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone B23	18.01%	14.38%	14.11%	0.78	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone B24	23.67%	19.53%	19.23%	0.81	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 33	34.37%	24.05%	24.08%	0.70	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 34	34.01%	23.97%	23.94%	0.70	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 35	34.36%	24.45%	24.45%	0.71	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 36	34.00%	24.17%	24.20%	0.71	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 37	33.98%	24.94%	24.94%	0.73	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 38	29.51%	22.25%	22.25%	0.75	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 39	28.15%	21.39%	21.38%	0.76	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 40	33.81%	24.95%	24.96%	0.74	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 41	34.11%	25.57%	25.57%	0.75	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 42	28.31%	21.59%	21.60%	0.76	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 43	29.31%	22.41%	22.41%	0.76	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 44	33.45%	24.68%	24.68%	0.74	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 45	33.89%	25.26%	25.32%	0.75	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 46	28.09%	21.22%	21.22%	0.76	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 47	29.61%	22.38%	22.38%	0.76	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.

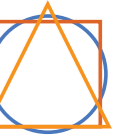


Location	Vertical Sky Component				Area of the working plane in a room which can receive direct skylight				Potential Impact "Proposed Cumulative" Scenario on "Existing" Scenario ONLY	Comment Impact of "Proposed Cumulative" Scenario on "Existing" Scenario ONLY
	Existing (% VSC)	Proposed (% VSC)	Cumulative Proposed ⁺ (% VSC)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"	Existing (% of area receiving direct skylight)	Proposed (% of area receiving direct skylight)	Cumulative Proposed ⁺ (% of area receiving direct skylight)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"		
The Haven										
Zone 48	33.98%	25.30%	25.29%	0.74	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 49	33.87%	25.10%	25.11%	0.74	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 50	29.53%	22.79%	22.78%	0.77	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 51	27.91%	20.49%	20.47%	0.73	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 52	33.82%	24.51%	24.51%	0.72	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 53	33.98%	24.57%	24.58%	0.72	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 54	28.27%	21.65%	21.59%	0.76	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 55	29.25%	21.08%	20.91%	0.71	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 56	33.49%	23.58%	23.42%	0.70	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 57	34.00%	23.79%	23.72%	0.70	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 58	28.11%	20.86%	20.56%	0.73	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 59	29.68%	20.86%	20.34%	0.69	-	-	-	-	Slight to Moderate	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to just below 0.7 times its former value is assessed as "slight" to "moderate" in extent.
Zone 60	34.43%	23.91%	23.22%	0.67	-	-	-	-	Moderate	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.5-0.7 times its former value is assessed as "moderate" in extent.
The Sanctuary										
Zone 61	36.51%	34.24%	33.15%	0.91	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 62	30.84%	28.56%	28.41%	0.92	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 63	36.68%	34.23%	32.97%	0.90	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 64	20.70%	18.17%	18.01%	0.87	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is not likely to fall to less than 0.8 times its former value, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 65	37.26%	34.53%	33.11%	0.89	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".



Location	Vertical Sky Component				Area of the working plane in a room which can receive direct skylight				Potential Impact "Proposed Cumulative" Scenario on "Existing" Scenario ONLY	Comment Impact of "Proposed Cumulative" Scenario on "Existing" Scenario ONLY
	Existing (% VSC)	Proposed (% VSC)	Cumulative Proposed ⁺ (% VSC)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"	Existing (% of area receiving direct skylight)	Proposed (% of area receiving direct skylight)	Cumulative Proposed ⁺ (% of area receiving direct skylight)	Change Change under "Cumulative Proposed" scenario expressed as "times existing value"		
The Sanctuary										
Zone 66	36.69%	33.90%	32.16%	0.88	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 67	19.10%	16.40%	14.52%	0.76	-	-	-	-	Slight	Having regard to factors outlined in Appendix H: Environmental Impact Assessment of the BRE Guide, the likely reduction in Vertical Sky Component at this window to between 0.7-0.8 times its former value is assessed as "slight" in extent.
Zone 68	35.27%	32.58%	30.51%	0.87	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
The Haven										
Zone 69	33.47%	30.81%	28.55%	0.85	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 70	35.52%	32.78%	30.27%	0.85	-	-	-	-	Imperceptible	The BRE Guide suggests that occupants of an existing building are not likely to notice an adverse reduction in daylight access where Vertical Sky Component remains above 27% or falls below 27% Vertical Sky Component but decreases to not less than 0.8 times its former value after the construction of a development. As the Vertical Sky Component at this window is likely to remain above 27% Vertical Sky Component, the potential impact of the proposed development on this window is assessed as "imperceptible".
Zone 71	38.40%	34.10%	23.44%	0.61	89.40%	89.40%	87.50%	0.98	Imperceptible to Moderate	While the construction of the proposed development is likely to result in a "moderate" impact reduction in Vertical Sky Component of the side window of this room, the construction of the proposed scenario or the cumulative proposed scenario is not likely to result in a noticeable change in daylight access within the room having regard to the area of the working plane, which will remain capable of receiving direct skylight. This impact is assessed as ranging from "imperceptible" to "moderate".

⁺ The "Proposed Cumulative" scenario assumes that the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, the development envisaged under Cork City Council Reg. Ref. 22/40809 and the development now proposed has been constructed.



3.3 Detailed analysis of the potential daylight access (Daylight Factor) within the permitted residential development at Jacob's Island, which has yet to be constructed, after the construction of the proposed development

In addition to assessing the potential impact of the proposed development on daylight access to neighbouring existing buildings, ARC also assessed the likely levels of daylight access within neighbouring permitted residential developments to identify whether these buildings would continue to receive an appropriate standard of daylight access after the construction of the proposed development. Specifically, ARC considered daylight access within the residential development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, which has yet to be constructed.

The BRE Guide (2022, 3rd edition) suggests that assessment of daylight access within buildings outside the application site using daylight factor is appropriate: "where the existing building is one of a series of new buildings that are being built one after another, and each building has been designed as part of the larger group...". Similar provisions in the second edition BRE Guide (2011) support the use of Average Daylight Factor to assess daylight access within relevant buildings in these circumstances.

Given this and given that the permitted development is understood to be owned by the Applicant, ARC also measured daylight access within the sample rooms within the permitted buildings opposing proposed new structures (permitted Blocks 7 and 8) with reference to Daylight Factor and to the tests outlined in the 2022 edition of the BRE Guide to identify whether the construction of the proposed development creates the potential for adverse impacts on daylight access. The BRE Guide references BS EN 17037: Daylight in Buildings and recommends that at least 50% of a horizontal reference plane (at 0.85 m) achieve the following daylight factors for each room type in existing buildings located at a similar latitude to Cork City: 0.7% daylight factor for bedrooms, 1.1% daylight factor for living rooms and 1.4% daylight factor for kitchens.

As part of this assessment, ARC also assessed daylight access using Average Daylight Factor. At paragraph 2.1.8, the second edition BRE Guide (2011) states as follows in relation to daylight access within new development: "BS 8206-2 Code of practice for daylighting, recommends an ADF of 5% for a well daylit space and 2% for a partly daylit space. Below 2% the room will look dull and electric lighting is likely to be turned on. In housing BS 8206-2 also gives minimum value of ADF of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms."

Section 2.1.13 of the BRE Guide (2022) states that an initial approach would be to look at daylight access to the "ground (or lowest storey base)" of a proposed structure. This is because daylight to the lowest levels of accommodation will be the most obstructed. All ground floor rooms in Blocks 7 and 8 opposing proposed new structures were assessed (please see Figure 3.5). The results of ARC's analysis are set out in Table 3.2 below. These results assume that the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, the development envisaged under Cork City Council Reg. Ref. 22/40809 and the development now proposed has been constructed.

ARC's analysis indicates that:

- 14 of 14 (100%) of the sample rooms within the permitted Blocks 7 and 8 (as permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21) are likely to achieve the Average Daylight Factor recommendations set out in the second edition BRE Guide of 2011 (1% Average Daylight Factor for bedrooms, 1.5% Average Daylight Factor for living rooms; 2% Average Daylight Factor for kitchens.) Please note that a standard of 2% Average Daylight Factor was applied to mixed function rooms (e.g. 2% Average Daylight Factor for kitchen / living / dining rooms and for kitchen / dining rooms).
- 14 of 14 (100%) of the sample rooms within the permitted Blocks 7 and 8 (as permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21) are likely to achieve the Daylight Factor recommendations set out in the third edition BRE Guide of 2022 (0.7% daylight factor for bedrooms, 1.1% daylight factor for living rooms and 1.4% daylight factor for kitchens over 50% of the horizontal reference plane within the room). Please note that a standard of 1.4% Daylight Factor to be achieved over 50% of the horizontal reference plane of the room was applied to mixed function rooms (e.g. 1.4% Daylight Factor for kitchen / living / dining rooms and for kitchen / dining rooms).



Figure 3.5: Indicative diagram based on floor plan prepared by O'Mahony Pike Architects showing location of sample rooms (in yellow) analysed as part of this assessment of daylight access within the proposed development – annotated in yellow by ARC - Blocks 7 and 8 - Floor 00

Given this, ARC's assessment indicates that the construction of the proposed development is unlikely to result in any undue adverse impacts on the potential of the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21 to achieve an adequate standard of daylight within the meaning of the BRE Guide.

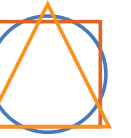


Table 3.3: Predicted daylight access to sample rooms within the permitted Blocks 7 and 8

Unit	Floor	Room Type	BR209 (2011, 2nd edition)		BS EN 17037 / BR209 (2022, 3rd edition)			
			Average Daylight Factor	Does the room achieve BR209 recommendations?	Proportion (%) of room achieving 0.7% daylight factor Target for bedrooms = 50%	Proportion (%) of room achieving 1.1% daylight factor Target for living rooms = 50%	Proportion (%) of room achieving 1.4% daylight factor Target for kitchens / KLDs = 50%	Does the room achieve BS EN 17037 recommendation?
B7 - Zone 01	Floor 00	Kitchen/Living/Dining	2.45%	Yes	Not Applicable	Not Applicable	64.90%	Yes
B7 - Zone 02	Floor 00	Bedroom	3.90%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B7 - Zone 03	Floor 00	Bedroom	3.88%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B7 - Zone 04	Floor 00	Bedroom	3.90%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B7 - Zone 05	Floor 00	Kitchen/Living/Dining	3.48%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B8 - Zone 01	Floor 00	Bedroom	3.07%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B8 - Zone 02	Floor 00	Bedroom	3.99%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B8 - Zone 03	Floor 00	Bedroom	4.50%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B8 - Zone 04	Floor 00	Kitchen/Living/Dining	2.45%	Yes	Not Applicable	Not Applicable	51.80%	Yes
B8 - Zone 05	Floor 00	Kitchen/Living/Dining	2.71%	Yes	Not Applicable	Not Applicable	77.50%	Yes
B8 - Zone 06	Floor 00	Bedroom	3.69%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B8 - Zone 07	Floor 00	Bedroom	3.96%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B8 - Zone 08	Floor 00	Bedroom	3.91%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B8 - Zone 09	Floor 00	Kitchen/Living/Dining	5.65%	Yes	Not Applicable	Not Applicable	100.00%	Yes

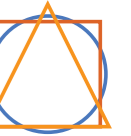


Figure 4.1: Location of open spaces within the proposed development assessed as part of this report

4.0 ASSESSMENT OF SUNLIGHT ACCESS WITHIN THE PROPOSED OPEN SPACES

Section 3 of the Building Research Establishment’s *Site layout planning for daylight and sunlight: a guide to good practice* (third edition, 2022) sets out design advice and recommendations for site layout planning to ensure good sunlight access suggests 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 sunlight at the equinox. Section 3.3.8 provides that “Locations that can and cannot receive two or more hours of sunlight on 21 March may be found using specialist software. The space is divided into a grid of points with a recommended spacing of 0.3 m or less, and the proportion of these points that can receive two hours of sunlight on March 21 is computed.” The results of ARC’s analysis are presented in Table 4.1 below, while Figures 4.2-4.8 illustrate the results of this analysis in graphic form.

Please note that, in determining whether or not to include existing and proposed substantial trees in the three dimensional model for the purposes of this quantitative analysis, ARC made reference to the BRE Guide (as updated in 2022), which states that the “question of whether trees or fences should be included in the calculation depends upon the type of shade they produce. Normally trees and shrubs need not be included, partly because their shapes are almost impossible to predict, and partly because the dappled shade of a tree is more pleasant than the deep shadow of a building (this applies especially to deciduous trees).” Given this, ARC did not show the shadows cast by any landscape planting in the assessment model.

As part of this analysis, ARC has carried out detailed quantitative analysis of seven open spaces (please see Figure 4.1) as follows:

- Public Open Space Areas (Three Spaces: the central public open space and the spaces at Blocks 12 and 15)
- Communal Open Space Areas (Four Spaces: spaces at Blocks 11, 13, 14 and 15).

Table 4.1: Open Space Areas – Proportion of space receiving two hours of sunlight on 21st March

Location of Open Space	Proportion of space (grid points) capable of receiving two hours of sunlight on 21st March	Does this achieve the BRE Guide recommendations for sunlight access?
Public Open Spaces		
Central Public Open Space (3,262sq m)	99.1%	Yes
Block 12 Public Open Space (667 sq m)	100.0%	Yes
Block 15 Public Open Space (421 sq m)	65.2%	Yes
Communal Open Spaces		
Block 11 Courtyard (705 sq m)	55.0%	Yes
Block 13 Open Space (281 sq m)	100.0%	Yes
Block 14 Courtyard (973 sq m)	61.6%	Yes
Block 15 Courtyard (1,511 sq m)	66.2%	Yes

As illustrated by Table 4.1 above, all proposed public and communal open spaces will receive an adequate amount of sunlight access over the course of the year within the meaning of the BRE Guide.

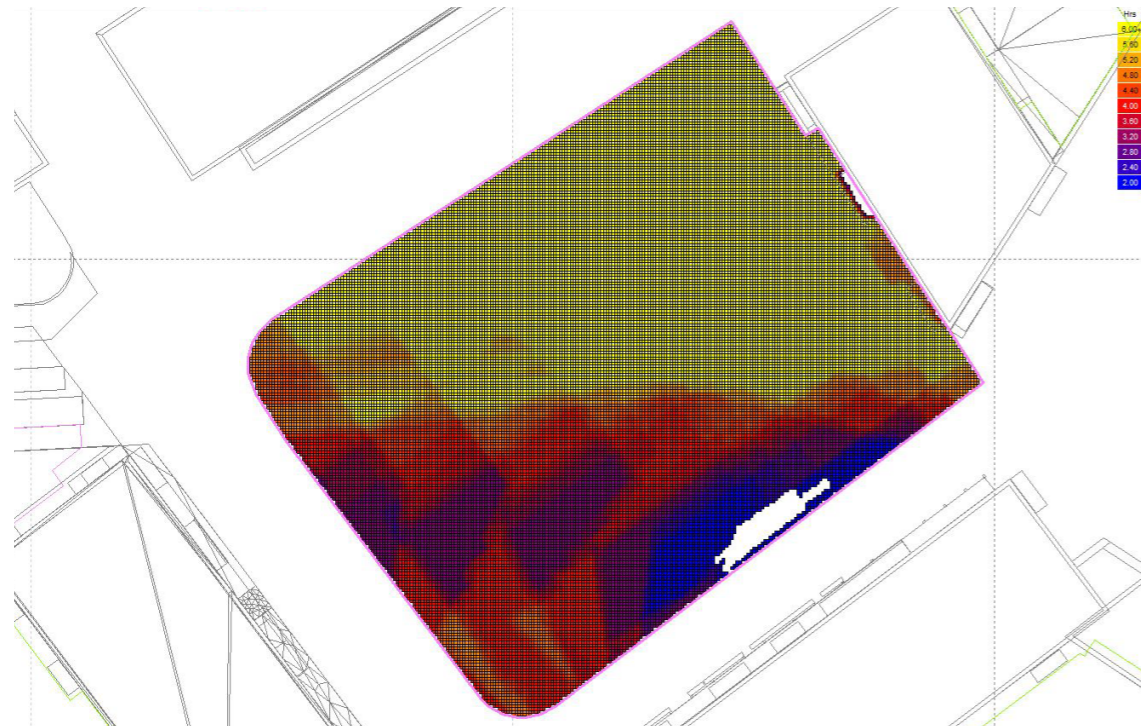
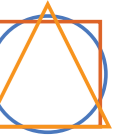


Figure 4.2: Results of sunlight analysis of the Central Public Open Space (3,262sq m) showing the duration of sunlight received at points in the space on 21st March. This space receives at least two hours of sunlight over 99.1% of its area.

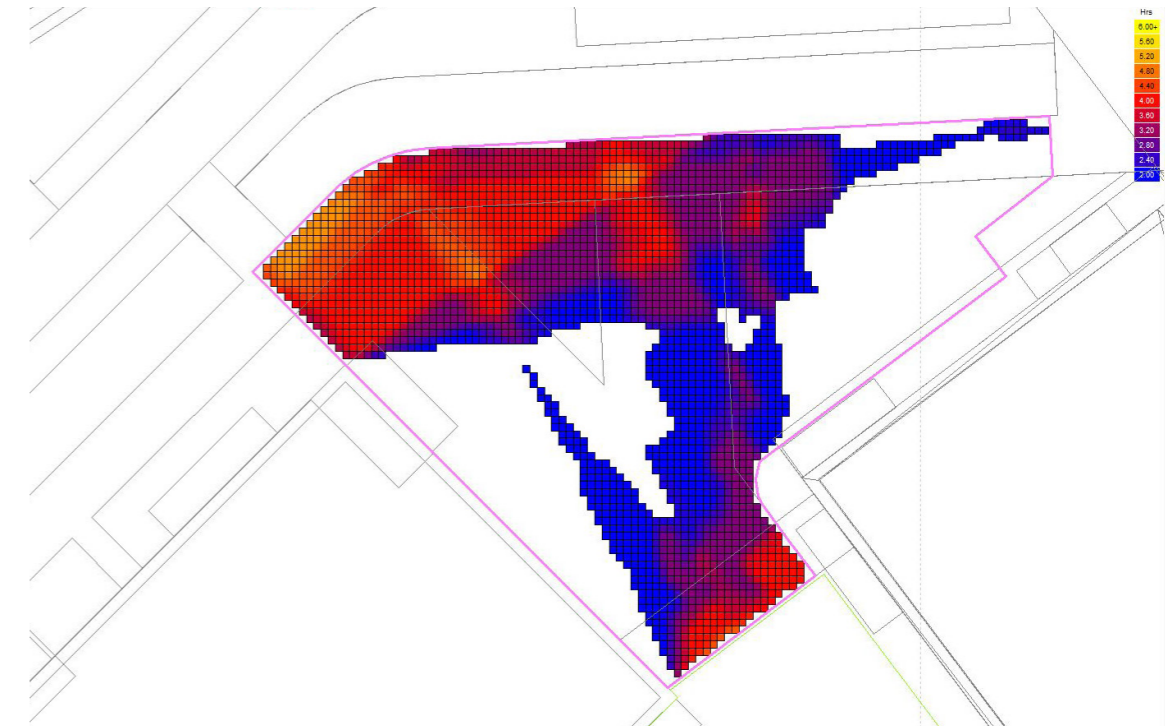


Figure 4.4: Results of sunlight analysis of the Block 15 Public Open Space (421 sq m) showing the duration of sunlight received at points in the space on 21st March. This space receives at least two hours of sunlight over 62.5% of its area.

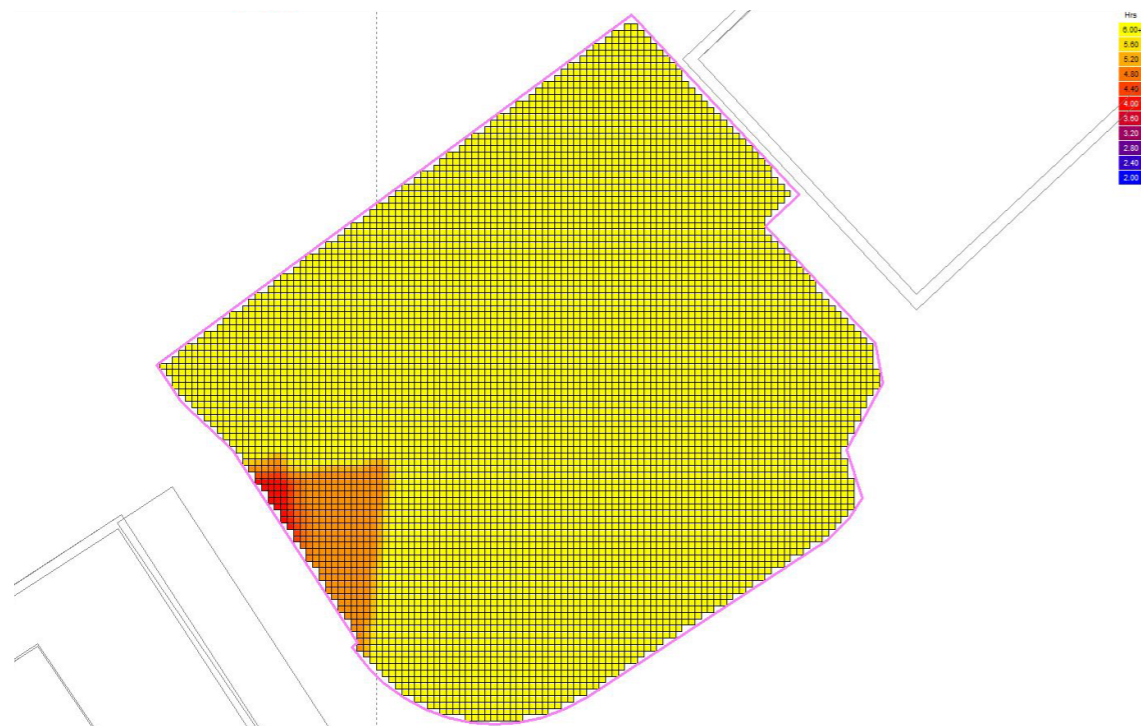


Figure 4.3: Results of sunlight analysis of the Block 12 Public Open Space (667 sq m) showing the duration of sunlight received at points in the space on 21st March. This space receives at least two hours of sunlight over 100.0% of its area.

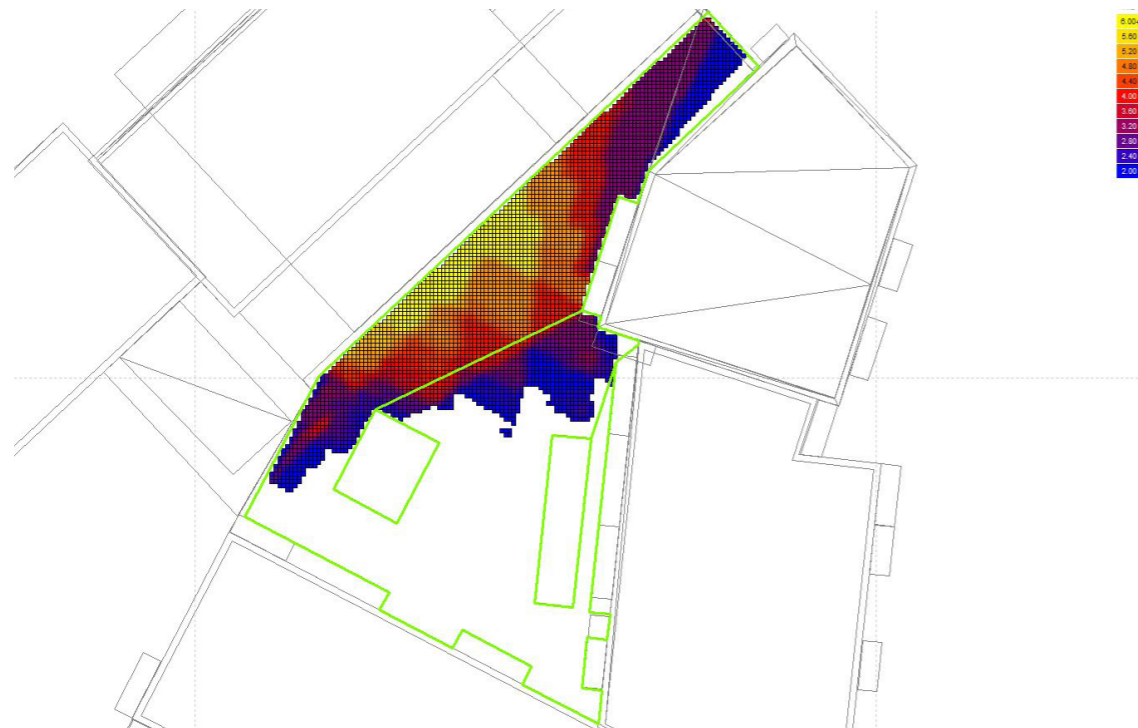
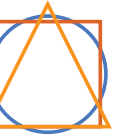


Figure 4.5: Results of sunlight analysis of the Block 11 Courtyard (705 sq m) showing the duration of sunlight received at points in the space on 21st March. This space receives at least two hours of sunlight over 55.0% of its area.

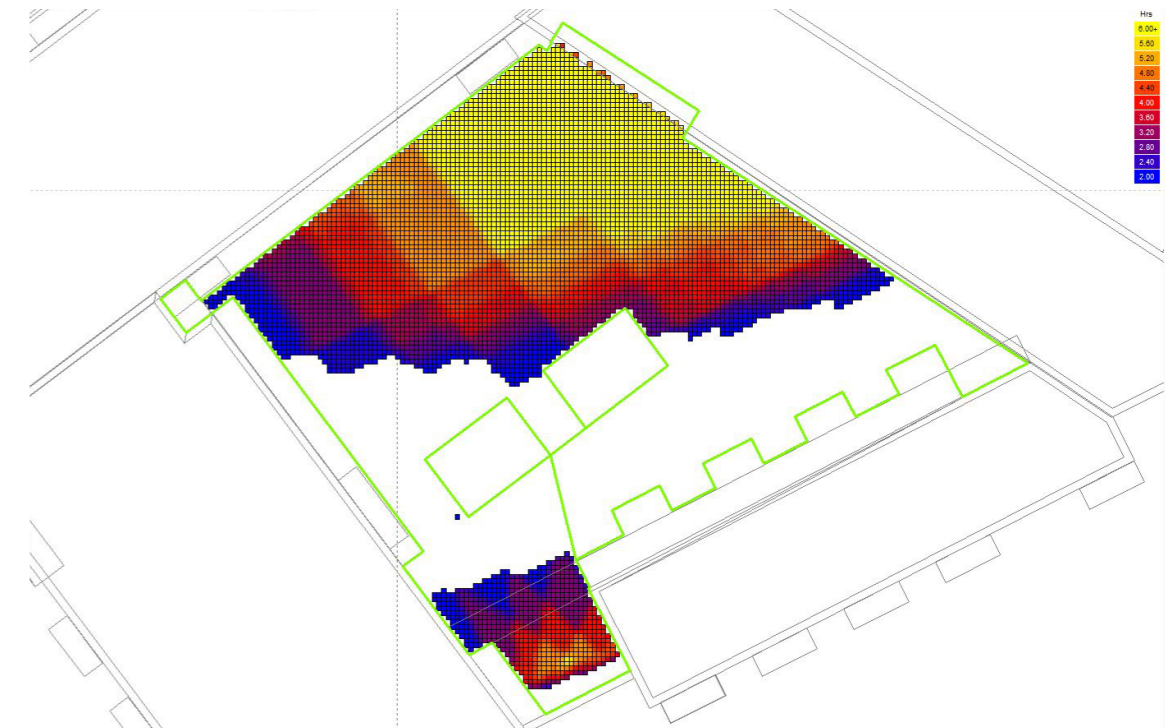


Figure 4.7: Results of sunlight analysis of the Block 14 Courtyard (973 sq m) showing the duration of sunlight received at points in the space on 21st March. This space receives at least two hours of sunlight over 61.6% of its area.

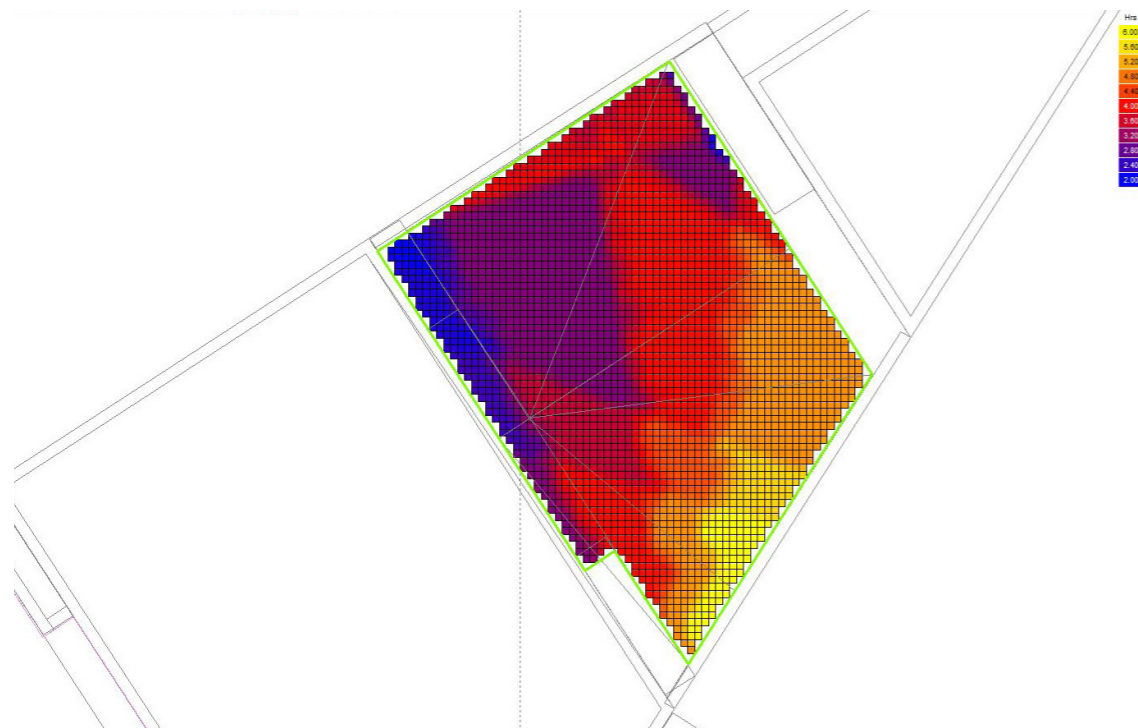


Figure 4.6: Results of sunlight analysis of the Block 13 Open Space (281 sq m) showing the duration of sunlight received at points in the space on 21st March. This space receives at least two hours of sunlight over 100.0% of its area.

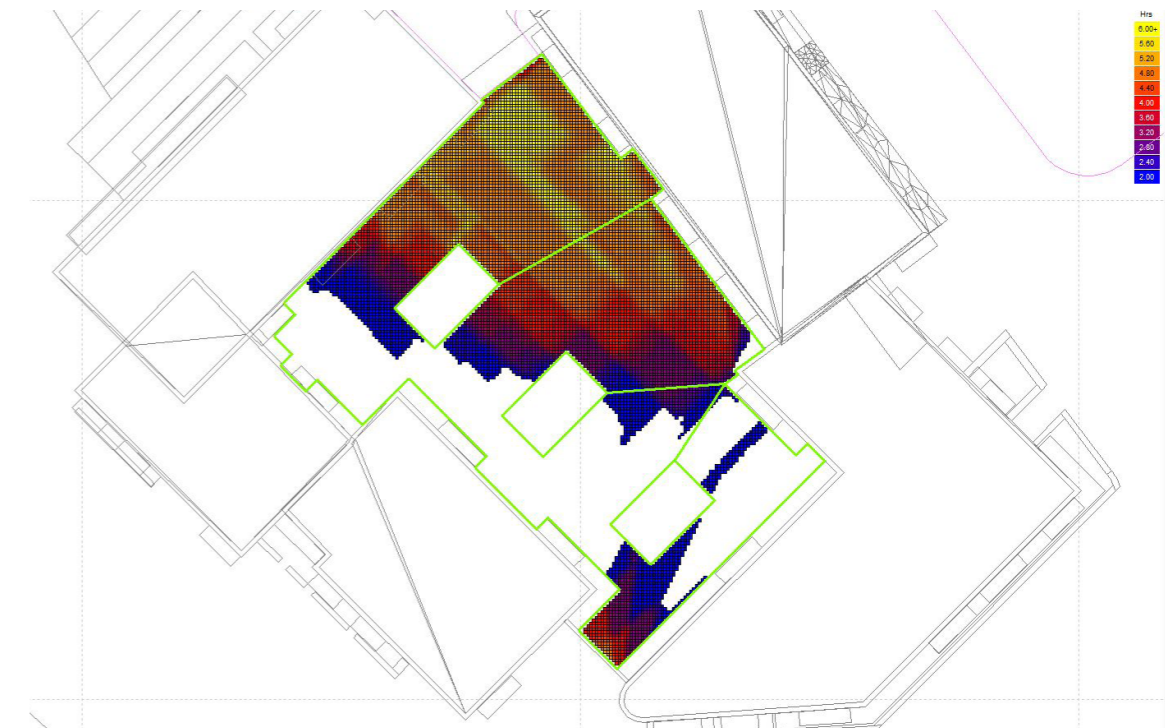
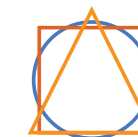


Figure 4.8: Results of sunlight analysis of the Block 15 Courtyard (1,511 sq m) showing the duration of sunlight received at points in the space on 21st March. This space receives at least two hours of sunlight over 66.2% of its area.



5.0 ASSESSMENT OF DAYLIGHT ACCESS WITHIN THE PROPOSED DEVELOPMENT

5.1 Introduction

The *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities* provide that “planning authorities should have regard to quantitative performance approaches to daylight provision outlined in guides like the BRE guide ‘Site Layout Planning for Daylight and Sunlight’ (2nd edition) or BS 8206-2: 2008 – ‘Lighting for Buildings – Part 2: Code of Practice for Daylighting’ when undertaken by development proposers which offer the capability to satisfy minimum standards of daylight provision.”

Section 3.2 of the *Urban Development and Building Height Guidelines* states: “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’. Where a proposal may not be able to fully meet all the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, in respect of which the planning authority or An Bord Pleanála should apply their discretion, having regard to local factors including specific site constraints and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution.”

The BS 8206-2: 2008 – ‘Lighting for Buildings – Part 2: Code of Practice for Daylighting’ was withdrawn in May 2019 and was replaced with EN 17037: *Daylight in Buildings* in May 2019. In June 2022, the second edition of the Building Research Establishment’s *Site Layout Planning for Daylight and Sunlight* (2011) and was replaced with a third edition, which references BS EN 17037. In Ireland, IS EN 17037: *Daylight in Buildings* was published by the National Standards Authority of Ireland (NSAI) on 28th January 2019. These documents set out different methodologies for assessment of daylight access within buildings, as well as different minimum standards. This has resulted in uncertainty as to which standard should be applied in assessments of daylight access within new developments submitted with planning applications.

The issue of what is meant by “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’” is considered at length by Humphreys J in the judgment of the High Court in *Atlantic Diamond Limited v. An Bord Pleanála & EWR Innovation Park Limited* [2021] IEHC 322. He states: “taking the provisions together, it is clear that the board is not at large in terms of what guidelines it has to have regard to. In my view, despite the fact that for reasons that will become apparent this is probably obiter, the reference to guidelines like the two identified certainly includes **having regard to both of the two guides identified, as well as any similar and broadly compatible guides (for example an updated version of one or other of those documents)**. The concept of documents “such as” the identified guidelines inherently involves something similar and broadly compatible, and you can’t judge that unless you have had regard to the documents to which the new document is meant to be similar.” [Emphasis added.]

Given this and having regard to the wording of the relevant Section 28 guidelines, this assessment of daylight access within the proposed development has regard to the standards for daylight access in buildings (and the methodologies for assessment of same) following documents:

- The Building Research Establishment’s ‘Site Layout Planning for Daylight and Sunlight’ (2nd edition, 2011) and BS 8206-2: 2008 – ‘Lighting for Buildings – Part 2: Code of Practice for Daylighting’. While both of these documents have been withdrawn, the comments of Humphreys J above would suggest that the relevant planning authority or An Bord Pleanála should have regard to both of these documents as these are the documents referenced in relevant Section 28 guidelines, such as the *Urban Development and Building Height Guidelines*. It is notable in this regard that BS 8206-2: 2008 had already been withdrawn when the judgment in the *Atlantic Diamond* case issued.
- The Building Research Establishment’s ‘Site Layout Planning for Daylight and Sunlight’ (3rd edition, 2022) and BS EN 17037: *Daylight in Buildings*. The comments of Humphreys J above would suggest that the relevant planning authority or An Bord Pleanála should also have regard to “any similar and broadly compatible guides (for example an updated version of one or other of those documents)”.

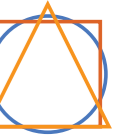
While in place at the time, IS EN 17037: 2018: *Daylight in Buildings* was not referenced or referred to as a relevant standard in *Atlantic Diamond Limited v. An Bord Pleanála & EWR Innovation Park Limited* [2021] IEHC 322. Notwithstanding this, in order to ensure that appropriate and reasonable regard is had to all guides and standards, ARC has carried out an assessment of daylight access within the proposed development under IS EN 17037 – the results of this assessment as presented in Appendix A.

5.2 Detailed Analysis of Daylight Access to Proposed Units – Selection of Representative Sample

As part of this assessment, ARC undertook an assessment of the likely daylight access within the proposed residential units. The BRE Guide does not dictate how its recommendations in relation to daylight access should be applied to large multi-unit schemes. Specifically, the BRE Guide does not suggest what proportion of rooms within a multi-unit scheme should be analysed to ensure good daylight performance within such a scheme as a whole, although it is noted that Paragraph C31 states that “It may not be necessary to analyse every room in a proposed development”.

The following approach was used in choosing the sample for assessment:

- Section 2.1.13 of the BRE Guide states that an initial approach would be to look at daylight access to the “ground (or lowest storey base)” of a proposed structure. This is because daylight to the lowest levels of accommodation will be the most obstructed. Given this, the sample includes rooms on the lowest floor of accommodation in each block.
- ARC also analysed a sample of rooms on relevant floors above the lowest floors in each block. On these floors, care was taken to ensure that the sample of rooms is representative of the development (e.g. it was ensured that rooms on all sides of the development were analysed).
- Rooms likely to receive lower levels of daylight due to their location within the scheme (e.g. in close proximity to opposing buildings; in close proximity to obstructions, such as corners; etc) were included in the sample.
- Rooms likely to receive lower levels of daylight due to their design (e.g. deep rooms; rooms served by one principal window wall) were included in the sample.
- Where there was a reasonable expectation that rooms would perform well in terms of daylight access, these rooms were omitted from the sample (e.g. dual aspect rooms, particularly those with large windows).
- Where examples of specific unit types had already been included in the sample, others of that unit type may have been omitted from the sample.
- While this analysis focused on daylight access to kitchen / living / dining rooms, a number of bedrooms were also analysed.



As set out in more detail at Section 5.4 below, ARC's analysis indicates that the proposal will achieve a high level of compliance with the recommendations for daylight access set out in both the second and third editions of the BRE Guide, *Site Layout Planning for Daylight and Sunlight*. In the small number of instances where a room was found to achieve a level of daylight below the recommendations set out in the BRE Guide, the corresponding room of that type on the floor above was also analysed to determine whether lower daylight levels were due to the location of the room on a lower floor or due to the design of the relevant unit type. This approach provides the basis for the estimate of total units within the proposed development achieving the recommendations of the BRE Guide set out in Section 5.4 below.

The locations of the sample study rooms analysed as part of this analysis of daylight access within residences within the proposed development are illustrated at Figures 5.1-5.10 below. The results of ARC's analysis are set out at Tables 5.1-5.4 below.

For more detail on the methodology used in assessing daylight access, please refer to the Technical Appendix of this Report.

5.3 Relevant Standards for Daylight Access

5.3.1 Assessment of Daylight Access under BR209 (2nd ed, 2011) and BS 8206-2:2008

The BRE Guide (2nd ed, 2011) (withdrawn June 2022) states as follows (at paragraph 2.1.8) in relation to daylight access within new development:

"2.1.8 Daylight provision in new rooms may be checked using the average daylight factor (ADF). The ADF is a measure of the overall amount of daylight in a space... BS 8206-2 Code of practice for daylighting, recommends an ADF of 5% for a well daylight space and 2% for a partly daylight space. Below 2% the room will look dull and electric lighting is likely to be turned on. In housing BS 8206-2 also gives minimum value of ADF of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms."

While not expressly discussed in the BRE Guide (2011), Section 5.6 of the BS 8206-2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting' (withdrawn in May 2019) states as follows in relation to multi-function rooms: "Where one room serves more than one purpose, the minimum average daylight factor should be that for the room type with the highest value. For example, in a space which combines a living room and a kitchen the minimum average daylight factor should be 2%." Given this, this assessment applies a standard of 2% Average Daylight Factor for mixed function rooms (e.g. 2% Average Daylight Factor for kitchen / living / dining rooms and for kitchen / dining rooms).

5.3.2 Assessment of Daylight Access under BR209 (3rd ed, 2022) and BS EN 17037

The National Annex attached to the BS EN 17037: Daylight in Buildings states as follows:

"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... may not be achievable for some buildings, particularly dwellings."

The BS EN 17037 goes on to recommend that at least 50% of a horizontal reference plane (at 0.85 m) achieve the following target illuminances for each room type: 100 lux for bedrooms, 150 lux for living rooms and 200 lux for kitchens (Method 2). Recommended daylight factor (Method 1) standards vary depending on the latitude of the studied location. As Cork City is located at a latitude of 51.89°N, the recommendations of BS EN 17037 and the third edition BRE Guide for London (51.15°N) were considered to represent a conservative approach and have been applied as part of this report. Specifically, this assessment applies the following minimum standards (to be achieved over 50% of the horizontal reference plane) recommendation to achieve 0.7% daylight factor for bedrooms, 1.1% daylight factor for living rooms and 1.4% daylight factor for kitchens.

These recommendations are also set out in the third edition of the BRE Guide (2022). Paragraph C17 provides that "Where a room has a shared use, the highest target should apply." Given this, the recommended minimum of 1.4% daylight factor for kitchens

is applied to all kitchen / living / dining rooms and kitchen / dining rooms.

ARC analysed each habitable room within the proposed development with reference to these criteria and the results are set out in Tables 5.1-5.4 below. Please note that, in relation to the assessment under BS EN 17037, the results of analysis are provided only in relation to the relevant room type. For example, for a bedroom, the proportion of the room achieving 0.7% daylight factor across the working plane is provided and the table cells related to the proportion of the room achieving 1.1% daylight factors (i.e. the recommendation for living rooms) and 1.4% daylight factor (i.e. the recommendation for kitchens) are marked as "Not Applicable" as this is not applicable to the assessment.

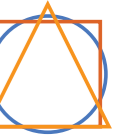


Figure 5.1: Indicative diagram based on floor plan prepared by O'Mahony Pike Architects showing location of sample rooms (in yellow) analysed as part of this assessment of daylight access within the proposed development – annotated in yellow by ARC - Block 11 - Floor G1



Figure 5.3: Indicative diagram based on floor plan prepared by O'Mahony Pike Architects showing location of sample rooms (in yellow) analysed as part of this assessment of daylight access within the proposed development – annotated in yellow by ARC - Block 11 - Floor 01



Figure 5.2: Indicative diagram based on floor plan prepared by O'Mahony Pike Architects showing location of sample rooms (in yellow) analysed as part of this assessment of daylight access within the proposed development – annotated in yellow by ARC - Block 11 - Floor G2

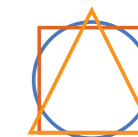


Table 5.1: Predicted daylight access to sample rooms* within the proposed development - Block 11

Unit	Floor	Room Type	BS 8206: 2 / BR209 (BRE Guide, 2nd ed, 2011)		BS EN 17037 / BR209 (BRE Guide, 3rd ed, 2022)			
			Average Daylight Factor	Does the room achieve BR209 (2nd ed, 2011) recommendations?	Proportion (%) of room achieving 0.7% daylight factor Target for bedrooms = 50%	Proportion (%) of room achieving 1.1% daylight factor Target for living rooms= 50%	Proportion (%) of room achieving 1.4% daylight factor Target for kitchens / KLDs = 50%	Does the room achieve BR209 (3rd ed, 2022) recommendations?
B11 - Zone 01	Floor G1	Kitchen/Living/Dining	2.71%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B11 - Zone 02	Floor G1	Bedroom	2.52%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B11 - Zone 03	Floor G1	Bedroom	1.60%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B11 - Zone 04	Floor G1	Kitchen/Living/Dining	2.15%	Yes	Not Applicable	Not Applicable	63.30%	Yes
B11 - Zone 05	Floor G1	Kitchen/Living/Dining	2.19%	Yes	Not Applicable	Not Applicable	60.90%	Yes
B11 - Zone 06	Floor G1	Bedroom	2.73%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B11 - Zone 07	Floor G1	Kitchen/Living/Dining	2.21%	Yes	Not Applicable	Not Applicable	58.30%	Yes
B11 - Zone 08	Floor G2	Kitchen/Living/Dining	2.69%	Yes	Not Applicable	Not Applicable	58.10%	Yes
B11 - Zone 09	Floor G2	Bedroom	3.00%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B11 - Zone 10	Floor G2	Kitchen/Living/Dining	2.51%	Yes	Not Applicable	Not Applicable	53.60%	Yes
B11 - Zone 11	Floor G2	Kitchen/Living/Dining	2.78%	Yes	Not Applicable	Not Applicable	76.80%	Yes
B11 - Zone 12	Floor G2	Kitchen/Living/Dining	2.06%	Yes	Not Applicable	Not Applicable	51.70%	Yes
B11 - Zone 13	Floor G2	Bedroom	2.67%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B11 - Zone 14	Floor G2	Kitchen/Living/Dining	2.09%	Yes	Not Applicable	Not Applicable	56.30%	Yes
B11 - Zone 15	Floor G2	Kitchen/Living/Dining	2.02%	Yes	Not Applicable	Not Applicable	51.20%	Yes
B11 - Zone 16	Floor G2	Kitchen/Living/Dining	2.04%	Yes	Not Applicable	Not Applicable	55.40%	Yes
B11 - Zone 17	Floor 01	Kitchen/Living/Dining	2.95%	Yes	Not Applicable	Not Applicable	64.40%	Yes
B11 - Zone 18	Floor 01	Kitchen/Living/Dining	3.63%	Yes	Not Applicable	Not Applicable	98.40%	Yes
B11 - Zone 19	Floor 01	Bedroom	2.91%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B11 - Zone 20	Floor 01	Kitchen/Living/Dining	2.56%	Yes	Not Applicable	Not Applicable	51.80%	Yes
B11 - Zone 21	Floor 01	Kitchen/Living/Dining	2.26%	Yes	Not Applicable	Not Applicable	56.70%	Yes
B11 - Zone 22	Floor 01	Bedroom	3.20%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B11 - Zone 23	Floor 01	Bedroom	2.09%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B11 - Zone 24	Floor 01	Kitchen/Living/Dining	2.12%	Yes	Not Applicable	Not Applicable	53.40%	Yes
B11 - Zone 25	Floor 01	Kitchen/Living/Dining	3.26%	Yes	Not Applicable	Not Applicable	86.90%	Yes
B11 - Zone 26	Floor 01	Kitchen/Living/Dining	2.12%	Yes	Not Applicable	Not Applicable	59.30%	Yes
B11 - Zone 27	Floor 01	Kitchen/Living/Dining	2.41%	Yes	Not Applicable	Not Applicable	64.80%	Yes
B11 - Zone 28	Floor 01	Kitchen/Living/Dining	2.15%	Yes	Not Applicable	Not Applicable	62.40%	Yes
B11 - Zone 29	Floor 01	Bedroom	1.65%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B11 - Zone 30	Floor 01	Bedroom	2.27%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B11 - Zone 31	Floor 01	Bedroom	2.06%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B11 - Zone 32	Floor 01	Kitchen/Living/Dining	4.02%	Yes	Not Applicable	Not Applicable	100.00%	Yes

ARC's analysis predicts that:

- 32 of the 32 sample rooms (100%) studied within the proposed Block 11 will achieve levels of daylight access at or above the minimum Average Daylight Factor recommended by the second edition BRE Guide of 2011 for kitchens or kitchen / living dining rooms (2% Average Daylight Factor), living rooms (i.e. 1.5% Average Daylight Factor) and for bedrooms (i.e. 1% Average Daylight Factor).
- 32 of the 32 sample rooms (100%) within the proposed Block 11 are likely to achieve the Daylight Factor recommendations set out in the third edition BRE Guide of 2022 (0.7% daylight factor for bedrooms, 1.1% daylight factor for living rooms and 1.4% daylight factor for kitchens or kitchen/living/dining rooms over 50% of the working plane within the room).

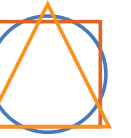


Figure 5.4: Indicative diagram based on floor plan prepared by O'Mahony Pike Architects showing location of sample rooms (in yellow) analysed as part of this assessment of daylight access within the proposed development – annotated in yellow by ARC - Block 13 - Floor G2 (left) and Floor 01 (right)

ARC's analysis predicts that:

- 7 of the 7 sample rooms (100%) studied within the proposed Block 13 will achieve levels of daylight access at or above the minimum Average Daylight Factor recommended by the second edition BRE Guide of 2011 for kitchens or kitchen / living dining rooms (2% Average Daylight Factor), living rooms (i.e. 1.5% Average Daylight Factor) and for bedrooms (i.e. 1% Average Daylight Factor).
- 7 of the 7 sample rooms (100%) within the proposed Block 13 are likely to achieve the Daylight Factor recommendations set out in the third edition BRE Guide of 2022 (0.7% daylight factor for bedrooms, 1.1% daylight factor for living rooms and 1.4% daylight factor for kitchens or kitchen/living/dining rooms over 50% of the working plane within the room).

Table 5.2: Predicted daylight access to sample rooms* within the proposed development - Block 13

Unit	Floor	Room Type	BS 8206: 2 / BR209 (BRE Guide, 2nd ed, 2011)		BS EN 17037 / BR209 (BRE Guide, 3rd ed, 2022)			Does the room achieve BR209 (3rd ed, 2022) recommendations?
			Average Daylight Factor	Does the room achieve BR209 (2nd ed, 2011) recommendations?	Proportion (%) of room achieving 0.7% daylight factor Target for bedrooms = 50%	Proportion (%) of room achieving 1.1% daylight factor Target for living rooms= 50%	Proportion (%) of room achieving 1.4% daylight factor Target for kitchens / KLDs = 50%	
B13 - Zone 01	Floor G2	Kitchen/Living/Dining	2.84%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B13 - Zone 02	Floor G2	Bedroom	4.17%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B13 - Zone 03	Floor G2	Kitchen/Living/Dining	2.59%	Yes	100.00%	Not Applicable	59.10%	Yes
B13 - Zone 04	Floor G2	Kitchen/Living/Dining	5.30%	Yes	100.00%	Not Applicable	100.00%	Yes
B13 - Zone 05	Floor G2	Kitchen/Living/Dining	3.83%	Yes	100.00%	Not Applicable	86.20%	Yes
B13 - Zone 06	Floor G2	Bedroom	4.68%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B13 - Zone 07	Floor 01	Kitchen/Living/Dining	3.57%	Yes	100.00%	Not Applicable	100.00%	Yes

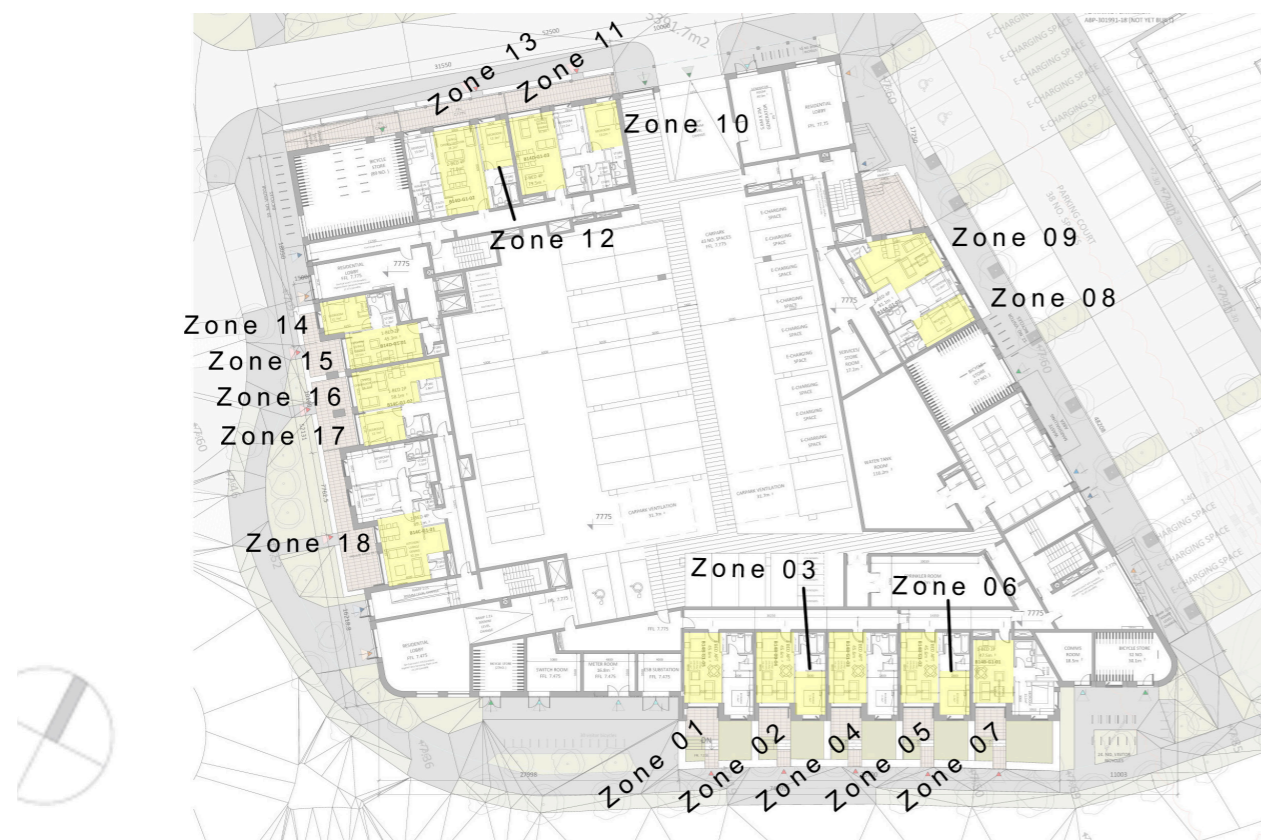
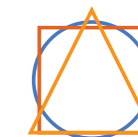


Figure 5.5: Indicative diagram based on floor plan prepared by O'Mahony Pike Architects showing location of sample rooms (in yellow) analysed as part of this assessment of daylight access within the proposed development – annotated in yellow by ARC - Block 14 - Floor G1



Figure 5.7: Indicative diagram based on floor plan prepared by O'Mahony Pike Architects showing location of sample rooms (in yellow) analysed as part of this assessment of daylight access within the proposed development – annotated in yellow by ARC - Block 14 - Floor 02



Figure 5.6: Indicative diagram based on floor plan prepared by O'Mahony Pike Architects showing location of sample rooms (in yellow) analysed as part of this assessment of daylight access within the proposed development – annotated in yellow by ARC - Block 14 - Floor 01

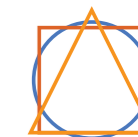


Table 5.3: Predicted daylight access to sample rooms* within the proposed development - Block 14

Unit	Floor	Room Type	BS 8206: 2 / BR209 (BRE Guide, 2nd ed, 2011)		BS EN 17037 / BR209 (BRE Guide, 3rd ed, 2022)			
			Average Daylight Factor	Does the room achieve BR209 (2nd ed, 2011) recommendations?	Proportion (%) of room achieving 0.7% daylight factor Target for bedrooms = 50%	Proportion (%) of room achieving 1.1% daylight factor Target for living rooms = 50%	Proportion (%) of room achieving 1.4% daylight factor Target for kitchens / KLDs = 50%	Does the room achieve BR209 (3rd ed, 2022) recommendations?
B14 - Zone 01	Floor G1	Kitchen/Living/Dining	4.02%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 02	Floor G1	Kitchen/Living/Dining	3.29%	Yes	Not Applicable	Not Applicable	99.00%	Yes
B14 - Zone 03	Floor G1	Bedroom	5.02%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B14 - Zone 04	Floor G1	Kitchen/Living/Dining	3.50%	Yes	Not Applicable	Not Applicable	98.40%	Yes
B14 - Zone 05	Floor G1	Kitchen/Living/Dining	3.30%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 06	Floor G1	Bedroom	4.99%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B14 - Zone 07	Floor G1	Kitchen/Living/Dining	3.85%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 08	Floor G1	Kitchen/Living/Dining	2.99%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 09	Floor G1	Bedroom	2.18%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B14 - Zone 10	Floor G1	Kitchen/Living/Dining	2.04%	Yes	Not Applicable	Not Applicable	50.40%	Yes
B14 - Zone 11	Floor G1	Bedroom	2.33%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B14 - Zone 12	Floor G1	Kitchen/Living/Dining	2.03%	Yes	Not Applicable	Not Applicable	50.00%	Yes
B14 - Zone 13	Floor G1	Bedroom	2.11%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B14 - Zone 14	Floor G1	Kitchen/Living/Dining	2.47%	Yes	Not Applicable	Not Applicable	75.20%	Yes
B14 - Zone 15	Floor G1	Bedroom	4.00%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B14 - Zone 16	Floor G1	Kitchen/Living/Dining	2.03%	Yes	Not Applicable	Not Applicable	66.40%	Yes
B14 - Zone 17	Floor G1	Bedroom	3.03%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B14 - Zone 18	Floor G1	Kitchen/Living/Dining	3.16%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 19	Floor 01	Kitchen/Living/Dining	5.36%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 20	Floor 01	Kitchen/Living/Dining	4.58%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 21	Floor 01	Kitchen/Living/Dining	3.83%	Yes	Not Applicable	Not Applicable	91.10%	Yes
B14 - Zone 22	Floor 01	Kitchen/Living/Dining	3.92%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 23	Floor 01	Kitchen/Living/Dining	3.62%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 24	Floor 01	Kitchen/Living/Dining	4.09%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 25	Floor 01	Kitchen/Living/Dining	3.09%	Yes	Not Applicable	Not Applicable	94.20%	Yes
B14 - Zone 26	Floor 01	Kitchen/Living/Dining	2.26%	Yes	Not Applicable	Not Applicable	63.30%	Yes
B14 - Zone 27	Floor 01	Kitchen/Living/Dining	4.13%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 28	Floor 01	Kitchen/Living/Dining	2.65%	Yes	Not Applicable	Not Applicable	62.50%	Yes
B14 - Zone 29	Floor 01	Kitchen/Living/Dining	2.93%	Yes	Not Applicable	Not Applicable	93.20%	Yes
B14 - Zone 30	Floor 01	Kitchen/Living/Dining	2.71%	Yes	Not Applicable	Not Applicable	63.90%	Yes
B14 - Zone 31	Floor 01	Kitchen/Living/Dining	2.14%	Yes	Not Applicable	Not Applicable	52.20%	Yes
B14 - Zone 32	Floor 01	Kitchen/Living/Dining	5.26%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B14 - Zone 33	Floor 02	Kitchen/Living/Dining	2.17%	Yes	Not Applicable	Not Applicable	56.00%	Yes
B14 - Zone 34	Floor 02	Kitchen/Living/Dining	3.12%	Yes	Not Applicable	Not Applicable	80.10%	Yes

ARC's analysis predicts that:

- 34 of the 34 sample rooms (100%) studied within the proposed Block 14 will achieve levels of daylight access at or above the minimum Average Daylight Factor recommended by the second edition BRE Guide of 2011 for kitchens or kitchen / living dining rooms (2% Average Daylight Factor), living rooms (i.e. 1.5% Average Daylight Factor) and for bedrooms (i.e. 1% Average Daylight Factor).
- 34 of the 34 sample rooms (100%) within the proposed Block 14 are likely to achieve the Daylight Factor recommendations set out in the third edition BRE Guide of 2022 (0.7% daylight factor for bedrooms, 1.1% daylight factor for living rooms and 1.4% daylight factor for kitchens or kitchen/living/dining rooms over 50% of the working plane within the room).

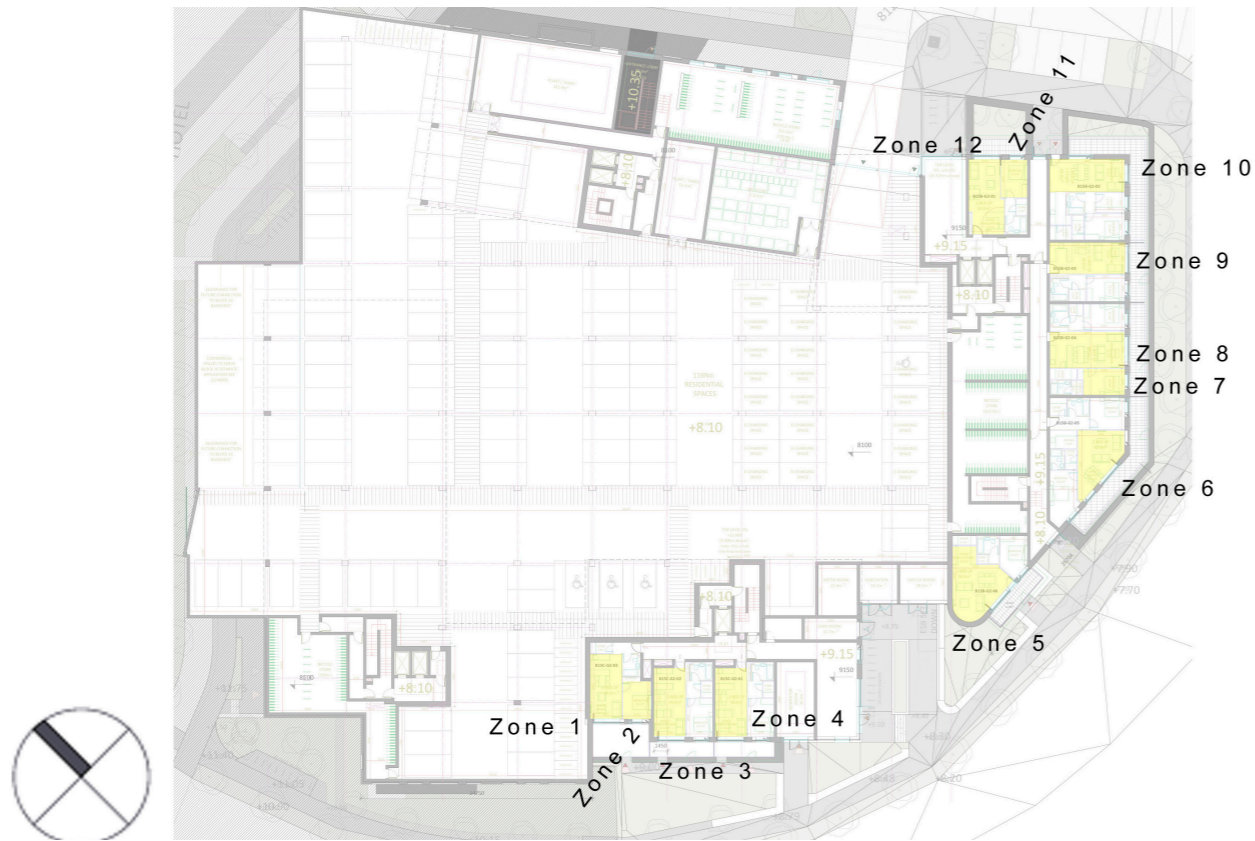
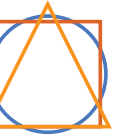


Figure 5.8: Indicative diagram based on floor plan prepared by O'Mahony Pike Architects showing location of sample rooms (in yellow) analysed as part of this assessment of daylight access within the proposed development – annotated in yellow by ARC - Block 15 - Floor G2



Figure 5.10: Indicative diagram based on floor plan prepared by O'Mahony Pike Architects showing location of sample rooms (in yellow) analysed as part of this assessment of daylight access within the proposed development – annotated in yellow by ARC - Block 15 - Floor 01

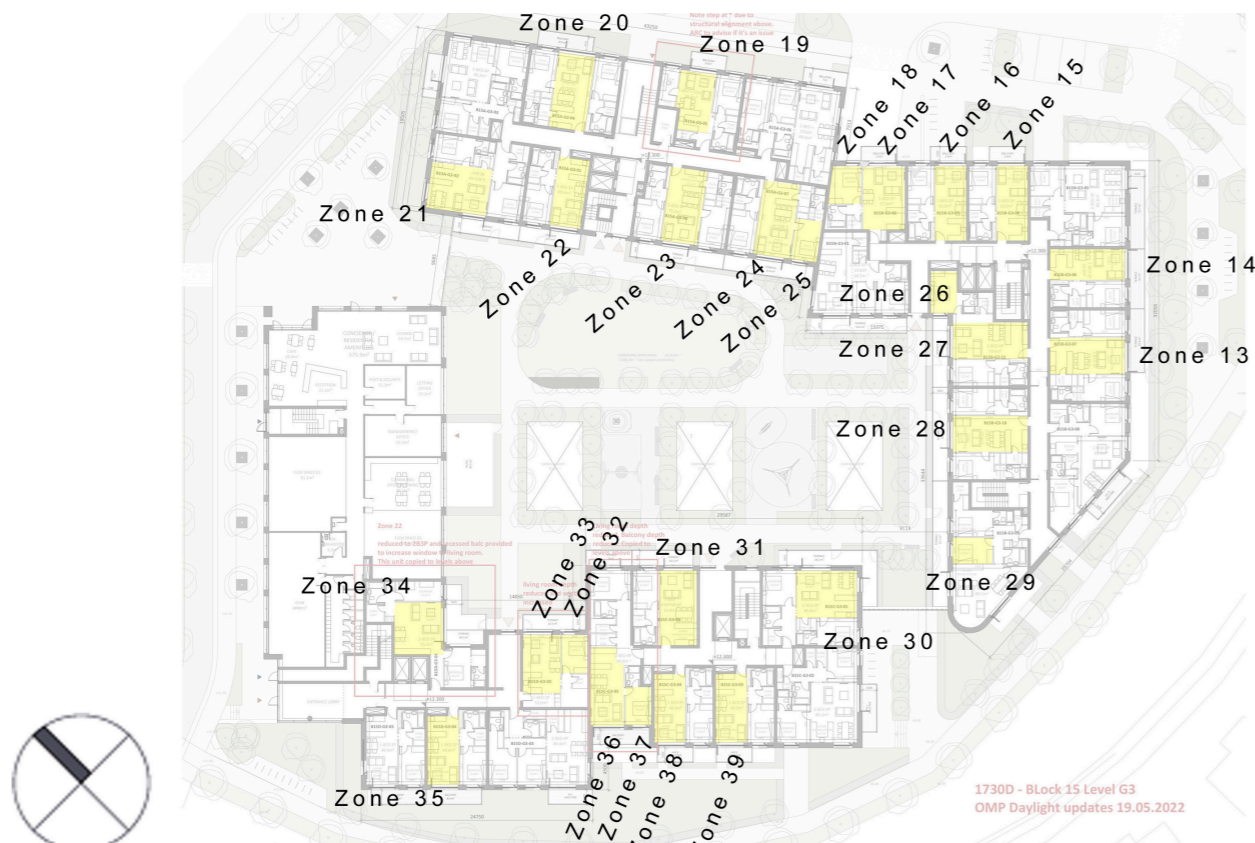


Figure 5.9: Indicative diagram based on floor plan prepared by O'Mahony Pike Architects showing location of sample rooms (in yellow) analysed as part of this assessment of daylight access within the proposed development – annotated in yellow by ARC - Block 15 - Floor G3

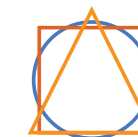
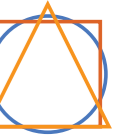


Table 5.4: Predicted daylight access to sample rooms* within the proposed development - Block 15

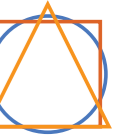
Unit	Floor	Room Type	BS 8206: 2 / BR209 (BRE Guide, 2nd ed, 2011)		BS EN 17037 / BR209 (BRE Guide, 3rd ed, 2022)			
			Average Daylight Factor	Does the room achieve BR209 (2nd ed, 2011) recommendations?	Proportion (%) of room achieving 0.7% daylight factor Target for bedrooms = 50%	Proportion (%) of room achieving 1.1% daylight factor Target for living rooms = 50%	Proportion (%) of room achieving 1.4% daylight factor Target for kitchens / KLDs = 50%	Does the room achieve BR209 (3rd ed, 2022) recommendations?
B15 - Zone 01	Floor G2	Kitchen/Living/Dining	2.17%	Yes	Not Applicable	Not Applicable	56.30%	Yes
B15 - Zone 02	Floor G2	Bedroom	2.55%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B15 - Zone 03	Floor G2	Kitchen/Living/Dining	4.51%	Yes	Not Applicable	Not Applicable	71.30%	Yes
B15 - Zone 04	Floor G2	Kitchen/Living/Dining	4.34%	Yes	Not Applicable	Not Applicable	83.20%	Yes
B15 - Zone 05	Floor G2	Kitchen/Living/Dining	4.61%	Yes	Not Applicable	Not Applicable	90.10%	Yes
B15 - Zone 06	Floor G2	Kitchen/Living/Dining	5.32%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B15 - Zone 07	Floor G2	Bedroom	4.71%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B15 - Zone 08	Floor G2	Kitchen/Living/Dining	2.11%	Yes	Not Applicable	Not Applicable	50.40%	Yes
B15 - Zone 09	Floor G2	Kitchen/Living/Dining	2.34%	Yes	Not Applicable	Not Applicable	54.10%	Yes
B15 - Zone 10	Floor G2	Kitchen/Living/Dining	3.74%	Yes	Not Applicable	Not Applicable	82.60%	Yes
B15 - Zone 11	Floor G2	Bedroom	3.11%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B15 - Zone 12	Floor G2	Kitchen/Living/Dining	2.65%	Yes	Not Applicable	Not Applicable	58.60%	Yes
B15 - Zone 13	Floor G3	Kitchen/Living/Dining	2.55%	Yes	Not Applicable	Not Applicable	59.40%	Yes
B15 - Zone 14	Floor G3	Kitchen/Living/Dining	2.54%	Yes	Not Applicable	Not Applicable	60.60%	Yes
B15 - Zone 15	Floor G3	Kitchen/Living/Dining	2.17%	Yes	Not Applicable	Not Applicable	46.20%	No
B15 - Zone 16	Floor G3	Kitchen/Living/Dining	2.16%	Yes	Not Applicable	Not Applicable	46.00%	No
B15 - Zone 17	Floor G3	Kitchen/Living/Dining	2.03%	Yes	Not Applicable	Not Applicable	49.70%	No
B15 - Zone 18	Floor G3	Bedroom	1.94%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B15 - Zone 19	Floor G3	Kitchen/Living/Dining	2.34%	Yes	Not Applicable	Not Applicable	70.70%	Yes
B15 - Zone 20	Floor G3	Kitchen/Living/Dining	2.01%	Yes	Not Applicable	Not Applicable	50.60%	Yes
B15 - Zone 21	Floor G3	Kitchen/Living/Dining	3.43%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B15 - Zone 22	Floor G3	Kitchen/Living/Dining	3.45%	Yes	Not Applicable	Not Applicable	61.60%	Yes
B15 - Zone 23	Floor G3	Kitchen/Living/Dining	2.98%	Yes	Not Applicable	Not Applicable	58.90%	Yes
B15 - Zone 24	Floor G3	Kitchen/Living/Dining	2.87%	Yes	Not Applicable	Not Applicable	58.20%	Yes
B15 - Zone 25	Floor G3	Bedroom	2.63%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B15 - Zone 26	Floor G3	Bedroom	2.55%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B15 - Zone 27	Floor G3	Kitchen/Living/Dining	2.29%	Yes	Not Applicable	Not Applicable	46.50%	No
B15 - Zone 28	Floor G3	Kitchen/Living/Dining	2.42%	Yes	Not Applicable	Not Applicable	44.20%	No
B15 - Zone 29	Floor G3	Bedroom	2.12%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B15 - Zone 30	Floor G3	Kitchen/Living/Dining	3.37%	Yes	Not Applicable	Not Applicable	100.00%	Yes
B15 - Zone 31	Floor G3	Kitchen/Living/Dining	2.16%	Yes	Not Applicable	Not Applicable	51.00%	Yes
B15 - Zone 32	Floor G3	Bedroom	1.80%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B15 - Zone 33	Floor G3	Kitchen/Living/Dining	2.39%	Yes	Not Applicable	Not Applicable	40.40%	No
B15 - Zone 34	Floor G3	Kitchen/Living/Dining	2.28%	Yes	Not Applicable	Not Applicable	71.90%	Yes
B15 - Zone 35	Floor G3	Kitchen/Living/Dining	4.66%	Yes	Not Applicable	Not Applicable	76.80%	Yes
B15 - Zone 36	Floor G3	Kitchen/Living/Dining	2.57%	Yes	Not Applicable	Not Applicable	65.00%	Yes
B15 - Zone 37	Floor G3	Bedroom	2.30%	Yes	100.00%	Not Applicable	Not Applicable	Yes
B15 - Zone 38	Floor G3	Kitchen/Living/Dining	4.21%	Yes	Not Applicable	Not Applicable	71.60%	Yes
B15 - Zone 39	Floor G3	Kitchen/Living/Dining	4.32%	Yes	Not Applicable	Not Applicable	74.50%	Yes
B15 - Zone 40	Floor 01	Kitchen/Living/Dining	2.74%	Yes	Not Applicable	Not Applicable	63.40%	Yes
B15 - Zone 41	Floor 01	Kitchen/Living/Dining	2.47%	Yes	Not Applicable	Not Applicable	51.00%	Yes
B15 - Zone 42	Floor 01	Kitchen/Living/Dining	2.68%	Yes	Not Applicable	Not Applicable	56.50%	Yes



Unit	Floor	Room Type	BS 8206: 2 / BR209 (BRE Guide, 2nd ed, 2011)		BS EN 17037 / BR209 (BRE Guide, 3rd ed, 2022)			
			Average Daylight Factor	Does the room achieve BR209 (2nd ed, 2011) recommendations?	Proportion (%) of room achieving 0.7% daylight factor Target for bedrooms = 50%	Proportion (%) of room achieving 1.1% daylight factor Target for living rooms = 50%	Proportion (%) of room achieving 1.4% daylight factor Target for kitchens / KLDs = 50%	Does the room achieve BR209 (3rd ed, 2022) recommendations?
B15 - Zone 43	Floor 01	Kitchen/Living/Dining	2.27%	Yes	Not Applicable	Not Applicable	54.40%	Yes
B15 - Zone 44	Floor 01	Kitchen/Living/Dining	2.88%	Yes	Not Applicable	Not Applicable	62.90%	Yes
B15 - Zone 45	Floor 01	Kitchen/Living/Dining	3.05%	Yes	Not Applicable	Not Applicable	57.10%	Yes
B15 - Zone 46	Floor 01	Kitchen/Living/Dining	2.64%	Yes	Not Applicable	Not Applicable	91.30%	Yes
B15 - Zone 47	Floor 01	Kitchen/Living/Dining	2.39%	Yes	Not Applicable	Not Applicable	56.10%	Yes

ARC's analysis predicts that:

- 47 of the 47 sample rooms (100%) studied within the proposed Block 15 will achieve levels of daylight access at or above the minimum Average Daylight Factor recommended by the second edition BRE Guide of 2011 for kitchens or kitchen / living dining rooms (2% Average Daylight Factor), living rooms (i.e. 1.5% Average Daylight Factor) and for bedrooms (i.e. 1% Average Daylight Factor).
- 41 of the 47 sample rooms (87%) within the proposed Block 15 are likely to achieve the Daylight Factor recommendations set out in the third edition BRE Guide of 2022 (0.7% daylight factor for bedrooms, 1.1% daylight factor for living rooms and 1.4% daylight factor for kitchens or kitchen/living/dining rooms over 50% of the working plane within the room).



5.4 Results of Assessment of Daylight Access within the Proposed Development

The results of ARC's analysis of likely daylight access within the proposed development are set out in Tables 5.1-5.4 below. ARC's analysis predicts that:

- 120 of the 120 sample rooms (100%) studied within the proposed development will achieve levels of daylight access at or above the minimum Average Daylight Factor recommended by the second edition BRE Guide of 2011 for kitchens or kitchen / living / dining rooms (2% Average Daylight Factor), living rooms (i.e. 1.5% Average Daylight Factor) and for bedrooms (i.e. 1% Average Daylight Factor). Please note that a standard of 2% Average Daylight Factor was applied to mixed function rooms (e.g. 2% Average Daylight Factor for kitchen / living / dining rooms and for kitchen / dining rooms).

The results of ARC's analysis suggest that 100% of the 489 no. units proposed as part of this development are likely to achieve the recommendations of the second edition (2011) of the BRE Guide with regard to Average Daylight Factor.

- 114 of the 120 sample rooms (95%) within the proposed development are likely to achieve the Daylight Factor recommendations set out in the third edition BRE Guide of 2022 (0.7% daylight factor for bedrooms, 1.1% daylight factor for living rooms and 1.4% daylight factor for kitchens or kitchen/living/dining rooms over 50% of the working plane within the room). Please note that a standard of 1.4% Daylight Factor to be achieved over 50% of the horizontal reference plane of the room was applied to mixed function rooms (e.g. 1.4% Daylight Factor for kitchen / living / dining rooms and for kitchen / dining rooms).

As described in Section 5.2 above, where ARC's analysis identified rooms that were not likely to achieve the recommendations of the third edition BRE Guide of 2022, the corresponding rooms on the floor above (and, if necessary, the floor above that, etc) were analysed to identify whether lower daylight levels were due to the location of the room on a lower floor or due to the design of the relevant unit type. This analysis indicated that only 6 no. rooms on Floor G3 of Block 15 were unlikely to achieve the minimum daylight standards recommended by the third edition BRE Guide of 2022, but that this issue was unlikely to occur in corresponding units on the floor above. Analysis of other blocks indicated that all rooms were likely to achieve the recommended minimum standards. The results of ARC's analysis suggest that 99% of the 489 no. units proposed as part of this development are likely to achieve the recommendations of the third edition (2022) of the BRE Guide with regard to Daylight Factor (Method 1).

5.5 Compensatory Design Solutions

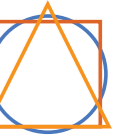
Section 3.2 of the *Urban Development and Building Height Guidelines* states: "Appropriate and reasonable regard should be taken of quantitative performance approaches to daylight provision outlined in guides like the Building Research Establishment's 'Site Layout Planning for Daylight and Sunlight' (2nd edition) or BS 8206-2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting'. Where a proposal may not be able to fully meet all the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, in respect of which the planning authority or An Bord Pleanála should apply their discretion, having regard to local factors including specific site constraints and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution."

Please refer to the *Planning Report* (prepared by HW Planning) and the *Jacob's Island Strategic Housing Development Sunlight & Daylight Commentary* (prepared by O'Mahony Pike Architects) for more detail on compensatory design solutions related to daylight access.

Amy Hastings BCL BL MSc (Spatial Planning) MIPI

ARC Consultants

June 2022



APPENDIX A: DAYLIGHT ACCESS ANALYSIS UNDER IS EN 17037: DAYLIGHT IN BUILDINGS

1.0 Introduction

As described in more detail in Section 5.0 above, a number of Section 28 guidelines (including the *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities* and the *Urban Development and Building Height Guidelines*) suggest that planning authorities should have regard to quantitative performance approaches to daylight provision outlined in “guides like the BRE guide ‘Site Layout Planning for Daylight and Sunlight’ (2nd edition) or BS 8206-2: 2008 – ‘Lighting for Buildings – Part 2: Code of Practice for Daylighting’” when considering daylight access within new development.

The BS 8206-2: 2008 – ‘Lighting for Buildings – Part 2: Code of Practice for Daylighting’ was withdrawn in May 2019, while BS EN 17037: Daylight in Buildings was adopted in the United Kingdom in May 2019. In Ireland, IS EN 17037: Daylight in Buildings was published by the National Standards Authority of Ireland on 28th January 2019. The standards for daylight access in the BRE Guide are different from those set out in IS EN 17037: 2018. Given this and given that relevant Section 28 guidelines do not refer to the IS EN 17037: 2018, the status of the IS EN 17037: 2018 under the planning process is unclear. However, in the interests of completeness, in addition to the principal assessment under the BRE Guide (section 5.0 above), this report also assesses daylight access within habitable rooms with reference to IS EN 17037.

The locations of the sample study rooms analysed as part of this analysis of daylight access within residences within the proposed development are illustrated at Figures 5.1-5.10 above. For more detail on the methodology used in assessing daylight access, please refer to the Technical Appendix of this Report.

2.0 Results of Assessment of Daylight Access within the Proposed Development - Daylight Factor (IS EN 17037 / BS EN 17037)

IS EN 17037: Daylight in Buildings states as follows:

“The daylight in an interior space depends, primarily, on the availability of natural light and, thereafter, the properties of the space and its surroundings. The standard proposes two methods to assess daylight provision in the interior: a calculation method based on daylight factor and cumulative daylight availability (method 1); or a calculation method based on the direct prediction of illuminance levels using hourly climate data (method 2).”

Both methods apply the annual occurrence of an absolute value for internal illuminance calculated from the availability of external horizontal illuminance as determined from climate data suitable for the site of evaluation.

Calculation method 1 using daylight factors on a reference plane should achieve a target daylight factor (D_T) and/or a minimum target daylight factor (D_{TM}) across a fraction of the reference plane for at least half of the daylight hours, where D_T and D_{TM} are based on the provision of recommended target illuminance values, (E_T) and minimum target illuminance (E_{TM}), both in lx.”

Under a minimum scenario, IS EN 17037: Daylight in Buildings recommends a target illuminance of 300 lux across 50% of a reference plane (a horizontal plane 0.85 m above the ground within a studied room) and a minimum target illuminance of 100 lux across 95% of that reference plane (Table A.1 for vertical windows). Applying Method 1, this corresponds to a recommendation to achieve 2.0% daylight factor across 50% of the reference plane and 0.7% daylight factor across 95% of the reference plane (see Table A.3 for Ireland, Dublin). The IS EN 17037 does not identify daylighting targets for specific room types within residential development.

3.0 Results of Assessment of Daylight Access within the Proposed Development - Daylight Factor (IS EN 17037)

ARC analysed each habitable room within the proposed development with reference to these criteria and the results are set out in Table A below. Where rooms achieve the relevant criteria, it is highlighted in green. Please note that, in relation to the assessment under BS EN 17037, the results of analysis are provided only in relation to the relevant room type (e.g. for a bedroom, the proportion of the room achieving 0.7% daylight factor across the working plane is provided and the table cell related to the

proportion of the room achieving 1.4% daylight factor (i.e. the standard for kitchens) is marked as “Not Applicable” as this is not applicable to the assessment).

ARC’s analysis of daylight access within the proposed development using Method 1 outlined in IS EN 17037: Daylight in Buildings and BS EN 17037: Daylight in Buildings (National Annex) indicates that 47 of 120 (39%) of sample rooms subject to detailed daylight access analysis are likely to achieve the recommendations set out in IS EN 17037: 2018 for Method 1 / Daylight Factor analysis.

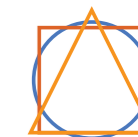
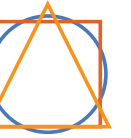


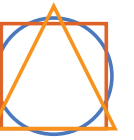
Table A: Predicted daylight access to sample rooms within the proposed development

Unit	Floor	Room Type	IS EN 17037		
			Minimum Target Daylight Factor (D _{TM})	Target Daylight Factor (D _T)	Does the room achieve IS EN 17037 recommendations?
			Proportion (%) of room achieving 0.7% daylight factor (Target = 95%)	Proportion (%) of room achieving 2.1% daylight factor (Target = 50%)	
Block 11					
B11 - Zone 01	Floor G1	Kitchen/Living/Dining	100.00%	64.30%	Yes
B11 - Zone 02	Floor G1	Bedroom	100.00%	44.20%	No
B11 - Zone 03	Floor G1	Bedroom	100.00%	5.80%	No
B11 - Zone 04	Floor G1	Kitchen/Living/Dining	100.00%	27.90%	No
B11 - Zone 05	Floor G1	Kitchen/Living/Dining	100.00%	39.50%	No
B11 - Zone 06	Floor G1	Bedroom	100.00%	40.60%	No
B11 - Zone 07	Floor G1	Kitchen/Living/Dining	100.00%	42.40%	No
B11 - Zone 08	Floor G2	Kitchen/Living/Dining	100.00%	39.30%	No
B11 - Zone 09	Floor G2	Bedroom	100.00%	71.00%	Yes
B11 - Zone 10	Floor G2	Kitchen/Living/Dining	100.00%	37.10%	No
B11 - Zone 11	Floor G2	Kitchen/Living/Dining	100.00%	56.10%	Yes
B11 - Zone 12	Floor G2	Kitchen/Living/Dining	100.00%	33.20%	No
B11 - Zone 13	Floor G2	Bedroom	100.00%	51.20%	Yes
B11 - Zone 14	Floor G2	Kitchen/Living/Dining	100.00%	31.20%	No
B11 - Zone 15	Floor G2	Kitchen/Living/Dining	100.00%	28.80%	No
B11 - Zone 16	Floor G2	Kitchen/Living/Dining	100.00%	27.50%	No
B11 - Zone 17	Floor 01	Kitchen/Living/Dining	100.00%	46.30%	No
B11 - Zone 18	Floor 01	Kitchen/Living/Dining	100.00%	60.90%	Yes
B11 - Zone 19	Floor 01	Bedroom	100.00%	50.90%	Yes
B11 - Zone 20	Floor 01	Kitchen/Living/Dining	100.00%	36.80%	No
B11 - Zone 21	Floor 01	Kitchen/Living/Dining	100.00%	34.00%	No
B11 - Zone 22	Floor 01	Bedroom	100.00%	65.70%	Yes
B11 - Zone 23	Floor 01	Bedroom	100.00%	34.60%	No
B11 - Zone 24	Floor 01	Kitchen/Living/Dining	100.00%	31.20%	No
B11 - Zone 25	Floor 01	Kitchen/Living/Dining	100.00%	58.60%	Yes
B11 - Zone 26	Floor 01	Kitchen/Living/Dining	100.00%	37.40%	No
B11 - Zone 27	Floor 01	Kitchen/Living/Dining	100.00%	42.70%	No
B11 - Zone 28	Floor 01	Kitchen/Living/Dining	100.00%	35.20%	No
B11 - Zone 29	Floor 01	Bedroom	100.00%	19.20%	No
B11 - Zone 30	Floor 01	Bedroom	100.00%	40.80%	No
B11 - Zone 31	Floor 01	Bedroom	100.00%	29.60%	No
B11 - Zone 32	Floor 01	Kitchen/Living/Dining	100.00%	93.90%	Yes
Block 13					
B13 - Zone 01	Floor G2	Kitchen/Living/Dining	100.00%	58.70%	Yes
B13 - Zone 02	Floor G2	Bedroom	100.00%	100.00%	Yes
B13 - Zone 03	Floor G2	Kitchen/Living/Dining	100.00%	42.80%	No
B13 - Zone 04	Floor G2	Kitchen/Living/Dining	100.00%	97.30%	Yes
B13 - Zone 05	Floor G2	Kitchen/Living/Dining	100.00%	79.10%	Yes
B13 - Zone 06	Floor G2	Bedroom	100.00%	0.00%	No
B13 - Zone 07	Floor 01	Kitchen/Living/Dining	100.00%	74.90%	Yes

Unit	Floor	Room Type	IS EN 17037		
			Minimum Target Daylight Factor (D _{TM})	Target Daylight Factor (D _T)	Does the room achieve IS EN 17037 recommendations?
			Proportion (%) of room achieving 0.7% daylight factor (Target = 95%)	Proportion (%) of room achieving 2.1% daylight factor (Target = 50%)	
Block 14					
B14 - Zone 01	Floor G1	Kitchen/Living/Dining	100.00%	72.10%	Yes
B14 - Zone 02	Floor G1	Kitchen/Living/Dining	100.00%	54.10%	Yes
B14 - Zone 03	Floor G1	Bedroom	100.00%	100.00%	Yes
B14 - Zone 04	Floor G1	Kitchen/Living/Dining	100.00%	55.10%	Yes
B14 - Zone 05	Floor G1	Kitchen/Living/Dining	100.00%	54.80%	Yes
B14 - Zone 06	Floor G1	Bedroom	100.00%	100.00%	Yes
B14 - Zone 07	Floor G1	Kitchen/Living/Dining	100.00%	96.60%	Yes
B14 - Zone 08	Floor G1	Kitchen/Living/Dining	100.00%	55.20%	Yes
B14 - Zone 09	Floor G1	Bedroom	100.00%	35.00%	No
B14 - Zone 10	Floor G1	Kitchen/Living/Dining	100.00%	29.20%	No
B14 - Zone 11	Floor G1	Bedroom	100.00%	39.10%	No
B14 - Zone 12	Floor G1	Kitchen/Living/Dining	100.00%	32.00%	No
B14 - Zone 13	Floor G1	Bedroom	100.00%	17.20%	No
B14 - Zone 14	Floor G1	Kitchen/Living/Dining	100.00%	44.20%	No
B14 - Zone 15	Floor G1	Bedroom	100.00%	98.30%	Yes
B14 - Zone 16	Floor G1	Kitchen/Living/Dining	100.00%	32.00%	No
B14 - Zone 17	Floor G1	Bedroom	100.00%	70.20%	Yes
B14 - Zone 18	Floor G1	Kitchen/Living/Dining	100.00%	79.20%	Yes
B14 - Zone 19	Floor 01	Kitchen/Living/Dining	100.00%	100.00%	Yes
B14 - Zone 20	Floor 01	Kitchen/Living/Dining	100.00%	100.00%	Yes
B14 - Zone 21	Floor 01	Kitchen/Living/Dining	100.00%	76.70%	Yes
B14 - Zone 22	Floor 01	Kitchen/Living/Dining	100.00%	88.10%	Yes
B14 - Zone 23	Floor 01	Kitchen/Living/Dining	100.00%	85.00%	Yes
B14 - Zone 24	Floor 01	Kitchen/Living/Dining	100.00%	94.30%	Yes
B14 - Zone 25	Floor 01	Kitchen/Living/Dining	100.00%	67.80%	Yes
B14 - Zone 26	Floor 01	Kitchen/Living/Dining	100.00%	37.30%	No
B14 - Zone 27	Floor 01	Kitchen/Living/Dining	100.00%	98.90%	Yes
B14 - Zone 28	Floor 01	Kitchen/Living/Dining	100.00%	43.60%	No
B14 - Zone 29	Floor 01	Kitchen/Living/Dining	98.60%	50.30%	Yes
B14 - Zone 30	Floor 01	Kitchen/Living/Dining	100.00%	43.00%	No
B14 - Zone 31	Floor 01	Kitchen/Living/Dining	100.00%	36.10%	No
B14 - Zone 32	Floor 01	Kitchen/Living/Dining	100.00%	98.20%	Yes
B14 - Zone 33	Floor 02	Kitchen/Living/Dining	100.00%	35.40%	No
B14 - Zone 34	Floor 02	Kitchen/Living/Dining	100.00%	53.50%	Yes
Block 15					
B15 - Zone 01	Floor G2	Kitchen/Living/Dining	100.00%	37.30%	No
B15 - Zone 02	Floor G2	Bedroom	100.00%	46.00%	No
B15 - Zone 03	Floor G2	Kitchen/Living/Dining	100.00%	52.60%	Yes
B15 - Zone 04	Floor G2	Kitchen/Living/Dining	100.00%	49.70%	No
B15 - Zone 05	Floor G2	Kitchen/Living/Dining	100.00%	78.40%	Yes
B15 - Zone 06	Floor G2	Kitchen/Living/Dining	100.00%	76.40%	Yes



Unit	Floor	Room Type	IS EN 17037		
			Minimum Target Daylight Factor (D_{TM}) Proportion (%) of room achieving 0.7% daylight factor (Target = 95%)	Target Daylight Factor (D_T) Proportion (%) of room achieving 2.1% daylight factor (Target = 50%)	Does the room achieve IS EN 17037 recommendations?
B15 - Zone 07	Floor G2	Bedroom	100.00%	85.80%	Yes
B15 - Zone 08	Floor G2	Kitchen/Living/Dining	98.10%	35.10%	No
B15 - Zone 09	Floor G2	Kitchen/Living/Dining	100.00%	41.80%	No
B15 - Zone 10	Floor G2	Kitchen/Living/Dining	100.00%	77.80%	Yes
B15 - Zone 11	Floor G2	Bedroom	100.00%	65.40%	Yes
B15 - Zone 12	Floor G2	Kitchen/Living/Dining	100.00%	40.10%	No
B15 - Zone 13	Floor G3	Kitchen/Living/Dining	95.50%	44.20%	No
B15 - Zone 14	Floor G3	Kitchen/Living/Dining	100.00%	43.20%	No
B15 - Zone 15	Floor G3	Kitchen/Living/Dining	99.70%	32.20%	No
B15 - Zone 16	Floor G3	Kitchen/Living/Dining	99.60%	31.80%	No
B15 - Zone 17	Floor G3	Kitchen/Living/Dining	100.00%	29.60%	No
B15 - Zone 18	Floor G3	Bedroom	100.00%	25.30%	No
B15 - Zone 19	Floor G3	Kitchen/Living/Dining	100.00%	45.90%	No
B15 - Zone 20	Floor G3	Kitchen/Living/Dining	100.00%	33.20%	No
B15 - Zone 21	Floor G3	Kitchen/Living/Dining	100.00%	65.40%	Yes
B15 - Zone 22	Floor G3	Kitchen/Living/Dining	100.00%	45.90%	No
B15 - Zone 23	Floor G3	Kitchen/Living/Dining	100.00%	42.70%	No
B15 - Zone 24	Floor G3	Kitchen/Living/Dining	100.00%	42.40%	No
B15 - Zone 25	Floor G3	Bedroom	100.00%	28.10%	No
B15 - Zone 26	Floor G3	Bedroom	100.00%	29.60%	No
B15 - Zone 27	Floor G3	Kitchen/Living/Dining	100.00%	31.00%	No
B15 - Zone 28	Floor G3	Kitchen/Living/Dining	100.00%	31.30%	No
B15 - Zone 29	Floor G3	Bedroom	100.00%	34.50%	No
B15 - Zone 30	Floor G3	Kitchen/Living/Dining	100.00%	79.40%	Yes
B15 - Zone 31	Floor G3	Kitchen/Living/Dining	100.00%	31.90%	No
B15 - Zone 32	Floor G3	Bedroom	100.00%	16.40%	No
B15 - Zone 33	Floor G3	Kitchen/Living/Dining	100.00%	20.10%	No
B15 - Zone 34	Floor G3	Kitchen/Living/Dining	100.00%	35.50%	No
B15 - Zone 35	Floor G3	Kitchen/Living/Dining	100.00%	60.30%	Yes
B15 - Zone 36	Floor G3	Kitchen/Living/Dining	80.70%	41.40%	No
B15 - Zone 37	Floor G3	Bedroom	100.00%	30.70%	No
B15 - Zone 38	Floor G3	Kitchen/Living/Dining	100.00%	51.00%	Yes
B15 - Zone 39	Floor G3	Kitchen/Living/Dining	100.00%	50.30%	Yes
B15 - Zone 40	Floor 01	Kitchen/Living/Dining	100.00%	44.20%	No
B15 - Zone 41	Floor 01	Kitchen/Living/Dining	100.00%	34.60%	No
B15 - Zone 42	Floor 01	Kitchen/Living/Dining	100.00%	40.80%	No
B15 - Zone 43	Floor 01	Kitchen/Living/Dining	100.00%	39.20%	No
B15 - Zone 44	Floor 01	Kitchen/Living/Dining	100.00%	41.30%	No
B15 - Zone 45	Floor 01	Kitchen/Living/Dining	100.00%	41.00%	No
B15 - Zone 46	Floor 01	Kitchen/Living/Dining	100.00%	44.80%	No
B15 - Zone 47	Floor 01	Kitchen/Living/Dining	100.00%	39.40%	No



TECHNICAL APPENDIX

Explanatory Note

In assessing sunlight and daylight access, Irish practitioners tend to refer to the relevant *Site layout planning for daylight and sunlight: a guide to good practice* for the Building Research Establishment (the BRE Guide, a third edition of which was published in June 2022).

Section 1.7 of the BRE Guide provides: “The guidance here is intended for use in the UK and in the Republic of Ireland”. Its use in assessing impacts on sunlight and daylight access as part of the planning process is supported by national government planning policy including:

- The *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas*, which, at Section 7.2 states: “Planning authorities should require that daylight and shadow projection diagrams be submitted in all such proposals. The recommendations of ‘Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice’ (B.R.E. 1991)¹ or B.S. 8206 ‘Lighting for Buildings, Part 2 1992: Code of Practice for Daylighting’ should be followed in this regard.”
- The *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities*, which, at Section 6.6, states: “Planning authorities should have regard to quantitative performance approaches to daylight provision outlined in guides like the BRE guide ‘Site Layout Planning for Daylight and Sunlight’ (2nd edition) or BS 8206-2: 2008 – ‘Lighting for Buildings – Part 2: Code of Practice for Daylighting’ when undertaken by development proposers which offer the capability to satisfy minimum standards of daylight provision.”
- The *Urban Development and Building Height Guidelines*, which, at Section 3.2, states: “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’. Where a proposal may not be able to fully meet all the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, in respect of which the planning authority or An Bord Pleanála should apply their discretion, having regard to local factors including specific site constraints and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution.”

The standards for daylight and sunlight access in buildings (and the methodologies for assessment of same) suggested in the BRE Guide (third edition, 2022) have been referenced in this report.

The BRE Guide does not set out rigid standards or limits, but is preceded by the following very clear warning as to how the design advice contained therein should be used:

“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.” [Emphasis added.]

This report is prepared by ARC Architectural Consultants Ltd for the benefit of the Applicant and in accordance with our instructions. ARC Architectural Consultants Ltd disclaims any liability, legal or otherwise, from any party, other than the Applicant, seeking to rely upon the content of this report. The purpose of this report is to provide a general indication of daylight performance and sunlight access within the proposed development on the basis of numerous assumptions outlined below and with reference to design tools set out in the guidance documents referenced above as part of the planning process. ARC takes no responsibility for any errors introduced by the third party proprietary sunlight and daylight analysis software used to perform the quantitative assessment. This report does not offer a guarantee of daylight performance or sunlight access to existing or future occupants or owners of the application site or neighbouring lands or any other party.

¹ The *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas* refer to the first edition of the BRE Guide as published in 1991. A second edition of the Guide was published in 2011.

SUNLIGHT ACCESS TO BUILDINGS AND OPEN SPACES

Context under Technical and Guidance Documents

Section 3.2.13 of the *Site layout planning for daylight and sunlight: a guide to good practice* (the BRE Guide) provides as follows in relation to the assessment of the impact of development on sunlight access to existing buildings.

“If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:

- *receives less than 25% of annual probable sunlight hours and less than 0.80 times its former annual value, or less than 5% of annual probable sunlight hours between 21 September and 21 March and less than 0.8 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.”* [Emphasis added]

Section 3.2.9 of the BRE Guide states:

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

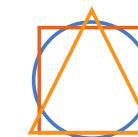
- *If the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window (NB obstructions within 90° of due north of the existing window need not count here).*
- *The window wall faces within 90° of due south and no obstruction, 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.”*

The BRE Guide, at Section 3.2.7, states that “3.2.7 Any reduction in sunlight access below these levels should be kept to a minimum. If the available sunlight hours are both less than the amount above and less than 0.80 times their former value, either over the whole year or just in the winter months (21 September to 21 March), and the overall annual loss is greater than 4% of APSh, then the occupants of the existing building will notice the loss of sunlight; the room may appear colder and less cheerful and pleasant.”

Section 3.3 of the Building Research Establishment’s *Site layout planning for daylight and sunlight: a guide to good practice* sets out design advice and recommendations for site layout planning to ensure good sunlight access to amenity spaces and to minimise the impact of new development on existing amenity spaces. The Guide suggests 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 sunlight on 21st March. Section 3.3.17 of the BRE Guide provides that “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.” [Emphasis added.] Section 3.3.8 provides that “Locations that can and cannot receive two or more hours of sunlight on 21 March may be found using specialist software. The space is divided into a grid of points with a recommended spacing of 0.3 m or less, and the proportion of these points that can receive two hours of sunlight on March 21 is computed.”

Assessment Methodology for Sunlight Access

A three dimensional digital model of the proposed development, the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, the development envisaged under Cork City Council Reg. Ref. 22/40809 and of existing buildings in the area was constructed by ARC Consultants based on drawings and three dimensional models supplied by the Design Team. Where survey data of surrounding context was not available, assumptions were made, with reference to on-site, satellite and aerial photography and to the online planning register; where relevant, in the creation of the three dimensional model. Section 3.3.9 of



the BRE Guide provides that the “question of whether trees or fences should be included in the calculation depends upon the type of shade they produce. Normally trees and shrubs need not be included, and partly because the dappled shade of a tree is more pleasant than the deep shadow of a building (this applies especially to deciduous trees).” Given this, existing and proposed landscaping was not included in the assessment model.

Using the digital model, shadows were cast by ARC at several times of the day at the summer and winter solstices, and at the equinox. An equinox occurs twice a year: the March or vernal equinox (typically in or around the 20th to 21st March) and the September or autumnal equinox (typically in or around the 21st to 23rd September). For the purposes of this analysis and with reference to the BRE Guide, shadows were cast at several times of the day on 21st March.

The results are presented in shadow study diagrams associated with this report. Three separate pages have been prepared for each time period on each representative date as follows:

- **Existing:** this page shows the shadows cast by the existing buildings only. Existing buildings surrounding the application site are shown in light grey, while the shadows cast are shown in a dark grey tone.
- **Proposed:** this page shows the shadows cast by the existing buildings together with the shadows cast by the proposed development. The existing buildings surrounding the site are shown in light grey, while the proposed development is shown in light blue. The shadows cast are shown in a dark grey tone.
- **Cumulative Proposed:** this page shows the shadows cast by the existing buildings together with the shadows cast by the development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, the development envisaged under Cork City Council Reg. Ref. 22/40809 and the proposed development. The existing buildings surrounding the site are shown in light grey. The permitted development on the application site is shown in purple, while the development now proposed is highlighted in light blue. The shadows cast are shown in a dark grey tone.

Please note that, for the purposes of preparing shadow diagrams, communal open spaces were modelled as a flat plane (i.e. were not modelled to reflect the proposed changes in ground levels). Proposed changes in ground level will result in some small areas of additional shadowing at ground level.

In order to calculate sunlight access to rooms, ARC referenced the methodology outlined in *Appendix A: Indicators to calculate access to skylight, sunlight and solar radiation* of the BRE Guide. Using proprietary sunlight and daylight access analysis software, ARC analysed a sunpath diagram overlaid with a shading mask corresponding to the existing or proposed shadow environment (as appropriate) and the sunlight probability diagram for a latitude of 53° N (i.e. which would represent a conservative approach) for a reference point (i.e. the centre point) of each sample study window. The sunlight availability indicator has 100 spots on it. Each of these represents 1% of annual probable sunlight hours (APSH). The percentage of APSH at the reference point is found by counting up all the unobstructed spots.

Definition of Impacts on Sunlight Access

The assessment of the impact of the proposed development on sunlight access had regard to the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* prepared by the Environmental Protection Agency (2022), and to Directive 2011/92/EU (as amended by Directive 2014/52/EU) on the assessment of the likely effects of certain public and private projects on the environment.

In assessing whether a predicted effect of the proposal on sunlight access is likely to be “imperceptible”, “not significant”, “slight”, “moderate”, “significant”, “very significant” or “profound” within the meaning of the EPA’s *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*, ARC referred to Appendix H of the BRE Guide sets out advice on environment impact assessment. It states:

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

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

H6 Where the loss of skylight or sunlight does not meet the guidelines in this document, the impact is assessed as minor, moderate or major adverse. Factors tending towards a minor adverse impact include:

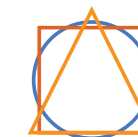
- only a small number of windows or limited area of open space are affected
- the loss of light is only marginally outside the guidelines
- an affected room has other sources of skylight or sunlight
- the affected building or open space only has a low level requirement for skylight or sunlight
- there are particular reasons why an alternative, less stringent, guideline should be applied, for example an overhang above the window or a window standing unusually close to the boundary.

H7 Factors tending towards a major adverse impact include:

- a large number of windows or large area of open space are affected
- the loss of light is substantially outside the guidelines
- all the windows in a particular property are affected
- the affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight, e.g. a living room in a dwelling or a children’s playground.

Having considered the factors outlined in Appendix H of the BRE Guide, ARC’s assessment classifies the impact of the proposed development on sunlight access within existing buildings or open spaces with reference to the list of definitions set out at Table 3.3: Descriptions of Effects contained in the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* prepared by the Environmental Protection Agency. The definitions from the EPA document are in italics, while some comment is also given below on what ARC considers these definitions might imply in the case of sunlight access (e.g. having regard to Appendix H of the BRE Guide). Please note that, for the purpose of this report, the word “effect” is taken to have the same meaning as the word “impact”.

- **Imperceptible:** *An effect capable of measurement but without significant consequences.* The definition implies that the development would cause a change in the sunlight received at a location, capable of measurement, but not noticeable to the casual observer. If the development caused no change in sunlight access, there could be no effect. Examples of “imperceptible” impacts on sunlight access would include:
 - a scenario where the proposed development is predicted to reduce the amount of sunlight received by a sample window, but the sample window will continue to receive the relevant recommended level of Annual Probable Sunlight Hours after the construction of the proposed development; and
 - a scenario where the proposed development is predicted to reduce the Annual Probable Sunlight Hours received by a sample window to not less than 0.8 times its existing value (i.e. the BRE Guide threshold for an adverse impact). Similarly, where sunlight access to a sample garden is reduced, the impact of proposed development could be considered to be “imperceptible” or “not significant” where the sample garden continues to receive at least two hours of sunlight over half its area on 21st March, and, where the area of the garden capable of receiving sunlight on 21st March does not drop to less than 0.8 times its existing level after the construction of the proposed development.
- **Not Significant:** *An effect which causes noticeable changes in the character of the environment but without significant consequences.* The definition implies that the development would cause a change in the sunlight received at a location, which is capable of measurement and capable of being noticed by an observer who is taking an active interest in the extent to which the proposal might affect sunlight access.



- **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 sunlight received at a location would be changed by shadows cast by the development to an extent that is both capable of measurement and is noticeable to a minor degree. However, the shadow environment of the surrounding environment 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 sunlight received by a sample window or garden to less than 0.8 times its former value, the amount of light received by the sample window or garden 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 daylight received by a sample window or sunlight received by a sample window or garden 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 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 shadow environment of the area; 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 sunlight access of similar extent in the area. A "moderate" impact might also be considered to occur where the level of sunlight access to a sample window or garden 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*.
- **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 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 sunlight access would overshadow a location to the extent that there is a significant change in the amount of direct sunlight received at that location. A "significant" impact could occur where the predicted reduction in 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 sunlight access to the sample window or garden 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. For example, a "very significant" reduction in sunlight access would occur where the development overshadows a location for most of the time that the location would have been in sunlight prior to the construction of the development and where overshadowing of that magnitude is not "consistent with existing and emerging baseline trends". A "very significant" impact could occur where the predicted reduction in 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 sunlight access to the sample window or garden 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 sunlight access would include facilitating sunlight access at a location where that location has previously had none (e.g. facilitating sunlight access as a result of the demolition of a building) or by removal of all access to sunlight at a location.

* Please note that, while this section sets out indicative quantitative ranges that could apply to each type of impact, this assessment considers a range of factors (such as relevant target values, the use of the affected building, the number of rooms affected within the building, etc) in classifying impacts.

The character of impacts may be positive, negative or neutral. Please note that, as the BRE Guide tends to refer to "adverse" impacts, the terms "adverse" and "negative" impact are used interchangeably.

DAYLIGHT ACCESS TO BUILDINGS

Context under Technical and Guidance Documents

Assessment of impacts on daylight access within existing buildings

Section 2.2.23 of the BRE Guide suggests that:

"If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if ...

- the VSC measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value
- the area of the working plane in a room which can receive direct skylight is reduced to less than 0.80 times its former value."

[PLEASE NOTE: calculation of the area of the working plane in a room within an existing building, which can receive direct skylight, can only be carried "where room layouts are known (for example if they are available on the local authority's planning portal)."]

Section 2.2.4 of the BRE Guide states: "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. Thus if the new development were 10 m tall, and a typical existing ground floor window would be 1.5 m above the ground, the effect on existing buildings more than $3 \times (10 - 1.5) = 25.5$ m away need not be analysed."

Assessment of daylight access within the proposed development under BR209 (2nd ed, 2011) and BS 8206-2:2008

The BRE Guide (BR209, 2nd ed, 2011) states as follows (at paragraph 2.1.8) in relation to daylight access within new development:

"2.1.8 Daylight provision in new rooms may be checked using the average daylight factor (ADF). The ADF is a measure of the overall amount of daylight in a space... BS 8206-2 Code of practice for daylighting, recommends an ADF of 5% for a well daylit space and 2% for a partly daylit space. Below 2% the room will look dull and electric lighting is likely to be turned on. In housing BS 8206-2 also gives minimum value of ADF of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms."

The British Standard, BS 8206-2, goes on to state, at Section 5.6, that "Where one room serves more than one purpose, the minimum average daylight factor should be that for the room type with the highest value. For example, in a space which combines a living room and a kitchen the minimum average daylight factor should be 2%."

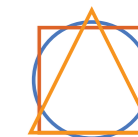
Assessment of daylight access within the proposed development under BR209 (3rd ed, 2022) and BS EN 17037

BS EN 17037: Daylight in Buildings states as follows:

"The daylight in an interior space depends, primarily, on the availability of natural light and, thereafter, the properties of the space and its surroundings. The standard proposes two methods to assess daylight provision in the interior: a calculation method based on daylight factor and cumulative daylight availability (method 1); or a calculation method based on the direct prediction of illuminance levels using hourly climate data (method 2).

Both methods apply the annual occurrence of an absolute value for internal illuminance calculated from the availability of external horizontal illuminance as determined from climate data suitable for the site of evaluation.

Calculation method 1 using daylight factors on a reference plane should achieve a target daylight factor (D_T) and/or a minimum target daylight factor (D_{TM}) across a fraction of the reference plane for at least half of the daylight hours, where D_T and D_{TM} are based on the provision of recommended target illuminance values, (E_T) and minimum target illuminance (E_{TM}), both in lx."



The National Annex attached to the BS EN 17037: Daylight in Buildings states as follows:

"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... may not be achievable for some buildings, particularly dwellings."

The BS EN 17037 goes on to recommend that at least 50% of a horizontal reference plane (at 0.85 m) achieve the following target illuminances for each room type: 100 lux for bedrooms, 150 lux for living rooms and 200 lux for kitchens. For London (latitude of 51.15°N), this corresponds to a recommendation to achieve 0.7% daylight factor for bedrooms, 1.1% daylight factor for living rooms and 1.4% daylight factor for kitchens over 50% of the horizontal reference plane.

Assessment of daylight access within the proposed development under IS EN 17037 (see Appendix A)

Under a minimum scenario, IS EN 17037: Daylight in Buildings recommends a target illuminance of 300 lux across 50% of a reference plane (a horizontal plane 0.85 m above the ground within a studied room) and a minimum target illuminance of 100 lux across 95% of that reference plane (Table A.1 for vertical windows). Applying Method 1, this corresponds to a recommendation to achieve 2.0% daylight factor across 50% of the reference plane and 0.7% daylight factor across 95% of the reference plane (see Table A.3 for Ireland, Dublin). The IS EN 17037 does not identify daylighting targets for specific room types within residential development.

Assessment Methodology for Daylight Access

A three dimensional digital model of the proposed development, othe development permitted under ABP Ref. ABP-301991-18, as amended by ABP-310378-21, the development envisaged under Cork City Council Reg. Ref. 22/40809 and of existing buildings in the area was constructed by ARC Consultants based on drawings and three dimensional models supplied by the Design Team. Where survey data of surrounding context was not available, assumptions were made, with reference to on-site, satellite and aerial photography and to the online planning register, where relevant, in the creation of the three dimensional model. At paragraph G1.2, the BRE Guide states: "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." Given this, existing and proposed landscaping was not included in this model. In assessing daylight access within rooms within the proposed development, the following assumptions were made:

- Grid: 0.3 m x 0.2 m
- Internal floor reflectance: 30%
- Internal wall reflectance: 65%
- Internal ceiling reflectance: 80%
- External ground reflectance: 20%
- Glazing transmission: 70%
- Glazing maintenance factor: 90%
- Working plane height: 0.85 m

In assessing the impact of the proposed development on existing buildings, ARC assessed the Vertical Sky Component of each window at a point at the centre of each window.

Having regard to the extreme variability in sky luminance over the course of any given day depending on weather conditions and the changing seasons, in order for daylight factor to be a meaningful and comparable measure of daylight access, it is necessary to assume a particular luminance distribution for the sky when calculating Average Daylight Factor. This daylight access analysis uses the Commission Internationale de l'Eclairage (CIE) Standard Overcast Sky Distribution model in its calculations, which is the standard sky most commonly used in daylight access analysis. This model assumes that sky luminance varies from horizon to zenith and is considered to correspond to an overcast day. As such, calculation of Average Daylight Factor in a room in circumstances where the sky luminance corresponds to the CIE Standard Overcast Sky Distribution could be considered to represent a worst case scenario. Unless specifically referenced, analysis of uniformity of daylight access within a room has not been carried out as part of this assessment. Please note that ARC's assessment assumes that all kitchen / living / dining rooms are open plan and that these rooms are not split up by walls or fixed furniture (e.g. a kitchen island).

Please note that the BRE Guide (third edition, 2022) makes recommendations with regard to framing factor: Windows (and their associated frames) within the proposed development are modelled in accordance with what is shown on the submitted architectural drawings so a default framing factor has not been used.

Definition of Impacts on Daylight Access

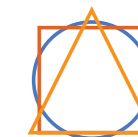
The assessment of the impact of the proposed development on daylight access had regard to the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* prepared by the Environmental Protection Agency (2022), and to Directive 2011/92/EU (as amended by Directive 2014/52/EU) on the assessment of the likely effects of certain public and private projects on the environment.

In assessing whether a predicted effect of the proposal on daylight access is likely to be "imperceptible", "not significant", "slight", "moderate", "significant", "very significant" or "profound" within the meaning of the EPA's *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*, ARC referred to Appendix H of the BRE Guide sets out advice on environment impact assessment. It states:

- H4 *The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied.*
- H5 *Where the loss of skylight or sunlight fully meets the guidelines in this document, the impact is assessed as negligible or minor adverse. Where the loss of light is well within the guidelines, or only a small number of windows or limited area of open space lose light (within the guidelines), a classification of negligible impact is more appropriate. Where the loss of light is only just within the guidelines, and a larger number of windows or open space area are affected, a minor adverse impact would be more appropriate, especially if there is a particularly strong requirement for daylight and sunlight in the affected building or open space.*
- H6 *Where the loss of skylight or sunlight does not meet the guidelines in this document, the impact is assessed as minor, moderate or major adverse. Factors tending towards a minor adverse impact include:*
 - *only a small number of windows or limited area of open space are affected*
 - *the loss of light is only marginally outside the guidelines*
 - *an affected room has other sources of skylight or sunlight*
 - *the affected building or open space only has a low level requirement for skylight or sunlight*
 - *there are particular reasons why an alternative, less stringent, guideline should be applied, for example an overhang above the window or a window standing unusually close to the boundary.*
- H7 *Factors tending towards a major adverse impact include:*
 - *a large number of windows or large area of open space are affected*
 - *the loss of light is substantially outside the guidelines*
 - *all the windows in a particular property are affected*
 - *the affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight, e.g. a living room in a dwelling or a children's playground.*

Having considered the factors outlined in Appendix H of the BRE Guide, ARC's assessment classifies the impact of the proposed development on daylight access within existing buildings with reference to the list of definitions set out at Table 3.3: Descriptions of Effects contained in the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* prepared by the Environmental Protection Agency. The definitions from the EPA document are in italics, while some comment is also given below on what ARC considers these definitions might imply in the case of daylight access (e.g. having regard to Appendix H of the BRE Guide). Please note that, for the purpose of this report, the word "effect" is taken to have the same meaning as the word "impact".

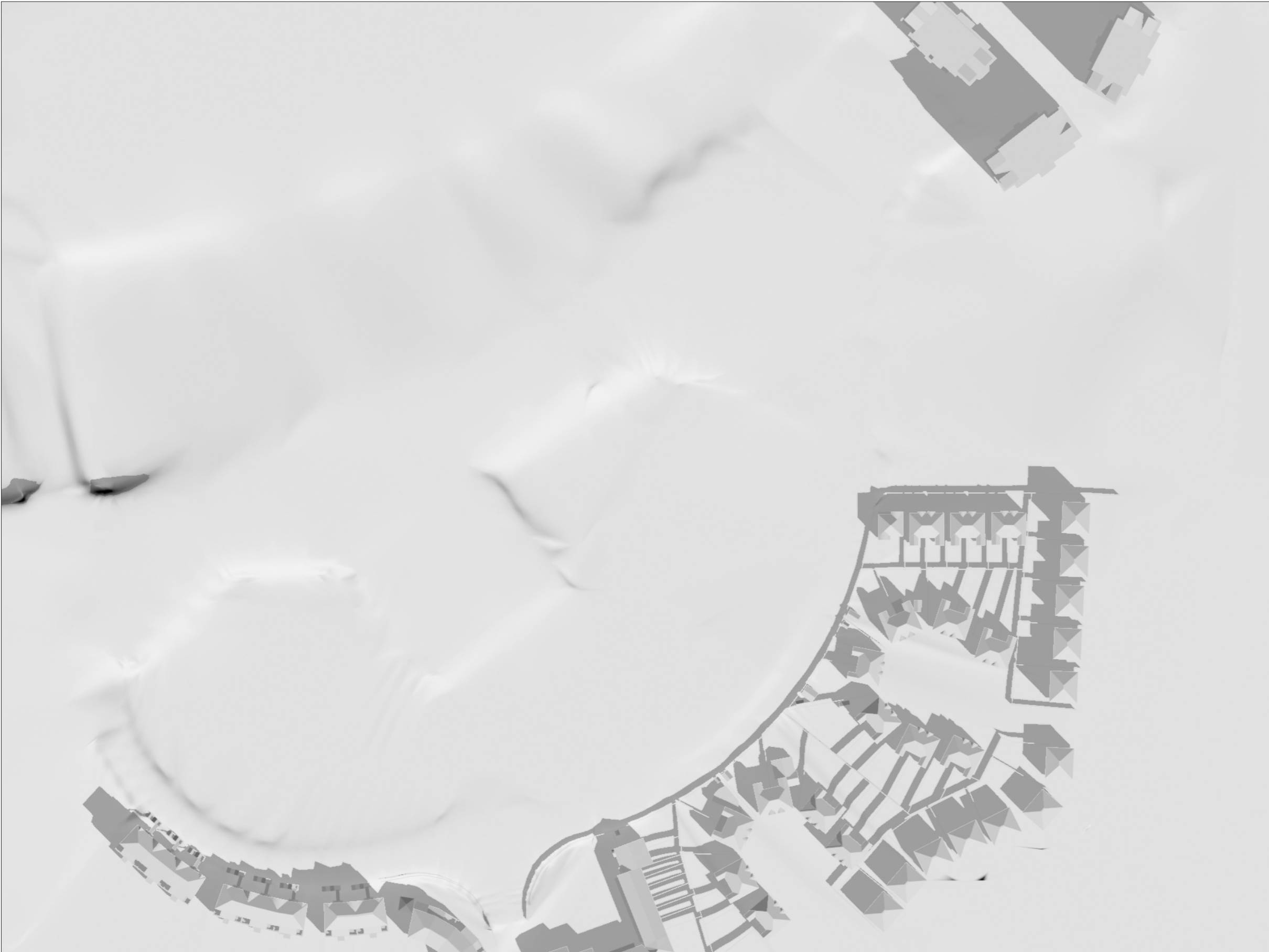
- **Imperceptible:** *An effect capable of measurement but without significant consequences.* The definition implies that the development would cause a change in the daylight received at a location, capable of measurement, but not noticeable to the casual observer. If the development caused no change in daylight access, there could be no effect. Examples of "imperceptible" impacts on daylight access would include:
 - (a) a scenario where the proposed development is predicted to reduce the Vertical Sky Component received by a sample window, but the sample window will continue to receive the relevant recommended level of Vertical Sky Component after



- the construction of the proposed development; and
- (b) a scenario where the proposed development is predicted to reduce the Vertical Sky Component to not less than 0.8 times its former value (i.e. the BRE Guide threshold for an adverse impact).
- **Not Significant:** *An effect which causes noticeable changes in the character of the environment but without significant consequences.* The definition implies that the development would cause a change in the daylight received at a location, which is capable of measurement and capable of being noticed by an observer who is taking an active interest in the extent to which the proposal might affect daylight access.
 - **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 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 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 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 daylight received by a sample window or sunlight received by a sample window or garden 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 or 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 environment within an existing building; and this change must be consistent with a pattern of change that is already occurring, is likely to occur. A moderate effect would occur where other developments were bringing about changes in daylight 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*.
 - **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 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 access would reduce daylight 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 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 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 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 received in a room falling well below the minimum standards for daylighting 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 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 or sunlight access to the sample window or garden 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 access would include facilitating daylight access to a room in an existing building where the existing room has none (e.g. as a result of the demolition of a building) or by removal of all access to daylight within an existing building.

* Please note that, while this section sets out indicative quantitative ranges that could apply to each type of impact, this assessment considers a range of factors (such as relevant target values, the use of the affected building, the number of rooms affected within the building, etc) in classifying impacts.

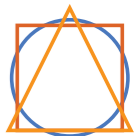
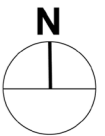
The character of impacts may be positive, negative or neutral. In relation to daylight access, it is conceivable that a development could result in positive effects, but this implies that a development would involve a reduction of the size or scale of built form (e.g. such as the demolition of a building, which might result in an increase in daylight access). Though that is possible, it is usually unlikely as most development involves the construction of new obstructions to daylight access. Please note that, as the BRE Guide tends to refer to "adverse" impacts, the terms "adverse" and "negative" impact are used interchangeably.

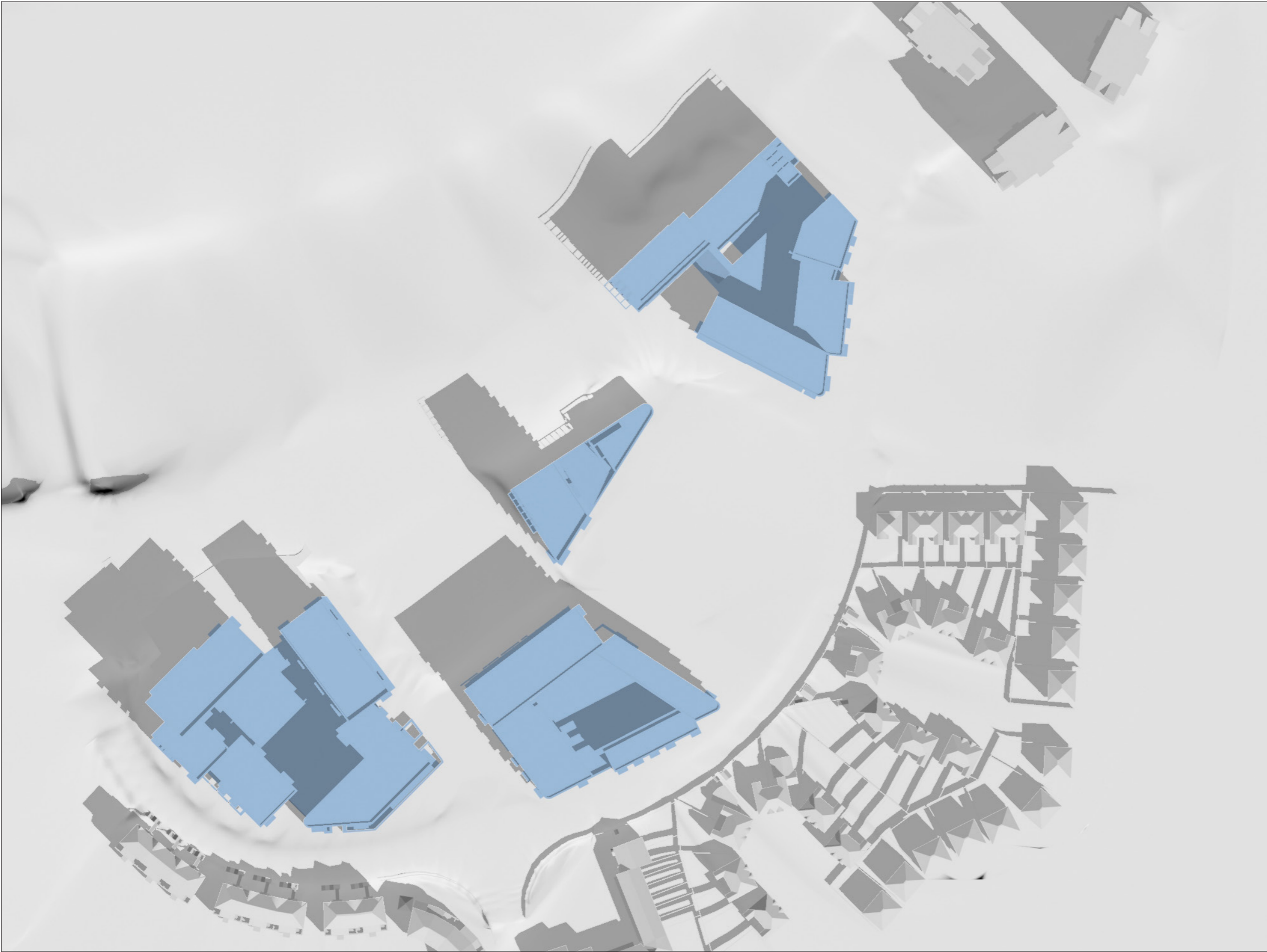


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
10.00 AM

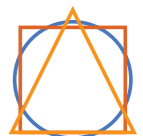
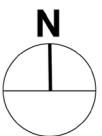


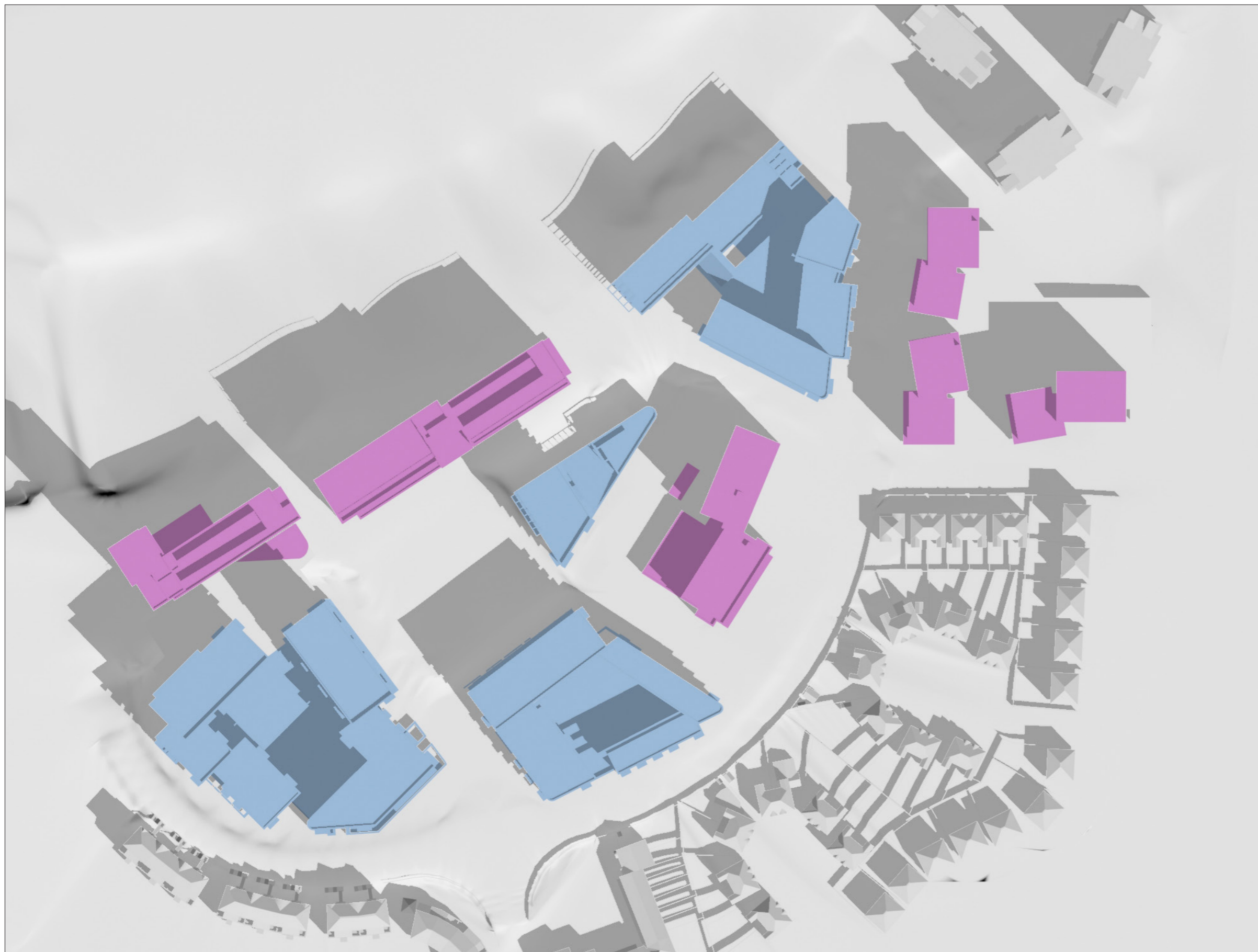


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
10.00 AM

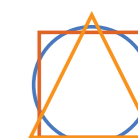
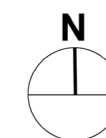


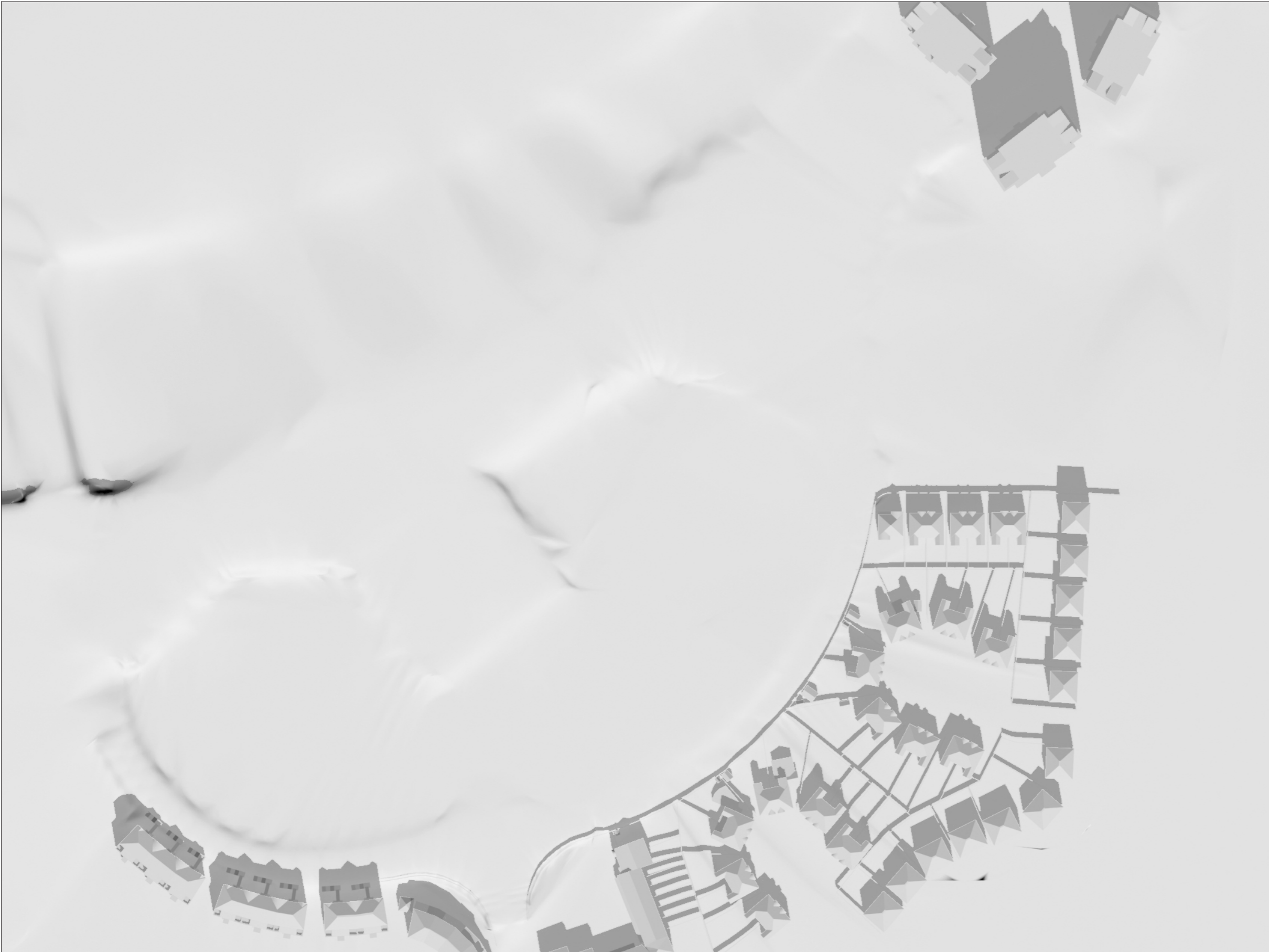


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
10.00 AM

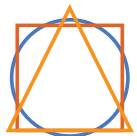
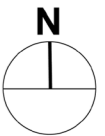


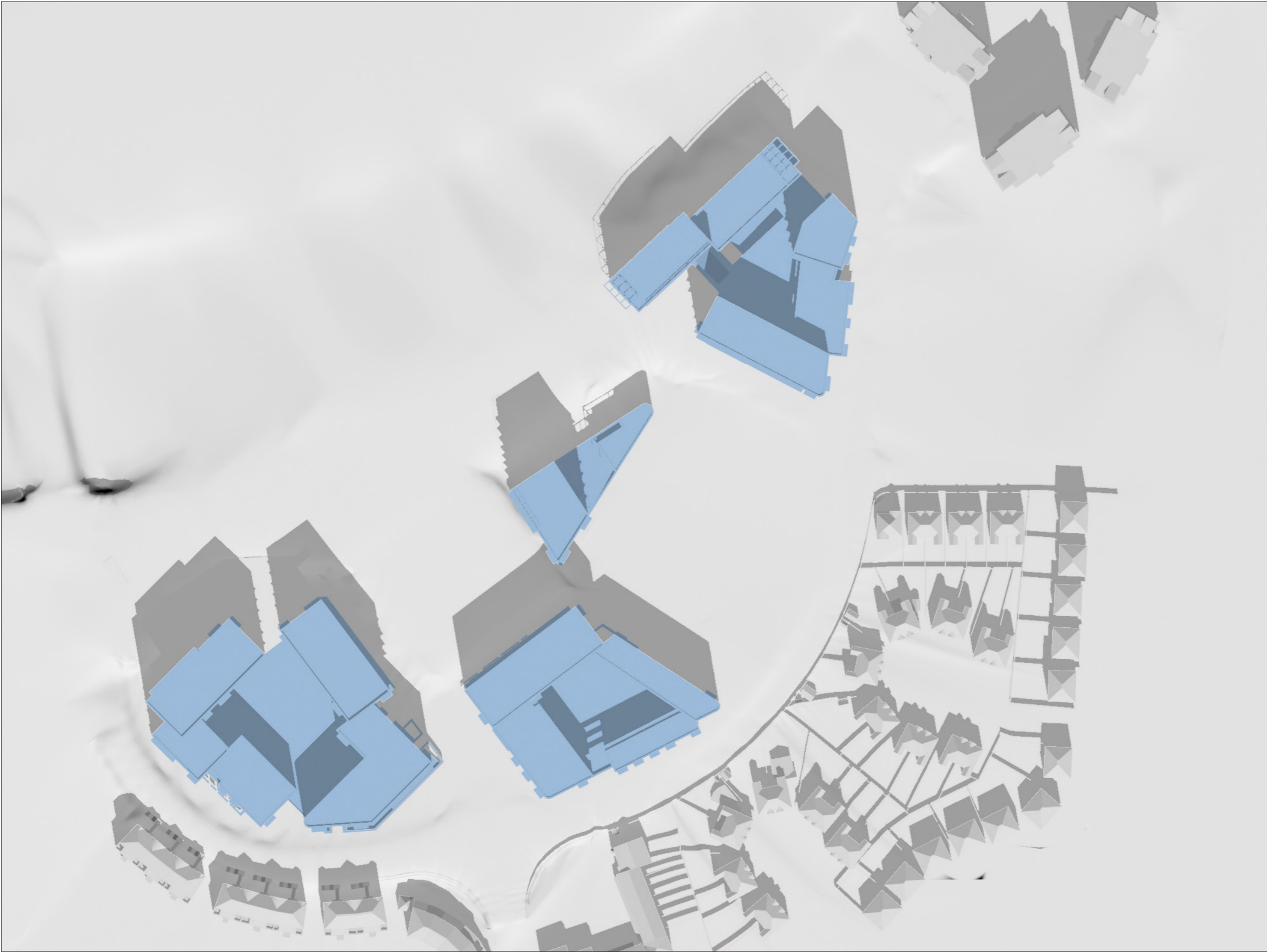


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
12.00 PM

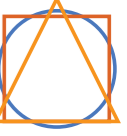
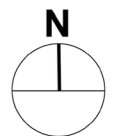


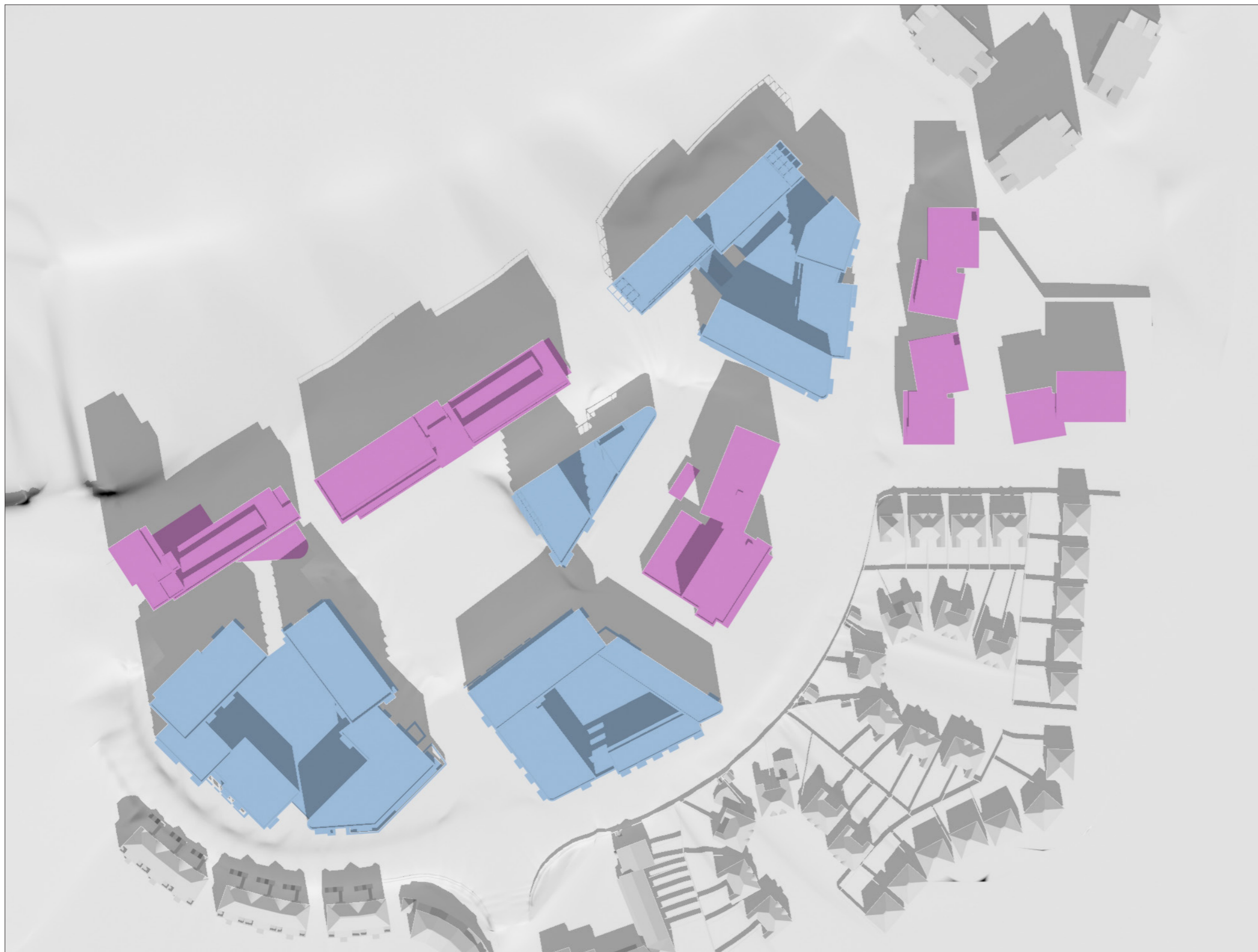


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
12.00 PM

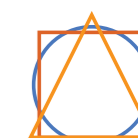
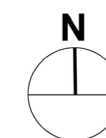


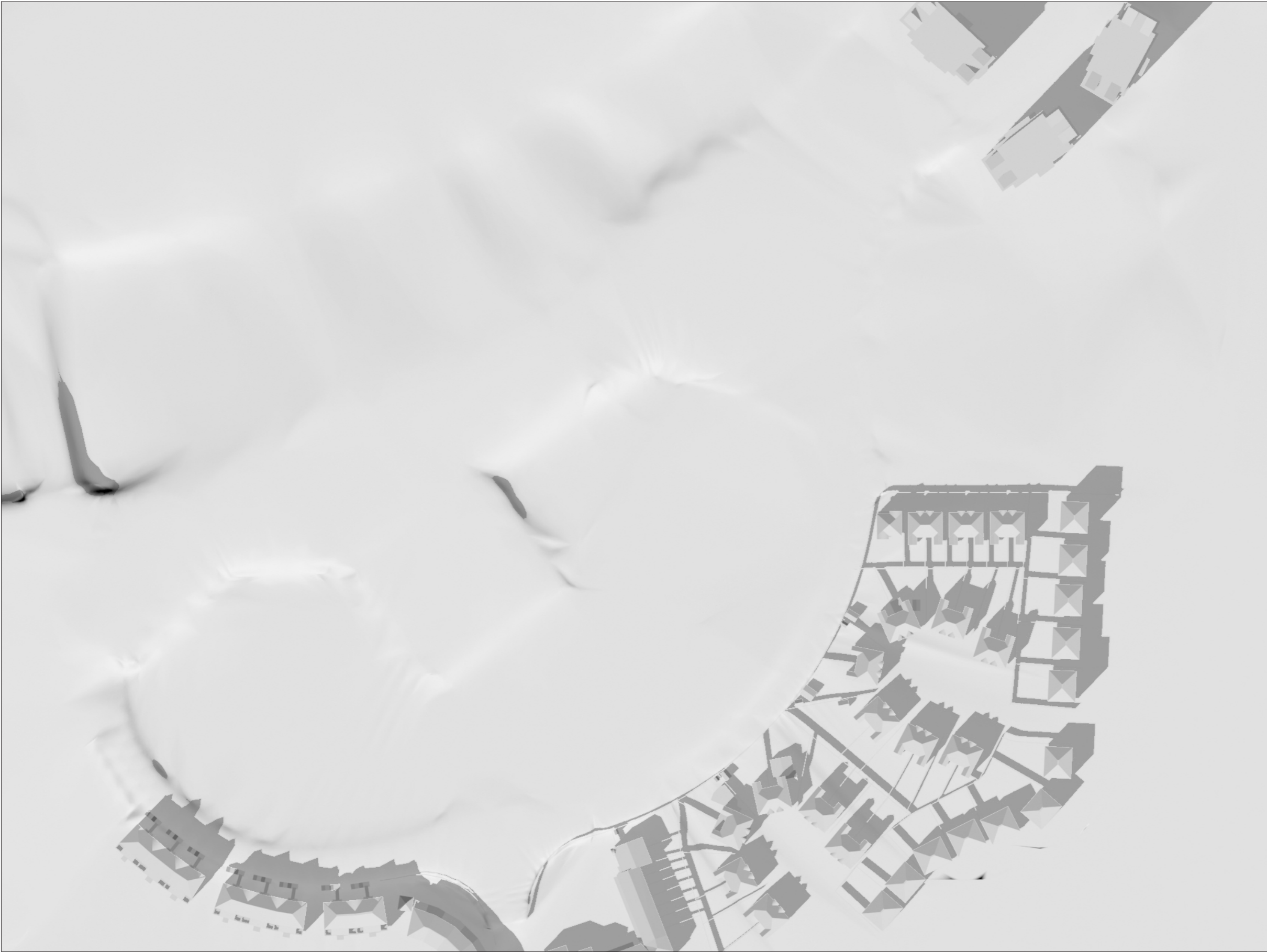


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
12.00 PM

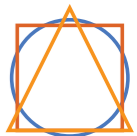
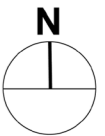


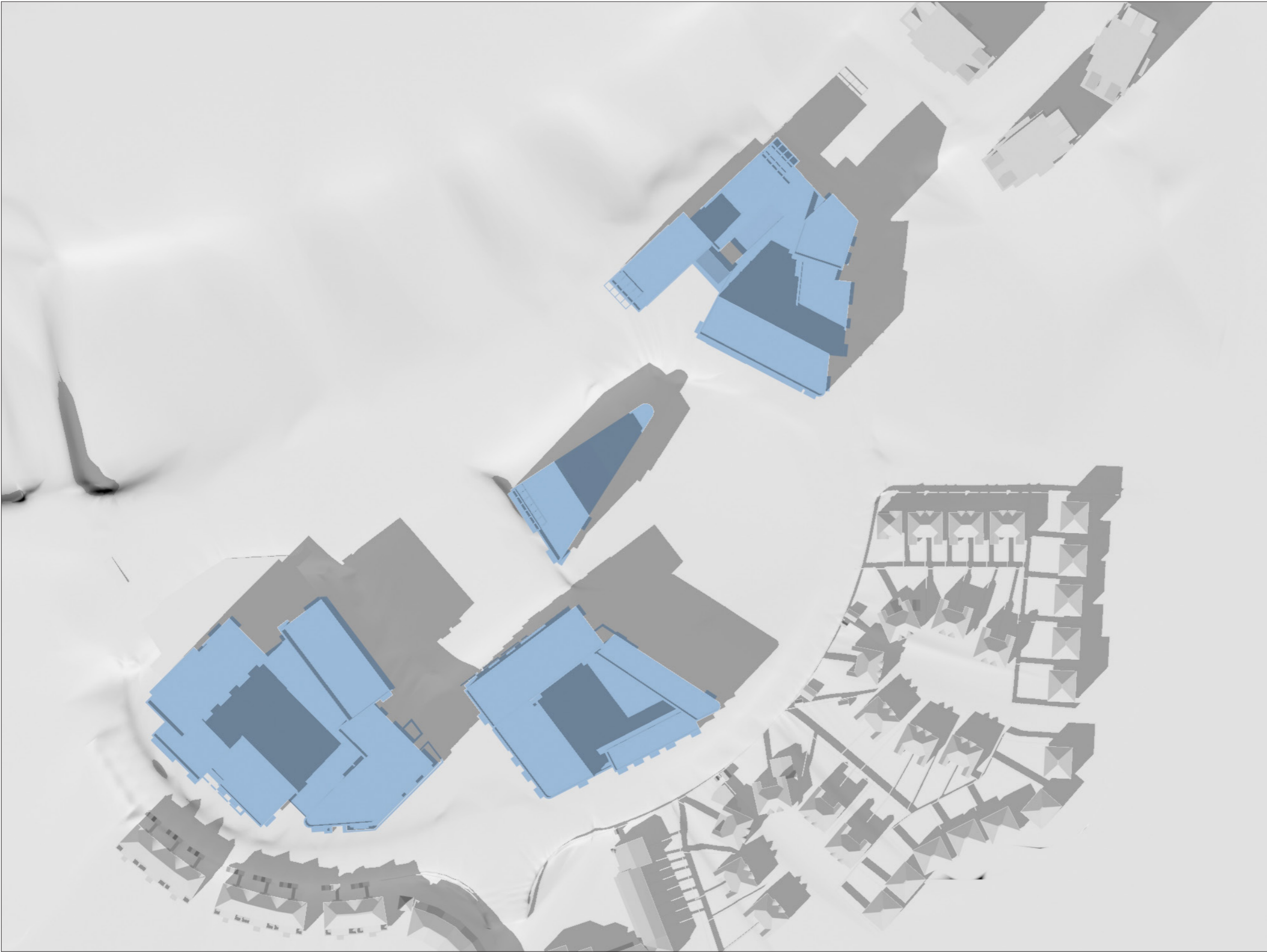


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
3.00 PM

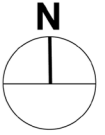




SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
3.00 PM

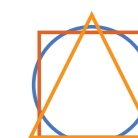
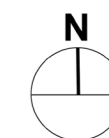


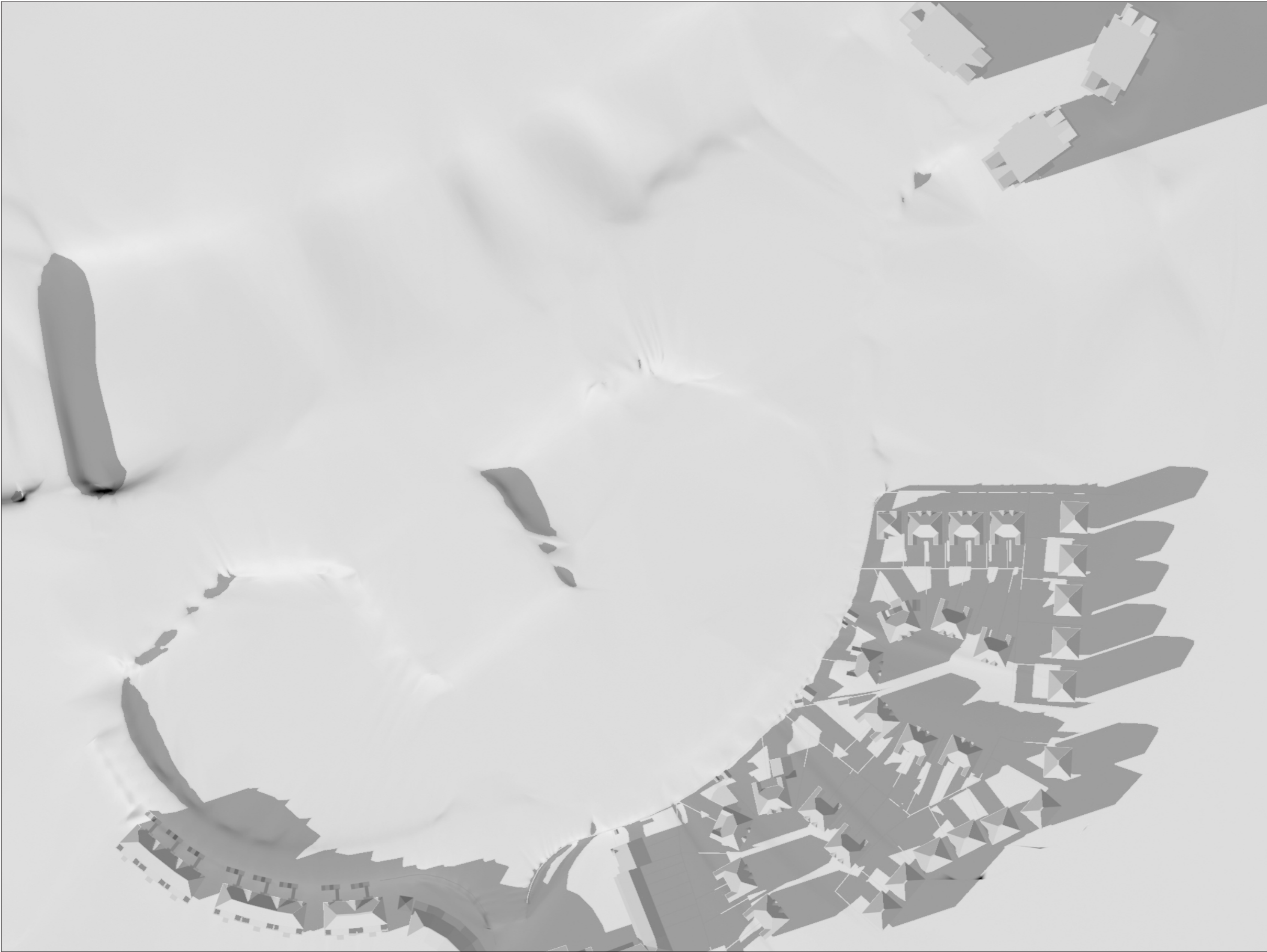


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
3.00 PM

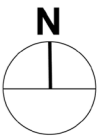


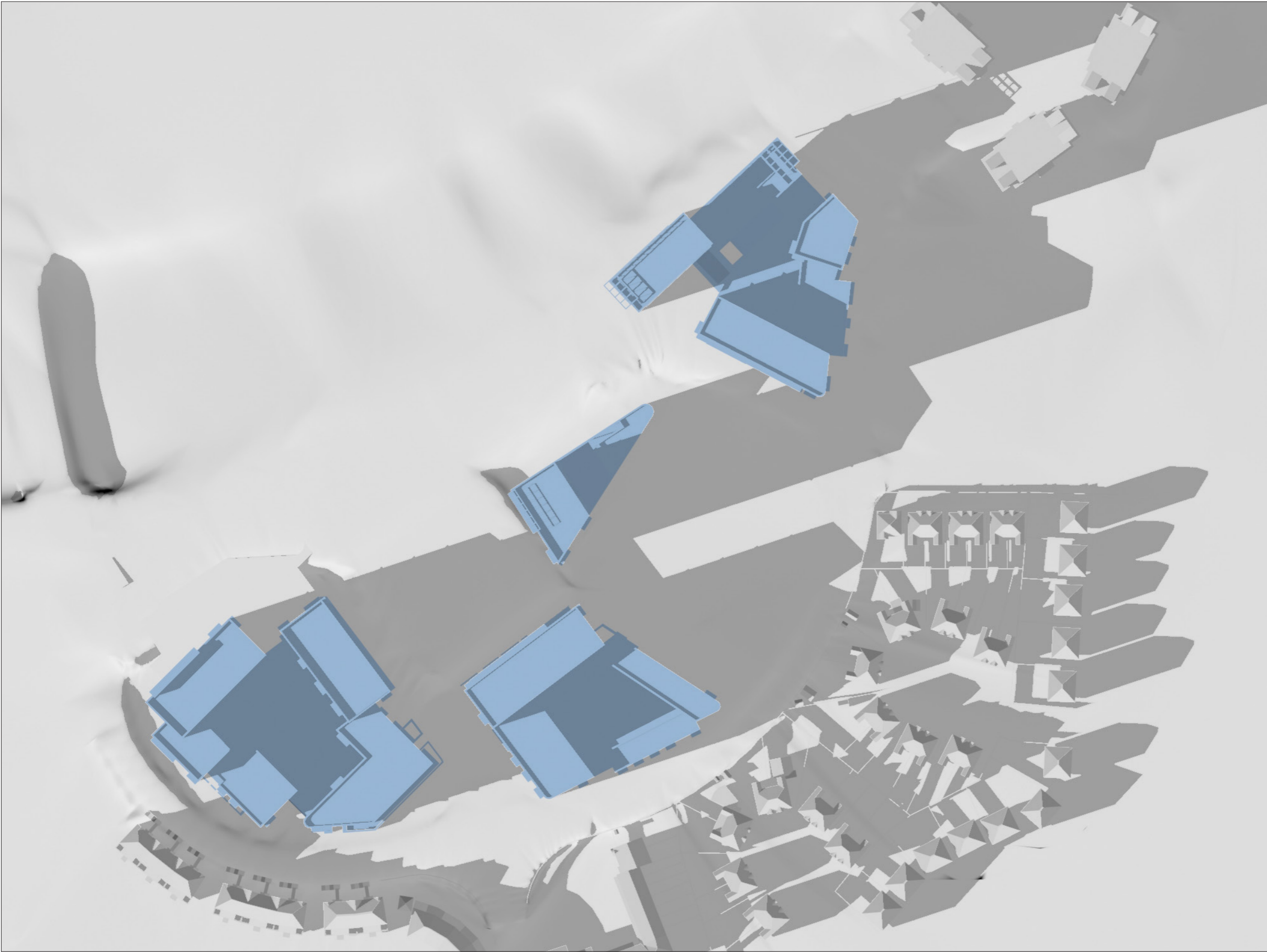


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
5.00 PM

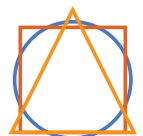
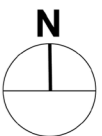


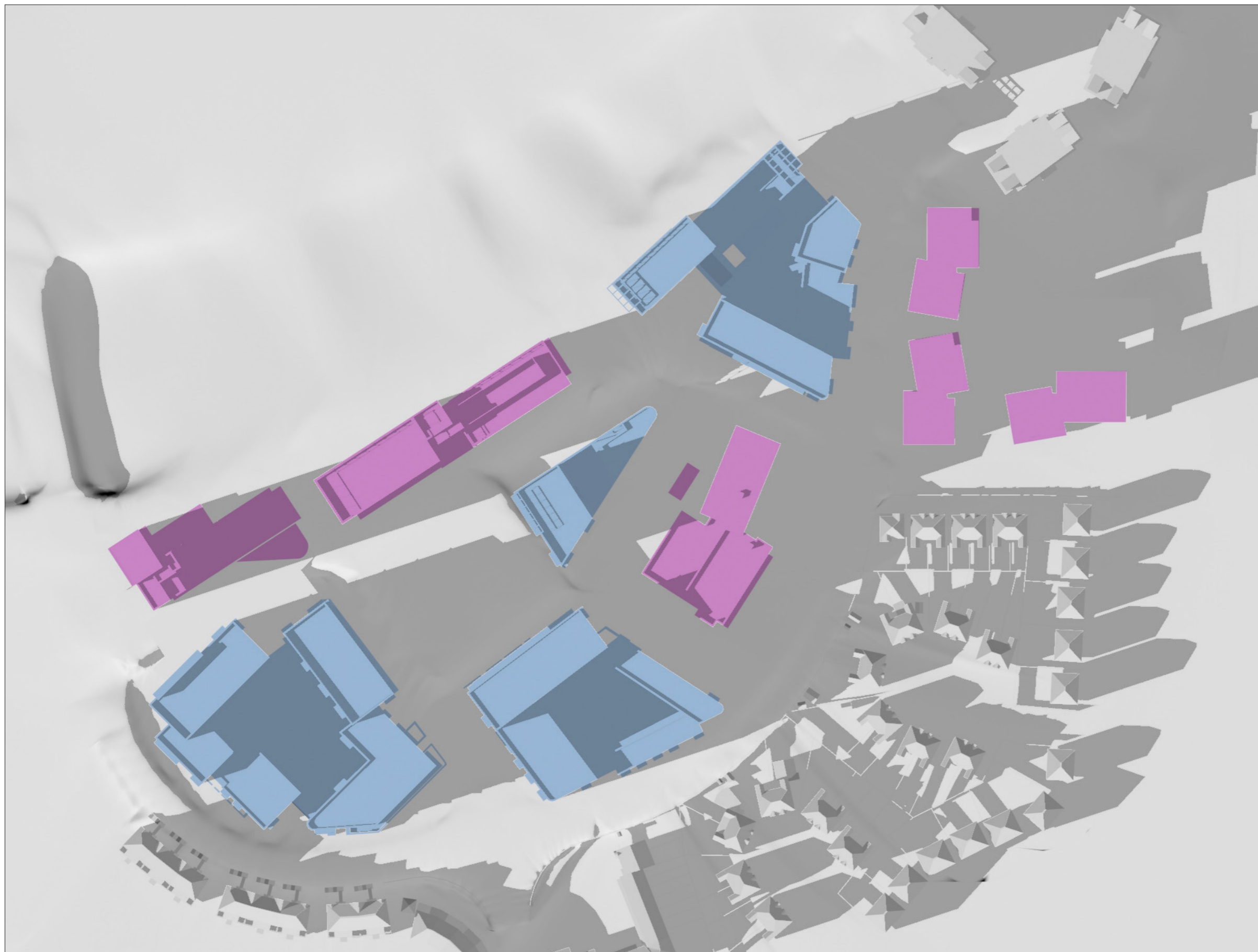


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
5.00 PM

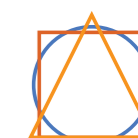
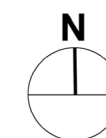




SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

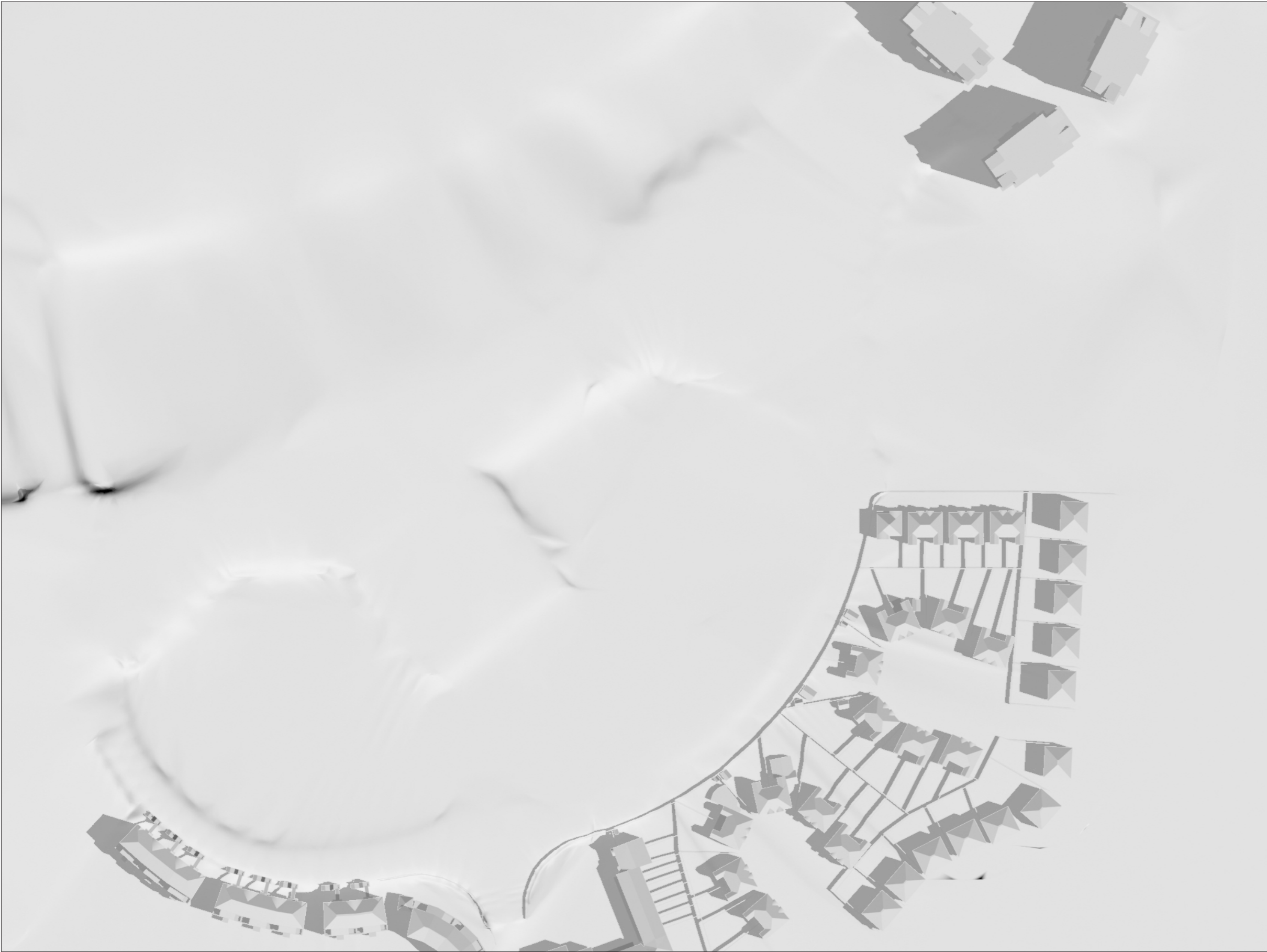
DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.34 AM
SUNSET : 6.48 PM

TIME :
5.00 PM



EXISTING

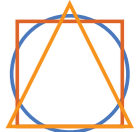
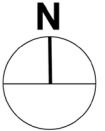
OSI LICENCE NO. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.

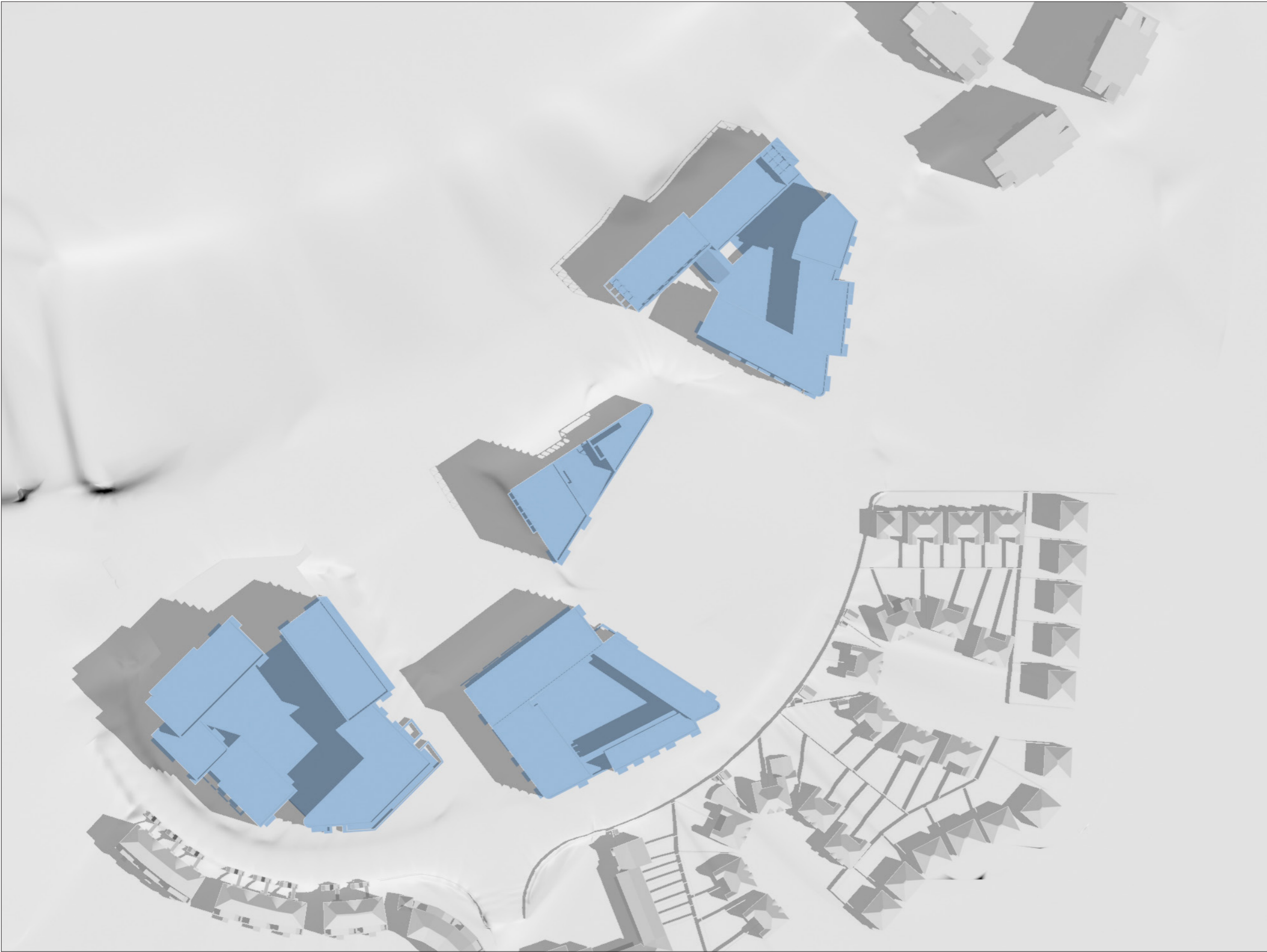


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
9.00 AM

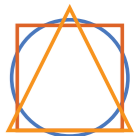
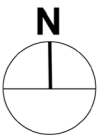




SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
9.00 AM

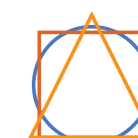
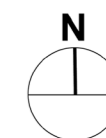




SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
9.00 AM



EXISTING

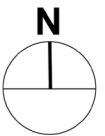
OSI LICENCE NO. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.



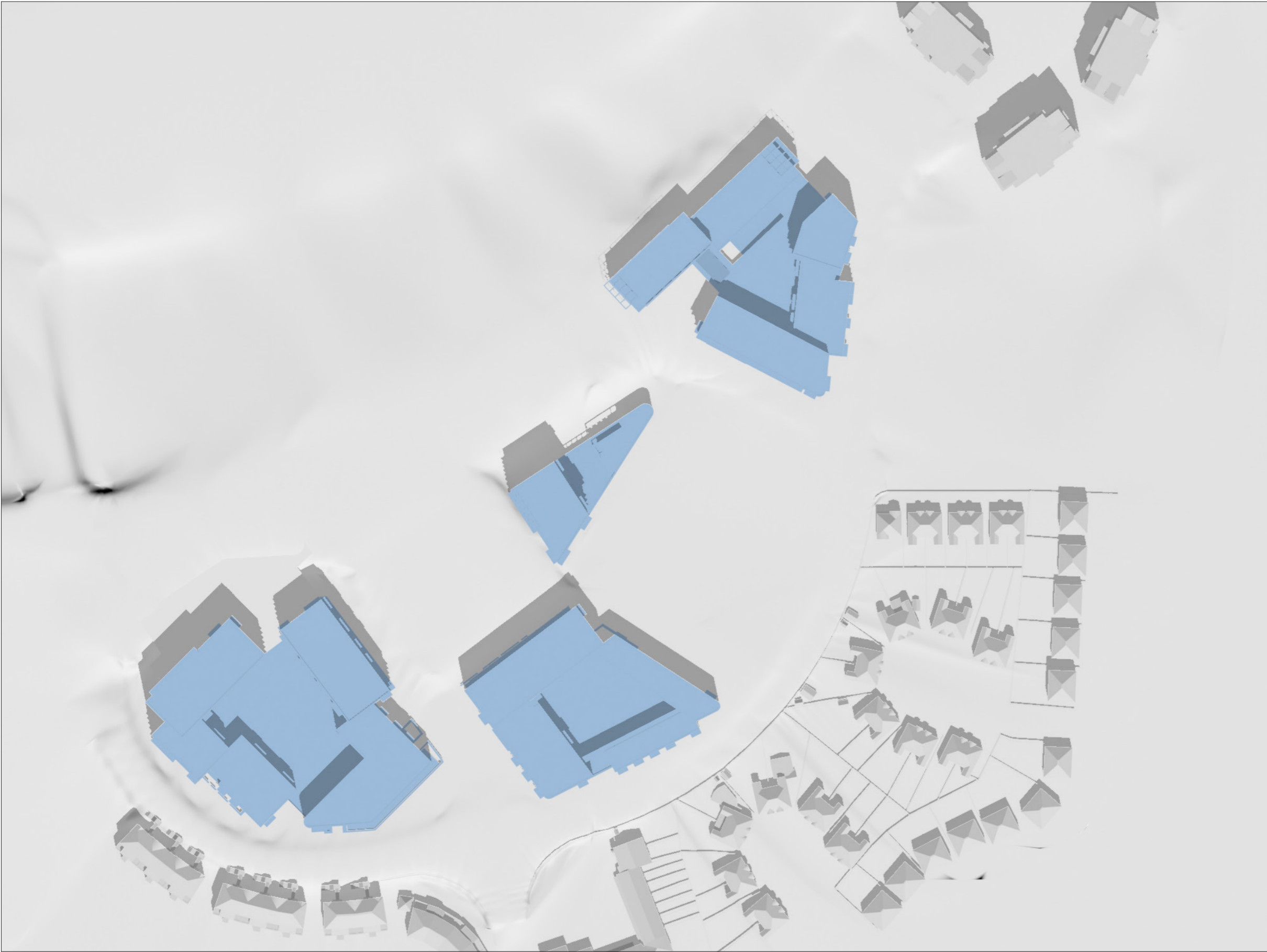
SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
12.00 PM



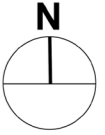
OSI LICENCE No. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.



SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
12.00 PM

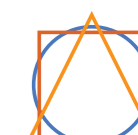
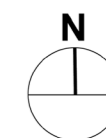




SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

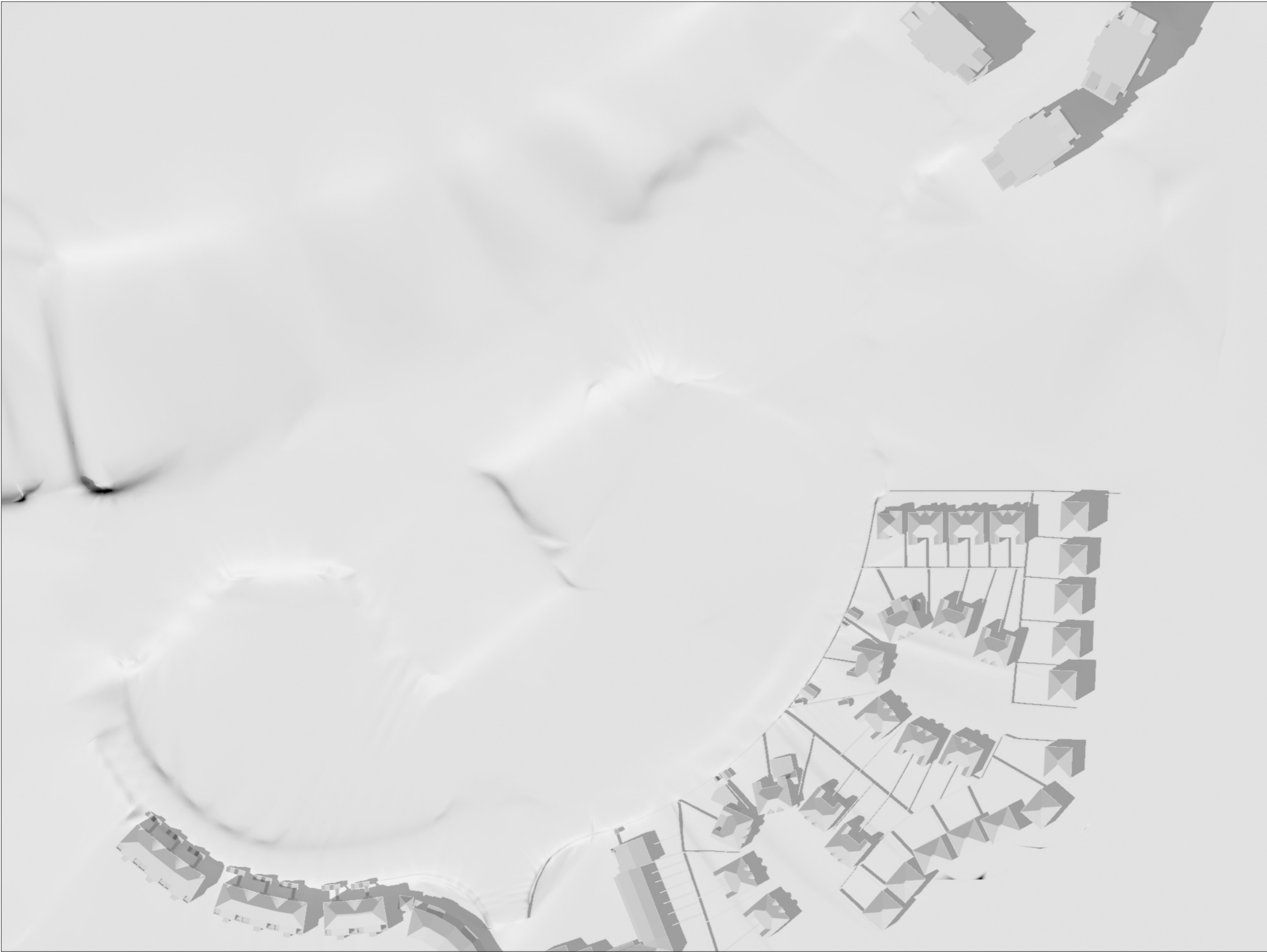
DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
12.00 PM



EXISTING

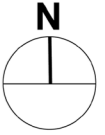
OSI LICENCE NO. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.



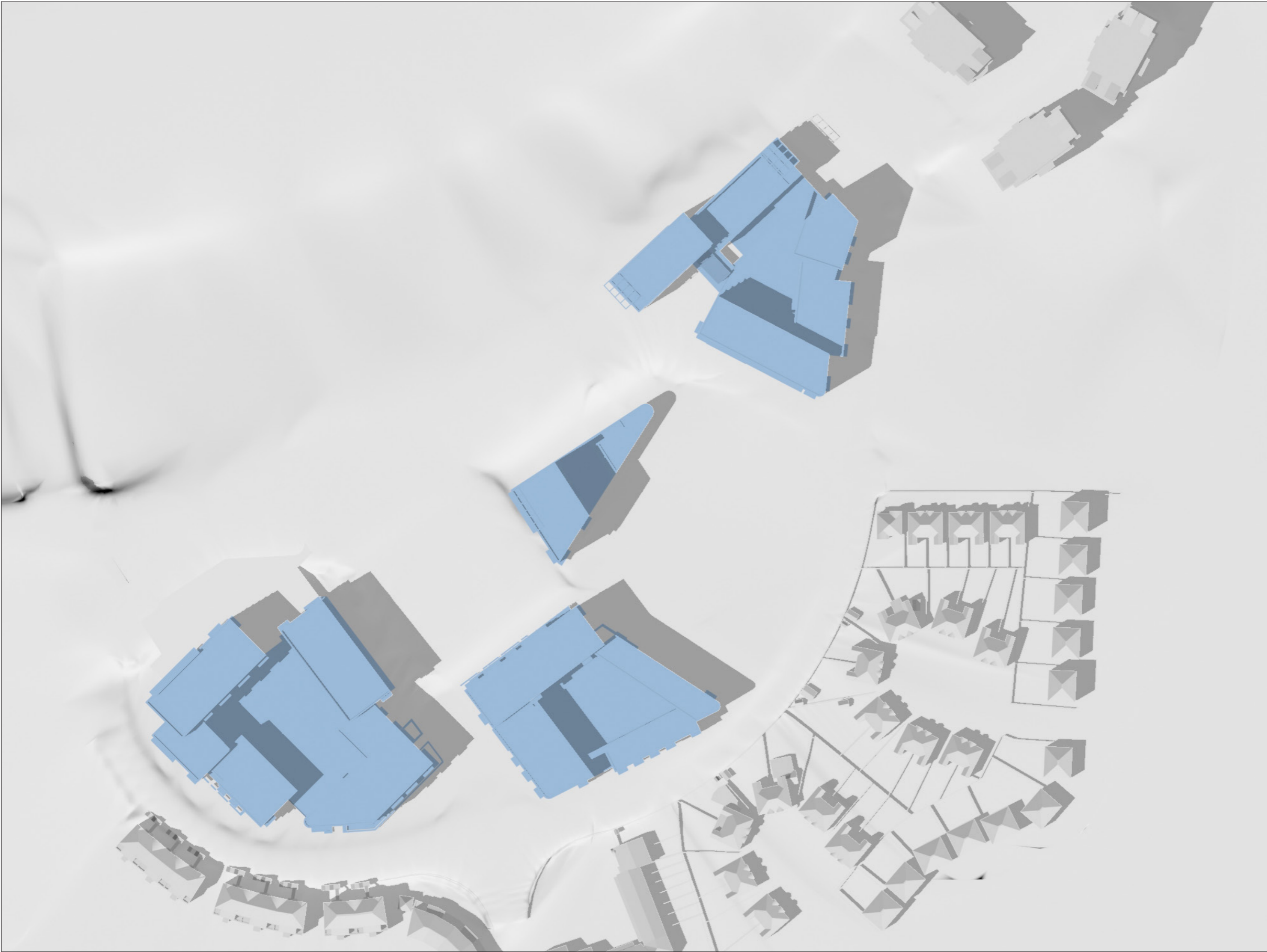
SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
3.00 PM



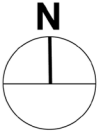
OSI LICENCE NO. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.



SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
3.00 PM

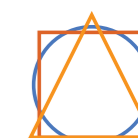
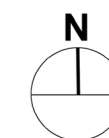




SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

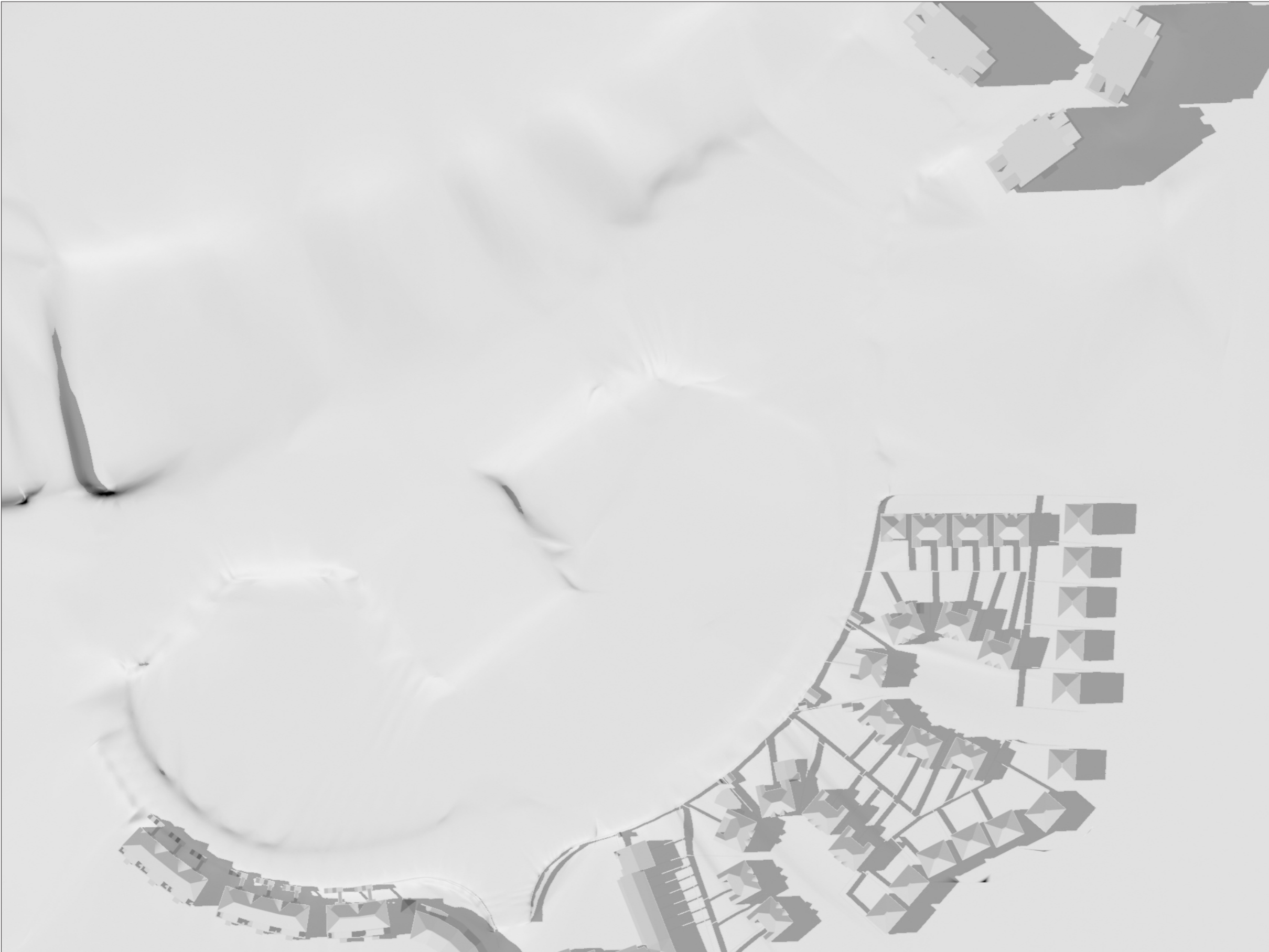
DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
3.00 PM



EXISTING

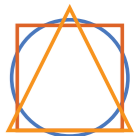
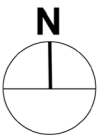
OSI LICENCE NO. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.



SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
5.00 PM

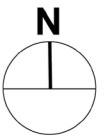




SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
5.00 PM

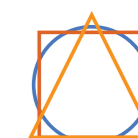
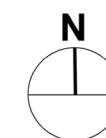




SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

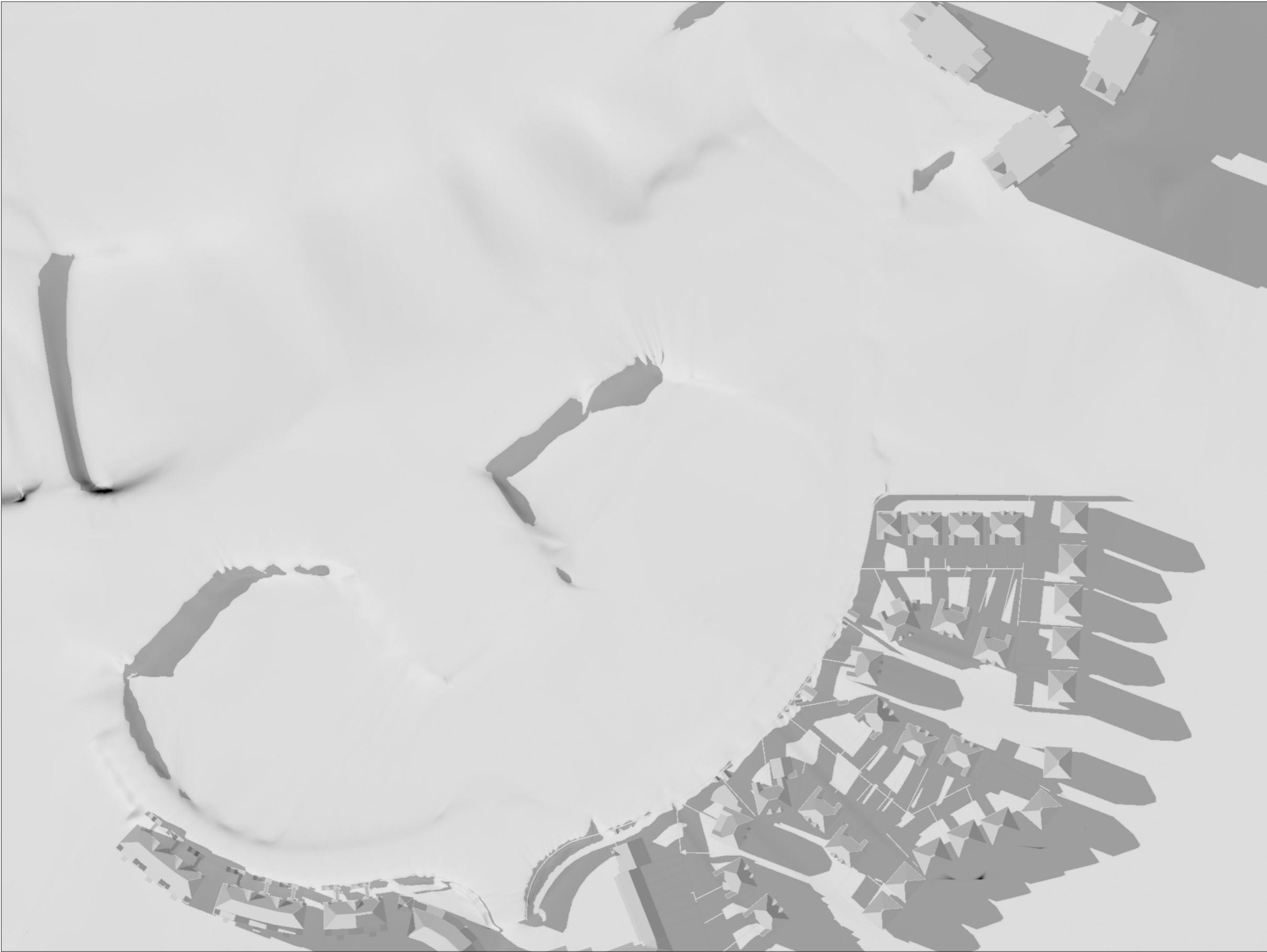
DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
5.00 PM



EXISTING

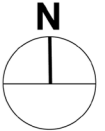
OSI LICENCE No. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.



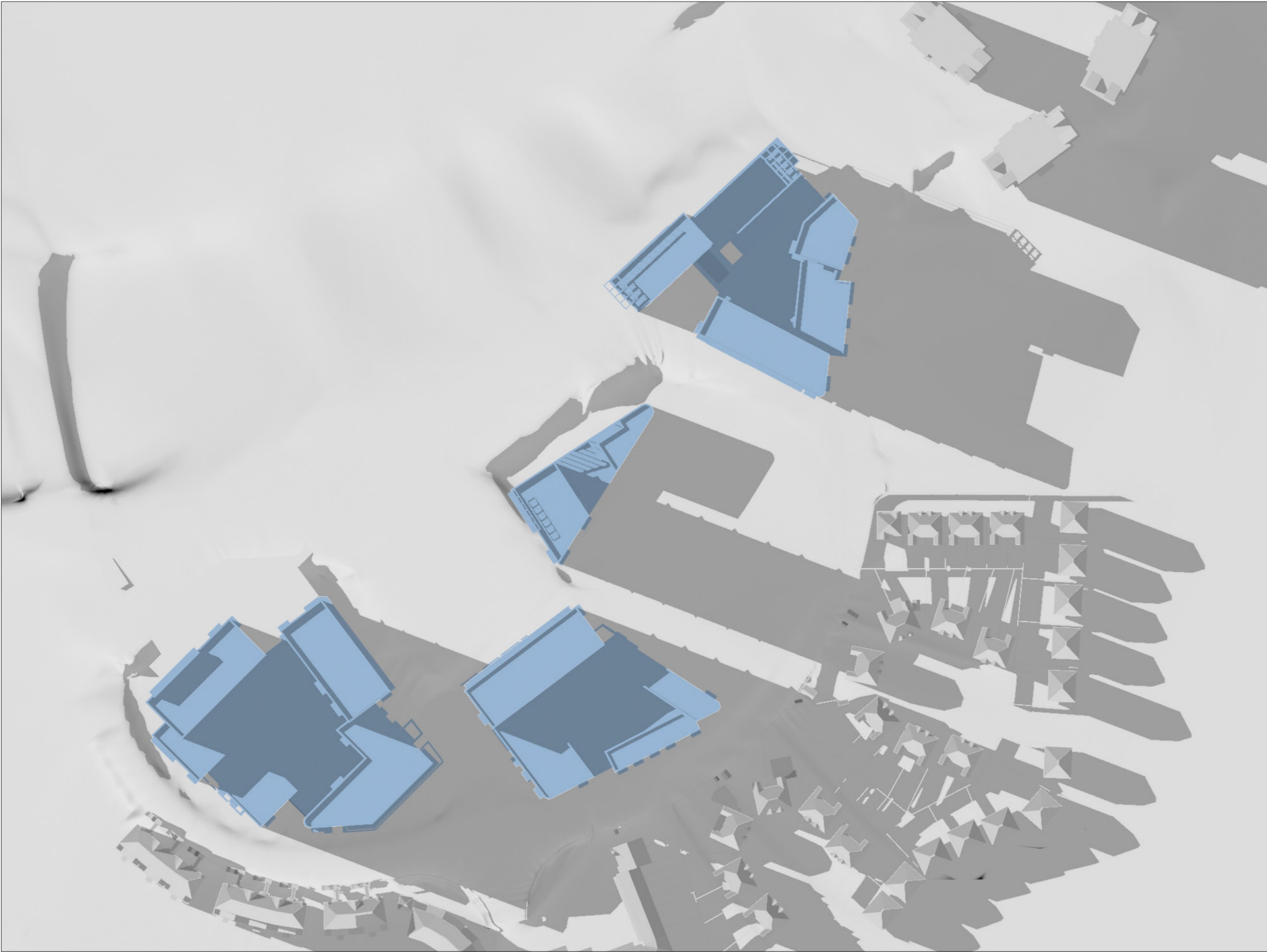
SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
7.00 PM



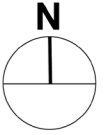
OSI LICENCE No. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.

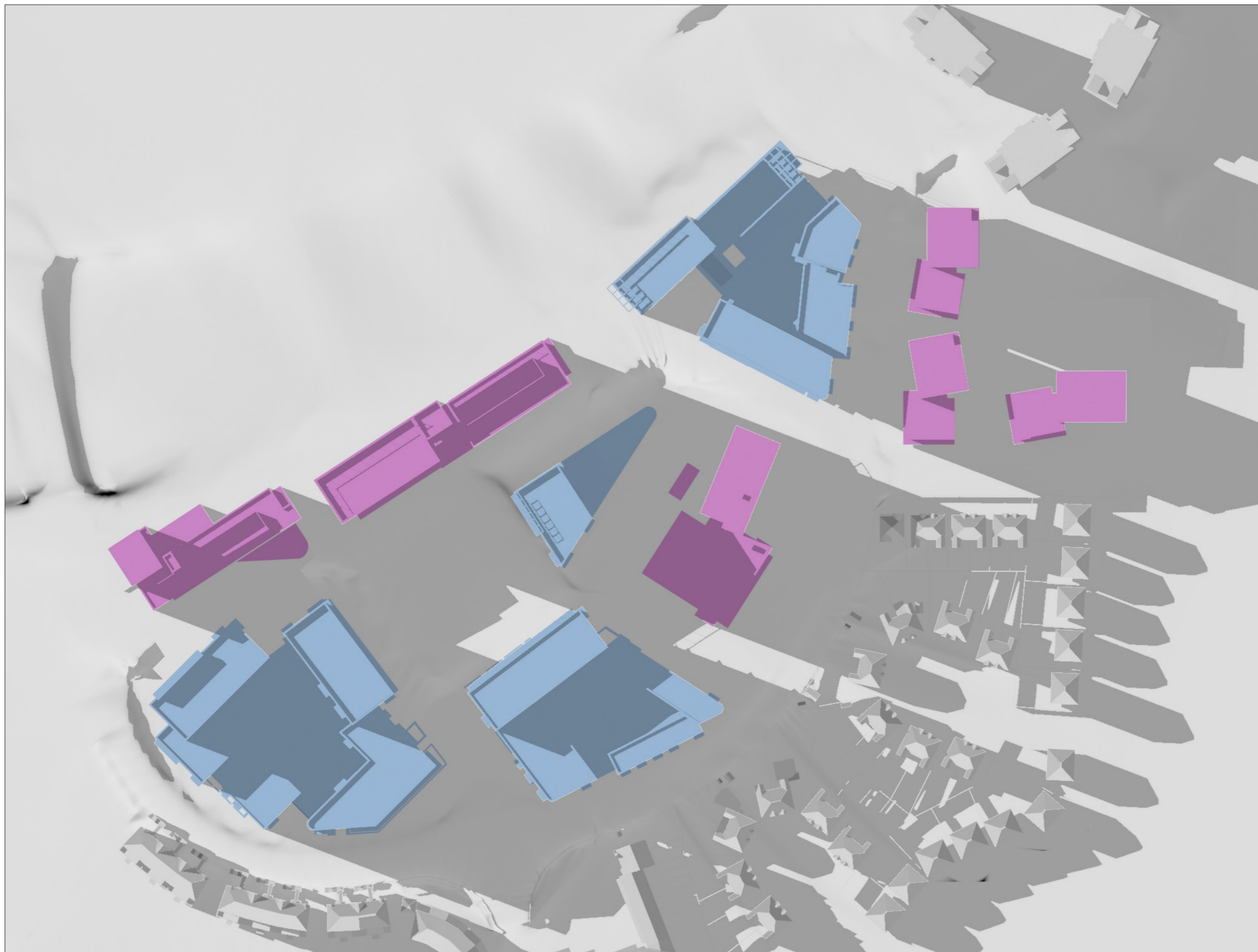


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
7.00 PM

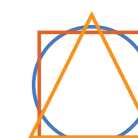
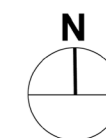




SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

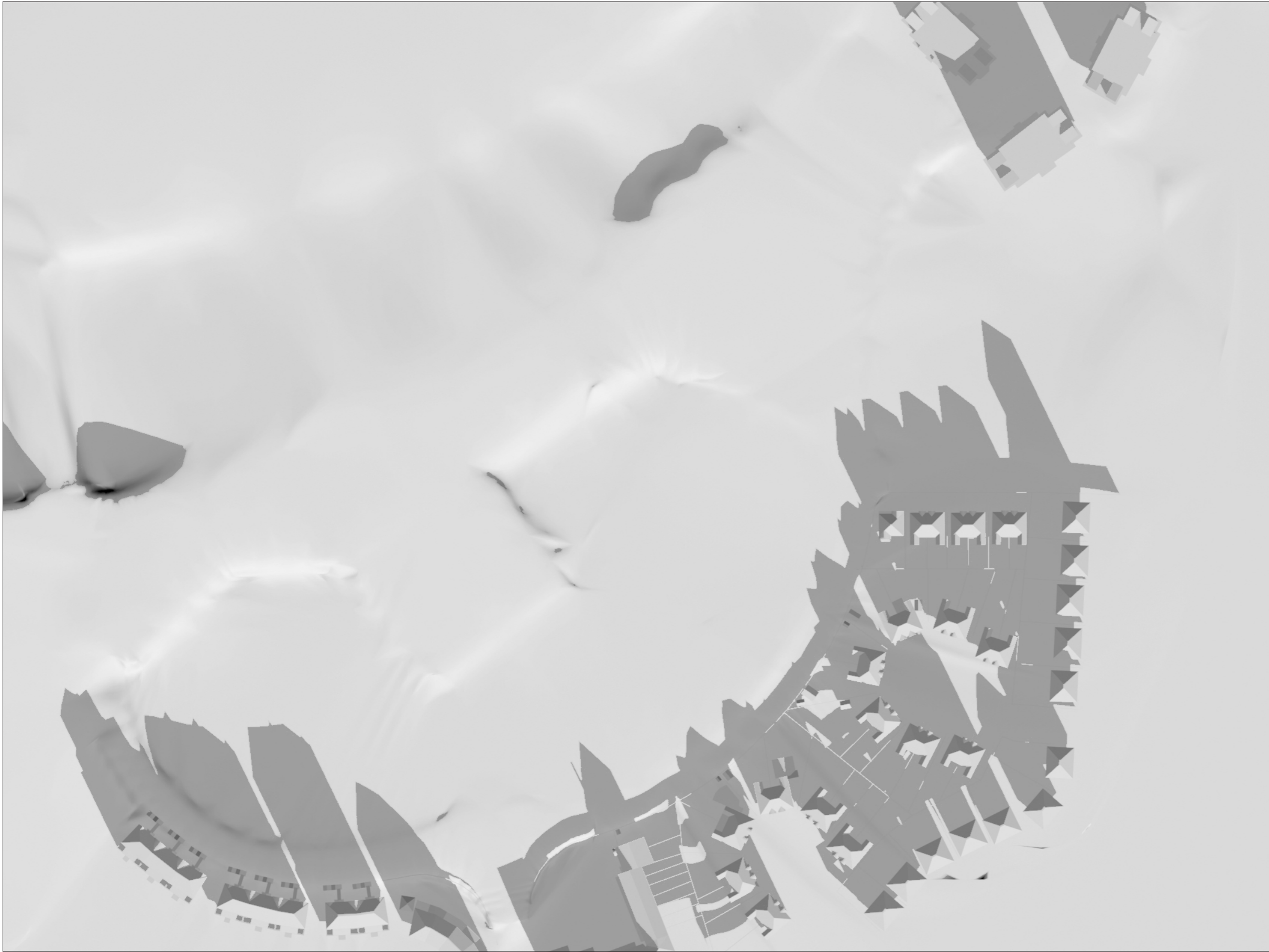
DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 5.14 AM
SUNSET : 9.57 PM

TIME :
7.00 PM



EXISTING

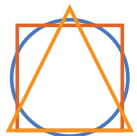
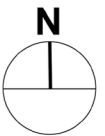
OSI LICENCE No. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.

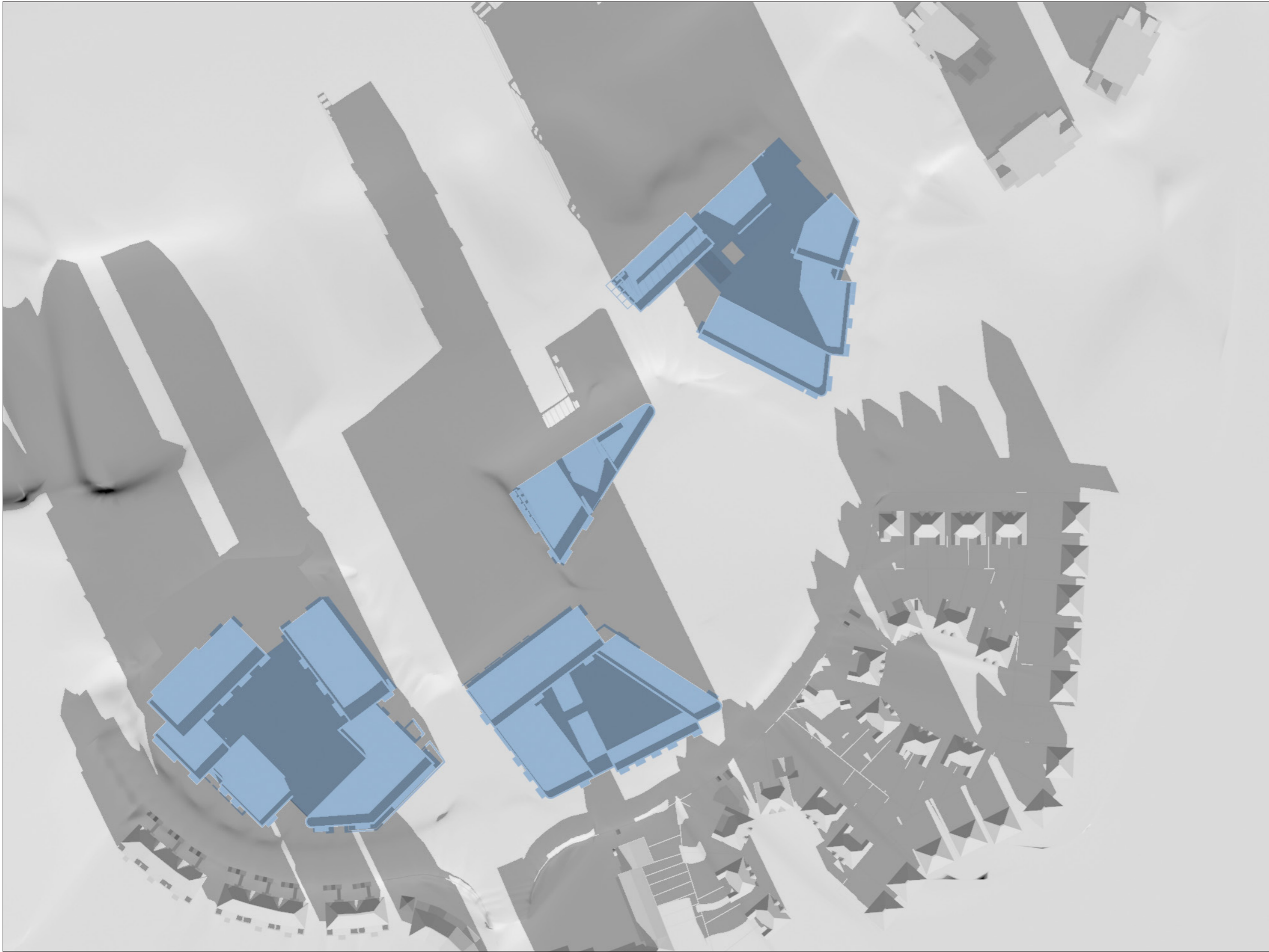


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : DECEMBER 21ST - WINTER SOLSTICE
SUNRISE : 8.39 AM
SUNSET : 4.24 PM

TIME :
10.30 AM

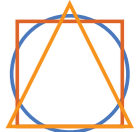
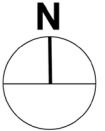


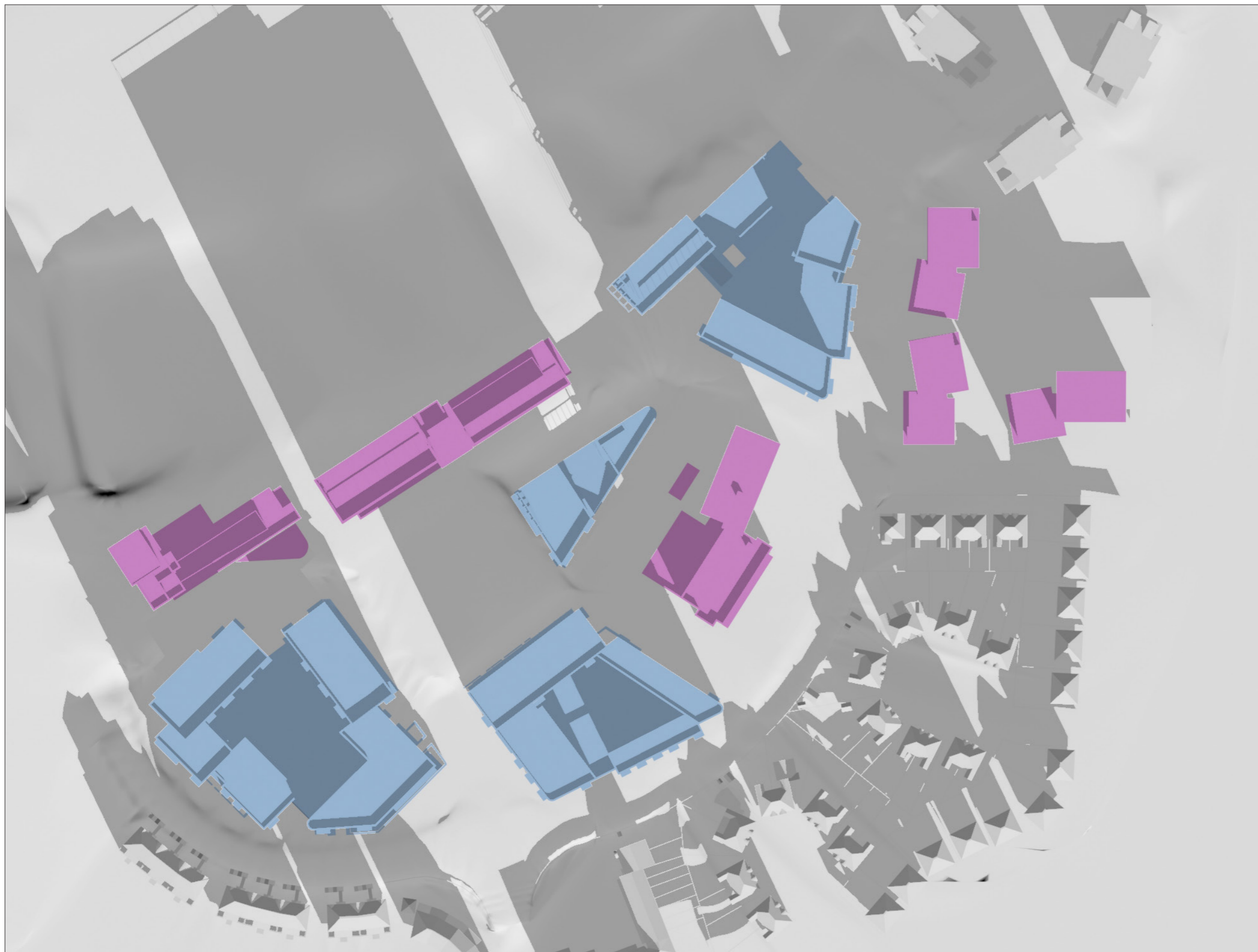


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : DECEMBER 21ST - WINTER SOLSTICE
SUNRISE : 8.39 AM
SUNSET : 4.24 PM

TIME :
10.30 AM

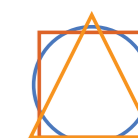
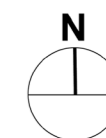




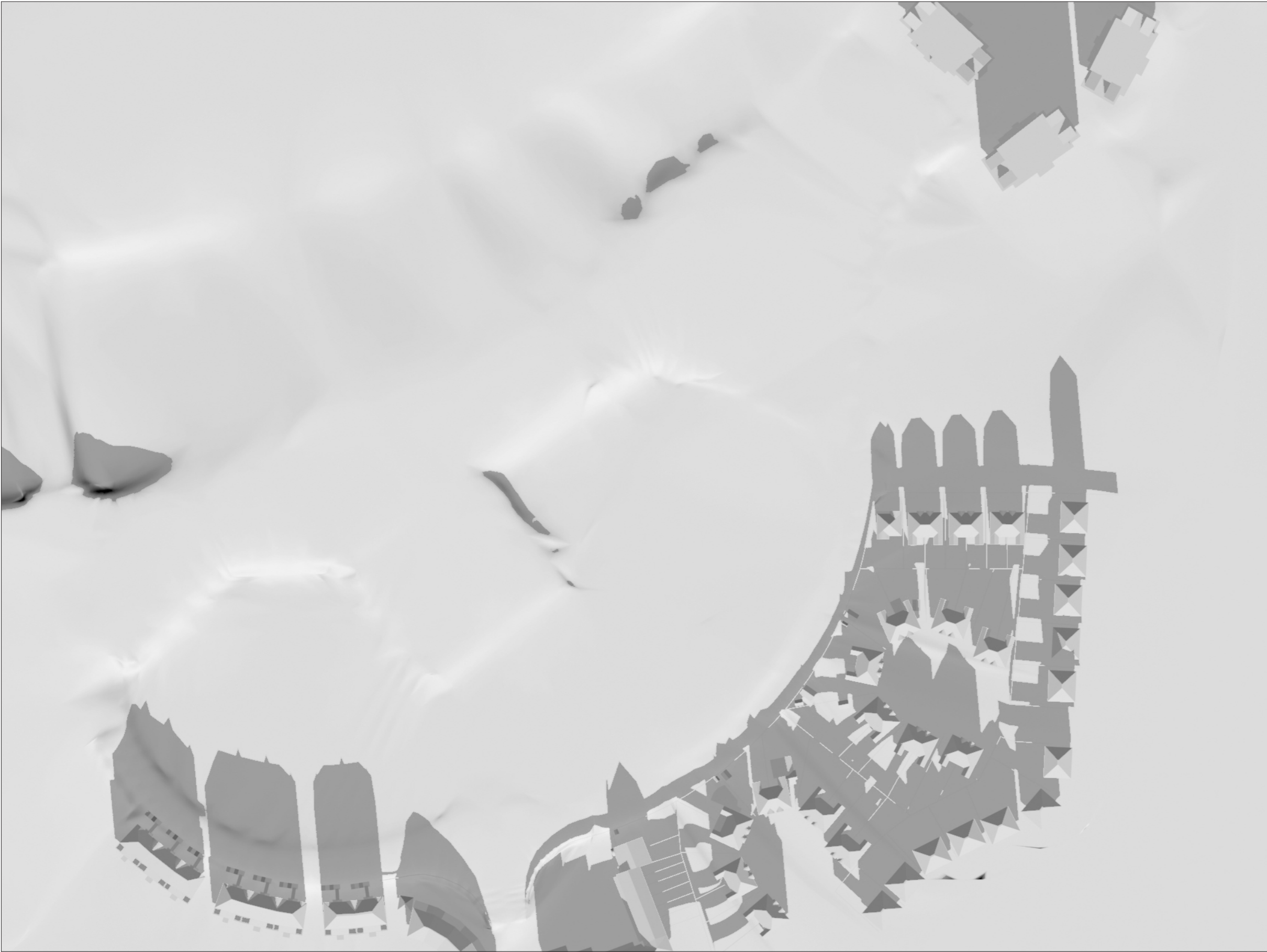
SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : DECEMBER 21ST - WINTER SOLSTICE
SUNRISE : 8.39 AM
SUNSET : 4.24 PM

TIME :
10.30 AM



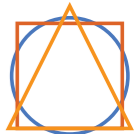
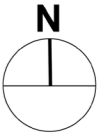
OSI LICENCE NO. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.

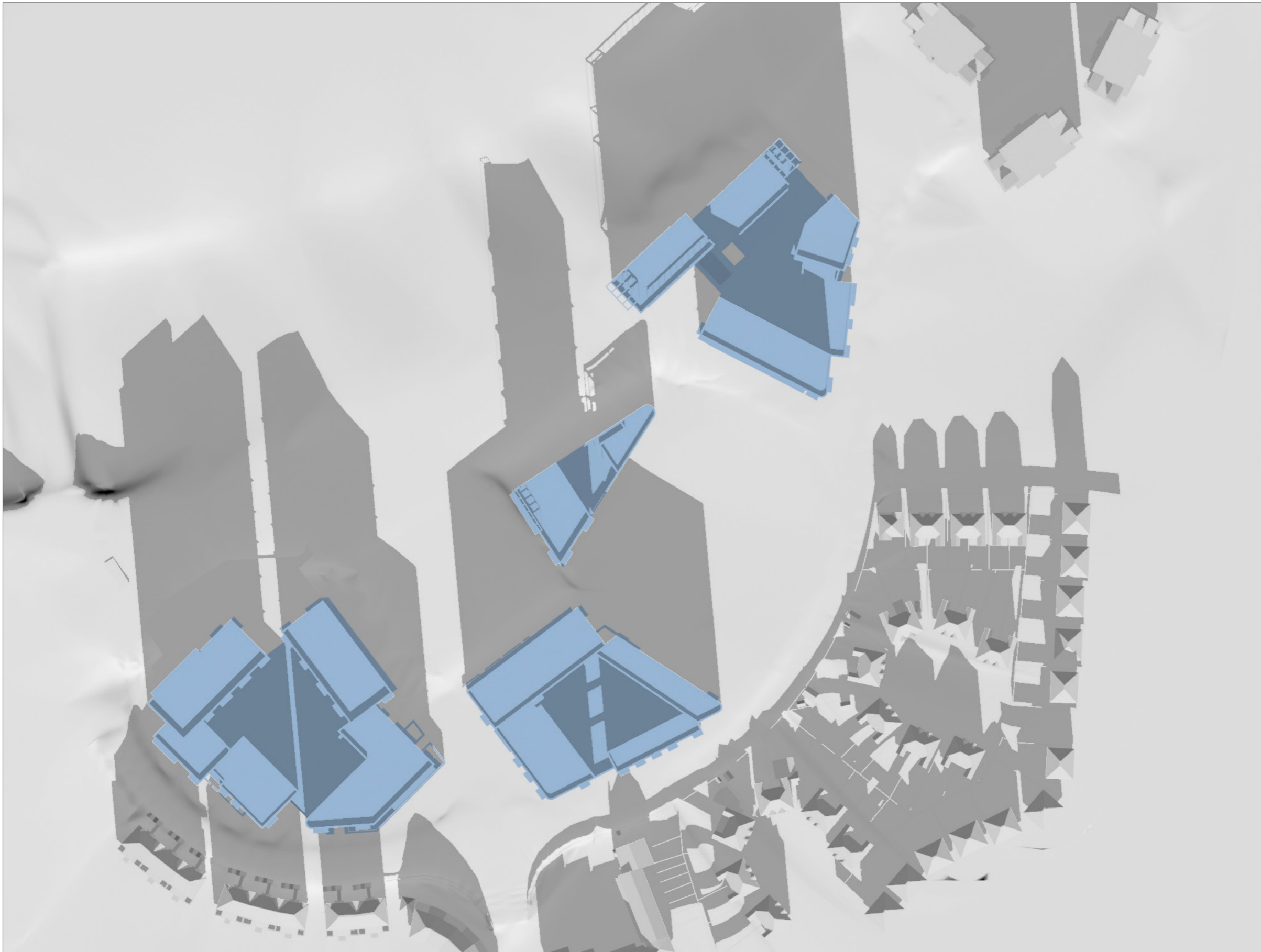


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : DECEMBER 21ST - WINTER SOLSTICE
SUNRISE : 8.39 AM
SUNSET : 4.24 PM

TIME :
12.00 PM

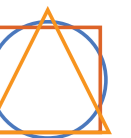
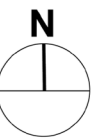


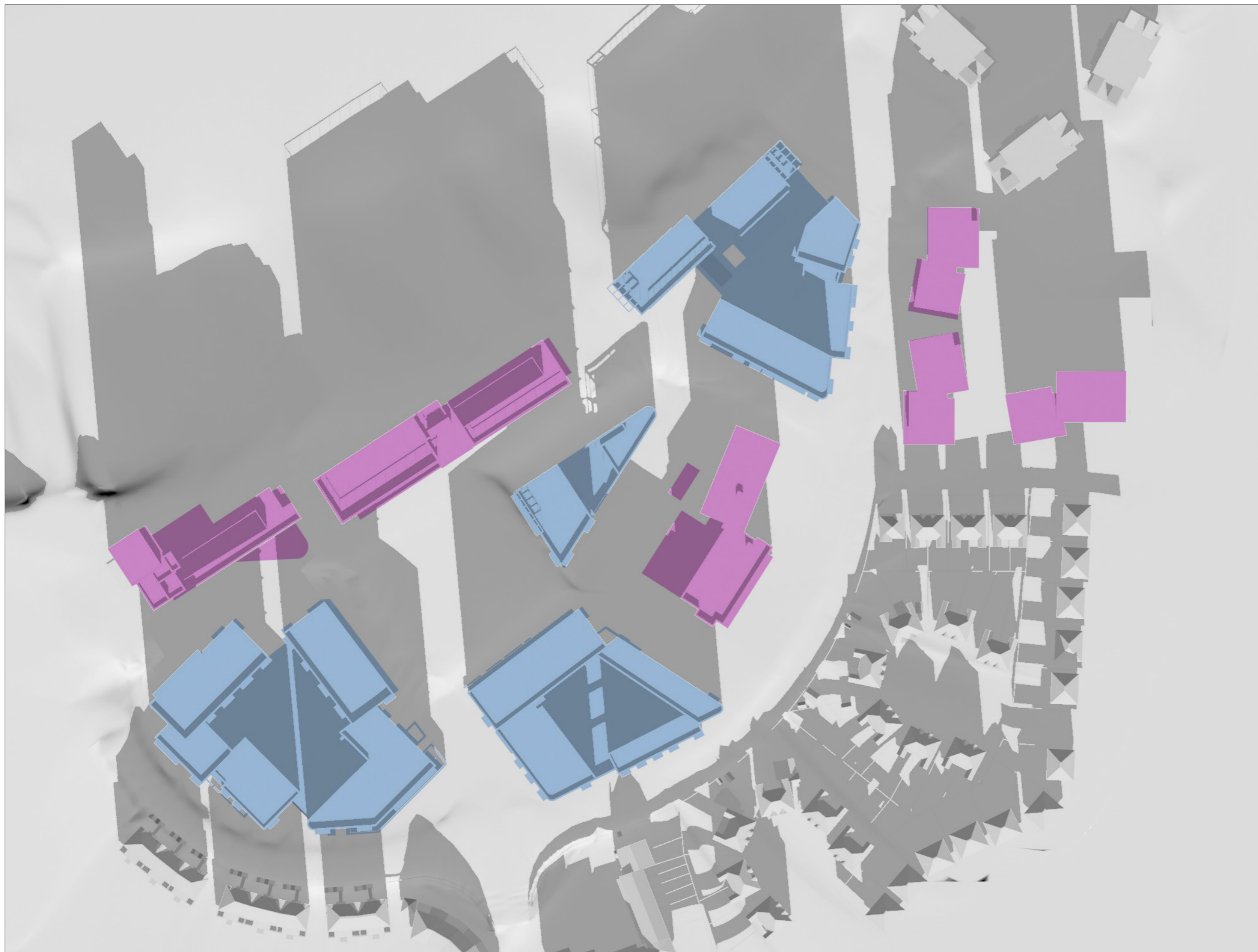


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : DECEMBER 21ST - WINTER SOLSTICE
SUNRISE : 8.39 AM
SUNSET : 4.24 PM

TIME :
12.00 PM

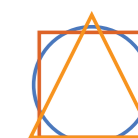
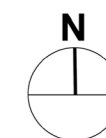




SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

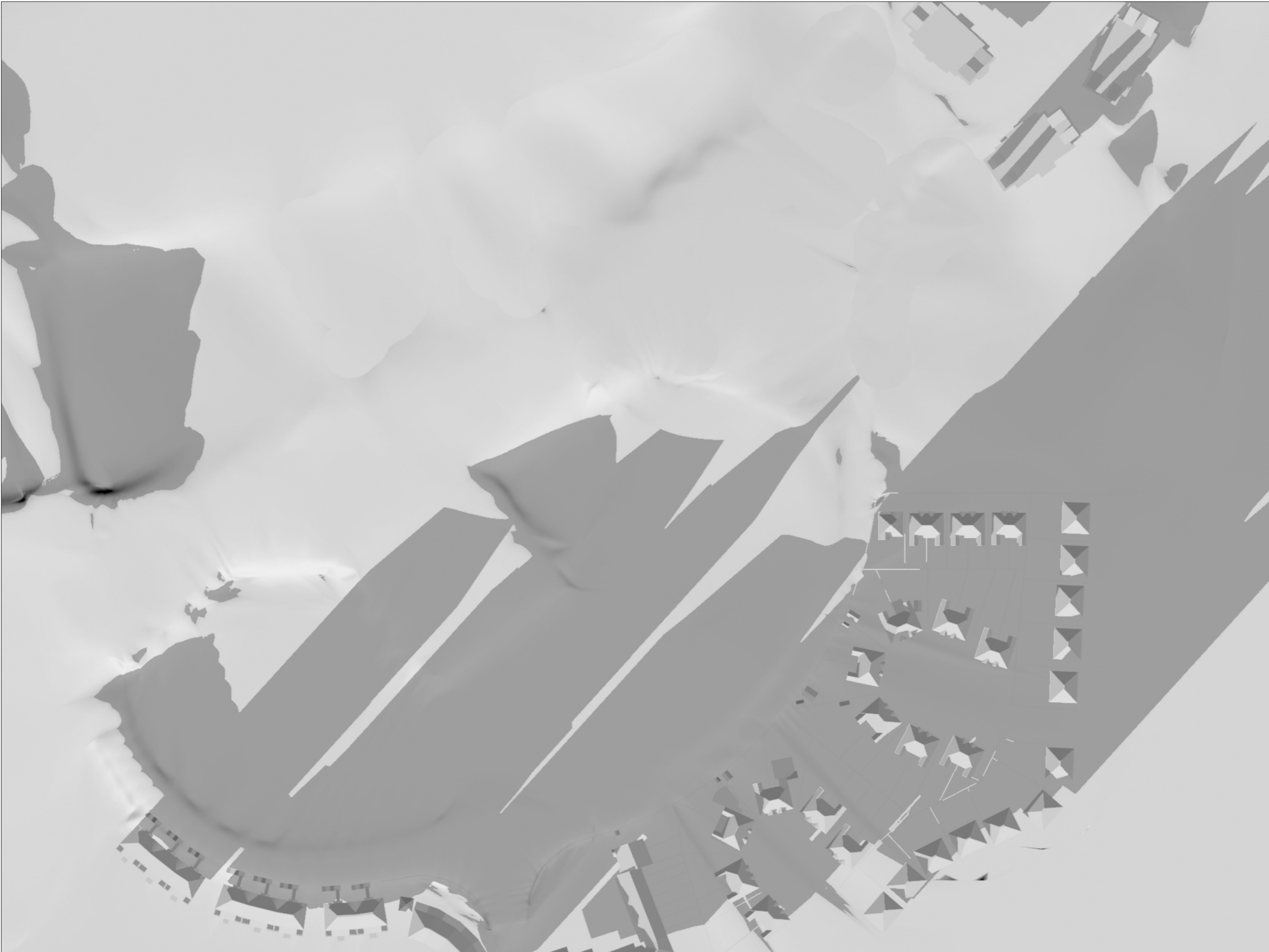
DATE : DECEMBER 21ST - WINTER SOLSTICE
SUNRISE : 8.39 AM
SUNSET : 4.24 PM

TIME :
12.00 PM



EXISTING

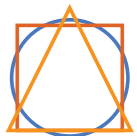
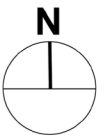
OSI LICENCE NO. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.

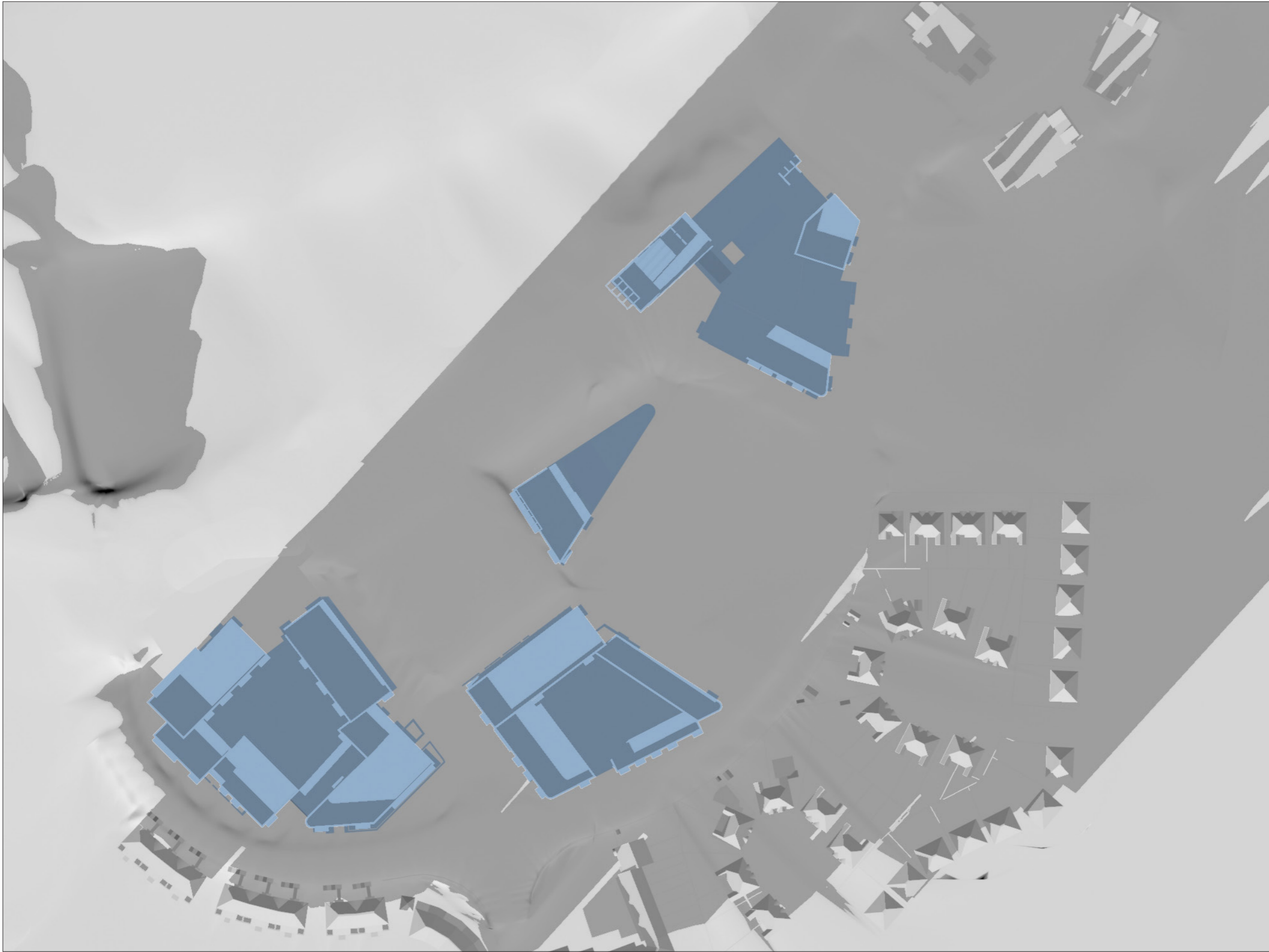


SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : DECEMBER 21ST - WINTER SOLSTICE
SUNRISE : 8.39 AM
SUNSET : 4.24 PM

TIME :
3.30 PM





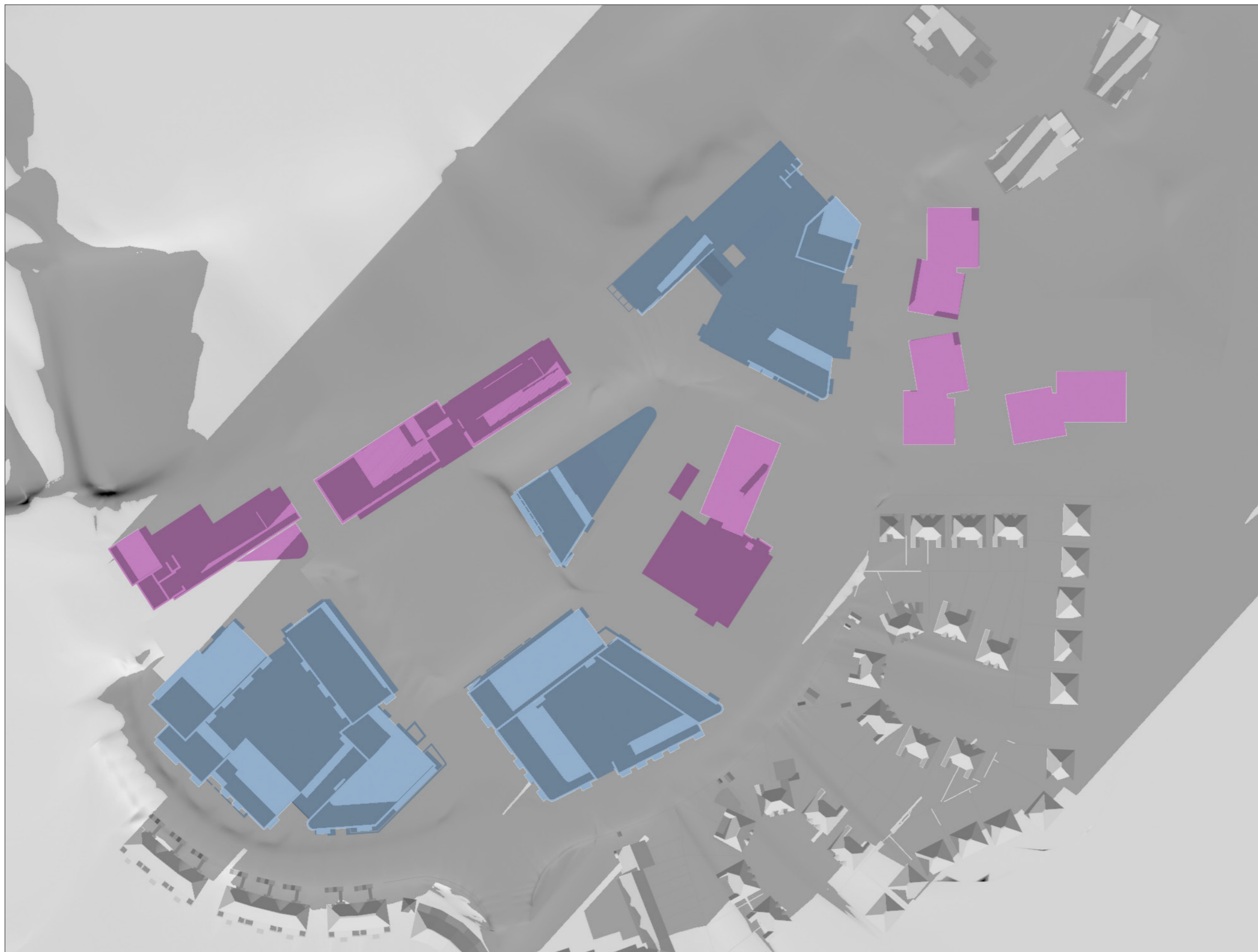
SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : DECEMBER 21ST - WINTER SOLSTICE
SUNRISE : 8.39 AM
SUNSET : 4.24 PM

TIME :
3.30 PM

CUMULATIVE
PROPOSED

OSI LICENCE NO. CYAL50210860
© ORDNANCE SURVEY IRELAND
/GOVERNMENT OF IRELAND.



SHADOW STUDY
LANDS AT JACOB'S ISLAND, CORK
JUNE 2022

DATE : DECEMBER 21ST - WINTER SOLSTICE
SUNRISE : 8.39 AM
SUNSET : 4.24 PM

TIME :
3.30 PM

