UNITED BY OUR DIFFERENCE

WSP

11-12 KING'S MEWS

Noise Impact Assessment

21/04/2015

Institute of Acoustics sponsoring organisation

Quality Management

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3
Remarks	Draft	For Issue	For Issue	
Date	13/04/2015	17/04/2015	21/04/15	
Prepared by	Michael Ashcroft	Michael Ashcroft	Michael Ashcroft	
Signature				
Checked by	Sarah Whydle	Louise Beamish	Louise Beamish	
Signature				
Authorised by	Louise Beamish	Louise Beamish	Louise Beamish	
Signature				
Project number	70007778	70007778	70007778	
Report number	Rev00	Rev01	Rev02	
File reference	70007778/C/05	70007778/C/05	70007778/C/05	

11-12 King’s Mews

Noise Impact Assessment

21/04/2015

Client

G&T King’s Mews 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

Michael Ashcroft

michael.ashcroft@wspgroup.com

Table of Contents

1 Introduction

1.1.1 WSP UK Ltd has been instructed by G&T King's Mews Ltd to undertake a noise impact assessment for the proposed development at 11-12 King's Mews, London. A previous application (ref. 2014/6795/P) was submitted for the redevelopment of the plot immediately to the west which is 6 John Street. A Noise Impact Assessment (WSP ref. 70007778) was presented by WSP Acoustics as part of the planning application.

1.1.2 An environmental noise survey has been undertaken to determine the current noise levels affecting the site. The survey results have been used to assess the suitability of the site for residential use.

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 and future sensitive receptors nearby.

1.1.4 A glossary of the technical terms used in this report is given in Appendix A.

2 Site Description

2.1 Existing Site

2.1.1 The 11-12 King's Mews plot currently comprises a section of the ground floor extension to the rear of 6 John Street and a gated car park area at the back of the building which is accessed via King's Mews.

2.1.2 The site location is shown on a site map in Appendix B.

2.1.3 The site is bounded to the west by the rear of 6 John Street, to the east by King's Mews and to the north and south by existing dwellings.

2.1.4 The noise climate on the eastern site boundary overlooking King's Mews is dominated by road traffic on Gray's Inn Road, located further to the east, and the surrounding road network. In addition, there is a car mechanic repair business on King's Mews which could be heard during the noise survey during daytime working hours (08:30 – 17:30).

2.2 Proposed Redevelopment

2.2.1 It is proposed to develop 11-12 King's Mews, to provide two residential units. The proposed layout drawings are shown in Appendix C.

3 Planning Policy and Guidance

3.1 National Planning Policy

National Planning Policy Framework

3.1.1 The National Planning Policy Framework (NPPF) 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 Consultation

3.2.1 Camden Council was contacted to discuss the methodology for this noise assessment. The following methods were agreed:

- The measured noise levels would be assessed against Camden Council's Policy DP28 in line with WSP's previous acoustic report for 6 John Street.
- The noise measurements undertaken in October 2014 for the previous planning application are valid for this noise assessment.
- Noise from the car mechanic repair business on King's Mews will be assessed against Camden's Policy DP28.

3.3 Local Planning Policy

3.3.1 Camden Council's development policies were adopted in 2010 and development policy 28 (*DP28 Noise and Vibration)* addresses 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.

3.3.2 The policy also states “development that exceeds Camden’s Noise and Vibration Thresholds will not be permitted.” The noise thresholds at and above which attenuation measures will be required, are set out in Camden Council’s Development Policies document and 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 L_{Aeq} 12h
Noise at 1 metre external to a sensitive façade	Evening	19:00 – 23:00	57 dB L_{Aeq} 4h
Noise at 1 metre external to a sensitive façade	Night	23:00 – 07:00	52 dB L_{Aeq} 1h
Individual noise events several times an hour	Night	23:00 – 07:00	>82 dB L_{Amax} (S time weighting)

3.4 Guidance

3.4.1 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 3-2.

Table 3-2: Indoor ambient noise levels in spaces when unoccupied

Activity	Location	Daytime (07:00-23:00 hrs)	Night-time (23:00-07:00 hrs)
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 $L_{Aeq,8h}$

3.4.2 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, the standard states that development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

3.4.3 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.

3.4.4 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 3-3.

Table 3-3: WHO guideline values for community noise in specific environments

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

3.4.5 In line with the WHO guidelines, a night-time L_{AFmax} criterion of 45 dB has been used in this assessment.

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 six day period commencing on 7th October 2014 at approximately 15:00 hours and finishing on 13th October 2014 at approximately 17:00 hours.

4.1.2 The unattended noise survey was conducted at a single measurement position, located on the first floor extension of the current property, overlooking King's Mews. This position was chosen as a secure location to leave the equipment unattended.

4.1.3 The microphone was mounted at a height of 1.4 m above the walkway that runs across the roof of the first floor extension (approximately two storeys high) in the free-field (i.e. at least 3.5 m away from any vertical reflecting surface).

4.1.4 A short term attended measurement was carried out on the afternoon of 13th October 2014. The measurement position was located 1 m from the kerb of King's Mews, at the north east corner of the site boundary, and 8 m to the east of the long term measurement position. This position was chosen to be representative of the noise levels at the eastern façade of the proposed dwellings and was selected to assist in determining the differential between the noise climate at the unattended measurement location and the eastern site boundary.

4.1.5 Details of the equipment used in the survey are given in Table A-3, in Appendix D.

4.2 Results

4.2.1 A comparison has been undertaken between the two measurement positions to determine whether any corrections need be applied to the long term measurement data, so as to be representative of the proposed façade overlooking King's Mews. This comparison indicates that a +2 dB correction should be applied to the daytime $L_{Aeq,\ T}$ values measured at the long term measurement position to account for the daytime operation of the car mechanic repair garage. In order to provide a robust assessment a 'worst case' scenario has been assumed and this correction has been applied to the daytime $L_{Aeq,\ T}$ values for the entire survey period, including the weekend. No corrections have been applied to the unattended night-time noise data as the garage is operational during daytime hours only.

4.2.2 A summary of the time averaged ambient noise levels (for comparison with Camden Council's Development Policies) and minimum background noise levels for each day, evening and night-time period along with the typical maximum noise levels during the night-time is presented in Table 4-1 below. Full results of the unattended and attended surveys are presented in Appendix E.

4.2.3 The 'typical' maximum noise level is calculated by taking the 90th percentile of the night-time L_{AFmax} noise levels measured during each 5 minute period.

Table 4-1: Summary of results from environmental noise survey

Day/Date	Daytime (07:00 – 19:00)		Evening (19:00 – 23:00)		Night-time (23:00 – 07:00)		
	Corrected[#] $L_{Aeq,12h}$, dB	Lowest $L_{A90,1h}$, dB	$L_{Aeq,4h}$, dB	Lowest $L_{A90,1h}$, dB	Highest $L_{Aeq,1h}$, dB	Lowest $L_{A90,1h}$, dB	Typical L_{AFmax} dB
Tuesday 7 October 2014	58*	49*	54	47	52	42	66
Wednesday 8 October 2014	60	50	54	49	52	44	71
Thursday 9 October 2014	60	50	55	49	53	43	68
Friday 10 October 2014	64	50	53	48	53	43	69
Saturday 11 October 2014	58	46	51	46	53	42	69
Sunday 12 October 2014	55	44	54	49	57	46	71
Monday 13 October 2014	62*	52*	-	-	-	-	-

* Incomplete period

[#] +2 dB correction applied as detailed in paragraph 4.2.1.

4.2.4 The BS 8233:2014 and WHO criteria for noise are expressed in terms of the 16 hour daytime (07:00 to 23:00 hours) and 8 hour night-time (23:00 to 07:00 hours) periods. Table 4-2 below presents the daytime and night-time noise levels for comparison with the BS 8233 and WHO criteria.

Table 4-2: Summary of the noise levels used in the assessment.

Period	$L_{Aeq,T}$ dB	Typical L_{AFmax} dB
Daytime (07:000-23:00)	63 [#]	-
Night-time (23:00-07:00)	54	71

[#] +2 dB correction applied as detailed in paragraph 4.2.1.

5 Site Suitability Assessment

5.1.1 Based upon the results of the survey, the noise levels measured at the site are at or above the noise thresholds outlined in Camden Council's development policy during the day, evening and night (as presented in Table 3-1) and, therefore, attenuation measures will be required. These measures are explored in more detail in this section.

5.2 Internal and External Noise Criteria

5.2.1 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.

5.2.2 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	-	

5.3 External Building Fabric Assessment

5.3.1 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.

5.3.2 Given the analysis of the short term measurement results and the applied correction, the measured noise levels are considered representative of the existing noise climate at the proposed development, overlooking King's Mews.

5.3.3 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 used in this assessment as presented in Table 4-2.

5.3.4 The required sound insulation performance of the façade in order to achieve the desired internal noise criteria (Table 5-1) is set out in Table 5-2.

Table 5-2: Required sound insulation performance of the building envelope

Period	Free-field Noise Level at façade, dB	Internal Noise Criteria, dB	Required Glazing Performance, dB $R_w + C_{tr}$
Day	63 $L_{Aeq,16h}$	35	28
Night	54 $L_{Aeq,8h}$	30	24
	71 L_{AFmax}	45	26

5.3.5 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

5.3.6 It is proposed that a standard thermal double glazed unit achieving a sound insulation performance of 28 dB R_W+C_{tr}, for example a 6mm glass/12mm airspace/4mm unit will be required to achieve the internal noise levels.

5.3.7 Based upon the acoustic performance requirements set out above, internal noise levels within living areas and bedrooms are expected to achieve the criteria as outlined in Table 5-1.

Ventilation and Cooling

5.3.8 On ventilation, BS 8233 advises that *"The Building Regulations' supporting documents on ventilation recommend habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used and sound attenuating types are available. However, windows may remain openable for rapid or purge ventilation, or at the occupants choice".*

5.3.9 The Building Research Establishment (BRE) has published an Information Paper on the acoustic performance of such passive ventilation systems. IP4/99: 1999: Ventilators: *Ventilation and Acoustic Effectiveness* details a study into the sound reduction performance, after taking into account flanking sound paths (i.e. sound paths that do not travel directly through the ventilator) and the effective area of the ventilator, were as summarised below.

Table 5-3: Range of measured sound reduction performance values for passive ventilators, with vents open

Window mounted trickle vents (open) dBA	Passive through-wall ventilators (open) dBA
From 14 to 40 (depending on model)	From 24 to 46 (depending on model)
Note: The figures have been corrected for the effective area of the ventilator	

5.3.10 It can be seen from the above table that window mounted trickle vents or passive through-wall ventilators are available that meet the requirements of the Building regulations Approved Document F for background ventilation and also provide a sound reduction performance to meet that required for the glazing elements.

5.3.11 It is recommended, therefore, that all habitable rooms of proposed dwellings should be provided with a form of natural ventilation such that the overall sound insulation performance of the façade is not compromised and the desired internal noise levels are achieved.

5.4 External Amenity Areas

5.4.1 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.

5.4.2 It is understood that there will be courtyard areas on the western side of the building. The screening provided by the surrounding buildings ensures that the spaces will achieve the lowest practicable levels.

5.4.3 The proposed dwellings will have balconies on both the eastern and western façades, which are unlikely to achieve the external noise criterion. With respect to balconies BS 8233 states:

> *'Other locations, such as balconies, roof gardens and terraces, are also important in residential buildings where normal external amenity space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate.'*

5.4.4 As stated above, it is not mandatory to achieve 55 dB on balconies. As such, noise control measures have not been specified.

6 Conclusions

6.1.1 WSP UK Ltd has been appointed by G&T King's Mews Ltd to undertake a noise impact assessment for the proposed redevelopment at 11-12 King's Mews, London.

6.1.2 A baseline noise survey has been undertaken to establish the existing noise levels affecting the site and surrounding area, which are dominated by road traffic along John Street, Gray's Inn Road and also the car repair business situated on King's Mews.

6.1.3 An additional short term measurement was carried out at the north east boundary of the site. This position was used to measure the noise levels at the eastern façade of the proposed dwellings and was selected to assist in determining the differential between the noise climate at the unattended measurement location and the eastern site boundary. A +2 dB correction was applied to the daytime $L_{Aeq,\ T}$ values in order for the long term measurement data to be representative of the noise levels at the façade of the proposed dwellings overlooking King's Mews.

6.1.4 Based on the measured noise data and internal noise level criteria from Camden Council's planning policy, BS 8233 and WHO guidelines 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.

6.1.5 In order to meet the required internal noise levels, a standard thermal double glazed unit achieving 28 dB R_W+C_{tr}, for example a 6mm glass/12mm airspace/4mm unit, will be required.

6.1.6 The proposed ventilation strategy is to provide ventilation though passive means. Window mounted trickle vents or passive through-wall ventilators will be required such that the overall sound insulation performance of the façade is not compromised in order to meet the desired internal; noise levels.

6.1.7 An assessment of the external amenity areas has also been undertaken. It is understood that the external amenity spaces will be the courtyards to the west of the building and the balconies on the eastern and western façades. The measured noise levels show that the 55 dB criterion is unlikely to be achieved in the external amenity areas. Nevertheless, BS 8233 recognizes this criterion is not always achievable in urban environments and is not mandatory for balconies of this size.

6.1.8 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.

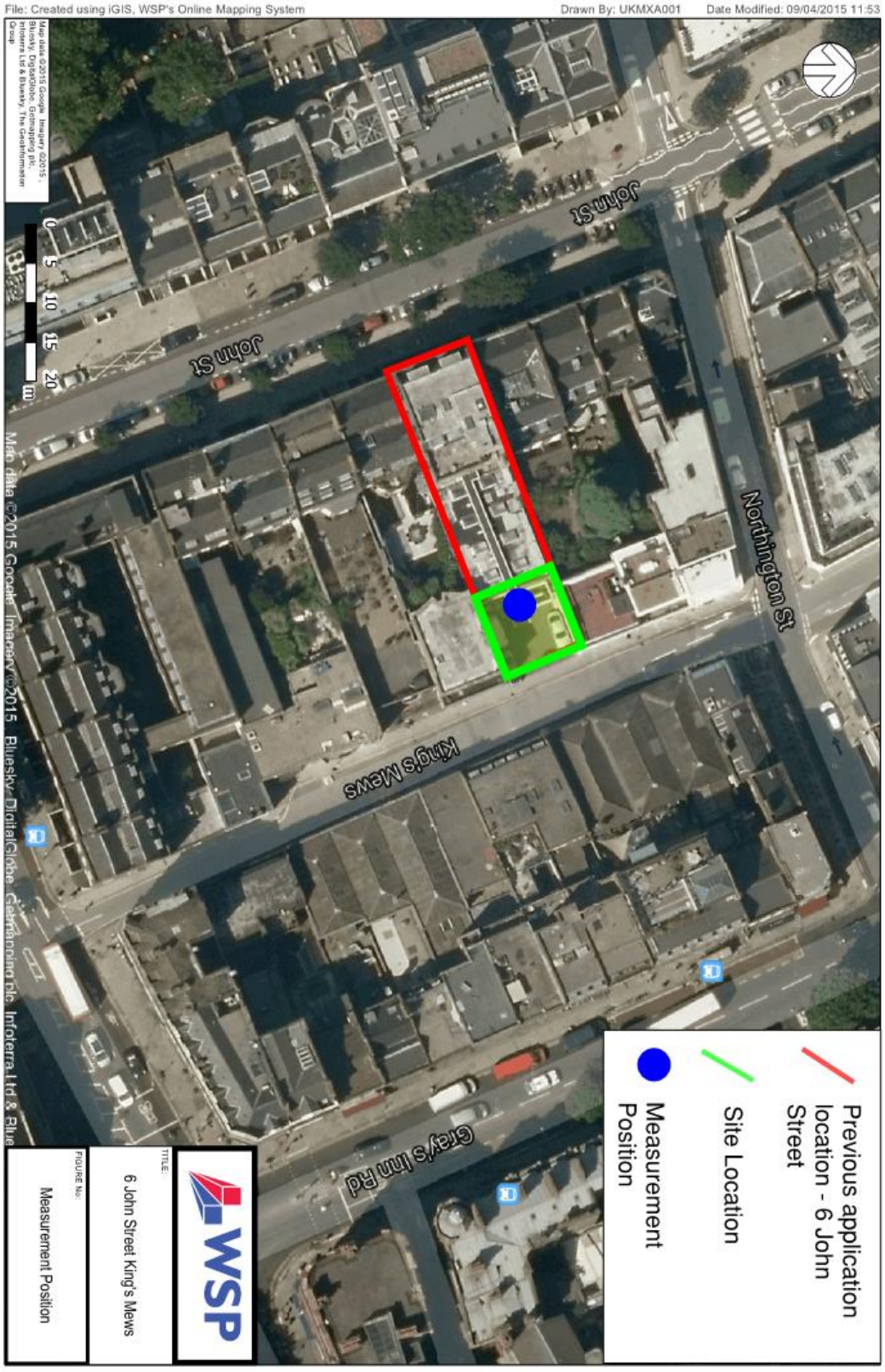
Table A-1: Typical sound levels found in the environment

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

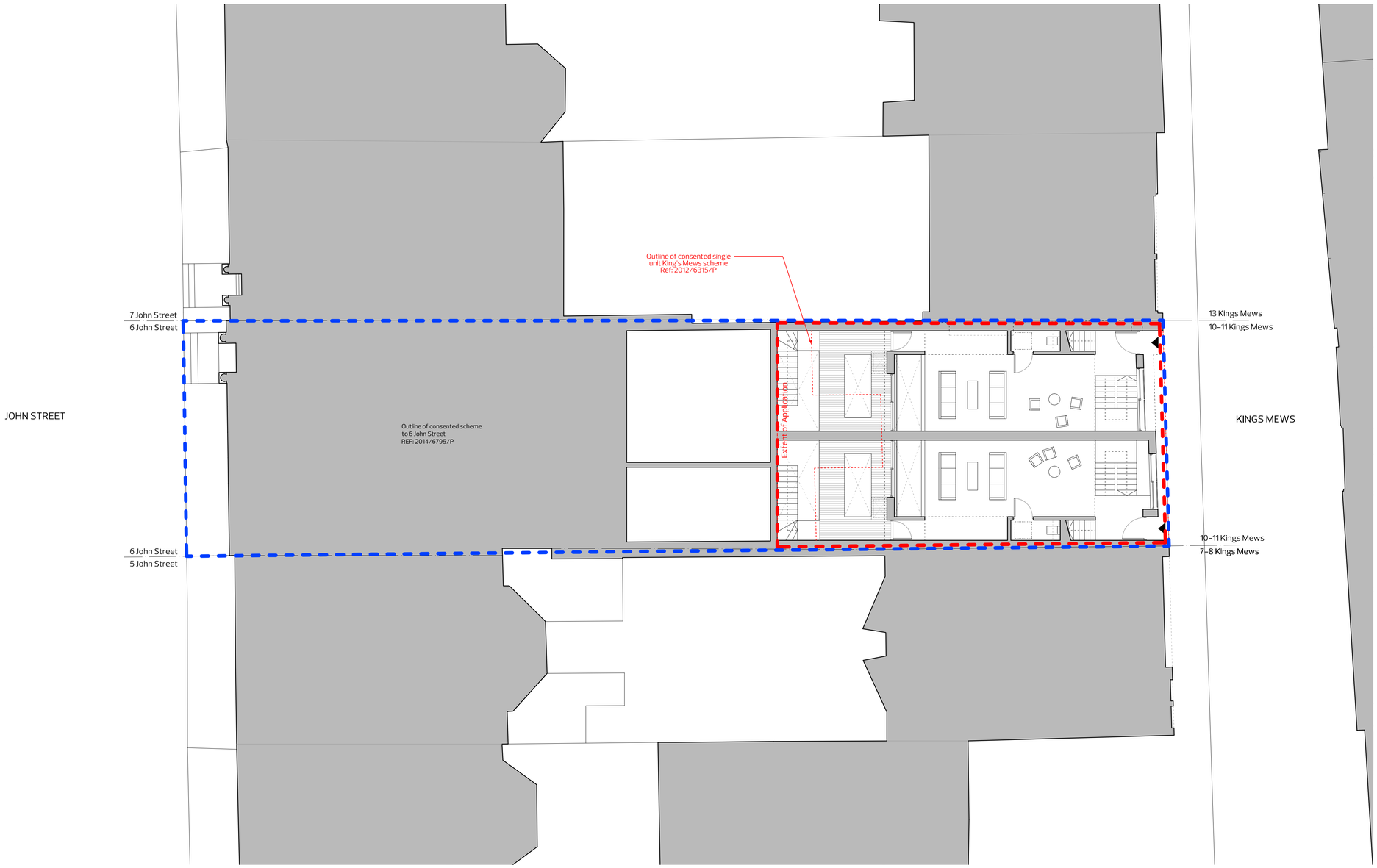
Table A-2: Terminology relating to noise

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. Measurement Location



Appendix C. Proposed Layout



01 PROPOSED SITE PLAN

Applicant Ownership Boundary

Application Site Boundary

N

0m 1 2 3 4 5 6m

Rev	Date	Description

Revision: **P1**

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: **1008**

Project Name: **10 / 11 King's Mews**

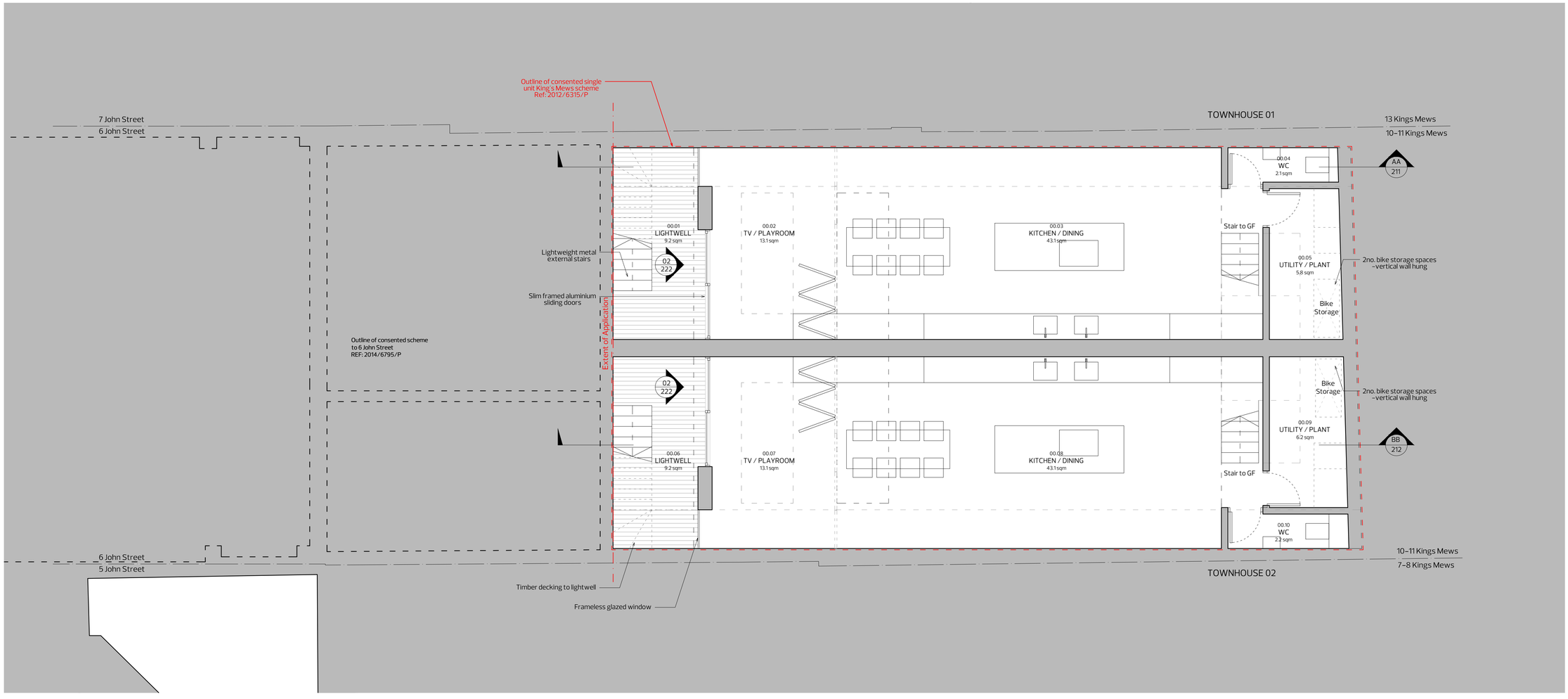
Drawing Name: **Proposed Site Plan**

Scale: **1:100 @ A1 / 1:200 @A3**

Date: **17/04/2015**

Drawing No: **1008_200**

EXTENT OF APPLICATION



01 PROPOSED LOWER GROUND FLOOR

0m 1 2 3m

Rev	Date	Description

Revision: **P1**

Status: **PLANNING**

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

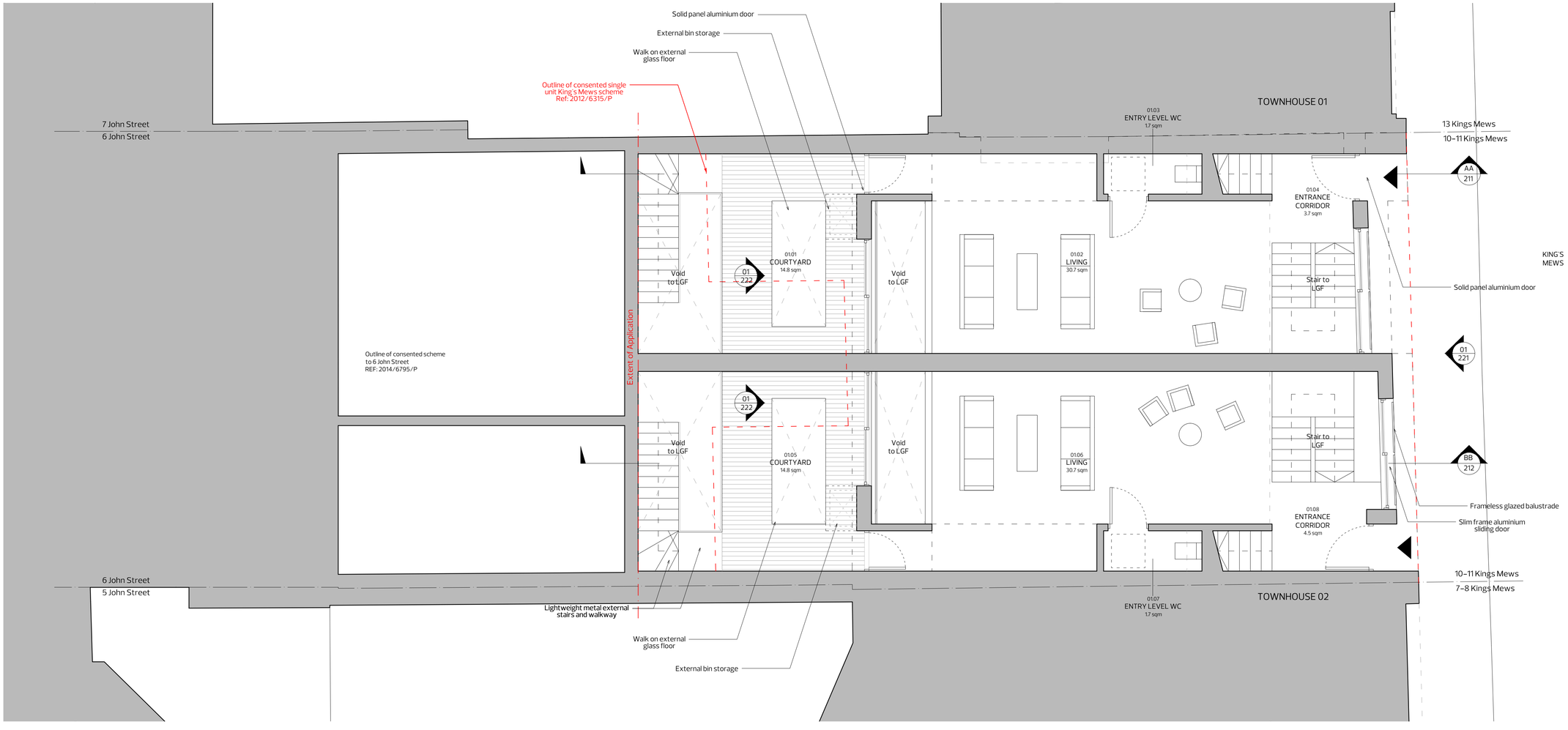
Coffey Architects
11–12 Great Sutton Street
London, EC1V 0BX
Tel – 020 75492141
www.coffeyarchitects.com

Project No: **1008**
Project Name: **10 / 11 King's Mews**

Drawing Name: **Proposed Lower Ground Floor Plan**

Scale: **1:50 @ A1 / 1:100 @A3**
Date: **17/04/2015**
Drawing No: **1008_201**

EXTENT OF APPLICATION



01 PROPOSED GROUND FLOOR

N

0m 1 2 3m

Rev	Date	Description

Revision: **P1**

Status: **PLANNING**

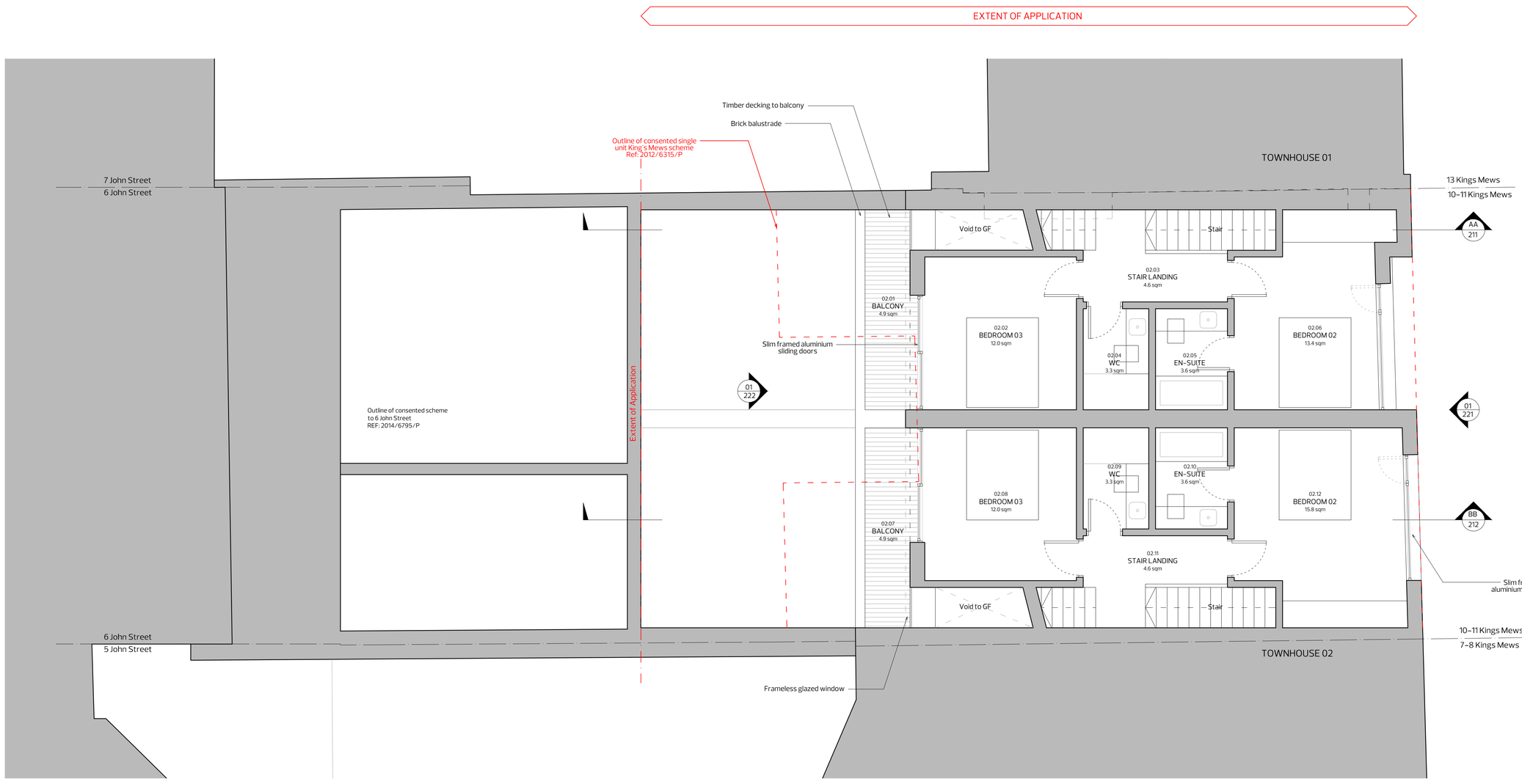
NOT FOR CONSTRUCTION
DO NOT SCALE FROM DRAWING
NOTIFY ARCHITECT IMMEDIATELY
ON DISCOVERY OF DISCREPANCIES

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

Project No: **1008**
Project Name: **10 / 11 King's Mews**

Drawing Name: **Proposed Ground Floor Plan**

Scale: **1:50 @ A1 / 1:100 @A3**
Date: **17/04/2015**
Drawing No: **1008_202**



01 PROPOSED FIRST FLOOR

0m 1 2 3m

Rev	Date	Description

Revision: **P1**

Status: **PLANNING**

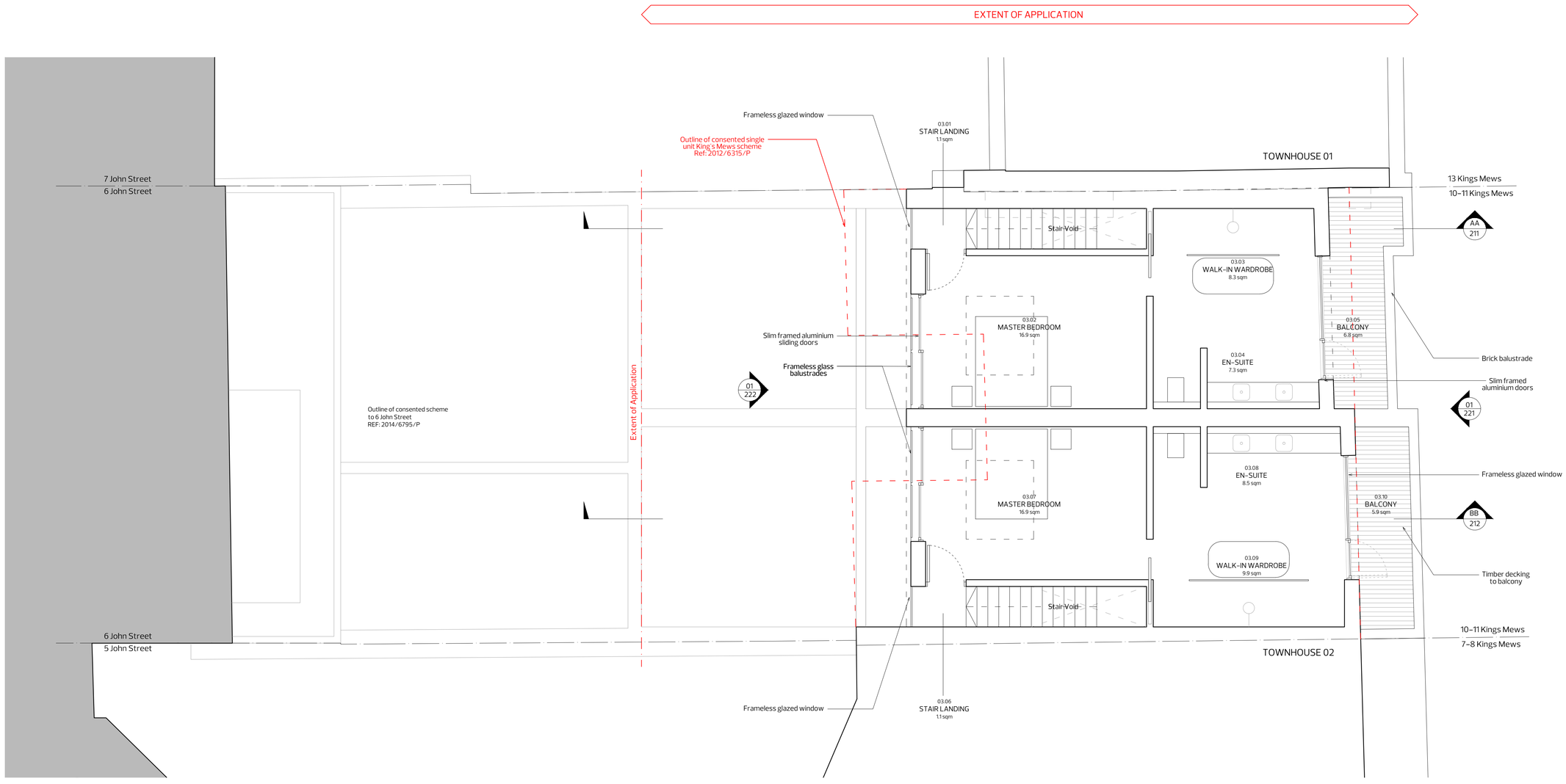
NOT FOR CONSTRUCTION
DO NOT SCALE FROM DRAWING
NOTIFY ARCHITECT IMMEDIATELY
ON DISCOVERY OF DISCREPANCIES

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

Project No: **1008**
Project Name: **10 / 11 King's Mews**

Drawing Name: **Proposed First Floor Plan**

Scale: **1:50 @ A1 / 1:100 @A3**
Date: **17/04/2015**
Drawing No: **1008_203**



01 PROPOSED SECOND FLOOR

0m 1 2 3m

Rev	Date	Description

Revision: **P1**

Status: **PLANNING**

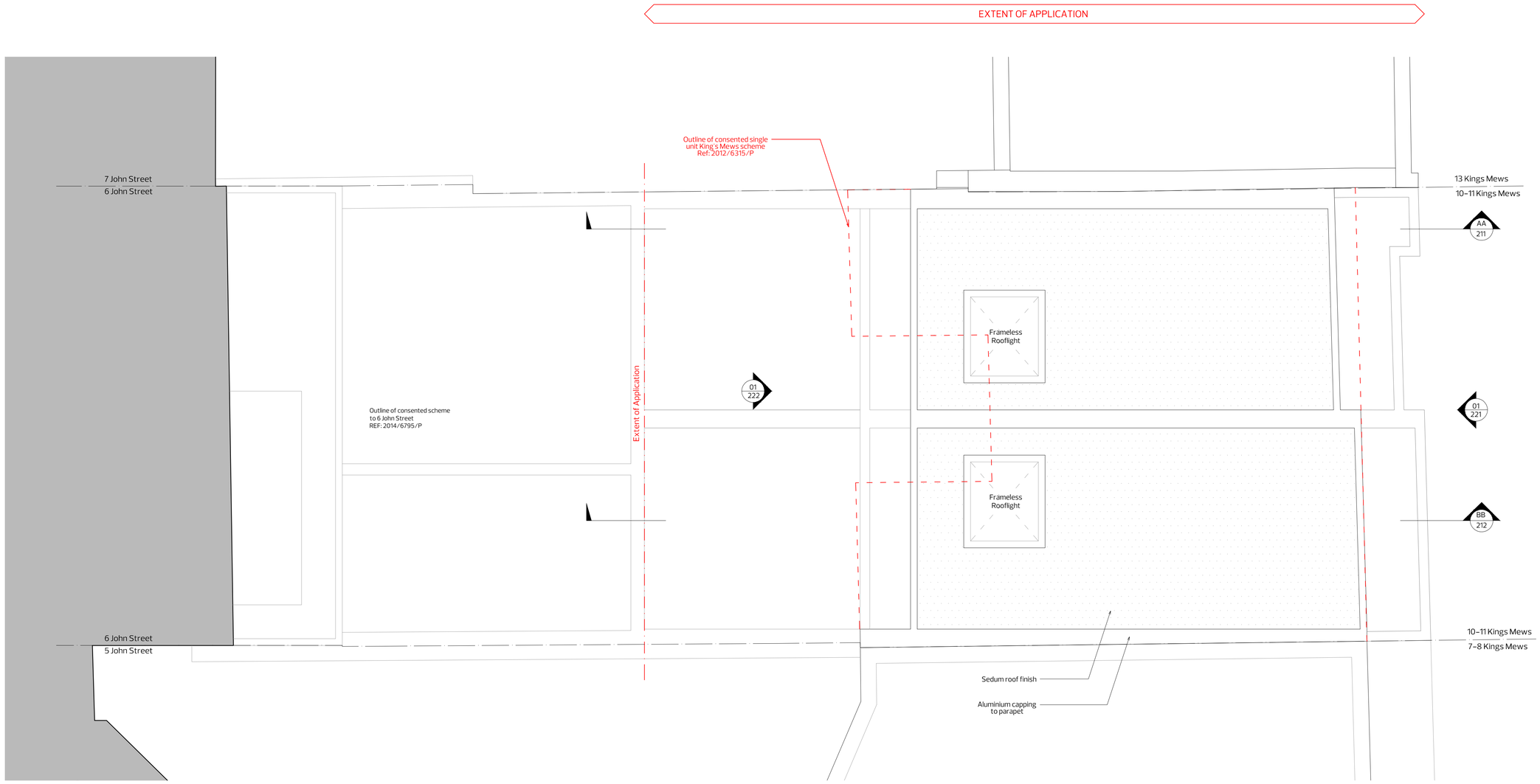
NOT FOR CONSTRUCTION
DO NOT SCALE FROM DRAWING
NOTIFY ARCHITECT IMMEDIATELY
ON DISCOVERY OF DISCREPANCIES

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

Project No: **1008**
Project Name: **10 / 11 King's Mews**

Drawing Name: **Proposed Second Floor Plan**

Scale: **1:50 @ A1 / 1:100 @A3**
Date: **17/04/2015**
Drawing No: **1008_204**



01 PROPOSED ROOF PLAN

N

0m 1 2 3m

Rev	Date	Description

Revision: **P1**

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: **1008**
Project Name: **10 / 11 King's Mews**

Drawing Name: **Proposed Roof Plan**

Scale: **1:50 @ A1 / 1:100 @A3**
Date: **17/04/2015**
Drawing No: **1008_205**

01 PROPOSED SECTION AA

MATERIAL KEY

01	Brickwork
02	Slim framed aluminium windows
03	Anodised aluminium finish
04	Frameless glass balustrade
05	Frameless glazed window
06	Back-painted glass panel

0m 1 2 3m

Rev	Date	Description

Revision: **P1**

Status: **PLANNING**

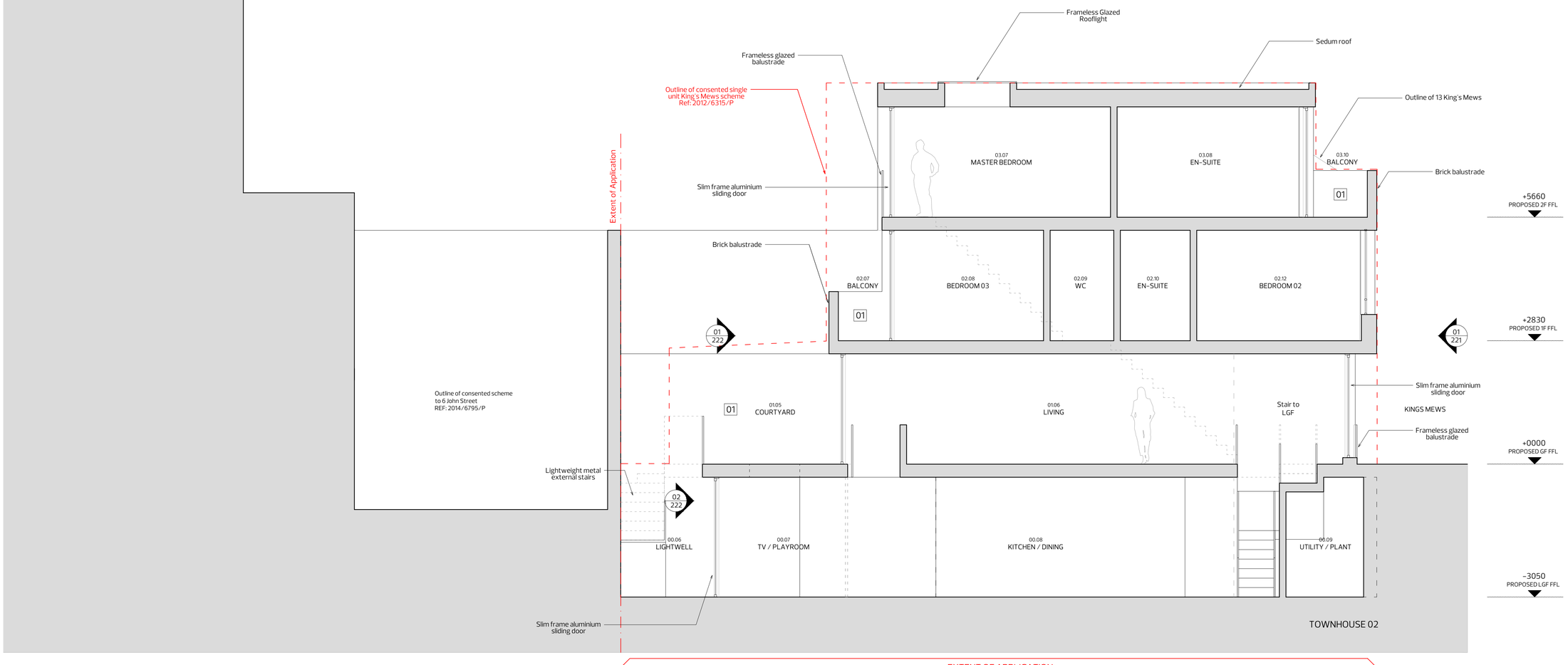
NOT FOR CONSTRUCTION
DO NOT SCALE FROM DRAWING
NOTIFY ARCHITECT IMMEDIATELY
ON DISCOVERY OF DISCREPANCIES

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

Project No: **1008**
Project Name: **10 / 11 King's Mews**

Drawing Name: **Proposed Section AA**

Scale: **1:50 @ A1 / 1:100 @A3**
Date: **17/04/2015**
Drawing No: **1008_211**



01 PROPOSED SECTION BB

MATERIAL KEY

01	Brickwork
02	Slim framed aluminium windows
03	Anodised aluminium finish
04	Frameless glass balustrade
05	Frameless glazed window
06	Back-painted glass panel

0m 1 2 3m

Rev	Date	Description

Revision: **P1**

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: **1008**
Project Name: **10 / 11 King's Mews**

Drawing Name: **Proposed Section BB**

Scale: **1:50 @ A1 / 1:100 @A3**
Date: **17/04/2015**
Drawing No: **1008_212**

01 PROPOSED KING'S MEWS ELEVATION

MATERIAL KEY

01	Brickwork
02	Slim framed aluminium windows
03	Anodised aluminium finish
04	Frameless glass balustrade
05	Frameless glazed window
06	Back-painted glass panel

0m 1 2 3m

Rev	Date	Description

Revision: **P1**

Status: **PLANNING**

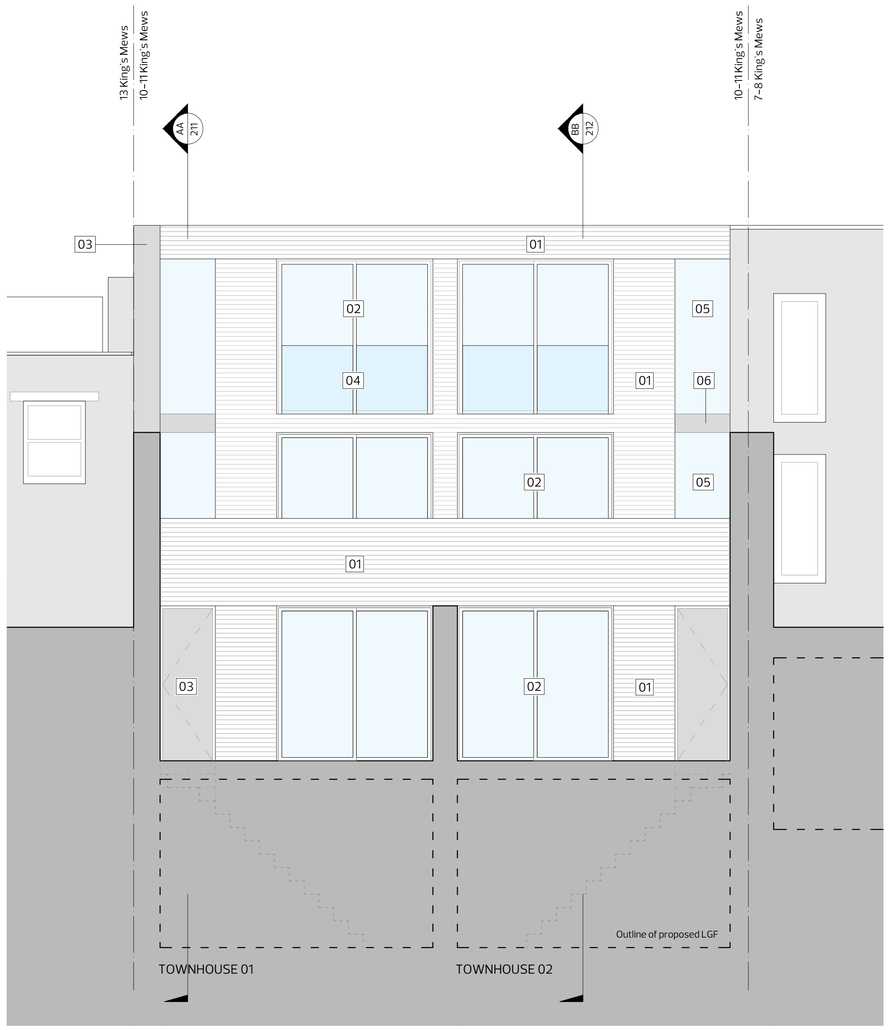
NOT FOR CONSTRUCTION
DO NOT SCALE FROM DRAWING
NOTIFY ARCHITECT IMMEDIATELY
ON DISCOVERY OF DISCREPANCIES

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

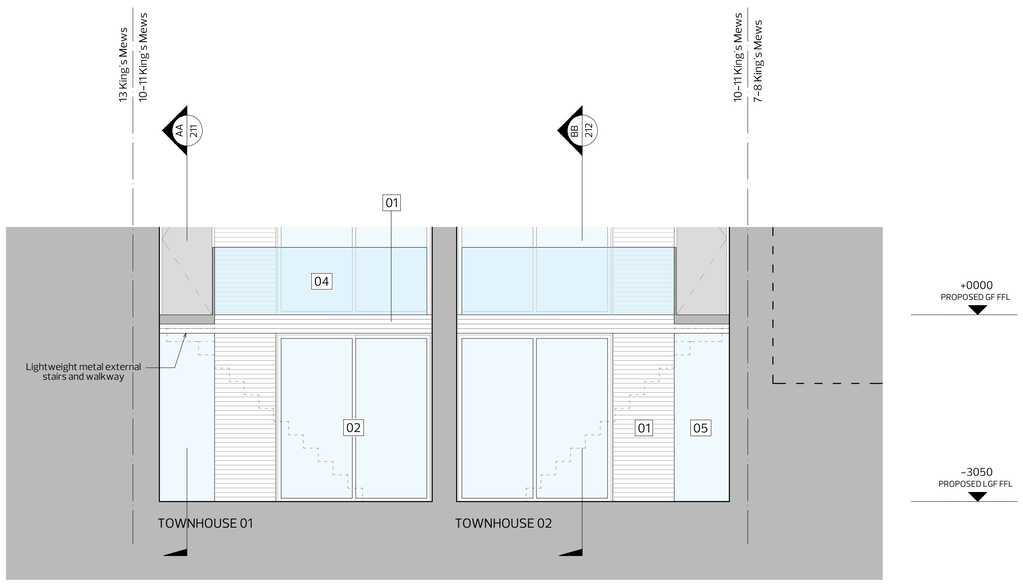
Project No: **1008**
Project Name: **10 / 11 King's Mews**

Drawing Name: **Proposed King's Mews Elevation**

Scale: **1:50 @ A1 / 1:100 @A3**
Date: **17/04/2015**
Drawing No: **1008_221**



01 PROPOSED REAR ELEVATION



02 PROPOSED REAR LGF ELEVATION

MATERIAL KEY

01 Brickwork
02 Slim framed aluminium windows
03 Anodised aluminium finish
04 Frameless glass balustrade
05 Frameless glazed window
06 Back-painted glass panel

0m 1 2 3m

Rev	Date	Description

Revision: **P1**

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: **1008**
Project Name: **10 / 11 King's Mews**

Drawing Name: **Proposed Rear Elevations**

Scale: **1:50 @ A1 / 1:100 @A3**
Date: **17/04/2015**
Drawing No: **1008_222**

Appendix D. Noise Survey Equipment

Table A-3: Equipment details

Manufacturer	Description	Manufacturer and Type Number	Serial Number
Rion	Sound Level Meter	Rion NL52	510145
	Pre-Amplifier	H25 Pre Amplifier	10137
	Microphone	Condenser Microphone	02850
	Calibrator	Rion NC-74 Calibrator	34615220
01 dB	Sound Level Meter	01dB-METRAVIB Solo Master	65811
	Pre-amplifier	01dB-Stell PRE 21 S	16485
	Microphone	Microtech Gefell GmbH MCE212	166394
	Calibrator	01dB-Metravib Cal 21	34634224

Appendix E. Noise Survey Results

Table A-4: Raw Hourly Data

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
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

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
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
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

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
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	75.0	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
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

Period Start	$L_{Aeq,1h}$	$L_{AFmax,1h}$	$L_{A90,1h}$
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	77.0	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
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

Table A-5 Unattended noise measurement results

Period Start	$L_{Aeq,5m}$	$L_{AFmax,5m}$	$L_{A90,5m}$
13/10/2014 16:32	59.3	53.2	76.7
13/10/2014 16:37	59.2	52.5	77.8
13/10/2014 16:42	57.8	52.2	69.6

Appendix F. Limitations to This Report

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