Sunlight and Daylight Access Analysis of the Proposed Development on Lands at Old Dublin Road and Lower Kilmacud Road, Stillorgan, Co. Dublin
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 the Leisureplex site at Old Dublin Road and Lower Kilmacud Road, Stillorgan, Co. Dublin. The subject site also includes 62 and 63 St. Laurence’s Park, Stillorgan, Co. Dublin.

Note on Reference to Context under Technical and Guidance Documents and on Reference to Methodology

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 brownfield site at the eastern extent of the Stillorgan Village / Stillorgan District Centre known locally as the “Leisureplex” site. Leisureplex operates a bowling alley on the site at the junction of the Old Dublin Road and Lower Kilmacud Road, together with other amusements and leisure uses. The building is a predominantly single-storey warehouse structure with surface car park accessed from Old Dublin Road. The subject site also includes the two-storey semi-detached dwellings at Nos. 62 and 63 St. Laurence’s Park.

The site is bounded by Lower Kilmacud Road to the south, on the southern side of which is a large site, which formerly accommodated a number of restaurants (one of which was the “Blakes” restaurant for which the site has become known) in one to two-storey building surrounded by surface car park. Following the closure of Blakes restaurant, that portion of the building came to be used as a nightclub for a number of years. The opposing sites (former Blakes and Esmonde Motors sites) is also identified for significant development and a four to nine-storey development was recently permitted on the site (ABP Ref ABP-300520-17). The former Blakes’ site was recently cleared and all buildings on the site demolished. Although more prominent than the application site (i.e. as it is located at an elevated position at the northern end of The Hill), a six to twelve-storey development was previously permitted on the Blakes site in 2005 (DURCC Reg. Ref. D94A08674/ABP Ref PLOID22/0848).

The site is bounded to the northwest by a series of two-storey commercial units turning the corner from Old Dublin Road on to St. Laurence’s Park. The residential estate at St. Laurence’s Park is located to the east between the site and the N11 National Primary Road.

The Dun Laoghaire-Rathdown Development Plan 2016-2022 and Stillorgan Local Area Plan 2018-2024 identify the application site for development as part of lands identified as ‘Leisure, Flex, Library and Environ’ (i.e. the application site to the west and the DLR site owned by Dun Laoghaire-Rathdown County Council to the east). The Stillorgan Local Area Plan 2018-2024 provides for a benchmark height of five storeys and identify the potential to accommodate a nine-storey landmark building on the combined site. Since the adoption of the Stillorgan Local Area Plan 2018-2024 in October 2018, the Department of Housing, Planning and Local Government published the Urban Development and Building Heights Guidelines for Planning Authorities (December 2018).

Specific Planning Policy Requirement 1 of these guidelines states: “In accordance with Government policy to support increased building height and density in locations with good public transport accessibility, particularly towns/city cores, planning authorities shall not provide for blanket numerical limitations on building height.” Given this, it is assumed that assessment of development on the application site will be based on performance-based criteria rather than with reference to any maximum height limits set out in the Local Area Plan.

The performance-based criteria suggested in the Guidelines provide that “the form, massing and height of proposed developments should be carefully modulated so as to maximise access to natural daylight, ventilation and views and minimise overshadowing and loss of light.”

While Stillorgan Village / Stillorgan District Centre is largely commercial in character, the wider area surrounding Stillorgan is largely residential in character and is typified by vast estates of one and two storey houses of varying styles and types interspersed with higher density residential developments. In recent decades, following the opening of the Stillorgan Quality Bus Corridor in 1999, numerous sites fronting on to the N11 National Primary Road near Stillorgan have been developed with high density residential developments, including the seven storey apartment blocks at Beechwood Court at Galloping Green; the six to eight storey Thornwood apartments and the five to seven storey Booterstown Wood apartments at the junction of Booterstown Avenue with the N11 and the five to seven storey Merion Hill.
2.0 ASSESSMENT OF THE IMPACT OF THE PROPOSED DEVELOPMENT ON SUNLIGHT ACCESS

The statistics of Met Eireann, the Irish Meteorological Service, indicate that the sunniest months in Ireland are May and June. During December, Dublin receives a mean daily duration of 1.7 hours of sunlight out of a potential 7.4 hours sunlight each day (i.e., only 22% of potential sunlight hours). This can be compared with a mean daily duration of 6.4 hours of sunlight out of a potential 16.7 hours each day received by Dublin during July. Therefore, the differences in sunshine duration are generally most noticeable during the summer months and least noticeable during the winter months. Due to the low angle of the sun in the mid-winter, the shadow environment in all urban and suburban areas is generally dense throughout winter.

In assessing the impact of a development on sunlight access, the comments of PJ Littlefair 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.”

2.1 Overview of the likely impact of shadows cast by the proposed development on lands outside the application site

Having regard to the shape, layout and orientation of the application site, the potential of the proposed development to result in overshadowing of lands outside the application site is limited to lands immediately to the north of the site and lands to the east, although the lands to the east, the ‘DLR site’ are, together with the application site, identified as a strategic site for redevelopment under the Stillorgan Local Area Plan 2018-2024. To the west of the site, the orientation of the site and the position of the proposed development set back from Old Dublin Road, the four lane width of Old Dublin Road and the large expanse of surface car parking surrounding the Stollorgan Shopping Centre reduce the potential for any impacts on sunlight access to sensitive receptors.

To the north, shadows cast by the proposed development are likely to extend across the road at St Laurence’s Park during the mornings and early afternoons during the autumn, winter and spring months. However, shadows cast by the proposed development are likely to extend to the front facades of houses at Nos. 45-49 St Laurence’s Park for a short time during the mornings of the spring and autumn months and during the mornings and early afternoons of the winter months resulting in a “slight” to “moderate” change to the shadow environment. For a time around mid-winter, shadows cast by the proposal are also predicted to extend as far as the facades of Nos. 39-44 during the morning and into the early afternoon and as far as Nos. 3-8 Old Dublin’s Park from late morning and into the afternoon. However, the shadow environment at this time of year is so dense that the impact of this additional overshadowing is predicted to be “imperceptible” to “slight”. The construction of the proposed development will not result in any additional shadow environment of lands to the north at St Laurence’s Park during the summer months (i.e. during May, June and July). Relevant windows within the existing houses to the north at St Laurence’s Park and their associated front and rear gardens will continue to receive a level of sunlight in excess of the level recommended by the Building Research Establishment’s Site layout planning for daylight and sunlight: a guide to good practice (the BRE Guide) to achieve an appearance of adequate sunlighting over the course of the year after the construction of the proposed development. Similarly, the open space at St Laurence’s Park is also predicted to receive a level of sunlight access in excess of that recommended by the BRE Guide for amenity spaces after the construction of the proposed development. Given this, the proposed development is not predicted to result in any undue adverse impacts on sunlight access of lands to the north at St Laurence’s Park.

As noted above, lands immediately to the east of the site at St Laurence’s Park form part of the overall site identified as the ‘Leisure Pitlex, Library and Environments’ site under the Stillorgan Local Area Plan 2018-2024 – together with the application site, these lands are identified for major redevelopment. The lands to the east currently accommodate a single storey library building, a pair of semi-detached dwellings and a number of terraces of existing units, which, it is understood, will shortly be proposed for demolition in order to facilitate the development of “a new library and in the region of 80 – 90 new housing units”. It is understood that “A full Design Team consisting of external consultants has been appointed and surveys and site investigations have been carried out. Stage 1 approval has been obtained from the Department of Housing, Planning and Local Government (DHLPG) which gives approval in principle to the development of the site. Work is currently on-going in relation to the preparation of an application for Stage 2 approval, which involves detailed discussion with the DHLPG in relation to design issues to ensure that the scheme delivers an attractive, high quality and sustainable residential and public realm for the Stillorgan area. It is anticipated that an application for Stage 2 approval will be submitted in the short-term which is required to allow the proposal to proceed to the planning process.”

Given this, it has been assumed, for the purposes of this assessment, that the existing units at Nos. 64-67, 68-69, 73-75 & 76-79 Old Dublin’s Park (currently vacant) will be demolished and that a new development will be constructed on the lands to the east: ARC was supplied with a model of the emerging design for the development on the adjoining ‘DLR site’ by the Design Team, which was used by ARC in undertaking analysis of whether new development on lands to the east would likely receive adequate sunlight access if the proposed development were to be constructed. ARC’s analysis indicates that, notwithstanding the construction of the proposed development, living within residential units and the linear amenity space on the ‘DLR site’ to the east of the eastern boundary of the application site are likely to appear adequately sunlit throughout the year within the meaning of the BRE Guide.

Shadows cast by the proposed development will extend to the rear of the adjoining commercial premises at Nos. 1-3 Old Dublin Road and Nos. 70-71 St Laurence’s Park for much of the day during the winter months (i.e. November, December, January). The construction of the proposed development will result in overshadowing of Nos. 1-3 Old Dublin Road during the mornings and early afternoons of the spring and autumn months, with the rear of No. 1 Old Dublin Road experiencing additional overshadowing during the mornings and early afternoons of the summer months. The yards to the rear of these structures appear to be almost entirely covered with single storey extensions, with only first floor windows facing towards the application site. Shadows cast by the proposed development are also likely to extend to the roof of the single storey garage to the rear of Nos. 1-3 Old Dublin Road and Nos. 70-71 St Laurence’s Park during the mornings and early afternoons throughout the year; although this additional overshadowing is not likely to impinge on any window (i.e. there do not appear to be any rooflights in this structure). While the rear facades of the buildings closest to Block 1/2 are likely to experience the largest impacts (i.e. Nos. 1-3 Old Dublin Road), it is noted that these buildings face within 90° of due north and, therefore, would not, in any case, be considered to have a reasonable expectation of sunlight. With the exception of what appears to be one residential unit on the first floor at No. 3 Old Dublin Road, it is understood that the corner terrace at Nos. 1-3 Old Dublin Road and Nos. 70-71 St Laurence’s Park are all in commercial use. ARC’s analysis indicates that rear-facing windows on the first floor of No. 3 Dublin Road will continue to receive a level of sunlight access in excess of that recommended by the British Standard and the BRE Guide after the construction of the proposed development.

Neither the British Standard nor the BRE Guide provide specific guidance on what constitutes appropriate sunlighting of commercial buildings. The British Standard would seem to suggest that the impact of overshadowing on commercial buildings should only be assessed in circumstances where certain rooms within such buildings “are deemed to have a special requirement for sunlight”. While the recommendations of the BRE Guide appear to be largely focused on sunlight access to residential buildings, the Guide notes: “Sunlight is also valued in non-domestic buildings. However, the requirement for sunlight will vary according to the type of non-domestic building, the aims of the designer and the extent to which the occupant can control their environment.” In considering what might have been the aims of designers of the existing commercial buildings at Nos. 1-3 Old Dublin Road and Nos. 70-71 St Laurence’s Park, it is noted that sunlight access to retail storage spaces and office areas, particularly those in which employees spend a significant portion of time working on computers, can be problematic as it results in glare on computer screens, visual discomfort and excessive heat gain. Overshadowing of existing commercial buildings by new development, even where it results in a significant change to sunlight access, may, therefore, not necessarily be considered by the occupants to result in negative impacts. Given this and that the application site has been identified for major redevelopment in the Stillorgan Local Area Plan 2018-2024, the impact of shadows cast by the proposed development on neighbouring buildings at Nos. 1-3 Old Dublin Road and Nos. 70-71 St Laurence’s Park is predicted to range from “slight” to “moderate”.  

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1 Response from Helen Griffin, Senior Executive Officer, Housing Department to question of Councillor D. Donnelly; Meeting of Dun Laoghaire-Rathdown County Council Council Dundrum Area Committee of 24th April 2019.
2.2 Detailed analysis of the predicted impact of shadows cast by the proposed development on existing buildings outside the application site

This Sunlight and Daylight Access Analysis assesses the impact of the proposed development to all potential receptors surrounding the application site - these impacts are described in the section entitled “Overview of the likely impact of shadows cast by the proposed development on lands outside the application site”. 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 sunlight access to a representative sample of sensitive receptors (i.e. windows) in buildings in proximity to the application site (please see Figure 2.1).

Section 3.2.1 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 2° 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, or less than 5% of annual probable sunlight hours between 21 September and 21 March and
- receives less than 0.8 times its former sunlight hours during either period and
- has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.”

[Emphasis added]

The BRE Guide does not identify a need to undertake detailed quantitative assessment of the impact of new development on existing buildings, which do not face within 90° of due south (i.e. such as the rear window of No. 1 Old Dublin Road) and does not set out a recommended level of sunlight access for such windows. Given this, the below analysis focuses on windows facing within 90° of due south. A worst case scenario was assumed whereby windows at the lowest level of accommodation were analysed. The results of ARC’s analysis are set out in Table 2.1 below.

As set out in Table 2.1 below the impact of shadows cast by the proposed development on the studied windows to the north at St Laurence’s Park will range from “imperceptible” to “not significant”. ARC’s analysis indicates that the impact of shadows cast by the proposed development on the lands to the north at St Laurence’s Park is not predicted to be of a level which would suggest that sunlight of an existing building “may be adversely affected” (i.e. the three criteria for an adverse impact set out in the BRE Guide will not be met in the case of the relevant sample windows studied as part of this analysis). All sample windows to the north (e.g. Nos. 3, 42 and 48 St Laurence’s Park, as well as No. 70 St Laurence’s Park) are predicted to remain capable of receiving a level of sunlight access in excess of the annual level recommended by the British Standard and BRE Guide for rooms with a reasonable expectation of sunlight of 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development. As such, the proposed development is not predicted to result in any undue adverse impacts on sunlight access to neighbouring buildings to neighbouring buildings to the north.

Table 2.2: Predicted impact of the proposed development on sunlight access to sample windows in neighbouring existing buildings

<table>
<thead>
<tr>
<th>Zone</th>
<th>Annual</th>
<th>Summer</th>
<th>Winter</th>
<th>Annual</th>
<th>Summer</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 3 St Laurence’s Park Floor 00</td>
<td>68%</td>
<td>48%</td>
<td>20%</td>
<td>64%</td>
<td>48%</td>
<td>16%</td>
</tr>
<tr>
<td>No. 42 St Laurence’s Park Floor 00</td>
<td>77%</td>
<td>53%</td>
<td>24%</td>
<td>74%</td>
<td>53%</td>
<td>21%</td>
</tr>
<tr>
<td>No. 48 St Laurence’s Park Floor 00</td>
<td>77%</td>
<td>53%</td>
<td>24%</td>
<td>60%</td>
<td>50%</td>
<td>10%</td>
</tr>
<tr>
<td>No. 70 St Laurence’s Park Floor 01</td>
<td>66%</td>
<td>45%</td>
<td>21%</td>
<td>53%</td>
<td>37%</td>
<td>16%</td>
</tr>
</tbody>
</table>

* 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.
2.3 Detailed analysis of potential sunlight access to planned development outside the application site

This Sunlight and Daylight Access Analysis assesses the impact of the proposed development to all potential receptors surrounding the application site - these impacts are described in the section entitled ‘Overview of the likely impacts of shadows cast by the proposed development on lands outside the application site’. As noted above, lands immediately to the east of the site at St Laurence’s Park form part of the overall site identified as the ‘Leisure Pile’ Library and Environments’ site under the Stillorgan Local Area Plan 2018-2024 - together with the application site, these lands are identified for major redevelopment. It is understood that Dun Laoghaire-Rathdown County Council are in the process of finalising the detailed design for a new development on the adjoining ‘DLR site’ to the east, which will include the construction of a new library and the provision of 90-100 new residential units in a development, which will range in height from two to nine storeys. ARC was supplied with a model and drawings of the emerging design for the development on the adjoining ‘DLR site’ by the Design Team. By way of example in order to illustrate briefly the findings outlined in the overview section above, ARC conducted detailed analysis of the potential for the proposed development to result in impacts on sunlight access to a representative sample of windows within residential units proposed as part of the emerging design for development on the ‘DLR site’ (please see Figure 2.1 for the locations of sample windows assessed as part of this report).

Section 3.1.15 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 sunlight access to new buildings:

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

- at least one main window wall faces within 90° of due south; and
- the centre of at least one window to a main living room can receive at least 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months between 21 September and 21 March.”

ARC, therefore, assessed whether sample living rooms envisaged as part of the emerging design for development on the ‘DLR site’ would be capable of achieving the recommended level of sunlight access if the development now proposed on the application site were constructed. The results of ARC’s analysis are set out in Table 2.2 below.

Table 2.2: Potential sunlight access to living rooms proposed as part of the emerging design for the ‘DLR site’ after the construction of the proposed development on the application site

<table>
<thead>
<tr>
<th>Zone</th>
<th>Potential Probable Sunlight Hours Received</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual</td>
</tr>
<tr>
<td>DLR Zone A</td>
<td></td>
</tr>
<tr>
<td>Floor 00</td>
<td>30%</td>
</tr>
<tr>
<td>BRE recommendation met. ARC’s analysis suggests that the window in the sample unit proposed as part of the emerging design for development on the ‘DLR site’ will have the potential to receive a level of sunlight considerably in excess of the BRE recommendation of 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development.</td>
<td></td>
</tr>
<tr>
<td>DLR Zone B</td>
<td></td>
</tr>
<tr>
<td>Floor 00</td>
<td>32%</td>
</tr>
<tr>
<td>BRE recommendation met. ARC’s analysis suggests that the window in the sample unit proposed as part of the emerging design for development on the ‘DLR site’ will have the potential to receive a level of sunlight considerably in excess of the BRE recommendation of 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development.</td>
<td></td>
</tr>
<tr>
<td>DLR Zone C</td>
<td></td>
</tr>
<tr>
<td>Floor 00</td>
<td>34%</td>
</tr>
<tr>
<td>BRE recommendation met. ARC’s analysis suggests that the window in the sample unit proposed as part of the emerging design for development on the ‘DLR site’ will have the potential to receive a level of sunlight considerably in excess of the BRE recommendation of 25% Annual Probable Sunlight Hours (including 5% Annual Probable Sunlight Hours during the winter period) after the construction of the proposed development.</td>
<td></td>
</tr>
</tbody>
</table>

* 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.

As set out in Table 2.2, ARC’s analysis indicates that, notwithstanding the construction of the proposed development, living rooms within residential units envisaged as part of the emerging design for development on the ‘DLR site’ are likely to be capable of achieving 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months between 21st September and 21st March. Given this, ARC’s analysis indicates that, notwithstanding shadows cast by the proposed development, residential units envisaged as part of the emerging design for the ‘DLR site’ appear adequately sunlit throughout the year within the meaning of the BRE Guide.

2.4 Detailed analysis of the predicted impact of shadows cast by the proposed development on existing gardens and amenity areas outside the application site

This Sunlight and Daylight Access Analysis assesses the impact of the proposed development to all potential receptors surrounding the application site - these impacts are described in the section entitled “Overview of the likely impact of shadows cast by the proposed development on lands outside the application site”. However, by way of example in order to illustrate briefly the findings outlined in the overview section above, ARC conducted detailed analysis of the potential for the proposed development to result in impacts on sunlight access to a representative sample of sensitive receptors (i.e. gardens/amenity areas) in proximity to the application site (please see Figure 2.1).

Insofar as amenity spaces/gardens are concerned, 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 21st March. If the garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21st 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 21st March notwithstanding the construction of a proposed development, loss of sunlight as a result of additional overshadowing is not likely to be noticed.

ARC analysed the likely proportion of a number of neighbouring gardens/amenity areas in sunlight before and after the construction of the proposed development throughout the day on 21st March. For the purposes of this analysis, ARC analysed the communal open space serving St Laurence’s Park and the principal private amenity area of No. 49 St Laurence’s Park. Please see Section 2.5 below for more details on sunlight access to the envisaged open space likely to be proposed as part of the redevelopment of the DLR site.

As set out in Table 2.3, ARC’s analysis indicates that, on 21st March, the proposed development will result in “slight” additional overshadowing of the sample gardens and amenity areas to the north of the application site at St Laurence’s Park during the mornings. However, given that the neighbouring gardens and amenity areas will remain capable of achieving a level of sunlight in excess of that recommended by the BRE Guide after the construction of the proposed development, ARC’s analysis indicates that the proposed development will not result in any undue adverse impacts on sunlight access to neighbouring gardens throughout the year within the meaning of the BRE Guide.

3 Please note that the cumulative impact of the proposed development and the development envisaged as part of the emerging design for the ‘DLR site’ is likely to result in a “moderate” impact on the garden associated with No. 49 St Laurence’s Park during the mornings of 21st March (i.e. an impact, which is consistent with a pattern of change that is already occurring, is likely to occur or is envisaged by policy).
Table 2.3: Predicted impact of the proposed development on sunlight access to sample existing neighbouring gardens

<table>
<thead>
<tr>
<th>Zone</th>
<th>21st March</th>
<th></th>
<th>Proposed</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time</td>
<td>Existing Percentage area in sunlight</td>
<td>Proposed</td>
<td>Percentage area in sunlight</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100%</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>St Laurence's Park</td>
<td>09:00</td>
<td>100%</td>
<td>91%</td>
<td></td>
</tr>
<tr>
<td>Open Space</td>
<td>10:00</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11:00</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12:00</td>
<td>100%</td>
<td>100%</td>
<td></td>
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<tr>
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<td>13:00</td>
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<td>15:00</td>
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<td>16:00</td>
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<td>100%</td>
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<tr>
<td></td>
<td>17:00</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

BRE recommendation met: Predicted impact below BRE threshold for adverse impact. ARC’s analysis predicts that at least half of the open space will continue to receive at least two hours of sunlight on 21 March after the construction of the proposed development.

Table 2.4: Potential sunlight access to the linear amenity space proposed as part of the emerging design for the ‘DLR site’ after the construction of the proposed development on the application site

<table>
<thead>
<tr>
<th>Time</th>
<th>Courtyard DLR Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td>4%</td>
</tr>
<tr>
<td>09:30</td>
<td>5%</td>
</tr>
<tr>
<td>10:00</td>
<td>24%</td>
</tr>
<tr>
<td>10:30</td>
<td>60%</td>
</tr>
<tr>
<td>11:00</td>
<td>81%</td>
</tr>
<tr>
<td>11:30</td>
<td>82%</td>
</tr>
<tr>
<td>12:00</td>
<td>77%</td>
</tr>
<tr>
<td>12:30</td>
<td>75%</td>
</tr>
<tr>
<td>13:00</td>
<td>57%</td>
</tr>
<tr>
<td>13:30</td>
<td>43%</td>
</tr>
<tr>
<td>14:00</td>
<td>7%</td>
</tr>
<tr>
<td>14:30</td>
<td>0%</td>
</tr>
<tr>
<td>15:00</td>
<td>0%</td>
</tr>
<tr>
<td>15:30</td>
<td>4%</td>
</tr>
<tr>
<td>16:00</td>
<td>3%</td>
</tr>
<tr>
<td>16:30</td>
<td>4%</td>
</tr>
<tr>
<td>17:00</td>
<td>0%</td>
</tr>
</tbody>
</table>

As noted above, lands immediately to the east of the site at St Laurence’s Park form part of the overall site identified as the ‘Leisure Plex, Library and Enviros’ site under the Stillorgan Local Area Plan 2018-2024 - together with the application site, these lands are identified for major redevelopment. It is understood that Dun Laoghaire-Rathdown County Council are in the process of finalising the detailed design for a new development on the adjoining ‘DLR site’ to the east. As part of contemplated development on the adjoining ‘DLR site’, it is understood that the Local Authority intends to develop a linear amenity space to the east of the eastern boundary of the application site. Using a model and drawings of the emerging design for the development on the adjoining ‘DLR site’ by the Design Team, ARC analysed the likely proportion of the envisaged linear amenity space in sunlight before and after the construction of the proposed development throughout the day on 21st March. The results of ARC’s analysis are set out in Table 2.4 below.

As set out in Table 2.4, ARC’s analysis indicates that, notwithstanding the construction of the proposed development, the proposed linear amenity area envisaged as part of the emerging design for development on the ‘DLR site’ is likely to be capable of receiving sunlight over more than half its area for at least two hours on the 21st March. Given this, ARC’s analysis indicates that, notwithstanding shadows cast by the proposed development, the proposed linear amenity area envisaged as part of the emerging design for the ‘DLR site’ appear adequately sunlit throughout the year within the meaning of the BRE Guide.
3.0 ASSESSMENT OF SUNLIGHT ACCESS WITHIN THE PROPOSED COMMUNAL OPEN SPACES WITHIN AND ADJOINING THE APPLICATION SITE

Section 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. It 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.

The subject application proposes a number of communal open spaces, which are discussed in more detail in the Planning Report submitted with the planning application. As part of this analysis, ARC assessed the likely proportion of the proposed principal communal open space, the central courtyard, predicted to receive sunlight access on 21st March. The results of ARC’s analysis are set out in Table 3.1 on the right hand side of the page.

ARC’s analysis indicates that the communal open spaces at Courtyards A and B (see Figure 3.1 below) are likely to receive sunlight for at least two hours on the 21st March and are, therefore, likely to enjoy an adequately sunlit appearance throughout the year within the BRE Guide. More than this, the largest communal open space (Courtyard A) will receive a high level of sunlight access throughout the day and for most of the year. ARC’s analysis indicates that the proposed communal open space will afford residents a place within the proposed development where residents can go to sit and enjoy the sunshine on a sunny day for a significant portion of the day for most of the year.

Table 3.1: Approximate areas of proposed communal open spaces* predicted to be in sunshine on 21st March

<table>
<thead>
<tr>
<th>Time</th>
<th>Courtyard A**</th>
<th>Courtyard B**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage area in sunlight on 21st March</td>
<td></td>
</tr>
<tr>
<td>09:00</td>
<td>0%</td>
<td>21%</td>
</tr>
<tr>
<td>10:00</td>
<td>17%</td>
<td>84%</td>
</tr>
<tr>
<td>11:00</td>
<td>33%</td>
<td>83%</td>
</tr>
<tr>
<td>11:30</td>
<td>35%</td>
<td>70%</td>
</tr>
<tr>
<td>12:00</td>
<td>49%</td>
<td>52%</td>
</tr>
<tr>
<td>12:30</td>
<td>54%</td>
<td>21%</td>
</tr>
<tr>
<td>13:00</td>
<td>58%</td>
<td>0%</td>
</tr>
<tr>
<td>14:00</td>
<td>58%</td>
<td>0%</td>
</tr>
<tr>
<td>14:30</td>
<td>57%</td>
<td>0%</td>
</tr>
<tr>
<td>15:00</td>
<td>47%</td>
<td>0%</td>
</tr>
<tr>
<td>16:00</td>
<td>43%</td>
<td>0%</td>
</tr>
<tr>
<td>17:00</td>
<td>40%</td>
<td>8%</td>
</tr>
</tbody>
</table>

* The areas of the communal open spaces were indicated on drawings provided to ARC by the Design Team. Please note that these calculations do not include shadows cast by landscaping treatments.

** ARC undertook detailed quantitative analysis of an area of 825 sq m (out of 911.8 sq m) for Courtyard A; and 447 sq m (out of 672 sq m) at Courtyard B.

Figure 3.1: Location of proposed amenity spaces within the application site assessed as part of this Sunlight and Daylight Access Analysis
4.0 ASSESSMENT OF THE IMPACT OF THE PROPOSED DEVELOPMENT ON DAYLIGHT ACCESS

The BRE Guide provides that “The quantity and quality of daylight inside a room will be impaired if obstructing buildings are large in relation to their distance away”. Generally speaking, new development is most likely to affect daylight access in existing buildings in close proximity to the application site.

4.1 Overview of the likely impact of the proposed development on daylight access to existing buildings and planned development outside the application site

ARC’s analysis indicates that the construction of the proposed development will result in little change in daylight access to neighbouring existing buildings. The impact of the proposed development on daylight access within neighbouring existing buildings to the north of the application site at St Laurence’s Park is predicted to range from none to “imperceptible” to “slight”.

While development of lands to the east has yet to commence, ARC’s analysis indicates that the sample habitable rooms within the emerging design for proposed development on the ‘DLR site’ on lands to the east of the application site have the potential to achieve Average Daylight Factors in excess of the relevant minimum levels recommended by the British Standard notwithstanding the construction of the proposed development.

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.

4.2 Detailed analysis of the predicted impact of the proposed development on daylight access to existing buildings outside the application site

This Sunlight and Daylight Access Analysis assesses the impact of the proposed development to all potential receptors surrounding the application site - these impacts are described in the section entitled “Overview of the likely impact of the proposed development on daylight access to existing buildings and planned development outside the application site”. 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 buildings in proximity to the application site (please see Figure 2.1 above). The representative sample of buildings includes worst case scenario examples, such as rooms at close proximity to the proposed development and rooms at low levels of accommodation.

Assumptions were made as to the use of the room, the size and layout of the interior of the rooms within existing buildings, the colour schemes used in the decoration of the walls, floor and ceiling of the room and the type of glazing used in the window. As such, the rooms in existing buildings adjoining the application site analysed as part of this analysis must be considered to be notional. While it was necessary, in undertaking the analysis, to make assumptions regarding the parameters of chosen sample rooms, comparative analysis of daylight access within assumed rooms is instructive as to the likely extent of change in the daylight environment in existing buildings in proximity to the application site. The results of the analysis are set out in Table 4.1 below.

<table>
<thead>
<tr>
<th>Sample Room (Assumed Use)</th>
<th>Existing</th>
<th>Proposed</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 3 St Laurence’s Park (Residential - Floor 00)</td>
<td>7.85%</td>
<td>7.70%</td>
<td>Daylight levels are predicted to decrease to 0.98 times their former value.</td>
</tr>
<tr>
<td>No. 42 St Laurence’s Park (Residential - Floor 00)</td>
<td>7.35%</td>
<td>7.20%</td>
<td>Daylight levels are predicted to decrease to 0.98 times their former value.</td>
</tr>
<tr>
<td>No. 48 St Laurence’s Park (Residential - Floor 00)</td>
<td>7.73%</td>
<td>6.90%</td>
<td>Daylight levels are predicted to decrease to 0.89 times their former value.</td>
</tr>
<tr>
<td>No. 70 St Laurence’s Park (Commercial - Floor 01)</td>
<td>2.72%</td>
<td>2.52%</td>
<td>Daylight levels are predicted to decrease to 0.93 times their former value.</td>
</tr>
<tr>
<td>No. 1 Old Dublin Road (Commercial - Floor 01)</td>
<td>2.72%</td>
<td>2.45%</td>
<td>Daylight levels are predicted to decrease to 0.90 times their former value.</td>
</tr>
</tbody>
</table>

As set out in Table 4.1 above, ARC’s analysis indicates that the proposed development has the potential to result in a small reduction in daylight access to rooms in houses on the northern side of St Laurence’s Park. This change is likely to be so minor that it is unlikely to be noticeable. Where noticeable, the construction of the proposed development is unlikely to affect the sensitivities of the daylight environment. Given this, the construction of the proposed development is predicted to result in an “imperceptible” to “slight” impact on daylight access in houses on the northern side of St Laurence’s Park.
4.3 Detailed analysis of potential daylight access to planned development outside the application site

The average daylight factor is used as the measure of general illumination from skylight. It is considered good practice to ensure that rooms in dwellings and in most other buildings have a predominantly daylit appearance. In order to achieve this the average daylight factor should be at least 2%.”

The British Standard goes on to recommend a minimum of 1% Average Daylight Factor for bedrooms; 1.5% Average Daylight Factor for living rooms and 2% Average Daylight Factor for kitchens. These minimum recommendations are also set out at Section 2.1.8 of the BRE Guide. The British Standard states “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%.” These minimum recommendations are also set out at Section 2.1.8 of the BRE Guide.

While the British Standard outlines a number of recommendations for daylight access within proposed development, it recommends caution in applying the recommendations contained therein as part of the planning process. It states: “The aim of the standard is to give guidance to architects, engineers, builders and others who carry out lighting design. It is recognized that lighting is only one of many matters that influence fenestration. These include other aspects of environmental performance (such as noise, thermal equilibrium and the control of energy use) fire hazards, constructional requirements, the external appearance and the surroundings of the site. The best design for a building does not necessarily incorporate the ideal solution for any individual function. For this reason, careful judgement needs to be exercised when using the criteria given in the standard for other purposes, particularly town planning control.”

This Sunlight and Daylight Access Analysis assesses the impact of the proposed development to all potential receptors surrounding the application site - these impacts are described in the section entitled “Overview of the likely impact of the proposed development on daylight access to existing buildings and planned development outside the application site”. As noted above, lands immediately to the east of the site at St Laurence’s Park form part of the overall site identified as the ‘Leisure Plex, Library and Environs’ site under the Stillorgan Local Area Plan 2018-2024 - together with the application site, these lands are identified for major redevelopment.

It is understood that Dun Laoghaire-Rathdown County Council are in the process of finalising the detailed design for a new development on the adjoining ‘DLR site’ to the east, which will include the construction of a new library and the provision of 90-100 new residential units in a development, which will rise to nine storeys in height. ARC was supplied with a model and drawings of the emerging design for the development on the adjoining ‘DLR site’ by the Design Team. By way of example in order to illustrate briefly the findings outlined in the overview section above, ARC conducted detailed analysis of the potential for the proposed development to result in impacts on daylight access to a representative sample of windows within residential units proposed as part of the emerging design for development on the ‘DLR site’ (please see Figure 2.1 for the locations of sample windows assessed as part of this report). For more detail on the methodology used in assessing daylight access, please refer to the Technical Appendix of this Report. The results of ARC’s analysis of likely daylight access within the proposed development are set out in Table 4.2 on the right hand side of the page:

<table>
<thead>
<tr>
<th>Location</th>
<th>Floor</th>
<th>Room Type</th>
<th>Predicted Average Daylight Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLR Zone A</td>
<td>Floor 00</td>
<td>Living / kitchen / dining room</td>
<td>2.75%</td>
</tr>
<tr>
<td>DLR Zone B</td>
<td>Floor 00</td>
<td>Living / kitchen / dining room</td>
<td>3.02%</td>
</tr>
<tr>
<td>DLR Zone C</td>
<td>Floor 00</td>
<td>Living / kitchen / dining room</td>
<td>4.06%</td>
</tr>
</tbody>
</table>

ARC’s analysis indicates that the sample habitable rooms within the emerging design for proposed development on the ‘DLR site’ on lands to the site of the application site have the potential to achieve Average Daylight Factors in excess of the relevant minimum levels recommended by the British Standard notwithstanding the construction of the proposed development.
5.0 **Assessment of Daylight Access within the Proposed Development**

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.”

Given this, as part of this Sunlight and Daylight Access Analysis, ARC undertook an assessment of the likely daylight access within the proposed residential units with reference to the quantitative performance approaches to daylight provision outlined in the British Standard. ARC was supplied with a model and drawings of the emerging design for the development on the adjoining ‘DLR site’ by the Design Team. For the purpose of this analysis, ARC included this development in the assessment model in order to present a worst case scenario. Given that site clearance works were being carried out at the time of writing this report, ARC also included the permitted four to nine storey development on the former ‘Blakes’ site (ABP Ref. ABP-300520-17) within the assessment model.

A sample of rooms within the proposed development was studied, although an emphasis was placed on analysis rooms likely to receive lower levels of daylight (e.g. rooms at the lowest levels of accommodation; rooms with the potential to receive lower levels of daylight access due to their location within the proposed development and/or due to their layout and fenestration). 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 Figure 5.1 below. For more detail on the methodology used in assessing daylight access, please refer to the Technical Appendix of this Report. The results of ARC’s analysis of likely daylight access within the proposed development are set out in Table 5.1 on the right hand side of the page:

<table>
<thead>
<tr>
<th>Location</th>
<th>Floor</th>
<th>Room Type</th>
<th>Predicted Average Daylight Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone A 13 L</td>
<td>Floor O1</td>
<td>Kitchen / living / dining room</td>
<td>5.03%</td>
</tr>
<tr>
<td>Zone A 13 B</td>
<td>Floor O1</td>
<td>Bedroom</td>
<td>3.81%</td>
</tr>
<tr>
<td>Zone B 03 L</td>
<td>Floor O0</td>
<td>Kitchen / living / dining room</td>
<td>3.15%</td>
</tr>
<tr>
<td>Zone B 03 B</td>
<td>Floor O0</td>
<td>Bedroom</td>
<td>1.15%</td>
</tr>
<tr>
<td>Zone B 04 L</td>
<td>Floor O0</td>
<td>Kitchen / living / dining room</td>
<td>4.67%</td>
</tr>
<tr>
<td>Zone B 09 L</td>
<td>Floor O1</td>
<td>Kitchen / living / dining room</td>
<td>7.64%</td>
</tr>
<tr>
<td>Zone B 13 L</td>
<td>Floor O1</td>
<td>Kitchen / living / dining room</td>
<td>3.47%</td>
</tr>
<tr>
<td>Zone B 14 L</td>
<td>Floor O1</td>
<td>Kitchen / living / dining room</td>
<td>4.52%</td>
</tr>
<tr>
<td>Zone B2 a</td>
<td>Floor B2</td>
<td>Kitchen / living / dining room</td>
<td>3.81%</td>
</tr>
<tr>
<td>Zone B2 b</td>
<td>Floor B2</td>
<td>Kitchen / living / dining room</td>
<td>2.06%</td>
</tr>
<tr>
<td>Zone C 08 L</td>
<td>Floor O0</td>
<td>Kitchen / living / dining room</td>
<td>3.76%</td>
</tr>
<tr>
<td>Zone C 14 L</td>
<td>Floor O1</td>
<td>Kitchen / living / dining room</td>
<td>4.52%</td>
</tr>
<tr>
<td>Zone D 10 L</td>
<td>Floor O0</td>
<td>Kitchen / living / dining room</td>
<td>3.37%</td>
</tr>
<tr>
<td>Zone D 10 B</td>
<td>Floor O0</td>
<td>Bedroom</td>
<td>2.71%</td>
</tr>
<tr>
<td>Zone D 16 L</td>
<td>Floor O0</td>
<td>Kitchen / living / dining room</td>
<td>3.52%</td>
</tr>
<tr>
<td>Zone D 18 L</td>
<td>Floor O0</td>
<td>Kitchen / living / dining room</td>
<td>4.19%</td>
</tr>
<tr>
<td>Zone D 24 L</td>
<td>Floor O1</td>
<td>Kitchen / living / dining room</td>
<td>3.62%</td>
</tr>
<tr>
<td>Zone D 26 L</td>
<td>Floor O1</td>
<td>Kitchen / living / dining room</td>
<td>3.74%</td>
</tr>
</tbody>
</table>

ARC’s analysis predicts that all sample study rooms (a large proportion of which represent a worst case scenario) within the proposed development will achieve levels of daylight access at or above the minimum Average Daylight Factor recommended by the British Standard for combined kitchen / living rooms (i.e. 2% Average Daylight Factor) or bedrooms (i.e. 1% Average Daylight Factor), as appropriate.

Given that rooms at the lowest level of accommodation are those most likely to experience higher levels of obstruction and lower levels of daylight access, ARC’s analysis suggests that all unit types proposed as part of the subject development have the potential to achieve a level of daylight access in excess of the minimum levels recommended by the British Standard.

Amy Hastings BCL BL MSc (Spatial Planning) MIPI
July 2019
APPENDIX A: ASSESSMENT OF THE IMPACT OF THE PROPOSED DEVELOPMENT ON SUNLIGHT AND DAYLIGHT ACCESS TO EXISTING BUILDINGS TO BE DEMOLISHED AT ST LAURENCE’S PARK

As noted in Section 2.0 above, lands immediately to the east of the site at St Laurence’s Park form part of the overall site identified as the Leisure Plex, Library and Environments’ site under the Stillorgan Local Area Plan 2018-2024 - together with the application site, these lands are identified for major redevelopment. The lands to the east currently accommodate the existing single storey library building, a pair of semi-detached dwellings and a number of terraces of existing units, which, it is understood, will shortly be proposed for demolition in order to facilitate the development of “a new library and in the region of 80 – 90 new housing units.” It is understood that ‘A full Design Team consisting of external consultants has been appointed and surveys and site investigations have been carried out. Stage 1 approval has been obtained from the Department of Housing, Planning and Local Government (DHPLG), which gives approval in principle to the development of the site.” Work is currently ongoing in relation to the preparation of an application for Stage 2 approval, which involves detailed discussion with the DHPLG in relation to design issues to ensure that the scheme delivers an attractive, high quality and sustainable residential and public realm for the Stillorgan area. It is anticipated that an application for Stage 2 approval will be submitted in the short-term which is required to allow the proposal to proceed to the planning process.” Given this, it was assumed, for the purposes of this assessment, that the existing single storey library building and the existing units at Nos. 62 and 63 (on the application site) and Nos. 64-67, 68-69, 73-75 & 76-79 St Laurence’s Park (currently vacant) will be demolished under a separate application and that a new development will be constructed on the lands to the east. However, in the interests of completeness, this Appendix sets out the potential impacts of the proposed development on sunlight and daylight access to the existing single storey library building and the existing units at Nos. 62, 63, 64-67, 68-69, 73-75 & 76-79 St Laurence’s Park in the event that these existing buildings are retained in the longer term. While Nos. 62 and 63 St Laurence’s Park are located on the application site and are proposed for retention, the impact of the proposed development on those houses has been assessed under this Appendix.

A.1 Overview of the likely impact of shadows cast by the proposed development on existing buildings to be demolished at St Laurence’s Park

ARC’s analysis indicates that the proposal will result in additional overshadowing of the lands to the east during the afternoons and evenings throughout the year; with the easternmost element of Block 3 resulting in some additional overshadowing during the mornings. The proposed development is likely to result in a “moderate” change in sunlight access to west-facing windows at Nos. 64-67, 68-69, 73-75 & 76-79 St Laurence’s Park and a “slight” to “moderate” change in sunlight access to south-facing windows at Nos. 62-63 St Laurence’s Park. The proposed development is also likely to result in a “moderate” change in sunlight access to amenity spaces along the eastern boundary. Shadows cast by the proposed development are also likely to result in “slight” overshadowing of the Stillorgan Library for a short time during the late evenings of the spring and autumn months.

In determining whether the extent of overshadowing likely to occur as a result of the construction of the proposed development is consistent with emerging trends for development (i.e. a “moderate” change), ARC considered the Site Development Framework for the ‘Leisureplex’ site set out at Section 4.5.2 of the Stillorgan Local Area Plan 2018-2024, which provides for a five storey benchmark height, dropping to three storeys where the proposal opposes dwellings at St Laurence’s Park. Having regard to planning precedent on neighbouring sites (i.e. ABP Ref. ABP-300520-17), it appears that the recommendations of the LAP with regard to benchmark heights on this sloping site may be interpreted as allowing heights between four and eight storeys. Given this and given that the subject application proposes to step back Block 4 away from the boundary to allow for an open space, the shadow environment predicted to be created by the proposed development is considered to be consistent with the shadow environment envisaged under the LAP.

A.1.2 Detailed analysis of the predicted impact of shadows cast by the proposed development on existing buildings to be demolished at St Laurence’s Park

This Sunlight and Daylight Access Analysis assesses the impact of the proposed development to all potential receptors to the east of the application site - these impacts are described in the section entitled “Overview of the likely impact of shadows cast by the proposed development on existing buildings to be demolished at St Laurence’s Park.” However, by way of example in order to

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1 Response from Helen Griffin, Senior Executive Officer Housing Department to question of Councillor D. Donnelly Meeting of Dun Laoghaire-Rathdown County Council Dunraven Area Committee of 26th April 2019.
2 While it is noted that any maximum height limits set out in the LAP likely no longer apply having regard to the Specific Planning Policy Requirements of the Urban Development and Building Height Guidelines, it is assumed that these height limits should now be considered advisory only. In any case, it is noted that the Dun Laoghaire-Rathdown County Council Building Heights Strategy allows for additional height where higher densities can be achieved within 500 m of the N11.

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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 sunlight access to a representative sample of sensitive receptors (i.e. windows) in buildings in proximity to the eastern boundary of the application site that are planned for demolition (please see Figure A.1). Section 3.2.1 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, or less than 5% of annual probable sunlight hours between 21 September and 21 March and
- receives less than 0.8 times its former sunlight hours during either period and
- has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.”

[Emphasis added]

Windows at the lowest level of accommodation were analysed. The results of ARC’s analysis are set out in Table A.1 below.
**A.1.3 Detailed analysis of the potential impact of shadows cast by the proposed development on gardens and amenity areas associated with existing buildings to be demolished at St Laurence’s Park**

Inssofar as amenity spaces / gardens are concerned, 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.

ARC analysed the likely proportion of a number of neighbouring gardens / amenity areas in sunlight before and after the construction of the proposed development throughout the day on 21st March. For the purposes of this analysis, ARC analysed the rear garden of No. 63 St Laurence’s Park.

It is not clear how the amenity space to the rear of Nos. 64-67, 68-69, 73-75 & 76-79 St Laurence’s Park functioned while these buildings were occupied or how it might function if, for some reason, these buildings came to be occupied in residential use again. For example, it is unclear whether the entire space was used as a single linear amenity space, whether it was separated into a number of smaller communal gardens or whether each unit effectively had an individual garden. For the purposes of this analysis, ARC analysed a notional area to the rear of No. 64-67 and a notional area to the rear of No. 68-69 & 73-75 St Laurence’s Park. (please see Figure A.1). These notional areas are of a size and layout similar to a typical suburban garden. However, given that the layout of an amenity area has a bearing on the results (i.e. changing the size and boundary treatments of a garden could materially change the results of detailed quantitative analysis), the results of the detailed quantitative analysis of the notional garden areas of No. 64-67 and No. 68-69 & 73-75 St Laurence’s Park should be considered with caution.

As set out in Table A.2, ARC’s analysis indicates that, on 21st March, the proposed development will result in “moderate” additional overshadowing of the sample gardens and amenity areas to the east of the application site associated with the existing buildings to be demolished at St Laurence’s Park during the afternoon and evening. However, given that the neighbouring gardens and amenity areas will remain capable of achieving a level of sunlight in excess of that recommended by the BRE Guide after the construction of the proposed development, ARC’s analysis indicates that the proposed development will not result in any undue adverse impacts on sunlight access to neighbouring gardens associated with the existing buildings to be demolished at St Laurence’s Park throughout the year within the meaning of the BRE Guide.1

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1 Please note that analysing different layouts of the space to the rear of Nos. 64-67, 68-69, 73-75 & 76-79 St Laurence’s Park will yield different results. For example, ARC’s analysis indicates that, while a long narrow space to the rear of the most southerly unit at No. 64-67 (i.e adjoining the boundary with Lower Kilmacud Road) would not, a single communal open space behind all of the units would continue to receive the level of sunlight recommended by the BRE Guide after the construction of the proposed development.
### A.2 Overview of the likely impact of the proposed development on daylight access to existing buildings to be demolished at St Laurence’s Park

ARC's analysis indicates that the construction of the proposed development will result in little change in daylight access to neighbouring existing buildings to be demolished at Nos. 62, 63, 64-67, 68-69, 73-75 & 76-79 St Laurence’s Park. The impact of the proposed development on daylight access within existing buildings identified for demolition to the east of the application site at St Laurence’s Park is predicted to range from “imperceptible” to “slight”, while the predicted impact of the proposed development on the existing single storey library is likely to range from none to “imperceptible”.

#### A.2.1 Detailed analysis of the predicted impact of the proposed development on daylight access to existing buildings to be demolished at St Laurence's Park

This Sunlight and Daylight Access Analysis assesses the impact of the proposed development to all potential receptors to the east of the application site - these impacts are described in the section entitled “Overview of the likely impact of the proposed development on daylight access to existing buildings to be demolished at St Laurence’s Park.” 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 buildings in proximity to the eastern boundary of the application site that are planned for demolition (please see Figure A.1). The representative sample of buildings includes worst case scenario examples, such as rooms at close proximity to the proposed development and rooms at low levels of accommodation.

Assumptions were made as to the use of the room, the size and layout of the interior of the rooms within existing buildings, the colour schemes used in the decoration of the walls, floor and ceiling of the room and the type of glazing used in the window ope. As such, the rooms in existing buildings adjoining the application site analysed as part of this analysis must be considered to be notional. While it was necessary, in undertaking the analysis, to make assumptions regarding the parameters of chosen sample rooms, comparative analysis of daylight access within assumed rooms is instructive as to the likely extent of change in the daylight environment in existing buildings in proximity to the application site. The results of the analysis are set out in Table A.3 below.

#### Table A.3:  Predicted impact of the proposed development on daylight access to sample rooms in neighbouring existing buildings to be demolished at St Laurence’s Park

<table>
<thead>
<tr>
<th>Sample Room (Assumed Use)</th>
<th>Average Daylight Factor</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing</td>
<td>Proposed</td>
</tr>
<tr>
<td>No. 63 St Laurence’s Park (Residential - Floor 00)</td>
<td>4.42%</td>
<td>4.19%</td>
</tr>
<tr>
<td>No. 64-67 St Laurence’s Park (Residential - Floor 00)</td>
<td>3.13%</td>
<td>3.11%</td>
</tr>
<tr>
<td>No. 68-69 &amp; 73-75 St Laurence’s Park (Residential - Floor 00)</td>
<td>3.19%</td>
<td>3.35%</td>
</tr>
</tbody>
</table>

As set out in Table A.3 above, ARC’s analysis indicates that the proposed development has the potential to result in a small change in daylight access to sample rooms in Nos. 62, 63, 64-67, 68-69, 73-75 & 76-79 St Laurence’s Park. This change is likely to be so minor that it is unlikely to be noticeable. Where noticeable, the construction of the proposed development is unlikely to affect the sensitivities of the daylight environment. Given this, the construction of the proposed development is predicted to result in an “imperceptible” to “slight” impact on daylight access in the sample rooms within existing buildings identified for demolition to the east of the application site at St Laurence’s Park.
Sunlight and Daylight Access Analysis • Lands at Old Dublin Road and Lower Kilmacud Road, Stillorgan, Co. Dublin

Technical Appendix

Explanatory Note
To date, it is understood that no standards or guidance documents (statutory or otherwise) on the subject of sunlight access to buildings or open spaces or daylight access to buildings have been prepared or published in Ireland. In the absence of guidance on the matter of sunlight and daylight access tailored to Irish climatic conditions, Irish practitioners tend to refer to the relevant British Standard, BS 8206-2:2008: Lighting for buildings - Part 2: Code of practice for daylighting. The standards for daylight and sunlight access in buildings (and the methodologies for assessment of same) suggested in the British Standard have been referenced in this Sunlight and Daylight Access Analysis.

The contents of P passion past 2011 revision of the 1991 publication Site layout planning for daylight and sunlight a guide to good practice for the Building Research Establishment have also been considered in the preparation of the report in the interests of completeness.

Neither the British Standard nor the BRE Guide set out rigid standards or limits. The BRE Guide 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.]

That the recommendations of the BRE Guide are not suitable for rigid application to all developments in all contexts is of particular importance in the context of national and local policies for the consolidation and densification of urban areas or when assessing applications for highly constrained sites (e.g. lands in close proximity or immediately to the south of residential lands).

The purpose of this report is to provide a general indication of daylight performance and sunlight access before and after the construction of 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. 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.

Sunlight Access to Buildings and Open Spaces

Context under Technical and Guidance Documents
The relevant British Standards, BS 8206-2:2008: Lighting for buildings - Part 2: Code of practice for daylighting, recommends, at Section 5.3: Sunlight Duration, the following test for the assessment of sunlight access to residential accommodation: “Interiors in which the occupants have a reasonable expectation of direct sunlight should receive at least 25% of probable sunlight hours... At least 5% of probable sunlight hours should be received during the winter months, between 21 September and 21 March. Sunlight is taken to enter an interior when it reaches one or more window reference points.” "Probable sunlight hours" is described by the British Standard as meaning the “long-term average of the total number of hours during the year in which direct sunlight reaches the unobstructed ground.”

Using data available from Met Eireann, the Irish Meteorological Service, ARC has determined that where a window is capable of receiving three hours of sunlight at the equinox, the tests set out in the British Standard will usually be met.

The BRE Guide states that “Any reduction in sunlight access below this level should be kept to a minimum if the available sunlight hours are both less than the amount above and less than 0.8 times their former value, either over the whole year or just in the winter months (21 September to 21 March), then the occupants of the existing building will notice the loss of sunlight. The room may appear colder and less cheerful and less 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 at the equinox. The BRE Guide recommends that, as a rule of thumb, the centre of the space should receive at least two hours of sunlight on the 21st March in order to appear adequately sunlit throughout the year.

Assessment Methodology for Sunlight Access
A three dimensional digital model of the proposed development 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. ARC was also supplied with a model and drawings of the emerging design for development on the adjoining DLR site by the Design Team - this model was used in undertaking detailed quantitative analysis of sunlight access within the proposed development in order to ensure that a worst case scenario had been considered. Similarly, given that site clearance works were being carried out at the time of writing this report, ARC also included the permitted four to nine storey development on the former ‘Blakes’ site (ABP Ref ABP-300520-17) within 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.

In determining whether or not to include existing and proposed substantial trees in the three dimensional model, ARC made reference to the BRE Guide (as updated in 2011), 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, 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 trees on the shadow study diagrams.

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

- Existing shadow baseline: this page shows the shadows cast by the existing buildings only. Existing buildings surrounding the application site are shown in light grey, while existing buildings on the application site are shown in orange. Buildings to be retained, but moved to a different location on the site, are shown in purple. The shadows cast are shown in a dark grey tone.
- Proposed shadow environment: 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. The proposed development on the application site is shown in blue, while permitted and planned developments on neighbouring sites are shown in green. The shadows cast are shown in a dark grey tone.

In order to calculate sunlight access to rooms, ARC referenced the methodology outlined in Appendix A: Indicators to calculate access to sunlight, solar 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. Dublin) 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 Effects 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 (Draft of 2017), 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.

The list of definitions given below is taken from Table 3.2: Descriptions of Effects contained in the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports prepared by the Environmental Protection Agency. Some comment is also given below on what these definitions might imply in the case of sunlight access. The definitions from the EPA document are in italics.
Sunlight and Daylight Access Analysis • Lands at Old Dublin Road and Lower Kilmacud Road, Stillorgan, Co. Dublin

- 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.

- Not Significant: An effect which causes noticeable changes in the character of the environment but without significant consequences. 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 noticeable to a minor degree. However, the shadow environment of the surrounding environment should remain largely unchanged.

- Slight: An effect which causes noticeable changes in the character of the environment without affecting its sensitivities. For this definition to apply sunlight access at a location would be changed by shadows cast by the development to an extent that is both capable of measurement and noticeable to a minor degree. However, the shadow environment of the surrounding environment should remain largely unchanged.

- Moderate: An effect which 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, is likely to occur, or is envisaged by policy. A moderate effect would occur where other developments were bringing about changes in sunlight access of similar extent in the area.

- 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.

- 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”.

- 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. In relation to sunlight access, it is conceivable that there could be positive impacts, 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 sunlight access). Though that is possible, it is usually unlikely as most development involves the construction of new obstructions to sunlight access.

The range of possible impacts listed above deal largely with the extent of impact; and the extent of the impact of a development is usually proportional to the extent to which that development is large in scale and/or height and its proximity to the location. This proportionality may be modified by the extent to which the development is seen as culturally or socially acceptable, and on the interaction between the proposed development, the character of the existing shadow environment and the land use pattern of the receiving environment.

Daylight Access to Buildings

Context under Technical and Guidance Documents

BS 8206-2:2008 Lighting for buildings - Part 2: Code of practice for daylighting states as follows at Section 5.5: Average daylight factor:

“The average daylight factor is used as the measure of general illumination from skylight. It is considered good practice to ensure that rooms in dwellings and in most other buildings have a predominantly daylit appearance. In order to achieve this the average daylight factor should be at least 2%.

If the average daylight factor in a space is at least 5% then electric lighting is not normally needed during the daytime. Provided the uniformity is satisfactory … if the average daylight factor in a space is between 2% and 5% supplementary electric lighting is usually required.”

The British Standard goes on to recommend a minimum of 1% Average Daylight Factor for bedrooms; 1.5% Average Daylight Factor for living rooms and 2% Average Daylight Factor for kitchens.

In terms of assessing the impact of development on daylight access in an existing room, the British Standard suggests that, where a room has an ADF of 5% (i.e., one not requiring supplemental electric lighting), a reduction in daylight access of between 15% and 8% is likely to be noticed - the room “would be likely to appear more gloomy, and electric lighting would be needed for more of the time”. In other words, where daylight access is reduced to between 0.85 times and 0.92 times its former value, the occupant of that residence is likely to notice the change. What this is saying is that, in some cases (the details of which are not explained in the British Standard), a reduction in ADF to anything less than 0.92 times the former light levels will be noticeable. In other cases (again not explained), light levels will have to fall to 0.85 times their former value before the change is noticed. Therefore, in all cases where a room has an ADF of 5%, anything greater than a 15% drop in daylight levels (or a drop to 0.85 times its former value) will be noticed. A general rule of thumb is that if daylight access was reduced by one fifth, the occupants will be likely to notice.

Assessment Methodology for Daylight Access

A three dimensional digital model of the proposed development 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. Existing and proposed landscaping was not included in this model. In assessing daylight access within rooms within the proposed development, assumptions were made as to the colour schemes (e.g. materials, reflectances, etc) used in the decoration of the walls, floor and ceiling of the room and the type of glazing used in the window opes. In all cases, rooms are assessed as excluding furniture and window treatments (e.g. curtains, blinds). Assumptions are also made as to the materials and reflectances of external surfaces. ARC was also supplied with a model of the existing and drawings of the emerging design for development on the adjoining ‘DLR site’ by the Design Team - this model was used in undertaking detailed quantitative analysis of sunlight access within the proposed development in order to ensure that a worst case scenario had been considered. Similarly given that site clearance works were being carried out at the time of writing this report, ARC also included the permitted four to nine storey development on the former ‘Blakes’ site (ABP Ref ABP 3003520-17) within the assessment model.

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. In assessing daylight access within the proposed development, Average Daylight Factor was assessed on the working plane (i.e., at work top level). 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.
Definition of Effects 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 (Draft of 2017), 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.

The list of definitions given below is taken from 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. Some comment is also given below on what these definitions might imply in the case of daylight access. The definitions from the EPA document are in italics.

- **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.

- **Not Significant**: An effect which causes noticeable changes in the character of the environment but without significant consequences (the footnote “2” to the word “noticeable” is: “for the purposes of planning consent procedures”). 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.

- **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, or is envisaged by policy. A moderate effect would occur where other developments were bringing about changes in daylight access of similar extent in the area.

- **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.

- **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.

- **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.

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.
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.26 AM
SUNSET : 6.39 PM
TIME : 10.00 AM
OSI Licence No. AR 0087019
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019
DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.26 am
SUNSET :  6.39 pm
TIME :
10.00 am
OSI Licence nO. AR 0087019

PROPOSED DEVELOPMENT
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019
RECEIVING
ENVIRONMENT
DATE :  MARCH 21ST - EQUINOX
SUNRISE : 6.26 am
SUNSET :  6.39 pm
OSI Licence nO. aR 0087019

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6:26 AM
SUNSET : 6:39 PM
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE: MARCH 21ST - EQUINOX
SUNRISE: 6:26 AM
SUNSET: 6:39 PM

TIME: 3:00 PM

OSI Licence No. AR 0087019
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.26 am
SUNSET : 6.39 pm
OSI Licence No. AR 0087019

PROPOSED DEVELOPMENT

TIME : 3.00 PM
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE : MARCH 21ST - EQUINOX
SUNRISE : 6.26 AM
SUNSET : 6.39 PM
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE: JUNE 21ST - SUMMER SOLSTICE
SUNRISE: 4.56 AM
SUNSET: 9.56 PM

TIME:
9.00 AM

OSI Licence No. AR 0087019
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 4.56 am
SUNSET :  9.56 pm
TIME :
9.00 am

OSI Licence No. AR 0087019

PROPOSED DEVELOPMENT
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE : JUNE 21ST - SUMMER SOLSTICE
SUNRISE : 4.56 AM
SUNSET : 9.56 PM

TIME : 12.00 PM
SHADOW STUDY

LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN

DATE: JUNE 21ST - SUMMER SOLSTICE

SUNRISE: 4.56 AM
SUNSET: 9.56 PM

TIME:
3.00 PM
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE: JUNE 21ST - SUMMER SOLSTICE
SUNRISE: 4.56 AM
SUNSET: 9.56 PM
TIME: 3.00 PM
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019
RECEIVING
ENVIRONMENT
DATE :  JUNE 21ST - SUMMER SOLSTICE
SUNRISE :  4.56 am
SUNSET :  9.56 pm
OSI LICENSE NO. AR 0087019

TIME :  5.00 PM
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE: JUNE 21ST - SUMMER SOLSTICE
SUNRISE: 4.56 AM
SUNSET: 9.56 PM

OSI LICENSE NO. AR 0087019

TIME: 5.00 PM

PROPOSED DEVELOPMENT
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE: JUNE 21ST - SUMMER SOLSTICE
SUNRISE: 4.56 AM
SUNSET: 9.56 PM
TIME: 7.00 PM
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE: JUNE 21ST - SUMMER SOLSTICE
SUNRISE: 4.56 AM
SUNSET: 9.56 PM

PROPOSED DEVELOPMENT
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE: DECEMBER 21ST - WINTER SOLSTICE
SUNRISE: 8.37 AM
SUNSET: 4.07 PM
TIME: 10.30 AM

OSI Licence No. AR 0087019
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE: DECEMBER 21ST - WINTER SOLSTICE
SUNRISE: 8.37 AM
SUNSET: 4.07 PM
TIME: 10.30 AM

OSI Licence No. AR 0087019
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE: DECEMBER 21ST - WINTER SOLSTICE
SUNRISE: 8.37 AM
SUNSET: 4.07 PM

TIME: 12.00 PM

OSI Licence No. AR 0087019
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

RECEIVING ENVIRONMENT

DATE : DECEMBER 21ST - WINTER SOLSTICE
SUNRISE : 8.37 am
SUNSET : 4.07 pm

TIME :
SUNRISE : 8.37 AM
SUNSET : 4.07 PM
SHADOW STUDY
LANDS AT OLD DUBLIN ROAD AND LOWER KILMACUD ROAD,
STILLORGAN, CO. DUBLIN
JULY 2019

DATE : DECEMBER 21ST - WINTER SOLSTICE
SUNRISE : 8.37 am
SUNSET : 4.07 pm

TIME :
SUNRISE : 8.37 AM
SUNSET : 4.07 PM