UNITED BY OUR DIFFERENCE

WSP

6 JOHN STREET

Noise Impact Assessment

27/10/2014

Institute of Acoustics sponsoring organisation

Quality Management

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3
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Signature				
Checked by	Steve Fisher			
Signature				
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Signature				
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6 JOHN STREET

Noise Impact Assessment

27/10/2014

Client

G&T John Street Ltd

Consultant

WSP UK Ltd
WSP House
London
WC2A 1AF
UK

Tel: 020 7314 5000
Fax: +44 20 7314 5111

www.wspgroup.co.uk

Registered Address

WSP UK Limited
01383511
WSP House, 70 Chancery Lane, London, WC2A 1AF

WSP Contacts

Sarah Whydle
Senior Acoustic Consultant

Sarah.Whydle@WSPGroup.com

Table of Contents

1 Introduction

1.1.1 WSP UK Ltd has been instructed by G&T John Street Ltd to undertake a noise impact assessment for the proposed redevelopment of 6 John Street, London.

1.1.2 An environmental noise survey has been undertaken to determine the current noise levels affecting the site and the surrounding areas. The survey results have been used to assess the suitability of the site for residential use and to set noise emission limits to ensure any proposed external building services plant complies with Camden City Council's policies on noise. This report presents the results of this assessment.

1.1.3 Mitigation measures have been identified in order to provide an adequate internal and external noise environment for future occupants and to minimise the potential impact on existing sensitive receptors nearby.

1.1.4 A glossary of acoustic terminology is contained in Appendix A.

2 Site Description

2.1 Existing Site

2.1.1 6 John Street currently comprises a two storey, terraced building with a ground floor extension to the rear that was previously used as a training centre. The site is bound to the west by John Street, to the east by Kings Mews and to the north and south by existing buildings.

2.1.2 The noise climate on the façade overlooking John Street is dominated by road traffic on John Street and Theobalds Road to the south of the site. The noise climate on the façade overlooking Kings Mews is dominated by road traffic on Grays Inn Road, located further to the east, and the surrounding road network. In addition, there is a car mechanic repair business on Kings Mews which could be heard during the noise survey, however, only during daytime hours (08:30 – 17:30).

2.2 Proposed Redevelopment

2.2.1 It is proposed to redevelop 6 John Street within the existing building envelope to provide 7 units (2 x 1 bed and 5 x 2 bed). The proposed layout drawings are shown in Appendix B.

3 Planning Policy and Guidance

3.1 National Planning Policy

National Planning Policy Framework

3.1.1 The National Planning Policy Framework (NPFF) was published by central government in 2012 and replaces all previous policy documents, including Planning Policy Guidance Note 24 (PPG24). The NPPF references the Noise Policy statement for England (NPSE), published in 2010, which seeks to promote good health and quality of life through the effective management of noise.

3.1.2 The NPSE aims, in the context of noise management, first to avoid and then to mitigate and minimise significant adverse impacts on health and quality of life, and where possible to contribute to the improvement of health and quality of life.

3.2 Local Planning Policy

3.2.1 Camden City Council's development policies were adopted in 2010 and development policy 28 (*DP28 Noise and Vibration)* address the issue of noise and is summarised below.

The Council will seek to ensure that noise and vibration is controlled and managed and will not grant planning permission for:

a) Development likely to generate noise pollution; or

b) Development sensitive to noise in locations with noise pollution, unless appropriate attenuation measures are provided.

3.2.2 The policy also states that:

Development that exceeds Camden's Noise and Vibration Thresholds will not be permitted.

The Council will only grant permission for plant or machinery if it can be operated without cause harm to amenity and does not exceed our noise thresholds.

3.2.3 The noise thresholds referred to above, at and above which attenuation measures will be required, are presented in Table 3.1 below.

Table 3.1: Noise levels on residential streets adjoining roads at and above which attenuation measures will be required

Noise description and location of measurement	Period	Time	Sites adjoining roads
Noise at 1 metre external to a sensitive façade	Day	07:00 – 19:00	62 dB
Noise at 1 metre external to a sensitive façade	Evening	19:00 – 23:00	57 dB
Noise at 1 metre external to a sensitive façade	Night	23:00 – 07:00	52 dB
Individual noise events several times an hour	Night	23:00 – 07:00	>82 dB L_{Amax} (S time weighting)

3.2.4 With regards to any proposed fixed building services plant, the noise thresholds at which planning permission will not be granted are presented in Table 3.2 below.

Table 3.2: Noise levels from plant and machinery at which planning permission will not be granted

Noise description and location of measurement	Period	Time	Noise levels
Noise at 1 metre external to a sensitive façade	Day, evening and night	00:00 – 24:00	5 dB(A) $<L_{A90}$
Noise that has a distinguishable discrete continuous noise (whine, hiss, screech, hum) or distinct impulses (bangs, clicks) at 1 metre external to a sensitive façade.	Day, evening and night	00:00 – 24:00	10 dB(A) $<L_{A90}$

3.3 Guidance

3.3.1 BS 8223: 2014 *Guidance on Sound Insulation and Noise Reduction for Buildings* provides guidance for the control of noise in and around buildings. It is intended to guide the design of new buildings, or refurbishment of existing buildings undergoing a change of use, by specifying appropriate criteria pertaining to the control of noise from outside the building; noise from plant and services within it; and internal acoustics. The noise level criteria recommended by BS 8223: 2014 for residential spaces are summarised below in Table 3.3.

Table 3.3: Indoor ambient noise levels in spaces when unoccupied

Activity	Location	07:00-23:00	23:00-07:00
Resting	Living Room	35 dB $L_{Aeq,16h}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq,16h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $L_{Aeq,8h}$

3.3.2 BS 8223: 2014 recommends that "*it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments*." The standard also states that these guideline values are not always achievable in all circumstances and therefore a compromise between elevated noise levels and the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

3.3.3 The WHO guidelines consolidate scientific knowledge on the health effects of community noise and provide guidance to environmental health authorities and professionals trying to protect people from the harmful effects of noise in non-industrial environments. The main sources of community noise are identified as road, rail and air traffic, industries, construction and public work and neighbours.

3.3.4 The effects of noise in dwellings are, typically, sleep disturbance, speech interference and annoyance. Relevant guideline values and the time base over which the individual guideline values apply are summarised in Table 3.4.

Table 3.4: WHO guideline values for community noise in specific environments

Specific Environment	Critical health effects	$L_{Aeq,T}$	Time base, T(hours)*	L_{AFmax}
Outdoor living area	Serious annoyance, daytime and evening	55 dB	16	-
	Moderate annoyance, daytime and evening	50 dB	16	-
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35 dB	16	-
Inside bedrooms	Sleep disturbance, night-time	30 dB	8	45 dB
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45 dB	8	60 dB
* These periods are usually taken to be 07:00-23:00 (16-hour day) and 23:00-07:00 (8-hour night).				

3.3.5 In line with the guidance outlined in BS 8233, a L_{AFmax} criterion of 45 dB has been used in this assessment, as per the WHO guidelines detailed above.

4 Site Survey Methodology and Results

4.1 Survey Methodology

4.1.1 An unattended environmental noise survey was carried out at the site over a 6 day period commencing on 7th October 2014 at approximately 15:00 hours and finishing on 13th October 2014 at approximately 18:00 hours.

4.1.2 The noise survey was conducted at two measurement positions. Measurement position one (MP1) was located on the façade overlooking John Street, and measurement position two (MP2) was located on the first floor extension overlooking Kings Mews.

4.1.3 The microphone at MP1 was located externally 1m from the façade at second floor level, allowing for continuous noise measurements to be logged for the survey duration.

4.1.4 The microphone at MP2 was located at a height of 1.4m from the walkway that runs across the roof of the first floor extension in the free field (i.e. at least 3.5m away from any vertical reflecting surface).

4.2 Results

4.2.1 A summary of the time averaged ambient noise levels and minimum background noise levels for each day and night time period along with the typical maximum noise levels during the night-time are presented in Tables 4.1 and 4.2 below. The 'typical' L_{AFmax} value is the 90th percentile of the measured 5 minute L_{AFmax} levels during the relevant period.

Table 4.1: Measured noise levels (dB), at measurement position 1 (MP1), façade measurement

Day/Date	Daytime (07:00 – 23:00)		Night-time (23:00 – 07:00)		
	$L_{Aeq,16h}$	Min $L_{A90,1h}$	$L_{Aeq,8h}$	Min $L_{A90,1h}$	Typical L_{AFmax}
Tuesday 7th October 2014	63*	51	57	44	75
Wednesday 8th October 2014	64	52	59	44	77
Thursday 9th October 2014	65	53	58	45	76
Friday 10th October 2014	65	52	58	45	77
Saturday 11th October 2014	62	49	62	42	75
Sunday 12th October 2014	61	44	59	47	75
Monday 13th October 2014	66*	56	-		

* Part periods: Tuesday daytime measurement commenced at 15:00 and Monday daytime measurement ended at 17:00

Table 4.2: Measured noise levels (dB), measurement position 2 (MP2), free-field measurement

Day/Date	Daytime (07:00 – 23:00)		Night-time (23:00 – 07:00)		
	$L_{Aeq,16h}$	Min $L_{A90,1h}$	$L_{Aeq,8h}$	Min $L_{A90,1h}$	Typical L_{AFmax}
Tuesday 7th October 2014	56*	47	49	42	66
Wednesday 8th October 2014	58	50	51	44	71
Thursday 9th October 2014	58	50	50	43	68
Friday 10th October 2014	61	50	51	43	69
Saturday 11th October 2014	56	46	50	42	69
Sunday 12th October 2014	54	44	53	46	71
Monday 13th October 2014	61*	54	-		

* Part periods: Tuesday daytime measurement commenced at 15:00 and Monday daytime measurement ended at 17:00

4.2.2 Based upon the results of the survey, the noise levels measured at the site are at or above the noise thresholds outlined in Camden City Council's development policy during the day and night (as presented in Table 3.1) and therefore, attenuation measures will be required. These measures are explored in more detail in the next section.

5 Site Suitability Assessment

5.1 Internal and External Noise Criteria

5.1.1 This section provides an assessment of the suitability of the site for residential use and outlines the mitigation measures required to provide an adequate internal and external noise environment for future occupants.

5.1.2 The internal and external noise criteria that have been adopted for the proposed redevelopment are outlined in Table 5.1 below.

Table 5.1: Internal and external noise criteria

	Daytime	Night-time	
	$L_{Aeq,16h}$	$L_{Aeq,8h}$	L_{AFmax}
Internal noise criteria	35 dB	30 dB	45 dB
External noise criteria	55 dB	-	

5.2 External Building Fabric Assessment

5.2.1 This section presents specifications for the façade sound insulation and provides recommendations for the ventilation strategies necessary to achieve the indoor ambient noise criteria, as outlined in Table 5.1.

5.2.2 The measured noise levels at MP1 are considered representative of the noise levels at the western façade and the noise levels measured at MP2 are considered representative of noise levels at the eastern façade. A -3 dB correction has been applied to the measured noise levels at MP1 to derive the free-field noise levels at this façade.

5.2.3 To present a robust assessment, the worst-case noise levels (i.e. the highest measured $L_{Aeq,T}$, from full periods only, and L_{AFmax} levels) are presented for each measurement position in Table 5.2.

5.2.4 The values in brackets within the table below represent the required sound insulation performance of the façade in order to achieve the target internal noise criteria, as set out in Table 5.1.

Table 5.2: Measured free-field noise levels at MP1 and MP2 for external building fabric assessment, and required sound insulation performance of the building envelope (dB).

Measurement Position	Daytime	Night-time	
	$L_{Aeq,16h}$ (R_W+C_{tr})	$L_{Aeq,8h}$ (R_W+C_{tr})	L_{AFmax} (R_W+C_{tr})
MP1 (western façade)	62 dB (27 dB)	59 dB (29 dB)	74 dB (29 dB)
MP2 (eastern façade)	61 dB (26 dB)	53 dB (23 dB)	71 dB (26 dB)

5.2.5 It is assumed that the non-glazed elements of the building envelope will provide sufficient sound insulation against external noise sources. Therefore, as the glazing elements are likely to be the acoustic weak link in the building envelope, it is appropriate to explore the level of protection afforded by the glazing.

Glazing

5.2.6 It is understood that Camden City Council is likely to require the existing single 3mm pane glazing to be retained and renovated, or new sash windows produced with physical glazing bars. To supplement this outer pane, a secondary glazing system will be incorporated into the design to achieve the acoustic performance required to meet internal noise levels.

5.2.7 The acoustic performance of the existing glazing system is not known at this stage, however a nominal and cautious sound level difference of 10 dB is anticipated once well sealed. Consequently, it is proposed that the glazing construction for habitable rooms on the western façade will need to comprise the renovated (or reproduced) 3mm pane/ 100mm airspace / standard thermal glazing unit (minimum 19 dB R_W+C_{tr}, for example a 6mm glass/12mm airspace/4mm glass), in order that the acoustic performance requirement of 29 dB $R_W + C_{tr}$ for the entire glazing system is achieved.

5.2.8 For the eastern façade overlooking Kings Mews, a standard thermal double glazed unit achieving 26 dB R_W+C_{tr}, for example a 6mm glass/12mm airspace/4mm glass, will be required to achieve the internal noise levels.

5.2.9 Based upon the acoustic performance requirements set out above, internal noise levels within living areas and bedrooms are expected to achieve the criteria at outlined in Table 5.1.

Ventilation and Cooling

5.2.10 It is understood that the ventilation strategy will be through mechanical means with heat recovery (MVHR) and air conditioning for all habitable rooms. When purge ventilation is required (e.g. release of odour) windows can be opened for short periods of time although the internal noise level criteria would be exceeded during this time.

5.2.11 The ventilation strategy should include acoustic attenuation to ensure that internal noise levels are not compromised due to the incorporation of the MVHR and air conditioning system.

5.3 External Amenity Areas

5.3.1 To prevent serious annoyance in outdoor living areas during the day and evening it is desirable that the noise level should not exceed a free-field level of 55 dB $L_{Aeq,16h}$. However, it is noted in BS 8233 that this criterion is not always achievable in all circumstances and a development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

5.3.2 It is understood that the external amenity spaces will be the terraces on the eastern façade, which are unlikely to achieve the external noise criterion. Nevertheless, the use of these areas will be at the occupier's discretion. Where possible, a 1.8m high acoustic barrier or solid screen should be erected around the perimeter of the terrace to provide some acoustic attenuation for future occupants.

6 Fixed Plant Noise Assessment

6.1 Noise Emission Limits

6.1.1 It is likely that the proposed redevelopment will include fixed plant items on the roof, however the orientation and type of any plant has not yet been determined. Therefore, it is proposed to set a plant noise limit using the measured noise levels and the guidance set out within Policy DP28 of Camden City Council's development policy (see Section 3).

6.1.2 The lowest measured background noise levels over a 1 hour period during the day and night at Measurement Position 1 have been selected to determine the plant noise emission limits for existing sensitive receptors fronting John Street, and background noise levels at Measurement Position 2 have been selected to determine the plant noise emission limits for existing sensitive receptors fronting Kings Mews.

6.1.3 Camden City Council's policy advises that any proposed fixed plant must be 5 dB below the existing L_{A90}, 1m from the façade of the nearest sensitive receptor. In the event that the plant contains any acoustic feature(s), the plant noise emission level should be reduced by a further 5 dB.

6.1.4 As the orientation and type of fixed plant is not known at this stage, both measurement positions have been used to set limits that would apply at 1m from the façade of the nearest sensitive receptors.

Table 6.1: Noise emission levels for proposed external fixed plant

Measurement Location	Time	Minimum measured $L_{A90,1h}$	Noise emission level $L_{Aeq,15min}$(dB)	
			Fixed plant with no tones	Fixed plant containing tones
MP1 – sensitive receptors to the west of the site	Day (07:00 – 23:00)	44	39	34
	Night (23:00 – 07:00)	42	37	32
MP2 – sensitive receptors to the east of the site	Day (07:00 – 23:00)	44	39	34
	Night (23:00 – 07:00)	42	37	32

7 Conclusions

7.1.1 WSP UK Ltd has been appointed by G&T John Street Ltd to undertake a noise impact assessment for the proposed redevelopment at 6 John Street, London.

7.1.2 A baseline noise survey has been undertaken to establish the existing noise levels affecting the site and surrounding areas, which are dominated by road traffic along John Street, Theobalds Road, Grays Inn Road and also the car repair business situated on Kings Mews.

7.1.3 Based on the measured noise data and internal noise level criteria from Camden City Council's planning policy an assessment of the acoustic performance of the glazed elements of the external building fabric has been undertaken. The ventilation strategy has also been outlined.

7.1.4 As the existing 3mm window is to be retained and renovated, (or replaces on a like for like basis), of habitable rooms on the western façade overlooking John Street, a secondary glazing system is to be incorporated into the design. This will comprise the renovated or reproduced 3mm pane/ 100mm airspace / standard thermal glazing unit (minimum 19 dB R_W+C_{tr}).

7.1.5 For the eastern façade overlooking Kings Mews, a standard thermal double glazed unit achieving 26 dB R_W+C_{tr}, for example a 6mm glass/12mm airspace/4mm glass, will be required to achieve the internal noise levels.

7.1.6 The proposed ventilation strategy is to provide ventilation though mechanical means with heat recovery and air conditioning. This will negate the need to open windows unless purge ventilation is required for short periods of time (e.g. for release of odour) during which time the internal noise level criteria will be exceeded.

7.1.7 An assessment of the external amenity areas has also been undertaken. It is understood that the external amenity spaces will be the terraces on the eastern façade, which are unlikely to achieve the external noise criterion. Nevertheless, the use of these areas will be at the occupier's discretion. Where possible, a 1.8m high acoustic barrier or solid screen should be erected around the perimeter of the terrace to provide some acoustic attenuation for future occupants.

7.1.8 Noise emission limits for any fixed plant have been identified; further recommendations for mitigation would be required when the orientation and type of plant becomes available.

7.1.9 The limitations to this report are detailed in Appendix F.

Appendices

Appendix A. Glossary of Acoustic Terminology

Noise

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq}, L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

An indication of the range of sound levels commonly found in the environment is given in the following table.

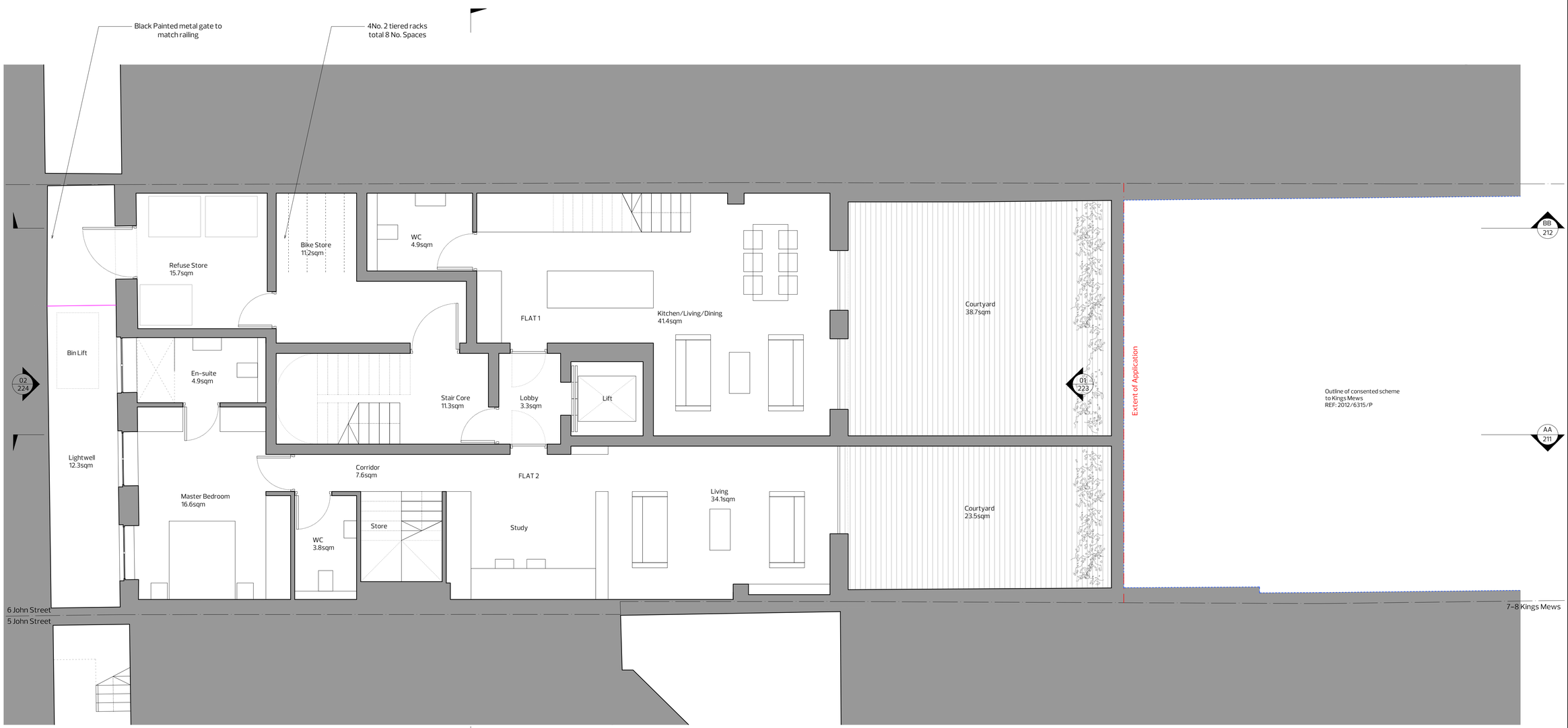
Table A1: Typical sound levels found in the environment

Sound Level	Location
0 dB(A)	Threshold of hearing
20 to 30 dB(A)	Quiet bedroom at night
30 to 40 dB(A)	Living room during the day
40 to 50 dB(A)	Typical office
50 to 60 dB(A)	Inside a car
60 to 70 dB(A)	Typical high street
70 to 90 dB(A)	Inside factory
100 to 110 dB(A)	Burglar alarm at 1m away
110 to 130 dB(A)	Jet aircraft on take off
140 dB(A)	Threshold of pain

Table A2: Terminology relating to noise

Terminology	Description
Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level (Sound Level)	The sound level is the sound pressure relative to a standard reference pressure of 20μPa ($20x10^{-6}$ Pascals) on a decibel scale.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s_1 and s_2 is given by $20 \log_{10} (s_1 / s_2)$. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
$L_{eq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level during the period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. L_{90} can be considered to be the "average minimum" noise level and is often used to describe the background noise.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m.
Façade	At a distance of 1m in front of a large sound reflecting object such as a building façade.
Fast/Slow Time Weighting	Averaging times used in sound level meters.
Octave Band	A range of frequencies whose upper limit is twice the frequency of the lower limit.

Appendix B. Proposed Layout



01 PROPOSED LOWER GROUND FLOOR

Rev	Date	Description

Revision:

Status:

PLANNING

NOT FOR CONSTRUCTION
DO NOT SCALE FROM DRAWING
NOTIFY ARCHITECT IMMEDIATELY
ON DISCOVERY OF DISCREPANCIES

Coffey Architects
11–12 Great Sutton Street
London, EC1V 0BX
Tel – 020 75492141
www.coffeyarchitects.com

Project No: 798

Project Name: 6 John Street WC1

Drawing Name: Proposed Lower Ground Floor Plan

Scale: 1:50 @ A1

Date: 24/10/2014

Drawing No: 798_201

7 John Street
6 John Street

13 Kings Mews
10–11 Kings Mews

BB
212

WC
3.0sqm

Bath
4.7sqm

Hall
11.0sqm

FLAT 1

Bedroom 2
8.8sqm

Entrance Lobby
29.6sqm

En-suite
3.5sqm

Lift
Access

New Gate
For Access to bin lift

02
224

Stair Core
11.3sqm

Lift

01
223

Master Bedroom
14.0sqm

Extent of Application

Outline of consented scheme
to Kings Mews
REF: 2012/6315/P

AA
211

Corridor
6.0sqm

FLAT 2

Terrace
7.5sqm

Kitchen /Dining
24.9sqm

Bedroom 2
16.7sqm

En-Suite
5.2sqm

N

10–11 Kings Mews
7–8 Kings Mews

6 John Street
5 John Street

Window removed when wall rebuilt

CC
213

01 PROPOSED GROUND FLOOR

Rev	Date	Description

Revision:

Status:

PLANNING

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London, EC1V 0BX
Tel – 020 75492141
www.coffeyarchitects.com

Project No: **798**

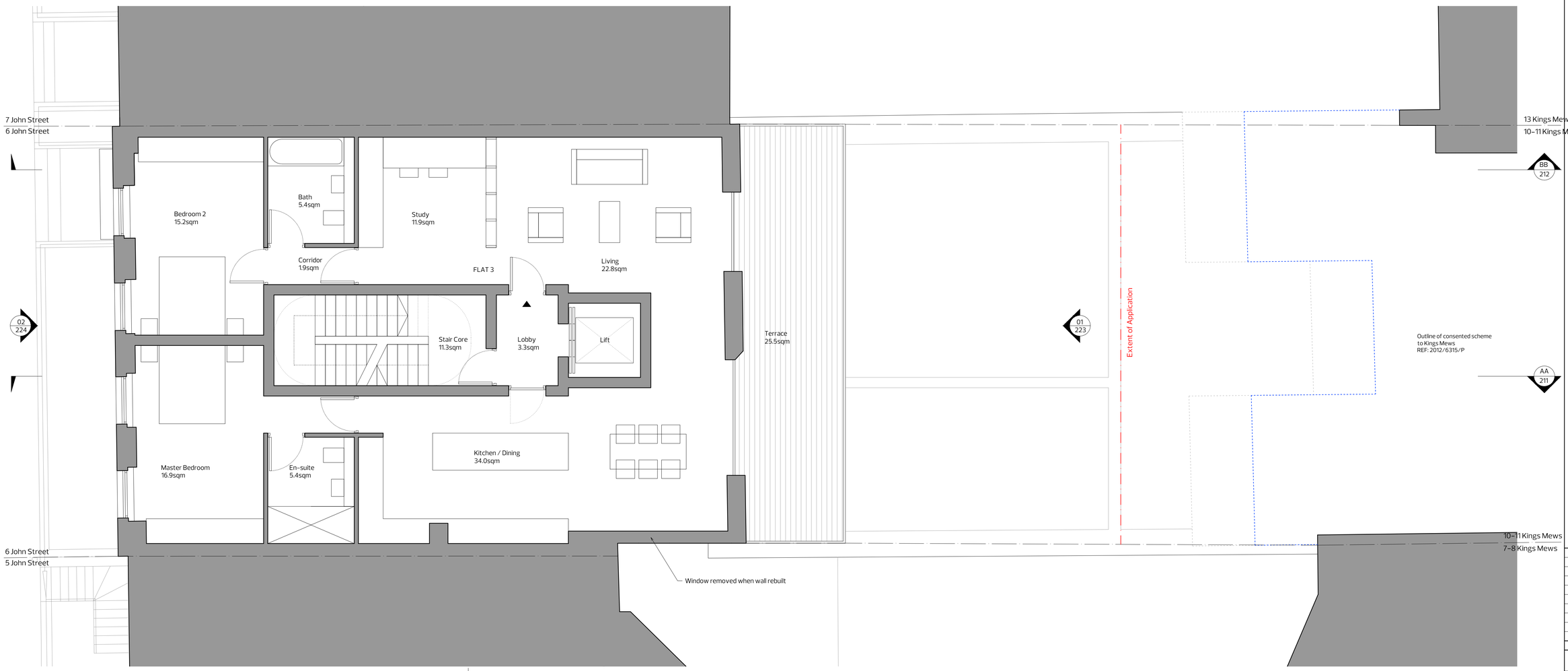
Project Name: **6 John Street WC1**

Drawing Name: **Proposed Ground Floor Plan**

Scale: **1:50 @ A1**

Date: **24/10/2014**

Drawing No: **798_202**



01 PROPOSED FIRST FLOOR

Rev	Date	Description

Revision:

Status:

PLANNING

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Coffey Architects
11–12 Great Sutton Street
London, EC1V 0BX
Tel – 020 75492141
www.coffeyarchitects.com

Project No: **798**

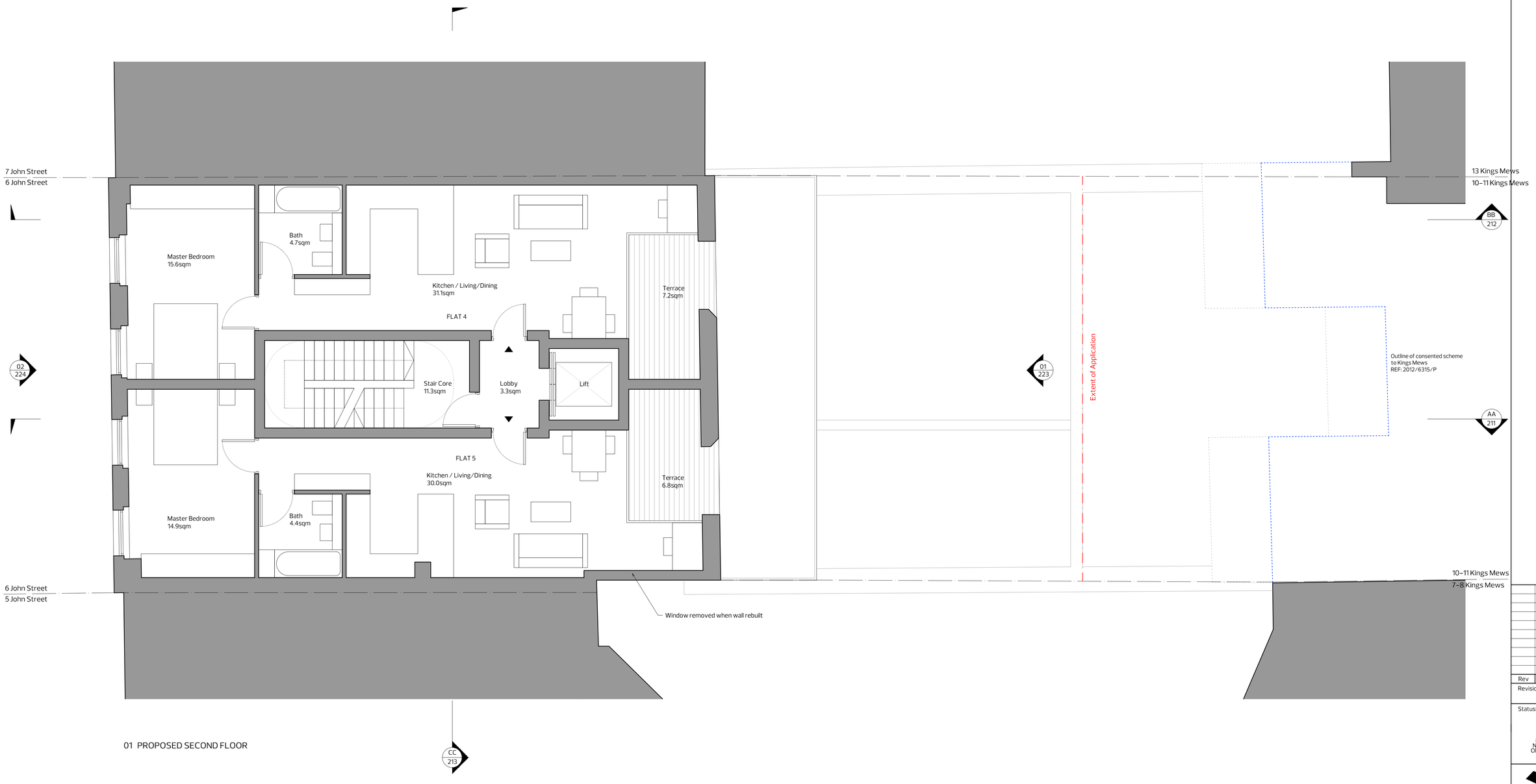
Project Name: **6 John Street WC1**

Drawing Name: **Proposed First Floor Plan**

Scale: **1:50 @ A1**

Date: **24/10/2014**

Drawing No: **798_203**



01 PROPOSED SECOND FLOOR

Rev	Date	Description

Revision:

Status:

PLANNING

NOT FOR CONSTRUCTION
DO NOT SCALE FROM DRAWING
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11–12 Great Sutton Street
London, EC1V 0BX
Tel – 020 75492141
www.coffeyarchitects.com

Project No: **798**

Project Name: **6 John Street WC1**

Drawing Name: **Proposed Second Floor Plan**

Scale: **1:50 @ A1**

Date: **24/10/2014**

Drawing No: **798_204**

7 John Street
6 John Street

13 Kings Mews
10–11 Kings Mews

BB
212

Master Bedroom
19.2sqm

En-Suite
6.5sqm

Bath
4.7sqm

FLAT 6

Hall
9.5sqm

Bedroom 2
16.3sqm

02
224

Stair Core
11.3sqm

Lobby
3.3sqm

Lift

01
223

Extent of Application

Outline of consented scheme
to Kings Mews
REF: 2012/6315/P

AA
211

FLAT 7

Hall
9.5sqm

Master Bedroom
18.8sqm

En-Suite
6.5sqm

Bath
4.7sqm

Bedroom 2
15.6sqm

N

6 John Street
5 John Street

10–11 Kings Mews
7–8 Kings Mews

Window removed when wall rebuilt

CC
213

01 PROPOSED THIRD FLOOR

Rev	Date	Description
Revision:		

Status:
PLANNING

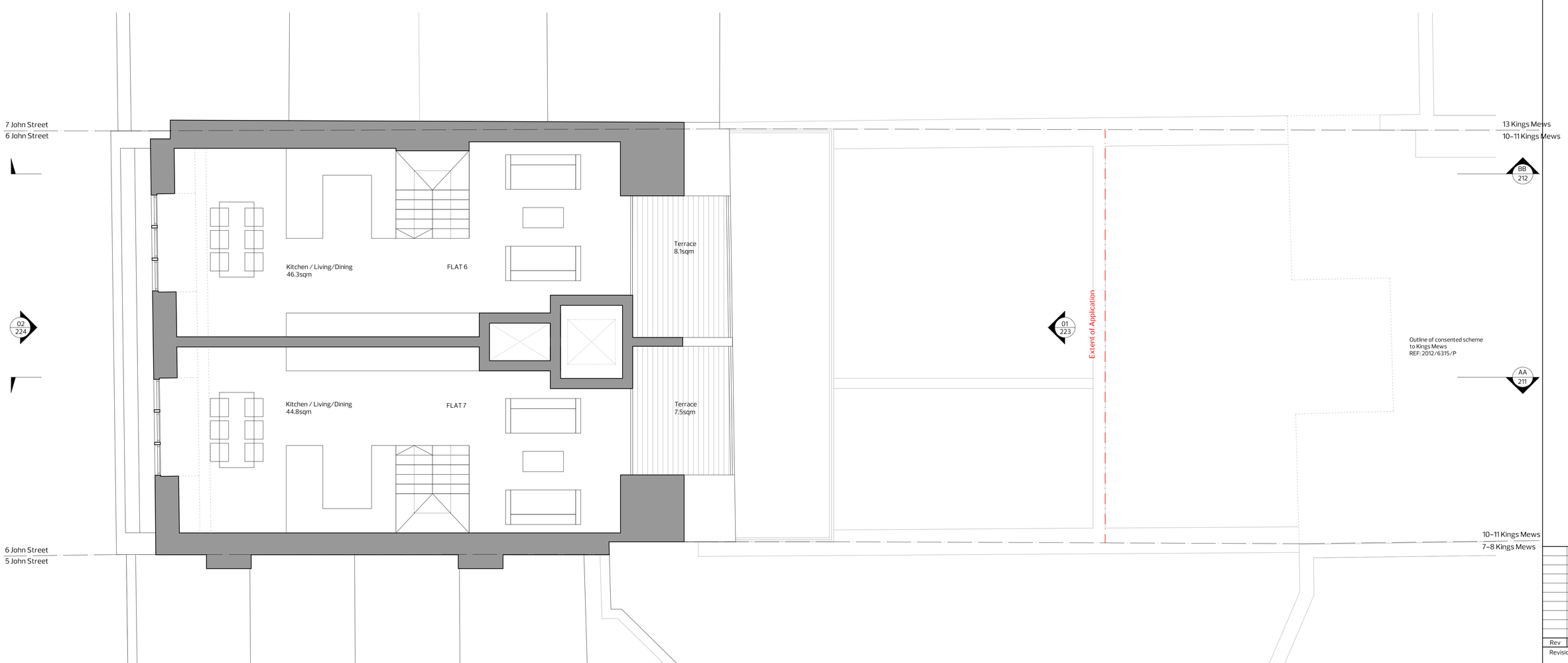
NOT FOR CONSTRUCTION
DO NOT SCALE FROM DRAWING
NOTIFY ARCHITECT IMMEDIATELY
ON DISCOVERY OF DISCREPANCIES

Coffey Architects
11–12 Great Sutton Street
London, EC1V 0BX
Tel - 020 75492141
www.coffeyarchitects.com

Project No: **798**
Project Name: **6 John Street WC1**

Drawing Name: **Proposed Third Floor Plan**

Scale: **1:50 @ A1**
Date: **24/10/2014**
Drawing No: **798_205**



01 EXISTING FOURTH FLOOR

Rev	Date	Description

Revision:

Status:
PLANNING

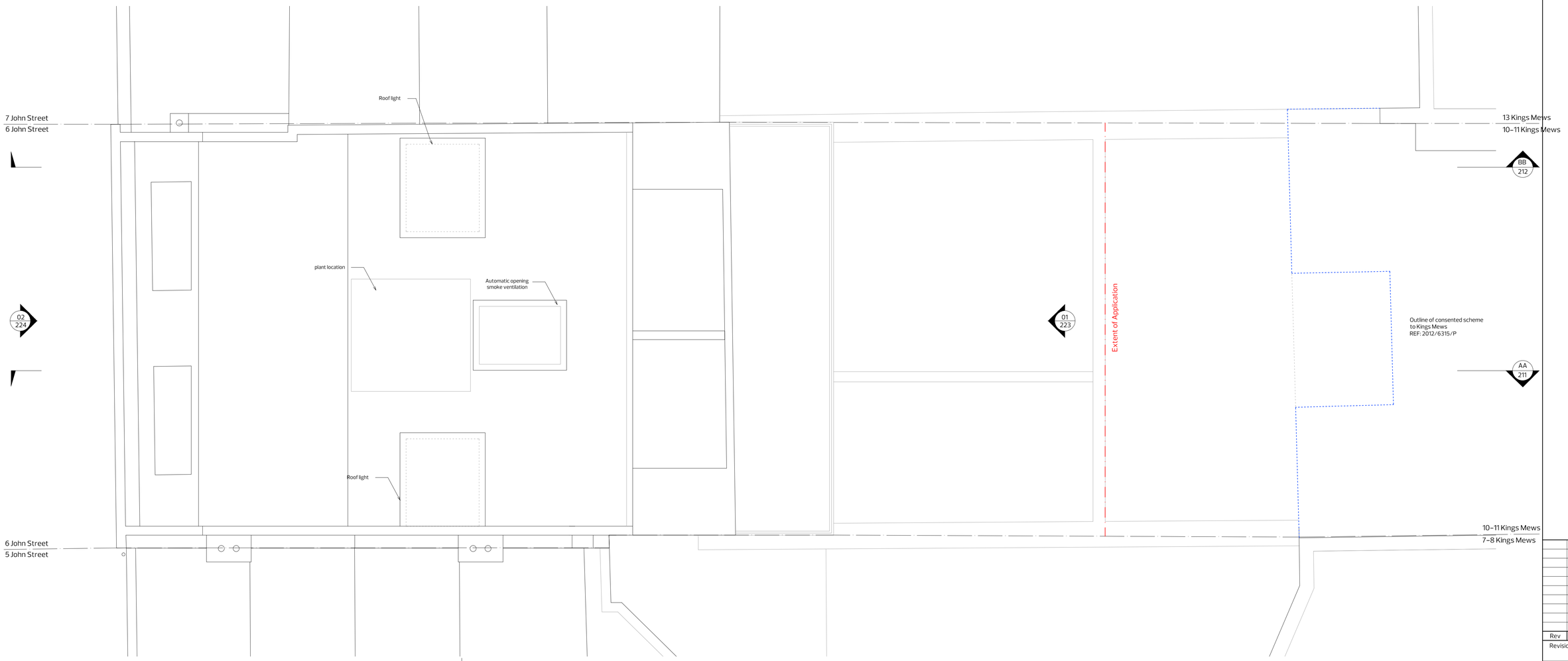
NOT FOR CONSTRUCTION
DO NOT SCALE FROM DRAWING
NOTIFY ARCHITECT IMMEDIATELY
ON DISCOVERY OF DISCREPANCIES

Coffey Architects
11–12 Great Sutton Street
London, EC1V 0BX
Tel - 020 75492141
www.coffeyarchitects.com

Project No: **798**
Project Name: **6 John Street WC1**

Drawing Name: **Existing Fourth Floor Plan**

Scale: **1:50 @ A1**
Date: **24/10/2014**
Drawing No: **798_206**



01 PROPOSED ROOF PLAN

Rev	Date	Description

Revision:

Status:
PLANNING

NOT FOR CONSTRUCTION
DO NOT SCALE FROM DRAWING
NOTIFY ARCHITECT IMMEDIATELY
ON DISCOVERY OF DISCREPANCIES

Coffey Architects
11–12 Great Sutton Street
London, EC1V 0BX
Tel – 020 75492141
www.coffeyarchitects.com

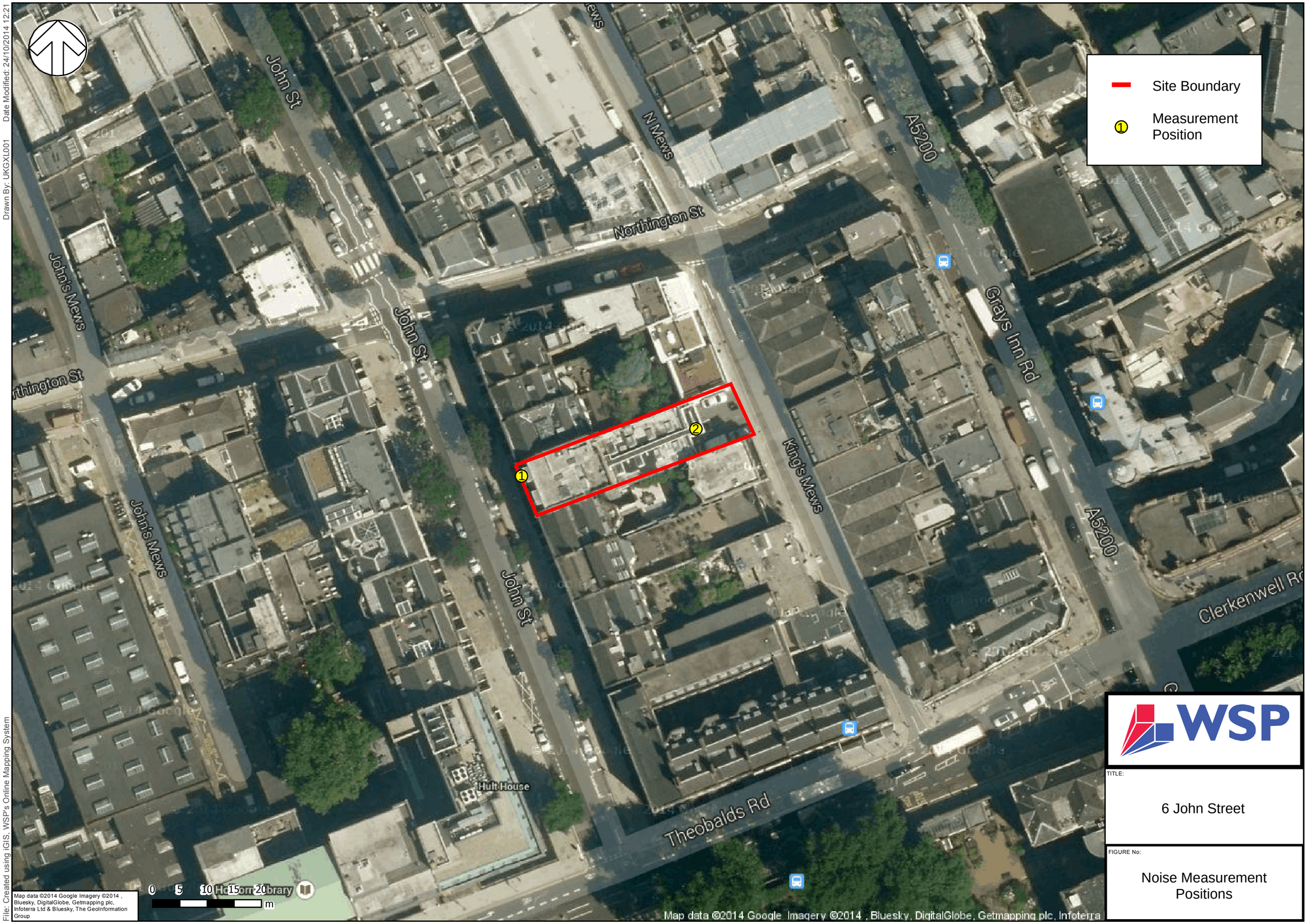
Project No: **798**
Project Name: **6 John Street WC1**

Drawing Name: **Proposed Roof Plan**

Scale: **1:50 @ A1**
Date: **24/10/2014**
Drawing No: **798_207**

Appendix C. Measurement Locations

Drawn By: UKGXL001 Date Modified: 24/10/2014 12:21



WSP

TITLE:

6 John Street

FIGURE No:

Noise Measurement Positions

File: Created using iGIS, WSP's Online Mapping System

Appendix D. Noise Survey Equipment

Table A3: Equipment details

Monitoring Location	Description	Manufacturer and Type Number	Serial Number
MP1	Sound Level Meter	01dB-Stell Solo	60532
	Pre-Amplifier	01dB-Stell Pre 21S	13150
	Microphone	Microtech Gefell MCE212	65593
	Calibrator	01dB-Stell Cal 21	1120240
MP2	Sound Level Meter	Rion NL52	510145
	Pre-Amplifier	H25 Pre Amplifier	10137
	Microphone	Condenser Microphone	02850
	Calibrator	Rion NC-74 Calibrator	34615220

Appendix E. Noise Survey Results

Table A4: Hourly data MP1

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
07/10/2014 15:00	64.9	87.7	56.0
07/10/2014 16:00	63.3	80.3	55.7
07/10/2014 17:00	64.0	84.5	55.8
07/10/2014 18:00	63.0	76.7	55.3
07/10/2014 19:00	62.5	85.0	53.5
07/10/2014 20:00	61.9	87.6	52.4
07/10/2014 21:00	64.4	85.6	52.0
07/10/2014 22:00	60.5	79.8	50.5
07/10/2014 23:00	58.7	75.7	48.8
08/10/2014 00:00	56.4	72.9	45.5
08/10/2014 01:00	55.2	74.4	44.1
08/10/2014 02:00	54.9	74.4	43.5
08/10/2014 03:00	55.0	74.1	43.6
08/10/2014 04:00	55.4	75.6	44.1
08/10/2014 05:00	57.0	82.1	45.7
08/10/2014 06:00	61.0	82.4	48.9
08/10/2014 07:00	64.4	88.8	53.7
08/10/2014 08:00	65.4	86.9	57.1
08/10/2014 09:00	65.3	84.2	57.4
08/10/2014 10:00	64.5	80.5	56.5
08/10/2014 11:00	66.8	93.6	56.7
08/10/2014 12:00	64.0	83.1	57.6
08/10/2014 13:00	65.1	79.6	57.6
08/10/2014 14:00	64.9	87.2	58.8
08/10/2014 15:00	64.4	82.4	57.8
08/10/2014 16:00	64.3	86.1	56.7
08/10/2014 17:00	64.5	84.3	57.2
08/10/2014 18:00	64.9	86.5	57.3
08/10/2014 19:00	62.6	80.4	55.2
08/10/2014 20:00	62.1	83.9	53.2
08/10/2014 21:00	61.2	79.1	52.4
08/10/2014 22:00	60.9	91.2	51.8

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
08/10/2014 23:00	59.1	79.5	49.9
09/10/2014 00:00	60.1	85.9	47.7
09/10/2014 01:00	57.1	76.7	46.0
09/10/2014 02:00	56.2	85.4	44.8
09/10/2014 03:00	55.2	75.0	44.4
09/10/2014 04:00	56.3	79.6	45.2
09/10/2014 05:00	58.8	87.3	47.6
09/10/2014 06:00	63.7	82.8	50.6
09/10/2014 07:00	63.8	82.9	54.0
09/10/2014 08:00	65.7	98.2	56.8
09/10/2014 09:00	65.5	90.4	57.4
09/10/2014 10:00	65.0	82.2	57.8
09/10/2014 11:00	65.0	85.7	57.8
09/10/2014 12:00	64.0	80.3	56.7
09/10/2014 13:00	65.1	95.2	57.1
09/10/2014 14:00	66.8	96.6	58.1
09/10/2014 15:00	66.4	88.9	58.6
09/10/2014 16:00	65.0	84.1	58.5
09/10/2014 17:00	64.4	81.4	57.2
09/10/2014 18:00	63.8	79.7	56.6
09/10/2014 19:00	65.8	94.3	56.5
09/10/2014 20:00	62.6	80.8	55.9
09/10/2014 21:00	62.8	86.7	53.1
09/10/2014 22:00	61.6	81.2	53.1
09/10/2014 23:00	59.4	78.0	50.4
10/10/2014 00:00	58.3	77.1	48.5
10/10/2014 01:00	58.6	76.9	48.0
10/10/2014 02:00	58.2	84.0	46.1
10/10/2014 03:00	56.1	75.4	45.8
10/10/2014 04:00	55.6	72.8	44.9
10/10/2014 05:00	58.0	76.9	46.0
10/10/2014 06:00	60.6	81.0	49.1
10/10/2014 07:00	64.2	85.2	53.2
10/10/2014 08:00	65.7	95.7	55.6
10/10/2014 09:00	64.7	82.3	56.8

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
10/10/2014 10:00	64.8	91.2	56.6
10/10/2014 11:00	64.6	91.6	56.2
10/10/2014 12:00	66.0	95.4	57.8
10/10/2014 13:00	67.5	99.4	56.4
10/10/2014 14:00	65.3	89.1	56.0
10/10/2014 15:00	63.7	79.9	56.0
10/10/2014 16:00	63.9	79.7	55.9
10/10/2014 17:00	64.8	88.1	56.8
10/10/2014 18:00	63.0	80.1	55.6
10/10/2014 19:00	62.5	87.6	54.4
10/10/2014 20:00	61.1	77.5	53.0
10/10/2014 21:00	64.1	97.4	52.4
10/10/2014 22:00	61.0	86.1	53.3
10/10/2014 23:00	60.3	88.1	50.1
11/10/2014 00:00	60.2	86.8	48.8
11/10/2014 01:00	57.9	75.6	47.1
11/10/2014 02:00	57.7	74.6	46.4
11/10/2014 03:00	56.7	78.8	46.1
11/10/2014 04:00	56.9	74.5	45.8
11/10/2014 05:00	55.6	72.8	45.1
11/10/2014 06:00	58.7	77.6	46.2
11/10/2014 07:00	59.9	82.2	48.9
11/10/2014 08:00	61.9	83.2	51.3
11/10/2014 09:00	61.2	77.2	50.9
11/10/2014 10:00	62.1	84.3	51.8
11/10/2014 11:00	62.2	80.3	51.8
11/10/2014 12:00	61.8	78.6	53.1
11/10/2014 13:00	61.3	83.4	51.7
11/10/2014 14:00	61.0	81.8	51.5
11/10/2014 15:00	62.1	87.9	52.3
11/10/2014 16:00	62.4	89.6	53.3
11/10/2014 17:00	62.2	81.6	54.4
11/10/2014 18:00	61.7	75.9	54.1
11/10/2014 19:00	60.6	77.1	51.6
11/10/2014 20:00	61.4	89.5	53.2

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
11/10/2014 21:00	60.3	81.6	49.5
11/10/2014 22:00	61.4	85.4	49.4
11/10/2014 23:00	59.5	74.9	49.2
12/10/2014 00:00	69.7	103.1	47.4
12/10/2014 01:00	58.2	81.9	46.5
12/10/2014 02:00	59.2	84.3	45.5
12/10/2014 03:00	58.4	84.1	45.0
12/10/2014 04:00	57.2	83.8	43.6
12/10/2014 05:00	56.8	76.4	42.2
12/10/2014 06:00	55.0	71.7	42.3
12/10/2014 07:00	59.1	84.0	44.2
12/10/2014 08:00	60.6	80.4	46.7
12/10/2014 09:00	59.7	79.5	47.6
12/10/2014 10:00	59.4	77.0	48.1
12/10/2014 11:00	62.0	90.2	49.2
12/10/2014 12:00	61.2	82.6	50.9
12/10/2014 13:00	61.4	77.0	51.4
12/10/2014 14:00	61.0	85.2	50.9
12/10/2014 15:00	60.9	86.1	51.7
12/10/2014 16:00	61.9	89.1	51.5
12/10/2014 17:00	61.9	86.4	51.6
12/10/2014 18:00	63.3	87.6	54.3
12/10/2014 19:00	61.9	77.0	54.5
12/10/2014 20:00	61.6	82.4	52.4
12/10/2014 21:00	59.8	86.7	50.1
12/10/2014 22:00	59.2	78.0	50.5
12/10/2014 23:00	59.5	78.0	50.7
13/10/2014 00:00	58.7	77.2	48.7
13/10/2014 01:00	56.7	74.9	47.0
13/10/2014 02:00	57.9	72.8	48.0
13/10/2014 03:00	57.7	74.9	49.9
13/10/2014 04:00	57.1	72.0	47.8
13/10/2014 05:00	59.9	75.5	51.5
13/10/2014 06:00	62.8	77.2	52.9
13/10/2014 07:00	64.4	80.2	56.0

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
13/10/2014 08:00	66.3	86.4	58.7
13/10/2014 09:00	66.4	88.6	57.8
13/10/2014 10:00	66.1	88.0	58.3
13/10/2014 11:00	65.0	83.5	57.5
13/10/2014 12:00	66.1	81.5	61.2
13/10/2014 13:00	64.5	80.8	56.7
13/10/2014 14:00	68.0	95.2	57.6
13/10/2014 15:00	69.5	97.4	57.6
13/10/2014 16:00	65.3	82.7	57.7

Table A5: Hourly Data – MP2

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
07/10/2014 15:00	57.0	78.4	51.5
07/10/2014 16:00	57.6	85.1	50.9
07/10/2014 17:00	55.2	76.2	50.6
07/10/2014 18:00	55.9	83.6	49.1
07/10/2014 19:00	54.4	80.2	48.4
07/10/2014 20:00	53.5	77.1	47.9
07/10/2014 21:00	53.0	74.1	47.3
07/10/2014 22:00	55.0	79.4	47.0
07/10/2014 23:00	50.7	71.6	45.7
08/10/2014 00:00	48.8	65.7	43.6
08/10/2014 01:00	47.1	65.5	42.3
08/10/2014 02:00	45.9	58.6	41.6
08/10/2014 03:00	46.4	66.0	41.8
08/10/2014 04:00	47.9	71.5	42.1
08/10/2014 05:00	49.1	67.9	44.0
08/10/2014 06:00	52.0	74.0	46.8
08/10/2014 07:00	56.8	80.8	50.1
08/10/2014 08:00	58.5	86.3	52.3
08/10/2014 09:00	59.4	88.8	52.1
08/10/2014 10:00	58.1	80.9	51.6
08/10/2014 11:00	58.7	83.3	52.2
08/10/2014 12:00	62.1	78.6	54.0
08/10/2014 13:00	59.8	74.1	54.9

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
08/10/2014 14:00	57.7	73.3	53.3
08/10/2014 15:00	58.1	80.8	52.8
08/10/2014 16:00	58.3	84.9	53.0
08/10/2014 17:00	57.0	80.1	52.3
08/10/2014 18:00	57.5	80.1	52.4
08/10/2014 19:00	54.3	73.1	50.3
08/10/2014 20:00	54.0	77.1	49.7
08/10/2014 21:00	53.9	76.5	48.9
08/10/2014 22:00	54.0	75.6	49.0
08/10/2014 23:00	52.1	79.0	48.4
09/10/2014 00:00	52.1	79.0	47.1
09/10/2014 01:00	50.5	79.2	45.3
09/10/2014 02:00	48.4	75.1	44.5
09/10/2014 03:00	50.7	78.2	44.3
09/10/2014 04:00	49.0	64.4	45.1
09/10/2014 05:00	51.2	72.1	46.4
09/10/2014 06:00	52.3	73.6	48.5
09/10/2014 07:00	56.0	80.7	50.5
09/10/2014 08:00	59.2	81.3	53.2
09/10/2014 09:00	60.5	86.9	53.5
09/10/2014 10:00	59.7	78.1	53.6
09/10/2014 11:00	58.0	79.6	52.9
09/10/2014 12:00	57.3	75.6	53.4
09/10/2014 13:00	61.0	93.0	53.9
09/10/2014 14:00	58.9	85.1	53.4
09/10/2014 15:00	59.5	78.7	54.4
09/10/2014 16:00	59.3	79.1	53.2
09/10/2014 17:00	57.0	76.6	52.3
09/10/2014 18:00	55.3	75.0	51.0
09/10/2014 19:00	56.4	78.6	50.8
09/10/2014 20:00	54.6	74.6	51.1
09/10/2014 21:00	56.4	78.5	49.2
09/10/2014 22:00	55.4	78.8	48.8
09/10/2014 23:00	51.5	69.5	47.0
10/10/2014 00:00	50.4	68.0	46.4

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
10/10/2014 01:00	49.7	64.5	45.2
10/10/2014 02:00	49.2	73.1	44.8
10/10/2014 03:00	48.6	73.2	43.6
10/10/2014 04:00	48.8	69.7	43.4
10/10/2014 05:00	49.7	70.6	44.4
10/10/2014 06:00	53.0	80.3	47.1
10/10/2014 07:00	57.5	84.4	49.6
10/10/2014 08:00	60.5	82.9	51.7
10/10/2014 09:00	60.5	80.1	53.4
10/10/2014 10:00	59.8	86.0	52.2
10/10/2014 11:00	59.7	90.3	52.0
10/10/2014 12:00	68.5	86.6	55.1
10/10/2014 13:00	59.2	81.5	52.2
10/10/2014 14:00	65.9	89.9	51.6
10/10/2014 15:00	58.7	86.0	51.5
10/10/2014 16:00	59.5	81.7	51.4
10/10/2014 17:00	61.3	84.2	51.1
10/10/2014 18:00	56.0	84.5	49.7
10/10/2014 19:00	54.2	75	48.7
10/10/2014 20:00	52.6	71.2	48.2
10/10/2014 21:00	52.6	74.8	47.5
10/10/2014 22:00	54.1	76.2	47.5
10/10/2014 23:00	52.5	74.4	46.2
11/10/2014 00:00	50.9	74.1	44.8
11/10/2014 01:00	49.5	70.4	44.4
11/10/2014 02:00	49.6	72.3	44.2
11/10/2014 03:00	48.6	64.1	44.1
11/10/2014 04:00	48.5	75.0	43.0
11/10/2014 05:00	47.5	61.8	43.0
11/10/2014 06:00	49.3	78.7	44.1
11/10/2014 07:00	54.9	79.0	46.2
11/10/2014 08:00	55.5	75.4	47.8
11/10/2014 09:00	57.1	81.3	49.7
11/10/2014 10:00	59.2	83.3	50.1
11/10/2014 11:00	58.5	78.6	50.5

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
11/10/2014 12:00	57.5	79.0	50.2
11/10/2014 13:00	53.9	79.1	48.4
11/10/2014 14:00	56.3	90.1	48.4
11/10/2014 15:00	54.0	74.5	48.4
11/10/2014 16:00	56.4	78.0	48.9
11/10/2014 17:00	52.8	74.6	48.7
11/10/2014 18:00	53.1	73.3	48.1
11/10/2014 19:00	52.1	73.1	47.2
11/10/2014 20:00	52.8	77.4	47.4
11/10/2014 21:00	51.4	79.7	45.8
11/10/2014 22:00	50.9	75.9	46.1
11/10/2014 23:00	53.2	72.3	45.9
12/10/2014 00:00	49.6	72.4	44.6
12/10/2014 01:00	49.8	69.7	43.1
12/10/2014 02:00	50.6	75.7	44.0
12/10/2014 03:00	49.4	70.6	42.6
12/10/2014 04:00	48.5	70.8	41.6
12/10/2014 05:00	47.8	67.2	41.5
12/10/2014 06:00	47.4	73.4	41.5
12/10/2014 07:00	53.0	78.4	44.5
12/10/2014 08:00	51.0	75.5	44.2
12/10/2014 09:00	51.6	70.2	45.2
12/10/2014 10:00	51.8	74.1	45.5
12/10/2014 11:00	51.8	76.3	45.9
12/10/2014 12:00	56.7	77.9	47.3
12/10/2014 13:00	53.0	75.8	47.8
12/10/2014 14:00	52.5	76.7	47.7
12/10/2014 15:00	52.5	77.9	48.1
12/10/2014 16:00	54.5	77	48.2
12/10/2014 17:00	53.6	75.9	48.5
12/10/2014 18:00	55.5	75.2	51.4
12/10/2014 19:00	57.4	78.9	53.7
12/10/2014 20:00	55.1	76.3	51.4
12/10/2014 21:00	53.3	76.3	49.1
12/10/2014 22:00	52.3	69.1	48.9

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
12/10/2014 23:00	54.1	73.8	50.7
13/10/2014 00:00	52.0	70.7	47.8
13/10/2014 01:00	49.9	68.3	46.0
13/10/2014 02:00	53.1	73.2	49.1
13/10/2014 03:00	53.8	78.1	50.9
13/10/2014 04:00	52.4	77.5	48.9
13/10/2014 05:00	55.4	72.7	52.5
13/10/2014 06:00	56.9	76.2	52.8
13/10/2014 07:00	58.9	77.8	54.2
13/10/2014 08:00	61.2	85.2	54.9
13/10/2014 09:00	58.8	81.8	52.7
13/10/2014 10:00	58.0	87.7	53.0
13/10/2014 11:00	61.1	77.3	53.2
13/10/2014 12:00	60.7	77.8	53.4
13/10/2014 13:00	57.2	79.7	52.4
13/10/2014 14:00	65.2	78.5	54.6
13/10/2014 15:00	57.4	77.9	52.9
13/10/2014 16:00	59.2	82.4	53.1

Appendix F. Limitations

This report has been prepared for the titled project or named part thereof and should not be used in whole or part and relied upon for any other project without the written authorisation of WSP UK Limited. WSP UK Limited accepts no responsibility or liability for the consequences of this document if it is used for a purpose other than that for which it was commissioned. Persons wishing to use or rely upon this report for other purposes must seek written authority to do so from the owner of this report and/ or WSP UK Limited and agree to indemnify WSP UK Limited for any and all loss or damage resulting therefrom. WSP UK Limited accepts no responsibility or liability for this document to any other party other than the person by whom it was commissioned.

The findings and opinions expressed are relevant to the dates of the site works and should not be relied upon to represent conditions at substantially later dates. Opinions included therein are based on information gathered during the study and from our experience. If additional information becomes available which may affect our comments, conclusions or recommendations WSP UK Limited reserve the right to review the information, reassess any new potential concerns and modify our opinions accordingly.

WSP UK Limited
WSP House
London
WC2A 1AF
UK
Tel: 020 7314 5000
Fax: +44 20 7314 5111
www.wspgroup.co.uk