

Project No: 14358

***Proposed Strategic Housing Development on the former
Player Wills site and undeveloped land owned by Dublin City
Council at South Circular Road, Dublin 8***

Daylight, Sunlight and Overshadowing Study



Confidential

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Executive Summary

This report details the analysis undertaken to quantify the Sunlight / Daylight performance of the proposed strategic housing development in an urban location within the city of Dublin. The report focuses on measuring the daylight impact to the surrounding dwellings when comparing the existing situations to the proposed development and the proposals established in the Development Framework for St Teresas Gardens and Environs. It also considers the impact to daylight and sunlight when considering the proposed design itself. The following can be concluded based on the studies undertaken:

Shadow Analysis

The Shadow analysis shows different shadows being cast from the existing situation, 2017 Development Framework for St Teresas Gardens and Environs and proposed scheme at particular periods throughout the year. It is noted from the images that overall, the proposed development would cast minimal additional shading on neighbouring buildings. This is further quantified by the Daylight Analysis of Existing Buildings and Sunlight to Existing Amenities section of this report.

Daylight Analysis of Existing Buildings

The Vertical Sky Component for 96% (281 of 294) of the points tested have a value greater than 27% or not less than 0.8 times their former value (that of the Existing Situation), exceeding the BRE recommendations. This increases to 99% when compared against the Development Framework plan. The majority of the values are just outside the recommendations achieving high values between 24% and 26% and therefore good levels of light would still be received within the spaces beyond.

Sunlight to Existing and Proposed Amenity Spaces

As mentioned above under Section 3.3.17 of BRE's Site Layout Planning for Daylight and Sunlight states that for a space to appear adequately sunlit throughout the year, at least half of the garden or amenity area should receive at least 2 hours of sunlight on the 21st of March.

On the 21st of March, all of the amenity areas provided for each block would receive at least 2 hours of sunlight exceeding the BRE recommendations.

The results also highlight that the proposed Players Park and St Catherine's Park public amenity spaces are exceeding the BRE recommendations and will be quality spaces in terms of sunlight received.

Average Daylight Factors

Based on the results of the rooms tested across the Player Wills site, 92% of the spaces tested within the proposed scheme have an Average Daylight Factors (ADF) above the recommended values, exceeding the BRE guidelines. This total would be expected to increase beyond 92% if all of the upper and outer spaces across the development were included in the results.

Observations

It should be noted that the guidance in 'Site layout planning for daylight and sunlight: a guide to good practice' is not mandatory and the Report itself states 'although it gives numerical guidelines these should be interpreted flexibly because natural lighting is only one of many factors in site layout design.

Whilst the results shown relate to the criteria as laid out in the BRE guidance targets it is important to note that the BRE targets have been drafted primarily for use in low density suburban development and should therefore be used with flexibility and caution when dealing with other types of sites. Despite the above, the proposed development performs well in relation to the metrics considered in this report.

Overall the results demonstrate that the proposed development performance exceeds BRE recommendations in the BRE 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice" by Paul Littlefair, 2011.

2 Introduction

This report details the analysis undertaken to quantify the Sunlight / Daylight performance of the proposed strategic housing development, in an urban location within the city of Dublin. The report focuses on measuring the daylight impact to the surrounding dwellings when comparing the existing situations to the proposed development and the proposals established in the Development Framework for St Teresas Gardens and Environs. It also considers the performance with regards to daylight and sunlight when considering the proposed design itself.

2.1 Analysis Performed

The focus of the study considers the following items with respect to the proposed new development:

- **Shadow Analysis** - a visual representation analysing any potential changes that may arise from the proposed development to neighbouring existing developments.
- **Daylight Analysis of Existing Buildings** - via consideration of Vertical Sky Component (VSC).
- **Sunlight to Existing and Proposed Amenity Spaces** – via sunlight hour’s analysis on the 21st of March.
- **Average Daylight Factors** – via average daylight factor calculations carried for floor plans across the site of the proposed development.

The analysis was completed using IES VE software and the assessment based on recommendations given in BRE – Site Layout Planning for Daylight and Sunlight guide.

2.2 Development Description

DBTR-SCR1 Fund, a Sub-Fund of the CWTC Multi Family ICAV intend to apply to An Bord Pleanála for permission for a mixed-use Build to Rent Strategic Housing Development at the former ‘Player Wills’ site (2.39 hectares) and adjoining lands (0.67 hectares) under the control of Dublin City Council. A public park, public road and works to South Circular Road and to facilitate connections to municipal services at Donore Avenue are proposed on the Dublin City Council land. The former ‘Player Wills’ site incorporates Eircode’s: D08 T6DC, D08 PW25, D08 X7F8 and D08 EK00 and has frontage onto South Circular Road, St. Catherine’s Avenue and Donore Avenue, Dublin 8. The Dublin City Council undeveloped land adjoins the former

'Player Wills' site to the west and the former 'Bailey Gibson' site to the east. The total area of the proposed development site is 3.06 hectares.

The design rationale is to create and deliver a high quality, sustainable, residential led mixed use strategic housing development within this inner city brownfield site which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on Drawing No. PL0003 contained within the architectural suite of drawings.

The development will consist of;

- i. the demolition of all buildings (15,454 sq.m GFA), excluding the original fabric of the former Player Wills Factory, to provide for the development of a mixed use (residential, community, arts and culture, creche, food and beverage and retail) scheme comprising predominantly build to rent apartment dwellings (492 no.) together with a significantly lesser quantity of single occupancy shared accommodation private living areas (240 no.), with an average private living floor area of 24.6 sq.m (double the minimum private living space size required for single occupancy shared accommodation) and a arts/culture/community hub within the repurposed ground floor of the former factory building;
- ii. change of use, refurbishment, modifications and alterations to the former Player Wills Factory building (PW1) to include the removal of 1 no. later addition storey (existing 4th storey) and the later addition rear (northern) extension, retention and modification of 3 no. existing storeys and addition of 2 no. storeys set back on the building's south, east and west elevations with an 8-storey projection (max. height 32.53m) on the north eastern corner, with a cumulative gross floor area of 17,630 sq.m including ancillary uses, comprising;
 - a. at ground floor 852 sq.m of floor space dedicated to community, arts and cultural and exhibition space together with artist and photography studios (Class 1 and Class 10 Use), 503 sq.m of retail floor space (Class 1 Use), 994 sq.m of café/bar/restaurant floor space, 217 sq.m of co-working office floor space (Class 3 Use) and ancillary floor space for welfare facilities, waste management and storage;
 - b. 240 no. single occupancy shared accommodation private living areas, distributed over levels 1-4, including 2 no. rooms of 30 sq.m, 49 no. rooms of 25 sq.m; 14 no. rooms of 23 sq.m, 58 no. rooms of 22.5 sq.m, 8 no. rooms of 20 sq.m, 104 no. rooms of 19 sq.m and 5 no. disabled access (Part M) rooms (3 no. 32 sq.m and 2 no. 26 sq.m); 21 no. kitchen/dining areas, and, 835 sq.m of dedicated shared accommodation services, amenities and facilities distributed across levels 1-4, to accommodate uses including lounge areas, entertainment (games) area, 2 no. external terraces (Level 03 and 04), laundry facilities, welfare facilities and waste storage;
 - c. 47 no. build-to rent apartments distributed across levels 1-7 including 12 no. studio apartments; 23 no. 1 bed apartments, 8 no. 2 bed apartments: and, 4 no. 3-bed apartments;

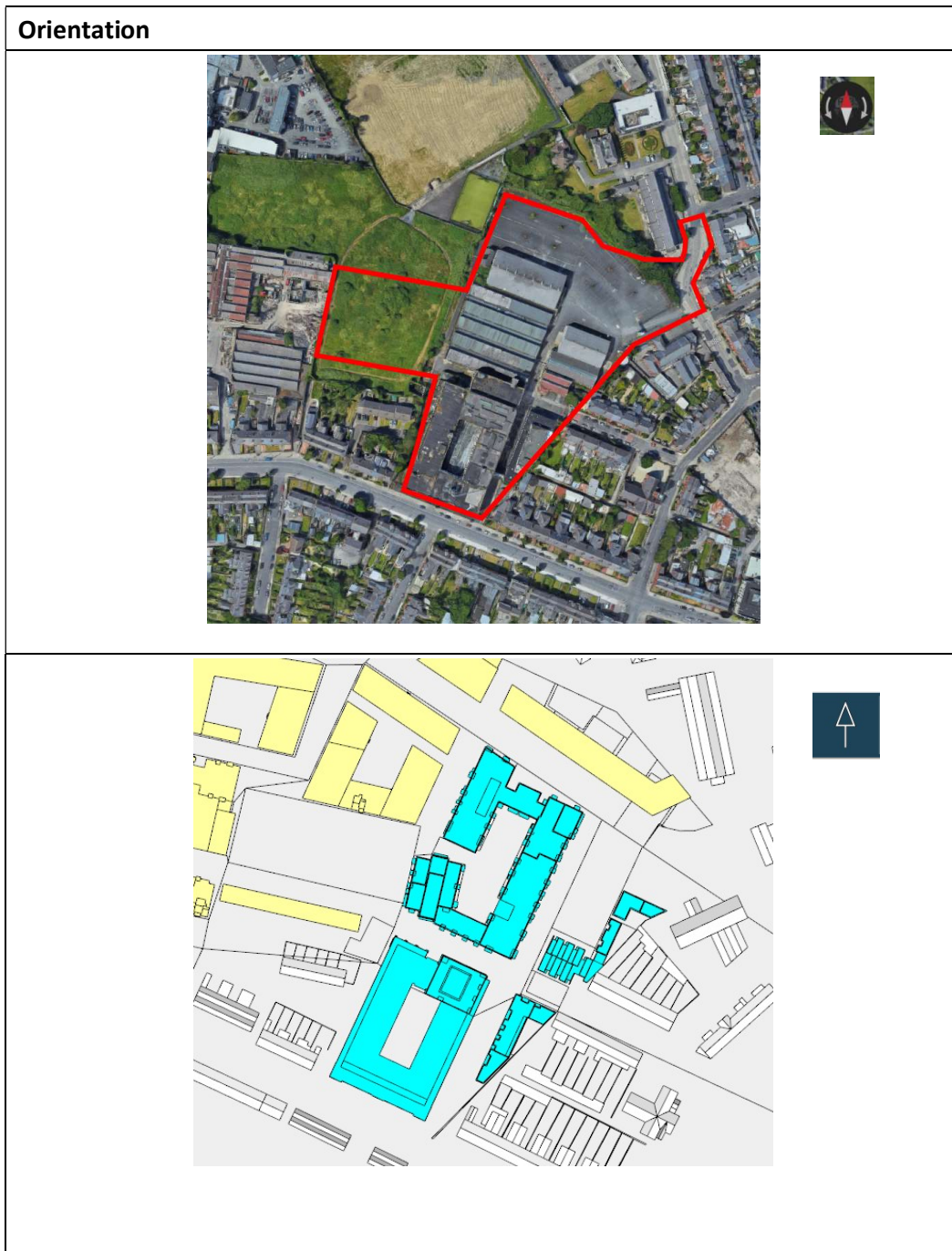
- d. 1,588 sq.m of shared (build to rent and shared accommodation) services, amenities and facilities including at ground floor reception/lobby area, parcel room, 2 no. lounges and administration facilities; at Level 01 entertainment area, TV rooms, entertainment (games room), library, meeting room, business centre; at Level 02 gym and storage and at Level 07, a lounge area.
 - e. Provision of communal amenity outdoor space as follows; PW1 - 450 sq.m in the form of roof terraces dedicated to shared accommodation and 285 sq.m roof terrace for the proposed apartments .
 - f. a basement (190 sq.m) underlying the proposed 8-storey projection to the northeast of PW1 to accommodate plant.
- iii. the construction of 445 no. Build to Rent apartment units, with a cumulative gross floor area of 48,455 sq.m including ancillary uses distributed across 3 no. blocks (PW 2, 4 and 5) comprising;
- a. PW2 (45,556 sq.m gross floor area including ancillary uses) - 415 no. apartments in a block ranging in height from 2-19 storeys (max. height 63.05m), incorporating 16 no. studio units; 268 no. 1 bed apartments, 93 no. 2 bed apartments and 38 no. 3-bed apartments. At ground floor, 2 no. retail units (combined 198 sq.m) (Class 1 use), and a café/restaurant (142 sq.m). Tenant services, amenities and facilities (combined 673 sq.m) distributed across ground floor (lobby, mail room, co-working and lounge area), Level 06 (terrace access) and Level 17 (lounge). Provision of communal amenity open space including a courtyard of 1,123 sq.m and roof terraces of 1,535 sq.m
 - b. Double basement to accommodate car parking, cycle parking, waste storage, general storage and plant.
 - c. PW4 (1,395 sq.m gross floor area including ancillary uses) - 9 no. apartments in a part 2-3 storey block (max. height 10.125m) comprising, 2 no. 2-bed duplex apartment units and 7 no. 3-bed triplex apartment units. Provision of communal amenity open space in the form of a courtyard 111 sq.m
 - d. PW5 (1,504 sq.m gross floor area including ancillary uses) - 21 no. apartments in a 4 storey block (max. height 13.30m) comprising 12 no. studio apartments, 1 no. 1-bed apartment, 5 no. 2-bed apartments, and 3 no. 3-bed apartments. Provision of communal amenity space in the form of a courtyard 167sq.m. Provision of communal amenity open space in the form of a courtyard 167 sq.m
- iv. the construction of a childcare facility (block PW4) with a gross floor area of 275 sq.m and associated external play area of 146 sq.m;
- v. the provision of public open space with 2 no. permanent parks, 'Players Park' (3,960 sq.m) incorporating active and passive uses to the northwest of the former factory building on lands owned by Dublin City Council; 'St. Catherine's Park' (1,350 sq.m) a playground, to the north east of the Player Wills site adjacent to St. Catherine's National School. A temporary public park (1,158 sq.m) to the northeast of the site set aside for a future school extension. The existing courtyard (690 sq.m) in block PW1 (former factory building) to be retained and enhanced and a public plaza (320 sq.m) between proposed blocks PW and PW4.

- vi. 903 no. long-stay bicycle parking spaces, with 861 no. spaces in the PW2 basement and 42 no. spaces at ground level in secure enclosures within blocks PW4 and PW5. 20 no. spaces reserved for non-residential uses and 110 no. short-stay visitor bicycle spaces provided at ground level.
- vii. 4 no. dedicated pedestrian access points are proposed to maximise walking and cycling, 2 no. from South Circular Road, 1 no. from St. Catherine's Avenue and 1 no. from Donore Avenue.
- viii. in the basement of PW2, 148 no. car parking spaces to serve the proposed build to rent apartments including 19 no. dedicated disabled parking spaces and 6 no. motorcycle spaces. 20 no. spaces for a car sharing club ('Go Car' or similar). 10% of parking spaces fitted with electric charging points.
- ix. in the basement of PW2, use for 81 no. car parking spaces (1,293 sq.m net floor area) including 5 no. dedicated disabled parking spaces, 3 no. motorcycle spaces and 10% of parking spaces fitted with electric charging points to facilitate residential car parking associated with future development on neighbouring lands. The area will not be used for carparking without a separate grant of permission for that future development. In the alternative, use for additional storage (cage/container) for residents of the proposed development.
- x. 37 no. surface level car parking spaces including 3 no. disabled access and 3 no. creche set down spaces and 10% fitted with electric charging points. 2 no. loading bays and 2 no. taxi set-down areas.
- xi. development of internal street network including a link road (84m long x 4.8m wide) to the south of the proposed 'Players Park' on land owned by Dublin City Council that will provide connectivity between the former 'Bailey Gibson' site and the 'Player Wills' site.
- xii. vehicular access will be provided via Donore Avenue with a one-way exit provided onto South Circular Road to the east of block PW1(the former factory building);
- xiii. replacement and realignment of footpaths to provide for improved pedestrian conditions along sections of Donore Avenue and South Circular Road and realignment of centreline along sections of Donore Avenue with associated changes to road markings;
- xiv. a contra-flow cycle lane is proposed at the one-way vehicular exit to the east of PW1 (former factory building) to allow 2-way cycle movements via this access point;
- xv. decommissioning of existing 2 no. ESB substations and the construction of 2 no. ESB substations and associated switch rooms, 1 no. single ESB substation in PW 1 (43.5 sq.m) and 1 no. double ESB substation in PW2 (68 sq.m);
- xvi. the construction of a waste and water storage building (combined 133 sq.m, height 4.35m) to the west of building PW1;
- xvii. all ancillary site development works; drainage, rooftop solar photovoltaics (20 no. panels total), landscaping, boundary treatment and lighting.

3 Methodology

3.1 Orientation

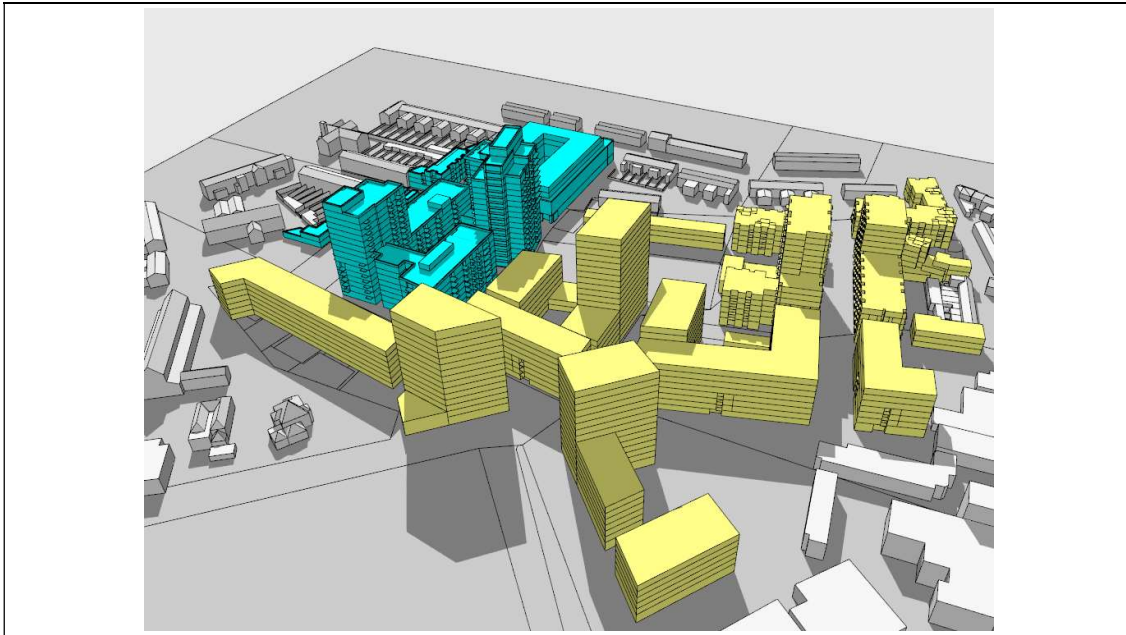
The model orientation taken from drawings provided by the Architect with the resulting angle shown below.



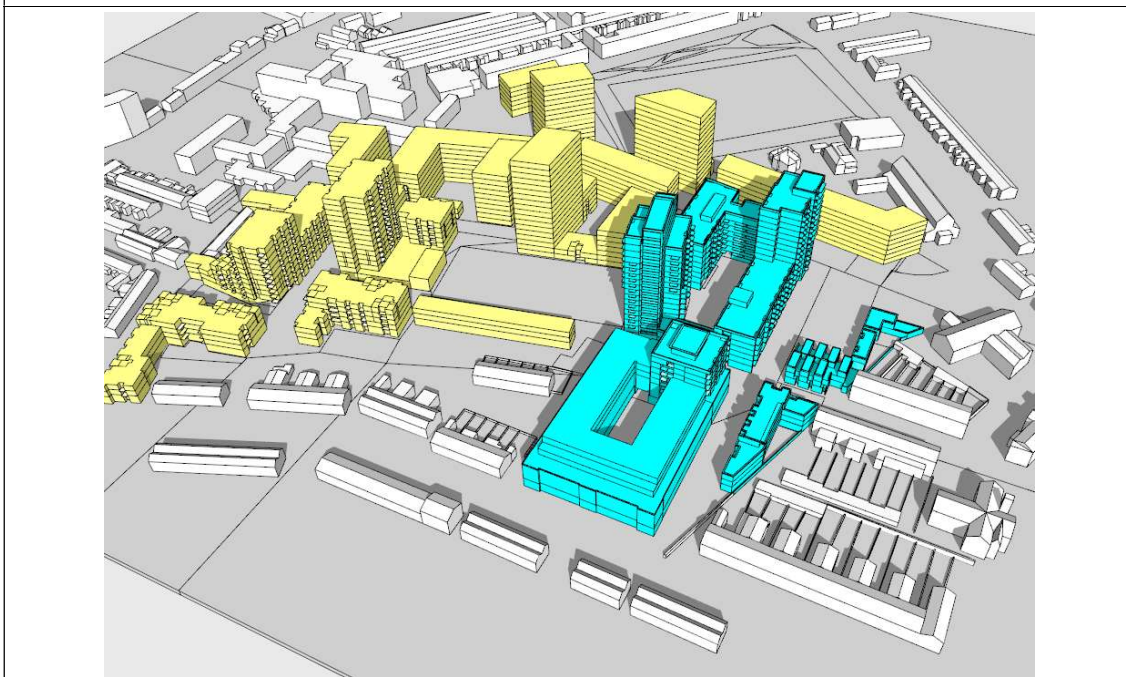
3.2 Model Geometry

3.2.1 Proposed Site Model

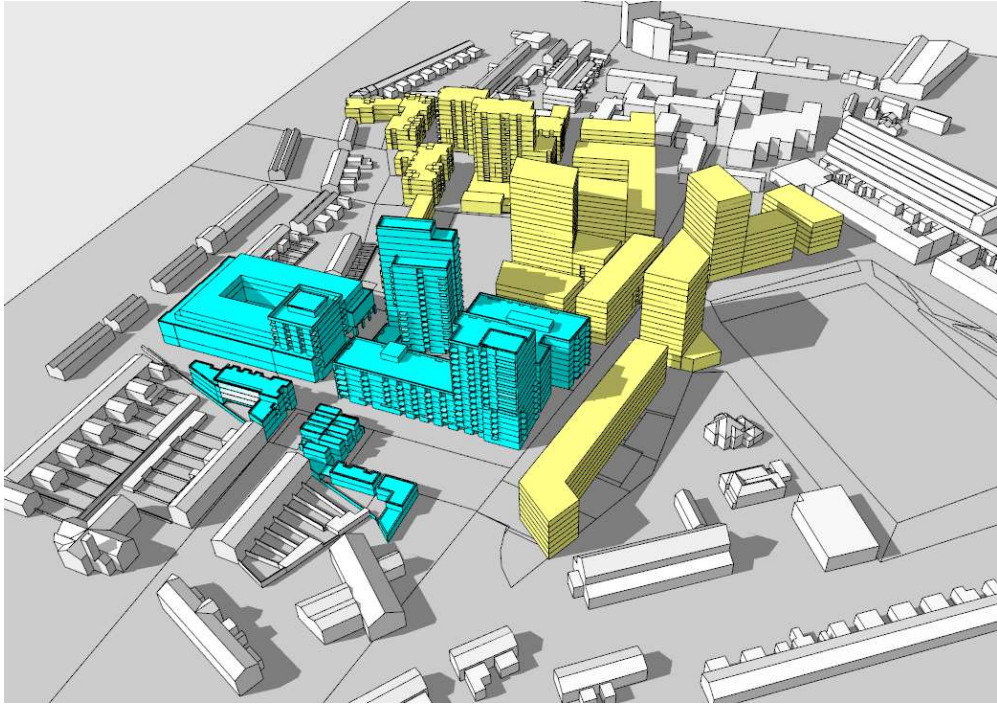
The following images show the models created from the architectural information provided and the use of google/bing maps where information was absent.



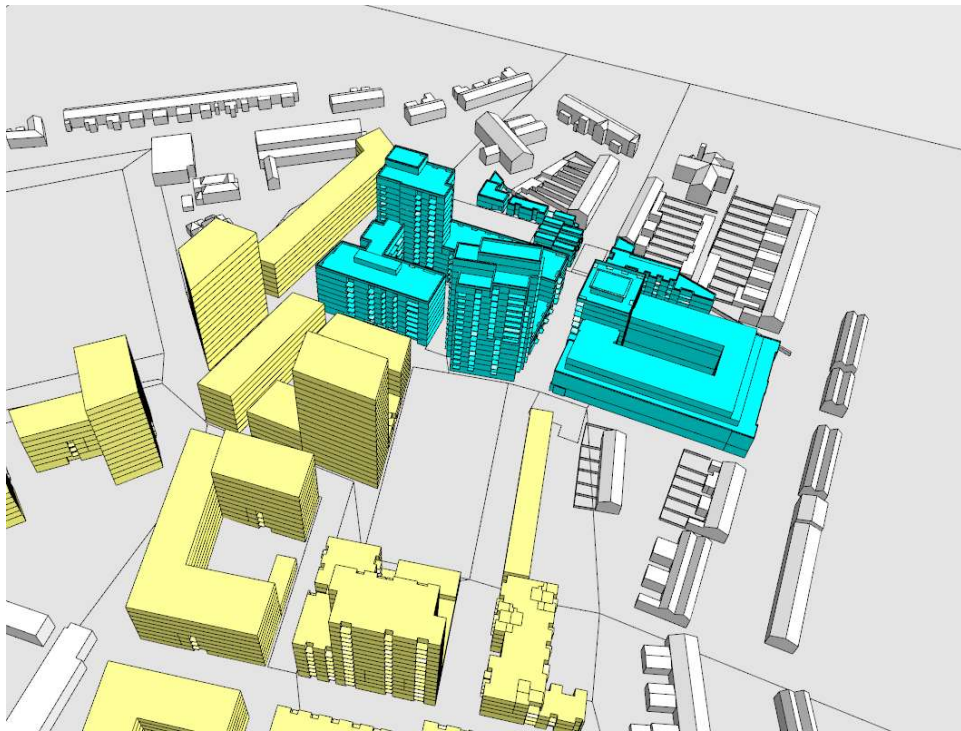
North



South



East



West

4 BRE – Site Layout Planning for Daylight and Sunlight (2nd edition)

Access to daylight and sunlight is a vital part of a healthy environment. Sensitive design should provide sufficient daylight and sunlight to new housing while not obstructing light to existing homes nearby.

The BRE Report, “Site layout planning for daylight and sunlight: a guide to good practice (BR209)”, advises on planning developments for good access to daylight and sunlight, and is widely used by local authorities to help determine the impacts of new developments.

4.1 Impact Classification Discussion

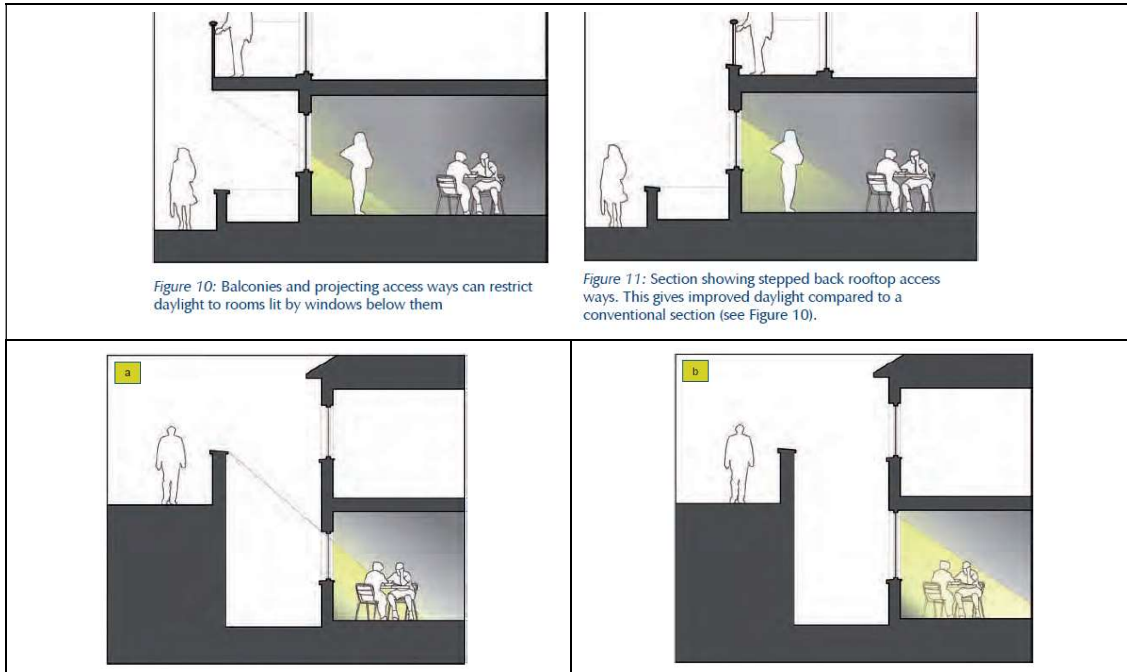
BRE guidance in Appendix I – Environmental Impact Assessment suggests impact classifications as minor, moderate and major adverse. It provides further classifications of these impacts with respect to criteria as follows;

Where the loss of skylight or sunlight fully meets the guidelines in the BRE guide, the impact is assessed as negligible or minor adverse. Where the loss of skylight or sunlight does not meet the BRE guidelines, the impact is assessed as minor, moderate or major adverse.

<p><i>Negligible adverse impact</i></p>	<ul style="list-style-type: none"> • <i>Loss of light well within guidelines, or</i> • <i>only a small number of windows losing light (within the guidelines) or</i> • <i>limited area of open space losing light (within the guidelines)</i>
<p><i>Minor adverse impact (a)</i></p>	<ul style="list-style-type: none"> • <i>Loss of light only just within guidelines and</i> <ul style="list-style-type: none"> ○ <i>a larger number of windows are affected or</i> ○ <i>larger area of open space is affected (within the guidelines)</i>
<p><i>Minor adverse impact (b)</i></p>	<ul style="list-style-type: none"> • <i>only a small number of windows or limited open space areas are affected</i> • <i>the loss of light is only marginally outside the guidelines</i> • <i>an affected room has other sources of skylight or sunlight</i> • <i>the affected building or open space only has a low level requirement for skylight or sunlight</i> • <i>there are particular reasons why an alternative, less stringent, guideline should be applied</i>
<p><i>Major adverse impact</i></p>	<ul style="list-style-type: none"> • <i>large number of windows or large open space areas are affected</i> • <i>the loss of light is substantially outside the guidelines</i> • <i>all the windows in a particular property are affected</i> • <i>the affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight (living rooms / playground)</i>

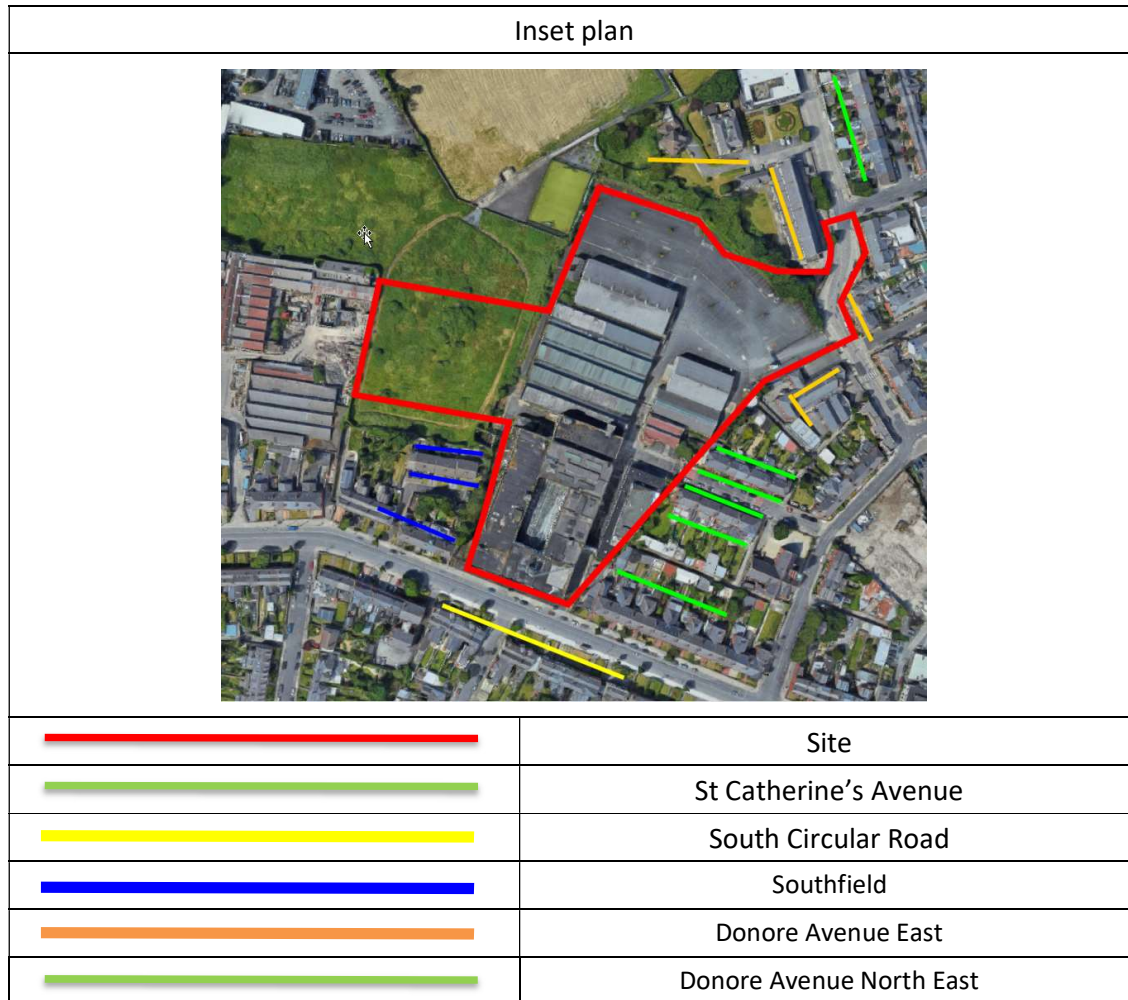
Conventional Windows

The BRE Guide talks about Conventional window design based on the discussions around these it could be determined that this term refers to windows typical with a sill height of 800mm – 1000mm as shown in the images below.



4.2 Potential Sensitive Receptors

To help understand the potential impact to surrounding buildings, potential sensitive receptors were identified as illustrated below.



NB: For the Shadow analysis carried out within this section of the report, massing for the Development Framework have been included for illustration purposes but they are not part of this planning application.

In addition, the BRE guidance suggests that where a site is undeveloped that a suitable benchmark should be utilised to compare the proposed development against. In this scenario the 2017 Development Framework for St Teresas Gardens and Environs scheme was used as this was the more conservative scheme of the options available to the design team.

5 Shadow Analysis

The statistics of Met Eireann, the Irish Meteorological Service, show the sunniest months in Ireland are May and June.

The following can also be shown:

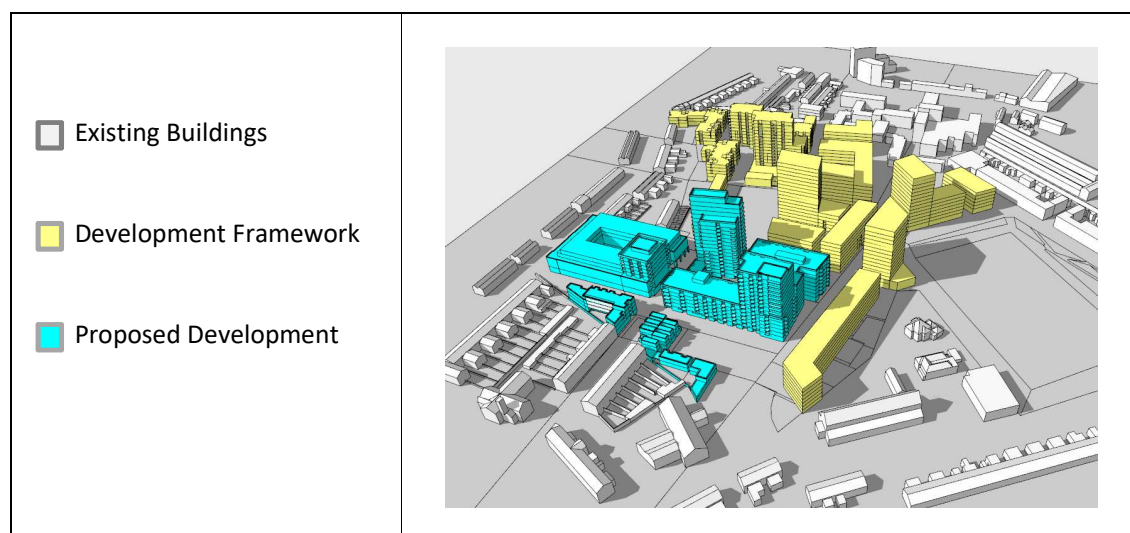
- During December, Dublin receives a mean daily duration of 1.7 hours of sunlight out of a potential 7.4 hours sunlight each day, i.e. only 22% of potential sunlight hours.
- During June, Dublin receives a mean daily duration of 6.4 hours of sunlight out of a potential 16.7 hours sunlight each day, i.e. only 38% of potential sunlight hours.

Therefore, impact caused by overshadowing are generally most noticeable during the summer months and least noticeable during the winter months.

This section will consider the shadows cast for the proposed development for the following dates:

- December 21st (Winter Solstice)
- March 21st / September 21st (Equinox)
- June 21st (Summer Solstice)

These images will show shadows cast for clear conditions with no clouds, assuming the sun is visible for every hour shown.



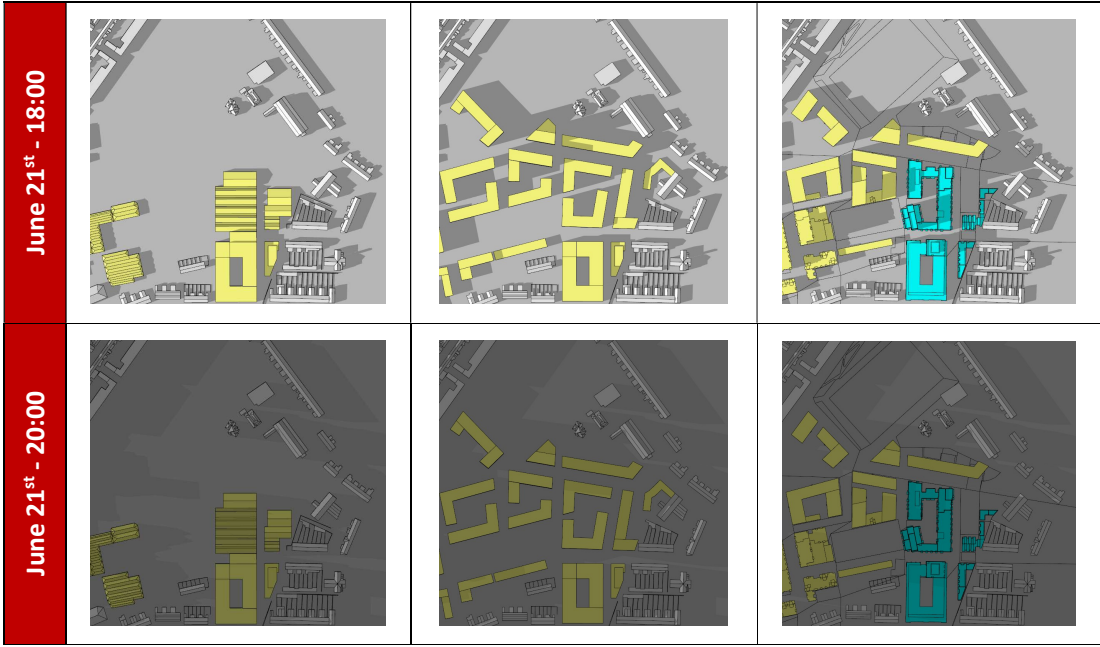
5.1 Neighbourhood - Plan View

5.1.1 March 21st

	Existing	Development Framework	Proposed
March 21 st - 8:00			
March 21 st - 10:00			
March 21 st - 12:00			
March 21 st - 14:00			
March 21 st - 16:00			

5.1.2 June 21st

	Existing	Development Framework	Proposed
June 21st - 8:00			
June 21st - 10:00			
June 21st - 12:00			
June 21st - 14:00			
June 21st - 16:00			



5.1.3 December 21st

	Existing	Development Framework	Proposed
December 21 st - 8:00			
December 21 st - 10:00			
December 21 st - 12:00			
December 21 st - 14:00			
December 21 st - 16:00			

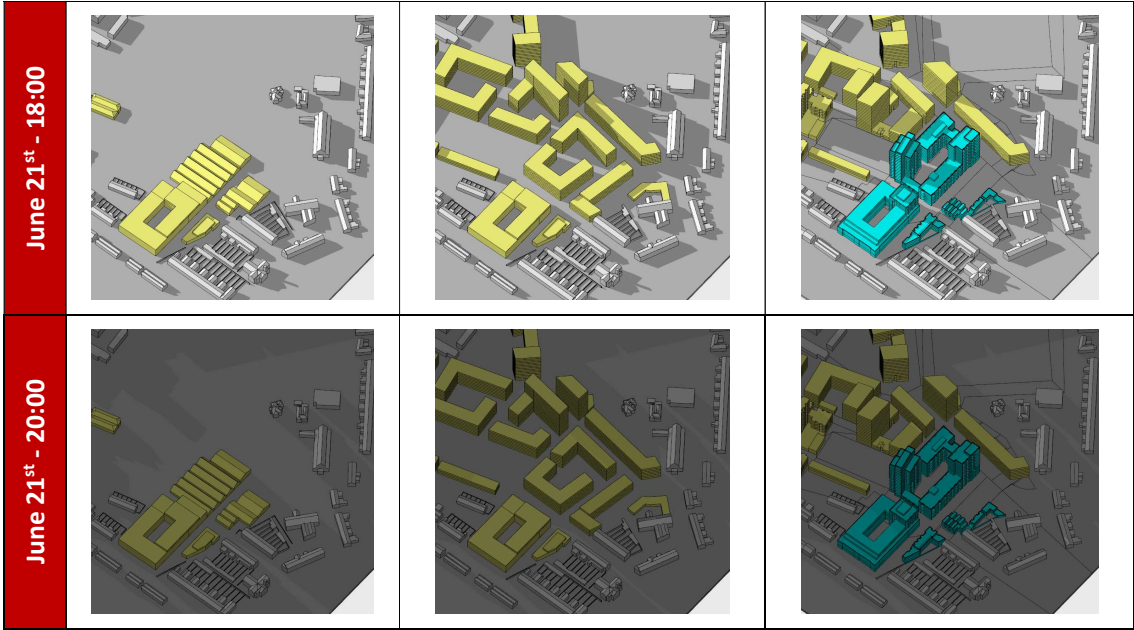
5.2 3D View

5.2.1 March 21st

	Existing	Development Framework	Proposed
March 21st - 8:00			
March 21st - 10:00			
March 21st - 12:00			
March 21st - 14:00			
March 21st - 16:00			

5.2.2 June 21st

	Existing	Development Framework	Proposed
June 21st - 8:00			
June 21st - 10:00			
June 21st - 12:00			
June 21st - 14:00			
June 21st - 16:00			



5.2.4 December 21st

	Existing	Development Framework	Proposed
December 21 st - 8:00			
December 21 st - 10:00			
December 21 st - 12:00			
December 21 st - 14:00			
December 21 st - 16:00			

5.3 Shadow Analysis Discussion

Shading from the proposed development is summarised as follows based on the analysis of the preceding images:

St Catherine’s Avenue – East of the development

No additional shading visible from the proposed development on these existing residential properties during March and December. Additional shading noted to some of the properties late evening in June (from 18:00). Overall there will be a minor adverse impact to these existing properties.

South Circular Road – South of the development

No additional shading visible from the proposed development on these existing residential properties. Overall there will be a negligible adverse impact to these existing properties.

Southfield – West of the development

Additional shading visible from the proposed development on these existing residential properties early mornings in March (0800-1000) and June (0800). Overall there will be a Minor adverse impact to these existing properties.

St Teresa’s Church – North East of the development

Additional shading noted to the church and grounds, similar to that of the framework plan, during the afternoons of March and December due to their north easterly location in relation to the proposed site. Some of this additional shading can be attributed to the Framework massing which is not part of this planning application. As noted below, the potential impact is further quantified via the Daylight Analysis of Existing Buildings Section of this report. Overall there will be a Minor adverse impact to these existing properties.

Donore Avenue – North East of the development

Minor additional shading noted late evening in March (16:00) and afternoons of December (14:00). No additional shading visible from the proposed development on these existing residential properties at any other period. Overall there will be a minor adverse impact to these existing properties.

Donore Avenue –East of the development

Additional shading noted late evening in June (18:00). No additional shading visible from the proposed development on these existing residential properties at any other period. Overall there will be a minor adverse impact to these existing properties.

The potential impact is further quantified via the Daylight Analysis of Existing Buildings and the Sunlight to Existing Amenities section of this report.

6 Daylight Analysis of Existing Buildings

6.1 VSC Guidance Requirements

BRE ‘Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice’ by Paul Littlefair, 2011. (Section 2.2)

When designing a new development, it is important to safeguard the daylight to nearby buildings. The BRE’s 2011 guidance provide numerical values that are purely advisory. Different criteria may be used based on the requirements for daylighting in an area viewed against other site layout constraints. Another issue is whether the Permitted building is itself a good neighbour, standing a reasonable distance from the boundary and taking no more than its fair share of light. Any reduction in the total amount of skylight can be calculated by finding the vertical sky component at the centre of key reference points. The vertical sky component definition from the BRE’s 2011 is described below;

<p>Vertical sky component (VSC)</p>	<p>Ratio of that part of illuminance, at a point on a given vertical plane, that is received directly from a CIE standard overcast sky, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky. Usually the ‘given vertical plane’ is the outside of a window wall. The VSC does not include reflected light, either from the ground or from other buildings.</p>
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The maximum possible VSC value for an opening in a vertical wall, assuming no obstructions, is 40%. This VSC at any given point can be tested in the Radiance module of the IES VE software.

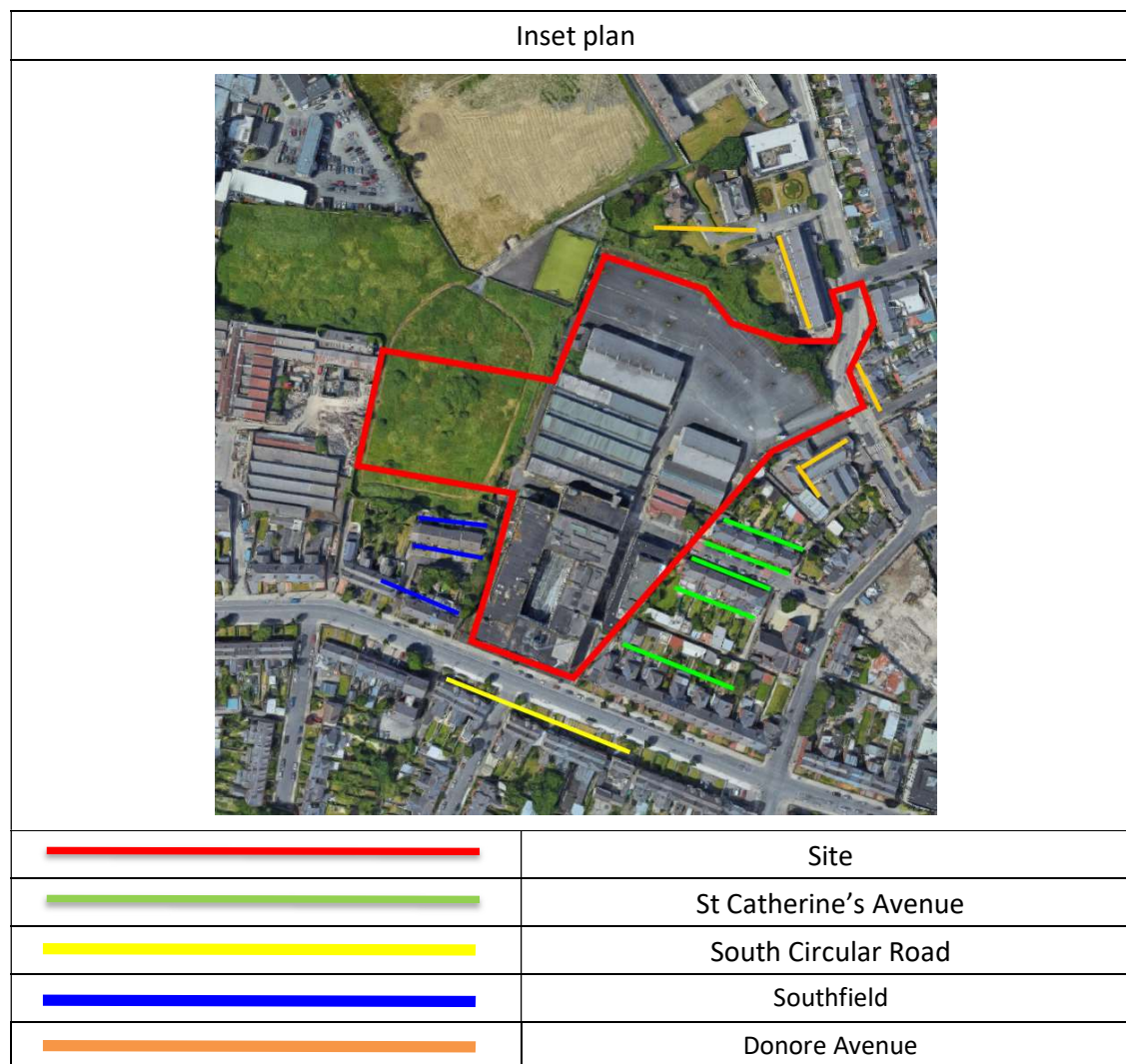
For typical Schemes the BRE’s 2011 guidance document Site Layout Planning for Daylight and Sunlight which states the following in Section 2.2.7

<p>2.2.7 If this VSC is greater than 27% then enough skylight should still be reaching the window of the existing building. Any reduction below this level should be kept to a minimum. If the VSC, with the new development in place, is both less than 27% and less than 0.8 times its former value, occupants of the existing building will notice the reduction in the amount of skylight. The area lit by the window is likely to appear more gloomy, and electric lighting will be needed more of the time.</p>

As such this study will make comparisons between the Existing scheme, 2017 Development Framework for St Teresas Gardens and Environs and the proposed development and consider if the values on the existing buildings are above 27% or not less than 0.8 times their former value (that of the Existing/Framework Schemes) when modelled.

6.2 Potential Sensitive Receptors

To help understand the potential impact to surrounding buildings, potential sensitive receptors were identified as illustrated below.



To note, areas of the Development Framework have been removed from this analysis as they do not form part of this application. Results have been analysed for the properties closest to the development with those further afield proposed to be analysed if the nearest properties failed to meet the BRE s Recommendations.

6.2.1 VSC values

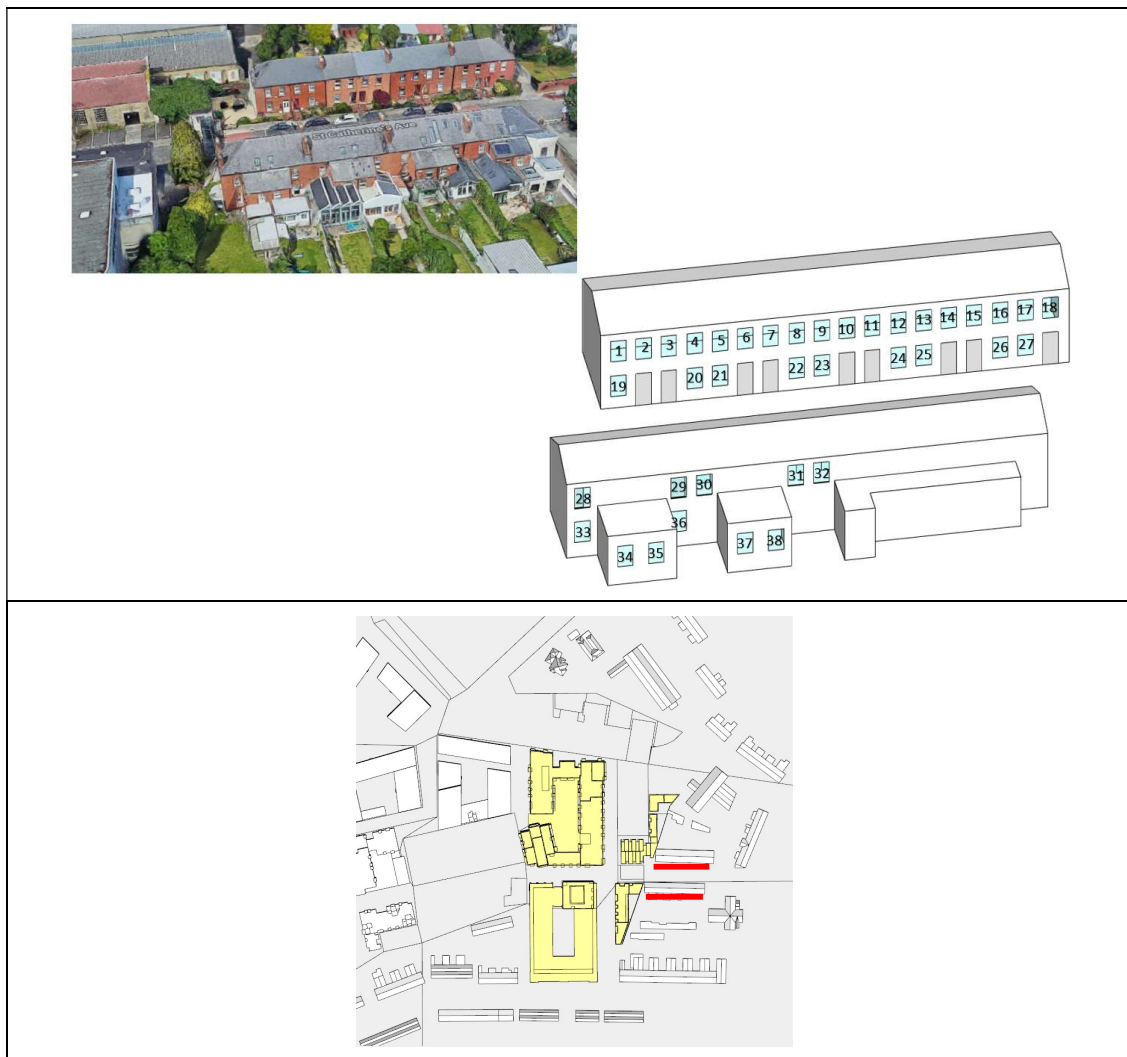
The BRE Guide also states the following in Section 2.1.6 that the amount of daylight a room needs depends on what it is being used for, but roughly speaking if the VSC is:

- $\geq 27\%$, conventional window design will usually give reasonable results
- between 15 % and 27 % special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight
- between 5 % and 15 % it is difficult to provide adequate daylight unless very large windows are used
- $<5\%$ it is often impossible to achieve reasonable daylight even if the whole window wall is glazed

As such these values will be referred to as part of the analysis of the adjacent properties.

6.3 Results

6.3.1 VSC View 01 (St Catherine's Ave)



Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	35.21	35.10	33.83	96%	✓
2	34.97	35.13	33.88	97%	✓
3	35.02	34.90	33.82	97%	✓
4	34.99	35.04	34.38	98%	✓
5	34.95	34.81	34.17	98%	✓
6	34.84	34.79	34.39	99%	✓
7	34.92	35.07	34.42	99%	✓
8	34.83	34.85	34.34	99%	✓
9	34.87	35.05	34.62	99%	✓
10	35.13	35.06	34.50	98%	✓
11	35.17	35.24	34.60	98%	✓

Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
12	35.24	35.16	34.79	99%	✓
13	35.28	35.27	34.88	99%	✓
14	35.33	35.36	34.95	99%	✓
15	35.68	35.55	35.24	99%	✓
16	35.83	35.87	35.77	100%	✓
17	36.00	36.16	35.87	100%	✓
18	36.22	35.53	36.15	100%	✓
19	30.19	30.21	28.36	94%	✓
20	29.96	29.98	28.69	96%	✓
21	29.59	29.94	28.86	98%	✓
22	29.67	29.69	29.44	99%	✓
23	30.03	29.80	29.52	98%	✓
24	30.21	30.18	29.95	99%	✓
25	30.64	30.39	30.54	100%	✓
26	31.96	32.21	31.81	100%	✓
27	32.41	32.55	32.31	100%	✓
28	37.89	37.85	35.61	94%	✓
29	38.29	37.97	37.40	98%	✓
30	38.04	38.03	37.36	98%	✓
31	38.17	38.12	37.76	99%	✓
32	38.17	38.18	37.66	99%	✓
33	26.15	24.61	22.41	86%	✓
34	36.44	36.05	34.52	95%	✓
35	36.59	36.54	35.04	96%	✓
36	21.93	22.01	21.75	99%	✓
37	36.68	36.79	35.91	98%	✓
38	36.63	36.75	36.36	99%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value (that of the existing situation). Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing properties.

6.3.2 VSC View 02 (St Catherine’s Avenue)



Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	35.50	35.14	34.14	96%	✓
2	35.60	34.99	34.15	96%	✓
3	35.23	35.10	33.86	96%	✓
4	35.52	34.76	33.93	96%	✓
5	35.34	34.87	33.47	95%	✓
6	35.21	34.63	33.30	95%	✓
7	35.25	34.64	33.05	94%	✓
8	35.33	34.67	33.32	94%	✓
9	35.35	34.50	33.15	94%	✓
10	35.52	34.58	33.02	93%	✓
11	35.65	34.42	32.88	92%	✓
12	35.77	34.37	32.55	91%	✓

Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
13	36.16	34.24	32.66	90%	✓
14	36.51	33.91	32.46	89%	✓
15	36.67	33.78	32.38	88%	✓
16	36.80	33.36	32.47	88%	✓
17	37.21	33.17	32.27	87%	✓
18	37.41	33.22	32.26	86%	✓
19	30.71	30.74	29.94	97%	✓
20	30.33	29.90	29.15	96%	✓
21	30.26	30.05	28.71	95%	✓
22	30.58	29.47	28.35	93%	✓
23	30.57	29.61	28.54	93%	✓
24	31.67	29.09	28.26	89%	✓
25	32.21	28.71	28.02	87%	✓
26	34.20	27.99	28.16	82%	✓
27	34.66	27.67	28.34	82%	✓
28	37.46	36.50	35.70	95%	✓
29	37.42	36.46	35.65	95%	✓
30	37.57	36.39	35.41	94%	✓
31	37.40	36.13	35.12	94%	✓
32	37.64	36.44	34.99	93%	✓
33	38.01	35.97	34.62	91%	✓
34	37.90	35.50	34.22	90%	✓
35	38.27	28.54	33.34	87%	✓
36	35.16	34.40	33.75	96%	✓
37	35.64	33.96	33.15	93%	✓
38	35.86	34.09	33.36	93%	✓
39	36.81	25.80	27.63	75%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27%. Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing properties.

6.3.3 VSC View 03 (St Catherine's Avenue)



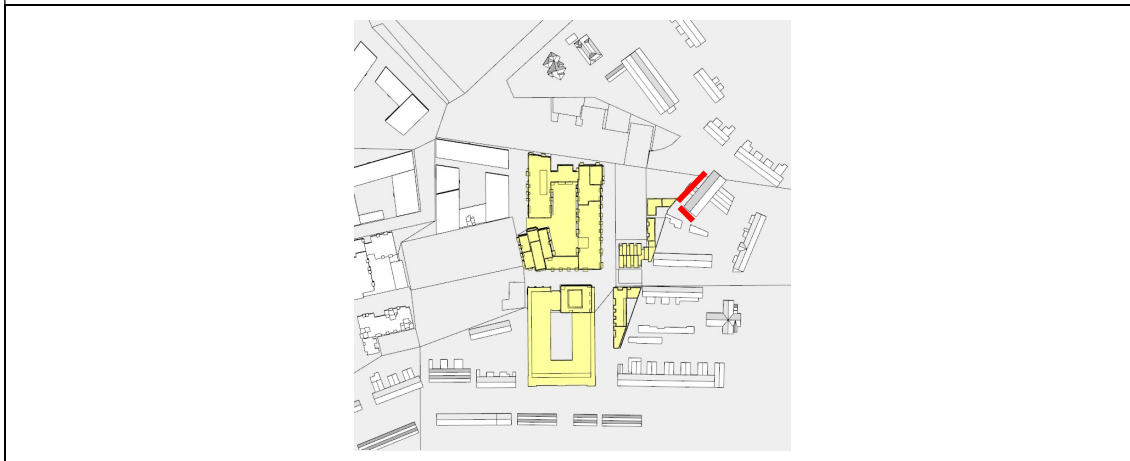
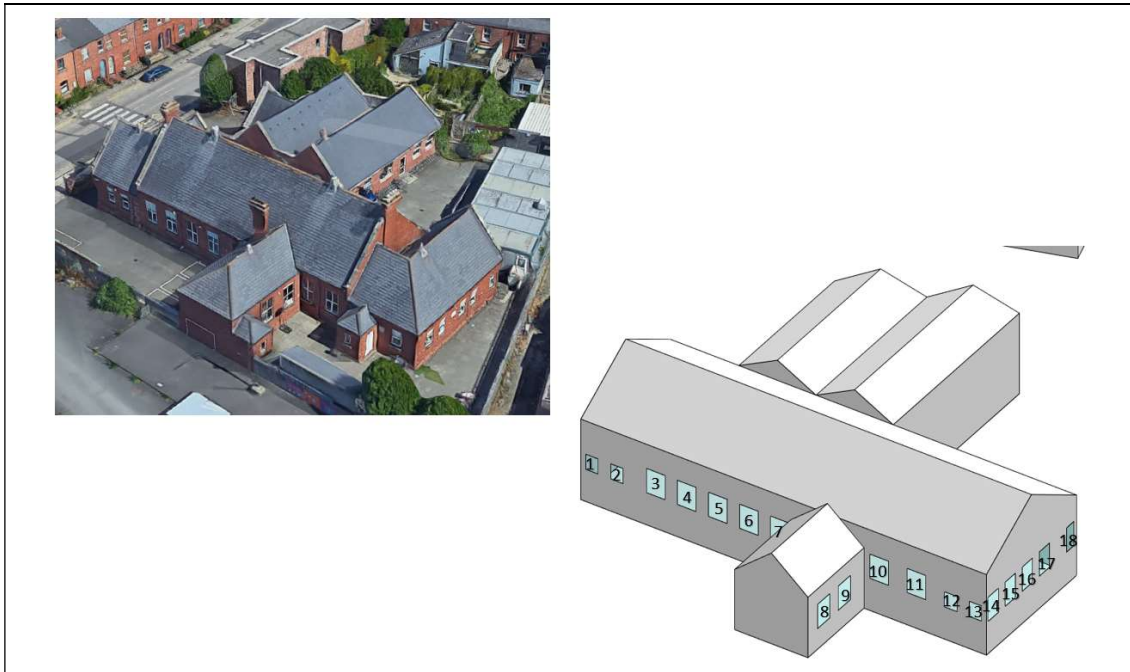
Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	35.51	34.71	30.22	85%	✓
2	33.08	32.75	31.12	94%	✓
3	34.48	33.88	31.12	90%	✓
4	36.42	35.52	32.70	90%	✓
5	36.82	35.62	33.26	90%	✓
6	28.75	28.45	28.69	100%	✓
7	33.53	33.14	31.38	94%	✓
8	36.93	35.98	34.15	92%	✓
9	36.95	36.06	34.09	92%	✓
10	34.27	34.19	33.50	98%	✓
11	34.63	33.92	32.83	95%	✓
12	36.91	36.41	34.60	94%	✓
13	37.05	36.32	34.72	94%	✓
14	33.84	33.80	33.32	98%	✓
15	33.43	33.15	32.68	98%	✓
16	33.17	32.06	29.76	90%	✓

Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
17	21.21	20.98	20.17	95%	✓
18	21.26	20.07	18.77	88%	✓
19	34.63	33.25	29.54	85%	✓
20	34.49	33.65	30.38	88%	✓
21	14.87	15.00	15.06	101%	✓
22	17.13	16.63	16.24	95%	✓
23	19.56	19.52	19.48	100%	✓
24	19.73	19.54	19.28	98%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value (that of the existing situation). Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing properties.

6.3.4 VSC View 04 (Donore Avenue)



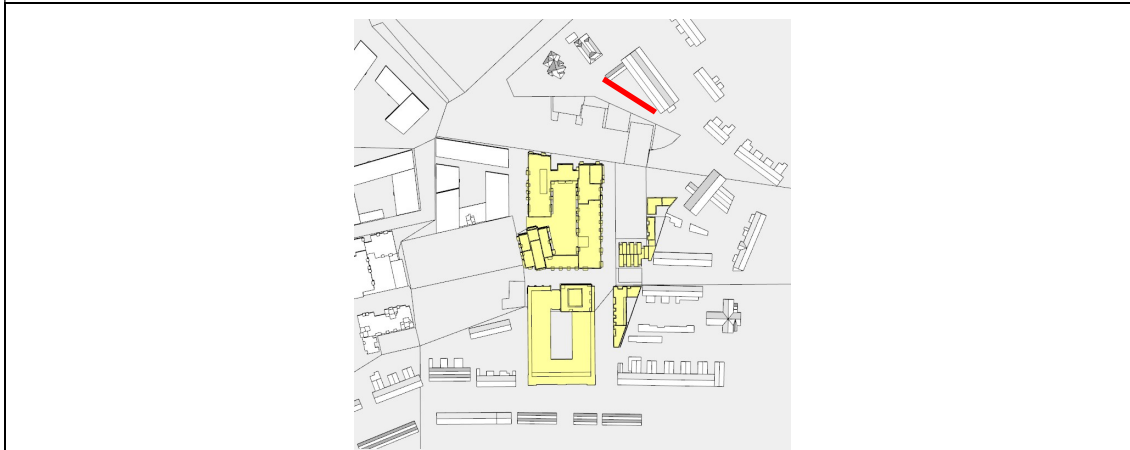
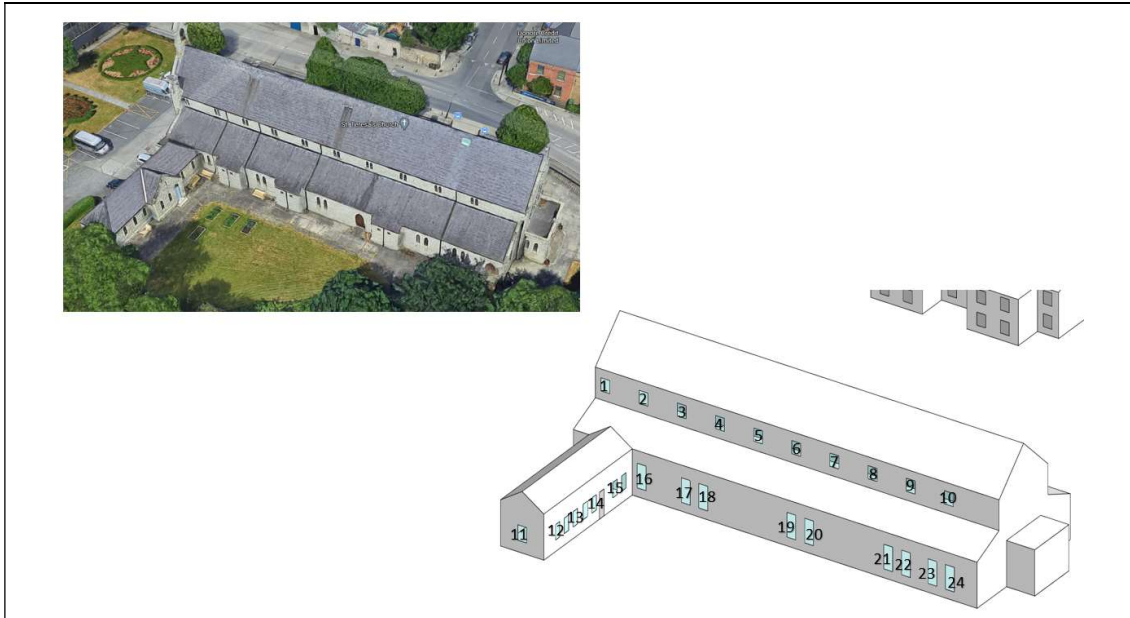
Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	37.6	10.65	34.62	92%	✓
2	37.5	5.38	34.21	91%	✓
3	37.4	34.28	34.17	91%	✓
4	37.2	33.87	33.9	91%	✓
5	36.6	33.24	33.52	92%	✓
6	34.5	31.82	32.97	96%	✓
7	28	26.13	27.87	100%	✓
8	32.7	29.21	26.97	82%	✓
9	28.1	24.74	21.72	77%	✓ ^①
10	30.7	26.94	25.43	83%	✓
11	35.8	30.24	30.15	84%	✓
12	36.9	31.01	30.63	83%	✓

Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
13	37.5	31.41	31.39	84%	✓
14	36.7	33.71	31.43	86%	✓
15	36.7	33.84	31.61	86%	✓
16	36.5	34.16	31.82	87%	✓
17	36.4	34.11	31.58	87%	✓
18	36.1	34.25	32.02	89%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value (that of the existing situation). Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing property.
- ✓Ⓞ This point is just out with the recommended values at just under 22% when compared to the existing situation. When compared with the Framework Plan this test point meets the recommendations.

6.3.5 VSC View 05 (Donore Avenue)



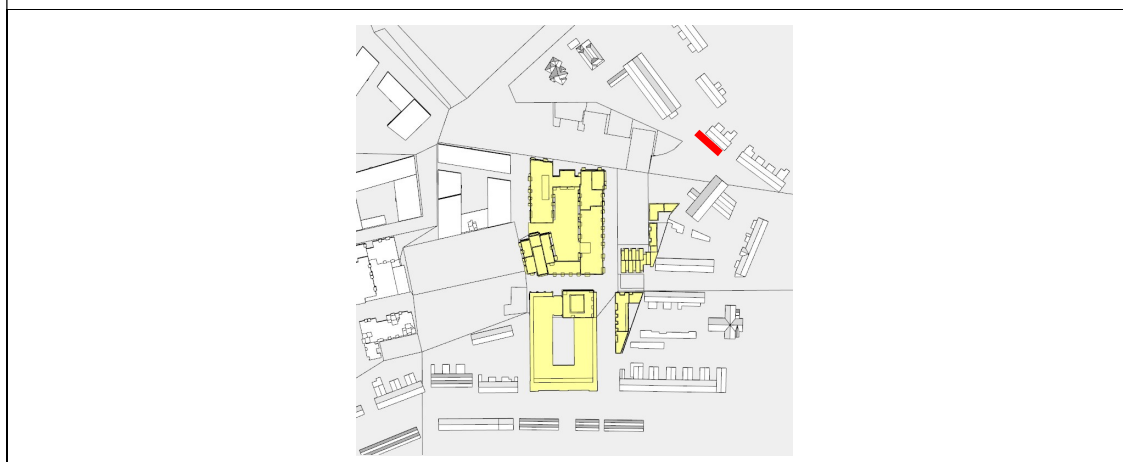
Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	38.95	34.3	33.53	86%	✓
2	39.05	34.04	33.5	86%	✓
3	38.82	33.52	33.4	86%	✓
4	38.92	33.21	33.53	86%	✓
5	39.02	32.84	33.63	86%	✓
6	38.88	32.14	33.55	86%	✓
7	38.84	31.46	33.5	86%	✓
8	38.85	30.44	33.33	86%	✓
9	38.82	29.07	33.11	85%	✓
10	38.85	27.82	33.18	85%	✓
11	37.79	26.74	29.07	77%	✓

Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
12	34	25.92	31.27	92%	✓
13	33.14	25.89	30.76	93%	✓
14	31.95	25.4	29.49	92%	✓
15	29.63	23.88	27.62	93%	✓
16	25.17	19.03	20.9	83%	✓
17	34.97	26.47	28.99	83%	✓
18	35.84	26.7	29.41	82%	✓
19	37.55	25.81	31	83%	✓
20	37.49	24.8	30.69	82%	✓
21	37.76	21.24	30.78	82%	✓
22	37.74	20.04	30.95	82%	✓
23	37.75	17.83	30.93	82%	✓
24	37.33	16.62	31.17	83%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value (that of the existing situation). Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing property.

6.3.6 VSC View 06 (Donore Avenue)

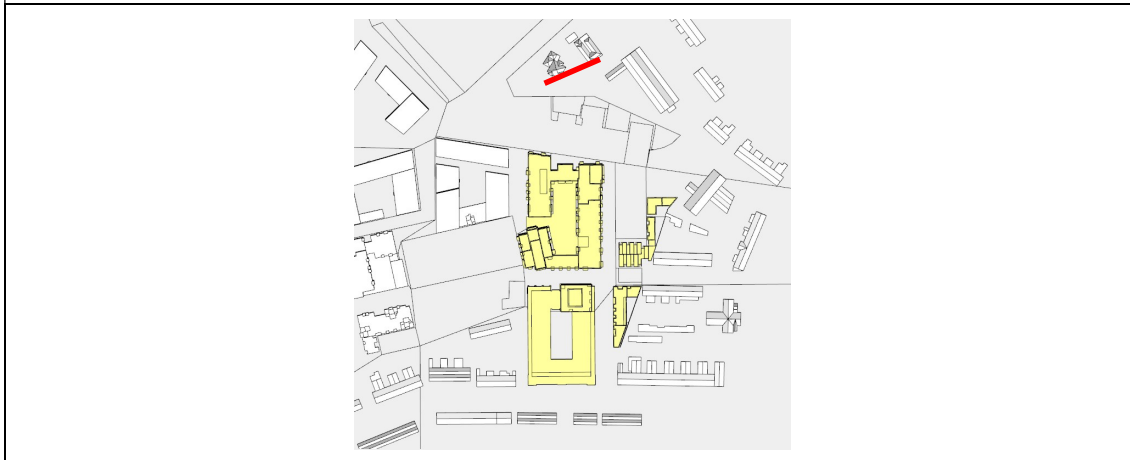
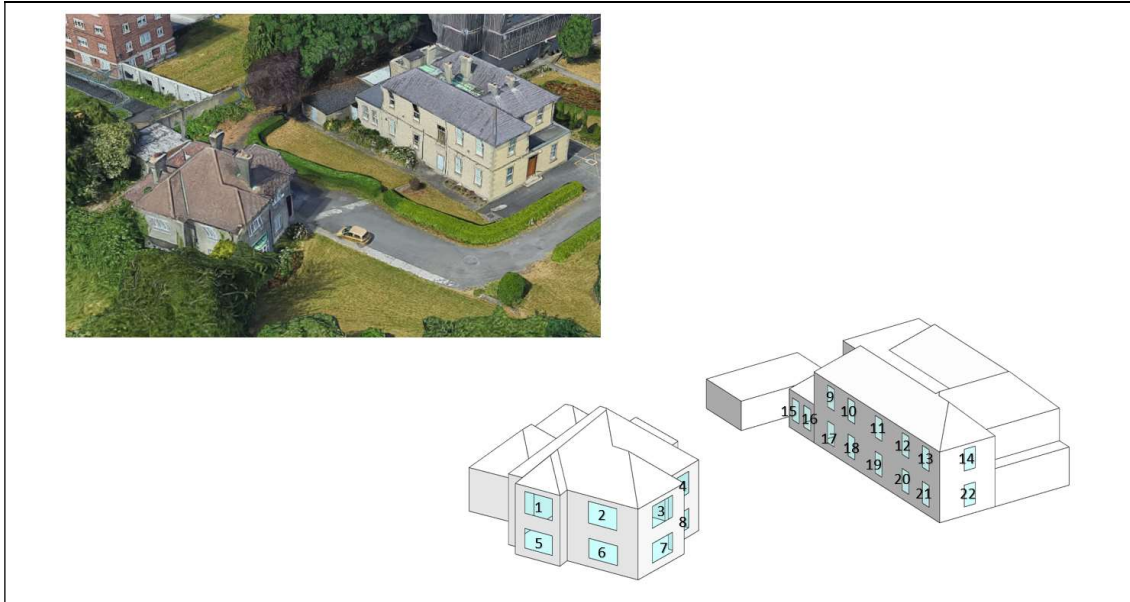


Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	35.08	34.21	33.46	95%	✓
2	34.75	34.38	33.26	96%	✓
3	34.40	34.61	33.23	97%	✓
4	34.23	34.57	33.70	98%	✓
5	33.98	34.55	33.38	98%	✓
6	34.20	34.41	33.32	97%	✓
7	34.02	34.61	33.46	98%	✓
8	33.95	34.54	33.72	99%	✓
9	32.50	32.58	32.30	99%	✓
10	31.75	32.59	31.85	100%	✓
11	30.97	32.93	32.13	100%	✓
12	31.10	33.17	31.85	100%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value (that of the existing situation). Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing properties.

6.3.7 VSC View 07 (Donore Avenue)



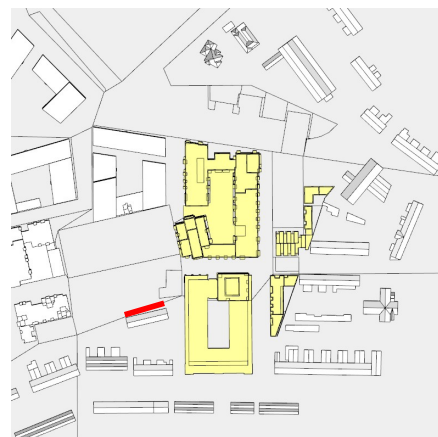
Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	38.54	22.05	30.04	78%	✓
2	38.05	22.03	29.46	77%	✓
3	37.08	30.67	33.64	91%	✓
4	34.69	30.77	32.38	93%	✓
5	38.24	20.26	29.01	76%	✓
6	37.37	19.34	28.36	76%	✓
7	35.94	28.49	32.28	90%	✓
8	31.67	27.53	29.61	93%	✓
9	37.08	31.17	33.17	89%	✓
10	37.14	30.9	33.24	89%	✓
11	37.11	30.37	32.84	88%	✓
12	37.4	30.27	32.35	86%	✓
13	37.63	29.73	32.46	86%	✓
14	35.76	30.96	32.72	91%	✓

Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
15	33.61	28.97	30.78	92%	✓
16	34.36	29.75	31.35	91%	✓
17	34.55	29.58	31.73	92%	✓
18	34.82	29.39	31.5	90%	✓
19	34.94	28.6	31.08	89%	✓
20	35.42	28.08	31.02	88%	✓
21	35.92	27.63	31.16	87%	✓
22	33.49	27.66	30.73	92%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value (that of the existing situation). Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing properties.

6.3.8 VSC View 08 (Southfield)



Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	37.44	32.1	24.58	66%	✓②
2	37.53	32.34	25.02	67%	✓②
3	37.8	32.43	25.48	67%	✓②
4	37.92	32.58	25.83	68%	✓②
5	38.03	32.57	26.22	69%	✓①
6	38.17	32.58	27.03	71%	✓
7	38.19	32.55	27.37	72%	✓
8	38.29	32.62	26.61	69%	✓①
9	38.31	32.92	27.77	72%	✓
10	38.19	32.75	27.48	72%	✓
11	38.42	32.72	27.6	72%	✓
12	38.24	32.85	27.74	73%	✓
13	38.24	32.78	28.01	73%	✓
14	36.92	29.56	24	65%	✓①
15	37.12	30	24.84	67%	✓①
16	37.63	29.76	25.78	69%	✓①

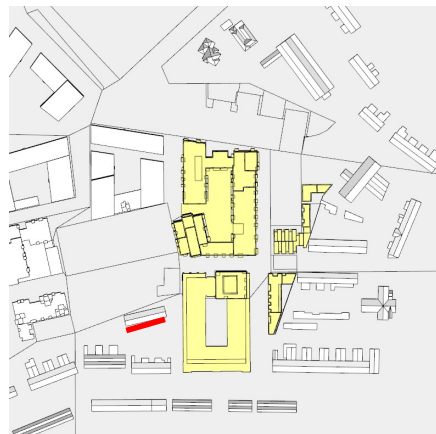
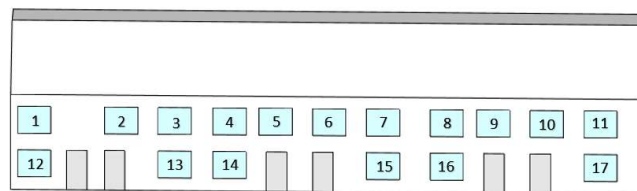
Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
17	37.58	29.79	25.95	69%	✓①
18	37.85	29.63	26.81	71%	✓①
19	38.04	29.67	26.71	70%	✓①
20	38.03	29.69	27.04	71%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value (that of the existing situation). Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing properties.
- ✓① These points (8 No.) are out with the recommended values when compared to the existing situation. When compared with the Framework Plan these test points meet the recommendations. To add, the values at these points are high sitting at between 24 and 26% and as such the spaces beyond would still receive adequate levels of daylight.
- ✓② These points (4 No.) are out with the recommended values when compared to the existing situation and the Framework Plan. It should be noted that, the values at these points are still high sitting at between 24.5 and 26%. As such the spaces beyond would still receive adequate levels of daylight.

In summary there will be a minor adverse impact as a results of the proposed development to these existing properties as the loss of light is marginally outside the guidelines.

6.3.9 VSC View 09 (Southfield)



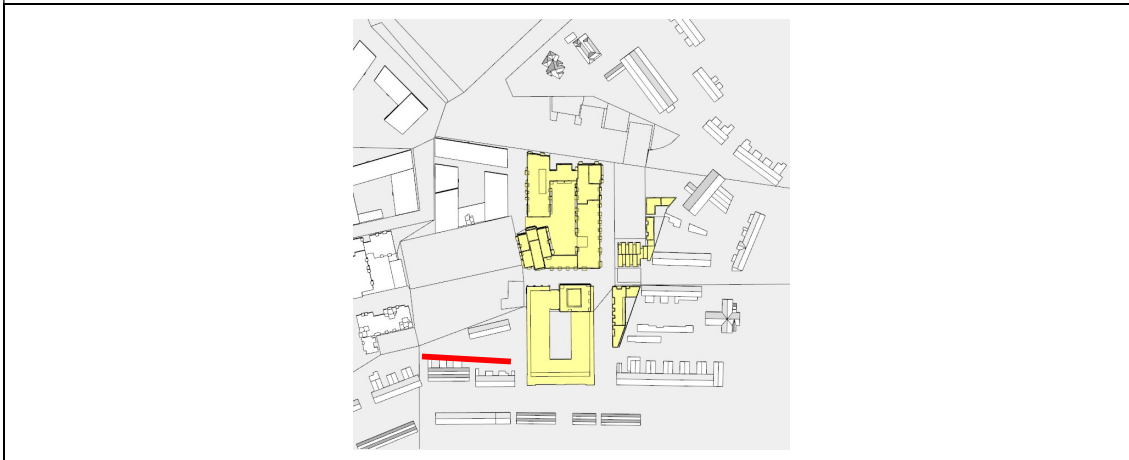
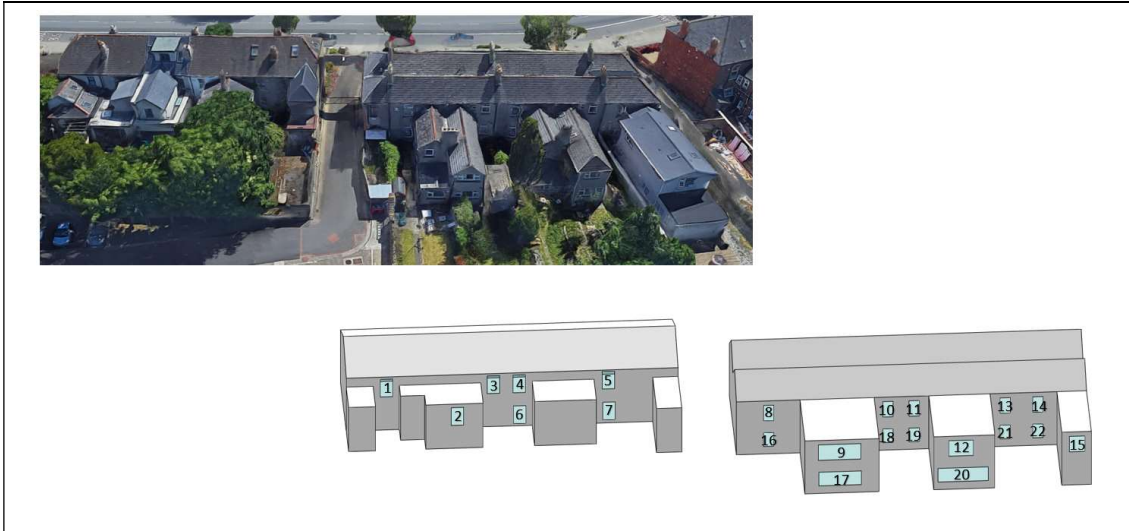
Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	36.48	36.43	35.62	98%	✓
2	36.48	36.61	35.37	97%	✓
3	36.46	36.35	35.11	96%	✓
4	36.36	36.45	35.08	96%	✓
5	36.47	36.20	34.74	95%	✓
6	36.07	36.27	34.13	95%	✓
7	36.06	35.89	33.64	93%	✓
8	35.66	35.67	32.92	92%	✓
9	35.42	35.41	32.23	91%	✓
10	35.10	34.95	31.42	90%	✓
11	34.19	34.20	30.07	88%	✓

Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
12	34.10	34.22	33.18	97%	✓
13	34.24	34.41	32.95	96%	✓
14	34.29	34.20	32.59	95%	✓
15	33.77	33.69	31.52	93%	✓
16	33.30	33.29	30.77	92%	✓
17	31.42	31.62	27.97	89%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value (that of the existing situation). Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing properties.

6.3.10 VSC View 10 (Southfield)



Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	34.58	33.3	27.00	78%	✓
2	35.04	33.72	37.85	100%	✓
3	36.29	34.75	29.11	80%	✓
4	35.82	34.48	29.55	82%	✓
5	36.83	34.77	30.31	82%	✓
6	20.24	19.7	16.99	84%	✓
7	21.76	20.97	19.86	91%	✓
8	34.77	32.82	29.51	85%	✓
9	37.58	34.33	30.04	80%	✓
10	29.17	27.54	26.06	89%	✓
11	29.63	27.92	26.07	88%	✓
12	38.05	34.24	29.99	79%	✓
13	30.18	28.37	25.67	85%	✓
14	31.59	29.82	28.3	90%	✓

Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
15	37.79	33.57	29.29	78%	✓
16	27.88	26.48	23.2	83%	✓
17	36.14	32.95	28.75	80%	✓
18	18.18	16.43	15.81	87%	✓
19	18.33	16.84	15.77	86%	✓
20	37.13	32.91	28.71	77%	✓
21	20.23	18.22	17.26	85%	✓
22	21.47	19.3	18.58	87%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value (that of the existing situation). Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing properties.

6.3.11 VSC View 11 (South Circular Road)



Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	33.09	33.30	28.80	87%	✓
2	33.32	33.32	28.46	85%	✓
3	33.11	33.45	29.12	88%	✓
4	33.49	33.76	28.99	87%	✓
5	33.86	33.83	29.41	87%	✓
6	34.17	33.88	29.67	87%	✓
7	34.48	34.07	30.35	88%	✓
8	35.01	34.15	30.63	87%	✓
9	35.04	34.54	31.04	89%	✓
10	35.25	34.53	30.57	87%	✓
11	37.47	36.35	32.47	87%	✓
12	37.75	36.27	32.49	86%	✓

Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
13	37.79	36.47	32.63	86%	✓
14	29.70	30.13	26.40	89%	✓
15	29.66	29.87	26.29	89%	✓
16	30.18	30.25	26.99	89%	✓
17	30.53	30.60	27.10	89%	✓
18	31.31	30.83	27.82	89%	✓
19	31.74	31.19	28.38	89%	✓
20	32.43	32.24	29.06	90%	✓
21	32.48	32.35	29.03	89%	✓
22	35.23	34.94	31.19	89%	✓
23	35.43	35.04	31.36	89%	✓
24	35.47	35.10	31.63	89%	✓
25	32.17	32.33	29.22	91%	✓
26	32.60	32.56	29.93	92%	✓
27	32.57	32.60	29.69	91%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value (that of the existing situation). Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing properties.

6.3.12 VSC View 12 (South Circular Road)



Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
1	35.42	35.53	33.87	96%	✓
2	35.50	35.39	33.61	95%	✓
3	35.49	35.41	33.59	95%	✓
4	35.36	35.20	33.41	94%	✓
5	35.35	35.45	33.14	94%	✓
6	35.50	35.47	33.31	94%	✓
7	35.63	35.23	32.98	93%	✓
8	35.43	35.29	33.13	94%	✓
9	35.43	35.38	33.23	94%	✓
10	35.47	35.45	32.86	93%	✓
11	35.09	34.92	32.46	93%	✓
12	34.80	34.66	31.74	91%	✓

Window Point	Existing Scheme VSC (%)	Framework Scheme VSC (%)	Proposed Scheme VSC (%)	(Proposed/ Existing Scheme) VSC (%)	Comment
13	34.24	34.40	31.05	91%	✓
14	33.93	34.08	30.51	90%	✓
15	33.63	34.05	29.97	89%	✓
16	33.56	33.62	29.51	88%	✓
17	32.97	32.96	31.47	95%	✓
18	32.88	32.88	31.42	96%	✓
19	32.60	32.83	31.36	96%	✓
20	32.71	32.86	31.24	96%	✓
21	32.79	32.87	31.14	95%	✓
22	33.09	32.98	31.02	94%	✓
23	33.29	33.16	31.11	93%	✓
24	33.39	33.27	31.08	93%	✓
25	33.18	33.10	31.11	94%	✓
26	33.20	32.78	30.90	93%	✓
27	32.48	32.40	30.24	93%	✓
28	31.81	31.70	29.28	92%	✓
29	31.44	31.44	28.51	91%	✓
30	30.23	30.52	27.33	90%	✓
31	30.02	30.27	26.92	90%	✓

The following conclusions can be made:

- ✓ The analysis demonstrates that post development, points tested have a vertical sky component greater than 27% or not less than 0.8 times their former value (that of the existing situation). Therefore, these points exceed BRE recommendations and there will be a negligible adverse impact to these existing properties.

6.4 Discussion

The Vertical Sky Component for 96% (281 of 294) of the points tested have a value greater than 27% or not less than 0.8 times their former value (that of the Existing Situation), exceeding the BRE recommendations. This increases to 99% when compared against the Framework plan. The majority of the values just out with the recommendations are achieving high values between 24% and 26% and therefore good levels of light should still be received within the spaces beyond. In summary there will be a minor adverse impact as a result of the proposed development.

7 Sunlight to Existing and Proposed Amenity Spaces

7.1 Guidance Requirements

The impact of the development proposal on the sunlight availability in the amenity areas will be considered to determine how the amenities perform when assessed against the BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight which states the following in Section 3.3.17.

Summary

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

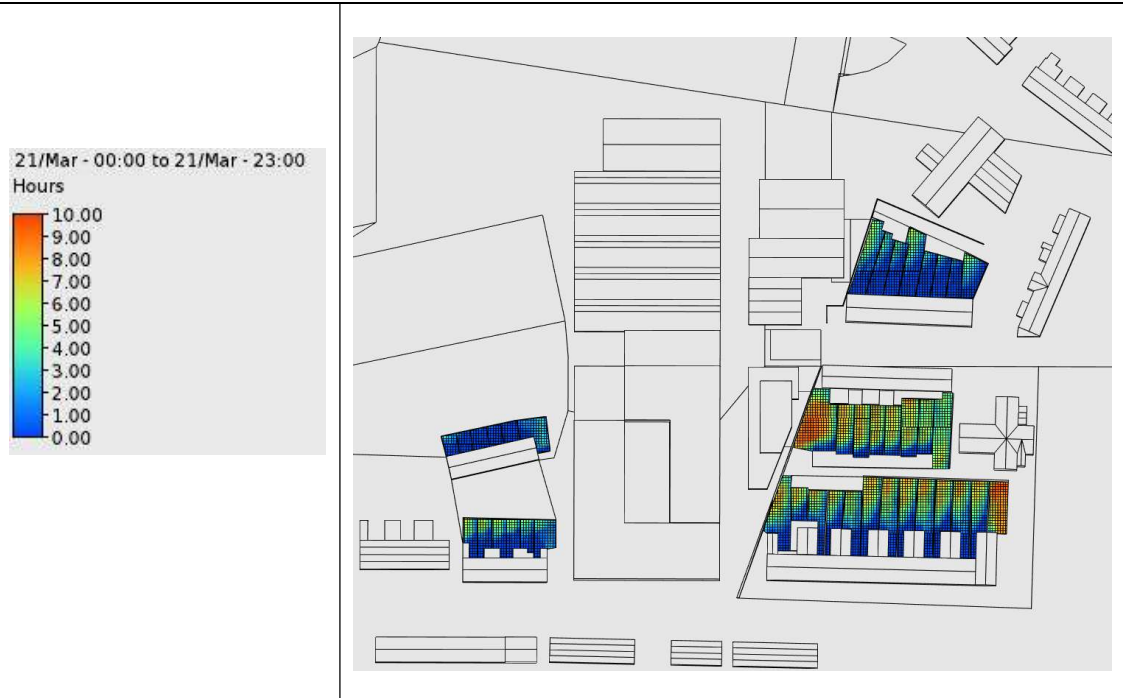
BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight states in 3.3.17 that for a space to, appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least 2 hours of sunlight on 21st March.

The following images shows the predicted results with respect to these spaces receiving at least 2 hours of sunlight on 21st March, across the gridded cells. Any gridded cells area below 2 hours are shown as grey.

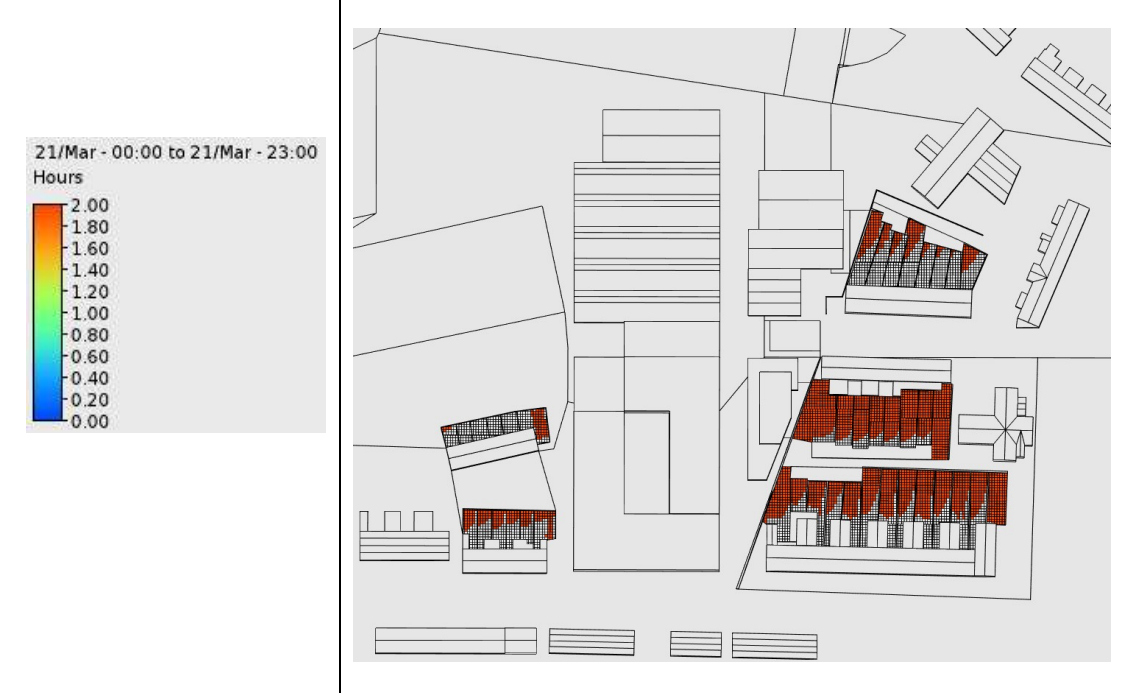
7.2 Results – Existing Amenity Areas (Adjacent to the Proposed Development)



Existing - Absolute Scale Showing All Hours of Sunlight Received



Existing - Area Showing >2 Hours



Proposed - Absolute Scale Showing All Hours of Sunlight Received



Proposed - Area Showing >2 Hours



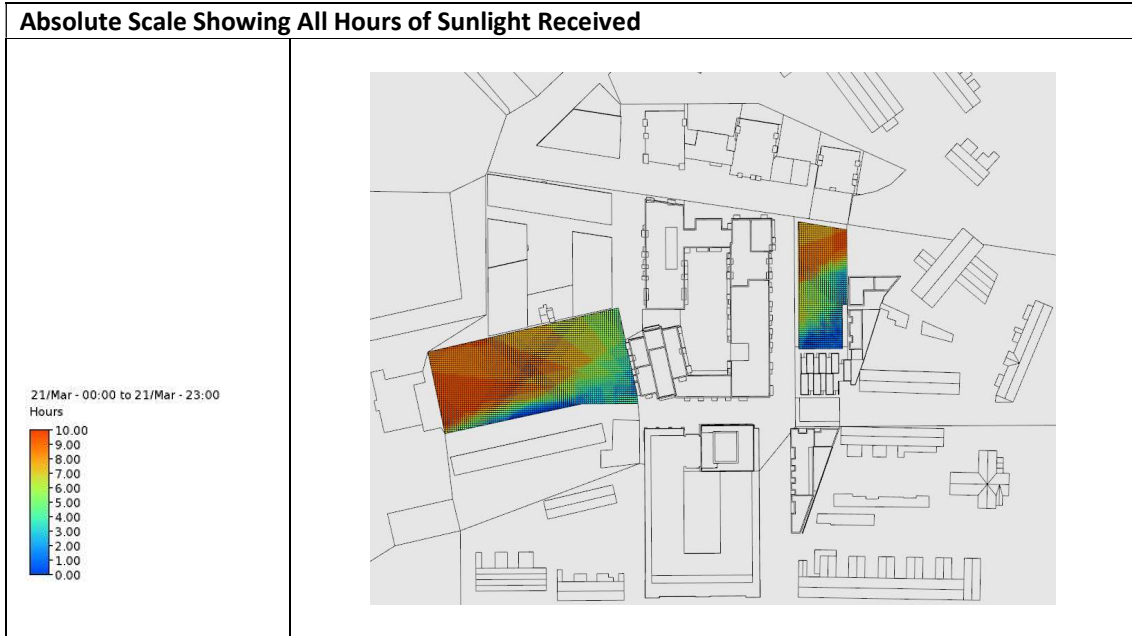
7.3 Discussion

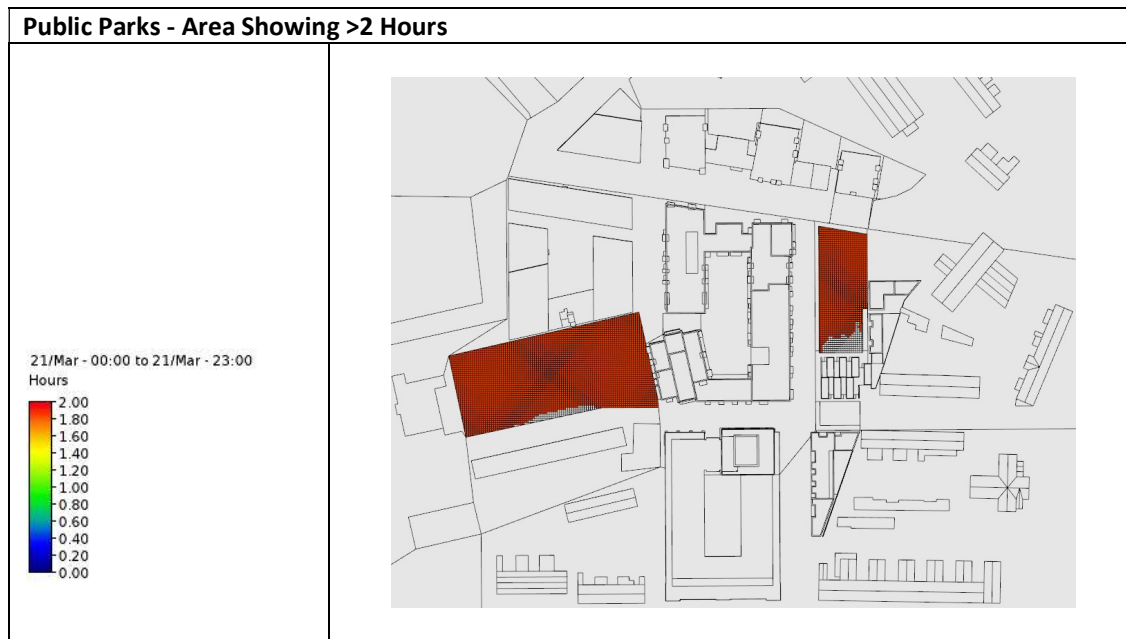
All of the existing gardens apart from one (as noted below) continue to receive similar levels of sunlight when comparing the existing and proposed schemes.

Although this is the case it should be noted that trees and vegetation are not taken into account in this analysis.



7.4 Results – Public Park Amenity Areas





7.5 Discussion

As noted previously, the BRE’s 2011 guidance document Site Layout Planning for Daylight and Sunlight states in 3.3.17 that for a space to, appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least 2 hours of sunlight on 21st March.

The results highlight that the Players Park and St Catherine’s Park public amenity spaces are exceeding the BRE recommendations and will be quality spaces in terms of sunlight received.

Reference	Location	Total Area (m ²)	Area (m ²) >2 hours on 21 st March	Total % > 2 Hours 21 st March
1	Players Park	3960	3861	98
2	St Catherine’s Park	1350	1187	88

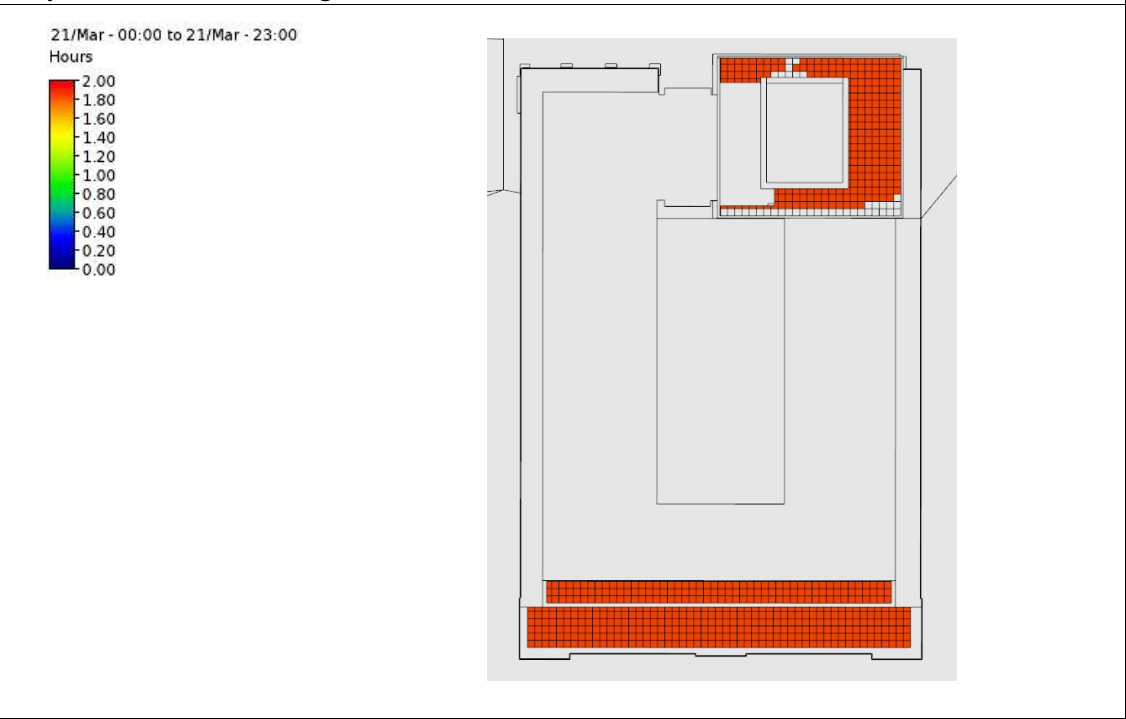
7.6 Results – Communal/Private Amenity Areas



Absolute Scale Showing All Hours of Sunlight Received



Player Will 1 - Area Showing >2 Hours

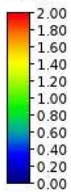


Player Wills 2 - Area Showing >2 Hours



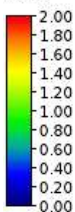
Player Wills 4 - Area Showing >2 Hours

21/Mar - 00:00 to 21/Mar - 23:00
Hours



Player Wills 5 - Area Showing >2 Hours

21/Mar - 00:00 to 21/Mar - 23:00
Hours



7.7 Discussion



Location	Total Area (m ²)	Area (m ²) >2 hours on 21 st March	Total % > 2 Hours 21 st March
PW 1 – 1	300	300	100
PW 1 – 2	150	150	100
PW 1 – 3	285	249	87
PW2 Courtyard -1	1223	640	52
PW2 -2	268	104	39
PW2 -3	915	901	98
PW2 -4	164	151	92
PW2 -5	90	45	50
PW2 -6	98	88	89
PW4	111	70	63
PW 5	167	117	70
Total	3322	2343	71

Location	Area (m ²)	Area (m ²) >2 hours at roof terrace on 21 st March	% > 2 Hours 21 st March
Player Wills Roof Terraces	2270	1988	88
Player Wills Courtyards	1501	805	54

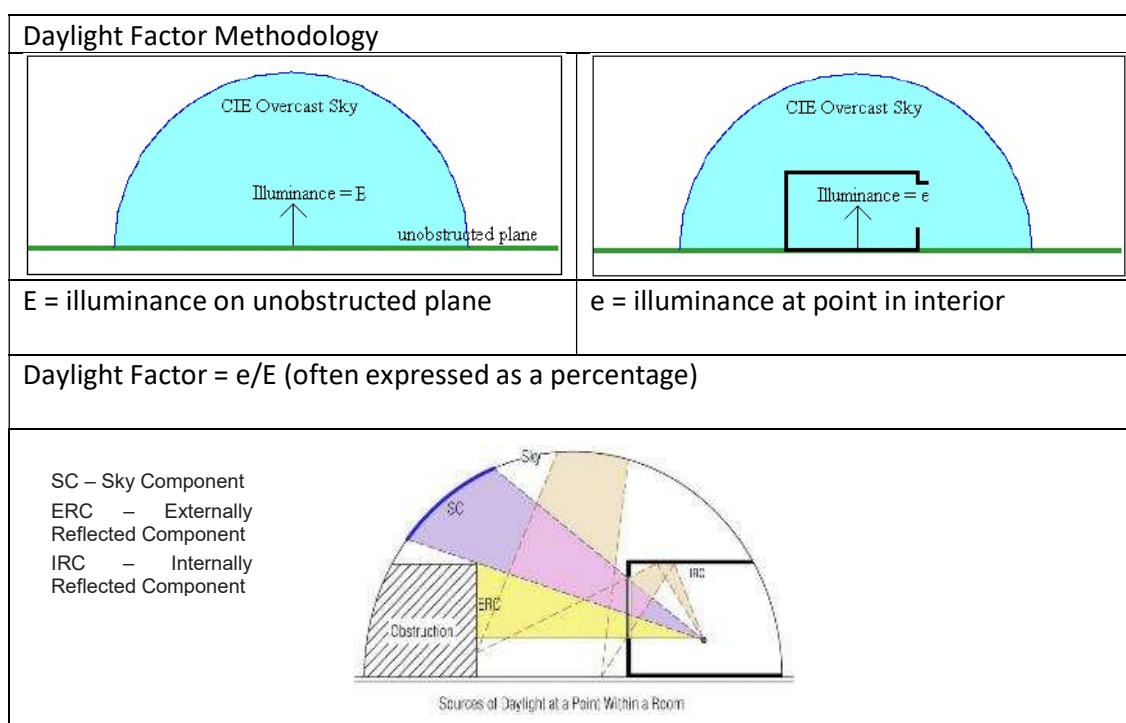
8 Average Daylight Factors (ADF)

This section addresses daylight to the proposed build to rent apartments and private living areas (For the shared accommodation).

8.1 Introduction to ADF

Daylight is constantly changing, so its level at a point in a building is usually defined as an average daylight factor (ADF).

This is the ratio of the indoor illuminance at the point in question to the outdoor unobstructed horizontal illuminance.



Both illuminances are measured under the same standard sky, a CIE overcast sky. Since the sun is in a particular position for only a short period each day, direct sunlight is excluded. Instead diffuse sunlight is used for average daylight calculations. Diffuse sunlight describes the sunlight that has been scattered by molecules and particles in the atmosphere but has still made it down to surface of the earth.

For average daylight factor there are three possible paths along which diffuse light can get into a room through glazed windows. Light from the patch of sky visible at the point considered, is expressed as the sky component. Light reflected from opposing exterior surfaces and then reaches the point, is expressed as the externally reflected component. Light

entering through the window but reaching the point only after reflection from internal surfaces, is expressed as the internally reflected component.

8.1.1 Reference and Metrics

BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight states the following in Appendix C with respect to Average Daylight Factors (ADF);

C4 If a predominantly daylit appearance is required, then the ADF should be 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary electric lighting is provided. There are additional recommendations for dwellings of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. These additional recommendations are minimum values of ADF which should be attained even if a predominantly daylit appearance is not achievable.

From BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight

From this the recommended Average Daylight Factors (ADF) are therefore;

- Bedrooms – 1.0%
- Living Rooms – 1.5%

This study will consider the predicted average daylight factor to the proposed units. Analysis has been carried by using the Radiance module of IES VE software to quantify the metrics describe below.

8.1.2 Assumptions

The following assumptions are to be used in the study:

- Sky Conditions: Standard CIE overcast sky
- Time (24hr): 12:00
- Date: 21 September
- Working Plane: 0.85m
- Floor to Floor Height: 3.10m

The following Surface Reflectance's are to be used in the study:

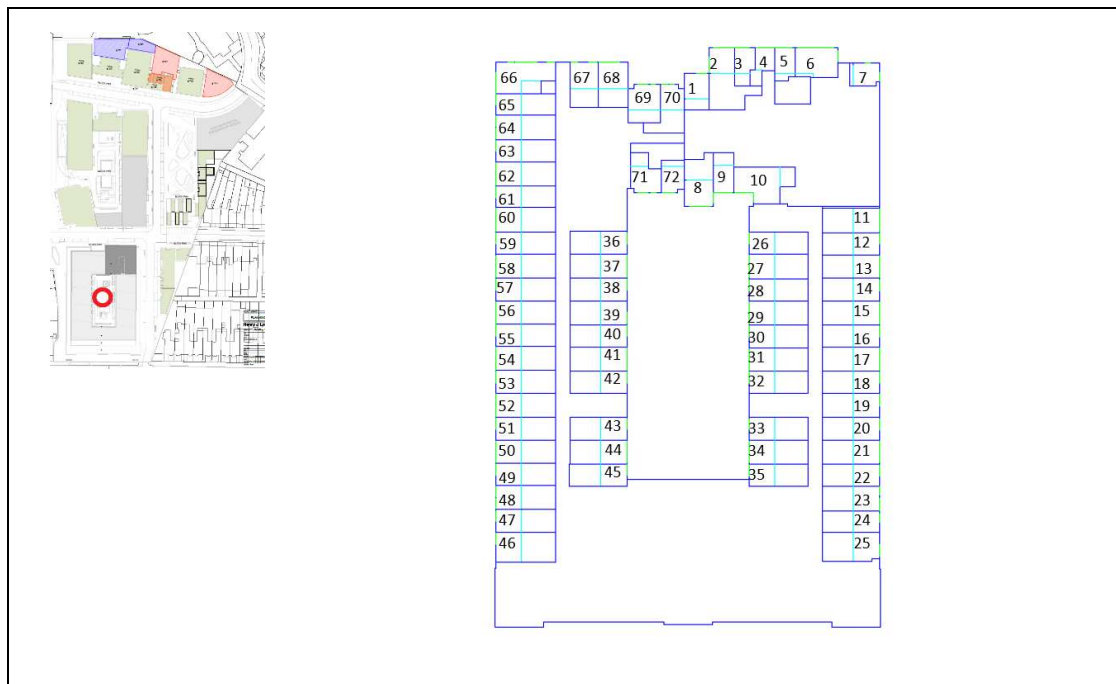
Material Surface	Reflectance
External Wall	0.50
Internal Partition	0.50
Roof	0.20
Ground	0.20
Floor/Ceiling (Floor)	0.20
Floor/Ceiling (Ceiling)	0.70

Glazing Transmittance:

- Light Transmittance: 70%
- Window Frame thickness: 50 mm

8.2 ADF Results – Player Will 1

8.2.1 PW1 – Level 1

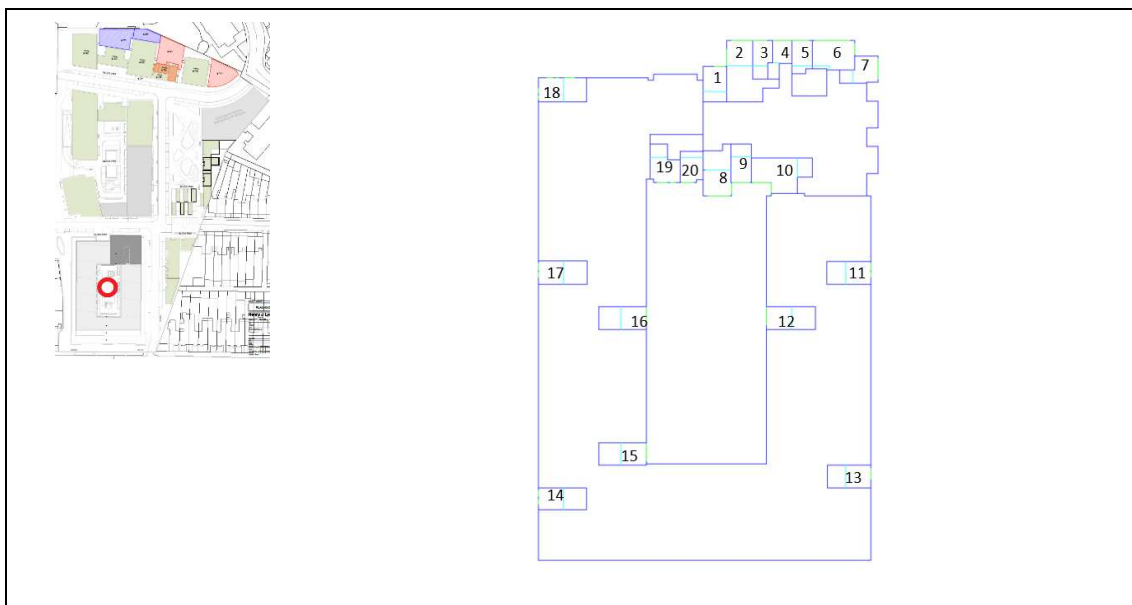


Room Reference	Room Name	Room Activity	External Window Area	Average Daylight Factor	Comment
1	L01: PW1_Bedroom 01	Bedroom	8.57	1.70	✓
2	L01: PW1_Living 01	Living	16.54	6.18	✓
3	L01: PW1_Bedroom 02	Bedroom	7.17	3.67	✓
4	L01: PW1_Bedroom 03	Bedroom	9.8	4.37	✓
5	L01: PW1_Bedroom 04	Bedroom	8.4	5.09	✓
6	L01: PW1_Living 02	Living	22.04	3.86	✓
7	L01: PW1_Bedroom 05	Bedroom	4.68	4.64	✓
8	L01: PW1_Living 03	Living	11.52	2.36	✓
9	L01: PW1_Bedroom 06	Bedroom	6.24	2.61	✓
10	L01: PW1_Bedroom 04	Bedroom	9.84	1.73	✓
11	L01: PW1_Bedroom 05	Bedroom	7.68	3.26	✓
12	L01: PW1_Bedroom 06	Bedroom	3.84	1.65	✓
13	L01: PW1_Bedroom 07	Bedroom	7.68	3.47	✓
14	L01: PW1_Bedroom 08	Bedroom	3.84	1.77	✓
15	L01: PW1_Bedroom 09	Bedroom	7.68	3.70	✓
16	L01: PW1_Bedroom 10	Bedroom	3.84	1.92	✓
17	L01: PW1_Bedroom 11	Bedroom	7.68	3.81	✓
18	L01: PW1_Bedroom 12	Bedroom	3.84	2.03	✓
19	L01: PW1_Bedroom 13	Bedroom	4.2	2.15	✓
20	L01: PW1_Bedroom 14	Bedroom	3.84	2.20	✓

Room Reference	Room Name	Room Activity	External Window Area	Average Daylight Factor	Comment
21	L01: PW1_Bedroom 15	Bedroom	7.68	4.23	✓
22	L01: PW1_Bedroom 16	Bedroom	3.84	2.29	✓
23	L01: PW1_Bedroom 17	Bedroom	7.2	3.54	✓
24	L01: PW1_Bedroom 18	Bedroom	3	1.83	✓
25	L01: PW1_Bedroom 19	Bedroom	4.08	2.24	✓
26	L01: PW1_Bedroom 20	Bedroom	3.84	1.47	✓
27	L01: PW1_Bedroom 21	Bedroom	7.68	1.85	✓
28	L01: PW1_Bedroom 22	Bedroom	3.84	1.64	✓
29	L01: PW1_Bedroom 23	Bedroom	7.68	2.11	✓
30	L01: PW1_Bedroom 24	Bedroom	3.84	1.68	✓
31	L01: PW1_Bedroom 25	Bedroom	7.68	2.12	✓
32	L01: PW1_Bedroom 26	Bedroom	3.84	1.72	✓
33	L01: PW1_Bedroom 27	Bedroom	3.84	1.59	✓
34	L01: PW1_Bedroom 28	Bedroom	7.68	1.75	✓
35	L01: PW1_Bedroom 29	Bedroom	3.84	1.38	✓
36	L01: PW1_Bedroom 30	Bedroom	3.84	1.10	✓
37	L01: PW1_Bedroom 31	Bedroom	7.68	1.66	✓
38	L01: PW1_Bedroom 32	Bedroom	3.84	1.34	✓
39	L01: PW1_Bedroom 33	Bedroom	3.84	1.57	✓
40	L01: PW1_Bedroom 34	Bedroom	3.84	1.39	✓
41	L01: PW1_Bedroom 35	Bedroom	7.68	1.89	✓
42	L01: PW1_Bedroom 36	Bedroom	3.84	1.60	✓
43	L01: PW1_Bedroom 37	Bedroom	3.84	1.60	✓
44	L01: PW1_Bedroom 38	Bedroom	7.68	2.47	✓
45	L01: PW1_Bedroom 39	Bedroom	3.84	1.39	✓
46	L01: PW1_Bedroom 40	Bedroom	3.84	1.59	✓
47	L01: PW1_Bedroom 41	Bedroom	3.84	2.19	✓
48	L01: PW1_Bedroom 42	Bedroom	7.68	4.06	✓
49	L01: PW1_Bedroom 43	Bedroom	3.84	2.27	✓
50	L01: PW1_Bedroom 44	Bedroom	7.68	4.16	✓
51	L01: PW1_Bedroom 45	Bedroom	3.84	2.24	✓
52	L01: PW1_Bedroom 46	Bedroom	7.68	4.15	✓
53	L01: PW1_Bedroom 47	Bedroom	3.84	2.23	✓
54	L01: PW1_Bedroom 48	Bedroom	7.68	4.09	✓
55	L01: PW1_Bedroom 49	Bedroom	3.84	2.22	✓
56	L01: PW1_Bedroom 50	Bedroom	7.68	4.34	✓
57	L01: PW1_Bedroom 51	Bedroom	3.84	2.07	✓
58	L01: PW1_Bedroom 52	Bedroom	7.68	4.30	✓
59	L01: PW1_Bedroom 53	Bedroom	3.84	2.06	✓
60	L01: PW1_Bedroom 54	Bedroom	7.68	3.95	✓

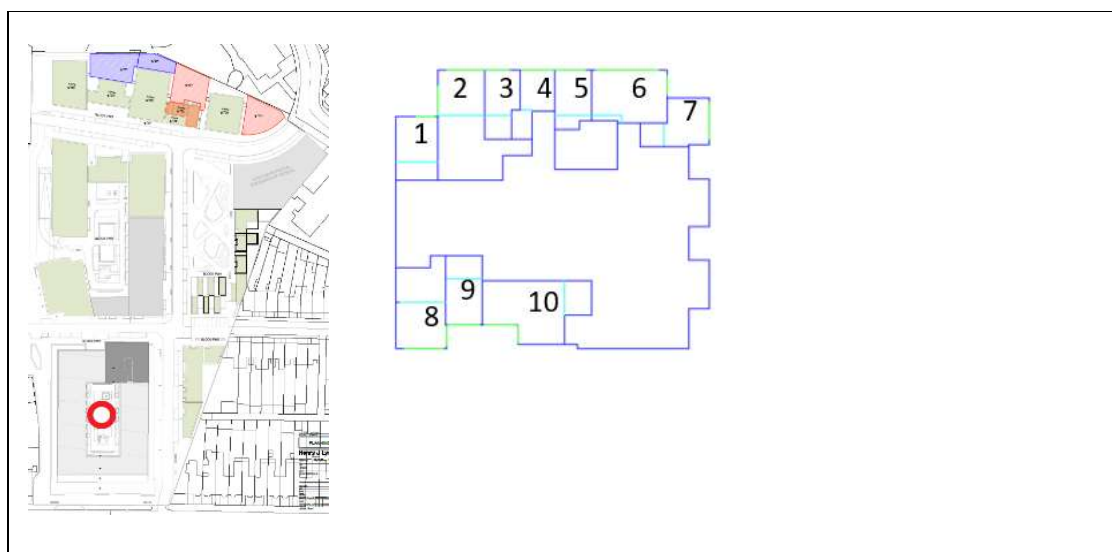
Room Reference	Room Name	Room Activity	External Window Area	Average Daylight Factor	Comment
61	L01: PW1_Bedroom 55	Bedroom	3.84	2.17	✓
62	L01: PW1_Bedroom 56	Bedroom	7.68	4.02	✓
63	L01: PW1_Bedroom 57	Bedroom	3.84	2.00	✓
64	L01: PW1_Bedroom 58	Bedroom	7.68	3.81	✓
65	L01: PW1_Bedroom 59	Bedroom	3.48	1.95	✓
66	L01: PW1_Bedroom 60	Bedroom	19.32	3.18	✓
67	L01: PW1_Bedroom 61	Bedroom	5.52	1.16	✓
68	L01: PW1_Bedroom 62	Bedroom	6.96	1.50	✓
69	L01: PW1_Bedroom 63	Bedroom	5.16	1.64	✓
70	L01: PW1_Bedroom 64	Bedroom	3.84	1.40	✓
71	L01: PW1_Bedroom 65	Bedroom	5.04	1.55	✓
72	L01: PW1_Bedroom 66	Bedroom	4.44	1.58	✓

8.2.2 PW1 – Level 3



Room Reference	Room Name	Room Activity	External Window Area	Average Daylight Factor	Comment
1	L03: PW1_Bedroom 01	Bedroom	5.88	1.43	✓
2	L03: PW1_Living 01	Living	13.08	3.77	✓
3	L03: PW1_Bedroom 02	Bedroom	4.92	2.43	✓
4	L03: PW1_Bedroom 03	Bedroom	6.72	3.73	✓
5	L03: PW1_Bedroom 04	Bedroom	5.76	2.89	✓
6	L03: PW1_Living 02	Living	16.32	3.89	✓
7	L03: PW1_Bedroom 05	Bedroom	7.2	4.60	✓
8	L03: PW1_Living 03	Living	11.52	3.88	✓
9	L03: PW1_Bedroom 06	Bedroom	6.24	1.58	✓
10	L03: PW1_Living 04	Living	6.24	1.52	✓
11	L03: PW1_Living 05	Living	3.84	2.43	✓
12	L03: PW1_Living 06	Living	4.16	2.81	✓
13	L03: PW1_Living 07	Living	3.6	2.56	✓
14	L03: PW1_Living 08	Living	3.84	2.42	✓
15	L03: PW1_Living 09	Living	4.16	2.23	✓
16	L03: PW1_Living 10	Living	4.16	2.62	✓
17	L03: PW1_Living 11	Living	3.84	2.24	✓
18	L03: PW1_Living 12	Living	5.76	2.63	✓
19	L03: PW1_Living 13	Living	5.04	2.17	✓
20	L03: PW1_Living 14	Living	4.44	2.59	✓

8.2.3 PW1 – Level 5



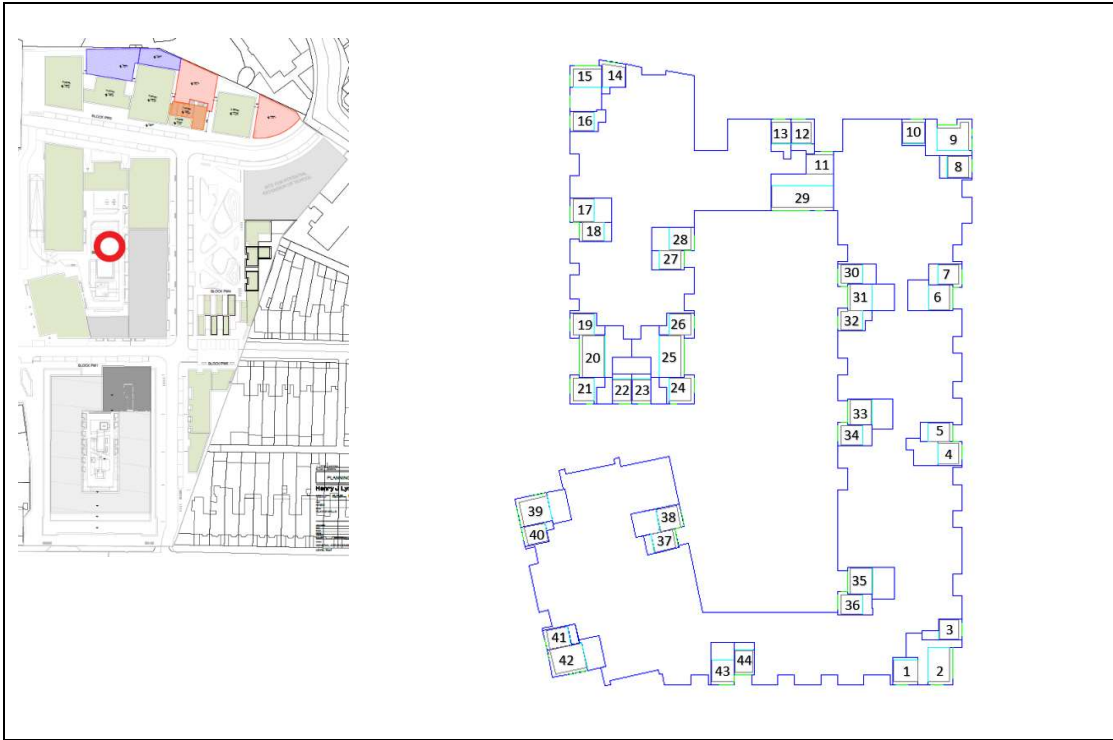
Room Reference	Room Name	Room Activity	External Window Area	Average Daylight Factor	Comment
1	L05: PW1_Bedroom 01	Bedroom	5.88	1.59	✓
2	L05: PW1_Living 01	Living	13.08	4.25	✓
3	L05: PW1_Bedroom 02	Bedroom	4.92	2.77	✓
4	L05: PW1_Bedroom 03	Bedroom	6.72	4.38	✓
5	L05: PW1_Bedroom 04	Bedroom	5.76	3.39	✓
6	L05: PW1_Living 02	Living	16.32	4.73	✓
7	L05: PW1_Bedroom 05	Bedroom	7.2	4.69	✓
8	L05: PW1_Living 03	Living	11.52	4.87	✓
9	L05: PW1_Bedroom 06	Bedroom	6.24	1.97	✓
10	L05: PW1_Living 04	Living	6.24	1.91	✓

The following conclusions can be made:

- ✓ All these rooms have an average daylight factor greater than the recommended minimum values (1.5% for living rooms and 1.0% for bedrooms) as stated under BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight. Therefore, these rooms exceed the BRE recommendations.

8.3 ADF Results – Players Will 2

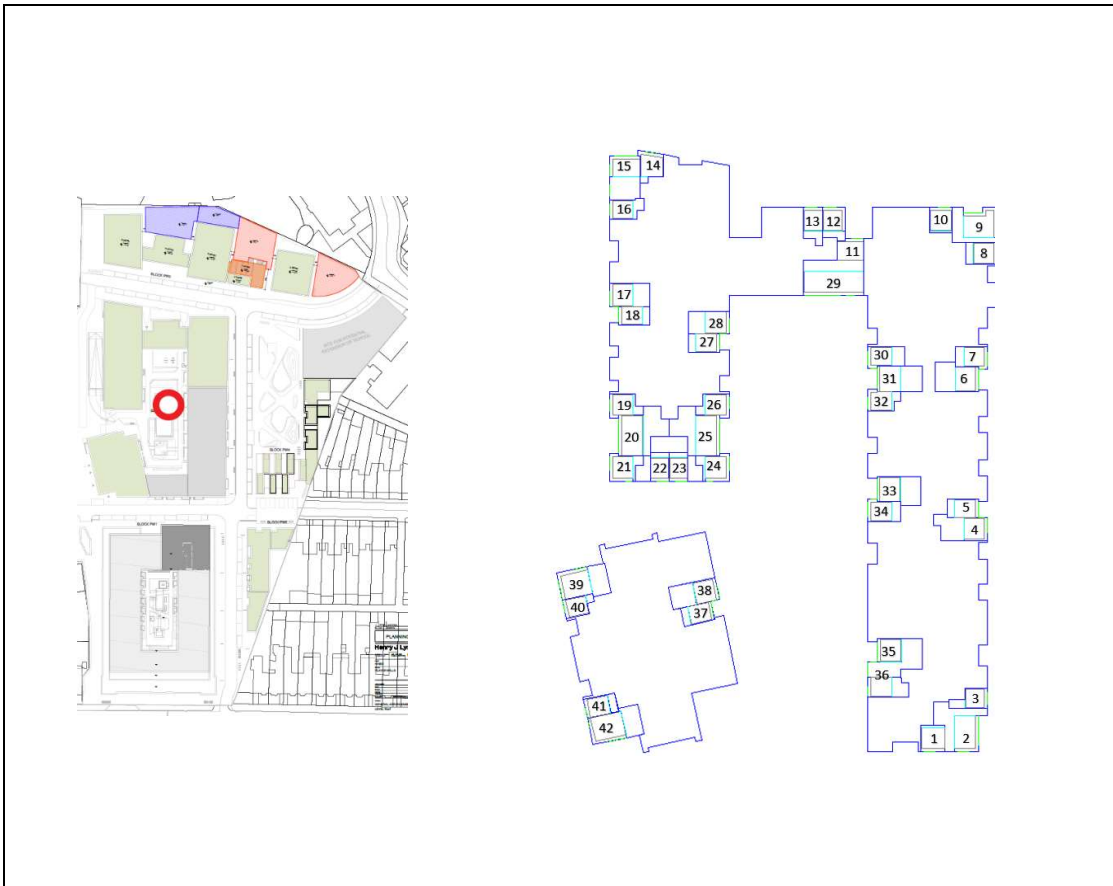
8.3.1 PW2 – Level 1



Ref.	Room Name	Room Activity	External Window Area	Average Daylight Factor	BRE Recommendation
1	L01: PW2-B01_Bedroom 01	Bedroom	4.5	1.42	✓
2	L01: PW2-B01_Living	Living	16.125	3.54	✓
3	L01: PW2-B01_Bedroom 02	Bedroom	4.5	3.51	✓
4	L01: PW2-B02_Living	Living	8	4.37	✓
5	L01: PW2-B02_Bedroom	Bedroom	6.375	1.77	✓
6	L01: PW2-B03_Living	Living	8.25	1.99	✓
7	L01: PW2-B03_Bedroom	Bedroom	8	4.51	✓
8	L01: PW2-B04_Bedroom 01	Bedroom	4.5	3.39	✓
9	L01: PW2-B04_Living	Living	14.375	3.00	✓
10	L01: PW2-B04_Bedroom 02	Bedroom	4.5	1.21	✓
11	L01: PW2-B05_Bedroom 01	Bedroom	4.5	1.05	✓
12	L01: PW2-B05_Bedroom 02	Bedroom	4.5	1.73	✓
13	L01: PW2-B05_Bedroom 03	Bedroom	4.5	1.72	✓
14	L01: PW2-B06_Bedroom 01	Bedroom	4.5	1.05	✓
15	L01: PW2-B06_Living	Living	13.75	2.50	✓
16	L01: PW2-B06_Bedroom 02	Bedroom	4.5	1.51	✓
17	L01: PW2-B07_Living	Living	8	1.63	✓

Ref.	Room Name	Room Activity	External Window Area	Average Daylight Factor	BRE Recommendation
18	L01: PW2-B07_Bedroom	Bedroom	6.375	0.77	-
19	L01: PW2-B08_Bedroom 01	Bedroom	4.5	1.48	✓
20	L01: PW2-B08_Living	Living	14.125	1.51	✓
21	L01: PW2-B08_Bedroom 02	Bedroom	7.75	2.18	✓
22	L01: PW2-B08_Bedroom 03	Bedroom	4.5	1.01	✓
23	L01: PW2-B09_Bedroom 01	Bedroom	4.5	1.02	✓
24	L01: PW2-B09_Bedroom 02	Bedroom	7.75	1.72	✓
25	L01: PW2-B09_Living	Living	14.125	1.05	-
26	L01: PW2-B09_Bedroom 03	Bedroom	4.5	1.04	✓
27	L01: PW2-B10_Bedroom	Bedroom	6.375	0.44	-
28	L01: PW2-B10_Living	Living	8	1.22	-
29	L01: PW2-B05_Living	Living	17.625	1.28	-
30	L01: PW2-B11_Bedroom 01	Bedroom	8	1.19	✓
31	L01: PW2-B11_Living	Living	8.25	0.36	-
32	L01: PW2-B11_Bedroom 02	Bedroom	4.5	1.03	✓
33	L01: PW2-B12_Living	Living	8.125	0.63	-
34	L01: PW2-B12_Bedroom	Bedroom	8	1.72	✓
35	L01: PW2-B13_Living	Living	8.125	0.58	-
36	L01: PW2-B13_Bedroom	Bedroom	8	1.09	✓
37	L01: PW2-B14_Bedroom	Bedroom	6.375	0.57	-
38	L01: PW2-B14_Living	Living	7.98	1.91	✓
39	L01: PW2-B15_Living	Living	13.25	3.42	✓
40	L01: PW2-B15_Bedroom	Bedroom	4.5	2.92	✓
41	L01: PW2-B16_Bedroom	Bedroom	4.5	3.31	✓
42	L01: PW2-B16_Living	Living	10	2.02	✓
43	L01: PW2-B17_Living	Living	8	1.63	✓
44	L01: PW2-B17_Bedroom	Bedroom	6.375	1.00	✓

8.3.2 PW2 – Level 3



Ref.	Room Name	Room Activity	External Window Area	Average Daylight Factor	BRE Recommendation
1	L03: PW2-B01_Bedroom 01	Bedroom	4.5	1.57	✓
2	L03: PW2-B01_Living	Living	16.125	3.41	✓
3	L03: PW2-B01_Bedroom 02	Bedroom	4.5	3.75	✓
4	L03: PW2-B02_Living	Living	8	3.90	✓
5	L03: PW2-B02_Bedroom	Bedroom	6.375	1.50	✓
6	L03: PW2-B03_Living	Living	8.25	1.63	✓
7	L03: PW2-B03_Bedroom	Bedroom	8	4.49	✓
8	L03: PW2-B04_Bedroom 01	Bedroom	4.5	3.49	✓
9	L03: PW2-B04_Living	Living	14.375	3.10	✓
10	L03: PW2-B04_Bedroom 02	Bedroom	4.5	1.67	✓
11	L03: PW2-B05_Bedroom 01	Bedroom	4.5	1.18	✓
12	L03: PW2-B05_Bedroom 02	Bedroom	4.5	2.52	✓
13	L03: PW2-B05_Bedroom 03	Bedroom	4.5	2.50	✓
14	L03: PW2-B06_Bedroom 01	Bedroom	4.5	1.34	✓
15	L03: PW2-B06_Living	Living	13.75	2.71	✓

Ref.	Room Name	Room Activity	External Window Area	Average Daylight Factor	BRE Recommendation
16	L03: PW2-B06_Bedroom 02	Bedroom	4.5	2.08	✓
17	L03: PW2-B07_Living	Living	8	2.29	✓
18	L03: PW2-B07_Bedroom	Bedroom	6.375	0.73	-
19	L03: PW2-B08_Bedroom 01	Bedroom	4.5	2.09	✓
20	L03: PW2-B08_Living	Living	14.125	1.44	-
21	L03: PW2-B08_Bedroom 02	Bedroom	7.75	2.64	✓
22	L03: PW2-B08_Bedroom 03	Bedroom	4.5	1.02	✓
23	L03: PW2-B09_Bedroom 01	Bedroom	4.5	1.03	✓
24	L03: PW2-B09_Bedroom 02	Bedroom	7.75	2.30	✓
25	L03: PW2-B09_Living	Living	14.125	1.24	-
26	L03: PW2-B09_Bedroom 03	Bedroom	4.5	1.37	✓
27	L03: PW2-B10_Bedroom	Bedroom	6.375	0.43	-
28	L03: PW2-B10_Living	Living	8	1.51	✓
29	L03: PW2-B05_Living	Living	17.625	1.51	✓
30	L03: PW2-B11_Bedroom 01	Bedroom	8	1.86	✓
31	L03: PW2-B11_Living	Living	8.25	0.42	✓
32	L03: PW2-B11_Bedroom 02	Bedroom	4.5	1.57	✓
33	L03: PW2-B12_Living	Living	8.125	0.67	-
34	L03: PW2-B12_Bedroom	Bedroom	8	2.12	✓
35	L03: PW2-B13_Living	Living	8	0.88	-
36	L03: PW2-B13_Bedroom	Bedroom	3.375	1.21	✓
37	L03: PW2-B14_Bedroom	Bedroom	6.375	0.96	-
38	L03: PW2-B14_Living	Living	7.98	2.70	✓
39	L03: PW2-B15_Living	Living	13.25	3.37	✓
40	L03: PW2-B15_Bedroom	Bedroom	4.5	3.00	✓
41	L03: PW2-B16_Bedroom	Bedroom	4.5	3.37	✓
42	L03: PW2-B16_Living	Living	10	2.17	✓

8.3.3 PW2 – Level 5



Ref.	Room Name	Room Activity	External Window Area	Average Daylight Factor	BRE Recommendation
1	L05: PW2-B01_Bedroom 01	Bedroom	4.5	1.86	✓
2	L05: PW2-B01_Living	Living	16.125	5.21	✓
3	L05: PW2-B01_Bedroom 02	Bedroom	4.5	3.81	✓
4	L05: PW2-B02_Living	Living	8	4.46	✓
5	L05: PW2-B02_Bedroom	Bedroom	6.375	2.58	✓
6	L05: PW2-B03_Living	Living	8.25	1.98	✓
7	L05: PW2-B03_Bedroom	Bedroom	8	4.57	✓
8	L05: PW2-B04_Bedroom 01	Bedroom	4.5	2.92	✓
9	L05: PW2-B04_Living	Living	14.375	4.10	✓
10	L05: PW2-B04_Bedroom 02	Bedroom	4.5	2.32	✓
11	L05: PW2-B05_Bedroom 01	Bedroom	4.5	1.47	✓
12	L05: PW2-B05_Bedroom 02	Bedroom	4.5	3.05	✓
13	L05: PW2-B05_Bedroom 03	Bedroom	4.5	3.02	✓
14	L05: PW2-B06_Bedroom 01	Bedroom	4.5	1.99	✓
15	L05: PW2-B06_Living	Living	13.75	3.91	✓
16	L05: PW2-B06_Bedroom 02	Bedroom	4.5	2.84	✓
17	L05: PW2-B07_Living	Living	8	3.11	✓
18	L05: PW2-B07_Bedroom	Bedroom	6.375	1.10	✓

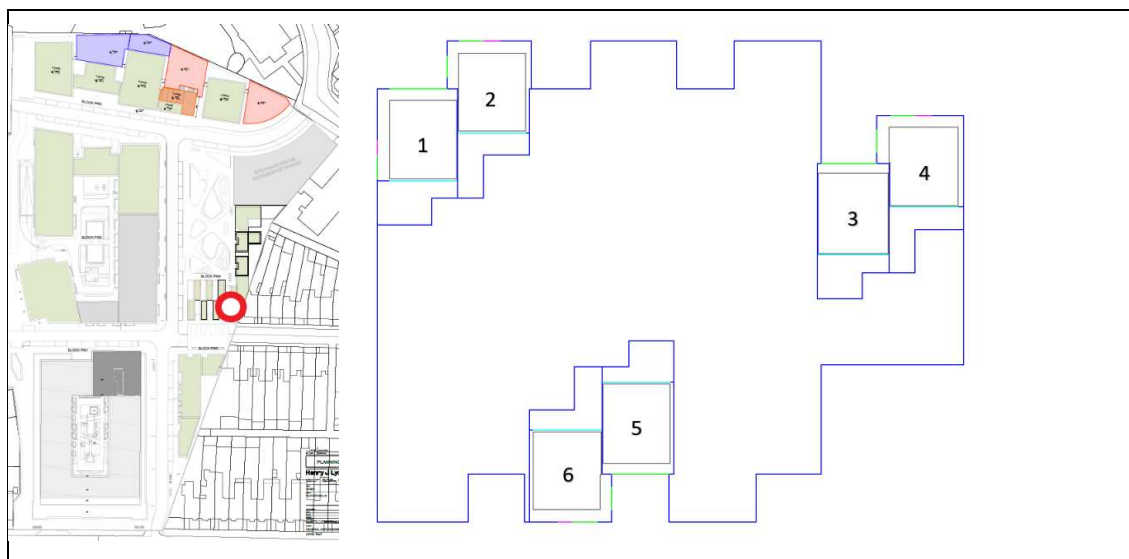
Ref.	Room Name	Room Activity	External Window Area	Average Daylight Factor	BRE Recommendation
19	L05: PW2-B08_Bedroom 01	Bedroom	4.5	2.65	✓
20	L05: PW2-B08_Living	Living	14.125	1.80	✓
21	L05: PW2-B08_Bedroom 02	Bedroom	7.75	3.12	✓
22	L05: PW2-B08_Bedroom 03	Bedroom	4.5	1.03	✓
23	L05: PW2-B09_Bedroom 01	Bedroom	4.5	1.22	✓
24	L05: PW2-B09_Bedroom 02	Bedroom	7.75	2.76	✓
25	L05: PW2-B09_Living	Living	14.125	1.66	✓
26	L05: PW2-B09_Bedroom 03	Bedroom	4.5	1.65	✓
27	L05: PW2-B10_Bedroom	Bedroom	6.375	0.74	-
28	L05: PW2-B10_Living	Living	8	1.55	✓
29	L05: PW2-B05_Living	Living	17.625	1.60	✓
30	L05: PW2-B11_Bedroom 01	Bedroom	8	2.93	✓
31	L05: PW2-B11_Living	Living	8.25	1.08	-
32	L05: PW2-B11_Bedroom 02	Bedroom	4.5	2.34	✓
33	L05: PW2-B12_Living	Living	8.125	1.73	✓
34	L05: PW2-B12_Bedroom	Bedroom	8	3.05	✓
35	L05: PW2-B13_Living	Living	8	1.52	✓
36	L05: PW2-B13_Bedroom	Bedroom	3.375	1.25	✓
37	L05: PW2-B14_Bedroom	Bedroom	6.375	1.03	✓
38	L05: PW2-B14_Living	Living	7.98	3.29	✓
39	L05: PW2-B15_Living	Living	13.25	3.68	✓
40	L05: PW2-B15_Bedroom	Bedroom	4.5	3.07	✓
41	L05: PW2-B16_Bedroom	Bedroom	4.5	3.39	✓
42	L05: PW2-B16_Living	Living	10	2.49	✓

The following conclusions can be made:

- ✓ All these rooms have an average daylight factor greater than the recommended minimum values (1.5% for living rooms and 1.0% for bedrooms) as stated under BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight. Therefore, these rooms exceed the BRE recommendations.
- These rooms do not surpass the recommended BRE guidelines.

8.4 ADF Results – Player Will 4

8.4.1 PW4 – Level 1



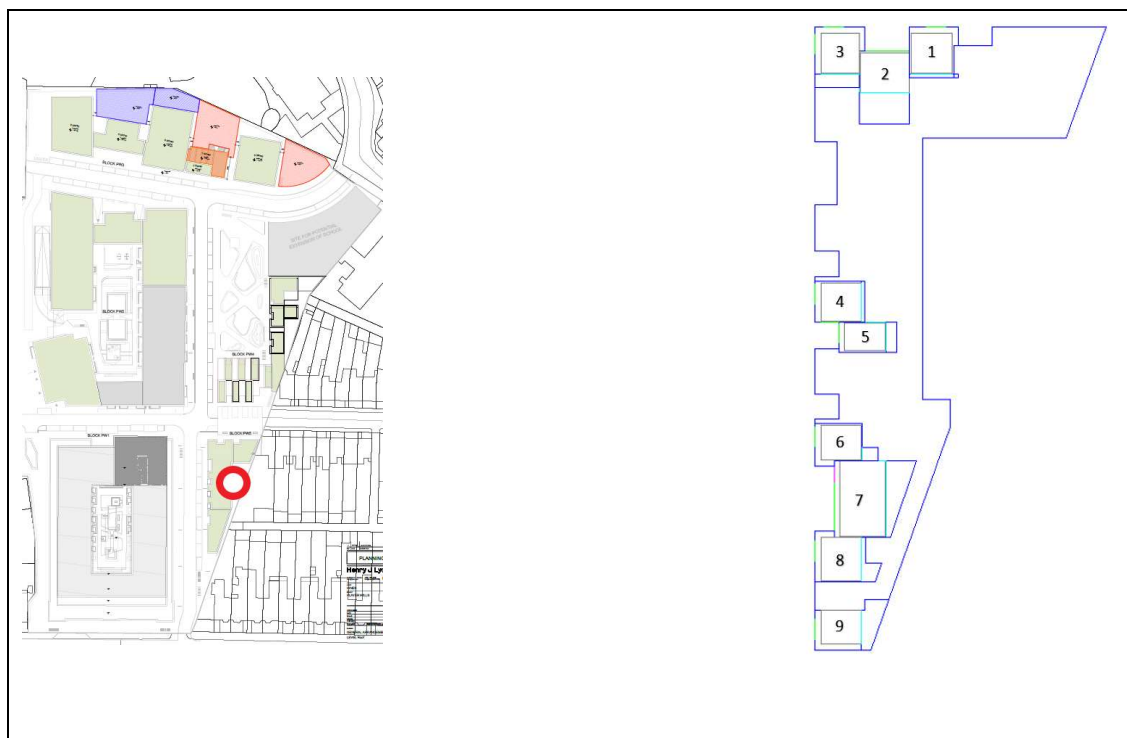
Room Reference	Room Name	Room Activity	External Window Area	Average Daylight Factor	Comment
1	L01: PW4_Bedroom 01	Bedroom	8.16	3.33	✓
2	L01: PW4_Bedroom 02	Bedroom	4.56	1.71	✓
3	L01: PW4_Bedroom 03	Bedroom	5.64	2.16	✓
4	L01: PW4_Bedroom 04	Bedroom	4.56	1.45	✓
5	L01: PW4_Bedroom 05	Bedroom	5.76	2.49	✓
6	L01: PW4_Bedroom 06	Bedroom	4.56	2.07	✓

The following conclusions can be made:

- ✓ All these rooms have an average daylight factor greater than the recommended minimum values (1.5% for living rooms and 1.0% for bedrooms) as stated under BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight. Therefore, these rooms exceed the BRE recommendations.
- These rooms do not surpass the recommended BRE guidelines.

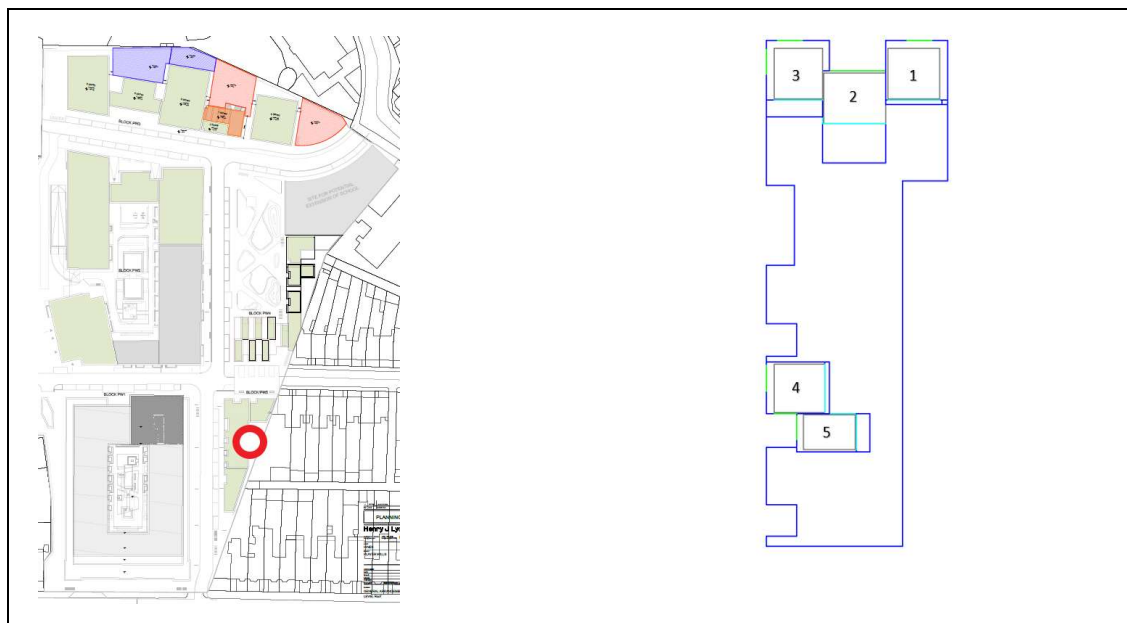
8.5 ADF Results – Player Will 5

8.5.1 PW5 – Level 1



Room Reference	Room Name	Room Activity	External Window Area	Average Daylight Factor	Comment
1	L01: PW5-01_Bedroom 01	Bedroom	4	2.65	✓
2	L01: PW5-01_Living	Living	8.875	2.03	✓
3	L01: PW5-01_Bedroom 02	Bedroom	8	3.30	✓
4	L01: PW5-02_Bedroom	Bedroom	7.625	1.99	✓
5	L01: PW5-02_Living	Living	3.75	0.67	-
6	L01: PW5-03_Bedroom 01	Bedroom	4	1.97	✓
7	L01: PW5-03_Living	Living	10	1.52	✓
8	L01: PW5-03_Bedroom 02	Bedroom	4	1.71	✓
9	L01: PW5-03_Bedroom 03	Bedroom	4	2.28	✓

8.5.2 PW5 – Level 3



Room Reference	Room Name	Room Activity	External Window Area	Average Daylight Factor	Comment
1	L03: PW5-01_Bedroom 01	Bedroom	4	2.79	✓
2	L03: PW5-01_Living	Living	8.875	5.21	✓
3	L03: PW5-01_Bedroom 02	Bedroom	8	3.66	✓
4	L03: PW5-02_Bedroom	Bedroom	7.625	3.64	✓
5	L03: PW5-02_Living	Living	3.75	1.71	✓

The following conclusions can be made:

- ✓ All these rooms have an average daylight factor greater than the recommended minimum values (1.5% for living rooms and 1.0% for bedrooms) as stated under BRE's 2011 guidance document Site Layout Planning for Daylight and Sunlight. Therefore, these rooms exceed the BRE recommendations.

8.6 Discussion

It should be noted that the 'worst' case locations have been tested i.e. those looking into elevations with obstructed views. Outwards facing rooms will generally have unobstructed views and should meet BRE recommendations. The results are summarised in the following table:

PW1:

Tested	102
Bedrooms Over BRE recommendations	92
Living Rooms Over BRE recommendations	10
Rooms Below BRE recommendations	0
	100%

PW2:

Tested	128
Bedrooms Over BRE recommendations	72
Living Rooms Over BRE recommendations	37
Rooms Below BRE recommendations	19
	85%

PW4:

Tested	6
Bedrooms Over BRE recommendations	6
Living Rooms Over BRE recommendations	0
Rooms Below BRE recommendations	0
	100%

PW5:

Tested	14
Bedrooms Over BRE recommendations	9
Living Rooms Over BRE recommendations	4
Rooms Below BRE recommendations	1
	93%

Total

Tested	250
Bedrooms Over BRE recommendations	179
Living Rooms Over BRE recommendations	51
Rooms Below BRE recommendations	20
	92%

Overall, 92% of the proposed rooms tested are achieving Average Daylight Factors (ADF) above the BRE guidelines. Since these rooms can be viewed as ‘worst case’ locations, it can be expected that the results from the development as a whole would increase above 92%.

9 Conclusion

The following can be concluded based on the studies undertaken.

9.1 Shadow Analysis

The Shadow analysis shows different shadows being cast from the existing, 2017 Development Framework for St Teresas Gardens and Environs and proposed schemes at particular periods throughout the year. It is noted from the images that overall, the proposed development would cast minimal additional shading on neighbouring buildings. This is further quantified by the Daylight Analysis of Existing Buildings section of this report.

9.2 Daylight Analysis of Existing Buildings

The Vertical Sky Component for 96% (281 of 294) of the points tested have a value greater than 27% or not less than 0.8 times their former value (that of the Existing Situation), exceeding the BRE recommendations. This increases to 99% when compared against the Framework plan. The majority of the values are just outside the recommendations achieving high values between 24% and 26% and therefore good levels of light would still be received within the spaces beyond.

9.3 Sunlight to Existing and Proposed Amenity Spaces

As mentioned above under Section 3.3.17 of BRE's Site Layout Planning for Daylight and Sunlight states that for a space to appear adequately sunlit throughout the year, at least half of the garden or amenity area should receive at least 2 hours of sunlight on the 21st of March.

On the 21st of March, all of the amenity areas provided for each block of the Player Wills site would receive at least 2 hours of sunlight exceeding the BRE recommendations.

The results also highlight that the Players Park and St Catherine's Park public amenity spaces are exceeding the BRE recommendations and will be quality spaces in terms of sunlight received.

9.4 Average Daylight Factors

Based on the results of the rooms tested across the Player Wills site, 92% of the spaces tested within the proposed scheme have an Average Daylight Factors (ADF) above the recommended values, exceeding the BRE guidelines. This total would be expected to increase beyond 92% if all of the upper and outer paces across the development were included in the results.

9.5 Observations

It should be noted the guidance in 'Site layout planning for daylight and sunlight: a guide to good practice' is not mandatory and the Report itself states 'although it gives numerical guidelines these should be interpreted flexibly because natural lighting is only one of many factors in site layout design.

Whilst the results shown relate to the criteria as laid out in the BRE guidance targets it is important to note that the BRE targets have been drafted primarily for use in low density suburban development and should therefore be used with flexibility and caution when dealing with other types of sites. Despite the above, the proposed development performs well in relation to the metrics considered in this report.

Overall the results demonstrate that the proposed development performs well when compared against the BRE recommendations in the BRE 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice" by Paul Littlefair.



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