
Daylight and Sunlight Report
for the Proposed Alterations at
Grove End House, London

Prepared for: Exploration Architecture
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1. Executive Summary

1.1 Scope of Service

1.1.1 We have been instructed by Exploration Architecture to consider the potential impact upon the amenity of the surrounding properties, which may arise from the proposed alterations at Grove End House, London.

1.2 BRE Assessment Criteria

1.2.1 To ensure that this assessment has been appropriately considered, daylight and sunlight assessments have been undertaken in accordance with the Building Research Establishment Report 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' 2011 (the "BRE guide") and also on British Standard 8206 – 2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting', to which the BRE report refers.

1.2.2 The standards and tests applied within this assessment are briefly described in Appendix A.

1.3 Daylight, Sunlight and Overshadowing

1.3.1 The windows and rooms to Chetwynd Villas meet the BRE guidelines for daylight and sunlight.

1.3.2 The amenity areas to Chetwynd Villas meet the BRE guidelines for overshadowing.

1.3.3 It is considered that the potential availability of natural light to the surrounding properties will not be adversely affected by the proposed alterations.

1.3.4 Moreover, there are no valid grounds to challenge the proposed alterations with regards to daylight and sunlight amenity.

1.4 Generally

1.4.1 When considering the numerical results, it is important to approach and interpret the BRE guidelines flexibly along with the following material mitigating factors:

*The BRE guidelines recognises that where buildings are located uncommonly close to the site boundary, as is the case here, a greater reduction in daylight or sunlight may be unavoidable and so the local authority may wish to apply different target values.

*Where buildings match the height and proportions of existing surrounding buildings some transgressions will be inevitable.

*Kitchens and bedrooms are given less weighting than that of a living room. By their specific omission studies and utility rooms are by implication given even less weighting than kitchen and bedrooms.



2. Introduction

2.1 Scope of Service

2.1.1 We have been instructed by Exploration Architecture to consider the potential impact upon the amenity of the surrounding properties, which may arise from the proposed alterations at Grove End House, London.

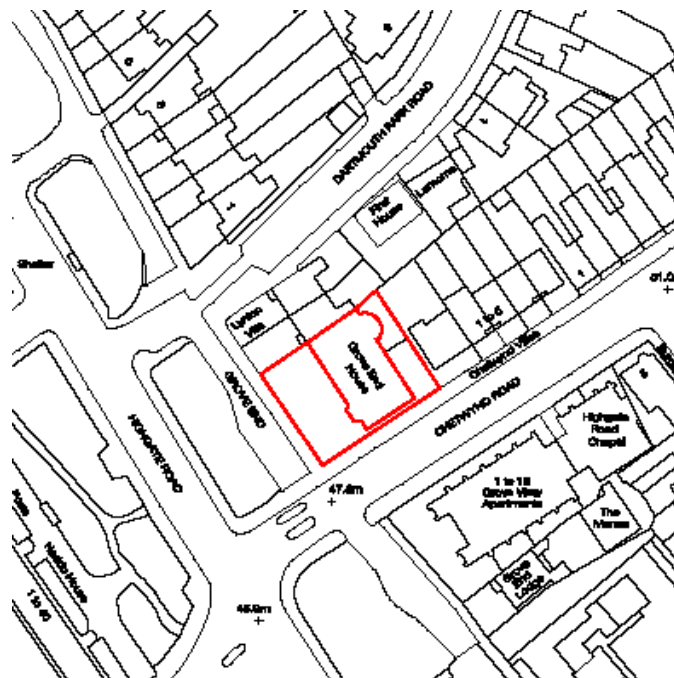
2.2 Assessment

2.2.1 To ensure that this assessment has been appropriately considered, daylight and sunlight assessments have been undertaken in accordance with the Building Research Establishment Report 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' 2011 (the "BRE guide") and with the British Standard 8206 – 2: 2008 – 'Lighting for Buildings – Part 2: Code of Practice for Daylighting', to which the BRE report refers.

2.2.2 The standards and tests applied within this assessment are briefly described in Appendix A.

2.2.3 The existing buildings adjacent to the site are shown on the Site Location Plan below.

Site Location Plan



2.2.4 The existing buildings adjacent to the site considered for this report are listed in the following table. Some of these buildings may not require a comprehensive assessment with the reasons for these findings given later in this report under section 3: Results and Consideration.



Adjacent Building Summary Table		
Name/Address of Building	Assumed Use of Building	Position in Relation to the Proposed Alterations
1 Chetwynd Villas	Residential	East
1A Chetwynd Villas	Residential	East

2.3 Limitations

- 2.3.1 Our assessment is based on the proposed alteration drawings by Exploration Architecture.
- 2.3.2 Topographical survey information was provided by Exploration Architecture with relation to the existing buildings on site along with elevations of surrounding buildings. Where buildings were not surveyed, the locations and heights were derived from the aforementioned drawings, site photographs and oblique aerial photography.
- 2.3.3 We refer you to the drawings which accompany this report for a list of the third-party information relied upon which our 3D computer model and resultant analyses are based.



3. Results and Consideration

3.1 Daylight

3.1.1 The table below shows a summary of the results for the buildings tested for daylight availability in accordance with the BRE recommendations. Detailed test results are shown in Appendix C.

Daylight Assessment Summary Table						
Building Reference	Vertical Sky Component Assessment			Daylight Distribution Assessment		
	No. of windows assessed	No. that meet the BRE Guidelines	No. that do not meet the BRE Guidelines	No. of rooms assessed	No. that meet the BRE Guidelines	No. that do not meet the BRE Guidelines
1 Chetwynd Villas	11	11	0	-	-	-
1A Chetwynd Villas	-	-	-	-	-	-
Total	11	11	0	-	-	-

Existing Baseline

3.1.2 The site is located at the junction of Grove End and Chetwynd Road, see accompanying drawing 1421/DSO/01. The site comprises a substantial family dwelling currently 3-storeys including a mansard roof.

Proposed Alterations

3.1.3 It is proposed that the mansard roof is replaced by a floor level of similar proportions, see accompanying drawing 1421/DSO/02.

3.1.4 We have assessed the habitable windows and rooms of the surrounding residential buildings that are most likely to be affected by the proposed alterations.

1 and 1A Chetwynd Villas

3.1.5 This building is situated immediately east of the site, along the common boundary, see accompanying drawing 1421/DSO/01.

3.1.6 We have obtained floor plans of this dwelling from the local authority website and is shown below.

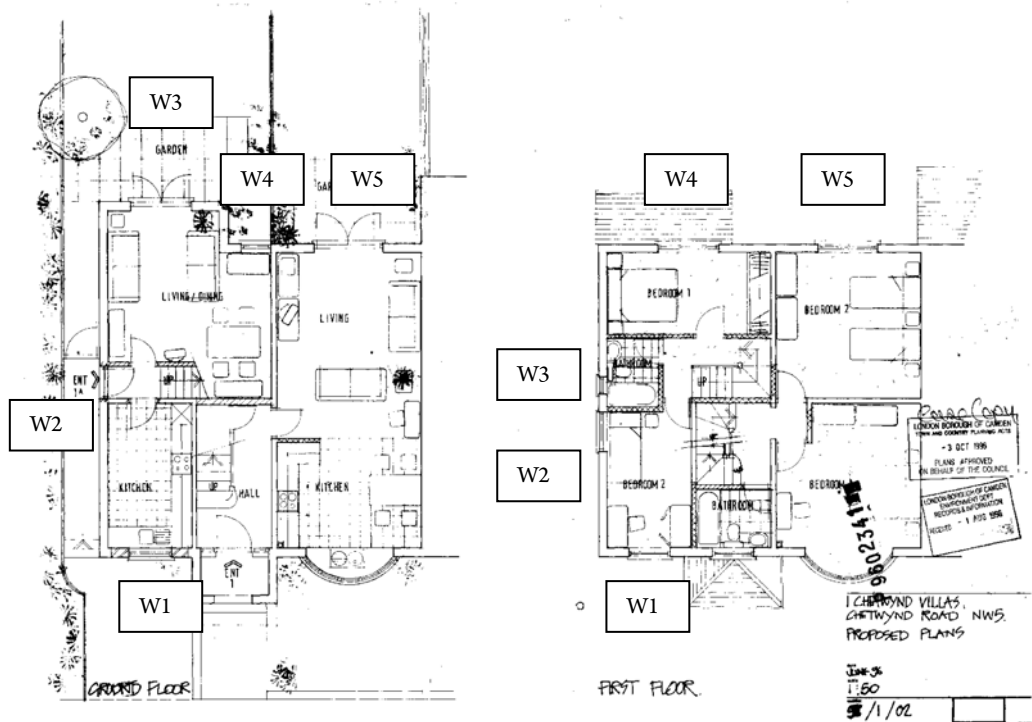


Image 1: 1 and 2 Chetwynd Villas dated circa 2002

- 3.1.7 The images are self-explanatory and match what has been viewed on site, see accompanying drawing 1421/DSO/01 and images at Appendix D. It is understood that this building was split in to 2 separate dwellings at the time.
- 3.1.8 At ground floor level, there is a kitchen to the front of the dwelling (ref Ground: W1), a side entrance (W2) and living/dining areas to the rear (W3, W4, and W5).
- 3.1.9 At first floor level to the front there is a dual aspect bedroom (First: W1 and W2, to the side elevation). The return elevation there is also a toilet window (W3). And to the rear, bedroom windows (W4 and W5).
- 3.1.10 There are also 3 no. “Velux” windows to the roof that serve bedrooms (Second: W1, W2 and W3).
- 3.1.11 In accordance with the BRE guidelines, circulation space, hallways, storerooms, toilets and bathrooms, need not be assessed.
- 3.1.12 Turning now to the assessment results, the windows and habitable rooms were assessed for Vertical Sky Component (VSC), Daylight Distribution (DD) respectively.
- 3.1.13 Regarding VSC, all windows assessed comfortably meet the BRE guidelines.
- 3.1.14 Regarding DD, all rooms will comfortably meet the BRE criteria. This is because the rear ground floor living room faces the proposed alterations at an oblique angle and faces north down the garden between the buildings opposite. For the first floor dual aspect bedroom, the majority of the light will



continue to enter the window to the front elevation, as such there would not be an impact to this room; the VSC results show that in any event.

- 3.1.15 Accordingly, it is considered that the potential daylight availability to this building would not be adversely affected by the proposed alterations.

Material Mitigating Factors

- 3.1.16 As with all development sites, it would be helpful at this stage to outline the material mitigating factors.
- 3.1.17 Mitigating factors are to be considered in conjunction with the numerical data, particularly with regards to specific surrounding circumstances, to arrive at a more balanced view.
- 3.1.18 The main mitigating factor is, that where buildings are located uncommonly close to the site boundary, as is certainly the case here, a greater reduction in daylight or sunlight may be unavoidable and so the local authority may wish to apply different target values.
- 3.1.19 The BRE guidelines recognises that where buildings match the height and proportions of existing surrounding buildings a higher degree of obstruction may be unavoidable, leading to a higher frequency of non-compliance. This provision is partly to ensure that a balanced approach is applied, considering all the circumstances and partly to ensure that development potential is not sterilised by a blind reading of numerical data.
- 3.1.20 Additionally, kitchens and bedrooms are generally given less weighting than that of a principle room such as a living room.
- 3.1.21 Daylight Summary
- 3.1.22 In summary for daylight, the proposed alterations are in accordance with the BRE guidance. It is considered that the potential daylight availability to the surrounding properties will not be adversely affected by the proposed alterations.

3.2 Sunlight

- 3.2.1 In accordance with the BRE report, the buildings outlined below have been assessed for annual probable sunlight hours (APSH), where the windows face within 90 degrees of due south. Detailed test results are shown in Appendix C.



Sunlight (APSH) Assessment Summary Table			
Building Reference	APSH		
	No. of Rooms assessed	No. that meet the BRE Guidelines	No. that do not meet the BRE Guidelines
1 Chetwynd Villas	3	3	0
Totals	3	3	0

1 and 1A Chetwynd Villas

3.2.2 The ground floor kitchen and first floor bedroom were assessed for sunlight. The remaining rooms were not assessed, either because they do not face within 90 degrees of due south or they are not habitable for the purposes of this report.

3.2.3 All rooms assessed meet the BRE guidelines for sunlight.

Technical points

3.2.4 It is also worth mentioning that the sunlight assessments are really intended for principal living rooms of a dwelling and although kitchens and bedroom should be considered, it should be with less weighting.

3.2.5 Where two windows (of an equal size) serve a living room, and where one meets the BRE criteria and the other one does not, then the room is considered to meet the BRE criteria. This is also true of the daylighting criteria.

3.2.6 Also, where sunlight to a living room is reduced by 4% APSH or less, then the room is considered to meet the BRE criteria.

Sunlight Summary

3.2.7 In summary for sunlight, it is considered that the potential sunlight availability to the surrounding properties will not be adversely affected by the proposed alterations.

3.3 Overshadowing

3.3.1 To determine the potential impact upon amenity areas we undertake the permanent overshadowing assessment.

3.3.2 The amenity areas should receive at least 2 hours of sunlight on 21 March over 50% of their respective areas in either the existing and proposed situations, or if less than that, a reduction of 20% is permitted. Paved areas, gravel areas nor small front gardens constitute amenity areas for the purposes of the BRE guidelines.

Permanent Overshadowing



-
- 3.3.3 The amenity areas, i.e. the 2 no rear garden to 1 and !A Chetwynd Villas, were assessed for permanent overshadowing, see accompanying drawing 1421/DSO/02.
 - 3.3.4 The results show that there is a minor reduction to each of the amenity areas, one by 17% and the other by 5%; well within the target criteria.
 - 3.3.5 In summary for overshadowing, the proposed alterations are in accordance with the BRE guidelines.



4. Conclusion

4.1 Daylight, Sunlight and Overshadowing

- 4.1.1 The windows and rooms to Chetwynd Villas meet the BRE guidelines for daylight and sunlight.
- 4.1.2 The amenity areas to Chetwynd Villas meet the BRE guidelines for overshadowing.
- 4.1.3 It is considered that the potential availability of natural light to the surrounding properties will not be adversely affected by the proposed alterations.
- 4.1.4 Moreover, there are no valid grounds to challenge the proposed alterations with regards to daylight and sunlight amenity.

4.2 Generally

- 4.2.1 When considering the numerical results, it is important to approach and interpret the BRE guidelines flexibly along with the following material mitigating factors:

- *The BRE guidelines recognises that where buildings are located uncommonly close to the site boundary, as is the case here, a greater reduction in daylight or sunlight may be unavoidable and so the local authority may wish to apply different target values.

- *Where buildings match the height and proportions of existing surrounding buildings some transgressions will be inevitable.

- *Kitchens and bedrooms are given less weighting than that of a living room. By their specific omission studies and utility rooms are by implication given even less weighting than kitchen and bedrooms.

Appendix A

BRE Assessments

BRE Assessments

Introduction

The Building Research Establishment Report “Site Layout Planning for Daylight and Sunlight – a guide to good practice 1991” (“the BRE Guidelines”) provides advice to building designers on site layout planning in order to achieve good daylight and sunlight amenity, not only to the proposed development and the open spaces between the proposed blocks, but also to the existing surrounding properties.

As part of this advice, the Building Research Establishment (BRE) have developed a series of assessments along with numerical guidelines so that the potential for good daylight and sunlight amenity can be achieved.

In general, the application of the BRE Guidelines are more appropriate for low density suburban development sites where there is a greater flexibility for site layout planning. In dense urban areas, however, development sites are usually constrained to a greater degree, often by immediately adjacent buildings etc. Accordingly, when dealing with dense urban areas the guidelines should be applied flexibly. This point is expressly recognised by the BRE Guidelines, which states in the introduction at page 1:

‘The Guide is intended for building designers and their clients, consultants and planning officials. 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. For example, in a historic city centre a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings.... ..’

Daylight

The criteria for assessing daylight to existing surrounding buildings are outlined at pages 4 to 8 of the BRE Guidelines. Generally, daylight assessments should be undertaken to habitable rooms within dwellings and to principal rooms in non-domestic buildings such as schools, hospitals and offices where the occupants have a reasonable expectation of daylight.

Whilst the BRE Guidelines contain a number of rules of thumb that inform site layout design some relate to specific situations, such as domestic developments to the rear of a property, which although useful may not be considered appropriate for general site layout design.

The principal assessments used to assess daylight to existing surrounding buildings are outlined in more detail below along with a further daylight assessment, usually applied to proposed dwellings, which is admissible provided it is agreed with the local authority, or there are past precedents.

25° section line assessment

The first assessment is known as the [modified] 25° section line test. It is a simple rule of thumb that determines whether an existing building should still receive adequate daylight with the proposed development in place.

The BRE guide states at page 11:

“If any part of a new building or development, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of a lowest window, subtends an angle of more than 25° to the horizontal may be affected.”

This assessment is most appropriate for well spaced, low-density or low-rise, uniform proposed developments. It is not an appropriate assessment for dense urban environments, where the existing building on the development site already subtends at an angle greater than 25° to the horizontal from the subject window. It is for this reason this 25° assessment is generally dispensed with and the more detailed assessments outlined below are entered into at the outset.

The Vertical Sky Component (“VSC”) Assessment

The Vertical Sky Component (“VSC”) assessment represents the amount of available daylight received directly from the sky at a particular window. The reference point for this assessment is the centre of the window, on the plane of the outer window wall.

A VSC is expressed as a percentage, being a ratio of that part of illuminance on a vertical plane (a window) that is received from a Standard Overcast Sky (CIE Sky), to the illuminance received on a horizontal plane on an unobstructed hemisphere of Standard Overcast Sky. To put it another way it is simply the amount of direct sky visibility a window receives, howsoever obstructed, expressed as a percentage of the amount of direct sky a horizontal unobstructed roof-light would receive.

The maximum percentage of direct skylight a vertical window can receive from a Standard Overcast Sky is 39.62%, or 40% when rounded. The BRE have determined that where a VSC value of 27% is achieved, then enough skylight (direct daylight) should reach the window of an existing building. This value is roughly equivalent to a uniform obstruction of 25°, with reference to the above assessment. The Guidelines go on to state:

“If the vertical sky component, with the new development in place, is both less than 27% and less than 0.8 times its former value, (a 20% reduction), then the occupants of the existing building will notice the difference.”

Consequently, the daylight to an existing building, as a result of a proposed development, may be reduced by 20% before that loss becomes noticeable.

The Daylight Distribution (“DD”) Assessment

The Daylight Distribution Assessment is undertaken at working plane level from within a subject room and represents the change in skyline when viewed through a subject window. The working plane level is set at 0.85m above floor level in dwellings and 0.70m in offices, however, in practice this distinction in height is not normally made, and so the working plane is generally set at 0.85m.

If significant areas beyond the no-sky line i.e. the point beyond the line where no sky can be seen at working plane level, the room will usually appear gloomy and supplementary electric lighting will be required. The BRE Guidance states:

“If, following construction of a new development, the no-sky line moves so that the area of the existing room which does not receive direct skylight is reduced to less than 0.8 times its former value, (a 20% reduction), then

this will be noticeable to the occupants, and more of the room will be poorly lit.”

Consequently, the daylight to an existing building, as a result of a proposed development, may be reduced by 20% before that loss becomes noticeable.

The VSC and DD are the 2 principal assessments that are required to be undertaken in order to assess daylight to existing surrounding buildings.

The Average Daylight Factor (“ADF”) Assessment

A further daylight assessment, which may be undertaken, provided it is accepted by the local authority, is known as the Average Daylight Factor (ADF). Strictly speaking ADF assessments are used to determine the daylight availability to units within a proposed development, however, in more recent times the ADF assessment has been accepted by local authorities as a valid assessment for existing surrounding buildings.

An ADF assessment takes into account the amount of direct sky visibility incident on a window serving a subject room, the transmittance of the light through the glass, and the reflectance of that resultant light from the entire surface area of the room, which is then expressed as a percentage.

The ADF values recommended in the British Standard BS8206 Part 2 to which the BRE refers are: 2% for kitchens or open plan living areas (LKD), 1.5% for living rooms and 1% for bedrooms, if supplementary electric lighting is provided.

Nb. The guidelines outlined in the latest edition of BS8206 Part 2: 2008 are now applied.

Sunlight

Sunlight is valued in both residential and commercial buildings. It is seen as providing warmth and cheerfulness to a room, whilst also giving the occupants a therapeutic effect and a sense of wellbeing.

In residential properties the main requirement for sunlight is in the living room or conservatories, which should be assessed if they have a main window facing within 90° of due south. Sunlight is considered less important in kitchens and bedroom, although care should be taken not to block out too much.

In commercial or non-domestic buildings, the requirement for sunlight varies according to the use of the building. The BRE recommends that for a commercial building any space that has a particular or special requirement for sunlight should be assessed.

Annual Probable Sunlight Hours (APSH) Assessment

The APSH assessment is undertaken to the main window of residential and commercial buildings, where the window faces within 90° of due south. “Probable Sunlight Hours” may be defined as the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness.

At page 17 of the BRE guidelines the criteria for the APSH assessment are as follows: -

'If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely effected. This will be the case if a point at the centre of the window, in the plane of the inner window wall, received in the year less than one quarter (25%) of annual probable sunlight hours including at least 5% of annual probable sunlight hours between 21 September and 21 March, and less than 0.8 times its former sunlight hours during either period and has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.'

Consequently, the sunlight to a living room within an existing building, as a result of a proposed development, may be reduced by 20% in either the annual or winter periods *and* has a reduction of more than 4% of APSH before that loss becomes noticeable. Accordingly, if a room is reduced by 4% APSH or less, it is considered to meet the BRE criteria.

Overshadowing

The BRE guidance also offers advice on how to preserve sunlight to both existing and proposed open amenity spaces. Areas such as main back gardens of dwellings, parks, playing fields, playgrounds, waterways and public spaces such should be assessed. Small front gardens to dwellings and parking areas need not be assessed.

The permanent overshadowing assessment

The permanent overshadowing assessment is undertaken on 21 March, the spring equinox. This assessment shows areas of a subject amenity area where no sunlight will be available during the winter period, however, the subject area may still receive some sunlight during the summer.

The BRE states at page 20:

“for it to appear adequately sunlight throughout the year, at least half of a garden or amenity area should receive at least 2 hours of sunlight on 21 March. If, as a result of new development, an existing garden or amenity area does not meet these guidelines, and the area which can receive 2 hours of sun on 21 March is less than 0.8 times its former value (a 20% reduction), then the loss of sunlight is likely to be noticeable”.

Consequently, if an open amenity area, is more than 50% in shade for more than 2 hours in either existing or proposed situations, and is reduced by more than 20% of its existing value as a result of new development, then that loss is likely to be noticeable.

The transient overshadowing assessment

A further overshadowing assessment, sometimes requested by the local authority for larger developments, is the temporary, or transient overshadowing assessment. This assessment usually comprises hourly overshadowing images of the existing and proposed situations undertaken on key dates during the year such as 21 March, the spring equinox; 21 June, the summer solstice; and 21 December, the winter solstice.

The BRE guidance offers no express numerical values for this type of assessment, consequently it is purely subjective.

Appendix B

Context Drawings

Appendix C

Daylight Results / Sunlight Results

Vertical Sky Component (VSC) Assessment/ Sunlight (APSH) Assessment

Floor Ref.	Room Ref.	Room	Use.	Window Ref.	Scenario	VSC	Difference	Condtn	Available Sunlight Hours					
									Annual %	Diff	%	Pass / Fail	Winter %	Diff
I and 1A Chetwynd Villas														
Ground	R1	Kitchen		W1	Existing	25.61	1.00	YES	58	1.00	YES	20	1.00	YES
					Proposed	25.61			58			20		
	R2	Entrance		W2	Existing	18.66	0.95	n/a	34	1.00	n/a	13	1.00	n/a
					Proposed	17.66			34			13		
R3	LKD		W3	Existing	25.18	1.00	YES	*North*			*North*			
				Proposed	25.15			*North*			*North*			
R4	Living Room		W4	Existing	24.01	1.00	YES	*North*			*North*			
				Proposed	24.01			*North*			*North*			
R4			W5	Existing	25.43	1.00	YES	*North*			*North*			
				Proposed	25.36			*North*			*North*			
First	R1	Bedroom		W1	Existing	32.46	1.00	YES	72	1.00	YES	22	1.00	YES
					Proposed	32.46			72			22		
	R1			W2	Existing	27.53	0.94	YES	46	0.93	YES	17	1.00	YES
					Proposed	25.98			43			17		
	R2	Shower-WC		W3	Existing	25.74	0.93	n/a	41	0.93	YES	16	1.00	n/a
					Proposed	23.90			38			16		
	R3	Bedroom		W4	Existing	31.13	0.99	YES	*North*			*North*		
					Proposed	30.86			*North*			*North*		
R4	Bedroom		W5	Existing	31.98	0.99	YES	*North*			*North*			
				Proposed	31.81			*North*			*North*			
Second	R1	Bedroom		W1	Existing	79.63	0.99	YES	*North*			*North*		
					Proposed	79.07			*North*			*North*		
					W2	Existing			79.78	1.00	YES	*North*		
Proposed	79.39	*North*				*North*								
W3	Existing	79.85	1.00	YES	*North*			*North*						
	Proposed	79.55			*North*			*North*						

Appendix D

Site Photographs



Photograph 1: Side elevation of 1A Chetwynd Villas (ignore numbering)



Photograph 2: Rear elevation of 1 and 1A Chetwynd Villas (ignore numbering)



Photograph 3: Front elevation of 1 and 1A Chetwynd Villas (ignore numbering)