

Gas Holder Site, Reading

Daylight & Sunlight within the
Proposed Development

April 2019



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Figure 1: Oblique aerial photograph of the site looking north



Figure 2: 3D view of computer model looking north

1. INTRODUCTION

- 1.1 Danescroft (Kenavon Drive Project Management) LLP is proposing a development at the Gas Holder Site at Alexander Turner Close, Reading.
- 1.2 The proposed development is designed by Collado Collins Architects and comprises Demolition of existing buildings and Gas Holder and the erection of three new buildings ranging between 2 and 9 storeys in height.
- 1.3 Anstey Horne has been commissioned to undertake a formal technical assessment of the daylight and sunlight levels within the proposed accommodation. We have used 3D computer modelling and our specialist computer software to calculate the levels of daylight and sunlight that will be available in the proposed habitable rooms. Our 3D model of the proposed scheme is illustrated in Figure 2 at page ii and in our drawings at Appendix A.
- 1.4 There are no mandatory standards for daylight or sunlight to dwellings, but the following publications offer guidance:
 - BS8206-2: 2008, *Lighting for Buildings – Part 2: Code of practice for daylighting* (2008)
 - BRE Report 209, *Site Layout Planning for Daylight and Sunlight: A guide to good practice* (second edition, 2011)
 - CIBSE Lighting Guide 10, *Daylighting - A Guide for Designers: Lighting for the Built Environment* (SLL LG10, 2014)
- 1.5 The above guides give advice on minimum recommended average daylight factors (ADF) in habitable rooms in dwellings. They also make recommendations for sunlight to interiors, based on the percentage of annual probable sunlight hours (APSH).
- 1.6 This report summarises the relevant planning policy, the basic principles of daylighting, the methods used to assess the potential levels that will be achieved in the new accommodation, the information used in compiling our 3D computer model and the results of our technical assessment. Drawings and full tables of results of our assessment are attached in the appendices.

2. PLANNING POLICY AND GUIDANCE

National Planning Policy and Guidance

2.1 The National Planning Policy Framework (NPPF) (February 2019, Department for Communities and Local Government) sets out the Government's planning policies for England and how these are expected to be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced.

2.2 The NPPF contains a set of core land-use planning principles that should underpin councils' plan-making and decision-taking. One such chapter covers "Making effective use of land" and covers "Achieving appropriate densities". Paragraph 123 (c) states the following:

"local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards)."

2.3 The Building Research Establishment, whose aims include achieving a higher quality built environment, publish BRE Report 209, Site Layout Planning for Daylight and Sunlight: A guide to good practice (second edition, 2011) by PJ Littlefair. This guide gives advice on site layout planning to achieve good daylighting and sunlighting in new buildings and to retain it in existing surrounding buildings. The guide is intended for use by designers, consultants and planning officials and notes that "The advice given here is not mandatory and this document should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer."

Regional Planning Policy and Guidance

2.4 Reading Borough Local Development Framework; Sites and Detailed Policies Document (adopted October 2012)

2.5 Policy DM4: Safeguarding Amenity states:

"Development will not cause a significant detrimental impact to the living environment of existing or new residential properties, in terms of:

- *Privacy and overlooking;*
- *Access to sunlight and daylight..."*

3. METHOD OF ASSESSMENT AND NUMERICAL GUIDELINES

Daylight within new development

- 3.1 Section 2.1 of the BRE guide makes recommendations concerning daylight in new buildings. At the site layout stage of the design process, when window positions and sizes are unknown, the potential for daylight may be checked at a series of reference points on each main face of the building. At each of these reference points the amount of available skylight falling on the vertical wall can be quantified as the vertical sky component (VSC).
- 3.2 Where window positions and sizes are known, it is more informative to calculate the interior daylighting inside the building. The guidelines recommend calculating the average daylight factor (ADF), which is the mean daylight factor on the horizontal working plane inside the room and is a measure of the overall amount of daylight in a space.
- 3.3 BS8206 and BRE Report 209 recommend the following minimum values of ADF in housing:-
- 1% for bedrooms
 - 1.5% for living rooms
 - 2% for kitchens
- 3.4 BS8206-2: 2008 notes that *“Where one room serves more than one purpose, the minimum average daylight factor should be that for the room type with the highest value. For example, in a space which combines a living room and a kitchen the minimum average daylight factor should be 2%”*.
- 3.5 The BRE guide notes that non-daylit internal kitchens should be avoided wherever possible, but where the layout means it is inevitable, it should directly link to a well daylit living room. Within the proposed scheme a number of the living/kitchen/dining rooms (LKDs) will have the kitchen area internalised, which will be less well daylit. In such instances we therefore notionally truncated the room to exclude the kitchen and tested the living/dining area and assessed it against the 1.5% ADF target for living rooms.
- 3.6 There are a number of ways that the ADF can be calculated. We have followed the method described in Appendix C of the BRE guide, which uses the following equation:

$$ADF = \frac{TMA_w \theta}{A(1 - R^2)}$$

Equation 1 - ADF formula

where,

T is the diffuse visible light transmittance of the glazing;

M is the maintenance factor allowing for the effects of dirt;

A_w is the net glazed area of the window;

Θ is the angle of visible sky;

A is the total area of all the room surfaces (ceilings, floors, walls and windows); and

R is the area-weighted average reflectance for the room surfaces.

Sunlight within new development

- 3.7 Section 3.1 of the BRE guide makes recommendations concerning sunlight in new buildings. It advises that *“In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day but especially in the afternoon. Sunlight is also required in conservatories. It is viewed as less important in bedrooms and in kitchens, where people prefer it in the mornings rather than the afternoon.”*
- 3.8 The BRE guidance advises that site layout can be used to affect the duration of sunlight in buildings. It notes that *“A dwelling with no main window wall within 90° of due south is likely to be perceived as insufficiently sunlit. This is usually an issue only for flats. Sensitive layout design of flats will attempt to ensure that each individual dwelling has at least one main living room which can receive a reasonable amount of sunlight.”*
- 3.9 The guide notes that *“The aim should be to minimise the number of dwellings whose living rooms face solely north, northeast or northwest, unless there is some corresponding factor such as an appealing view to the north.”* It also acknowledges that *“for larger developments of flats, especially those with constraints, it may not be possible to have every living room facing within 90° of due south”*.
- 3.10 Access to sunlight can be quantified: *“BS8206 recommends that interiors where the occupants expect sunlight should receive at least one quarter (25%) of annual probable sunlight hours (APSH), including in the winter months between 21 September and 21 March at least 5% of APSH”*.
- 3.11 ‘Probable sunlight hours’ means *“the total amount of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for*

the location in question". The calculation uses a sunlight probability model that is based on sunlight statistics. The sunlight probability diagram is shown in Figure A.3 of BS8206-2:2008. There are 100 dots on the diagram, with each dot representing 1% of probable sunlight hours. The density of dots on the diagram is proportional to the probability of the sun shining from a particular area of sky.

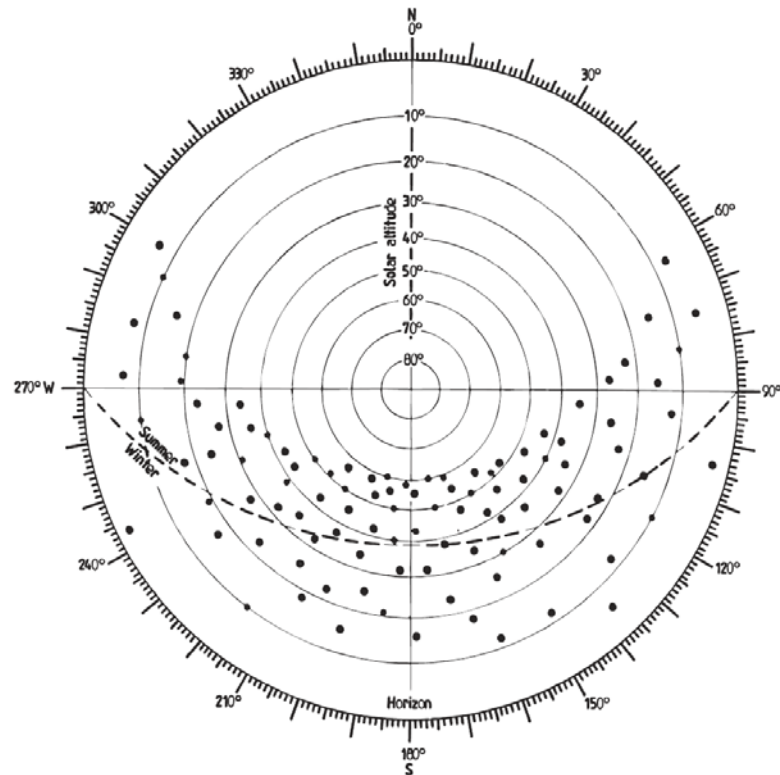


Figure 3 - Sunlight probability diagram (Source: BS8206-2:2008)

- 3.12 Where rooms are lit by more than one window it is sensible to consider the aggregate amount of sunlight reaching the room, though care should be taken to avoid double-counting. The BRE guide advises as follows: *"If a room has multiple windows on the same wall or adjacent walls, the highest value APSH should be taken. If a room has two windows on opposite walls, the APSH due to each can be added together."* Our computer software accurately calculates the room-based aggregate APSH, which is a better indicator than individual results for each window.
- 3.13 Whilst the BRE guidelines may, in theory, be applied anywhere, APSH values of 25% annually and 5% in the winter months are often not possible in modern, dense, city-centre sites where it is necessary to fully optimise housing potential. Furthermore, whilst the criteria can be applied to rooms of all orientations, the guide notes that *"if a room faces significantly north of due east or west it is unlikely to be met"*.
- 3.14 BS8206 notes that *"The degree of satisfaction is related to the expectation of sunlight. If a room is necessarily north facing or if the building is in a densely-built urban area, the*

absence of sunlight is more acceptable than when its exclusion seems arbitrary. It is the duration of sunlight in an interior, rather than its intensity or the size of the sunny patch, which correlates best with the occupants' satisfaction."

- 3.15 Whilst BS8206 is intended to give good access to sunlight in a range of situations, the BRE guide notes that in some circumstances *"the designer or planning authority may wish to choose a different target value for hours of sunlight."*
- 3.16 In the summary the BRE guide states that a dwelling will appear reasonably sunlit provided that 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 25% APSH, including at least 5% APSH in the winter months between 21 September and 21 March. Where groups of dwellings are planned, *"site layout should aim to maximise the number of dwellings with a main living room that meets the above recommendations"*.

Computer simulation

- 3.17 The appendices to the BRE guide describe various manual methods for calculating VSC and APSH and for plotting the no-sky line on the working plane. However, where the obstructions on the skyline are complex these methods can be difficult to apply and the results can be crude. We therefore prefer to use computer simulation and our specialist software, which is based on the more accurate Waldram method described in Appendix B of the BRE guide.
- 3.18 Our software calculates the VSC at each window, converts this into an equivalent angle of visible sky (θ) and uses this to calculate ADF in each room. Our software can also calculate the aggregate APSH across all windows in a room, as referred to above, without double-counting, so that the room-based aggregate APSH can be established.
- 3.19 The information upon which our computer model was based is explained in the next section of this report.

4. APPLICATION OF THE BRE GUIDE

- 4.1 In its introduction BRE Report 209 states its *“main aim is ... to help ensure good conditions in the local environment considered broadly, with enough sunlight and daylight on or between the buildings for good interior and exterior conditions”*.
- 4.2 The guide notes that it *“is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design.”*
- 4.3 Clearly, the BRE guide is an advisory document, not a rigid set of rules. Care must therefore be taken when applying its recommendations.
- 4.4 In theory the BRE report’s numerical guidelines may be applied to any setting, whether that is a city centre, suburban area or rural village. However, it notes, *“In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings.”*
- 4.5 Clearly, rigid application of the BRE Report’s standard numerical guidelines may be inappropriate in a built-up urban environment where higher density affordable development may be desirable and where there simply cannot be the same expectation of light as in a suburban or rural context.

5. INFORMATION USED IN THE TECHNICAL STUDY

5.1 We undertook our technical study using a 3D computer model of the proposed scheme and its surrounding buildings, which we built from the following information:

- Proposed scheme:
 - o Collado Collins Architect's drawings of the proposed scheme dated 1 April 2019
- Surrounding buildings:
 - o Zmap received from Collado Collins Architects
 - o OS map
 - o Aerial photography from Microsoft Bing
 - o Site visit and photographs

5.2 The computer model is illustrated on the drawings at Appendix A.

5.3 In calculating the daylight (ADF) levels the following values were applied in the BRE / BS formula:

- T (diffuse glass transmission): 0.68 for clear double glazing with a low emissivity coating;
- M (maintenance factor for dirt on glass): 0.92 (i.e. 8% loss) for vertical glazing;
- A_w (window aperture area): measured from 3D computer model multiplied by 0.8 for the frame correction factor;
- A (total surface area of room): measured from the 3D computer model; and
- R (area-weighted surface reflectance of room) calculated for each room based on the following surface finishes and reflectances:
 - o Ceilings: white 0.85
 - o Walls: pale cream 0.81
 - o Floors: light wood flooring 0.4

6. RESULTS OF TECHNICAL STUDY

- 6.1 We tested a representative selection of habitable rooms with a reasonable horizontal and vertical spread throughout the proposed development, including all habitable rooms at ground, first, third and fifth floors.
- 6.2 In all we tested 162 rooms, of which 63 are living rooms, dining rooms and kitchens (or a combination thereof) and 99 are bedrooms. Where windows are set back beneath balconies serving the floor above, we have included the obstructing effect of the balcony within our model.
- 6.3 The rooms tested are shown outlined on our drawing nos. ROL00143_02_401 to 403 at Appendix D. The drawings give the use of each room, and the room and window references used in our detailed tables of results.

Daylight within new development

- 6.4 The average daylight factor (ADF) results for the proposed habitable rooms tested are shown in the table at Appendix B (along with the relevant target for the room use concerned) and on the room layout drawings at Appendix D.
- 6.5 Of all the habitable rooms tested, all meet their respective ADF targets apart from one LKD at first floor level in Block C. This is a large deep LKD, which only narrowly misses the 2% guideline at 1.9%. Due to the large living space being provided for this two-bedroom flat, it is inevitable that it will be difficult for daylight to reach to the back of the space, and this results in a slightly lower average daylight factor across the full area.
- 6.6 It is also perhaps worth noting that this LKD has direct access to a balcony. Balconies provide much-needed private amenity space, but there is always a trade-off with daylight because they necessarily limit the available daylight. In this case it is the projecting balcony of the room above that affects the LKD by blinkering the view of sky. It is likely that this LKD would otherwise adhere to the guidance, but there is necessarily a trade-off between daylight and important private amenity space for other occupants.

Sunlight within new development

- 6.7 The guidelines acknowledge that *“if a room faces significantly north of due east or west [the sunlight criterion] is unlikely to be met”*. We therefore only tested the rooms in our model whose windows face within 90° of due south.
- 6.8 We tested a total of 101 rooms with south facing rooms. Although we have tested various types of habitable room, the guidelines focus on main living rooms and conservatories and the results should be considered in this context.
- 6.9 The annual probable sunlight hours (APSH) results for the rooms tested are given in the table at Appendix C. As explained in paragraph 3.12, these are room-based aggregate APSH figures taking account of sunlight available to all windows, where they are served by more than one.
- 6.10 Of the 101 rooms tested, 98 (97%) adherence to the annual sunlight guidance and 99 (98%) adhere to the winter sunlight guidance. Two of the rooms which do not adhere to the sunlight guidance annually and in winter are located in Block B. These are Living/Dining (LD) rooms (R16) located on the north elevation at third and fifth floor in the same location on the floor plate. Being located on the north elevation, as stated above, the sunlight criterion is unlikely to be met. Both LDs are however dual aspect and receive well in excess of their ADF targets at over 5% respectively. The two rooms also have direct access onto private amenity space.
- 6.11 The other room is a bedroom in Block C and adheres to the winter sunlight guidelines but falls below the annual guidelines. Again, this room fully satisfies the daylight analysis, but in this case, because of the overhanging balcony of the LKD above, the sunlight to this bedroom window is blinkered. If one looks at the rooms either side of this bedroom, these rooms do not have projecting balconies above them and the sunlight levels for these rooms adhere to and exceed the guidelines. Therefore, without the projecting balcony, this bedroom is also likely to adhere to the annual sunlight guidance. This balcony is, however, a necessary private amenity space for the flat above.

7. SUMMARY AND CONCLUSION

- 7.1 There are no mandatory standards for daylight or sunlight provision within dwellings. Reading Borough Council's planning policy seeks to provide good living conditions for residents of new housing developments, including the provision of adequate daylight and sunlight within dwellings.
- 7.2 BRE Report 209, *Site Layout Planning for Daylight and Sunlight: A guide to good practice* provides useful guidance on the subject.
- 7.3 We assessed daylight and sunlight to all habitable rooms at ground, first, third and fifth floor levels in the proposed development. The tests were undertaken in accordance with the BRE methodology.
- 7.4 For Daylight, all the rooms tested, apart from one LKD, adhere to the ADF targets. The LKD that does not, only narrowly misses the guidance and is particularly deep and has the added blinkering affect of a projecting balcony above its window. For sunlight, again, there is almost 100% adherence to the annual and winter guidelines. There are three rooms that fall below the annual sunlight guidelines and two of these also fall below the winter guidelines. Each of these three rooms nevertheless exceed their respective daylight guidelines and are each impacted by projecting balconies servicing flats above. It is likely that without the projecting balconies above them, each of these rooms would adhere to the sunlight guidance, but this is the trade off to provide private amenity space.
- 7.5 Although the BRE guide gives numerical guidelines, these are intended to be applied flexibly since natural lighting is only one of many factors in site layout design. Where higher density development is desirable there simply cannot be the same expectation of light as in a suburban or rural context.
- 7.6 In conclusion, the layout of the proposed development follows the BRE guidelines and will provide very good daylight and sunlight conditions within the proposed accommodation. In our opinion Reading's planning policy on daylight and sunlight to new dwellings will be satisfied.



ANSTEY HORNE

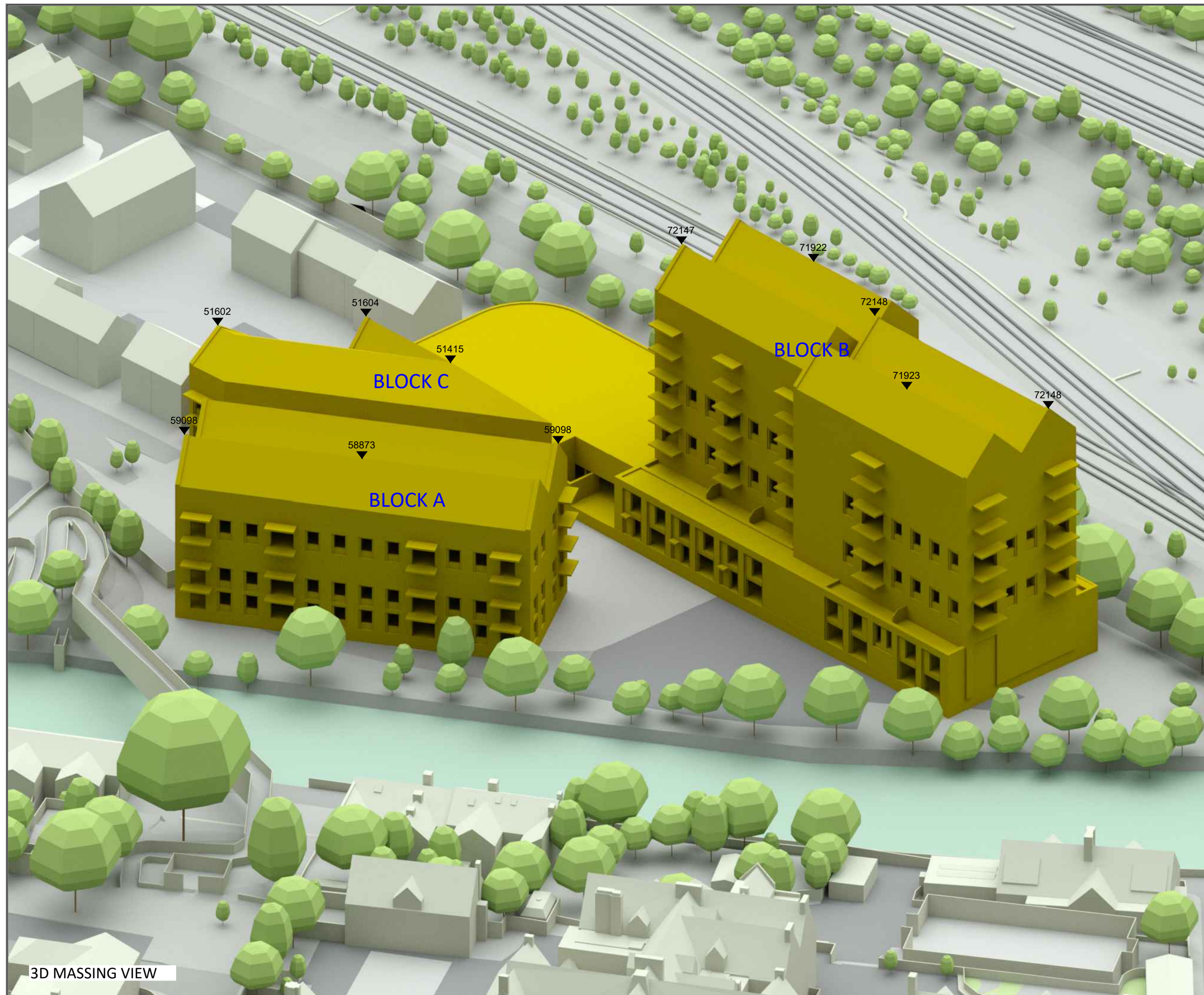
10 April 2019

APPENDIX A

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PLAN AND 3D VIEWS OF THE COMPUTER MODEL

DRAWING NOS. ROL00143_02_004 TO 006



CHARTERED SURVEYORS

London	Bristol	Birmingham
020 7065 2770	0117 911 3061	0121 667 9902
www.ansteyhorne.co.uk		

LEGEND:

 Existing
 Consented

 Proposed
  Cutback

12120 AOD Height (mm)

SOURCES OF INFORMATION:

EXISTING, SURROUNDING & ANALYSED BUILDINGS

COLLADO COLLINS ARCHITECTS
Received on 13/03/19

Site and aerial photos.

PROPOSED BUILDINGS
COLLADO COLLINS ARCHITECTS
 Received on 01/04/19

REV	DESCRIPTION		DATE
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CLIENT:	DANESCROFT (KENAVON DRIVE PROJECT MANAGEMENT) LLP		
PROJECT TITLE:	GAS HOLDER SITE AT ALEXANDER TURNER CLOSE READING		
SCHEME REF:	SCHEME RECEIVED: 01/04/19		
DRAWING TITLE:	3D MASSING MODEL VIEW EXISTING CONDITION		
MODELLED BY / DRAWN BY	DATE:	SCALE:	
BS	05/04/19	N.T.S.	A3
PROJECT No:	RELEASE No:	VERSION No:	DRAWING No:
ROL00143_R02_V01			005
3D Massing Model			



3D MASSING VIEW

LEGEND:			
	Existing		Consented
	Proposed		Cutback
12120	AOD Height (mm)		

SOURCES OF INFORMATION:

EXISTING, SURROUNDING & ANALYSED BUILDINGS
COLLADO COLLINS ARCHITECTS
Received on 13/03/19

Site and aerial photos.

PROPOSED BUILDINGS
COLLADO COLLINS ARCHITECTS
Received on 01/04/19

REV	DESCRIPTION	DATE
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CLIENT:	DANESCROFT (KENAVON DRIVE PROJECT MANAGEMENT) LLP	
PROJECT TITLE:	GAS HOLDER SITE AT ALEXANDER TURNER CLOSE READING	
SCHEME REF:	SCHEME RECEIVED: 01/04/19	
DRAWING TITLE:	3D MASSING MODEL VIEW EXISTING CONDITION	
MODELLED BY: / DRAWN BY	DATE:	SCALE: N.T.S. A3
BS	05/04/19	
PROJECT No:	RELEASE No:	VERSION No: DRAWING No:
ROL00143_R02_V01		006
3D Massing Model		

APPENDIX B

-

AVERAGE DAYLIGHT FACTOR ('ADF') TABLE

Parameters Used for ADF :

Glazing transmittance = 0.68

Maintenance Factor = 1

Glazing bar correction = 0.8

Wall Reflectance = 0.81

Floor Reflectance = 0.4

Ceiling Reflectance = 0.84

Property / room ref.	Property type	Flat no.	Room usage	Window ref.	ADF% Contrib.	Total
Block A						
Gnd Floor						
R1	RESIDENTIAL		BEDROOM	W1	3.74	3.74
R2	RESIDENTIAL		BEDROOM	W2	2.34	2.34
R3	RESIDENTIAL		LD	W3	1.78	
R3	RESIDENTIAL		LD	W4	2.18	
R3	RESIDENTIAL		LD	W5	1.59	5.55
R4	RESIDENTIAL		LD	W6	1.62	
R4	RESIDENTIAL		LD	W7	1.99	
R4	RESIDENTIAL		LD	W8	2.07	5.69
R5	RESIDENTIAL		BEDROOM	W9	4.22	4.22
R6	RESIDENTIAL		BEDROOM	W10	2.69	2.69
R7	RESIDENTIAL		LD	W11	3.90	3.90
R8	RESIDENTIAL		BEDROOM	W12	3.54	3.54
R9	RESIDENTIAL		BEDROOM	W13	3.15	3.15
R10	RESIDENTIAL		BEDROOM	W14	3.73	3.73
R11	RESIDENTIAL		BEDROOM	W15	4.55	4.55
R12	RESIDENTIAL		LD	W16	3.39	3.39
R13	RESIDENTIAL		BEDROOM	W17	2.76	2.76
R14	RESIDENTIAL		BEDROOM	W18	4.38	4.38
R15	RESIDENTIAL		LD	W19	2.24	
R15	RESIDENTIAL		LD	W20	1.66	
R15	RESIDENTIAL		LD	W21	1.25	5.15
R16	RESIDENTIAL		LD	W22	1.13	
R16	RESIDENTIAL		LD	W23	1.31	
R16	RESIDENTIAL		LD	W24	1.50	3.93
R17	RESIDENTIAL		BEDROOM	W25	3.04	3.04
R18	RESIDENTIAL		BEDROOM	W26	2.55	2.55
1st Floor						
R1	RESIDENTIAL		LD	W1	3.18	3.18
R2	RESIDENTIAL		BEDROOM	W2	3.17	3.17
R3	RESIDENTIAL		BEDROOM	W3	2.99	2.99
R4	RESIDENTIAL		BEDROOM	W4	3.65	3.65
R5	RESIDENTIAL		LD	W5	1.87	
R5	RESIDENTIAL		LD	W6	2.23	
R5	RESIDENTIAL		LD	W7	2.04	6.14
R6	RESIDENTIAL		LD	W8	2.15	
R6	RESIDENTIAL		LD	W9	2.16	
R6	RESIDENTIAL		LD	W10	2.23	6.54
R7	RESIDENTIAL		BEDROOM	W11	3.98	3.98
R8	RESIDENTIAL		BEDROOM	W12	3.37	3.37
R9	RESIDENTIAL		LD	W13	4.18	4.18
R10	RESIDENTIAL		BEDROOM	W14	3.71	3.71
R11	RESIDENTIAL		BEDROOM	W15	3.29	3.29
R12	RESIDENTIAL		BEDROOM	W16	3.88	3.88
R13	RESIDENTIAL		BEDROOM	W17	4.72	4.72
R14	RESIDENTIAL		LD	W18	3.48	3.48

TABLE P7
AVERAGE DAYLIGHT FACTOR (ADF)
WITHIN PROPOSED ACCOMODATION

Property / room ref.	Property type	Flat no.	Room usage	Window ref.	ADF% Contrib.	Total
R15	RESIDENTIAL		BEDROOM	W19	3.38	3.38
R16	RESIDENTIAL		BEDROOM	W20	3.98	3.98
R17	RESIDENTIAL		LD	W21	2.24	
R17	RESIDENTIAL		LD	W22	1.65	
R17	RESIDENTIAL		LD	W23	1.59	5.48
R18	RESIDENTIAL		LD	W24	1.47	
R18	RESIDENTIAL		LD	W25	1.34	
R18	RESIDENTIAL		LD	W26	1.65	4.46
R19	RESIDENTIAL		BEDROOM	W27	3.38	3.38
R20	RESIDENTIAL		BEDROOM	W28	2.84	2.84
R21	RESIDENTIAL		BEDROOM	W29	3.00	3.00
R22	RESIDENTIAL		LD	W30	3.15	3.15
3rd Floor						
R1	RESIDENTIAL		LD	W1	4.08	4.08
R2	RESIDENTIAL		BEDROOM	W2	3.76	3.76
R3	RESIDENTIAL		BEDROOM	W3	3.52	3.52
R4	RESIDENTIAL		BEDROOM	W4	4.27	4.27
R5	RESIDENTIAL		LD	W5	2.17	
R5	RESIDENTIAL		LD	W6	2.37	
R5	RESIDENTIAL		LD	W7	2.16	6.70
R6	RESIDENTIAL		LD	W8	2.25	
R6	RESIDENTIAL		LD	W9	2.25	
R6	RESIDENTIAL		LD	W10	2.36	6.86
R7	RESIDENTIAL		BEDROOM	W11	4.20	4.20
R8	RESIDENTIAL		BEDROOM	W12	3.56	3.56
R9	RESIDENTIAL		LD	W13	4.40	4.40
R10	RESIDENTIAL		BEDROOM	W14	3.90	3.90
R11	RESIDENTIAL		BEDROOM	W15	3.43	3.43
R12	RESIDENTIAL		BEDROOM	W16	4.04	4.04
R13	RESIDENTIAL		BEDROOM	W17	4.97	4.97
R14	RESIDENTIAL		LD	W18	3.65	3.65
R15	RESIDENTIAL		BEDROOM	W19	3.56	3.56
R16	RESIDENTIAL		BEDROOM	W20	4.19	4.19
R17	RESIDENTIAL		LD	W21	2.35	
R17	RESIDENTIAL		LD	W22	1.78	
R17	RESIDENTIAL		LD	W23	1.72	5.85
R18	RESIDENTIAL		LD	W24	1.63	
R18	RESIDENTIAL		LD	W25	1.46	
R18	RESIDENTIAL		LD	W26	1.86	4.95
R19	RESIDENTIAL		BEDROOM	W27	3.85	3.85
R20	RESIDENTIAL		BEDROOM	W28	3.27	3.27
R21	RESIDENTIAL		BEDROOM	W29	3.54	3.54
R22	RESIDENTIAL		LD	W30	3.96	3.96
Block B						
Gnd Floor						
R1	RESIDENTIAL		LD	W1	3.27	
R1	RESIDENTIAL		LD	W2	3.31	6.58
R2	RESIDENTIAL		LD	W3	2.96	
R2	RESIDENTIAL		LD	W4	2.97	5.94
R3	RESIDENTIAL		LD	W5	1.78	
R3	RESIDENTIAL		LD	W6	3.85	5.63
R4	RESIDENTIAL		LD	W7	1.91	
R4	RESIDENTIAL		LD	W8	4.19	6.10
R5	RESIDENTIAL		LD	W9	2.10	
R5	RESIDENTIAL		LD	W10	4.58	6.68

TABLE P7
AVERAGE DAYLIGHT FACTOR (ADF)
WITHIN PROPOSED ACCOMODATION

Property / room ref.	Property type	Flat no.	Room usage	Window ref.	ADF% Contrib.	Total
1st Floor						
R1	RESIDENTIAL		BEDROOM	W1	7.15	7.15
R2	RESIDENTIAL		BEDROOM	W2	6.60	6.60
R3	RESIDENTIAL		BEDROOM	W3	3.22	3.22
R4	RESIDENTIAL		BEDROOM	W4	3.02	3.02
R5	RESIDENTIAL		BEDROOM	W5	6.22	6.22
R6	RESIDENTIAL		BEDROOM	W6	6.89	6.89
R7	RESIDENTIAL		BEDROOM	W7	5.19	5.19
R8	RESIDENTIAL		BEDROOM	W8	4.62	4.62
R9	RESIDENTIAL		BEDROOM	W9	5.47	5.47
R10	RESIDENTIAL		BEDROOM	W10	4.98	4.98
R11	RESIDENTIAL		BEDROOM	W11	5.94	5.94
R12	RESIDENTIAL		BEDROOM	W12	5.38	5.38
3rd Floor						
R1	RESIDENTIAL		LD	W1	3.58	3.58
R2	RESIDENTIAL		BEDROOM	W2	3.35	3.35
R3	RESIDENTIAL		BEDROOM	W3	3.74	3.74
R4	RESIDENTIAL		BEDROOM	W4	4.04	4.04
R5	RESIDENTIAL		LD	W5	2.29	
R5	RESIDENTIAL		LD	W6	4.81	7.10
R6	RESIDENTIAL		KITCHEN	W7	5.30	5.30
R7	RESIDENTIAL		KITCHEN	W8	5.30	5.30
R8	RESIDENTIAL		LD	W9	4.82	
R8	RESIDENTIAL		LD	W10	2.33	7.15
R9	RESIDENTIAL		BEDROOM	W11	4.12	4.12
R10	RESIDENTIAL		BEDROOM	W12	3.82	3.82
R11	RESIDENTIAL		BEDROOM	W13	3.41	3.41
R12	RESIDENTIAL		LD	W14	2.81	2.81
R13	RESIDENTIAL		BEDROOM	W15	4.58	4.58
R14	RESIDENTIAL		BEDROOM	W16	3.69	3.69
R15	RESIDENTIAL		LD	W17	3.56	
R15	RESIDENTIAL		LD	W18	0.00	3.56
R16	RESIDENTIAL		LD	W19	1.53	
R16	RESIDENTIAL		LD	W20	3.89	5.41
R17	RESIDENTIAL		BEDROOM	W21	3.73	3.73
R18	RESIDENTIAL		BEDROOM	W22	3.73	3.73
R19	RESIDENTIAL		LD	W23	3.89	3.89
R20	RESIDENTIAL		BEDROOM	W24	3.65	3.65
R21	RESIDENTIAL		BEDROOM	W25	4.12	4.12
R22	RESIDENTIAL		LD	W26	2.33	
R22	RESIDENTIAL		LD	W27	1.48	
R22	RESIDENTIAL		LD	W28	2.44	6.25
R23	RESIDENTIAL		KITCHEN	W29	5.17	5.17
R24	RESIDENTIAL		KITCHEN	W30	5.45	5.45
R25	RESIDENTIAL		LD	W31	2.30	
R25	RESIDENTIAL		LD	W32	2.29	
R25	RESIDENTIAL		LD	W33	3.08	7.67
R26	RESIDENTIAL		BEDROOM	W34	3.45	3.45
R27	RESIDENTIAL		BEDROOM	W35	3.28	3.28
R28	RESIDENTIAL		LD	W36	3.43	3.43
R29	RESIDENTIAL		BEDROOM	W37	3.42	3.42
R30	RESIDENTIAL		LD	W38	3.26	
R30	RESIDENTIAL		LD	W39	0.00	3.26
R31	RESIDENTIAL		BEDROOM	W40	3.44	3.44
R32	RESIDENTIAL		BEDROOM	W41	4.51	4.51
5th Floor						

TABLE P7
AVERAGE DAYLIGHT FACTOR (ADF)
WITHIN PROPOSED ACCOMODATION

Property / room ref.	Property type	Flat no.	Room usage	Window ref.	ADF% Contrib.	Total
R1	RESIDENTIAL		LD	W1	4.81	4.81
R2	RESIDENTIAL		BEDROOM	W2	3.95	3.95
R3	RESIDENTIAL		BEDROOM	W3	3.81	3.81
R4	RESIDENTIAL		BEDROOM	W4	4.12	4.12
R5	RESIDENTIAL		LD	W5	2.33	
R5	RESIDENTIAL		LD	W6	4.84	7.17
R6	RESIDENTIAL		KITCHEN	W7	5.32	5.32
R7	RESIDENTIAL		KITCHEN	W8	5.32	5.32
R8	RESIDENTIAL		LD	W9	4.84	
R8	RESIDENTIAL		LD	W10	2.33	7.17
R9	RESIDENTIAL		BEDROOM	W11	4.12	4.12
R10	RESIDENTIAL		BEDROOM	W12	3.82	3.82
R11	RESIDENTIAL		BEDROOM	W13	3.94	3.94
R12	RESIDENTIAL		LD	W14	3.66	3.66
R13	RESIDENTIAL		BEDROOM	W15	3.71	3.71
R14	RESIDENTIAL		BEDROOM	W16	3.69	3.69
R15	RESIDENTIAL		LD	W17	3.56	
R15	RESIDENTIAL		LD	W18	0.00	3.56
R16	RESIDENTIAL		LD	W19	1.55	
R16	RESIDENTIAL		LD	W20	3.89	5.44
R17	RESIDENTIAL		BEDROOM	W21	3.73	3.73
R18	RESIDENTIAL		BEDROOM	W22	3.73	3.73
R19	RESIDENTIAL		LD	W23	3.89	3.89
R20	RESIDENTIAL		BEDROOM	W24	3.65	3.65
R21	RESIDENTIAL		BEDROOM	W25	4.12	4.12
R22	RESIDENTIAL		LD	W26	2.33	
R22	RESIDENTIAL		LD	W27	1.49	
R22	RESIDENTIAL		LD	W28	2.46	6.29
R23	RESIDENTIAL		KITCHEN	W29	5.22	5.22
R24	RESIDENTIAL		KITCHEN	W30	5.50	5.50
R25	RESIDENTIAL		LD	W31	2.32	
R25	RESIDENTIAL		LD	W32	2.32	
R25	RESIDENTIAL		LD	W33	3.48	8.13
R26	RESIDENTIAL		BEDROOM	W34	3.76	3.76
R27	RESIDENTIAL		BEDROOM	W35	3.55	3.55
R28	RESIDENTIAL		LD	W36	3.76	3.76
R29	RESIDENTIAL		BEDROOM	W37	3.64	3.64
R30	RESIDENTIAL		LD	W38	3.46	
R30	RESIDENTIAL		LD	W39	0.00	3.46
R31	RESIDENTIAL		BEDROOM	W40	3.63	3.63
R32	RESIDENTIAL		BEDROOM	W41	3.75	3.75
Block C						
Gnd Floor						
R1	RESIDENTIAL		LD	W1	1.83	
R1	RESIDENTIAL		LD	W2	1.75	3.58
R2	RESIDENTIAL		BEDROOM	W3	3.10	3.10
R3	RESIDENTIAL		LKD	W4	3.50	
R3	RESIDENTIAL		LKD	W8	0.97	4.48
R4	RESIDENTIAL		BEDROOM	W5	2.82	2.82
R5	RESIDENTIAL		BEDROOM	W6	2.42	2.42
R6	RESIDENTIAL		BEDROOM	W9	1.38	1.38
R7	RESIDENTIAL		BEDROOM	W10	2.99	2.99
1st Floor						
R1	RESIDENTIAL		BEDROOM	W1	3.34	3.34

TABLE P7
 AVERAGE DAYLIGHT FACTOR (ADF)
 WITHIN PROPOSED ACCOMODATION

Property / room ref.	Property type	Flat no.	Room usage	Window ref.	ADF% Contrib.	Total
R2	RESIDENTIAL		BEDROOM	W2	3.04	3.04
R3	RESIDENTIAL		BEDROOM	W3	3.34	3.34
R4	RESIDENTIAL		BEDROOM	W4	3.49	3.49
R5	RESIDENTIAL		BEDROOM	W5	3.55	3.55
R6	RESIDENTIAL		LKD	W6	0.97	
R6	RESIDENTIAL		LKD	W7	1.52	
R6	RESIDENTIAL		LKD	W8	1.04	3.54
R7	RESIDENTIAL		BEDROOM	W9	2.22	2.22
R8	RESIDENTIAL		LKD	W10	1.14	
R8	RESIDENTIAL		LKD	W11	0.90	2.04
R9	RESIDENTIAL		LKD	W12	0.99	
R9	RESIDENTIAL		LKD	W13	0.91	1.90
R10	RESIDENTIAL		BEDROOM	W14	2.50	2.50
R11	RESIDENTIAL		BEDROOM	W15	2.49	2.49
R12	RESIDENTIAL		LKD	W16	0.84	
R12	RESIDENTIAL		LKD	W17	0.88	
R12	RESIDENTIAL		LKD	W18	1.10	2.82

APPENDIX C

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ANNUAL PROBABLE SUNLIGHT HOURS ('APSH') TABLE

TABLE P9
ANNUAL PROBABLE SUNLIGHT HOURS (APSH)
WITHIN PROPOSED ACCOMMODATION

PROPERTY						WINDOW		ROOM	
						ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)	ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)
Room ref.	Property type	Flat no.	Window ref.	Room use	Orientation				
Block A									
Gnd Floor									
R1	RESIDENTIAL		W1	BEDROOM	Northerly	5	0	5	0
R2	RESIDENTIAL		W2	BEDROOM	Northerly	5	0	5	0
R3	RESIDENTIAL		W3	LD	Northerly	6	0		
R3	RESIDENTIAL		W4	LD	Southerly	30	13		
R3	RESIDENTIAL		W5	LD	Southerly	43	14	43	14
R4	RESIDENTIAL		W6	LD	Southerly	41	12		
R4	RESIDENTIAL		W7	LD	Southerly	43	11		
R4	RESIDENTIAL		W8	LD	Southerly	35	21	72	27
R5	RESIDENTIAL		W9	BEDROOM	Southerly	53	19	53	19
R6	RESIDENTIAL		W10	BEDROOM	Southerly	52	21	52	21
R7	RESIDENTIAL		W11	LD	Southerly	37	22	37	22
R8	RESIDENTIAL		W12	BEDROOM	Southerly	54	20	54	20
R9	RESIDENTIAL		W13	BEDROOM	Southerly	55	21	55	21
R10	RESIDENTIAL		W14	BEDROOM	Southerly	55	21	55	21
R11	RESIDENTIAL		W15	BEDROOM	Southerly	51	20	51	20
R12	RESIDENTIAL		W16	LD	Southerly	36	21	36	21
R13	RESIDENTIAL		W17	BEDROOM	Southerly	54	20	54	20
R14	RESIDENTIAL		W18	BEDROOM	Southerly	49	21	49	21
R15	RESIDENTIAL		W19	LD	Southerly	35	21		
R15	RESIDENTIAL		W20	LD	Northerly	17	2		
R15	RESIDENTIAL		W21	LD	Northerly	17	2	42	21
R16	RESIDENTIAL		W22	LD	Northerly	17	2		
R16	RESIDENTIAL		W23	LD	Northerly	15	2		
R16	RESIDENTIAL		W24	LD	Northerly	2	0	20	2
R17	RESIDENTIAL		W25	BEDROOM	Northerly	2	0	2	0
R18	RESIDENTIAL		W26	BEDROOM	Northerly	2	0	2	0

*NOTES: 'APSH' = annual probable sunlight hours, which means the long term average of the total number of hours during the year in which direct sunlight reaches the unobstructed ground.

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WITHIN PROPOSED ACCOMMODATION

PROPERTY						WINDOW		ROOM	
						ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)	ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)
Room ref.	Property type	Flat no.	Window ref.	Room use	Orientation				
1st Floor									
R1	RESIDENTIAL		W1	LD	Northerly	7	0	7	0
R2	RESIDENTIAL		W2	BEDROOM	Northerly	5	0	5	0
R3	RESIDENTIAL		W3	BEDROOM	Northerly	5	0	5	0
R4	RESIDENTIAL		W4	BEDROOM	Northerly	5	0	5	0
R5	RESIDENTIAL		W5	LD	Northerly	6	0		
R5	RESIDENTIAL		W6	LD	Southerly	31	14		
R5	RESIDENTIAL		W7	LD	Southerly	46	14	46	14
R6	RESIDENTIAL		W8	LD	Southerly	47	15		
R6	RESIDENTIAL		W9	LD	Southerly	47	15		
R6	RESIDENTIAL		W10	LD	Southerly	36	22	75	30
R7	RESIDENTIAL		W11	BEDROOM	Southerly	53	19	53	19
R8	RESIDENTIAL		W12	BEDROOM	Southerly	53	22	53	22
R9	RESIDENTIAL		W13	LD	Southerly	38	23	38	23
R10	RESIDENTIAL		W14	BEDROOM	Southerly	55	21	55	21
R11	RESIDENTIAL		W15	BEDROOM	Southerly	55	21	55	21
R12	RESIDENTIAL		W16	BEDROOM	Southerly	55	21	55	21
R13	RESIDENTIAL		W17	BEDROOM	Southerly	52	21	52	21
R14	RESIDENTIAL		W18	LD	Southerly	37	22	37	22
R15	RESIDENTIAL		W19	BEDROOM	Southerly	54	20	54	20
R16	RESIDENTIAL		W20	BEDROOM	Southerly	49	21	49	21
R17	RESIDENTIAL		W21	LD	Southerly	35	21		
R17	RESIDENTIAL		W22	LD	Northerly	17	2		
R17	RESIDENTIAL		W23	LD	Northerly	17	2	42	21
R18	RESIDENTIAL		W24	LD	Northerly	17	2		
R18	RESIDENTIAL		W25	LD	Northerly	15	2		
R18	RESIDENTIAL		W26	LD	Northerly	4	0	22	2
R19	RESIDENTIAL		W27	BEDROOM	Northerly	4	0	4	0
R20	RESIDENTIAL		W28	BEDROOM	Northerly	4	0	4	0
R21	RESIDENTIAL		W29	BEDROOM	Northerly	4	0	4	0
R22	RESIDENTIAL		W30	LD	Northerly	6	0	6	0

*NOTES: 'APSH' = annual probable sunlight hours, which means the long term average of the total number of hours during the year in which direct sunlight reaches the unobstructed ground.

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WITHIN PROPOSED ACCOMMODATION

PROPERTY						WINDOW		ROOM	
						ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)	ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)
Room ref.	Property type	Flat no.	Window ref.	Room use	Orientation				
3rd Floor									
R1	RESIDENTIAL		W1	LD	Northerly	8	0	8	0
R2	RESIDENTIAL		W2	BEDROOM	Northerly	6	0	6	0
R3	RESIDENTIAL		W3	BEDROOM	Northerly	6	0	6	0
R4	RESIDENTIAL		W4	BEDROOM	Northerly	6	0	6	0
R5	RESIDENTIAL		W5	LD	Northerly	6	0		
R5	RESIDENTIAL		W6	LD	Southerly	32	15		
R5	RESIDENTIAL		W7	LD	Southerly	47	15	47	15
R6	RESIDENTIAL		W8	LD	Southerly	47	15		
R6	RESIDENTIAL		W9	LD	Southerly	47	15		
R6	RESIDENTIAL		W10	LD	Southerly	36	22	75	30
R7	RESIDENTIAL		W11	BEDROOM	Southerly	53	19	53	19
R8	RESIDENTIAL		W12	BEDROOM	Southerly	53	22	53	22
R9	RESIDENTIAL		W13	LD	Southerly	38	23	38	23
R10	RESIDENTIAL		W14	BEDROOM	Southerly	55	21	55	21
R11	RESIDENTIAL		W15	BEDROOM	Southerly	56	22	56	22
R12	RESIDENTIAL		W16	BEDROOM	Southerly	56	22	56	22
R13	RESIDENTIAL		W17	BEDROOM	Southerly	53	22	53	22
R14	RESIDENTIAL		W18	LD	Southerly	38	23	38	23
R15	RESIDENTIAL		W19	BEDROOM	Southerly	55	21	55	21
R16	RESIDENTIAL		W20	BEDROOM	Southerly	50	22	50	22
R17	RESIDENTIAL		W21	LD	Southerly	36	22		
R17	RESIDENTIAL		W22	LD	Northerly	17	2		
R17	RESIDENTIAL		W23	LD	Northerly	17	2	43	22
R18	RESIDENTIAL		W24	LD	Northerly	17	2		
R18	RESIDENTIAL		W25	LD	Northerly	15	2		
R18	RESIDENTIAL		W26	LD	Northerly	6	0	24	2
R19	RESIDENTIAL		W27	BEDROOM	Northerly	6	0	6	0
R20	RESIDENTIAL		W28	BEDROOM	Northerly	6	0	6	0
R21	RESIDENTIAL		W29	BEDROOM	Northerly	6	0	6	0
R22	RESIDENTIAL		W30	LD	Northerly	8	0	8	0
Block B									

*NOTES: 'APSH' = annual probable sunlight hours, which means the long term average of the total number of hours during the year in which direct sunlight reaches the unobstructed ground.

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WITHIN PROPOSED ACCOMMODATION

PROPERTY						WINDOW		ROOM	
						ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)	ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)
Room ref.	Property type	Flat no.	Window ref.	Room use	Orientation				
Gnd Floor									
R1	RESIDENTIAL		W1	LD	Southerly	68	24		
R1	RESIDENTIAL		W2	LD	Southerly	70	26	70	26
R2	RESIDENTIAL		W3	LD	Southerly	72	27		
R2	RESIDENTIAL		W4	LD	Southerly	73	27	73	27
R3	RESIDENTIAL		W5	LD	Southerly	36	9		
R3	RESIDENTIAL		W6	LD	Southerly	55	13	58	14
R4	RESIDENTIAL		W7	LD	Southerly	39	13		
R4	RESIDENTIAL		W8	LD	Southerly	60	17	61	18
R5	RESIDENTIAL		W9	LD	Southerly	44	17		
R5	RESIDENTIAL		W10	LD	Southerly	64	21	65	22
1st Floor									
R1	RESIDENTIAL		W1	BEDROOM	Southerly	67	25	67	25
R2	RESIDENTIAL		W2	BEDROOM	Southerly	69	27	69	27
R3	RESIDENTIAL		W3	BEDROOM	Southerly	54	24	54	24
R4	RESIDENTIAL		W4	BEDROOM	Southerly	55	24	55	24
R5	RESIDENTIAL		W5	BEDROOM	Southerly	69	26	69	26
R6	RESIDENTIAL		W6	BEDROOM	Southerly	69	26	69	26
R7	RESIDENTIAL		W7	BEDROOM	Southerly	53	11	53	11
R8	RESIDENTIAL		W8	BEDROOM	Southerly	55	14	55	14
R9	RESIDENTIAL		W9	BEDROOM	Southerly	58	16	58	16
R10	RESIDENTIAL		W10	BEDROOM	Southerly	57	16	57	16
R11	RESIDENTIAL		W11	BEDROOM	Southerly	61	19	61	19
R12	RESIDENTIAL		W12	BEDROOM	Southerly	63	21	63	21
3rd Floor									
R1	RESIDENTIAL		W1	LD	Southerly	37	29	37	29
R2	RESIDENTIAL		W2	BEDROOM	Southerly	58	24	58	24
R3	RESIDENTIAL		W3	BEDROOM	Southerly	61	26	61	26
R4	RESIDENTIAL		W4	BEDROOM	Southerly	61	26	61	26
R5	RESIDENTIAL		W5	LD	Southerly	61	26		

*NOTES: 'APSH' = annual probable sunlight hours, which means the long term average of the total number of hours during the year in which direct sunlight reaches the unobstructed ground.

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WITHIN PROPOSED ACCOMMODATION

PROPERTY						WINDOW		ROOM	
						ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)	ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)
Room ref.	Property type	Flat no.	Window ref.	Room use	Orientation				
R5	RESIDENTIAL		W6	LD	Southerly	26	10	79	28
R6	RESIDENTIAL		W7	KITCHEN	Southerly	32	5	32	5
R7	RESIDENTIAL		W8	KITCHEN	Southerly	33	6	33	6
R8	RESIDENTIAL		W9	LD	Southerly	26	10		
R8	RESIDENTIAL		W10	LD	Northerly	1	0	26	10
R9	RESIDENTIAL		W11	BEDROOM	Northerly	1	0	1	0
R10	RESIDENTIAL		W12	BEDROOM	Northerly	1	0	1	0
R11	RESIDENTIAL		W13	BEDROOM	Northerly	1	0	1	0
R12	RESIDENTIAL		W14	LD	Northerly	2	0	2	0
R13	RESIDENTIAL		W15	BEDROOM	Northerly	1	0	1	0
R14	RESIDENTIAL		W16	BEDROOM	Northerly	1	0	1	0
R15	RESIDENTIAL		W17	LD	Northerly	1	0		
R15	RESIDENTIAL		W18	LD	Northerly	0	0	1	0
R16	RESIDENTIAL		W19	LD	Southerly	6	0		
R16	RESIDENTIAL		W20	LD	Northerly	2	0	7	0
R17	RESIDENTIAL		W21	BEDROOM	Northerly	1	0	1	0
R18	RESIDENTIAL		W22	BEDROOM	Northerly	1	0	1	0
R19	RESIDENTIAL		W23	LD	Northerly	2	0	2	0
R20	RESIDENTIAL		W24	BEDROOM	Northerly	1	0	1	0
R21	RESIDENTIAL		W25	BEDROOM	Northerly	1	0	1	0
R22	RESIDENTIAL		W26	LD	Northerly	1	0		
R22	RESIDENTIAL		W27	LD	Northerly	18	6		
R22	RESIDENTIAL		W28	LD	Northerly	27	7	28	7
R23	RESIDENTIAL		W29	KITCHEN	Northerly	30	7	30	7
R24	RESIDENTIAL		W30	KITCHEN	Northerly	30	7	30	7
R25	RESIDENTIAL		W31	LD	Northerly	32	7		
R25	RESIDENTIAL		W32	LD	Northerly	32	7		
R25	RESIDENTIAL		W33	LD	Southerly	28	23	52	25
R26	RESIDENTIAL		W34	BEDROOM	Southerly	54	22	54	22
R27	RESIDENTIAL		W35	BEDROOM	Southerly	57	22	57	22
R28	RESIDENTIAL		W36	LD	Southerly	32	24	32	24
R29	RESIDENTIAL		W37	BEDROOM	Southerly	57	23	57	23
R30	RESIDENTIAL		W38	LD	Southerly	26	21		

*NOTES: 'APSH' = annual probable sunlight hours, which means the long term average of the total number of hours during the year in which direct sunlight reaches the unobstructed ground.

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WITHIN PROPOSED ACCOMMODATION

PROPERTY						WINDOW		ROOM	
						ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)	ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)
Room ref.	Property type	Flat no.	Window ref.	Room use	Orientation				
R30	RESIDENTIAL		W39	LD	Southerly	0	0	26	21
R31	RESIDENTIAL		W40	BEDROOM	Southerly	58	23	58	23
R32	RESIDENTIAL		W41	BEDROOM	Southerly	59	24	59	24
5th Floor									
R1	RESIDENTIAL		W1	LD	Southerly	38	30	38	30
R2	RESIDENTIAL		W2	BEDROOM	Southerly	59	25	59	25
R3	RESIDENTIAL		W3	BEDROOM	Southerly	61	26	61	26
R4	RESIDENTIAL		W4	BEDROOM	Southerly	61	26	61	26
R5	RESIDENTIAL		W5	LD	Southerly	61	26		
R5	RESIDENTIAL		W6	LD	Southerly	26	10	79	28
R6	RESIDENTIAL		W7	KITCHEN	Southerly	32	5	32	5
R7	RESIDENTIAL		W8	KITCHEN	Southerly	33	6	33	6
R8	RESIDENTIAL		W9	LD	Southerly	26	10		
R8	RESIDENTIAL		W10	LD	Northerly	1	0	26	10
R9	RESIDENTIAL		W11	BEDROOM	Northerly	1	0	1	0
R10	RESIDENTIAL		W12	BEDROOM	Northerly	1	0	1	0
R11	RESIDENTIAL		W13	BEDROOM	Northerly	1	0	1	0
R12	RESIDENTIAL		W14	LD	Northerly	2	0	2	0
R13	RESIDENTIAL		W15	BEDROOM	Northerly	1	0	1	0
R14	RESIDENTIAL		W16	BEDROOM	Northerly	1	0	1	0
R15	RESIDENTIAL		W17	LD	Northerly	1	0		
R15	RESIDENTIAL		W18	LD	Northerly	0	0	1	0
R16	RESIDENTIAL		W19	LD	Southerly	7	0		
R16	RESIDENTIAL		W20	LD	Northerly	2	0	8	0
R17	RESIDENTIAL		W21	BEDROOM	Northerly	1	0	1	0
R18	RESIDENTIAL		W22	BEDROOM	Northerly	1	0	1	0
R19	RESIDENTIAL		W23	LD	Northerly	2	0	2	0
R20	RESIDENTIAL		W24	BEDROOM	Northerly	1	0	1	0
R21	RESIDENTIAL		W25	BEDROOM	Northerly	1	0	1	0
R22	RESIDENTIAL		W26	LD	Northerly	1	0		
R22	RESIDENTIAL		W27	LD	Northerly	18	6		
R22	RESIDENTIAL		W28	LD	Northerly	27	7	28	7

*NOTES: 'APSH' = annual probable sunlight hours, which means the long term average of the total number of hours during the year in which direct sunlight reaches the unobstructed ground.

05/04/2019

WITHIN PROPOSED ACCOMMODATION

PROPERTY						WINDOW		ROOM	
						ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)	ANNUAL SUNLIGHT Proposed (% APSH)	WINTER SUNLIGHT Proposed (% APSH)
Room ref.	Property type	Flat no.	Window ref.	Room use	Orientation				
R23	RESIDENTIAL		W29	KITCHEN	Northerly	30	7	30	7
R24	RESIDENTIAL		W30	KITCHEN	Northerly	30	7	30	7
R25	RESIDENTIAL		W31	LD	Northerly	32	7		
R25	RESIDENTIAL		W32	LD	Northerly	32	7		
R25	RESIDENTIAL		W33	LD	Southerly	33	28	56	29
R26	RESIDENTIAL		W34	BEDROOM	Southerly	57	25	57	25
R27	RESIDENTIAL		W35	BEDROOM	Southerly	60	25	60	25
R28	RESIDENTIAL		W36	LD	Southerly	36	28	36	28
R29	RESIDENTIAL		W37	BEDROOM	Southerly	59	25	59	25
R30	RESIDENTIAL		W38	LD	Southerly	29	24		
R30	RESIDENTIAL		W39	LD	Southerly	0	0	29	24
R31	RESIDENTIAL		W40	BEDROOM	Southerly	60	25	60	25
R32	RESIDENTIAL		W41	BEDROOM	Southerly	60	25	60	25
Block C									
Gnd Floor									
R1	RESIDENTIAL		W1	LD	Northerly	23	1		
R1	RESIDENTIAL		W2	LD	Northerly	18	1	24	1
R2	RESIDENTIAL		W3	BEDROOM	Northerly	6	0	6	0
R3	RESIDENTIAL		W4	LKD	Northerly	7	0		
R3	RESIDENTIAL		W8	LKD	Southerly	37	14	44	14
R4	RESIDENTIAL		W5	BEDROOM	Northerly	5	0	5	0
R5	RESIDENTIAL		W6	BEDROOM	Southerly	29	22	29	22
R6	RESIDENTIAL		W9	BEDROOM	Southerly	12	10	12	10
R7	RESIDENTIAL		W10	BEDROOM	Southerly	25	5	25	5
1st Floor									
R1	RESIDENTIAL		W1	BEDROOM	Northerly	27	3	27	3
R2	RESIDENTIAL		W2	BEDROOM	Northerly	20	2	20	2
R3	RESIDENTIAL		W3	BEDROOM	Northerly	6	0	6	0
R4	RESIDENTIAL		W4	BEDROOM	Northerly	6	0	6	0
R5	RESIDENTIAL		W5	BEDROOM	Northerly	6	0	6	0

*NOTES: 'APSH' = annual probable sunlight hours, which means the long term average of the total number of hours during the year in which direct sunlight reaches the unobstructed ground.

TABLE P9
ANNUAL PROBABLE SUNLIGHT HOURS (APSH)

05/04/2019

WITHIN PROPOSED ACCOMMODATION

PROPERTY						WINDOW		ROOM	
						ANNUAL SUNLIGHT	WINTER SUNLIGHT	ANNUAL SUNLIGHT	WINTER SUNLIGHT
Room ref.	Property type	Flat no.	Window ref.	Room use	Orientation	Proposed (% APSH)	Proposed (% APSH)	Proposed (% APSH)	Proposed (% APSH)
R6	RESIDENTIAL		W6	LKD	Southerly	23	19		
R6	RESIDENTIAL		W7	LKD	Southerly	28	22		
R6	RESIDENTIAL		W8	LKD	Southerly	44	16	55	23
R7	RESIDENTIAL		W9	BEDROOM	Southerly	36	12	36	12
R8	RESIDENTIAL		W10	LKD	Southerly	19	10		
R8	RESIDENTIAL		W11	LKD	Southerly	29	5	41	11
R9	RESIDENTIAL		W12	LKD	Southerly	17	8		
R9	RESIDENTIAL		W13	LKD	Southerly	32	4	39	9
R10	RESIDENTIAL		W14	BEDROOM	Southerly	35	5	35	5
R11	RESIDENTIAL		W15	BEDROOM	Southerly	36	5	36	5
R12	RESIDENTIAL		W16	LKD	Southerly	30	4		
R12	RESIDENTIAL		W17	LKD	Southerly	15	4		
R12	RESIDENTIAL		W18	LKD	Southerly	35	3	41	7

*NOTES: 'APSH' = annual probable sunlight hours, which means the long term average of the total number of hours during the year in which direct sunlight reaches the unobstructed ground.

APPENDIX D

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LAYOUT PLANS WITH ADF RESULTS

DRAWING NOS. ROL00143_02_401 TO 403

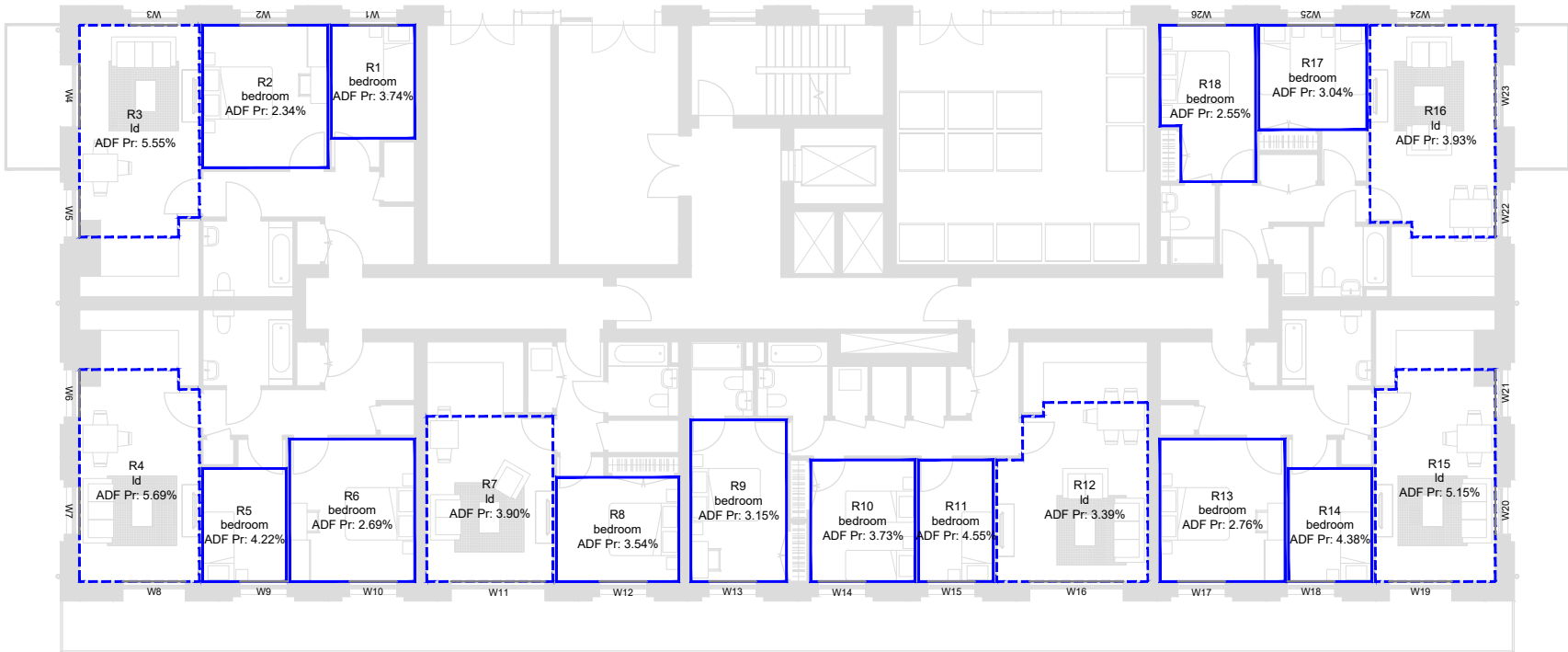
LEGEND:

- Room Layout from Plan/ Inspection
- Room Layout - Notional

SOURCES OF INFORMATION:

EXISTING, SURROUNDING & ANALYSED BUILDINGS
COLLADO COLLINS ARCHITECTS
Received on 13/03/19
Site and aerial photos.
PROPOSED BUILDINGS
COLLADO COLLINS ARCHITECTS
Received on 01/04/19

GROUND



1ST FLOOR



0m 2m 4m 6m 8m 10m

REV	DESCRIPTION	DATE
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CLIENT: DANESCROFT (KENAVON DRIVE PROJECT MANAGEMENT) LLP

PROJECT TITLE: GAS HOLDER SITE AT ALEXANDER TURNER CLOSE READING

SCHEME REF: SCHEME RECEIVED: 01/04/19

DRAWING TITLE: AVERAGE DAYLIGHT FACTOR INTERNAL FLOOR LAYOUTS BLOCK A

MODELLED BY: / DRAWN BY: BS DATE: 05/04/19 SCALE: 1:200 A3

PROJECT No: RELEASE No: VERSION No: DRAWING No:

ROL00143_R02_V01_401-01

Daylight & Sunlight



 Room Layout from Plan/ Inspection

 Room Layout - Notional

EXISTING, SURROUNDING & ANALYSED BUILDINGS

COLLADO COLLINS ARCHITECTS
Received on 13/03/19

Site and aerial photos.

PROPOSED BUILDINGS
COLLADO COLLINS ARCHITECTS
 Received on 01/04/19

REV	DESCRIPTION		DATE
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SCHEME REF:	SCHEME RECEIVED: 01/04/19		
DRAWING TITLE:	AVERAGE DAYLIGHT FACTOR INTERNAL FLOOR LAYOUTS BLOCK A		
MODELLED BY: / DRAWN BY	DATE:	SCALE:	A3
BS	05/04/19	1:200	
PROJECT No:	RELEASE No:	VERSION No:	DRAWING No:
ROL00143_R02_V01			401-02
Daylight & Sunlight			

LEGEND:

- Room Layout from Plan/ Inspection
- Room Layout - Notional

SOURCES OF INFORMATION:

EXISTING, SURROUNDING & ANALYSED BUILDINGS

COLLADO COLLINS ARCHITECTS
Received on 13/03/19

Site and aerial photos.

PROPOSED BUILDINGS

COLLADO COLLINS ARCHITECTS
Received on 01/04/19

GROUND

1ST FLOOR



0m 2m 4m 6m 8m 10m

REV	DESCRIPTION	DATE
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DRAWING TITLE: AVERAGE DAYLIGHT FACTOR INTERNAL FLOOR LAYOUTS BLOCK B

MODELLED BY:/ DRAWN BY BS DATE: 05/04/19 SCALE: 1:200 A3

PROJECT No: RELEASE No: VERSION No: DRAWING No:

ROL00143_R02_V01_402-01

Daylight & Sunlight

LEGEND:

- Room Layout from Plan/ Inspection
- Room Layout - Notional

SOURCES OF INFORMATION:

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COLLADO COLLINS ARCHITECTS
Received on 13/03/19
Site and aerial photos.
PROPOSED BUILDINGS
COLLADO COLLINS ARCHITECTS
Received on 01/04/19

3RD FLOOR



5TH FLOOR



0m 2m 4m 6m 8m 10m

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DRAWING TITLE: AVERAGE DAYLIGHT FACTOR INTERNAL FLOOR LAYOUTS BLOCK B

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PROJECT No: RELEASE No: VERSION No: DRAWING No:

ROL00143_R02_V01_402-02

Daylight & Sunlight

LEGEND:

- Room Layout from Plan/ Inspection
- Room Layout - Notional

SOURCES OF INFORMATION:

EXISTING, SURROUNDING & ANALYSED BUILDINGS
COLLADO COLLINS ARCHITECTS
Received on 13/03/19
Site and aerial photos.
PROPOSED BUILDINGS
COLLADO COLLINS ARCHITECTS
Received on 01/04/19

GROUND

1ST FLOOR



0m 1m 2m 3m 4m 5m 6m

REV	DESCRIPTION	DATE
-----	-------------	------

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PROJECT TITLE: GAS HOLDER SITE AT ALEXANDER TURNER CLOSE READING

SCHEME REF: SCHEME RECEIVED: 01/04/19

DRAWING TITLE: AVERAGE DAYLIGHT FACTOR INTERNAL FLOOR LAYOUTS BLOCK C

MODELLED BY: / DRAWN BY: BS DATE: 05/04/19 SCALE: 1:125 A3

PROJECT No: RELEASE No: VERSION No: DRAWING No:

ROL00143_R02_V01_403-01

Daylight & Sunlight



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