

Daylighting Impact Assessment

Garrard House, Reading

Date:	9/10/2015
Revision:	-
Prepared By:	Nick Devlin
Project Ref:	1427/ND

Table of Contents

1.0	Introduction	1
1.1	Site Context.....	1
1.2	Planning Policy.....	2
1.3	Conclusion.....	3
2.0	BRE Guidelines.....	4
2.1	Daylight.....	4
2.1.1	Vertical Sky Component	5
2.1.2	No Sky Line	5
2.1.3	Average Daylight Factor	5
2.2	Sunlight.....	6
2.2.1	Annual Probable Sunlight Hours	6
3.0	Reference Windows.....	7
4.0	Analysis Results.....	8
4.1	37 - 41 Garrard Street	8
4.2	17-27 Station Approach	8
4.3	Icon House	9
4.4	Projection East & West	9
4.5	Garrard House Proposals.....	10
5.0	Appendix 1 - Glossary	11
6.0	Appendix 2 – Site Context & Model	12
7.0	Appendix 3 – Window Reference Locations	14
8.0	Appendix 4 – VSC Results	18
9.0	Appendix 5 – Garrard House Results.....	21
10.0	Appendix 6 – Icon / Projection No Sky Line.....	23

1.0 Introduction

This daylighting assessment has been prepared by Fabric Building Physics Ltd to assess any daylighting impact of the proposed new development at Garrard House, Reading. Specifically, Fabric has been appointed to undertake an assessment of the internal day-lighting within the proposed development and ensure that any impact of the development proposals on adjacent properties is within acceptable limits as defined by BRE Guide 209 – Site Layout for Sunlight and Daylight 2011.

This analysis completed for this report is has been derived from a 3d computer model compiled from both a Z-mapping 3d model and the architect's drawings.

There have been a number of recent planning applications within the near vicinity of the development proposals. In order to assess the cumulative impact of these various applications, the alterations to Thames Tower and the Station Hill proposals have been included in the analysis.

1.1 Site Context

The development site is located within Reading town centre. The existing building occupies a rectilinear plot bounded by Garrard Street to the north, Merchants Place to the west and an access road to the east. Both Garrard House and 37-41 Station Approach and 29-35 Station Approach are currently unoccupied.

The development proposals are for the provision of an additional 2.5 storeys of residential accommodation to be construction at the existing roof level of the existing Garrard House. The buildings in the immediate surroundings are between 6 and 10 storeys tall. Two multi-storey carparks are located to the west and northwest of the development site, which form part of the Station Hill development.

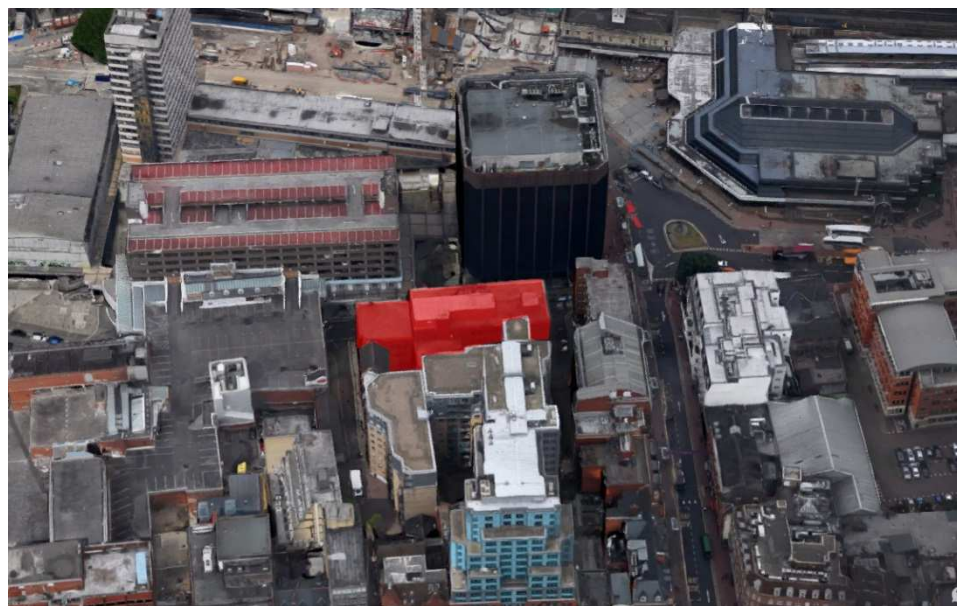


Figure 1: Aerial View of Site Location

1.2 Planning Policy

The Reading Borough Council planning applications checklist (July 2013) states a requirement for a Sunlight and Daylight Assessment for all applications involving:

- Buildings exceeding four storeys in height where adjoining other developed land or public open spaces,
- Where proposed buildings or extensions could lead to overshadowing of other
- proposed buildings or spaces within the same development site
- Where the application site is itself subject to significant shading from adjoining buildings or trees.

Policy CS7: Design and the Public Realm

All development must be of high design quality that maintains and enhances the character and appearance of the area of Reading in which it is located. The various components of development form, including: -

- Layout: urban structure and urban grain;
- Landscape;
- Density and mix;
- Scale: height and massing; and
- Architectural detail and materials.

Will be assessed to ensure that the development proposed makes a positive contribution to the following urban design objectives: -

- Character - a place with its own identity and sense of place
- Continuity and enclosure
- Quality of the public realm
- Ease of movement and permeability
- Legibility - clear image and easy to understand
- Adaptability – capable of adaptation over time
- Diversity – meets a wide range of needs.

Developments will also be assessed to ensure that they: -

- Respond positively to their local context and create or reinforce local character and distinctiveness, including protecting and enhancing the historic environment of the Borough and providing value to the public realm;
- Create safe and accessible environments where crime and disorder or fear of crime does not undermine quality of life or community cohesion;

Address the needs of all in society and are accessible, usable and easy to understand by them and are visually attractive as a result of good high quality

built forms and spaces, the inclusion of public art and appropriate materials and landscaping.

Reading Borough Council: Sites & Detailed Policies Document (Adopted Oct 2012) Policy DM4: Safeguarding Amenity

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;
- Visual dominance and overbearing effects of a development;
- Noise and disturbance;
- Artificial lighting;
- Vibration;
- Dust and fumes;
- Smell; or
- Crime and safety.

The position of habitable rooms, windows and outdoor living spaces will be particularly important. A back-to-back distance of 20 metres between dwellings is usually appropriate, although the circumstances on individual sites may enable dwellings to be closer without a detrimental effect on privacy.

As well as immediate impacts, other aspects to which this policy applies will include matters such as hours of operation of businesses, and effects of traffic movements, particularly of heavy goods vehicles (HGVs). Proposals which would generate regular movements of HGVs on residential roads will not be acceptable.

Where an otherwise acceptable development could change its character to a use that would have a greater impact on amenity without needing planning permission, conditions will be applied to restrict such changes.

1.3 Conclusion

As can be expected, the development proposals are predicted to reduce the skylight access at a number of the adjacent buildings. However, the majority of these adjacent buildings are currently either unoccupied or contain commercial premises which are less sensitive to reductions in internal daylight potential.

However, in each case, the resultant predicted VSC results created by the development proposals are no worse than the appropriate target / threshold values that defined in accordance with Appendix F of the BRE guidance document. It is therefore contended that given the location, context and massing of the development proposals, any negative impact on the existing skylight levels at adjacent buildings is within acceptable limits.

2.0 BRE Guidelines

BRE report 209 – Site Layout Planning for Sunlight and Daylight (2011) defines the criteria and methodology for the assessment of daylight, sunlight and overshadowing within new and existing developments. The purpose of the guide is to provide a framework to ensure adequate daylighting is provided in new development and minimise the impact of new development on adjacent existing buildings.

The handbook provides guideline standards to be maintained in existing buildings and a simplified methodology to determine whether any negative impact is 'material' or within acceptable limits. The handbook discusses the limits of applicability of the defined standards, with particular emphasis on the need to interpret the guideline standards flexibly subject to the site context, constraints and design requirements;

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. Although it gives numerical guidelines, these should be interpreted flexibly because 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. (Page 1, Paragraph 1.6)

Note that numerical values given here are purely advisory. Different criteria may be used, based upon the requirements for daylighting in an area viewed against other site layout constraints. Another important issue is whether the existing building is itself a good neighbour, standing a reasonable distance from the boundary and taking no more than its fair share of light'. (Page 7, Paragraph 2.2.3)

2.1 Daylight

Where a proposed development does not subtend the 25° angle from a point 2m above ground level projected from an existing building, it can be concluded that the development proposals will not have a material impact on the existing daylighting levels and therefore no further analysis is required. This process is to be undertaken for all adjacent / potentially affected buildings.

Where proposed development does subtend the 25° line, the potential impact on existing buildings is assessed using Vertical Sky Component and No Sky Line calculations. The latter requires knowledge of the internal floorplan of the potentially affected building.

For new development, the BRE guidelines state:

Daylight provision in new rooms may be checked using the average daylight factor calculation. The ADF is a measure of the overall amount of daylight in a space... In housing, BS 8206 also gives minimum values of ADF of 2%

for kitchens, 1.5% for living rooms and 1% for bedrooms. (Page 7, Paragraph 2.2.3)

2.1.1 Vertical Sky Component

The Vertical Sky Component (VSC) is defined as:

This is the ratio of the direct sky illuminance falling on the vertical wall at a reference point (usually the centre of the window), to the simultaneous horizontal illuminance under an unobstructed sky. The standard CIE (Commission Internationale de L'Eclairage) overcast sky is used, and the ratio is expressed as a percentage.

This is the principle measurement of how much sky is visible from a vertical surface and is used to assess the impact of new development on adjacent properties. An unobstructed vertical surface can achieve a maximum VSC of 39.6%.

The BRE guidelines state that for a room to be able to continue to receive sufficient daylight, the windows should be capable of achieving a VSC of greater than 27 per cent. Furthermore, new development should seek to limit any reduction below this level to within 0.8 times the original value to ensure adequate daylighting potential is maintained.

2.1.2 No Sky Line

The no sky line / view of sky divides points on the working plane (0.85m above FFL for residential) which have and do not have a direct view of the sky. Areas located beyond the no-sky line will usually appear darker and more gloomy compared with the rest of the room. The BRE handbook states:

If, following construction of a new development, the no sky line moves so that the area of the existing room, which does received direct skylight, is reduced to less than 0.8 times its former value this will be noticeable to the occupants, and more of the room will appear poorly lit. This is also true if the no-sky line encroaches on key areas like kitchen sinks and worktops.

2.1.3 Average Daylight Factor

The Average Daylight Factor (ADF) is the ratio of illuminance achieved on a working plane in a room, relative to the unobstructed horizontal illuminance achieved outside. The CIE standard overcast sky is used and the ratio is expressed as a percentage

2.2 Sunlight

For access to direct sunlight, the BRE guidelines propose a single methodology, Annual Probable Sunlight Hours, to assess direct solar access for both existing and new build development. Separate criteria are defined for the assessment of direct sun in external open spaces.

2.2.1 Annual Probable Sunlight Hours

The BRE guidelines states that:

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

- *At least one main window wall faces within 90° of due south and*
- *The centre of at least one window to a main living room can receive 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months between 21 September and 21 March.*
- *Where groups of dwellings are planned, site layout design should aim to maximise the number of dwellings with a main living room that meets the above recommendations.*

The APSH assesses the likelihood of direct sunlight including the effects of cloud cover rather than relying solely on solar geometry. BR209 defines 'probable sunlight hours' as the total number of hours in the year that sun is expected to shine on unobstructed ground, allowing for average levels of cloud cover for the location in question based on historical climate data. APSH is measured at the window face and are calculated for each window using the sunlight availability indicators provided in BR 209 Appendix A for the latitude that most closely matches the site.

For existing adjacent dwellings, where a main window faces within 90 degrees of south and development proposals subtend the 25° line, there is potential for the existing sunlight amenity to be adversely affected. This will be the case if the centre of the window:

- *Receives less than 25% of APSH or less than 5% APSH between 21st September and 21 March and*
- *Receives less than 0.8 times its former sunlight hours during either period and*
- *Has a reduction in sunlight hours received over the whole year greater than 4% of APSH*

3.0 Reference Windows

Refer to Drawing 1427-010-012 in the Appendix for location of reference windows at the adjacent Projection East / West / Icon building. Window location references for the other buildings are included on the relevant results pages in the Appendix.

4.0 Analysis Results

4.1 37 - 41 Garrard Street

37-41 Garrard Street, also known as Thames Tower, is a currently unoccupied former commercial building. Planning permission was recently granted for the provision of additional floors at roof level and change of use to mixed use.

The VSC analysis has been completed for a sample number of windows on the south elevation, notably every alternate floor.

1. The results of the VSC analysis is detailed in the Appendix. The VSC analysis predicts reductions in excess of 20% of the existing value in 8 out of the 72 reference windows. These are all located in the bottom left corner of the south elevation.
2. These reductions are greater than the guideline thresholds detailed in BRE Report 209. However, the existing building at 37-41 Garrard Street is significantly taller than the existing or proposed roof extensions to Garrard House.
3. Therefore, in accordance with Appendix F of Site Layout Planning for Sunlight & Daylight, it is more appropriate use a 'mirror-image' of 37-41 Garrard Street to determine the appropriate acceptable VSC values. The BRE Guidance states:

A similar approach may be adopted in cases where an existing building has windows that are unusually close to the site boundary and taking more than their fair share of light... To ensure that new development matches the height and proportions of existing buildings, the VSC and APSH targets for these windows could be set to those for a 'mirror image' building of the same height and size, an equal distance away on the other side of the boundary. (Page 62, Appendix F, Paragraph F5).

4. On this basis, it can be seen that as the proposals at Garrard House are significantly lower than the existing building at 37-41 Garrard Street, the predicted VSC results are within acceptable limits.
5. On this basis it is contended that any impact on the existing building at 37-41 Garrard Street is within acceptable limits.

4.2 17-27 Station Approach

1. The existing and predicted Vertical Sky Component was assessed for 49 windows at rear of this block. These windows currently experience low

existing VSC values, due to their close proximity to the Projection East building directly opposite.

2. The development proposals are predicted to result in reductions to the existing VSC values no greater than 3% of their existing value. The full results are presented in the Appendix.
3. The windows are orientated more than 90 degrees from south and therefore it is not necessary to undertake an APSH assessment in this location.
4. It is therefore proposed that the reduction in skylight availability at the rear of 17-27 Station Approach is within acceptable limits given the site context.

4.3 Icon House

1. The results for Icon House are represented by columns A-H on drgs 010-012 in the Appendix and in the tables contained on drg 031. Window columns A-C do not face the development site.
2. The existing windows at Icon House are those located closest to the development site and are predicted therefore to experience greater reductions to the VSC than other buildings in the vicinity.
3. The VSC analysis indicates that only one window is predicted to experience a reduction demonstrably greater than 20% its' existing value.
4. The No Sky Line analysis included in the Appendix illustrates that the development proposals will have minimal impact on the location of the no sky line in all but the fifth floor of Icon House.
5. The resultant VSC for the existing windows are predicted to be consistent with the site context and density. The development proposals are of similar height to the existing Icon House building and is therefore considered to be within reasonable scale and massing in accordance with the methodology detailed in Appendix F of the BRE guidelines.

4.4 Projection East & West

1. The results for Projection East and West are represented by columns I-T on drgs 010-012 in the Appendix and in the tables contained on drg 031.
2. The VSC analysis indicates that only 3 windows are predicted to experience a reduction greater than 20% of their existing value. These are located at first and second floor.

3. The No Sky Line analysis included in the Appendix illustrates that the development proposals will have minimal impact on the location of the no sky line in all but the fifth floor.
4. The resultant VSC for the existing windows is predicted to be consistent with the site context and density in relation to a mirror image of Projection East and West buildings in accordance with Appendix F of the BRE guidelines. The development proposals are therefore considered to be within reasonable scale and massing.

4.5 Garrard House Proposals

1. The Average Daylight Factor (ADF) calculations for the proposed accommodation demonstrates that the majority of living / kitchen / dining rooms are predicted to achieve an ADF in excess of (the majority significantly in excess of) the BRE minimum value of 1.5% for living rooms and 2% for kitchens.
2. Where the glazing design includes a louvred panel over a window, this has not been included in the ADF calculations as a potential source of daylight. However, it is anticipated that the internal daylighting levels will be greater than predicted in the calculations.
3. It is therefore concluded that the internal daylighting conditions within the development proposals will meet or exceed the requirements detailed in the BRE guidance.

5.0 Appendix 1 - Glossary

Daylight

Visible part of the global solar radiation – includes sunlight and skylight components as described below.

Sunlight

Visible part of the solar radiation that reaches the Earth's surface directly as parallel rays after selective attenuation by the atmosphere. Note, this is sometimes known as beam radiation.

Skylight

Visible part of the solar spectrum that reaches the Earth's surface diffusely as a result of scattering by the Earth's atmosphere.

Obstruction Angle

The angular altitude of the top of an obstruction above the horizontal, measured from a given reference point in a vertical plane in a section drawn perpendicular to the vertical plane.

Annual Probable Sunlight Hours (APSH)

Long-term average of the total number of hours during the year that direct sunlight reaches a reference point. The reference point can be located on a horizontal or vertical surface. The APSH calculation includes the statistical likelihood of cloud cover in a specific location. It is therefore a more appropriate predictor of sunlight hours than shadow diagrams which do not consider cloud cover.

Vertical Sky Component (VSC)

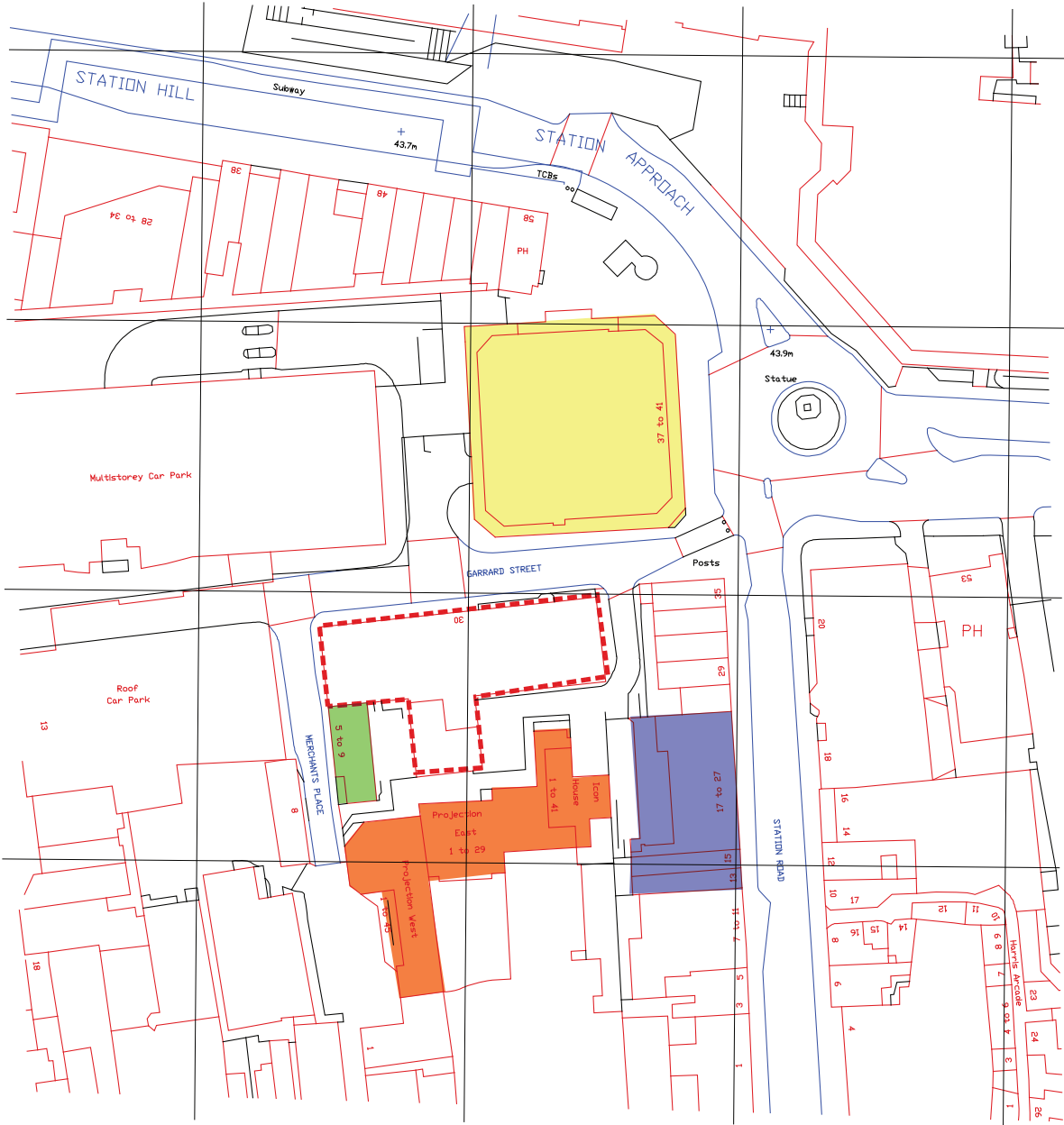
The ratio, expressed as a percentage, of that part of illuminance, at a point on a given vertical plane that is received directly from a standard overcast sky, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky. This is the principle measurement of how much sky is visible from a vertical surface and is used to assess the impact of new development on adjacent properties.

Visible Sky Angle θ (VSA)

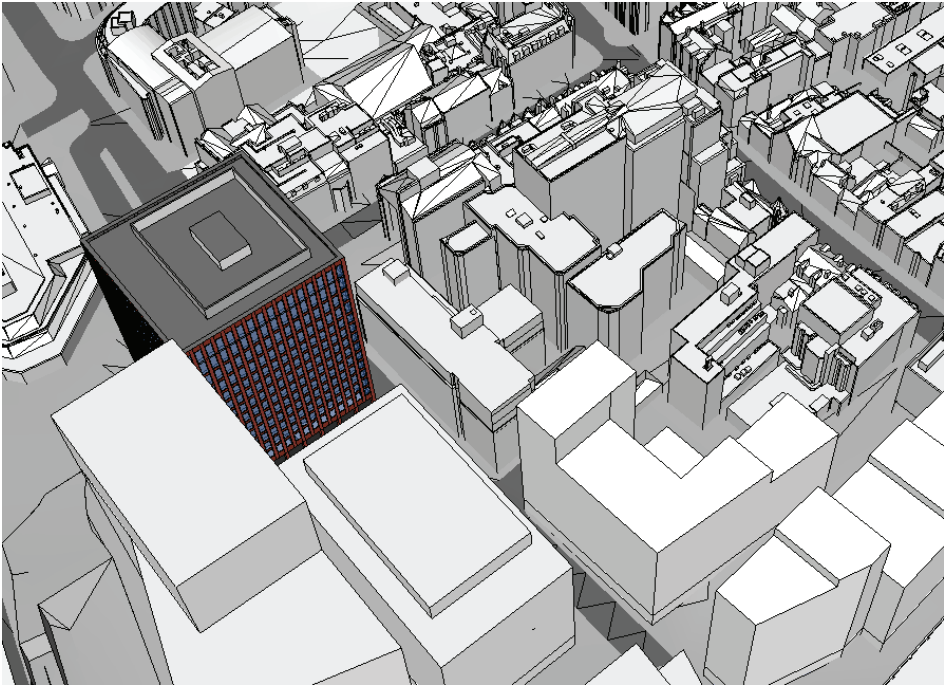
An angular measurement that results from deducting the obstruction angle from a right angle taken from a given reference point in a vertical plane. Ignoring the effects of shading by window reveals, the VSA is equal to 90° minus the Obstruction Angle.

6.0 Appendix 2 – Site Context & Model

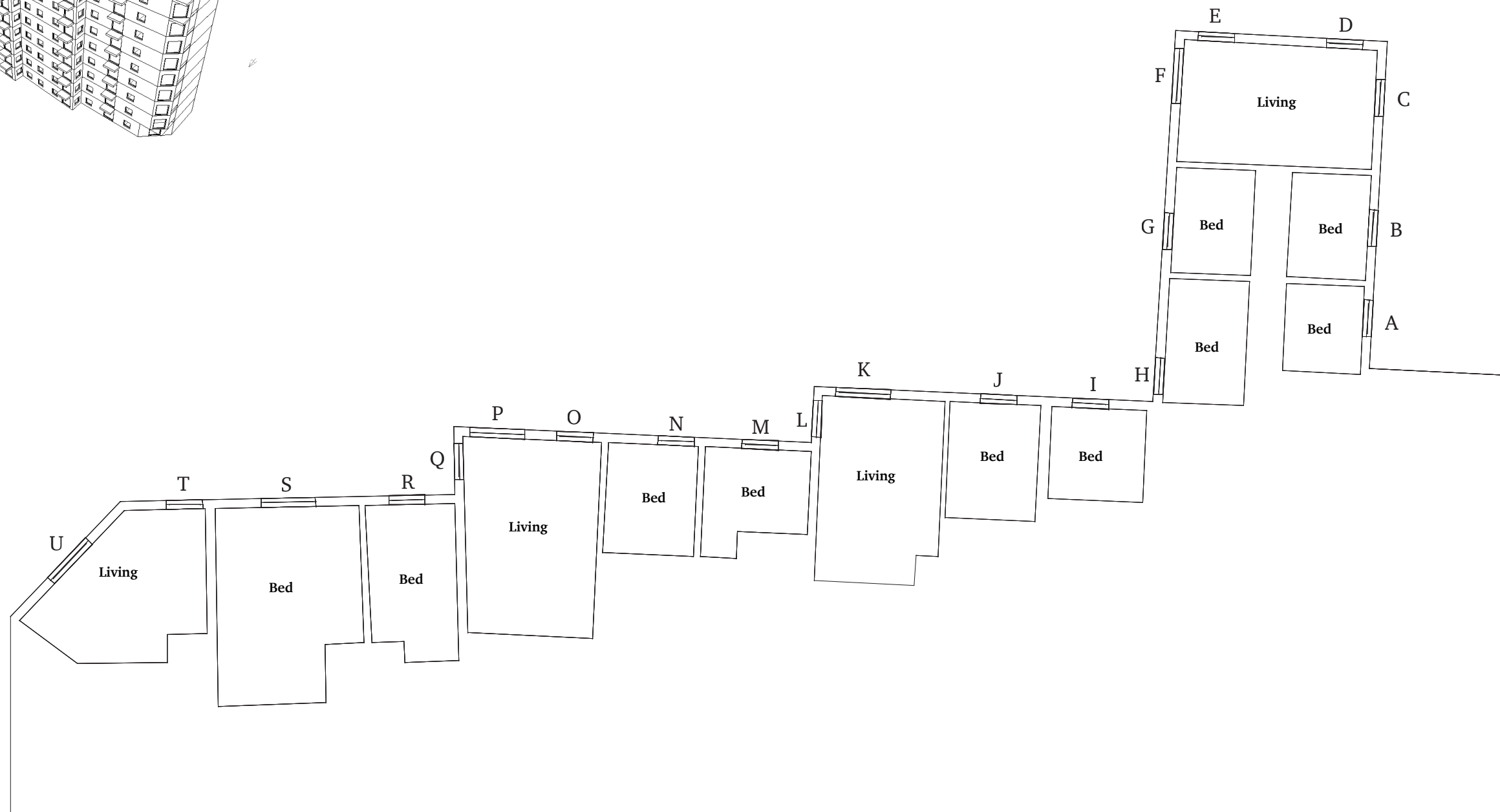
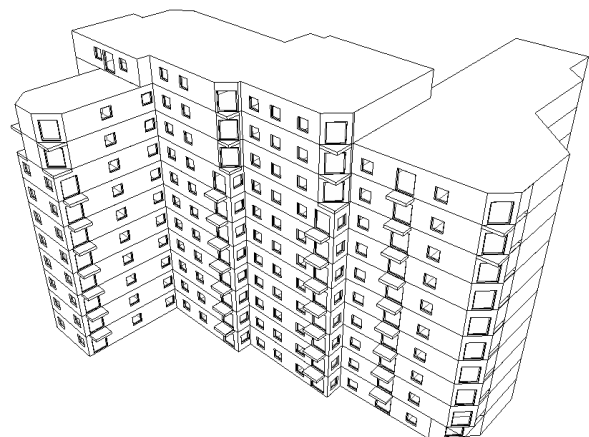
Site Location Plan



Existing Site Condition



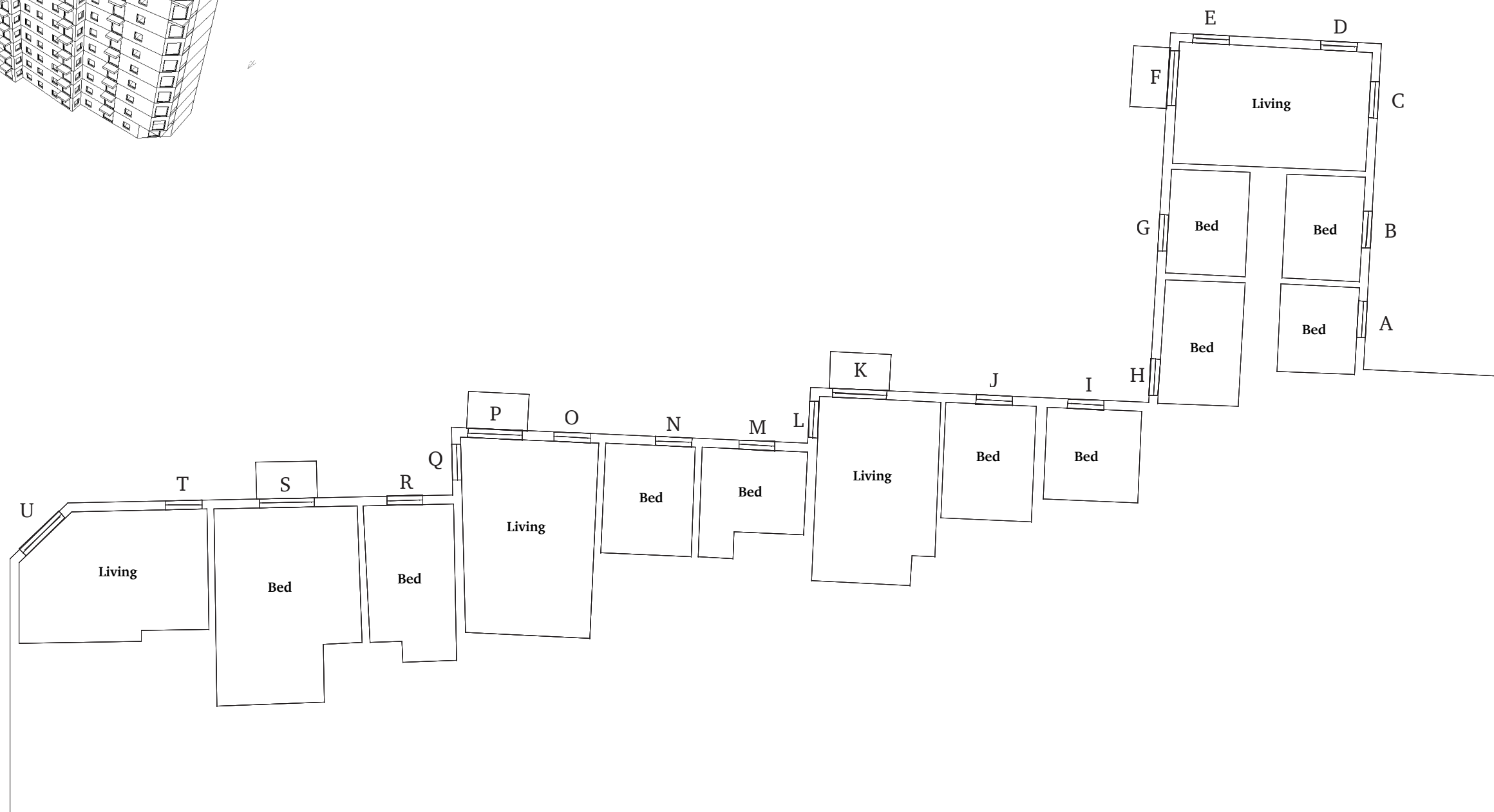
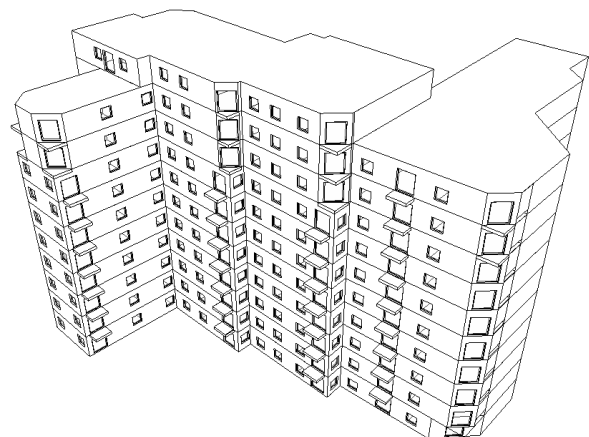
7.0 Appendix 3 – Window Reference Locations



Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabrichp.co.uk

fabric
BUILDING PHYSICS

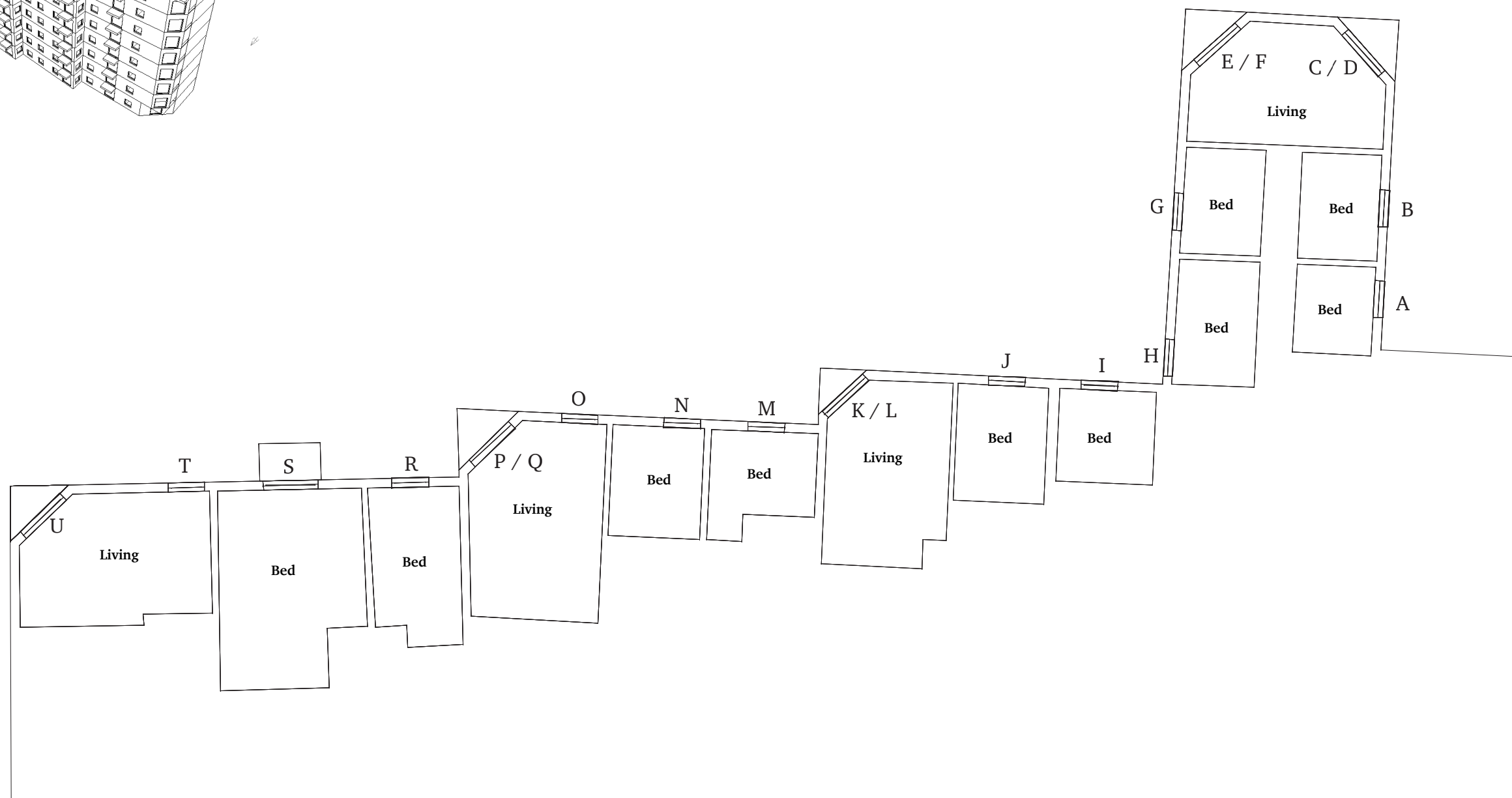
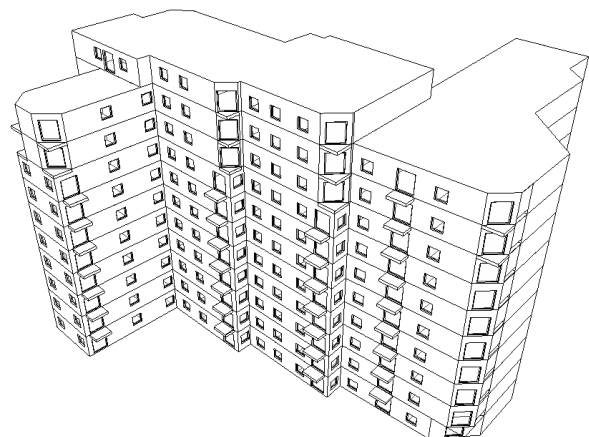
Project	
Garrard House, Reading	
Title	
Ground Floor Window ID / Projection East & West	
Drawing No:	
1427-010	
Scale	Date
NTS	08/10/2015



Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabrichp.co.uk

fabric
BUILDING PHYSICS

Project	
Garrard House, Reading	
Title	
1st-7th Floor Window ID / Projection East & West	
Drawing No:	
1427-011	
Scale	Date
NTS	08/10/2015



Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabrichp.co.uk

fabric
BUILDING PHYSICS

Project
Garrard House, Reading

Title
8th-10th Floor Window ID /
Projection East & West

Drawing No:
1427-012

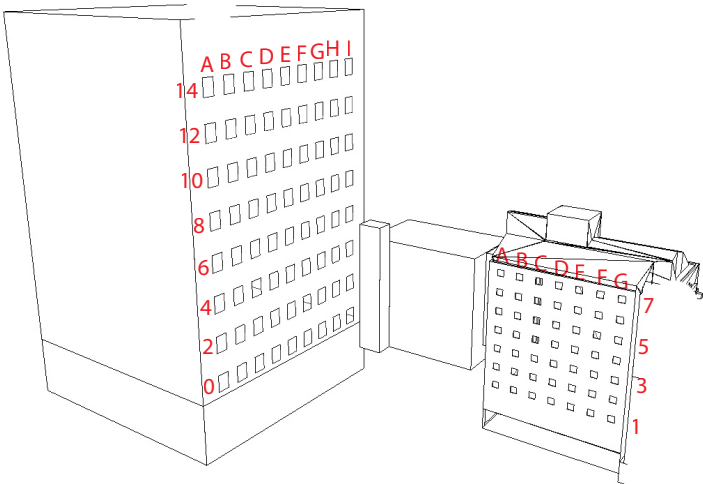
Scale
NTS

Date
08/10/2015

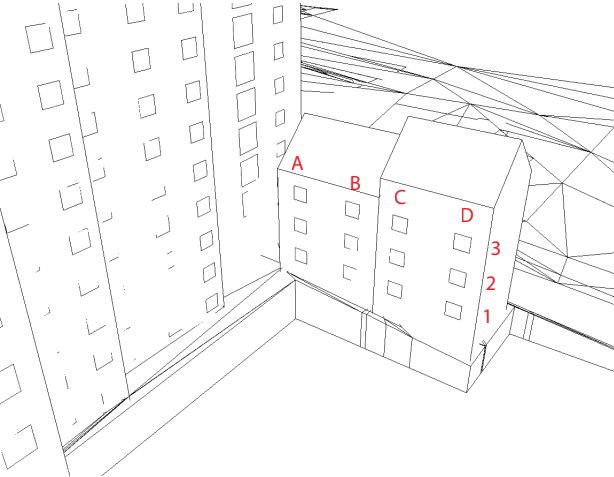
8.0 Appendix 4 – VSC Results

Existing Condition										Existing Condition										Existing Condition				
Floor	Thames Tower									Floor	17-27 Station Road							Floor	Merchants Place					
	A	B	C	D	E	F	G	H	I		A	B	C	D	E	F	G		A	B	C	D		
14	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6	7	6.47	10.69	12.13	6.16	12.77	6.62	7.64	3	9.83	9.81	10.22	7.98		
12	39.40	39.40	39.40	39.40	39.40	39.40	39.40	39.40	39.40	6	6.22	9.59	11.35	5.86	9.72	6.13	5.43	2	7.47	6.34	6.19	4.68		
10	38.75	38.85	38.80	38.80	38.80	38.80	38.80	38.80	38.80	5	5.76	8.42	10.16	4.85	7.35	4.71	4.02	1	5.65	4.33	3.88	2.91		
8	38.17	38.35	38.40	38.24	38.33	38.32	38.30	38.27	38.29	4	5.40	7.26	8.52	4.30	5.75	4.08	3.08	Proposed Condition						
6	36.96	37.12	37.00	36.99	36.70	36.58	36.65	36.70	36.60	3	4.97	5.87	6.86	3.68	4.39	3.19	2.35	Floor	Merchants Place					
4	31.88	31.60	31.20	30.60	30.30	28.50	26.40	23.90	23.30	2	4.66	5.07	5.62	3.42	3.69	2.79	1.93		A	B	C	D		
2	19.34	18.90	18.70	18.60	19.90	19.30	17.00	13.10	11.50	1	3.73	4.17	4.39	2.70	2.75	2.17	1.47	3	9.47	8.76	7.76	5.57		
0	10.30	10.18	9.99	10.60	12.30	12.80	11.40	7.90	6.90	Proposed Condition					Proposed Condition					2	7.06	5.25	4.88	3.60
Floor	Window Column									Floor	17-27 Station Road							Ratio	Merchants Place					
	A	B	C	D	E	F	G	H	I		A	B	C	D	E	F	Q		A	B	C	D		
14	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6	7	6.47	10.60	12.13	6.16	12.77	6.62	7.64	Floor	Merchants Place					
12	39.40	39.40	39.40	39.40	39.40	39.40	39.40	39.40	39.40	6	5.97	9.57	11.30	5.85	9.72	6.13	5.43		A	B	C	D		
10	38.75	38.85	38.80	38.80	38.80	38.80	38.80	38.80	38.80	5	5.56	8.35	10.12	4.85	7.35	4.71	4.02	3	0.96	0.89	0.76	0.70		
8	38.17	38.35	38.40	38.24	38.33	38.32	38.30	38.27	38.29	4	5.18	7.15	8.43	4.27	5.74	4.08	3.08	2	0.95	0.83	0.79	0.77		
6	36.50	36.75	36.66	36.60	36.55	36.42	36.55	36.66	36.64	3	4.81	5.82	6.84	3.67	4.39	3.19	2.35	1	0.92	0.83	0.80	0.82		
4	24.05	24.04	24.13	24.37	26.06	25.42	24.29	22.24	22.47	2	4.51	4.97	5.56	3.40	3.67	2.78	1.93							
2	13.50	13.36	13.73	14.60	16.99	16.85	15.24	11.63	10.71	1	3.63	4.14	4.39	2.70	2.75	2.17	1.47							
0	8.06	8.13	8.20	9.20	11.20	11.77	10.51	7.02	6.45															
Ratio										Ratio														
Floor	Window Column									Floor	17-27 Station Road							Floor	Merchants Place					
	A	B	C	D	E	F	G	H	I		A	B	C	D	E	F	Q		A	B	C	D		
14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	7	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1						
12	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	6	0.96	1.00	1.00	1.00	1.00	1.00	1.00	2						
10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5	0.97	0.99	1.00	1.00	1.00	1.00	1.00	3						
8	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4	0.96	0.98	0.99	0.99	1.00	1.00	1.00	4						
6	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	3	0.97	0.99	1.00	1.00	1.00	1.00	1.00	5						
4	0.75	0.76	0.77	0.80	0.86	0.89	0.92	0.93	0.96	2	0.97	0.98	0.99	0.99	0.99	1.00	1.00	6						
2	0.70	0.71	0.73	0.78	0.85	0.87	0.90	0.89	0.93	1	0.97	0.99	1.00	1.00	1.00	1.00	1.00	7						
0	0.78	0.80	0.82	0.87	0.91	0.92	0.92	0.89	0.93															

Thames Tower (left) 17-27 Station Road (Right)



5-9 Merchants Place



Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabricbp.co.uk

fabric
BUILDING PHYSICS

Project

Garrard House, Reading

Title

VSC Results

Drawing No:

1427-030

Scale

NTS

Date

09/10/2015

Existing VSC Condition										
Floor	Window Column									
	A	B	C	D	E	F	G	H	I	J
Orientation	N	N	E	E	E	N	N	W	W	W
10									24.99	26.49
9	21.45	28.50	25.79		27.94		28.28	15.84	21.57	24.69
8	19.58	25.28	16.50		19.21		25.53	14.58	17.85	21.36
7	16.18	21.34	24.24	18.40	18.58	27.17	18.99	16.06	15.73	18.81
6	13.59	18.15	21.48	16.95	17.17	17.63	17.67	15.99	14.76	17.23
5	11.01	14.83	8.20	14.98	15.02	16.10	16.95	15.36	13.82	16.00
4	8.66	11.88	14.58	11.52	11.13	11.46	16.11	14.08	12.40	13.71
3	6.76	9.24	11.68	8.64	7.94	6.08	13.35	11.61	10.35	10.64
2	5.15	6.99	8.86	6.32	5.48	2.14	10.66	9.28	8.08	7.92
1	3.98	5.38	6.98	4.09	3.42	0.04	8.28	7.20	6.24	5.87
0	3.25	4.22	5.46	2.76	2.12	0.02	6.59	5.69	4.47	4.08

Proposed VSC

Floor	Window Column									
	A	B	C	D	E	F	G	H	I	J
Orientation	N	N	E	E	E	N	N	W	W	W
10	-	-	-	-	-	-	-	-	24.99	26.49
9	21.45	28.50	25.79		27.94		28.28	15.84	21.57	24.69
8	19.58	25.28	16.50		19.15		25.53	14.58	17.85	21.36
7	16.18	21.34	24.24	18.13	18.26	27.17	18.99	16.04	15.63	18.71
6	13.59	18.15	21.48	16.37	16.25	17.03	17.61	15.92	14.55	17.16
5	11.01	14.83	8.20	14.11	13.63	14.48	16.28	14.78	13.33	15.50
4	8.66	11.88	14.58	11.09	10.39	9.42	15.09	13.18	11.69	13.10
3	6.76	9.24	11.68	8.39	7.55	4.82	12.80	11.04	9.59	10.33
2	5.15	6.99	8.86	6.13	5.20	1.44	9.96	8.88	7.53	7.57
1	3.98	5.38	6.98	3.95	3.28	0.04	7.91	6.90	5.89	5.70
0	3.25	4.22	5.46	2.71	2.02	0.02	6.36	5.52	4.24	4.08

Ratio

Floor	Window Column									
	A	B	C	D	E	F	G	H	I	J
Orientation	N	N	E	E	E	N	N	W	W	W
10	-	-	-	-	-	-	-	-	1.00	1.00
9	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00
8	1.00	1.00	1.00		1.00		1.00	1.00	1.00	1.00
7	1.00	1.00	1.00	0.99	0.98	1.00	1.00	1.00	0.99	0.99
6	1.00	1.00	1.00	0.97	0.95	0.97	1.00	1.00	0.99	1.00
5	1.00	1.00	1.00	0.94	0.91	0.90	0.96	0.96	0.96	0.97
4	1.00	1.00	1.00	0.96	0.93	0.82	0.94	0.94	0.94	0.96
3	1.00	1.00	1.00	0.97	0.95	0.79	0.96	0.95	0.93	0.97
2	1.00	1.00	1.00	0.97	0.95	0.67	0.93	0.96	0.93	0.96
1	1.00	1.00	1.00	0.97	0.96	1.00	0.96	0.96	0.94	0.97
0	1.00	1.00	1.00	0.98	0.95	1.00	0.97	0.97	0.95	1.00

Existing VSC Condition										
Floor	Window Column									
	K	I	M	N	O	P	Q	R	S	T
Orientation	N	N	E	E	E	N	N	W	W	W
10	30.70		-	-	-	34.15		-		
9	24.84		23.67	26.01	26.66	25.44		24.38	27.36	27.48
8	23.63		22.06	24.63	25.49	23.37		22.95	17.97	26.46
7	22.56	17.56	20.56	23.67	23.92	26.24	18.39	21.89	17.04	25.30
6	12.95	17.18	18.86	22.13	21.44	16.85	17.49	20.45	16.06	24.75
5	11.51	16.60	18.18	20.77	19.99	15.46	16.86	19.44	15.06	23.56
4	7.99	14.81	16.25	18.54	18.22	13.24	15.48	18.12	13.88	22.51
3	2.75	11.42	11.74	13.44	13.87	9.39	13.33	15.83	10.18	16.20
2	1.48	8.54	7.78	9.18	9.83	6.39	10.77	12.70	5.76	10.21
1	0.94	6.77	5.38	6.22	6.78	4.11	8.24	9.39	4.03	7.20
0	0.00	5.36	3.88	4.37	5.01	0.00	0.00	0.00	0.00	0.00

Proposed VSC

Floor	Column									
	K	I	M	N	O	P	Q	R	S	T
Orientation	N	N	E	E	E	N	N	W	W	W
10	30.70		-	-	-	34.15		-		
9	24.84		23.67	26.01	26.66	25.44		24.38	27.36	27.48
8	23.59		22.06	24.63	25.49	23.37		22.95	17.97	26.46
7	22.56	17.48	20.56	23.44	23.92	25.97	18.38	21.87	17.04	25.29
6	12.87	17.05	18.83	21.62	21.42	16.25	17.49	20.05	16.02	24.65
5	10.78	16.25	17.87	20.15	19.79	14.82	16.85	18.88	14.76	23.24
4	7.74	14.57	15.85	18.08	17.73	12.72	15.43	17.58	13.37	21.91
3	2.69	11.42	11.74	13.44	13.41	8.61	13.21	15.23	9.64	16.17
2	1.45	8.54	7.78	3.78	9.08	5.25	10.57	11.63	4.90	10.21
1	0.94	6.77	5.38	6.22	6.22	2.88	8.08	8.42	2.97	7.20
0	0.00	5.86	3.88	4.34	4.61	0.00	0.00	0.00	0.00	0.00

Ratio

Floor	Column									
	K	I	M	N	O	P	Q	R	S	T
Orientation	N	N	E	E	E	N	N	W	W	W
10	1.00		-	-	-	1.00		-	-	-
9	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
8	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
7	1.00	1.00	1.00	0.99	1.00	0.99	1.00	1.00	1.00	1.00
6	0.99	0.99	1.00	0.98	1.00	0.96	1.00	0.98	1.00	1.00
5	0.94	0.98	0.98	0.97	0.99	0.96	1.00	0.97	0.98	0.99
4	0.97	0.98	0.98	0.98	0.97	0.96	1.00	0.97	0.96	0.97
3	0.98	1.00	1.00	1.00	0.97	0.92	0.99	0.96	0.95	1.00
2	0.98	1.00	1.00	0.41	0.92	0.82	0.98	0.92	0.85	1.00
1	1.00	1.00	1.00	1.00	0.92	0.70	0.98	0.90	0.74	1.00
0	1.00	1.09	1.00	0.99	0.92	1.00	1.00	1.00	1.00	1.00

Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabricbp.co.uk

fabric

BUILDING PHYSICS

Project

Garrard House, Reading

Title

VSC Results Icon/Projection House

Drawing No:

1427-031

Scale

NTS

Date

09/10/2015

9.0 Appendix 5 – Garrard House Results

FLAT	ROOM	FLOOR AREA m²	Net Glass Area m²	Lower Window ADF	Upper Window ADF	ROOM ADF		FLAT	ROOM	FLOOR AREA m²	Net Glass Area m²	Lower Window ADF	Upper Window ADF	ROOM ADF
4.01	Kit / Liv / Din	23.3	4.74	0.21	1.17	3.57		5.05	Kit / Liv / Din	18.3	3.75	0.31	1.27	1.58
		23.3	3.10	0.21	1.19				Bed 1	12.0	2.75	0.31	1.30	1.61
		23.3	3.10	0.12	0.66			5.06	Kit / Liv / Din	22.7	2.25	0.16	0.66	0.82
	Bed 1	11.0	4.43	0.38	2.12	2.50			Bed 1	12.0	2.75	0.26	1.09	1.35
	Bed 2	7.3	1.71	0.19	1.03	1.21		5.07	Kit / Liv / Din	22.7	2.25	0.15	0.64	0.79
4.02	Kit / Liv / Din	23.2	8.37	0.50	2.79	4.10			Bed 1	12.0	2.75	0.23	0.94	1.17
		23.2	1.86	0.12	0.69			5.08	Kit / Liv / Din	22.7	2.25	0.10	0.39	0.49
	Bed 1	13.9	1.86	0.14	0.75	0.75			Bed 1	12.0	2.75	0.18	0.75	0.94
4.03	Kit / Liv / Din	27.8	5.89	0.32	1.75	2.07		5.09	Kit / Liv / Din	23.7	6.63	0.22	0.90	1.53
	Bed 1	8.3	3.10	0.39	2.14	2.53				23.7	2.63	0.08	0.34	
	Bed 2	10.4	3.10	0.46	2.54	3.00			Bed 1	11.3	2.75	0.19	0.78	0.97
4.04	Kit / Liv / Din	28.3	5.89	0.45	2.49	2.94			Bed 2	8.2	1.50	0.10	0.41	0.50
	Bed 1	12.3	5.89	0.70	3.88	8.64		6.02	Kit / Liv / Din	23.2	6.75	0.68	2.79	4.27
		12.3	5.89	0.62	3.44					23.2	1.50	0.16	0.65	
	Bed 2	7.8	5.89	1.05	5.79	6.84			Bed 1	13.9	1.50	0.16	0.65	0.81
5.02	Kit / Liv / Din	23.2	6.75	0.61	2.50	3.83		6.05	Kit / Liv / Din	18.3	3.75	0.31	1.28	1.59
		23.2	1.50	0.14	0.58				Bed 1	12.0	2.75	0.32	1.31	1.63
	Bed 1	13.9	1.50	0.16	0.65	0.81		6.06	Kit / Liv / Din	22.7	2.25	0.16	0.67	0.83
5.03	Kit / Liv / Din	27.8	4.75	0.37	1.54	4.27			Bed 1	12.0	2.75	0.27	1.11	1.38
		27.8	4.75	0.46	1.90			6.07	Kit / Liv / Din	22.7	2.25	0.16	0.65	0.81
	Bed 1	8.3	2.50	0.47	1.95	2.43			Bed 1	12.0	2.75	0.23	0.96	1.20
	Bed 2	10.4	2.50	0.52	2.16	2.68		6.08	Kit / Liv / Din	22.7	2.25	0.10	0.41	0.51
5.04	Kit / Liv / Din	28.3	5.00	0.52	2.13	2.64			Bed 1	12.0	2.75	0.19	0.77	0.96
	Bed 1	12.3	4.75	0.87	3.59	8.25		6.09	Kit / Liv / Din	23.7	6.63	0.23	0.93	1.59
		12.3	4.75	0.74	3.05					23.7	2.63	0.09	0.35	
	Bed 2	7.8	4.75	1.21	5.00	5.00			Bed 1	11.3	2.75	0.19	0.80	0.99
									Bed 2	8.2	1.50	0.10	0.43	0.53

Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabricbp.co.uk

fabric

BUILDING PHYSICS

Project

Garrard House, Reading

Title

ADF - Proposed Dwellings

Drawing No:

1427-032

Scale

NTS

Date

09/10/2015

10.0 Appendix 6 – Icon / Projection No Sky Line



-  Existing working plane with view of sky
-  Proposed working plane with view of sky

Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabricbp.co.uk

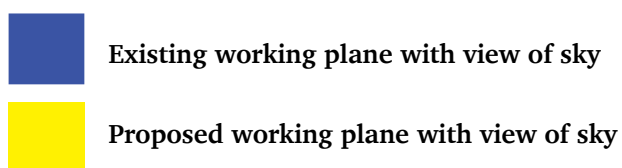
fabric
BUILDING PHYSICS

Project
Garrard House, Reading

Title
Projection East, West & Icon
No Sky Line - Ground Floor

Drawing No:
1427-020

Scale NTS	Date 08/10/2015
--------------	--------------------



Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabricbp.co.uk

fabric
BUILDING PHYSICS

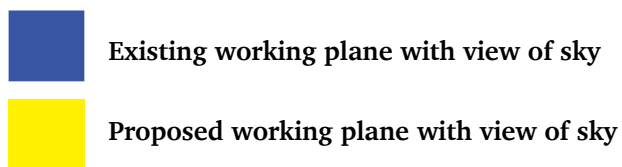
Project
Garrard House, Reading

Title
Projection East, West & Icon
No Sky Line - First Floor

Drawing No:
1427-021

Scale
NTS

Date
08/10/2015



Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabrichp.co.uk

fabric
BUILDING PHYSICS

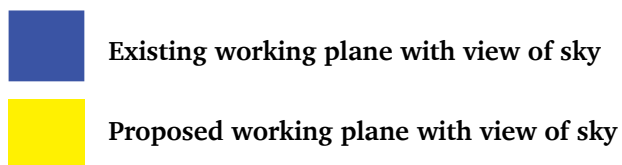
Project
Garrard House, Reading

Title
Projection East, West & Icon
No Sky Line - Second Floor

Drawing No:
1427-022

Scale
NTS

Date
08/10/2015



Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabrichp.co.uk

fabric
BUILDING PHYSICS

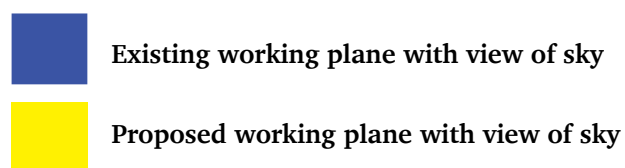
Project
Garrard House, Reading

Title
Projection East, West & Icon
No Sky Line - Third Floor

Drawing No:
1427-023

Scale
NTS

Date
08/10/2015



Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabricbp.co.uk

fabric
BUILDING PHYSICS

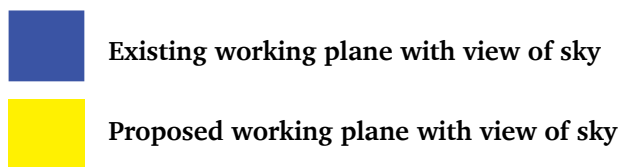
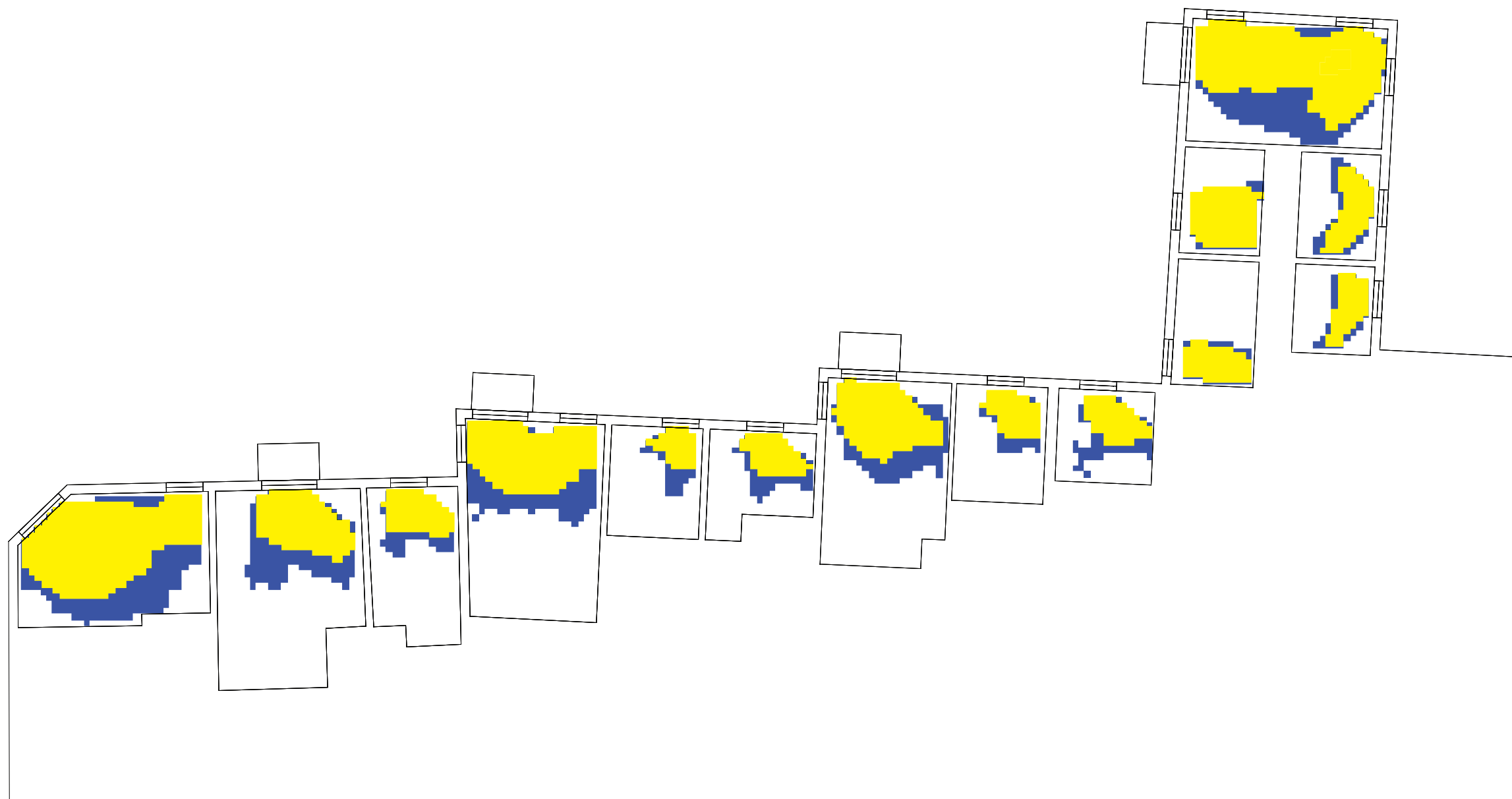
Project
Garrard House, Reading

Title
Projection East, West & Icon
No Sky Line - Fourth Floor

Drawing No:
1427-024

Scale
NTS

Date
08/10/2015



Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabricbp.co.uk

fabric
BUILDING PHYSICS

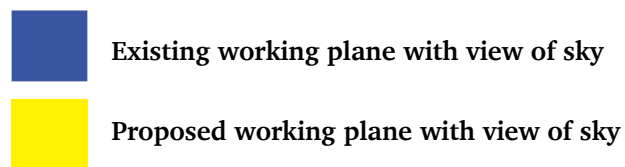
Project
Garrard House, Reading

Title
Projection East, West & Icon
No Sky Line - Fifth Floor

Drawing No:
1427-025

Scale
NTS

Date
08/10/2015



Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabricbp.co.uk

fabric
BUILDING PHYSICS

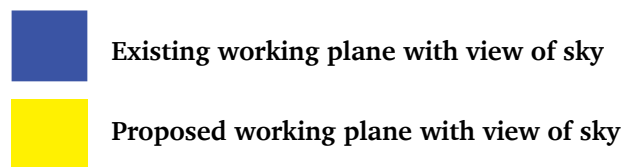
Project
Garrard House, Reading

Title
Projection East, West & Icon
No Sky Line - Sixth Floor

Drawing No:
1427-026

Scale
NTS

Date
08/10/2015



Studio 1 | 3 Downes Street
Bridport | Dorset | DT6 3JR
T: 07725 668449
www.fabricbp.co.uk

fabric
BUILDING PHYSICS

Project
Garrard House, Reading

Title
Projection East, West & Icon
No Sky Line - Seventh Floor

Drawing No:
1427-027

Scale
NTS

Date
08/10/2015