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Client : Zammy Uddin

Daylight and Sunlight Assessment for the Development at 110 Drummond Street, London

December 2015

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Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Written by	Checked by
1	0	First issue	17th Dec 2015	RM	SPH

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Contents

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1 Background and Scope of Appraisal

Herrington Consulting has been commissioned by Zammy Uddin to assess the potential impact of the proposed development at 110 Drummond Street, London NW1 2HN in relation to daylight, sunlight and overshadowing on the neighbouring building(s). The key objectives of the assessment are to:

- assess the baseline conditions at the site;
- analyse the potential impacts of the development on the daylight and sunlight currently received by the neighbouring buildings, and;
- assess these impacts in line with any relevant planning policies and best practice guidance. And to;
- analysis and quantification of the natural daylight and sunlight that will be available within the habitable rooms of the proposed development.

2 The Site and Development Proposals

2.1 Site Location

The site is located within the London Borough of Camden. The location of the site is shown in Figure 2.1 and the site plan included in Appendix A.1 of this report gives a more detailed reference to the site location and layout.

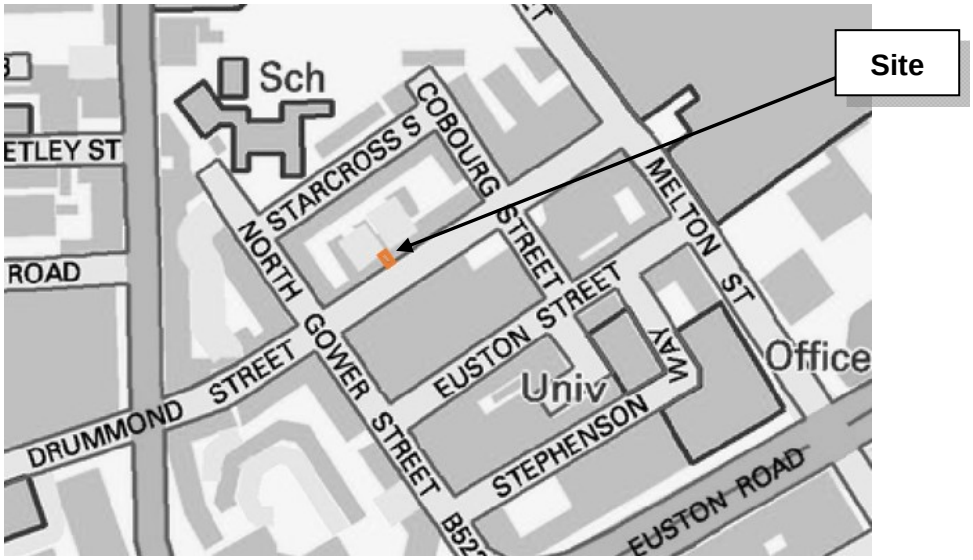


Figure 2.1 – Location map (Contains Ordnance Survey data © Crown copyright and database right 2011)

2.2 The Development

The proposals for development are to extend the existing basement and third floor to create three flats. Drawings of the proposed scheme are included in Appendix A.1 of this report.

3 Policy and Guidance

3.1 National Planning Policy

National Planning Policy Framework (2012)

The National Planning Policy Framework adopted on the 27th March 2012, replacing the Planning Policy Statements and Planning Policy Guidance, stipulates that *"…planning policies and decisions should always seek to secure a good standard of amenity for existing and future occupants of land and buildings."*

National Planning Practice Guidance (2014)

The National Planning Practice Guidance was launched in 2014, creating an online resource for planning practitioners. The guidance does not provide any further detail in terms of amenity beyond that stated above.

3.2 Regional Planning Policy

The London Plan – Spatial Development Strategy for Greater London (2011)

Policy 7.6: 'Architecture' of the adopted London Plan, includes the following statements: *"Buildings and structures should not cause unacceptable harm to the amenity of surrounding land and buildings… particularly residential buildings in relation to… overshadowing".*

Minor Alterations to the London Plan (2012)

On the 11th May 2015 the Mayor of London published for six weeks public consultation two sets of Minor Alterations to the London Plan – on Housing Standards and on Parking Standards. A number of minor alterations have been proposed to the London Plan; however, these changes do not alter the policies above.

Further Alterations to the London Plan (March 2015)

In March 2015, the Mayor published further updates to the London Plan in the Further Alteration to the London Plan document. This document proposes a number of further changes to the London Plan; however, these changes will not alter the policies listed above.

3.3 Local Planning Policy

Camden Development Policies (2010 - 2025)

Policy DP26 states that the council will only grant planning permission for development that does not cause harm to the amenity of existing and future occupiers and to nearby properties. To assess this impact, the council will consider; *'visual privacy and overlooking'; 'overshadowing and outlook',* and '*sunlight, daylight and artificial light levels*'. To assess whether a proposed development will have acceptable levels of daylight and sunlight provision, the council will follow

the standard recommendations of the British Research Establishment's Site Layout Planning for Daylight and Sunlight- A Guide to Good Practice.

Camden Supplementary Planning Guidance – CPG1 Design (2015)

The CPG1 document states in section 4 that, '*Alterations should always take into account the character and design of the property and its surroundings*'. The guidance also states that any development should be of *'high quality design'* which *'respects and enhances the character and appearance of a property and its surroundings, and also covers matters such as outlook, privacy and overlooking*.'

3.4 Best Practice Guidance

In the absence of official national planning guidance / legislation on daylight and sunlight, the most recognised guidance document is published by the Building Research Establishment and entitled 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice', Second Edition, 2011; herein referred to as the 'BRE Guidelines'.

The BRE Guidelines are not mandatory and themselves state that they should not be used as an instrument of planning policy, however in practice they are heavily relied upon as they provide a good guide to approach, methodology and evaluation of daylight and sunlight impacts.

In conjunction with the BRE Guidelines further guidance is given within the British Standard (BS) 8206-2:2008: 'Lighting for buildings - Part 2: Code of practice for daylighting'.

In this assessment the BRE Guidelines have been used to establish the extent to which the Proposed Development meets current best practice guidelines. In cases where the Development is likely to reduce light to key windows the study has compared results against the BRE criteria.

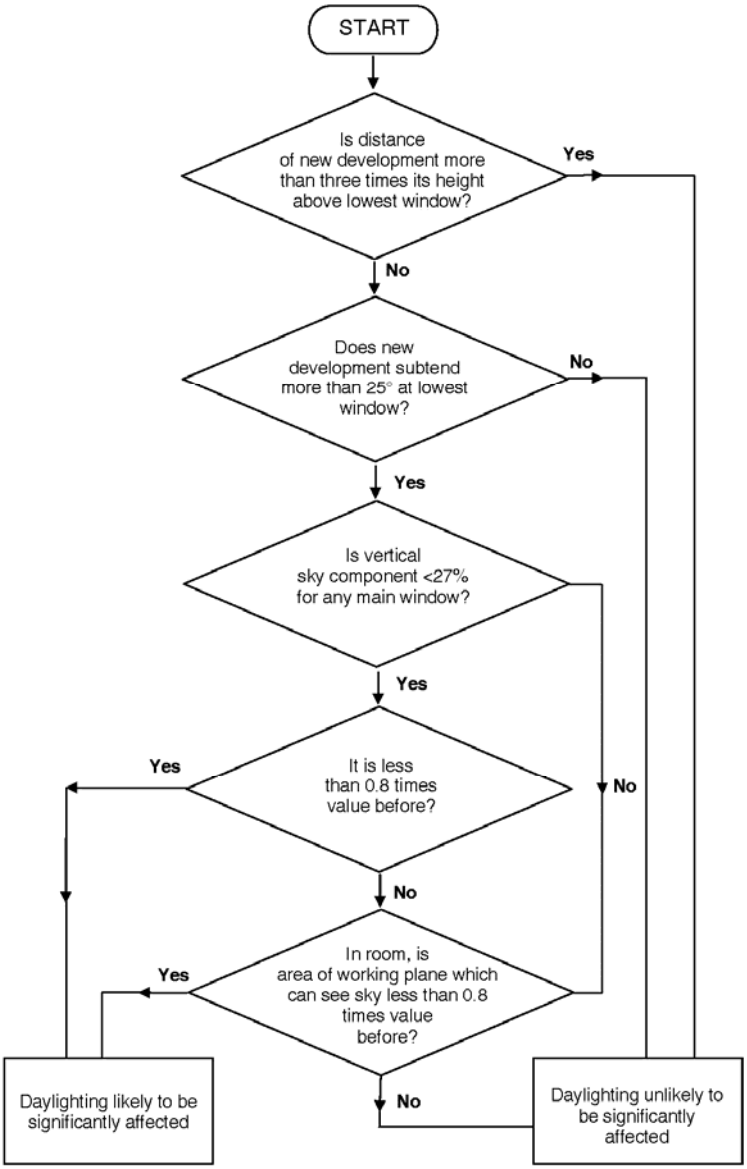
Whilst the BRE Guidelines provide numerical guidance for daylight, sunlight and overshadowing, these criteria should not be seen as absolute targets since, as the document states, the intention of the guide is to help rather than constrain the designer. The Guide is not an instrument of planning policy, therefore whilst the methods given are technically robust, it is acknowledged that some level of flexibility should be applied where appropriate.

4 Assessment Techniques

4.1 Background

Natural light refers to both daylight and sunlight. However, a distinction between these two concepts is required for the purpose of analysis and quantification of natural light in buildings. In this assessment, the term '*Daylight*' is used for natural light where the source is the sky in overcast conditions, whilst '*Sunlight*' refers specifically to the light coming directly from the sun.

The primary objective of this assessment is to quantify the impacts of the proposed development on the adjacent building[s] and therefore the methods employed by this study are focussed on this objective. These methodologies are described in the following sections of this report and follow the hierarchical approach set out by the BRE Guidelines. The 'decision chart' outlining this process (Figure 20 of the Guidelines) has been reproduced below.



The BRE guidelines are intended for use for rooms in adjoining dwellings. They may also be applied to any existing non-domestic buildings where the occupants have a reasonable expectation of daylight, which could include schools, hospitals, hotels and offices. For dwellings it states that living rooms, dining rooms and kitchens should be assessed. Bedrooms should also be checked, although it states that they are less important. Other rooms, such as bathrooms, toilets, storerooms, circulation areas and garages need not be assessed.

4.2 Vertical Sky Component (VSC)

The Vertical Sky Component (VSC) calculation is the ratio of the direct sky illuminance falling on the outside of a window, to the simultaneous horizontal illuminance under an unobstructed sky. The standard CIE (Commission Internationale d'Éclairage) Overcast Sky is used and the ratio is expressed as a percentage. For example, a window that has an unobstructed view over open fields would benefit from the maximum VSC, which would be close to 40%. For a window to be considered as having a reasonable amount of skylight reaching it, the BRE Guidelines suggests that a minimum VSC value of 27% should be achieved. When assessing the impact of a new development on an existing building the BRE Guidelines sets out the following specific requirement:

If the VSC with the new development in place is both less than 27% and less than 0.8 times its former value, then the reduction in light to the window is likely to be noticeable.

This means that a reduction in the VSC value of up to 20% its former value would be acceptable and thus the impact would be considered negligible. It is important to note that the VSC is a simple geometrical calculation, which provides an early indication of the potential for daylight entering the space. It does not, however, assess or quantify the actual daylight levels inside the rooms.

4.3 No Sky Line

The No Sky Line, or sometimes referred to as No Sky View method, describes the distribution of daylight within rooms by calculating the area of the 'working plane', which can receive a direct view of the sky and hence 'skylight'. The working plane height is generally set at 850mm above floor level within a residential property and 700mm within a commercial property.

The BRE Guidelines state that if following the construction of a new development the No Sky Line moves such that the area of existing room that does not receive direct skylight is reduced to less than 0.8 times its former value, the impact will be noticeable to the occupants. This is also true if the No Sky Line encroaches onto key areas like kitchen sinks and worktops.

One benefit of the daylight distribution test is that the resulting contour plans show where the light falls within a room, both in the existing and proposed conditions, and a judgment may be made as to whether the room will retain light to a reasonable depth.

This method can only be accurately used to examine the impact of new development on the daylight distribution within existing buildings when the internal room layout is known. However, in

circumstances where the internal layout and dimensions of the affected room are not known, best estimates are used.

4.4 Overshadowing

The BRE Guidance suggests that where new development may affect one or more amenity areas, then analysis can be undertaken to quantify the loss of sunlight resulting from overshadowing. Typical examples of areas that could be considered as open spaces or amenity areas are main back gardens of houses, allotments, parks and playing fields, children's playgrounds, outdoor swimming pools, sitting-out areas, such as in public squares and focal points for views, such as a group of monuments or fountains.

Sun Hours on Ground

The BRE Guidelines recommend that for a garden or amenity area to appear adequately sunlit throughout the year, at least 50% of an amenity area should receive at least 2 hours of sunlight on 21st March. The BRE Guidelines also suggest that if, as a result of a new development, an existing garden or amenity area does not meet these guidelines, and the area which can receive some sun on the 21st March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.

When undertaking this analysis, sunlight from an altitude of 10° or less has been ignored as this is likely to be obscured by planting and undulations in the surrounding topography. Driveways and hard standing for cars is also usually left out of the area used for this calculation. Fences or walls less than 1.5 metres high are also ignored. Front gardens which are relatively small and visible from public footpaths are omitted with only main back gardens needing to be analysed.

The Guidelines also state that "normally, trees and shrubs need not be included, partly because their shapes are almost impossible to predict, and partly because the dappled shade of a tree is more pleasant than a deep shadow of a building". This is especially the case for deciduous trees, which provide welcome shade in the summer whilst allowing sunlight to penetrate during the winter months.

Transient Overshadowing

The BRE Guidelines suggest that where large buildings are proposed, which may affect a number of open spaces or amenity areas, it is useful and illustrative to plot a shadow plan to show the location of shadows at different times of the day and at key times during the year. Typically the 21st March, 21st June and 21st December are used to represent the annual variance of sun position, noting that the position of the sun in the sky during the spring equinox (21st March) is equivalent to that of the autumn equinox.

The BRE Guidelines provide no criteria for the significance of transitory overshadowing other than to suggest that by establishing the different times of day and year when shadow would be cast over surrounding areas, provides an indication as to the significance of the likely effect of a new development. The assessment of transient overshadowing effects is therefore based upon expert

judgment, taking into consideration the likely effects of the various baseline conditions and comparing them with the likely significant transient overshadowing effects of the redevelopment proposals.

4.5 Annual Probable Sunlight Hours

It is also possible to quantify the amount of sunlight available to a new development and the recognised methodology for undertaking this analysis is the Annual Probable Sunlight Hours (APSH) method.

In the case of sunlight, the assessment is equally applied to adjoining dwellings and any existing non-domestic buildings where there is a particular requirement for sunlight. The BRE Guidelines set out a hierarchy of tests to determine whether the proposed development will have a significant impact. These are set out in order of complexity below:

Test 1 – Assess whether the windows to main living rooms and conservatories of the buildings surrounding the site are situated within 90° of due south. Obstruction to sunlight may become an issue if some part of the new development is situated within 90° of due south of a main window wall of an existing building.

Test 2 - Draw a section perpendicular from the centre of the window in any window walls identified by Test 1. If the angle subtended between the horizontal line drawn from the centre of the lowest window of the existing building and the proposed development is less than 25°, then the proposed development is unlikely to have a substantial effect on the direct sunlight enjoyed by the existing window.

Test 3 – If the window wall faces within 20° of due south and the reference point has a VSC of 27% or more, then the room is considered to receive sufficient sunlight.

Test 4 – If all of the above tests have been failed, then a more detailed analysis is required to determine the obstruction level to the existing building. In such cases, the BRE Guidance recommends the use of the Annual Probable Sunlight Hours (APSH) test to assess the impact on the availability of sunlight. To pass this test the centre point of the window will need to receive more than one quarter of APSH, including at least 5% APSH in the winter months between 21st September and the 21st March. The BRE Guidelines state that if 'post-development' the available sunlight hours are both less than the amount above and less than 0.8 times their 'pre-development' value, either over the whole year or just within the winter months, then the occupants of the existing building will notice the loss of sunlight. In addition, if the overall annual loss is greater than 4% of APSH, the room may appear colder and less pleasant.

4.6 Average Daylight Factor

The Average Daylight Factor (ADF) method calculates the average illuminance within a room as a proportion of the illuminance available to an unobstructed point outdoors under a sky of known luminance and luminance distribution. This is the most detailed of the daylight calculations and

considers the physical nature of the room behind the window, including; window transmittance, and surface reflectivity.

This method of quantifying the availability of daylight within a room does, however, require the internal layout to be known and is generally only used for establishing daylight provision in new rooms. The BRE Guide sets out the following guidelines for the assessment of the ADF:

If a predominantly daylit appearance is required, then the ADF should be 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary electric lighting is provided. In dwellings, the following minimum average daylight factors should be achieved: 1% in bedrooms, 1.5% in living rooms and 2% in kitchens.

For offices, the British Council for Offices (BCO) Guide to Lighting provides guidance on how to specify good office lighting. The main message is to use daylight effectively and use artificial lighting only where and when it's is needed. The new guide recognises that maximising natural daylight within offices can bring about tangible benefits for employee wellbeing and suggests that a well daylit office space is one that achieves an average daylight factor of between 2% and 5%.

5 Assessment Methodology

5.1 Method of Baseline Data Collation

The following data and information has been used to inform this study:

- OS Mastermap mapping
- Scheme drawings in AutoCAD format
- Photographic information collected during a site visit carried out on 4th December 2015
- Aerial photography (Google Maps and Bing)

5.2 Identification of Key Sensitive Receptors

The BRE Guidelines are intended for use for rooms and adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms circulation areas and garages are not deemed as requiring daylight and therefore are not identified as sensitive receptors. The BRE document also states that the guidelines may also be applied to any non-domestic building where the occupants have a reasonable expectation of daylight. This would normally include schools, hospitals, hotels, hostels, small workshops and some offices.

The first step in this process is to determine the key sensitive receptors, i.e. which windows may be affected by the proposed development. Key receptors are those windows that face, or are located broadly perpendicular to the proposed development.

If a window falls into this category, the second step is to measure the obstruction angle. This is the angle at the level of the centre of the lowest window between the horizontal plane and the line joining the highest point of nearest obstruction formed from any part of the proposed development. If this angle is less than 25° then it is unlikely to have a substantial effect on the diffuse daylight enjoyed by the existing window and the window is not deemed to be a sensitive receptor. A graphical representation of the 25° rule is illustrated in Figure 5.1 below.

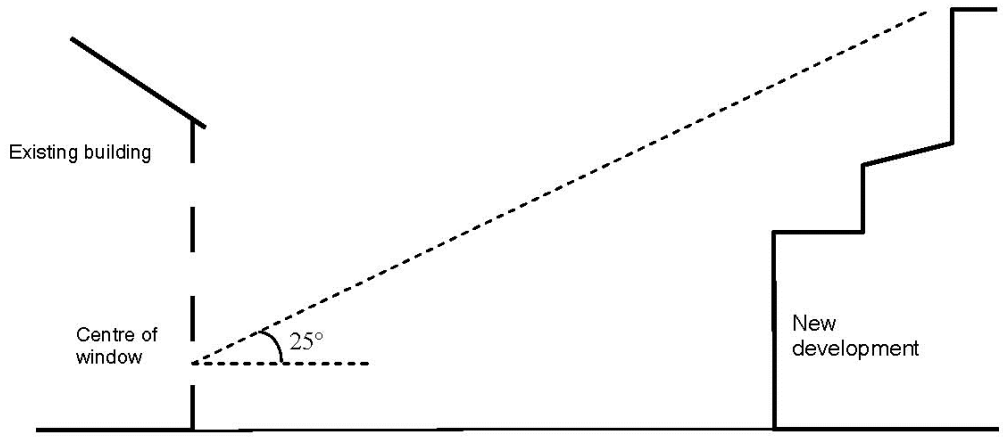


Figure 5.1 – Graphical representation of the 25° Rule (indicative buildings used for illustration purposes only)

As part of this assessment a digital three dimensional model of the study area has been created for both the 'pre' and 'post' development scenarios. Images of these models are shown by the drawings appended to this report.

Using the 3D model it is possible to identify all windows having an obstruction angle greater than 25°. Impacts to these windows are therefore deemed to be negligible in line with the criteria set out within the BRE Guidelines.

There are, however, circumstances where the 25° degree rule is not wholly appropriate, for example where the development facing the window does not create a uniform obstruction along the skyline, or where the proposals are not directly adjacent to the receptor window. In these situations professional judgement is used to differentiate between windows that require more detailed analysis and those that will clearly not be impacted. Where any level of uncertainty exists, the window is taken forward for detailed analysis.

Windows serving non-habitable spaces are not included within the assessment as these are not identified by planning policy or by the BRE Guidelines to be sensitive to changes in daylight and sunlight. Therefore, as part of the identification of sensitive receptor process, the use of each room is, where possible, established and windows serving non-habitable spaces such as toilets, store rooms, stairwells and circulation spaces are identified.

Windows serving rooms within commercial premises are assumed to be non-habitable and in accordance with the BRE Guidelines are not identified as sensitive receptors. However, there are special cases where it can be assumed that some non-domestic uses could be deemed to have a reasonable expectation of daylight and therefore could be taken forward for more detailed analysis. Typically these could be school classrooms, hospital wards, art studios etc, but professional judgement is generally relied upon to determine this and where considered appropriate, windows serving commercial premises are included.

Drawings showing the location of all sensitive receptors that have been assessed as part of this study is included in Appendix A.2 of this report.

In summary, habitable rooms in the following residential buildings have been identified as potential sensitive receptors and have therefore been tested.

- No. 112 Drummond Street
- Nos. 1, 2 & 3 Exmouth Mews
- Flats 14, 15, 16, 17, 21 & 22 Starcross Street

5.3 Numerical Modelling

The numerical analysis used in this assessment has been undertaken using the Waldrum Tools (Version 2) software package.

5.4 Calculation Assumptions

The following assumptions have been made when undertaking the analysis:

- When assessing the VSC the calculation is based on the centre point of the window position

- When assessing the ADF for internal rooms and in the absence of specific information, the following parameters are assumed:

  - Glazing type is assumed to be double glazing (Pilkington K Glass 4/16/4 Argon filled) with a light transmittance value of 0.75 (value for double glazed unit not per pane)
  - Correction factor for frames and glazing bars = 0.8
  - Where information from the designer is not available, the following values are used to derive the Maintenance Factor applied to the transmittance values.

Location / setting	**Building type (**Residential – good maintenance)	**Exposure (normal)**	**Special exposure**	**Maintenance Factor**
Urban	8%	x 1.0	x 1.0	0.94
Rural / suburban	4%	x 1.0	x 1.0	0.97

Table 5.1 – Parameters used for deriving Maintenance Factor (refer to BS 8206-2:2008 Tables A3, A4 and A5

The reflectance values used in the ADF analysis are as shown in Table 5.3 unless specified otherwise by the designer.

Surface	Value
Grass	10%
Pavement	20%
External brickwork	30%
External walls (concrete)	40%
External rendered wall (painted white)	60%
Internal walls (painted pale cream)	81%
Internal ceiling (painted white)	85%
Internal flooring	30%

Table 5.2 – Reflectance values used in ADF analysis

- Where information on internal room layouts of adjacent properties is not known, best estimates as to room layout and size have been made in order to undertake ADF and/or No Skyline analysis

- Where the internal arrangements and room uses have been estimated, it should be noted that this has no bearing upon the tests for VSC or APSH because the reference point is at the centre of the window being tested and windows have been accurately drawn from the survey information. It is relevant to the daylight distribution assessment, but in the absence of suitable plans, estimation is a conventional approach.

- In areas where survey data has not been provided or needs to be supplemented with additional information, photographs, OS mapping and brick counts have been used in the process of building the 3D model of the surrounding and existing buildings.

- When analysing the effect of the new building on the existing buildings, the shading effect of the existing trees has been ignored. This is the recommended practice where deciduous trees that do not form a dense belt or tree line are present (BRE Guidelines – Appendix H). This is because daylight is at its scarcest and most valuable in the winter when most trees will not be in leaf.

- In situations where windows are deeply set-back beneath balconies or other overhanging features, it is common for these rooms to have low VSC values as a result of the obstruction caused by the balcony. It widely accepted and acknowledged within the BRE Guidelines that the presence of balconies can mask the impact of a proposed development when using the VSC test and therefore the Guidelines suggest that the window should be tested both ‘with’ and ‘without’ the balcony in place. If the ratio of change with the development in place, but with the balconies removed, remains above 0.8, then it can be concluded that it is the presence of the balcony

rather than the introduction of a new building that is the main factor in the relative loss of light.

5.5 Assessment criteria

The numerical assessment criteria specified within the BRE Guidelines is designed to identify the threshold at which point a change in daylight or sunlight would become 'noticeable' to the occupants. Consequently, where the results of the daylight/sunlight analysis demonstrate compliance with the BRE criteria it can be concluded that the impact will be negligible.

However, a point that should be stressed here is that 'noticeable' does not necessarily equate to 'unacceptable' and the BRE's standard target values should not always be considered as pass/fail criteria. Whilst the BRE Guidelines provide numerical guidance for daylight, sunlight and overshadowing, these criteria should not be seen as absolute targets since, as the document states, the intention of the guide is to help rather than constrain the designer. The Guide is not an instrument of planning policy, therefore whilst the methods given are technically robust, it is acknowledged that some level of flexibility should be applied where appropriate.

Consequently, based on the numerical assessment criteria set out with the BRE Guidelines and the use of professional judgment, the following assessment criteria have been established and are used in describing the impacts of the proposed development.

Significance	Description	Typical Change Ratio
Negligible	No alteration or a small alteration from the existing scenario. Results demonstrate full compliance with the BRE assessment criteria and therefore occupants are unlikely to notice any change.	1.0 to 0.8
Minor adverse	An alteration from the existing scenario which may be marginally noticeable to the occupant. This may include a marginal infringement of the numerical levels suggested in the BRE Guidelines, which should be viewed in context. A typical change ratio for this level of significance would be 0.7	0.7 to 0.8
Moderate adverse	An alteration from the existing scenario which may cause a moderate noticeable change to the occupant. This may consist of a moderate infringement of the numerical BRE assessment criteria with	0.6 to 0.7
Major adverse	An alteration from the existing scenario which may cause a major noticeable change to the occupant. This may consist of a significant infringement of the numerical BRE assessment criteria.	Less than 0.6

Table 5.3 - Daylight & Sunlight Impact Descriptors

6 Daylight Analysis

6.1 Vertical Sky Component Assessment

Using the analytical techniques discussed in Section 4, the VSC for the key receptors has been calculated for the 'pre' and 'post' development conditions. The detailed outputs from the numerical analysis are included in Appendix A.3. The results are summarised in Tables 6.1 to 6.10 below.

14 Starcross Street						
Floor	**Room**	**Window**	**VSC (pre-development)**	**VSC (post-development)**	**Ratio of change**	**BRE minimum requirements met?**
Second	R1	W1	37.94	37.80	1.00	Yes
	R2	W2	37.85	37.72	1.00	Yes
		W3	37.90	37.77	1.00	Yes

Table 6.1 – Comparison of 'pre' and 'post' development VSC Tests

15 Starcross Street						
Floor	**Room**	**Window**	**VSC (pre-development)**	**VSC (post-development)**	**Ratio of change**	**BRE minimum requirements met?**
Second	R1	W1	36.29	36.14	1.00	Yes
		W2	37.05	36.91	1.00	Yes
	R2	W3	37.81	37.66	1.00	Yes

Table 6.2 – Comparison of 'pre' and 'post' development VSC Tests

16 Starcross Street						
Floor	**Room**	**Window**	**VSC (pre-development)**	**VSC (post-development)**	**Ratio of change**	**BRE minimum requirements met?**
Ground	R1	W1	29.82	29.57	0.99	Yes
		W2	19.79	19.79	1.00	Yes
		W3	12.54	12.54	1.00	Yes
	R2	W4	18.52	18.52	1.00	Yes
First	R1	W1	33.95	33.75	0.99	Yes
		W2	34.29	34.09	0.99	Yes
		W3	24.17	24.17	1.00	Yes
	R2	W4	28.24	28.08	0.99	Yes

Table 6.3 – Comparison of 'pre' and 'post' development VSC Tests

17 Starcross Street						
Floor	**Room**	**Window**	**VSC (pre-development)**	**VSC (post-development)**	**Ratio of change**	**BRE minimum requirements met?**
Ground	R1	W1	19.30	19.13	0.99	Yes
	R2	W2	0.00	0.00	1.00	Yes
		W3	19.28	19.23	1.00	Yes
		W4	30.28	30.20	1.00	Yes
First	R1	W1	29.38	29.22	0.99	Yes
	R2	W2	22.45	22.41	1.00	Yes
		W3	34.77	34.60	1.00	Yes
		W4	34.81	34.65	1.00	Yes

Table 6.4 – Comparison of 'pre' and 'post' development VSC Tests

21 Starcross Street						
Floor	**Room**	**Window**	**VSC (pre-development)**	**VSC (post-development)**	**Ratio of change**	**BRE minimum requirements met?**
Second	R1	W1	37.54	37.40	1.00	Yes
Third	R1	W1	39.24	39.12	1.00	Yes
		W2	26.43	26.42	1.00	Yes

Table 6.5 – Comparison of 'pre' and 'post' development VSC Tests

22 Starcross Street						
Floor	**Room**	**Window**	**VSC (pre-development)**	**VSC (post-development)**	**Ratio of change**	**BRE minimum requirements met?**
Second	R1	W1	20.79	20.66	0.99	Yes
Third	R1	W1	15.63	15.63	1.00	Yes
		W2	33.31	33.12	0.99	Yes

Table 6.6 – Comparison of 'pre' and 'post' development VSC Tests

112 Drummond Street						
Floor	**Room**	**Window**	**VSC (pre-development)**	**VSC (post-development)**	**Ratio of change**	**BRE minimum requirements met?**
Second	R1	W1	37.12	37.10	1.00	Yes
		W2	26.64	21.57	0.81	Yes
Third	R1	W1	37.67	37.67	1.00	Yes

Table 6.7 – Comparison of 'pre' and 'post' development VSC Tests

1 Exmouth Mews						
Floor	**Room**	**Window**	**VSC (pre-development)**	**VSC (post-development)**	**Ratio of change**	**BRE minimum requirements met?**
Ground	R1	W1	29.28	29.13	0.99	Yes
	R2	W2	28.75	28.63	1.00	Yes
First	R1	W1	33.27	33.11	1.00	Yes
	R2	W2	32.65	32.54	1.00	Yes

Table 6.8 – Comparison of 'pre' and 'post' development VSC Tests

2 Exmouth Mews						
Floor	**Room**	**Window**	**VSC (pre-development)**	**VSC (post-development)**	**Ratio of change**	**BRE minimum requirements met?**
Ground	R1	W1	28.87	28.58	0.99	Yes
	R2	W2	29.31	29.07	0.99	Yes
First	R1	W1	33.21	32.91	0.99	Yes
	R2	W2	33.37	33.16	0.99	Yes

Table 6.9 – Comparison of 'pre' and 'post' development VSC Tests

3 Exmouth Mews						
Floor	**Room**	**Window**	**VSC (pre-development)**	**VSC (post-development)**	**Ratio of change**	**BRE minimum requirements met?**
Ground	R1	W1	27.14	26.64	0.98	Yes
	R2	W2	27.82	27.41	0.99	Yes
First	R1	W1	31.48	30.88	0.98	Yes
	R2	W2	32.50	32.05	0.99	Yes

Table 6.10 – Comparison of 'pre' and 'post' development VSC Tests

6.2 No Sky Line Assessment

In order to pass the No Sky Line Assessment, the BRE Guidelines state that the area of the working plane within the room that has a view of the sky should not be reduced to less than 0.8 times its former value as a result of new development. One benefit of the daylight distribution test is that the resulting contour plans show where the light falls within a room, both in the existing and proposed conditions, and a judgement may be made as to whether the room will retain light to a reasonable depth.

In this case the dimensions and exact layout of the rooms within the existing buildings are not known. However, in order to gain an understanding of the impact of the proposed development on the daylight distribution within the potentially affected rooms an estimate of the room dimension and layout has been made.

The results of this analysis are summarised in Tables 6.11 to 6.20 and detailed outputs of the analysis are included in the Appendix to this report.

14 Starcross Road				
Floor	**Room**	**Percentage of working plane area with a sky view**		**Ratio of change**
		Pre Development	**Post Development**	
Second	R1	97.95%	97.95%	1.00
	R2	99.61%	99.61%	1.00

Table 6.11 – Comparison of 'pre' and 'post' development NSL tests

15 Starcross Road				
Floor	**Room**	**Percentage of working plane area with a sky view**		**Ratio of change**
		Pre Development	**Post Development**	
Second	R1	99.50%	99.50%	1.00
	R2	97.79%	97.79%	1.00

Table 6.12 – Comparison of 'pre' and 'post' development NSL tests

16 Starcross Road				
Floor	**Room**	**Percentage of working plane area with a sky view**		**Ratio of change**
		Pre Development	**Post Development**	
Ground	R1	100%	100%	1.00
	R2	94.74%	94.74%	1.00
First	R1	100%	100%	1.00
	R2	99.28%	99.28%	1.00

Table 6.13 – Comparison of 'pre' and 'post' development NSL tests

17 Starcross Road				
Floor	**Room**	**Percentage of working plane area with a sky view**		**Ratio of change**
		Pre Development	**Post Development**	
Ground	R1	95.69%	95.69%	1.00
	R2	99.94%	99.94%	1.00
First	R1	99.18%	99.18%	1.00
	R2	100%	100%	1.00

Table 6.14 – Comparison of 'pre' and 'post' development NSL tests

21 Starcross Road				
Floor	**Room**	**Percentage of working plane area with a sky view**		**Ratio of change**
		Pre Development	**Post Development**	
Second	R1	97.96%	97.96%	1.00
Third	R1	64.44%	64.44%	1.00

Table 6.15 – Comparison of 'pre' and 'post' development NSL tests

22 Starcross Road				
Floor	**Room**	**Percentage of working plane area with a sky view**		**Ratio of change**
		Pre Development	**Post Development**	
Ground	R1	80.18%	80.18%	1.00
First	R1	93.67%	93.67%	1.00

Table 6.16 – Comparison of 'pre' and 'post' development NSL tests

112 Drummond Street				
Floor	**Room**	**Percentage of working plane area with a sky view**		**Ratio of change**
		Pre Development	**Post Development**	
Ground	R1	99.80%	99.80%	1.00
First	R1	96.66%	96.66%	1.00

Table 6.17 – Comparison of 'pre' and 'post' development NSL tests

1 Exmouth Mews				
Floor	**Room**	**Percentage of working plane area with a sky view**		**Ratio of change**
		Pre Development	**Post Development**	
Ground	R1	85.19%	85.19%	1.00
	R2	88.79%	88.79%	1.00
First	R1	96.29%	96.29%	1.00
	R2	98.48%	98.48%	1.00

Table 6.18 – Comparison of 'pre' and 'post' development NSL tests

2 Exmouth Mews				
Floor	**Room**	**Percentage of working plane area with a sky view**		**Ratio of change**
		Pre Development	**Post Development**	
Ground	R1	93.61%	93.61%	1.00
	R2	83.81%	83.81%	1.00
First	R1	98.52%	98.52%	1.00
	R2	96.90%	96.90%	1.00

Table 6.19 – Comparison of 'pre' and 'post' development NSL tests

3 Exmouth Mews				
Floor	**Room**	**Percentage of working plane area with a sky view**		**Ratio of change**
		Pre Development	**Post Development**	
Ground	R1	85.19%	85.19%	1.00
	R2	93.12%	93.12%	1.00
First	R1	96.99%	96.99%	1.00
	R2	98.70%	98.70%	1.00

Table 6.20 – Comparison of 'pre' and 'post' development NSL tests

6.3 Discussion of Daylighting Impacts

Based on the results of the numerical analysis summarised in the above tables it is possible to draw conclusions as to the impacts that the proposed development will have on the neighbouring buildings. These are discussed as follows:

Vertical Sky Component

The BRE Guidelines operate on the general principle where the retained VSC is 27% or greater, or where the VSC is below 27% and is not reduced to less than 0.8 times its former value, then the reduction in daylight is unlikely to be noticeable to the building's occupants and thus the impact can be deemed negligible.

Based on the results of the analysis summarised in the above tables, it can be seen that all of the windows either retain a VSC value greater than 27% post development, or have a ratio of change that is 0.8 or above and therefore are fully compliant. Consequently, in line with the assessment criteria set out within the BRE Guidelines it is possible to conclude that the impact of the proposed development on the daylighting to the neighbouring windows will be **negligible**.

No Sky Line

The BRE Guidelines state that, if following the construction of a new development, the no sky line moves such that the area of the room that does receive 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.

From these results, it can be seen that as a result of the proposed development the area of the working plane within the assessed rooms that receives direct light from the sky will not be reduced to an extent such that the ratio of change is significantly less than the 0.8 recommended value.

Consequently, from this analysis it can be concluded that there will be no alteration or a small alteration from the existing scenario. The results demonstrate full compliance with the BRE assessment criteria and therefore occupants are unlikely to notice any change and the impact can be concluded as being **negligible**.

7 Sunlight and Overshadowing Analysis

7.1 Annual Probable Sunlight Hours Assessment

Whilst the application of the four-stage assessment outlined in Section 4.5 allows the use of the more simplistic tests (Tests 1 to 3) to be used where applicable, when using a computational numerical model, it is a more robust and efficient approach to test all windows using the most detailed methodology. Consequently, for all windows that do not face within 90 degrees of due north, the APSH values have been calculated.

To pass this test the centre point of the window will need to receive more than one quarter of APSH, including at least 5% APSH in the winter months between 21st September and the 21st March. The BRE Guidelines state that if 'post-development' the available sunlight hours are both less than the amount above and less than 0.8 times their 'pre-development' value, either over the whole year or just within the winter months, then the occupants of the existing building will notice the loss of sunlight.

The APSH test has been carried out and the detailed results of the analysis and model outputs are included in Appendix A.3 and a summary of the results are shown in Tables 7.1 to 7.10.

14 Starcross Street							
			Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Room	Window	All year	Winter	All year	Winter	
Second	R1	W1	81%	28%	1.00	1.00	0%
	R2	W2	81%	28%	1.00	1.00	0%
	R3	W3	79%	27%	0.99	0.99	1%

Table 7.1 – Results of APSH analysis

15 Starcross Street							
			Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Room	Window	All year	Winter	All year	Winter	
Second	R1	W1	77%	28%	1.00	1.00	0%
	R2	W2	79%	28%	1.00	1.00	0%
	R3	W3	81%	28%	1.00	1.00	0%

Table 7.2 – Results of APSH analysis

16 Starcross Street							
			Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Room	Window	All year	Winter	All year	Winter	
Ground	R1	W1	67%	20%	1.00	1.00	0%
		W2	43%	15%	1.00	1.00	0%
		W3	28%	6%	1.00	1.00	0%
	R2	W4	39%	13%	1.00	1.00	0%
First	R1	W1	78%	26%	1.00	1.00	0%
		W2	79%	27%	1.00	1.00	0%
		W3	53%	21%	1.00	1.00	0%
	R2	W4	64%	22%	1.00	1.00	0%

Table 7.3 – Results of APSH analysis

17 Starcross Street							
			Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Room	Window	All year	Winter	All year	Winter	
Ground	R1	W1	34%	6%	1.00	1.00	0%
	R2	W2	0%	0%	1.00	1.00	0%
		W3	25%	3%	1.00	1.00	0%
		W4	70%	18%	1.00	1.00	0%
First	R1	W1	58%	14%	1.00	1.00	0%
	R2	W2	31%	5%	1.00	1.00	0%
		W3	79%	26%	1.00	1.00	0%
		W4	79%	26%	1.00	1.00	0%

Table 7.4 – Results of APSH analysis

21 Starcross Street							
			Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Room	Window	All year	Winter	All year	Winter	
Second	R1	W1	79%	28%	1.00	1.00	0%
Third	R1	W1	82%	28%	1.00	1.00	0%
		W2	46%	17%	1.00	1.00	0%

Table 7.5 – Results of APSH analysis

22 Starcross Street							
			Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Room	Window	All year	Winter	All year	Winter	
Ground	R1	W1	43%	12%	1.00	1.00	0%
		W2	1%	0%	1.00	1.00	0%
First	R1	W1	76%	25%	1.00	1.00	0%

Table 7.6 – Results of APSH analysis

112 Drummond Street							
			Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Room	Window	All year	Winter	All year	Winter	
Second	R1	W1	18%	2%	1.00	1.00	0%
Third	R1	W1	13%	0%	1.00	1.00	0%

Table 7.7 – Results of APSH analysis

1 Exmouth Mews							
			Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Room	Window	All year	Winter	All year	Winter	
Ground	R1	W1	50%	14%	0.98	0.93	1%
	R2	W2	52%	16%	1.00	1.00	0%
First	R1	W1	60%	22%	1.00	1.00	0%
	R2	W2	58%	22%	0.98	0.96	1%

Table 7.8 – Results of APSH analysis

2 Exmouth Mews							
			Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Room	Window	All year	Winter	All year	Winter	
Ground	R1	W1	48%	11%	0.96	0.85	2%
	R2	W2	50%	14%	0.96	0.88	2%
First	R1	W1	56%	17%	0.98	0.94	1%
	R2	W2	55%	17%	0.98	0.94	1%

Table 7.9 – Results of APSH analysis

3 Exmouth Mews							
			Percentage APSH (Proposed)		Ratio of change		Percentage reduction in APSH
Floor	Room	Window	All year	Winter	All year	Winter	
Ground	R1	W1	41%	5%	0.98	0.83	1%
	R2	W2	43%	6%	0.93	0.67	3%
First	R1	W1	48%	8%	0.96	0.80	2%
	R2	W2	53%	13%	1.00	1.00	0%

Table 7.10 – Results of APSH analysis

The assessment requirements set out in the BRE Guidelines have been reiterated below. For the assessment to conclude that the sunlighting of the existing dwelling could be adversely affected, all three of the following tests need to have been failed:

a) Does the window receive less than 25% of the APSH, or less than 5% the APSH between 21st September and 21st March?

b) Does the assessed window receive less than 0.8 times its former sunlight hours during either the 'whole year' or 'winter' period?

c) Is the reduction in sunlight received over the whole of the year greater than 4% of the APSH?

When the results of the APSH analysis summarised in Table 7.1 are inspected, it can be seen that in the majority of cases the 'all year' sunlight hours with the development in place remain above the 25% threshold and the winter value is well above 5%.

However, when examining the ratio of change between the existing and proposed scenarios it can be seen that in all cases the ratio of change remains robustly greater than 0.8.

Given that in all of the above cases at least one test is passed then the BRE assessment criteria are met. Consequently, it can be concluded that the impact of the proposed development will be **negligible**.

7.2 Sun on the Ground

The BRE Guidelines acknowledge that good site layout planning for daylight and sunlight should not limit itself to providing good natural light inside buildings. Sunlight in the space between buildings has an important effect on the overall appearance and ambiance of a development. The worst situation is to have significant areas on which the sun does not shine for a large part of the year. These areas would, in general, be damp, chilly and uninviting.

The 2011 BRE Guidelines suggest that the Spring Equinox (21st March) is a suitable date for the assessment and therefore using the specialist software described in Section 5.3, the path of the sun is tracked to determine where the sun would reach the ground and where it would not.

The BRE guidelines recommend that at least half of a garden or amenity area should receive at least 2 hours of sunlight on March 21st or the area which receives 2 hours of direct sunlight should not be reduced to less than 0.8 times its former value (i.e. there should be no more than a 20% reduction).

Typical examples of areas that could be considered as open spaces or amenity areas are main back gardens of houses, allotments, parks and playing fields, children's playgrounds, outdoor swimming pools, sitting-out areas, such as in public squares and focal points for views.

The following areas have been identified as sensitive amenity areas and the results of the sun on the ground analysis are summarise in Table 7.2.

- Area 1 – Roof terrace area to No. 112 Drummond Street

The shadow positions have been plotted throughout the day (21st March) and the results of this analysis summarised in Table 7.11 below. The graphical results are included in Appendix A.2.

Amenity area	Percentage of area lit for 2 hours or more on the 21st March		Ratio of change	Compliant with BRE criteria?
	Existing	Proposed		
Area 1	56%	56%	1.0	Yes

Table 7.11 – Results of the Sun on Ground analysis

From the above results, it can be seen that with the proposed scheme in place, the amenity area associated with No. 112 Drummond Street benefits from direct sunlight to well over 50% of its area on the 21st March and this is not reduced as a result of the development.. Consequently, it can be concluded that the proposed development will not result in a noticeable increase in overshadowing to the neighbouring gardens.

7.3 Transient Overshadowing

Where amenity areas are used at specific times of day or year, it is useful and illustrative to comment on the overshadowing that will occur throughout the day and at different times of the year. However, with traditional rear gardens and public open spaces that are potentially used all year round, it is acknowledged by the BRE Guidelines that the 21st March equinox is used, as this represents a much worst case than an assessment during the summer when shadows are shorter and impacts of new development are less magnified.

It is also worth highlighting that whilst the BRE Guidelines do not provide any thresholds or assessment criteria for overshadowing analysis carried out at any date other than the 21st March. All that is quoted in the Guidelines is an acknowledgement that some degree of transient overshadowing should be expected from new development. Consequently, unless there is a specific reason to assess overshadowing at a specific time of day, the use of transient shadow plots is not recommended by the BRE Guidelines.

In this situation it is not considered that any of the amenity areas that are potentially affected by the proposed development would be described as being sensitive to overshadowing at any particular time of day. Consequently, transient overshadowing is not considered appropriate for this assessment.

7.4 Solar Glare

Solar glare or dazzle can affect neighbouring buildings and pose potential hazards for road users under certain circumstances. The BRE Guidelines highlight two particular cases were this can be a problem; these being where there are large areas of reflective glass or cladding on the façade, or where large areas of glass or cladding slope back such that high altitude sunlight can be reflected along the ground.

When the proposed design is considered, it can be seen that the building does not slope back, nor does it include large areas of reflective glass or cladding. Given the building design and the BRE Guideline's stance on this matter, it is not considered necessary or appropriate to incorporate an analysis of solar glare.

8 Daylight Provision Within New Rooms

8.1 Assessment of Average Daylight Factor

Using the analytical techniques discussed in Section 4, the ADF for the habitable rooms within the proposed development has been calculated. It is a conventional approach to assume that where rooms on the lower floors of a development have an adequate provision of natural daylight, rooms on the floors above having a broadly similar layout and fenestration will receive increased levels of daylight.

In accordance with the guidance set out in both the BRE Guidelines and the BS 8206-2:2008 document, rooms that have a dual use, i.e. an open plan kitchen and lounge, are assessed as a single room and assessed against the room use with the highest daylighting requirement.

The results are summarised in Table 8.1 below.

Floor	Analysis /room ref no	ADF	Room Type	Recommended minimum value	Does this meet BRE criteria?
Below Ground	R2	2.6%	Bedroom	1.0%	Yes
	R1	1.2%	Bedroom	1.0%	Yes
Ground	R1	2.2%	Living Room	1.5%	Yes
	R2	2.4%	Kitchen/ Dining Room	2.0%	Yes
First	R1	2.2%	Studio/ Living/ Kitchen/ Dining Room	2.0%	Yes
Second	R1	2.2%	Living/ Kitchen/ Dining Room	2.0%	Yes
Third	R1	3.7%	Bedroom	1.0%	Yes
	R2	5.8%	Bedroom	1.0%	Yes

Table 8.1 – Calculated ADF Values

From the above results it can be seen that all rooms enjoy levels of daylight in excess of the required minimum percentage stipulated in the BRE Guidelines (2011).

8.2 Annual Probable Sunlight Hours

The BRE Guidelines provide guidance in respect of sunlight quality for new developments stating: *"in housing, the main requirement for sunlight is in living rooms, where it is valued at any time of the 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 morning rather than the afternoon."*

The assessment criteria set out within the BRE document are discussed in Section 4.3 of this report, but in general terms the overall objective sought by the guidelines is as follows:

"In general, a dwelling or non-domestic building which has a particular requirement for sunlight, will appear reasonably sunlit provided that at least one main window faces within 90 degrees 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.

It is also worth noting that in paragraph 3.1.11 of the BRE guidance it is suggested that if a room faces significantly north of due east or west it is unlikely to meet the recommended levels of sunlight. From this it can be deduced that only windows facing within 90 degrees of due south can be assessed using this methodology.

A further observation from paragraph 5.3 of the BS 8206-2 is that with regards to sunlight duration, the degree of satisfaction is related to the expectation of sunlight. Therefore, if a room is 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.

For the windows of the basement rooms, the alignment and APSH tests have been undertaken. The results of this analysis are summarised in Table 8.2. Where a room has more than one window on the same elevation, then the larger, more dominant window is tested.

Flat	Floor	Room	Window	Percentage APSH	
				All year	Winter
Flat 1	Below Ground	Bedroom 2	W1	18%	0%
		Bedroom 1	W2	0%	0%
			W3	0%	0%
			W4	0%	0%
	Ground	Living Room	W1	66%	15%
		Kitchen/ Dining	W2	0%	0%
Flat 2	First	Living/ Kitchen/ Dining (Studio)	W1	74%	21%
			W2	74%	21%
			W3	0%	0%
Flat 3	Second	Living/ Kitchen/ Dining	W1	80%	27%
			W2	80%	27%
	Third	Bedroom 2	W1	69%	23%
			W2	79%	27%
		Bedroom 1	W3	19%	2%
			W4	18%	2%

Table 8.2 – Results of APSH analysis

From the results summarised in Table 8.2 it can be seen that whilst some rooms to the rear of the property have North facing windows and as such do not receive direct sunlight, the configuration of the proposed development ensures each flat has rooms that are well lit by sunlight. A summary of the sunlight analysis is given below for each of the three proposed flats

Flat 1 (basement and ground floor) – Whilst only one of the bedrooms receives good levels of sunlight throughout the summer months, it is acknowledged by the BRE Guidelines that bedrooms have the lowest requirement for sunlight. What is important is that each flat has access to direct sunlight in the main living room. From the results of the analysis it is evident that the living room for Flat 1 receives significantly more than the minimum required amount of sunlight throughout the year and also during the winter months. Flat 2 (first floor) – Again this studio flat also enjoys excellent levels of sunlight provision to front facing windows throughout the winter as well as annually.

Flat 3 (second floor) – This flat enjoys the highest levels of direct sunlight of all three flats, with the living/ kitchen/ dining room and bedroom to the front of the property receiving in excess of the 25% annual and 5% winter sunlight.

In summary, when the provision of direct sunlight is considered, it can be seen that all three flats receive sunlight to at least the main living area, both throughout the year and during the winter months.

8.3 Direct Sunlighting to Amenity Spaces

The BRE Guidelines acknowledge that good site layout planning for daylight and sunlight should not limit itself to providing good natural light inside buildings. Sunlight in the space between buildings has an important effect on the overall appearance and ambiance of a development. The worst situation is to have significant areas on which the sun does not shine for a large part of the year. These areas would, in general, be damp, chilly and uninviting.

The BRE Guidelines set out the following principle benefits of sunlight in the spaces between buildings:

- To provide attractive sunlit views (all year)
- To make outdoor activities, like sitting out and children's play more pleasant (mainly during the warmer months)
- To encourage plant growth (mainly in spring and summer)
- To dry out the ground, reducing moss and slime (mainly during the colder months)
- To melt frost, ice and snow (in winter)
- To dry clothes (all year)

The assessment criteria set out within the BRE Guidelines is based on the recommendation that for an amenity space to appear adequately sunlit throughout the year, at least half of this area should receive at least two hours of sunlight on 21 March.

Inspection of the site plan shows that the residents of flat 3 (located over the second and third floors) will have access to a roof terrace area. This will receive well in excess of 2 hours of direct sunlight to over 50% of its area on the 21st March and therefore this amenity space is considered to meet the necessary requirements for direct sunlight.

9 Conclusions

The detailed analysis undertaken as part of this assessment has examined the impact of the proposed development on the amount of daylight enjoyed by the habitable rooms within neighbouring buildings. In line with the assessment criteria prescribed by the BRE Guideline, it has been shown that the reduction in daylighting to the windows of the neighbouring buildings is less than the value that is considered to represent a notable impact.

The assessment of the impact of the proposed development on the sunlight enjoyed by the neighbouring buildings has also shown that whilst there will be a reduction in the number of probable sunlight hours enjoyed by these windows, this reduction is again within the limits prescribed by the BRE Guidelines as being acceptable.

In summary, the development proposals have been appraised in line with the guidelines set out in the BRE document. When assessed against the criteria for establishing whether the proposed development will have a significant impact, it has been possible to conclude that the development will not result in a notable reduction in the amount of either daylight or sunlight enjoyed by the neighbouring buildings.

In addition to the impact on its neighbours, the provision of natural daylight and sunlight to the habitable rooms within the proposed development itself has also been quantified. This analysis has shown that all rooms will meet or exceed the minimum target ADF values set out within the BRE Guidelines and the British Standards. Consequently, it can be concluded that these habitable spaces will be well lit and will have a reduced reliance on supplementary electric lighting

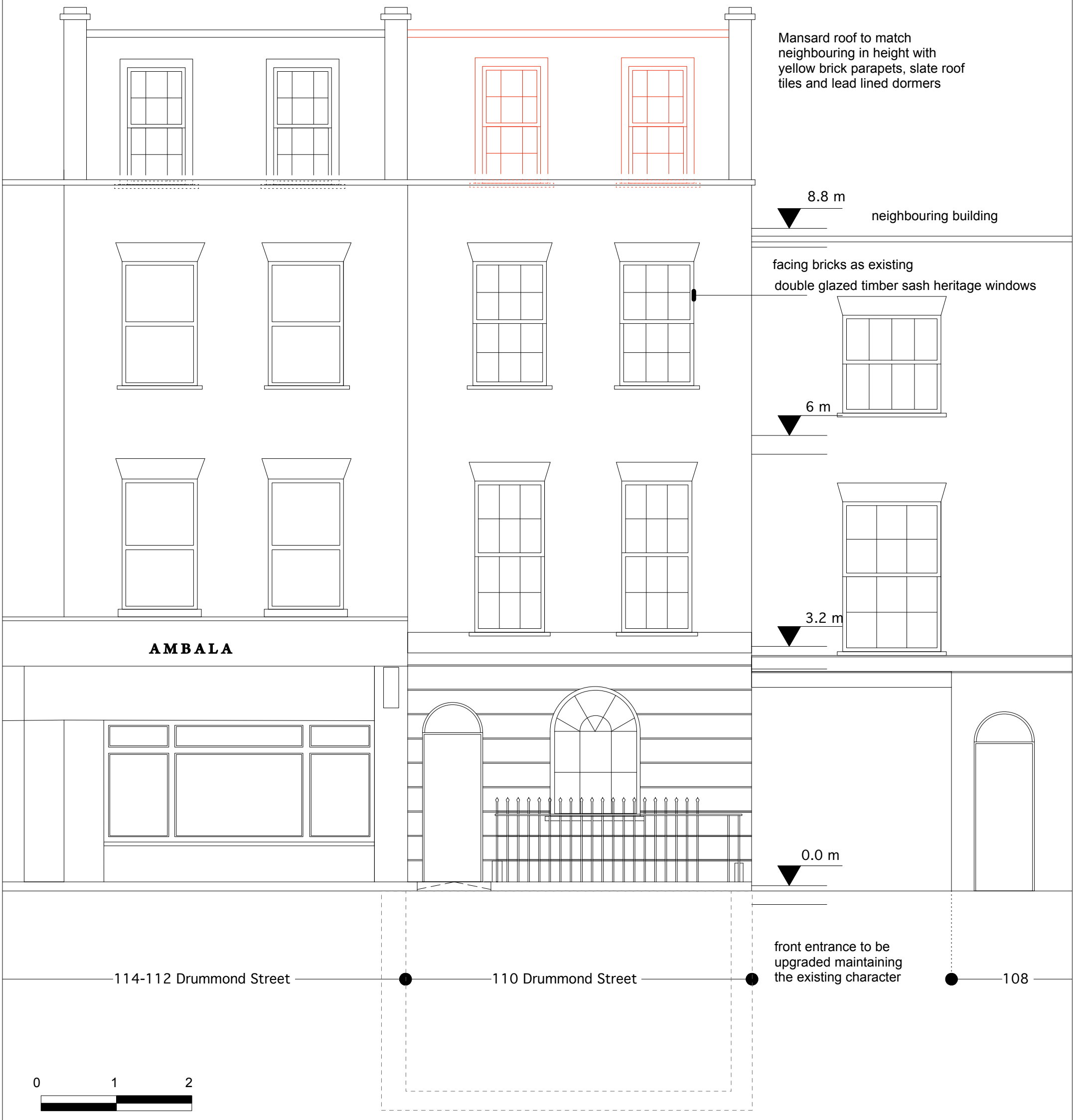
A Appendices

A.1 Appendix A.1 – Scheme Drawings

A.2 Appendix A.2 – Graphical Model Outputs

A.3 Appendix A.3 – Tabulated Results for Daylight & Sunlight Calculations

Appendix A.1 – Scheme Drawings



Notes

Key

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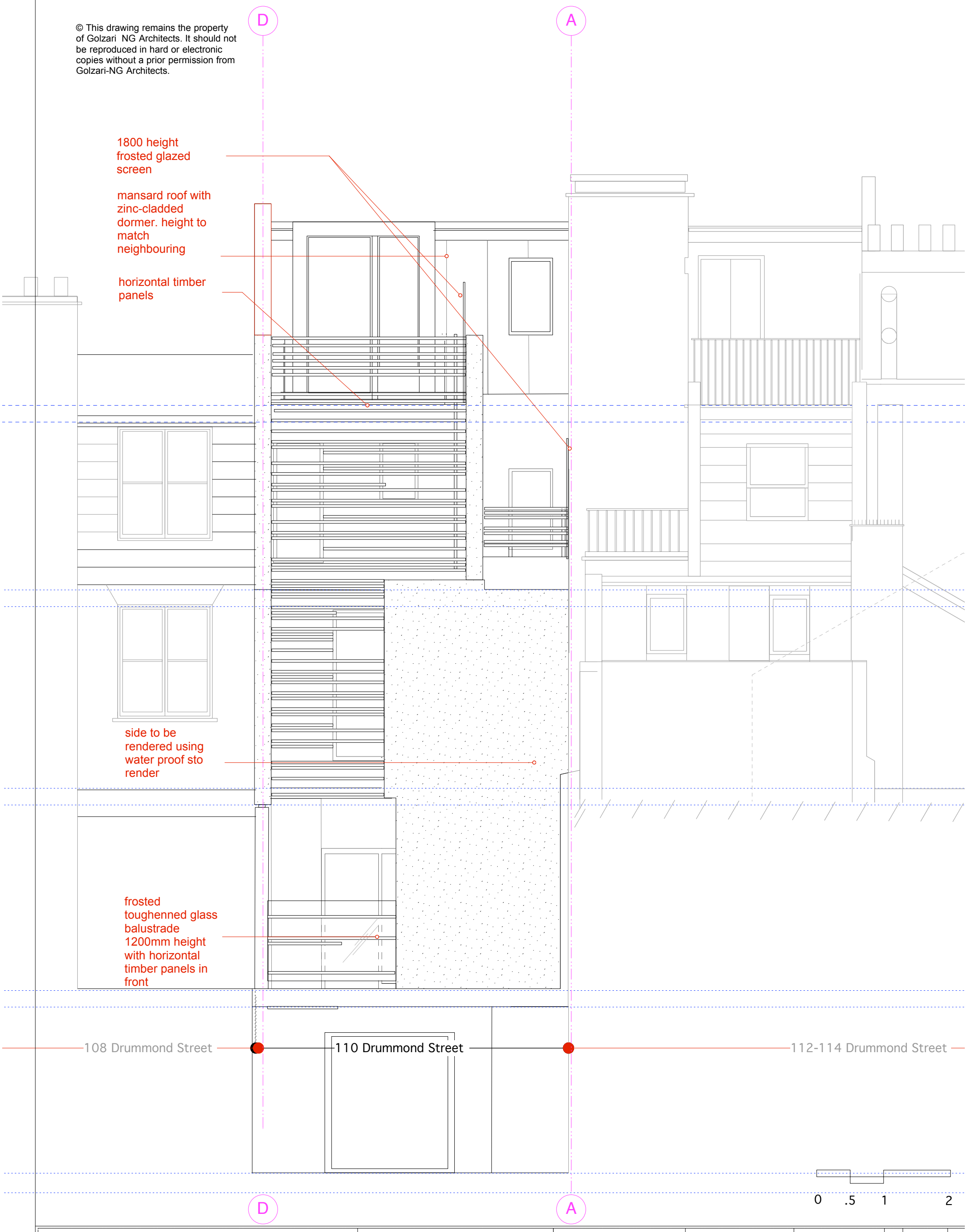
Project No NG1404	Drawing No NG17	Rev	Date	DRWN
Project 110 Drummond Street	Scale: 1:50@A3	-A	05.10.15	MT
Drawing Title Proposed Front Elevation	Comments/Issue For Information Only			



Notes

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Project No NG1404	Drawing No. 06	Rev	Date	DR
Project 110 Drummond Street	Scale: 1:50@A3	A	6.10.15	
Drawing Title Proposed Rear Elevation	Comments/Issue For Information Only			

Side wall addittion in yellow stock bricks to match neighbours' wall in height and material

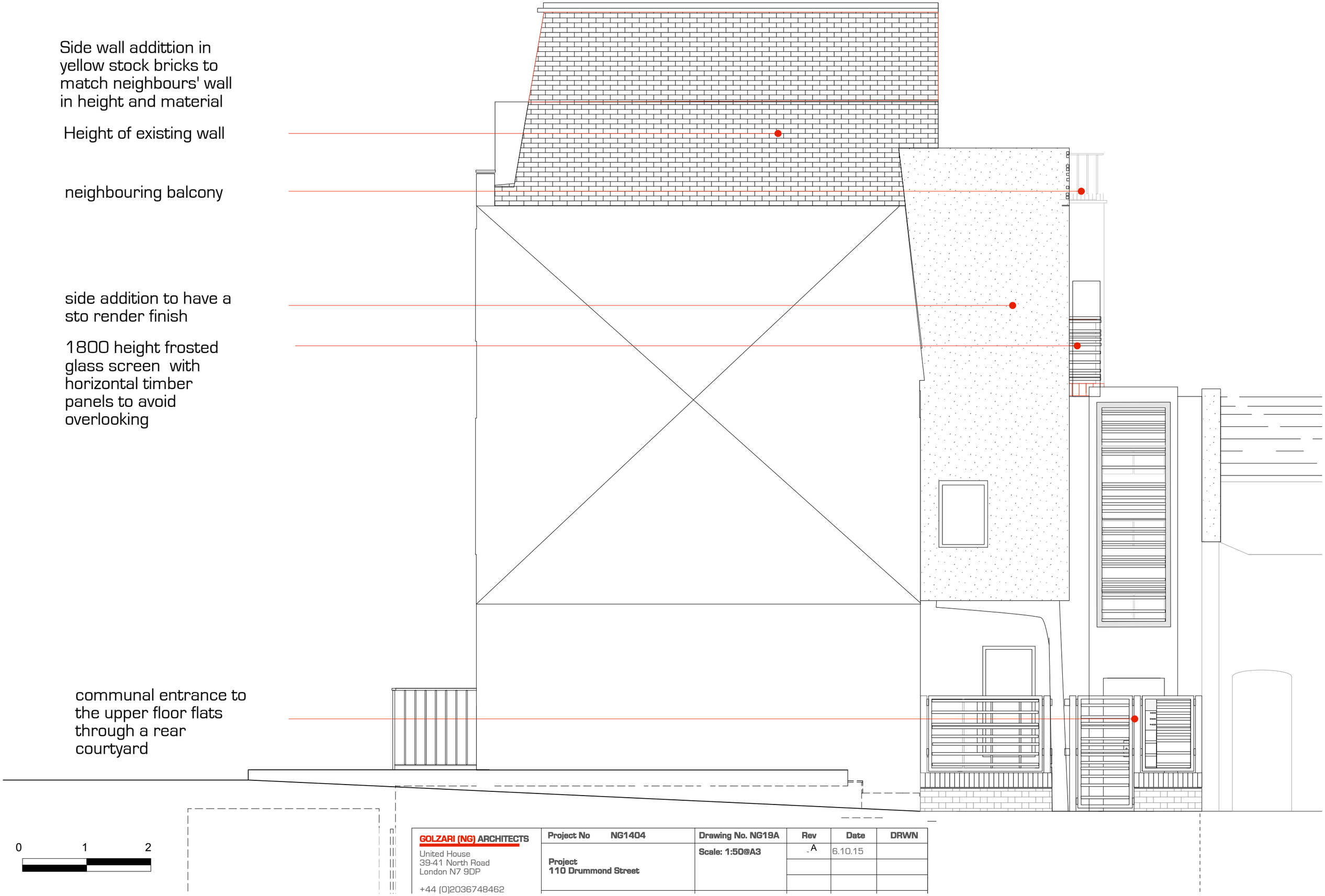
Height of existing wall

neighbouring balcony

side addition to have a sto render finish

1800 height frosted glass screen with horizontal timber panels to avoid overlooking

communal entrance to the upper floor flats through a rear courtyard



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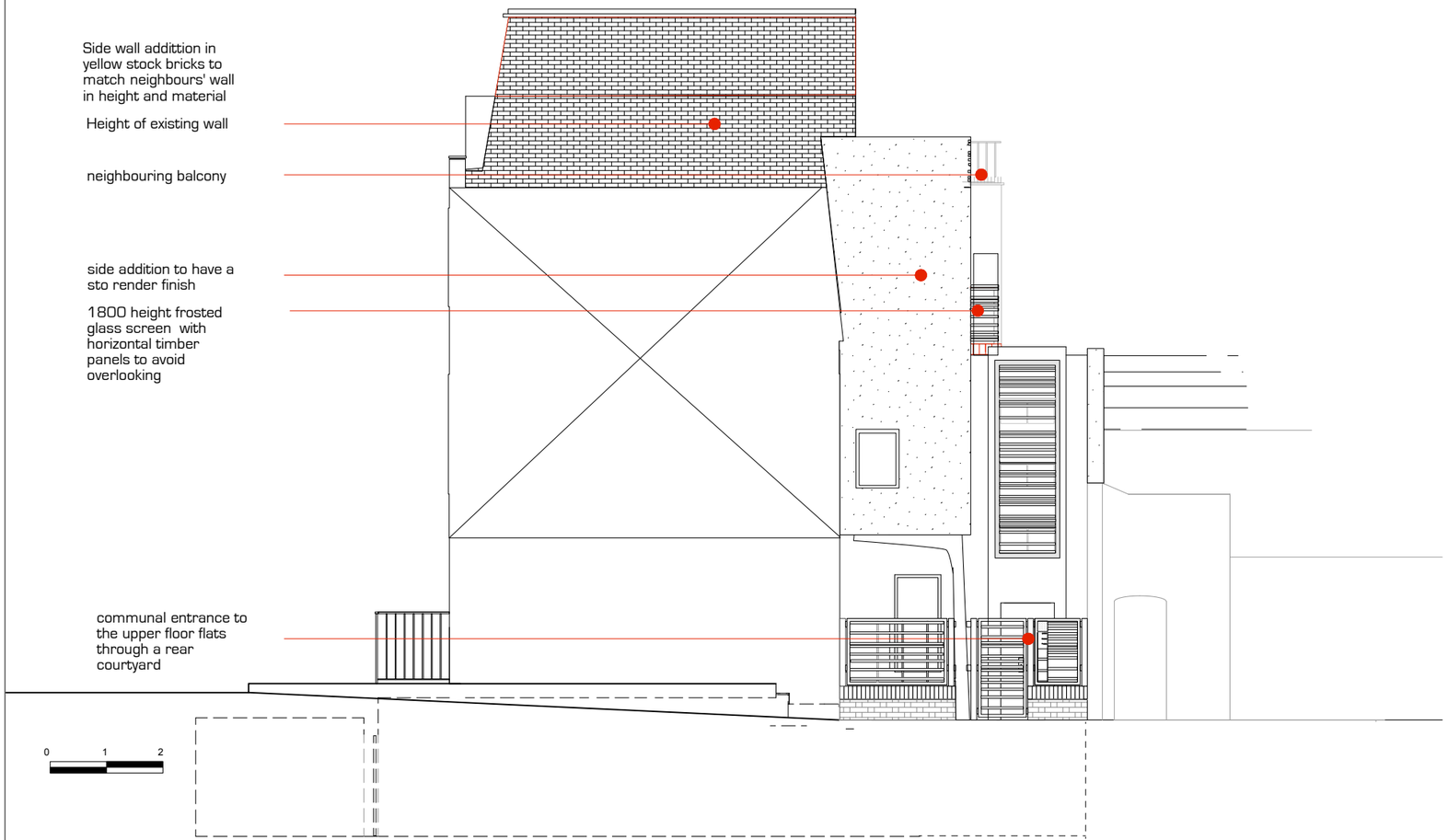
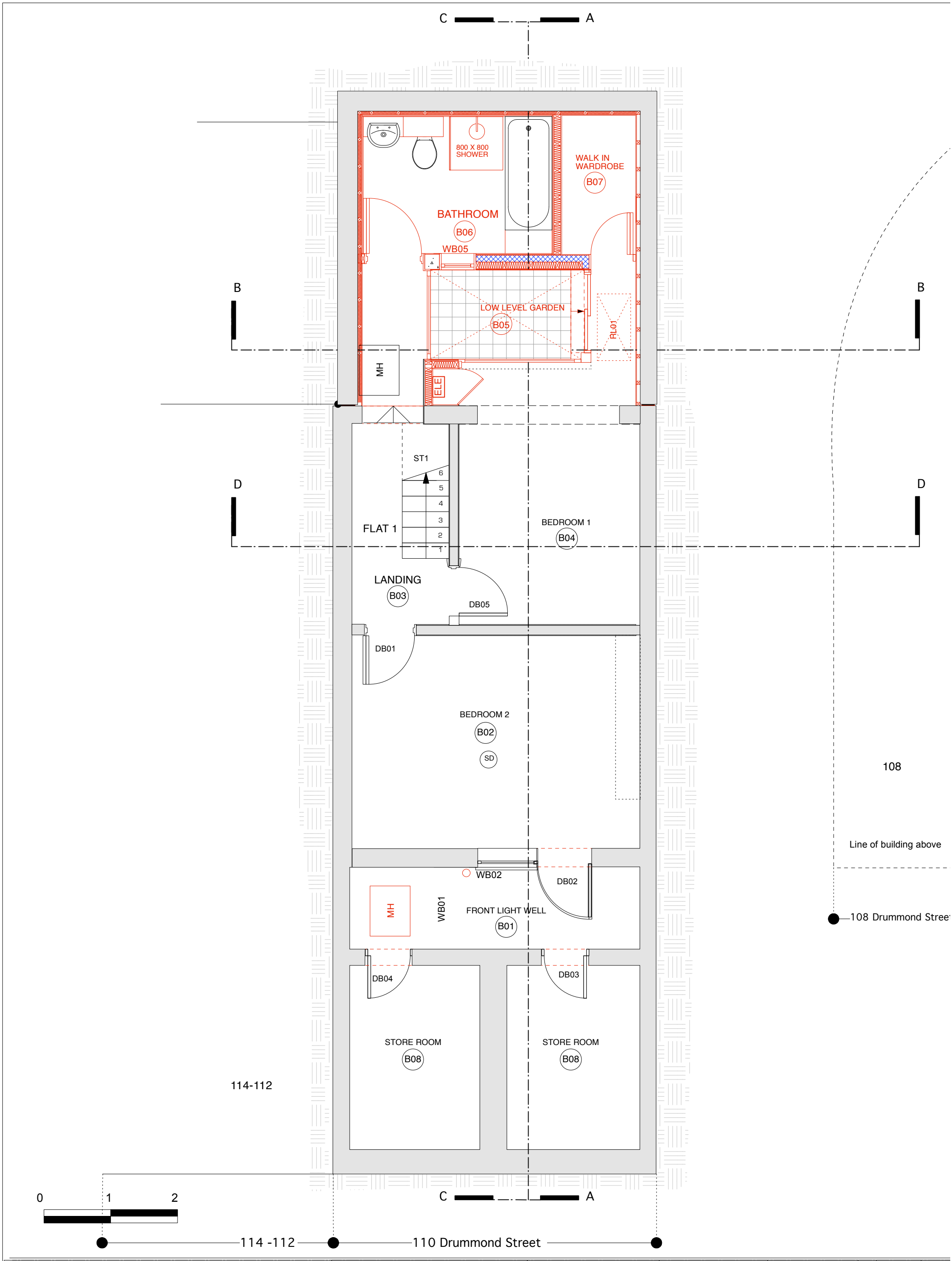
Project No NG1404	Drawing No. NG19	Rev	Date	DRWN
Project **110 Drummond Street**	**Scale: 1:100@A3**	- A	6.10.15	
Drawing Title **Proposed Side Elevation**	**Comments/Issue** For Information Only			

Notes

Key





Notes

Key

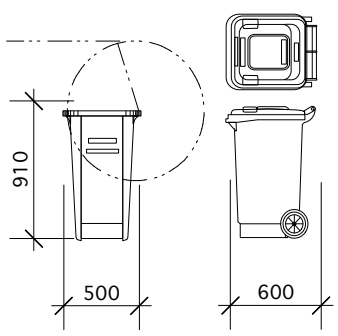
- Existing Walls
- Remove Walls
- Masonry Sto Rend Block Wall
- Proposed Insulated Stud Wall

GOLZARI (NG) ARCHITECTS
United House
39-41 North Road
London N7 9DP
+44 (0)2036748462
Email: info@ngarchitects.co.uk

Project No NG1404	Drawing No NG12	Rev	Date	DRWN
Project 110 Drummond Street	Scale: 1:50@A3	A	27.07.15	
Drawing Title Proposed Basement	Comments/Issue For Information Only			

NOTES

Eurobins 240 litres



C A

B B

D D

proposed cycle racks

mail boxes

RL02

MDB

Gas

COURTYARD

G06

Frosted glass 1.1m high

Proposed rear extension

LOWER GROUND GARDEN

G04

RL01

ST1

LANDING

G03

KITCHEN & DINING

G02

BOILER

FRIDGE

LIVING

G01

114 -112

Exmouth Mews

108

Line of building above

100mm Step

front street elevation to remain as existing

FLAT 1
105 m2

LOWER LEVEL

114 -112

110 Drummond Street

108 Drummond Street

C A

0 1 2

Notes

Key

- Existing Walls
- Remove Walls
- Masonry Sto Rend Block Wall
- Proposed Insulated Stud Wall

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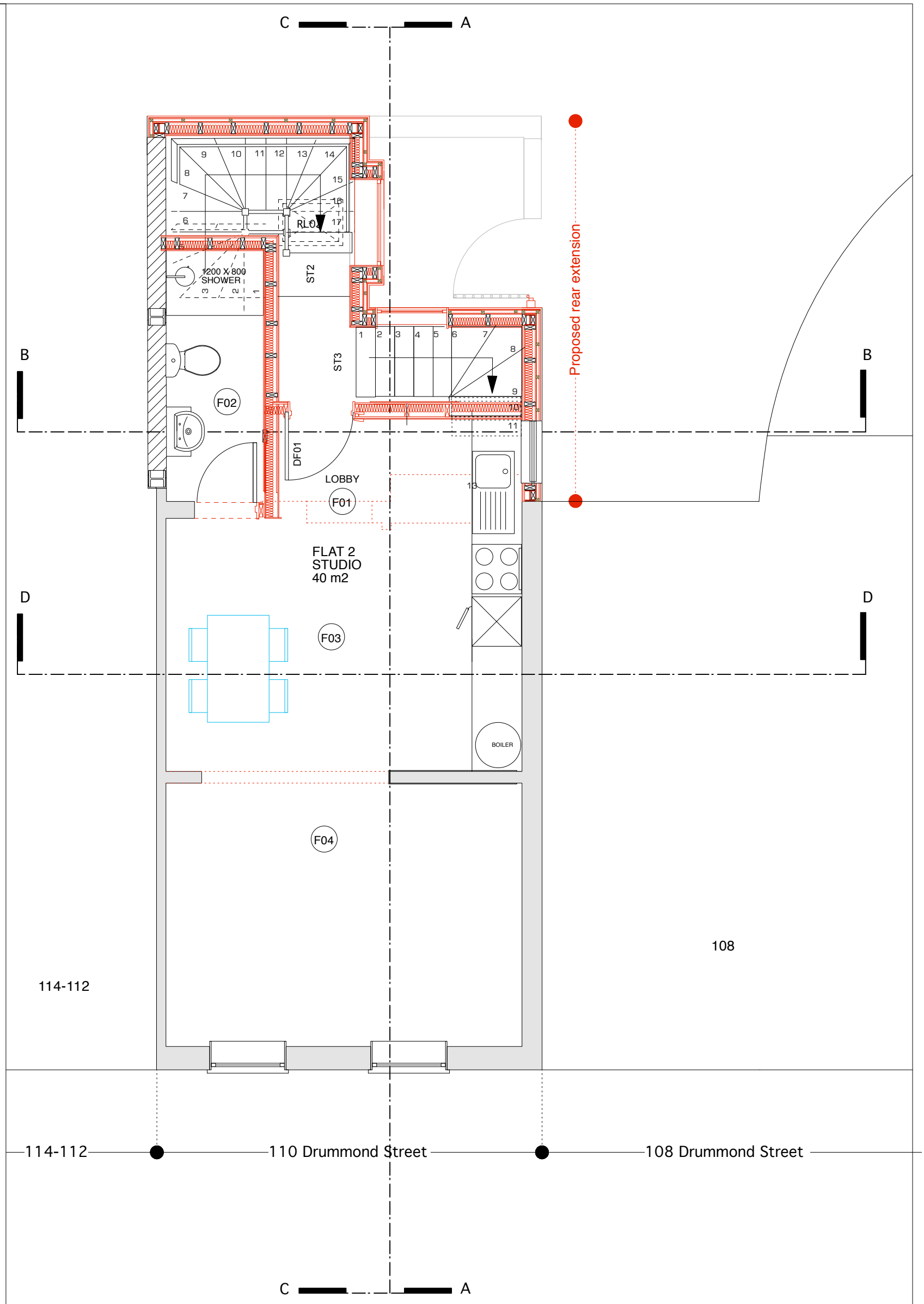
Project No NG1404	Drawing No. NG13	Rev	Date	DRWN
Project 110 Drummond Street	Scale: 1:50@A3	-		
Drawing Title Proposed Ground	Comments/Issue For Information Only		6.10.15	
		A	15.12.15	

NOTES



0 1 2

Notes

Key

- Existing Walls
- Remove Walls
- Stud with StoRend outer panel
- Internal Insulated Stud Wall

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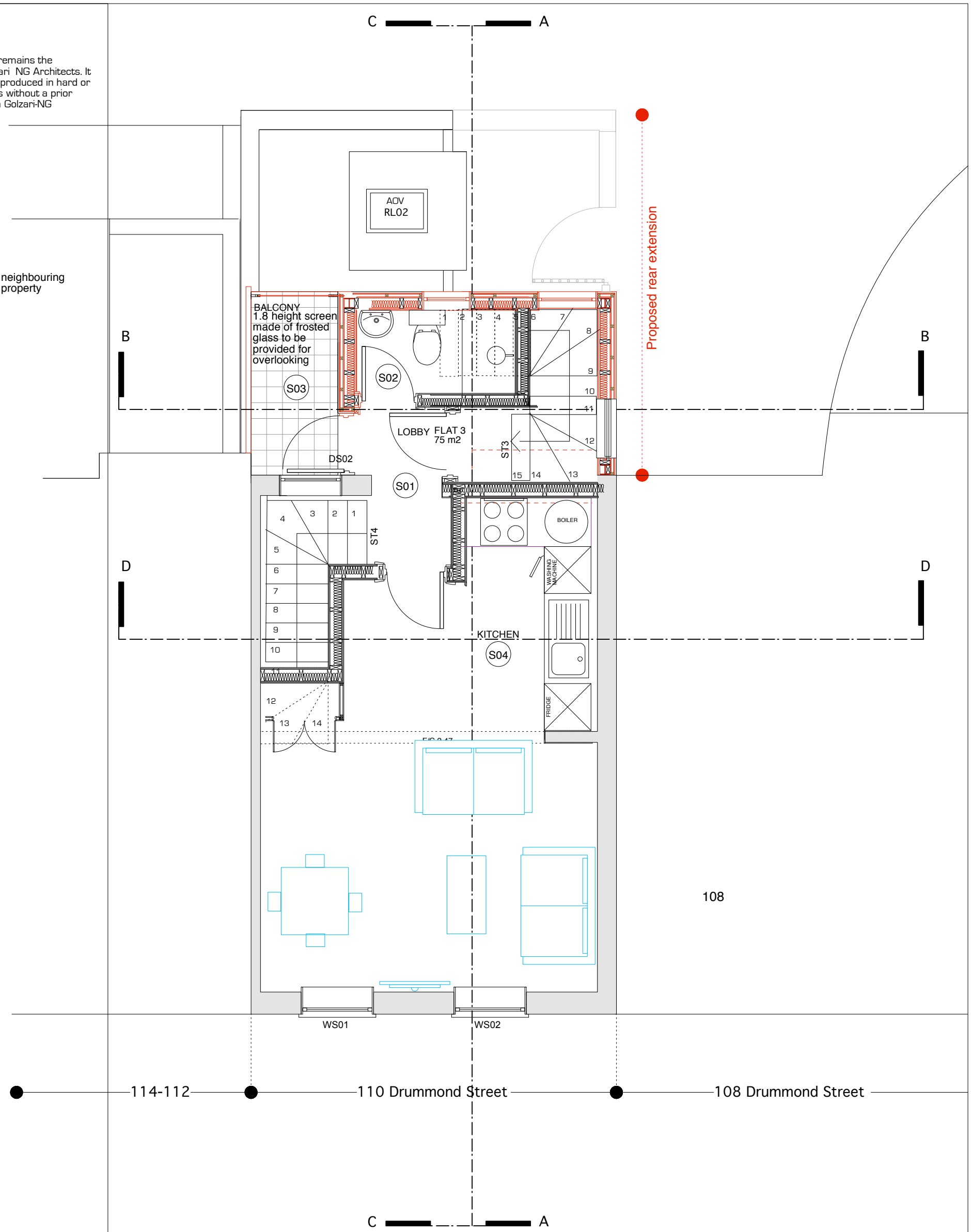
Project No NG1404	Drawing No NG14	Rev	Date	DRWN
Project 110 Drummond Street	Scale: 1:50@A3	A	7.10.15	
Drawing Title Proposed First	Comments/Issue For Information Only			

NOTES



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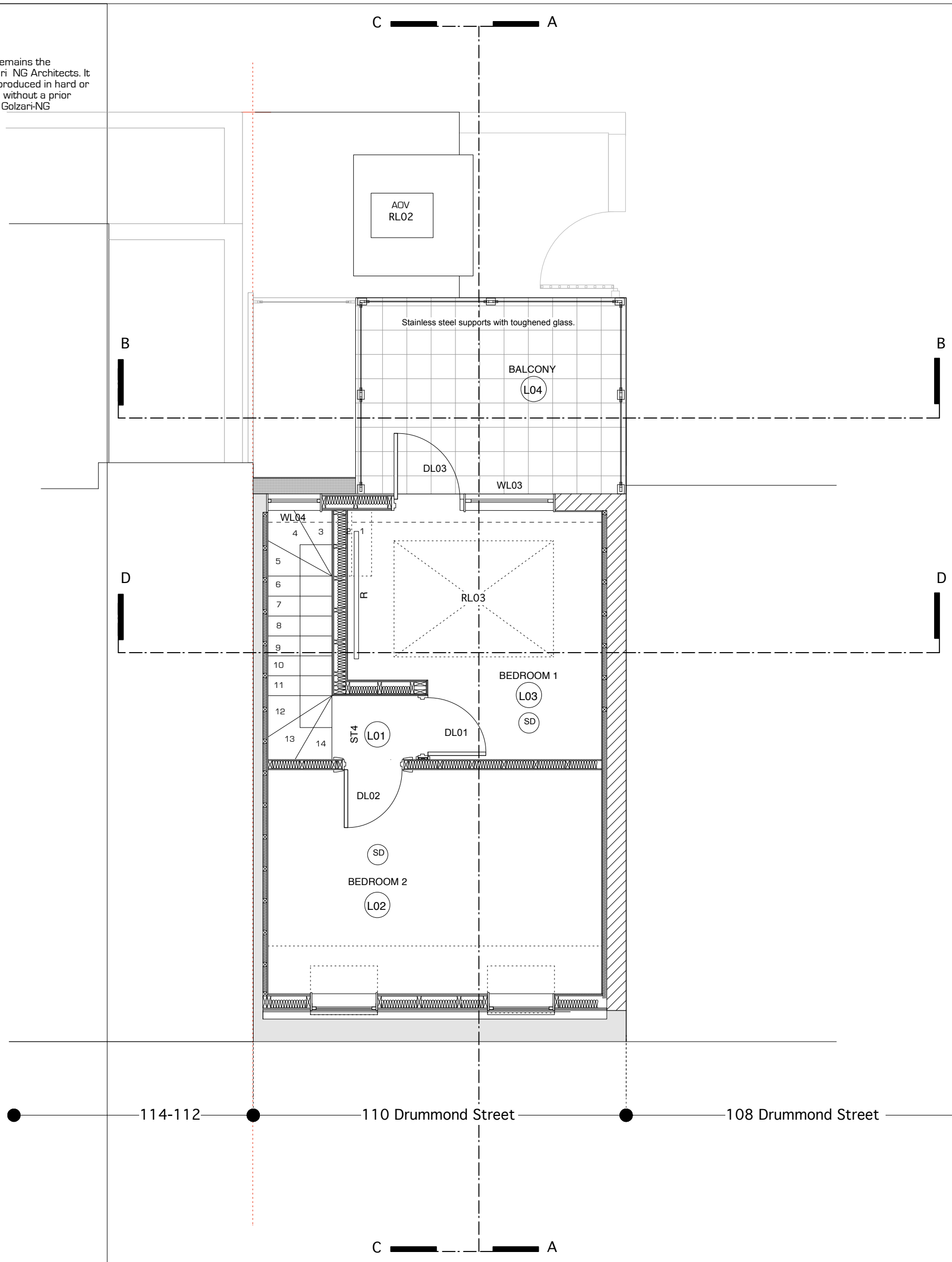
	Existing Walls	GOLZARI (NG) ARCHITECTS United House 39-41 North Road London N7 9DP +44 (0)2036748462 Email: info@ngarchitects.co.uk	Project 110 Drummond Street	Scale: 1:50@A3	A-	06.10.15	
	Remove Walls						
	Stud with StoRend outer panel		Drawing Title Proposed Second	Comments/Issue For Information Only			
	Internal Insulated Stud Wall						

NOTES



0 1 2

Notes

Key

- Existing Walls
- Remove Walls
- External Insulated Stud Wall
- Internal Insulated Stud Wall

GOLZARI (NG) ARCHITECTS
United House
39-41 North Road
London N7 9DP
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Email: info@ngarchitects.co.uk

Project No NG1404	Drawing No NG16	Rev	Date	DRWN
Project 110 Drummond Street	Scale: 1:50@A3	-A	6.10.15	
Drawing Title Proposed Third/Mansard	Comments/Issue For Information Only			

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United House
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+44(0)7918197532
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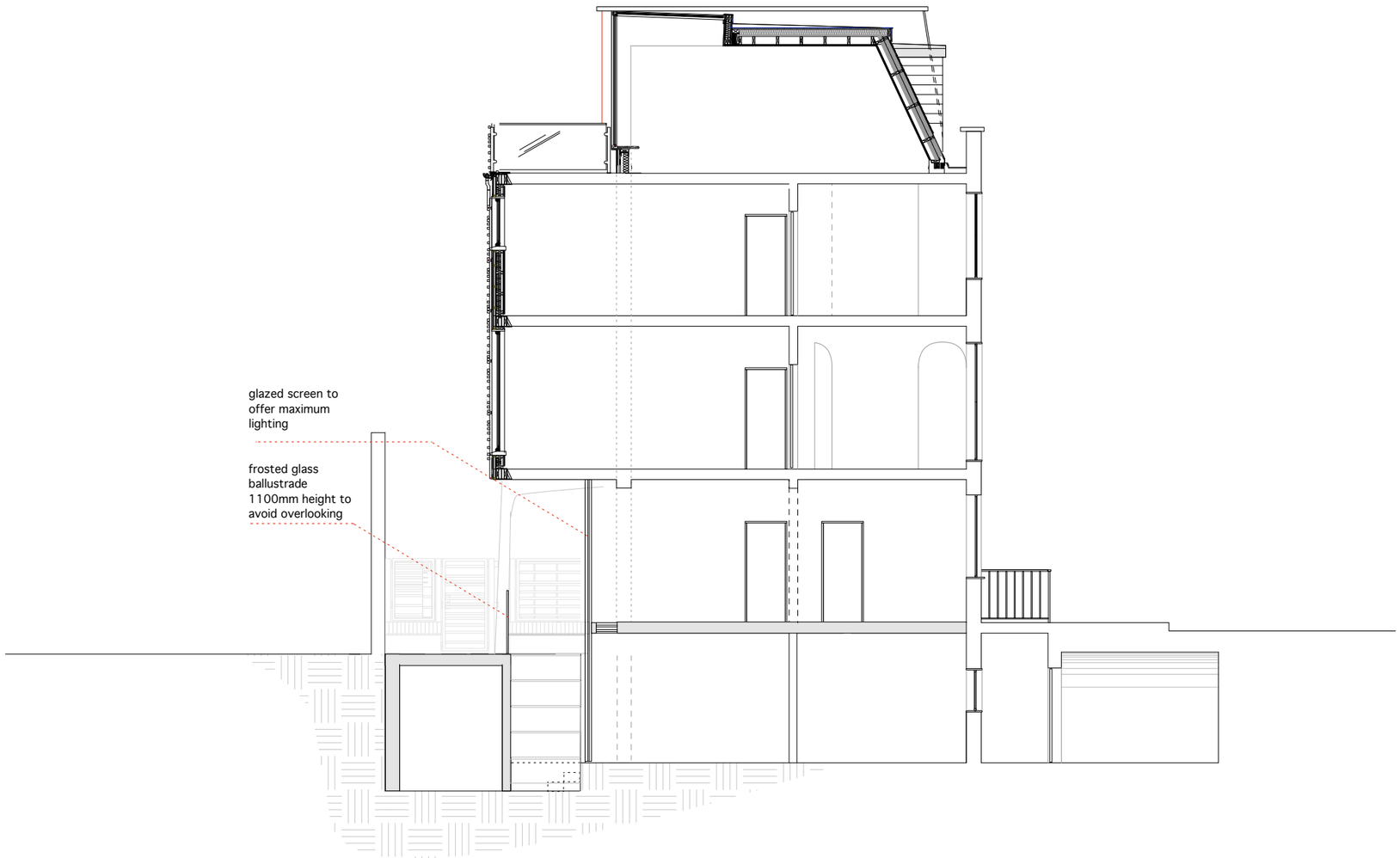
Project No NG1404	Drawing No NG28	Rev	Date	DRWN
Project **110 Drummond Street**	**Scale: 1:100@A3**	A-	11.11.15	
Drawing Title Proposed Section AA	**Comments/Issue** For Information Only			

Notes

Key

Existing Section AA 1:100
110 Drummond Street
1

0 .5 1 2



Notes

Key

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London N7 9DP

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Email: info@ngarchitects.co.uk

Project No NG1404	Drawing No NG21	Rev	Date	DRWN
Project 110 Drummond Street	Scale: 1:150@A3	-A	6.10.15	
Drawing Title Proposed Section BB	Comments/Issue For Information Only			

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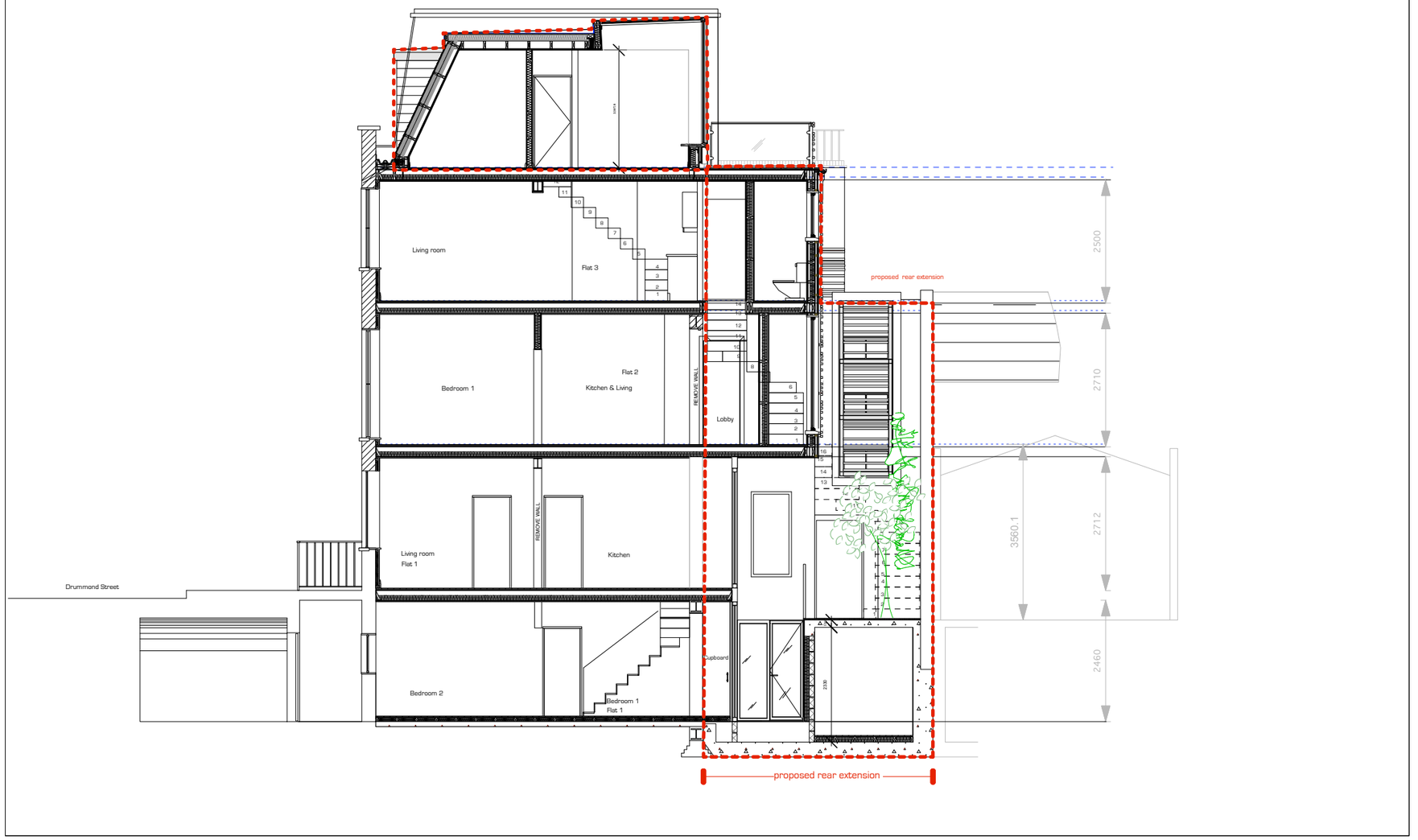
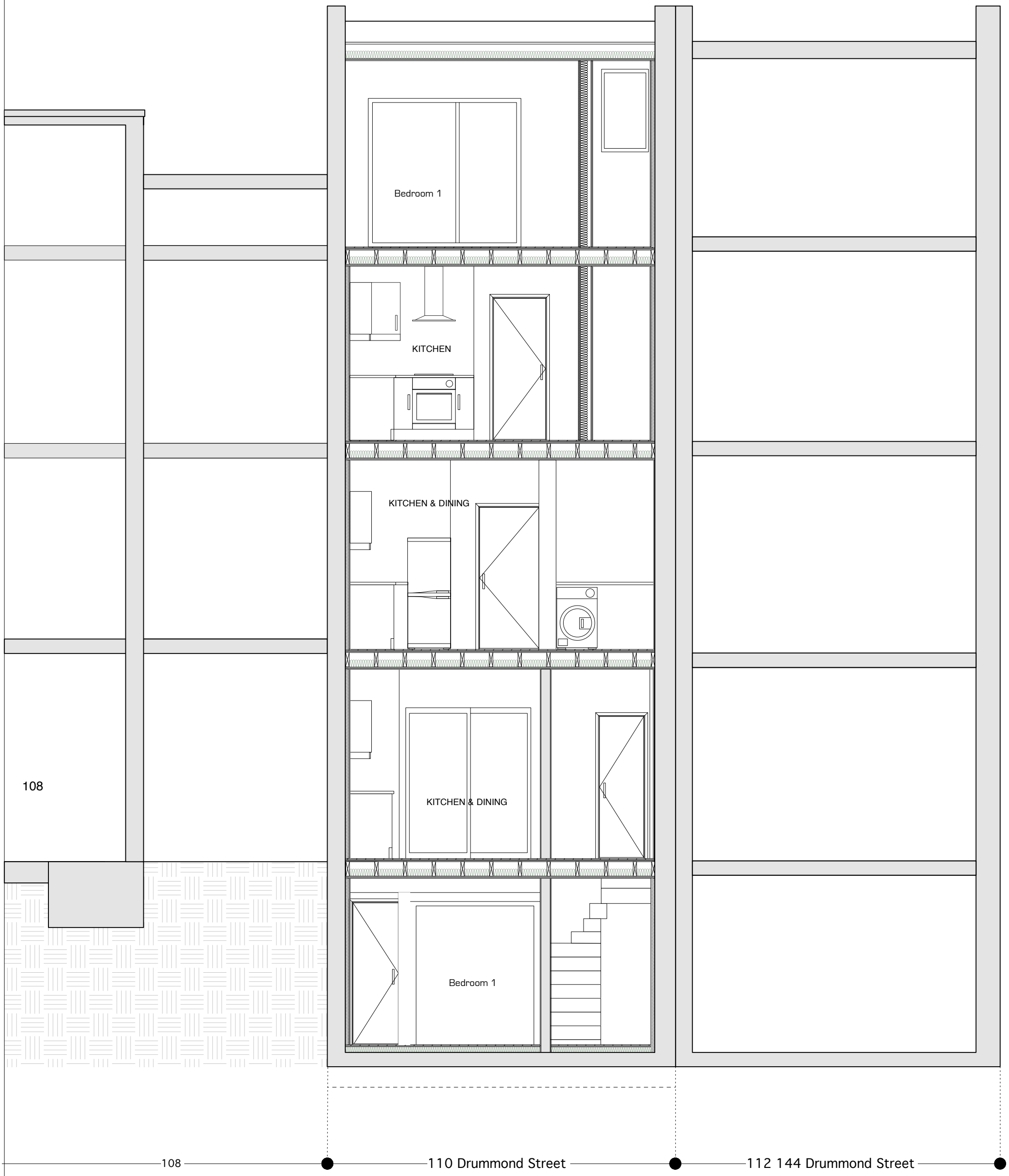
Project No NG 1404	**Drawing No. NG20**	**Rev**	**Date**
	Scale: 1:100@A3	A-	6.10.15
Project **110 Drummond Street**			
Drawing Title Proposed section CC	**Comments/Issue** For Information Only		

Notes

0 .5 1 2





Notes

Key

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Project No NG1404	Drawing No NG23	Rev	Date	DRWN
Project 110 Drummond Street	Scale: 1:50@A3	A	6.10.15	
Drawing Title Proposed Section DD	Comments/Issue For Information Only			

Appendix A.2 – Graphical Model Outputs

herrington
CONSULTING LIMITED

Unit 6 - Barham Business Park
Elham Valley Road
Canterbury
Kent CT4 6DQ

Tel : 01227 833855
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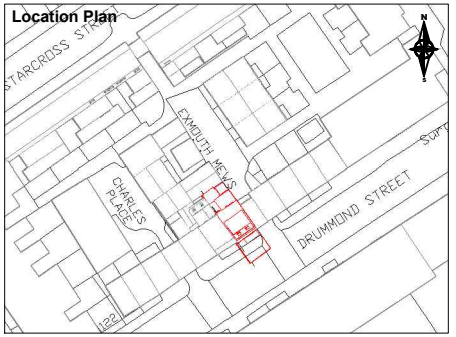
www.herringtonconsulting.co.uk

Legend

Location Plan



Rev	Description	Date
00	First issue	16/12/15

CLIENT
Zammy Uddin

PROJECT
110 Drummond Street, London

SCALE	DATE	ANALYST	DRAWN BY
Not to scale	16th December 2015	RM	RM

DWG REF.	REV.
3D Model Image	0

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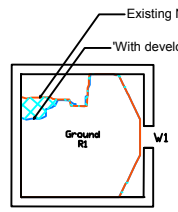
Legend



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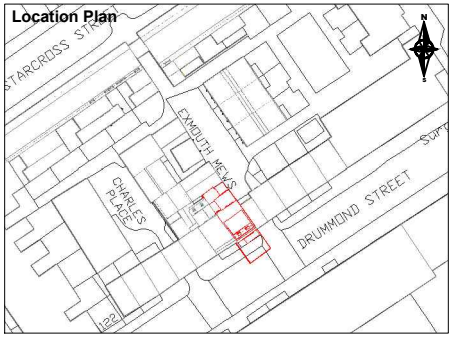

Rev	Description	Date
00	First issue	16/12/15

CLIENT
Zammy Uddin

PROJECT
110 Drummond Street, London

SCALE	DATE	ANALYST	DRAWN BY
Not to scale	16th December 2015	RM	RM

DWG REF.	REV.
Ground Floor Window Location Plan	0

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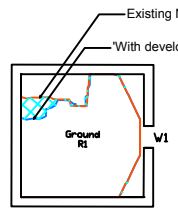
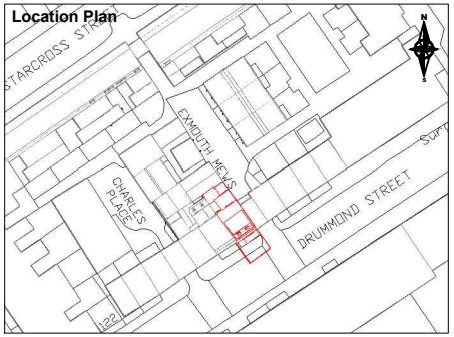
Legend



Location Plan



Rev	Description	Date
00	First issue	16/12/15

CLIENT: Zammy Uddin

PROJECT: 110 Drummond Street, London

SCALE	DATE	ANALYST	DRAWN BY
Not to scale	16th December 2015	RM	RM

DWG REF.: First Floor Window Location Plan

REV.: 0

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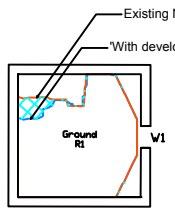
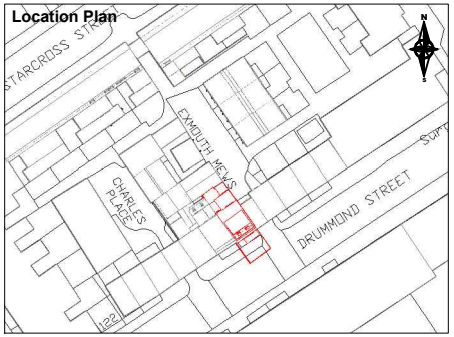
Legend



Location Plan



Rev	Description	Date
00	First issue	16/12/15

CLIENT: Zammy Uddin

PROJECT: 110 Drummond Street, London

SCALE	DATE	ANALYST	DRAWN BY
Not to scale	16th December 2015	RM	RM

DWG REF.	REV.
Second Floor Window Location Plan	0

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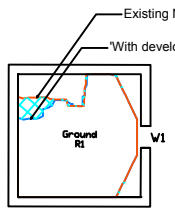
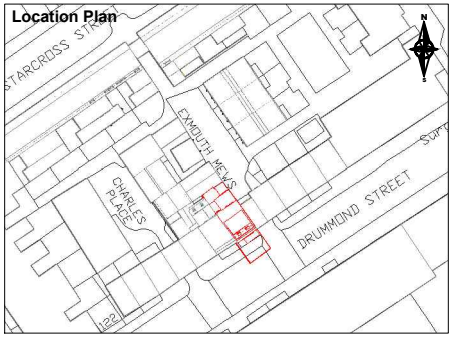
Legend



Location Plan



Rev	Description	Date
00	First issue	16/12/15

CLIENT
Zammy Uddin

PROJECT
110 Drummond Street, London

SCALE	DATE	ANALYST	DRAWN BY
Not to scale	16th December 2015	RM	RM

DWG REF.	REV.
Third Floor Window Location Plan	0

Appendix A.3 – Tabulated Results for Daylight and Sunlight Calculations

Project Name: 110 Drummond Street London
Project No: 1382
Report Title: Daylight & Sunlight Assessment for the Proposed Development at Drummond Street, London
Architect: NG Architects
Scheme Iteration No: n/a
Iteration Description: n/a
Date of Analysis: 15/12/2015
Key drawings: n/a

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Scenario	VSC	Difference	Pass / Fail	Available Sunlight Hours					
								Annual %	Diff	Pass / Fail	Winter %	Diff	Pass / Fail
14 Starcross St.													
Second	R1	Dining Room	W1	Existing	37.94	1.00	PASS	81	1.00	PASS	28	1.00	PASS
				Proposed	37.8			81			28		
Second	R2	Kitchen	W2	Existing	37.85	1.00	PASS	81	1.00	PASS	28	1.00	PASS
				Proposed	37.72			81			28		
Second	R2	Kitchen	W3	Existing	37.9	1.00	PASS	80	0.99	PASS	28	0.96	PASS
				Proposed	37.77			79			27		
15 Starcross St.													
Second	R1	Kitchen	W1	Existing	36.29	1.00	PASS	77	1.00	PASS	28	1.00	PASS
				Proposed	36.14			77			28		
Second	R1	Kitchen	W2	Existing	37.05	1.00	PASS	79	1.00	PASS	28	1.00	PASS
				Proposed	36.91			79			28		
Second	R2	Dining Room	W3	Existing	37.81	1.00	PASS	81	1.00	PASS	28	1.00	PASS
				Proposed	37.66			81			28		
16 Starcross St.													
Ground	R1	Kitchen	W1	Existing	29.82	0.99	PASS	67	1.00	PASS	20	1.00	PASS
				Proposed	29.57			67			20		
Ground	R1	Kitchen	W2	Existing	19.79	1.00	PASS	43	1.00	PASS	15	1.00	PASS
				Proposed	19.79			43			15		
Ground	R1	Kitchen	W3	Existing	12.54	1.00	PASS	28	1.00	PASS	6	1.00	PASS
				Proposed	12.54			28			6		
Ground	R2	Dining Room	W4	Existing	18.52	1.00	PASS	39	1.00	PASS	13	1.00	PASS
				Proposed	18.52			39			13		
First	R1	Bedroom	W1	Existing	33.95	0.99	PASS	78	1.00	PASS	26	1.00	PASS
				Proposed	33.75			78			26		
First	R1	Bedroom	W2	Existing	34.29	0.99	PASS	79	1.00	PASS	27	1.00	PASS
				Proposed	34.09			79			27		
First	R1	Bedroom	W3	Existing	24.17	1.00	PASS	53	1.00	PASS	21	1.00	PASS
				Proposed	24.17			53			21		
First	R2	Bedroom	W4	Existing	28.24	0.99	PASS	64	1.00	PASS	22	1.00	PASS
				Proposed	28.08			64			22		
17 Starcross St.													
Ground	R1	Dining Room	W1	Existing	19.3	0.99	PASS	34	1.00	PASS	6	1.00	PASS
				Proposed	19.13			34			6		
Ground	R2	Kitchen	W2	Existing	0	0.00	PASS	0	0.00	PASS	0	0.00	PASS
				Proposed	0			0			0		
Ground	R2	Kitchen	W3	Existing	19.28	1.00	PASS	25	1.00	PASS	3	1.00	PASS
				Proposed	19.23			25			3		
Ground	R2	Kitchen	W4	Existing	30.28	1.00	PASS	70	1.00	PASS	18	1.00	PASS
				Proposed	30.2			70			18		
First	R1	Bedroom	W1	Existing	29.38	0.99	PASS	58	1.00	PASS	14	1.00	PASS
				Proposed	29.22			58			14		
First	R2	Bedroom	W2	Existing	22.45	1.00	PASS	31	1.00	PASS	5	1.00	PASS
				Proposed	22.41			31			5		
First	R2	Bedroom	W3	Existing	34.77	1.00	PASS	79	1.00	PASS	26	1.00	PASS
				Proposed	34.6			79			26		
First	R2	Bedroom	W4	Existing	34.81	1.00	PASS	79	1.00	PASS	26	1.00	PASS
				Proposed	34.65			79			26		

21 Starcross St.													
Second	R1	Dining Room	W1	Existing	37.54	0.996271	PASS	79	1.00	PASS	28	1.00	PASS
				Proposed	37.4			79			28		
Third	R1	Bedroom	W1	Existing	39.24	0.996942	PASS	82	1	PASS	28	1	PASS
				Proposed	39.12			82			28		
Third	R1	Bedroom	W2	Existing	26.43	0.999622	PASS	46	1	PASS	17	1	PASS
				Proposed	26.42			46			17		
22 Starcross St.													
Ground	R1	KD	W1	Existing	20.79	0.99	PASS	43	1.00	PASS	12	1.00	PASS
				Proposed	20.66			43			12		
Ground	R1	KD	W2	Existing	15.63	1.00	PASS	1	1.00	PASS	0	0.00	PASS
				Proposed	15.63			1			0		
First	R1	Bedroom	W1	Existing	33.31	0.99	PASS	76	1.00	PASS	25	1.00	PASS
				Proposed	33.12			76			25		
112 Drummond St.													
Second	R1	Dining Room	W1	Existing	37.12	1.00	PASS	18	1.00	PASS	2	1.00	PASS
				Proposed	37.1			18			2		
Third	R1	Bedroom	W1	Existing	37.67	1.00	PASS	13	1.00	PASS	0	0.00	PASS
				Proposed	37.67			13			0		
1 Exmouth Mews													
Ground	R1	WC	W1	Existing	29.28	0.99	PASS	51	0.98	PASS	15	0.93	PASS
				Proposed	29.13			50			14		
Ground	R2	Kitchen	W2	Existing	28.75	1.00	PASS	52	1.00	PASS	16	1.00	PASS
				Proposed	28.63			52			16		
First	R1	Bathroom	W1	Existing	33.27	1.00	PASS	60	1.00	PASS	22	1.00	PASS
				Proposed	33.11			60			22		
First	R2	Bedroom	W2	Existing	32.65	1.00	PASS	59	0.98	PASS	23	0.96	PASS
				Proposed	32.54			58			22		
2 Exmouth Mews													
Ground	R1	Kitchen	W1	Existing	28.87	0.99	PASS	50	0.96	PASS	13	0.85	PASS
				Proposed	28.58			48			11		
Ground	R2	WC	W2	Existing	29.31	0.99	PASS	52	0.96	PASS	16	0.88	PASS
				Proposed	29.07			50			14		
First	R1	Bedroom	W1	Existing	33.21	0.99	PASS	57	0.98	PASS	18	0.94	PASS
				Proposed	32.91			56			17		
First	R2	Bathroom	W2	Existing	33.37	0.99	PASS	56	0.98	PASS	18	0.94	PASS
				Proposed	33.16			55			17		
3 Exmouth Mews													
Ground	R1	WC	W1	Existing	27.14	0.98	PASS	42	0.98	PASS	6	0.83	PASS
				Proposed	26.64			41			5		
Ground	R2	Kitchen	W2	Existing	27.82	0.99	PASS	46	0.93	PASS	9	0.67	PASS
				Proposed	27.41			43			6		
First	R1	Bathroom	W1	Existing	31.48	0.98	PASS	50	0.96	PASS	10	0.80	PASS
				Proposed	30.88			48			8		
First	R2	Bedroom	W2	Existing	32.5	0.99	PASS	53	1.00	PASS	13	1.00	PASS
				Proposed	32.05			53			13		

Project Name: 110 Drummond Street London
Project No: 1382
Report Title: Daylight & Sunlight Assessment for the proposed Development at Drummond Street, London
Architect: NG Architects
Scheme Iteration No: n/a
Iteration Description: n/a
Date of Analysis: 15/12/2015
Key drawings: n/a

Floor	Room	Room Use.	Window	Room Area	Lit Area Existing	Lit Area Proposed	Difference	Pass / Fail
14 Starcross St.								
Second	R1	Dining Room	Area m2 % of room	6.33	6.2 97.95%	6.2 97.95%	1.00	PASS
Second	R2	Kitchen	Area m2 % of room	7.64	7.61 99.61%	7.61 99.61%	1.00	PASS
15 Starcross St.								
Second	R1	Kitchen	Area m2 % of room	8.02	7.98 99.50%	7.98 99.50%	1.00	PASS
Second	R2	Dining Room	Area m2 % of room	6.33	6.19 97.79%	6.19 97.79%	1.00	PASS
16 Starcross St.								
Ground	R1	Kitchen	Area m2 % of room	19.87	19.87 100.00%	19.87 100.00%	1.00	PASS
Ground	R2	Dining Room	Area m2 % of room	7.42	7.03 94.74%	7.03 94.74%	1.00	PASS
First	R1	Bedroom	Area m2 % of room	9.14	9.14 100.00%	9.14 100.00%	1.00	PASS
First	R2	Bedroom	Area m2 % of room	5.59	5.55 99.28%	5.55 99.28%	1.00	PASS
17 Starcross St.								
Ground	R1	Dining Room	Area m2 % of room	7.42	7.1 95.69%	7.1 95.69%	1.00	PASS
Ground	R2	Kitchen	Area m2 % of room	17.09	17.08 99.94%	17.08 99.94%	1.00	PASS
First	R1	Bedroom	Area m2 % of room	6.07	6.02 99.18%	6.02 99.18%	1.00	PASS
First	R2	Bedroom	Area m2 % of room	7.96	7.96 100.00%	7.96 100.00%	1.00	PASS
21 Starcross St.								
Second	R1	Dining Room	Area m2 % of room	16.14	15.81 97.96%	15.81 97.96%	1	PASS
Third	R1	Bedroom	Area m2 % of room	16.14	10.4 64.44%	10.4 64.44%	1	PASS

22 Starcross St.								
Ground	R1	KD	Area m2 % of room	33.56	26.91 80.18%	26.91 80.18%	1.00	PASS
First	R1	Bedroom	Area m2 % of room	15	14.05 93.67%	14.05 93.67%	1.00	PASS
112 Drummond St.								
Second	R1	Dining Room	Area m2 % of room	5.03	5.02 99.80%	5.02 99.80%	1.00	PASS
Third	R1	Bedroom	Area m2 % of room	16.78	16.22 96.66%	16.22 96.66%	1.00	PASS
1 Exmouth Mews								
Ground	R1	WC	Area m2 % of room	2.16	1.84 85.19%	1.84 85.19%	1.00	PASS
Ground	R2	Kitchen	Area m2 % of room	12.31	10.93 88.79%	10.93 88.79%	1.00	PASS
First	R1	Bathroom	Area m2 % of room	7.81	7.52 96.29%	7.52 96.29%	1.00	PASS
First	R2	Bedroom	Area m2 % of room	10.56	10.4 98.48%	10.4 98.48%	1.00	PASS
2 Exmouth Mews								
Ground	R1	Kitchen	Area m2 % of room	11.9	11.14 93.61%	11.14 93.61%	1.00	PASS
Ground	R2	WC	Area m2 % of room	2.1	1.76 83.81%	1.76 83.81%	1.00	PASS
First	R1	Bedroom	Area m2 % of room	10.15	10 98.52%	10 98.52%	1.00	PASS
First	R2	Bathroom	Area m2 % of room	7.42	7.19 96.90%	7.19 96.90%	1.00	PASS
3 Exmouth Mews								
Ground	R1	WC	Area m2 % of room	2.16	1.84 85.19%	1.84 85.19%	1.00	PASS
Ground	R2	Kitchen	Area m2 % of room	11.48	10.69 93.12%	10.69 93.12%	1.00	PASS
First	R1	Bathroom	Area m2 % of room	7.32	7.1 96.99%	7.1 96.99%	1.00	PASS
First	R2	Bedroom	Area m2 % of room	10.01	9.88 98.70%	9.88 98.70%	1.00	PASS

Project Name: 110 Drummond Street London
Project No: 1382
Report Title: Daylight & Sunlight Assessment for the Proposed Development at Drummond Street, London
Architect: NG Architects
Scheme Iteration No: n/a
Iteration Description: n/a
Date of Analysis: 15/12/2015
Key drawings: n/a

Floor Ref.	Amenity Ref.		Amenity Area	Lit Area Existing	Lit Area Proposed	Difference
112 Drummond St.						
Ground	A1	Area m2	5.12	2.88	2.88	1
		Percentage		56%	56%	

Project Name: 110 Drummond Street London
Project No: 1382
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Architect: NG Architects
Scheme Iteration No: n/a
Iteration Description: Internal Daylight/ Sunlighting Results
Date of Analysis: 15/12/2015
Key drawings: n/a

Floor	Room	Room Use.	Window	Glass Transmittance	Glazed Area	Clear Sky Angle Existing	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Existing	ADF Proposed	Req'd Value	Difference	Pass/Fail
110 Drummond Street															
Below Ground	R2	Bedroom	W1	0.78	3.19	39.77	39.77	64.98	0.65	1.00	2.64	2.64			
											2.64	2.64	1	1.00	PASS
Below Ground	R1	Bedroom	W2	0.78	0.40	25.40	25.40	66.33	0.65	1.00	0.21	0.21			
			W3	0.78	2.11	1.38	1.38	66.33	0.65	1.00	0.06	0.06			
			W4	0.78	2.76	16.07	16.07	66.33	0.65	1.00	0.90	0.90			
											1.17	1.17	1	1.00	PASS
Ground	R1	Living Room	W1	0.78	1.32	60.47	60.47	48.07	0.65	1.00	2.24	2.24			
											2.24	2.24	1.5	1.00	PASS
Ground	R2	KD	W2	0.78	4.34	22.00	22.00	54.07	0.65	1.00	2.39	2.39			
											2.39	2.39	2	1.00	PASS
First	R1	LKD	W1	0.78	1.27	67.48	67.48	122.21	0.65	1.00	0.95	0.95			
			W2	0.78	1.26	67.58	67.58	122.21	0.65	1.00	0.94	0.94			
			W3	0.78	0.48	49.01	49.01	122.21	0.65	1.00	0.26	0.26			
											2.15	2.15	2	1.00	PASS
Second	R1	LKD	W1	0.78	1.08	77.49	77.49	102.66	0.65	1.00	1.10	1.10			
			W2	0.78	1.09	77.52	77.52	102.66	0.65	1.00	1.11	1.11			
											2.22	2.22	2	1.00	PASS
Third	R2	Bedroom	W1	0.78	0.78	84.95	84.95	48.57	0.65	1.00	1.83	1.83			
			W2	0.78	0.78	85.00	85.00	48.57	0.65	1.00	1.83	1.83			
											3.66	3.66	1	1.00	PASS
Third	R1	Bedroom	W3	0.78	1.72	82.80	82.80	49.36	0.65	1.00	3.89	3.89			
			W4	0.78	0.89	77.58	77.58	49.36	0.65	1.00	1.90	1.90			
											5.79	5.79	1	1.00	PASS

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Project No: 1382
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Architect: NG Architects
Scheme Iteration No: n/a
Iteration Description: Internal Daylight/ Sunlighting Results
Date of Analysis: 15/12/2015
Key drawings: n/a

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Scenario	Available Sunlight Hours					
					Annual %	Diff	Pass / Fail	Winter %	Diff	Pass / Fail
110 Drummond Street										
Basement	R2	Bedroom	W1	Existing	18	1.00	PASS	0	0.00	PASS
				Proposed	18			0		
Basement	R1	Bedroom	W2	Existing	0	0.00	PASS	0	0.00	PASS
				Proposed	0			0		
Basement	R1	Bedroom	W3	Existing	0	0.00	PASS	0	0.00	PASS
				Proposed	0			0		
Basement	R1	Bedroom	W4	Existing	0	0.00	PASS	0	0.00	PASS
				Proposed	0			0		
Ground	R1	Living Room	W1	Existing	66	1.00	PASS	15	1.00	PASS
				Proposed	66			15		
Ground	R2	KD	W2	Existing	0	0.00	PASS	0	0.00	PASS
				Proposed	0			0		
First	R1	LKD	W1	Existing	74	1.00	PASS	21	1.00	PASS
				Proposed	74			21		
First	R1	LKD	W2	Existing	74	1.00	PASS	21	1.00	PASS
				Proposed	74			21		
First	R1	LKD	W3	Existing	0	0.00	PASS	0	0.00	PASS
				Proposed	0			0		
Second	R1	LKD	W1	Existing	80	1.00	PASS	27	1.00	PASS
				Proposed	80			27		
Second	R1	LKD	W2	Existing	80	1.00	PASS	27	1.00	PASS
				Proposed	80			27		
Third	R2	Bedroom	W1	Existing	69	1.00	PASS	23	1.00	PASS
				Proposed	69			23		
Third	R2	Bedroom	W2	Existing	79	1.00	PASS	27	1.00	PASS
				Proposed	79			27		
Third	R1	Bedroom	W3	Existing	19	1.00	PASS	2	1.00	PASS
				Proposed	19			2		
Third	R1	Bedroom	W4	Existing	18	1.00	PASS	2	1.00	PASS
				Proposed	18			2		