INTERNAL ILLUMINANCE ANALYSIS

in connection with the proposed redevelopment at

67-71 HIGH STREET HAMPTON HILL TW12 1NH

Prepared by: **Richard Staig** *BSc* **MRICS**
Chartered Building Surveyors
30 Red Lion Street
Richmond
TW9 1RB

Tel: 07710 066235

Ref: ROL.220195/DLR
*Wp ref:*DLR

CONTENTS

INTERNAL ILLUMINANCE ANALYSIS

in connection with the proposed redevelopment at

67-71 HIGH STREET HAMPTON HILL TW12 1NH

EXECUTIVE SUMMARY

1.1 This Report has been commissioned by Messrs. Atlas Commercial Property Investments Limited to accompany the application for *Prior Notification requirement under Part O of the GPDO for the change of use of offices (Class B1a)* for the conversation of Block C into residential flats. The proposals considered are those prepared by Messrs. Doe Architects.

1.2 Following the publication of the information paper entitled "*Site Layout planning for daylight and sunlight: A guide to good practice*" by the *Building Research Establishment* in 1991, the assessment of daylight and sunlight has been generally carried out in accordance with the criteria set by this publication and which is generally taken to be the accepted basis for such assessment and adopted by most Planning Authorities. This publication has been superseded by the *Second Edition* issued October 2011. The *BRE Second Edition 2011* does give numerical guidelines, but recommends that these should be interpreted flexibly.

1.3 Within Paragraph 1.6 of the *BRE Second Edition 2011* it states, *inter alia*, *'The advice given here (sic BRE Second Edition 2011) 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'.*

1.4 The criteria against which internal illuminance is considered is detailed within *Appendix C* of the *BRE Second Edition 2011* which is used in conjunction with *BS 8206-2 Code of practice for daylighting* and the *CIBSE Lighting Guide LG10 Daylighting and window design.*

1.5 The technical analysis, carried out in accordance with *Appendix C* of the *Building Research Establishment* Guidance *"Site Layout planning for daylight and sunlight: A guide to good practice" Second Edition* issued *October 2011,* confirms that the internal illuminance for the proposals accord with the guidance provided by *Appendix C.*

INTRODUCTION

2.1 This Report has been commissioned by Messrs. Atlas Commercial Property Investments Limited to accompany the application for *Prior Notification requirement under Part O of the GPDO for the change of use of offices (Class B1a)* for the conversation of Block C into residential flats. The proposals considered are those prepared by Messrs. Doe Architects.

2.2 I would confirm that I am a Chartered Building Surveyor working predominately in the field of rights of light including daylight and sunlight assessments. I have an extensive and highly specialised knowledge, in these areas having worked in the past for both Anstey Horne & Co. for five years and Schatunowski Brooks (formerly known as Michael Brooks Associates as it was when I joined, then known as GVA Schatunowski Brooks and now part of Avison Young) for three years, as well as Delva Patman Associates - now known as Delva Patman Redler LLP - for four years prior to joining in Partnership Dixon Payne in 2001. All are acknowledged Experts in these fields; I now act under my own banner.

2.3 I regularly provide Expert Witness advice in respect of Planning Applications in respect of daylight and sunlight at Planning Inquiries acting for both Appellants and Planning Authorities. I was consulted by the *Building Research Establishment* prior to the revision of their guidelines in 2011 and am part of the further consultation about further revisions currently being considered following the publication of *BS EN 17037:2018*.

2.4 The analysis and assessments are described in more detail in subsequent sections of this Report.

2.5 The proposals considered are for the refurbishment of the existing building to create 20nr residential units on four floors as shown on drawings prepared by Messrs. JDW Architects.

2.6 The technical analysis has used a 3D model of the property which has been constructed from the Architects' drawings with a 3D survey model of the surrounding contextual buildings provided by Messrs. ZMapping Limited.

INTERNAL ILLUMINANCE

3.1 Following the publication of the information paper entitled "*Site Layout planning for daylight and sunlight: A guide to good practice*" by the *Building Research Establishment* in 1991, the assessment of daylight and sunlight has been generally carried out in accordance with the criteria set by this publication and which is generally taken to be the accepted basis for such assessment and adopted by most Planning Authorities. This publication has been superseded by the *Second Edition* issued *October 2011*. The *BRE Second Edition 2011* does give numerical guidelines, but recommends that these should be interpreted flexibly. Paragraph *1.6* of the *BRE Second Edition 2011* states in entirety *'The guide is intended for building designers and their clients, consultants and planning officials. The advice given here (sic BRE Second Edition 2011) is not mandatory and the guide should not be 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. In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or on 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. Alternatively, where natural light is of special importance in a building, less obstruction and hence more sunlight and daylight may be deemed necessary. The calculation methods in Appendices A, B and G are entirely flexible in this regard. Appendix F gives advice on how to develop a consistent set of target values for skylight under such circumstances, and Appendix C shows how to relate these to interior daylighting requirements.*

3.2 The criteria against which internal illuminance is considered is detailed within *Appendix C* of the *BRE Second Edition 2011* which is used in conjunction with *BS 8206-2 Code of practice for daylighting* and the *CIBSE Lighting Guide LG10 Daylighting and window design*. The guide states that where a predominately daylit appearance is required, the *ADF* should be at least 5% or more if there is no supplementary electric lighting or 2% or more there is. In respect of kitchens, living rooms and bedrooms there are additional recommendations of 2%, 1.5% and 1% respectively. *BS8206-2* further advises that achieving 2% if in living room will give an improved daylight provision whilst 3% - 4% would improve the situation further.

3.3 For the detailed technical analysis, in accordance with the *BRE Second Edition 2011*, the 3D model as previously described was utilized and, using specialist computer programmes, calculated the quantum of daylight received to the proposed fenestration of property and individual flats calculated by way of Waldram analysis as detailed within *Appendix B* of the *BRE Second Edition 2011*.

3.4 By way of explanation, Percy J. Waldram invented the Waldram diagram as a method of showing on a 2d image the curved and three-dimensional view of the sky from a fixed point. The area of a Waldram diagram drawn to scale is 396cm² which represents the total amount of unobscured sky that can be seen from a vertical plane. The vertical edges of any obstructions are plotted as vertical lines on the diagrams by reference to their angle from the reference point. The head of any obstruction are plotted along the droop line corresponding to their altitudes above the horizontal measured in the section perpendicular to the reference point.

3.5 The *ADF* of a room is calculated using the following formula:-

$$ADF = \frac{TMAwTheta}{A(1-Rsq)}$$

T = Diffuse visible transmittance of the glazing; assumed 0.68 for clear double glazing
M = Maintenance factor 0.8
Aw = Area of glazing
A = Total surface area of room
R = Average reflectance; 0.5 for assumed light coloured surfaces
Theta = Vertical sky component of window in average daylight factor.

3.6 The detailed results are attached and provides that all units comply with the guidance of *Appendix C* in respect of internal illuminance.

CONCLUSION

4.1 Following the publication of the information paper entitled "*Site Layout planning for daylight and sunlight: A guide to good practice*" by the *Building Research Establishment* in 1991, the assessment of daylight and sunlight has been generally carried out in accordance with the criteria set by this publication and which is generally taken to be the accepted basis for such assessment and adopted by most Planning Authorities. This publication has been superseded by the *Second Edition* issued *October 2011*. The *BRE Second Edition 2011* does give numerical guidelines, but recommends that these should be interpreted flexibly. Paragraph *1.6* of the *BRE Second Edition 2011* states in entirety *'The guide is intended for building designers and their clients, consultants and planning officials. The advice given here (sic BRE Second Edition 2011) is not mandatory and the guide should not be 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. In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or on 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. Alternatively, where natural light is of special importance in a building, less obstruction and hence more sunlight and daylight may be deemed necessary. The calculation methods in Appendices A, B and G are entirely flexible in this regard. Appendix F gives advice on how to develop a consistent set of target values for skylight under such circumstances, and Appendix C shows how to relate these to interior daylighting requirements.*

4.2 The criteria against which internal illuminance is considered is detailed within *Appendix C* of the *BRE Second Edition 2011* which is used in conjunction with *BS 8206-2 Code of practice for daylighting* and the *CIBSE Lighting Guide LG10 Daylighting and window design* and the technical analysis confirms that the internal illuminances of the proposed residential dwellings comply with that guidance.

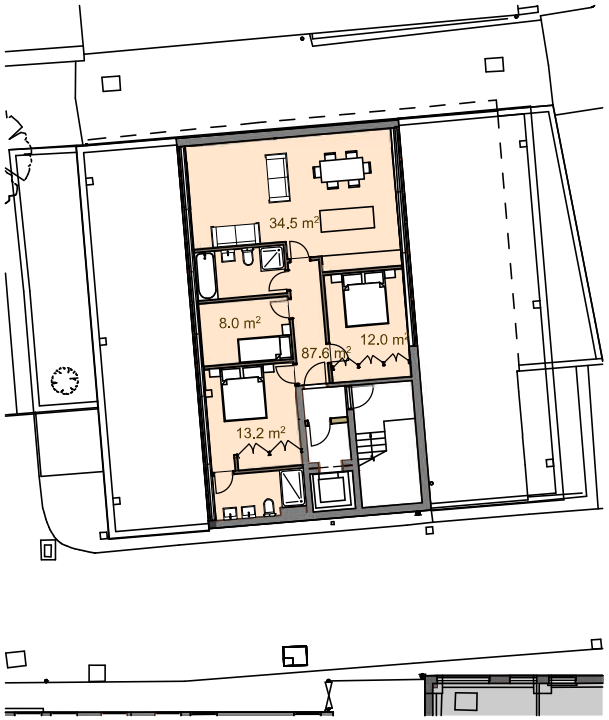
March 25, 2022

Richard Staig *BSc* **MRICS** T. 07710 066235
Chartered Building Surveyor
30 Red Lion Street
Richmond
TW9 1RB

APPENDIX – LAYOUT DRAWING & RESULTS

1 GROUND FLOOR 1:200

2 1ST FLOOR 1:200



3 TOP FLOOR 1:200

0 10 metres

ISSUE - FOR DISCUSSION

CHARLES DOE ARCHITECTS
3 The Square
Richmond
Surrey TW9 1DY
Tel: +44 (0) 20 8948 4200
Fax: +44 (0) 20 8948 4201

OFFICE AND RESIDENTIAL
63-71 HIGH STREET
HAMPTON HILL

Title: BUILDING C - 3 STORY PD OPTION A

Scale: 1:200 @ A3

Date: FEBRUARY 2022

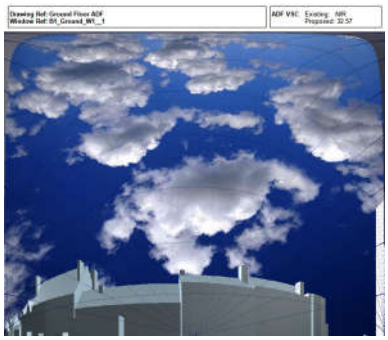
Project: 1452

Drawing No.: SK-125

BRE SECOND EDITION 2011
67-71 HIGH STREET HAMPTON HILL TW12 1NH
INTERNAL ILLUMINANCE

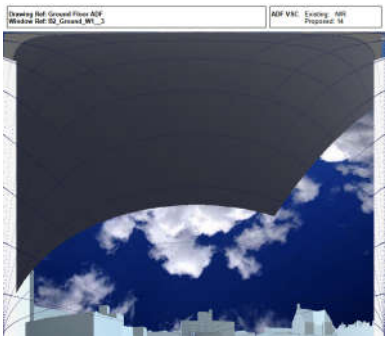
Building Name	Floor Name	Room Name	Room Use	Window Ref	Glass Transmittance	Glazed Area	Clear Sky Pr	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Pr	Reqd Val	Meets BRE Criteria
B1	Ground	R1	LKD	W1	0.68	6.104541	72.890135	114.208751	0.5	1	3.249809		
											3.249809	2	YES
B1	Ground	R2	Bedroom	W2	0.68	6.478601	74.049836	42.266633	0.5	1	9.467671		
B1	Ground	R2	Bedroom	W1	0.68	6.104541	74.399732	42.266633	0.5	1	8.963182		
											18.430854	1	YES
B1	Ground	R3	Bedroom	W2	0.68	6.478601	72.691401	59.472717	0.5	1	6.605139		
											6.605139	1	YES
B2	Ground	R1	LKD	W2	0.68	10.771082	35.415898	124.088812	0.5	1	2.56425		
											2.56425	2	YES
B2	Ground	R2	Bedroom	W2	0.68	10.771082	36.569244	60.954256	0.5	1	5.390223		
B2	Ground	R2	Bedroom	W1	0.68	1.206897	42.670402	60.954256	0.5	1	0.704739		
											6.094962	1	YES
B3	Ground	R1	LKD	W1	0.68	1.916171	34.56577	124.647565	0.5	1	0.443233		
B3	Ground	R1	LKD	W2	0.68	10.771082	36.569244	124.647565	0.5	1	2.635888		
											3.079121	2	YES
B3	Ground	R2	Bedroom	W4	0.68	4.531264	45.381447	54.04067	0.5	1	3.174041		
B3	Ground	R2	Bedroom	W3	0.68	2.758295	33.920223	54.04067	0.5	1	1.444156		
B3	Ground	R2	Bedroom	W2	0.68	0.911438	33.771181	54.04067	0.5	1	0.475103		
											5.0933	1	YES
B1	First	R1	LKD	W1	0.68	6.081641	84.002473	106.76288	0.5	1	3.991425		
											3.991425	2	YES
B1	First	R2	Bedroom	W2	0.68	5.947996	84.493642	46.968754	0.5	1	8.925266		
											8.925266	1	YES
B1	First	R3	Bedroom	W1	0.68	6.311139	84.25574	66.359367	0.5	1	6.684063		
B1	First	R3	Bedroom	W2	0.68	5.947996	84.496644	66.359367	0.5	1	6.317473		
											13.001535	1	YES
B2	First	R1	LKD	W1	0.68	6.311139	84.281526	119.839479	0.5	1	3.702335		
											3.702335	2	YES
B2	First	R2	Bedroom	W2-L	0.68	9.707786	83.142708	71.140896	0.5	0.15	1.419553		
B2	First	R2	Bedroom	W2-U	0.68	20.293764	84.865419	71.140896	0.5	1	20.193403		
											21.612956	1	YES
B3	First	R1	LKD	W2-L	0.68	9.712768	83.143057	129.810328	0.5	0.15	0.778371		
B3	First	R1	LKD	W2-U	0.68	20.288781	84.865419	129.810328	0.5	1	11.06402		
											11.842391	2	YES
B3	First	R2	Bedroom	W2-L	0.68	9.719045	83.130495	60.442979	0.5	0.15	1.672495		
B3	First	R2	Bedroom	W2-U	0.68	20.282504	84.857118	60.442979	0.5	1	23.751961		
											25.424456	1	YES
B3	First	R3	Bedroom	W2-L	0.68	9.701557	83.142184	71.262795	0.5	0.15	1.416207		
B3	First	R3	Bedroom	W2-U	0.68	20.299992	84.865419	71.262795	0.5	1	20.165048		
											21.581255	1	YES
B1	Second	R1	LKD	W1	0.68	10.750936	83.099267	136.948966	0.5	1	5.44152		
B1	Second	R1	LKD	W2	0.68	18.392622	86.374296	136.948966	0.5	1	9.676201		
											15.11772	1	YES
B1	Second	R2	Bedroom	W1	0.68	10.750936	86.315197	53.846409	0.5	1	14.375147		
											14.375147	2	YES
B1	Second	R3	Bedroom	W2	0.68	18.392622	83.744592	45.864197	0.5	1	28.013159		
											28.013159	1	YES
B1	Second	R4	Bedroom	W2	0.68	18.392622	86.374296	61.375139	0.5	1	21.59092		
											21.59092	1	YES

BRE SECOND EDITION 2011
67-71 HIGH STREET HAMPTON HILL W12 1NH
ADF WALDRAM DIAGRAMS

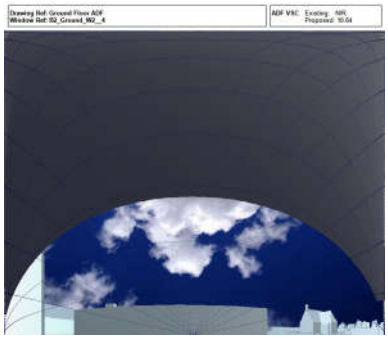


ADFVSC-B1_Ground_W1__1-C

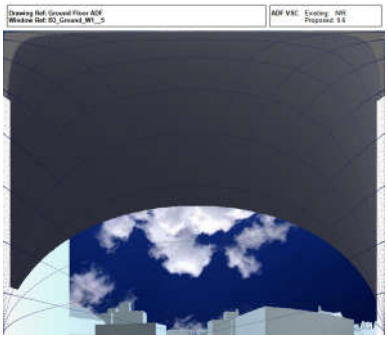
ADFVSC-B1_Ground_W2__2-C



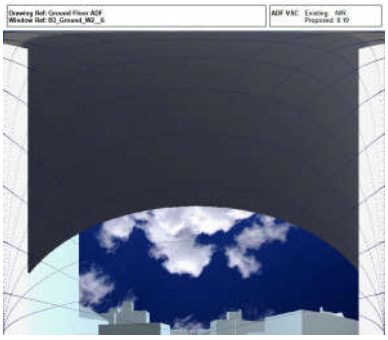
ADFVSC-B2_Ground_W1__3-C



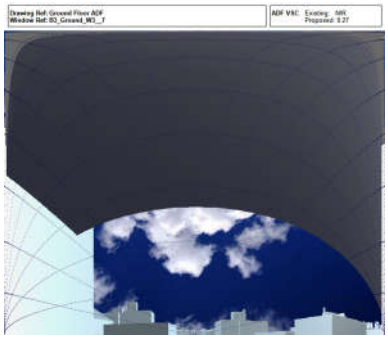
ADFVSC-B2_Ground_W2__4-C



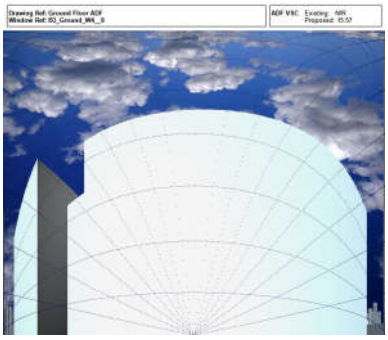
ADFVSC-B3_Ground_W1__5-C



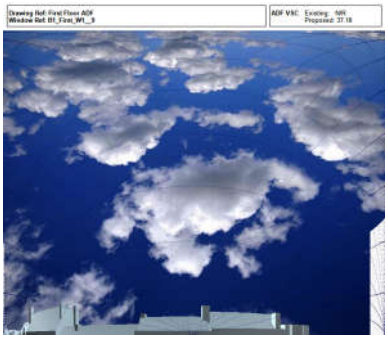
ADFVSC-B3_Ground_W2__6-C



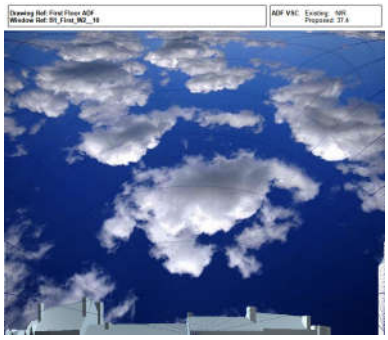
ADFVSC-B3_Ground_W3__7-C



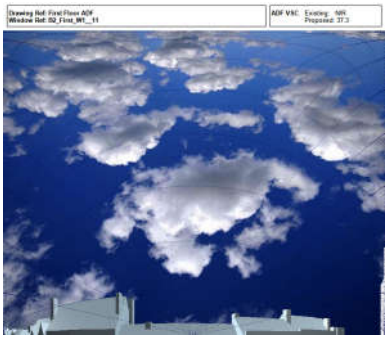
ADFVSC-B3_Ground_W4__8-C



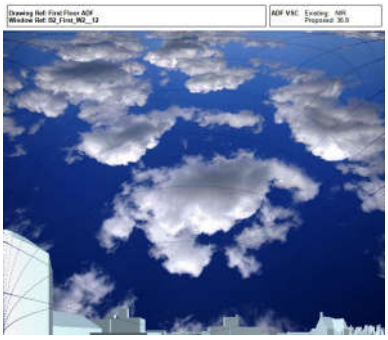
ADFVSC-B1_First_W1__9-C



ADFVSC-B1_First_W2__10-C

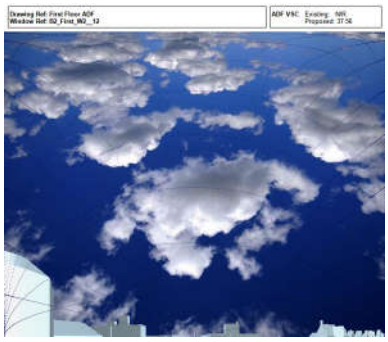


ADFVSC-B2_First_W1__11-C



ADFVSC-B2_First_W2__12-B

BRE SECOND EDITION 2011
67-71 HIGH STREET HAMPTON HILL W12 1NH
ADF WALDRAM DIAGRAMS



ADFVSC-B2_First_W2__12-U

ADFVSC-B1_Second_W1__13-C

ADFVSC-B1_Second_W2__14-C