Philip Acoustics Ltd.

Consultants in Noise and Vibration

REPORT TITLE: NOISE SURVEY AND ASSESSMENT FOR A PROPOSED RESIDENTIAL APARTMENT OVER AN EXISTING GARAGE AT 50 ROCHESTER PLACE, LONDON NW1 9JX

London Borough of Camden Planning Application Reference: 2014/1538

REPORT REF: 14076-003

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SUMMARY

- This report presents the results of a noise assessment for a proposed new residential apartment over an existing garage at 50 Rochester Place, London NW1 9JX. The assessment is required as additional information to a planning application for the development and has been requested as by the Local Planning Authority which is London Borough of Camden.

- The assessment determines the magnitude of noise from the existing garage use potentially passing through the shared building structure to the new residential apartment above and thus enables appropriate sound insulation measures to be included in the scheme design.

- The assessment includes a noise survey within the existing garage and shows upgrade treatment is required to the proposed screed over concrete plank base structure separating floor such that sound insulation for the overall separating structure is adequate to protect future occupants of the residential apartment from noise occurring within the garage below.

- The recommended upgrade treatment includes a high sound insulation performance double layer acoustic plasterboard ceiling to within the existing garage on a Metal Frame (MF) suspension system incorporating acoustic hangers, full specification details for the upgrade treatments including acoustic ceiling are provided in the report.

1. INTRODUCTION

Philip Acoustics has been commissioned to undertake a noise impact assessment for a proposed new residential apartment constructed over an existing garage at 50 Rochester Place, London NW1 9JX.

The assessment is required as additional information to a planning application for the development and has been requested as by the Local Planning Authority which is London Borough of Camden. London Borough of Camden planning application reference for the development is 2014/1538.

The objective of the assessment is to determine the magnitude of noise from the existing garage use potentially passing through the shared building structure to the new residential apartment above and thus to enable appropriate sound insulation measures to be included in the scheme design.

This report presents results of the noise assessment and includes:

- Description of the site, development proposal and surrounding area;
- Overview of London Borough of Camden noise policy;
- Noise criteria as appropriate for residential use constructed over commercial (garage) use;
- Assessment of noise from the garage use to within the proposed new residential apartment, including noise survey within the existing garage, review of the project Architect's proposed constructions and specification for sound insulation measures to the separating structure between the garage and new apartment over.

2. SITE DESCRIPTION

The site is currently garage use (MDA Motors) within a single storey mews terrace to the North Eastern side of Rochester Place. The area surrounding the site is a mixture of existing residential and commercial use properties.

The building immediately adjacent at 48 Rochester Place is a three storey residential use property. The building immediately adjacent at 52 Rochester Place is single storey currently unoccupied but with expected future use as an artist's studio.

The proposal for 50 Rochester Place reference London Borough of Camden planning application 2014/1538 is for a new two bedroom residential apartment to be formed over the existing garage with new concrete slab party floor (including with acoustic insulation) constructed between the garage and apartment.

Architect's drawings for the proposed development are provided in Appendix A.

3. LONDON BOROUGH OF CAMDEN NOISE POLICY

Policy DP28 - Noise and Vibration of Camden Development Policies 2010-2025 Local Development Framework provides extensive guidance and permitted noise and vibration level thresholds for various development scenarios including for new proposed residential development. Copy of Policy DP28 is included in Appendix B.

In addition, Policy DP28 makes reference to Camden's Noise Strategy document 2002 and also Planning Policy Guidance 24: Planning and Noise (usually referred to as PPG24, although this guidance document is now withdrawn by government).

Paragraph 28.3 of Policy DP28 indicates that where uses sensitive to noise (including residential development in this instance) are proposed close to an existing noise source (the existing garage use in this instance) then the Council will require an acoustic report and the Council will only grant permission if appropriate attenuation measures are taken.

Therefore, and in accordance with the guidance and requirements of Policy DP28, this report covers noise transfer from the existing garage use potentially passing through the shared building structure and affecting the new residential apartment above.

Review of the applicability of guidance and permitted noise level thresholds from Policy DP28 and the other referenced documents is included in Section 4.

4. NOISE CRITERIA

London Borough of Camden's noise policy and other referenced documents do not include any assessment method or noise limit guidance specifically for commercial activity noise potentially affecting adjoining residential occupiers by transfer through a shared building structure.

In addition there is no specific formal British Standard or ISO Standard assessment method or noise limit guidance for commercial activity noise potentially affecting adjoining residential occupiers by transfer through a shared building structure.

However, a general principle that is widely applied in many situations of potential noise disturbance is that of considering whether a noise source would likely be clearly audible or cause a significant increase in the level of existing ambient noise experienced by residential occupiers.

Although whether or not a noise is clearly audible is to a certain extent subjective, depending upon the hearing ability of the resident as well as other factors, it is generally accepted that if a noise is at least 5dB (5 decibels) below the existing background noise, at all frequencies, then the new noise should not be generally or clearly audible.

For the purpose of acoustic assessment and acoustic design calculations it is proposed to use the noise criteria that the garage use activity $L_{eq\ (5\ min)}$ noise levels for typical busy/noisy activity are at least 5dB below the anticipated lowest daytime $L_{90\ (5\ min)}$ background noise levels in the residential apartment, both in terms of overall dBA and at individual octave band frequencies.

Philip Acoustics has worked on many mixed use commercial and residential projects with noise breakout issues and recommends that at this level, noise transfer from the garage to the residential apartment via the shared building structure would not be clearly audible or cause noise disturbance to future occupants of the new residential apartment.

Note that in this instance it is not considered appropriate to assess noise into the residential apartment using guidance limits for noise intrusion contained in British Standard BS8233:2014 "Guidance on Sound Insulation and Noise Reduction for Buildings". This is because the guidance limits in British Standard BS8233 are absolute limits (not relative to background noise levels) and are principally intended for consideration of noise intrusion from steady and anonymous noise sources such as frequent flowing traffic rather than commercial noise sources.

Nor is it considered appropriate to assess noise into the residential apartment by using sound insulation performance values for separating floors to residential properties contained within the currently applicable version of Building Regulations Approved Document E. This is because the sound insulation performance values within Approved Document E are primarily intended to be applied to separating floors between residential properties, as opposed to between a commercial use and a residential property. Section 0: Performance paragraph 0.8 of the currently applicable version of Building Regulations Approved Document E covers this and states:

> *"0.8 The performance standards set out in Tables 1a and 1b are appropriate for walls, floors and stairs that separate spaces used for normal domestic purposes. A higher standard of sound insulation may be required between spaces used for domestic purposes and communal or non-domestic purposes. In these situations the appropriate level of sound insulation will depend on the noise generated in the communal or non-domestic space. Specialist advice may be needed to establish if a higher standard of sound insulation is required, and if so, to determine the appropriate level."*

5. NOISE ASSESSMENT & SCHEME FOR SOUND INSULATION

The scheme for sound insulation relates principally to mitigation of noise transfer from garage activity at ground floor of the building passing through the shared building structure into rooms of the proposed residential apartment above.

To be able to assess the impact of noise from garage activity to within the proposed apartment and establish a scheme for sound insulation of the building structure between the garage and residential apartment over, the following information is required:

- Noise criteria (as Section 4 of this report);
- Source noise data, i.e. $L_{eq\ (5\ min)}$ noise levels for typical busy/noisy activity occurring within the garage;
- Likely lowest daytime $L_{90\ (5\ min)}$ background noise levels to inside the proposed residential apartment.

5.1 Source Noise Data

For the purpose of assessment in this report this is taken as being the typical busy and highest normally occurring activity noise levels within the garage.

MDA Motors garage is currently trading and therefore a sample noise survey was undertaken inside the garage during the afternoon of Tuesday 15 April 2014 and also morning of Wednesday 16 April 2014.

Noise levels were measured at a central position within the garage below proposed location for the apartment. Measurements were recorded in terms of L_{eq} overall dBA and linear dB octave band values over 5 minute periods for duration of the surveys. Details of the instrumentation used for the noise survey are provided in Appendix C.

Results of the noise survey are provided graphically in raw data format in Appendix D. Summary of the measured typical highest normally occurring activity noise levels within the garage in terms of L_{eq} overall dBA and linear dB octave band values is shown in Table 1. It is noted that the activity noise levels within MDA Motors garage are entirely consistent with noise levels previously measured by Philip Acoustics within several other similar size and type garages for other noise assessments.

Description	Overall dBA	Octave Band Centre Frequency Hz Lin dB					
		125	250	500	1k	2k	4k
Typical high activity noise level occurring within MDA Motors garage $L_{eq\ (5\ min)}$	74	68	71	67	68	68	65

Table 1: Typical high activity noise levels within MDA Motors garage

5.2 Background Noise Levels In Residential Apartment

The development is not yet constructed and therefore it is not possible to directly measure background noise internally to within the new apartment. However, Philip Acoustics has recently and as part of other work carried out background noise measurements in close proximity of the site (to within the first floor of a property at 55 Rochester Place) and at other similar locations in this part of London.

Rochester Place has only intermittent traffic and therefore even daytime period noise levels to within properties in this location are at the lower end of the design range for bedrooms and living rooms advised in British Standard BS8233.

For the purpose of this noise assessment it is proposed to cautiously use a lower value L_{Aeq} 30dB as being applicable during the daytime period for all rooms of the proposed new apartment. Daytime L_{A90} background noise values inside residential rooms in this type of location are typically up to 5dB lower than same period L_{Aeq} values and therefore a background noise level of $L_{A90\ (5\ min)}$ 25dB is used for the assessment, taken as being equivalent to L_{Aeq} 30dB and with octave band values as typical for this type of location.

Summary of the anticipated lower range background noise levels inside the apartment is provided in Table 2 on the following page.

Description	Overall dBA	Octave Band Centre Frequency Hz Lin dB					
		125	250	500	1k	2k	4k
Typical low daytime background noise in apartment rooms $L_{90\ (5\ min)}$	25	35	30	20	15	12	10

Table 2: Expected daytime background noise levels inside new apartment

5.3 Noise Assessment

The required minimum sound insulation performance for the separating structure between the garage and new apartment over in terms of octave band Level Difference values is assessed by subtraction of the octave band noise criteria from the garage source noise data values in Table 1; the octave band noise criteria being 5dB lower than the background noise values in Table 2. Result of the assessment is provided in Table 3.

Description	Overall dBA	Octave Band Centre Frequency Hz Lin dB					
		125	250	500	1k	2k	4k
(a) Typical highest activity noise level occurring within MDA Motors garage $L_{eq\ (5\ min)}$	74	68	71	67	68	68	65
(b) Typical low daytime background noise in apartment rooms $L_{90\ (5\ min)}$	25	35	30	20	15	12	10
(c) Target noise criteria is background noise -5dB	20	30	25	15	10	7	5
(d) Required minimum sound insulation performance of separating structure between garage and apartment Level Difference D = (a) – (c)	54*	38	46	52	58	61	60

Note Overall dBA sound insulation value for guidance & information only, acoustic design for separating structures is based on octave band sound insulation performance*

Table 3: Minimum sound insulation for the garage to apartment separating structure Level Difference D dB

The required minimum sound insulation for the separating structure between the garage and new apartment represents a high level of sound insulation performance well in excess of that as would be acceptable in accordance with the minimum requirements for between new build and between conversion residential properties of the currently applicable version of Building Regulations Approved Document E.

Review of the project Architect's proposed constructions and specification for sound insulation measures to the separating structure between the garage and new apartment to achieve the required minimum sound insulation as Table 3 are provided in Section 5.4.

5.4 Scheme For Sound Insulation

The separating floor structure between the existing garage use and new apartment over is proposed to be formed by a new precast concrete plank base structure having screed on resilient layer above.

This type of new base floor structure will naturally provide a high level of sound insulation (for example as compared with a traditional timber joist type floor), albeit not on its own sufficient to achieve the required minimum sound insulation between the garage and new apartment as Table 3 in Section 5.3.

Therefore to achieve the required minimum sound insulation the base structure is to have additional treatment above and below:

- Above: Floor on top of the base structure (i.e. within the apartment) to be a timber sub-deck on battens (to enable services to run under);
- Below: Ceiling below the base structure (i.e. within the garage) is to be acoustic type of double layer plasterboard on suspended Metal Frame (MF) system with insulation placed over in the formed void.

Specification details for the base floor structure as well as these additional treatments above and below the base floor structure are provided in Sections 5.4.1 to 5.4.3.

Expected sound insulation performance for the base floor structure alone and also for the base floor structure with the additional treatments applied is provided in Table 4 and shows that the proposed floor with specified treatments will comply with the required minimum sound insulation as Table 3 in Section 5.3.

A concept sketch drawing detail for the as proposed separating floor with additional treatments applied is provided in Appendix E.

Description	**Octave Band Centre Frequency Hz Lin dB**					
	125	**250**	**500**	**1k**	**2k**	**4k**
(a) Required minimum sound insulation of separating floor structure as Table 3 in Section 5.3	38	46	52	58	61	60
(b) Typical sound insulation performance of 100mm concrete plank base structure floor with nominal 50mm screed on resilient layer as Section 5.4.1 (includes effects of flanking). *Does not achieve minimum sound insulation*	35	40	45	51	58	60
(c) Typical sound insulation performance of concrete plank base structure floor as (b) above but with timber deck sub floor on top and high performance acoustic ceiling below as Sections 5.4.2 & 5.4.3 (includes effects of flanking). *Achieves minimum sound insulation*	43	48	54	61	68	70*

Note Sound insulation limited to upper value 70dB, higher insulation may be achieved but is not quoted*

Table 4: Sound insulation for the specified garage to apartment separating structure Level Difference D dB

5.4.1 Base Floor Structure

The new base floor structure between the garage and apartment is to be formed by 100mm precast concrete planks over new steel beams having nominal 50mm screed on resilient layer above. The method of base floor separating structure is nominally defined as Floor Type 2: *Concrete base with ceiling and floating floor* from Section 3 of Building Regulations Approved Document E.

It is recommended that the resilient layer (under screed) be minimum 5mm thick, summary details for several suitable and commonly used proprietary resilient layer products are provided below. Further details of these products and suppliers can be readily found by simple web search:

- Cellecta YELO*fon* HD5 (5mm thick);
- Thermal Economics 6mm IsoRubber (6mm thick);
- InstaCoustic InstaLay 65 (6mm thick).

5.4.2 Floor Sub-Deck Above

Floor above the base floor structure within the apartment is to be formed by a timber sub-deck of nominally 18mm T&G OSB/chipboard flooring boards on 25mm timber battens (to create void to enable services to run under). Floor finish on top of this is expected to be tile or hardwood flooring.

It is recommended that the base floor structure (as Section 5.4.1) combined with high performance double layer insulated acoustic ceiling alone (as Section 5.4.3) will readily comply with the required minimum sound insulation as Table 3 in Section 5.3. Therefore it is not necessary to include specification for any special acoustic insulation elements as part of the timber sub-deck flooring above.

Notwithstanding this, the timber sub-deck even without inclusion of any special acoustic insulation elements will provide additional sound insulation benefit over the base floor.

5.4.3 Acoustic Ceiling Below

Ceiling below the base floor structure to within the garage is to be acoustic type formed by double layer plasterboard on suspended Metal Frame (MF) system with insulation placed over in the formed void.

Recommended specification for the acoustic ceiling is listed below:

- Plasterboard: Minimum 2 x layers 15mm British Gypsum SoundBloc (or equivalent);
- Insulation: Minimum 100mm thick mineral wool type density ≥ 10kg/m^3;
- Suspension System: Metal Frame (MF) incorporating acoustic hangers typically as British Gypsum type GAH2 (or equivalent);
- Ceiling Void Depth: Minimum 150mm from underside of base floor structure soffit to upper surface of plasterboard ceiling and to come below the new base floor steelwork beams (not touching the steelwork beams), i.e. new base floor steelwork beams not visible from within garage, hidden by acoustic ceiling.

APPENDIX A

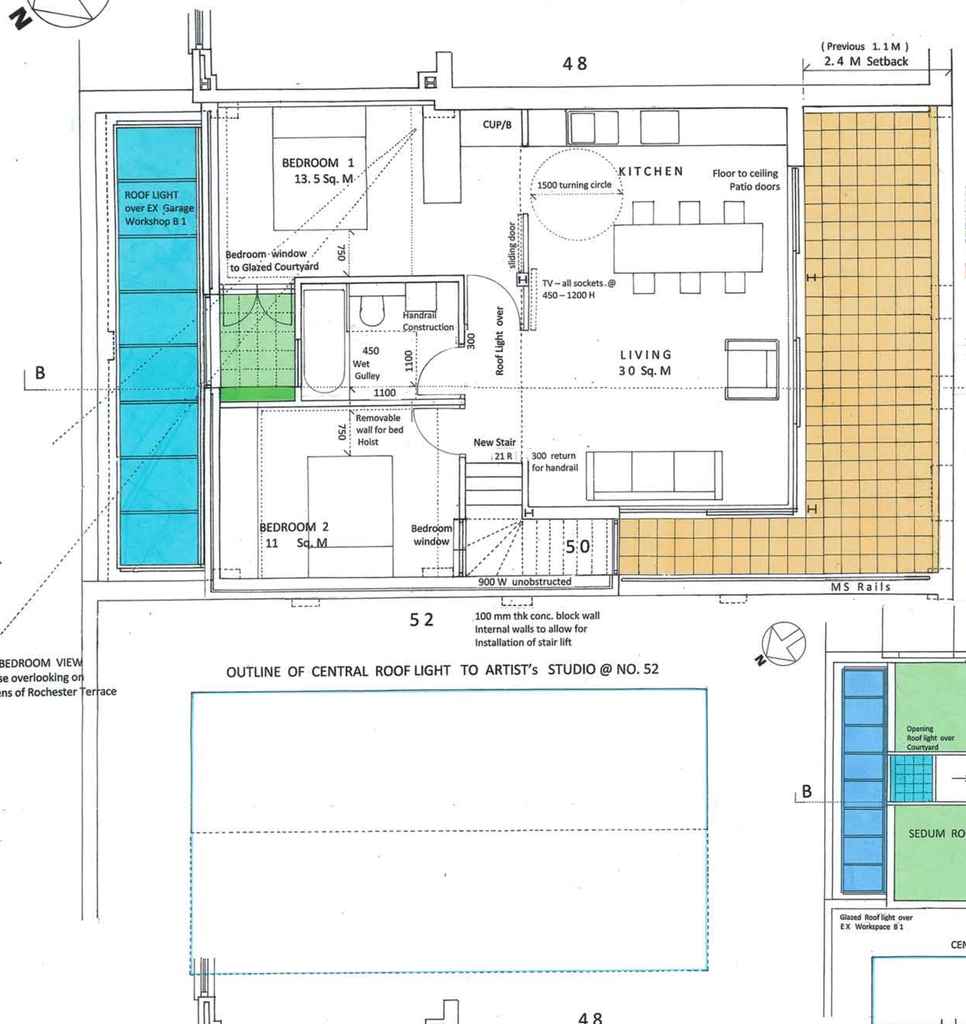
Drawings Of The Proposed Development

DETAIL PLANNING APPLICATION

SCALE 1:100 (A3 size) SCALE 1:50 A1 SIZE

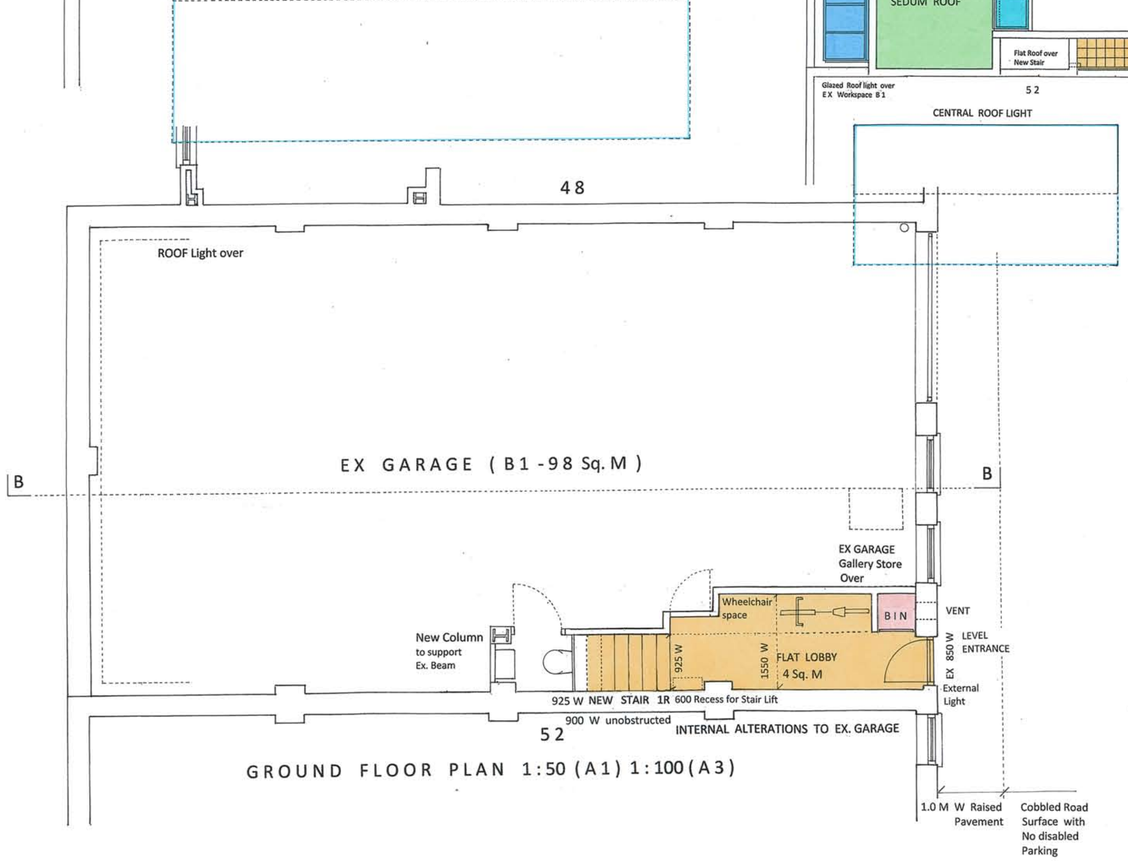
PROPOSED FIRST FLOOR PLAN 1:50(A1) 1:100 (A3)

GROSS INTERNAL AREA 72 Sq. M (2B4P) LIFETIME HOMES ANALYSIS

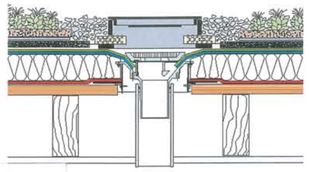


OBLIQUE BEDROOM VIEW to minimise overlooking on rear gardens of Rochester Terrace

OUTLINE OF CENTRAL ROOF LIGHT TO ARTIST's STUDIO @ NO. 52



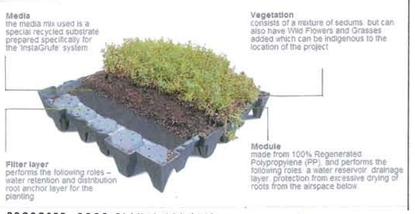
GROUND FLOOR PLAN 1:50 (A1) 1:100 (A3)

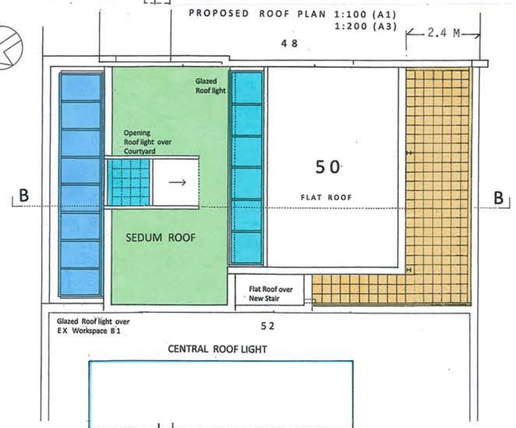


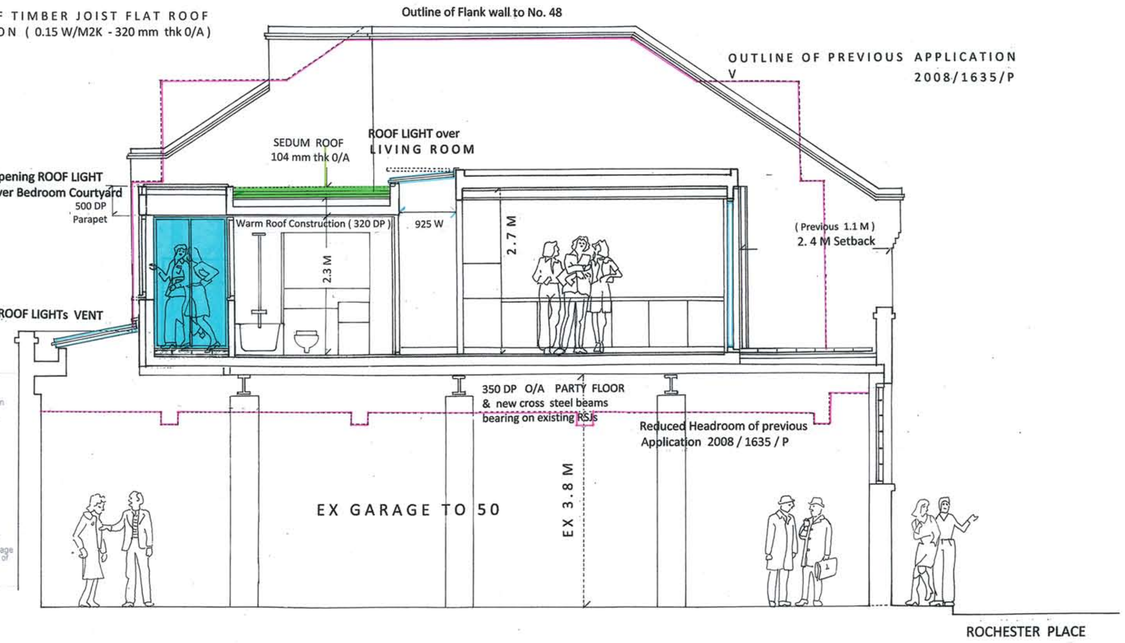
REAR GREEN SEDUM DOMESTIC ROOF

30 mm Sedum blanket for flowers and colours on
50 mm Sedum substrate of organic and granular aggregate over
20 mm water retention and drainage boards with water cups
Sandwich between 2 layers of 2 mm protection fleece
104 mm 0/A thickness laid on top of

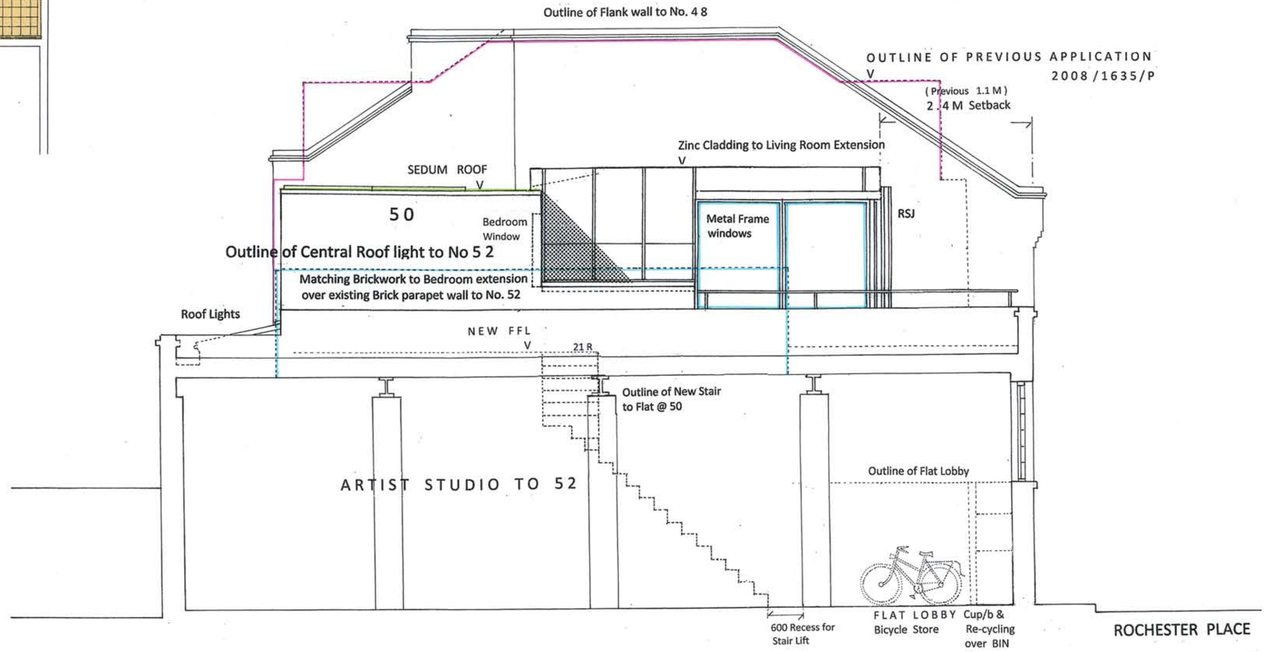
WARM ROOF TIMBER JOIST FLAT ROOF CONSTUCTION (0.15 W/M2K - 320 mm thk 0/A)







PROPOSED CROSS SECTION B 1:50 (A1) 1:100 (A3)



PROPOSED SIDE–WEST ELEVATION TO 52 1:50(A1) 1:100(A3)

ARCHITECT CHARLES KHOO RIBA – PROGETTI
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JOB TITLE 50 ROCHESTER PLACE LONDON NW1 9JX

DRAWING TITLE PROPOSED PLANS SECTIONS ELEVATIONS.

DRAWN BY

DATE 31 JAN 2014

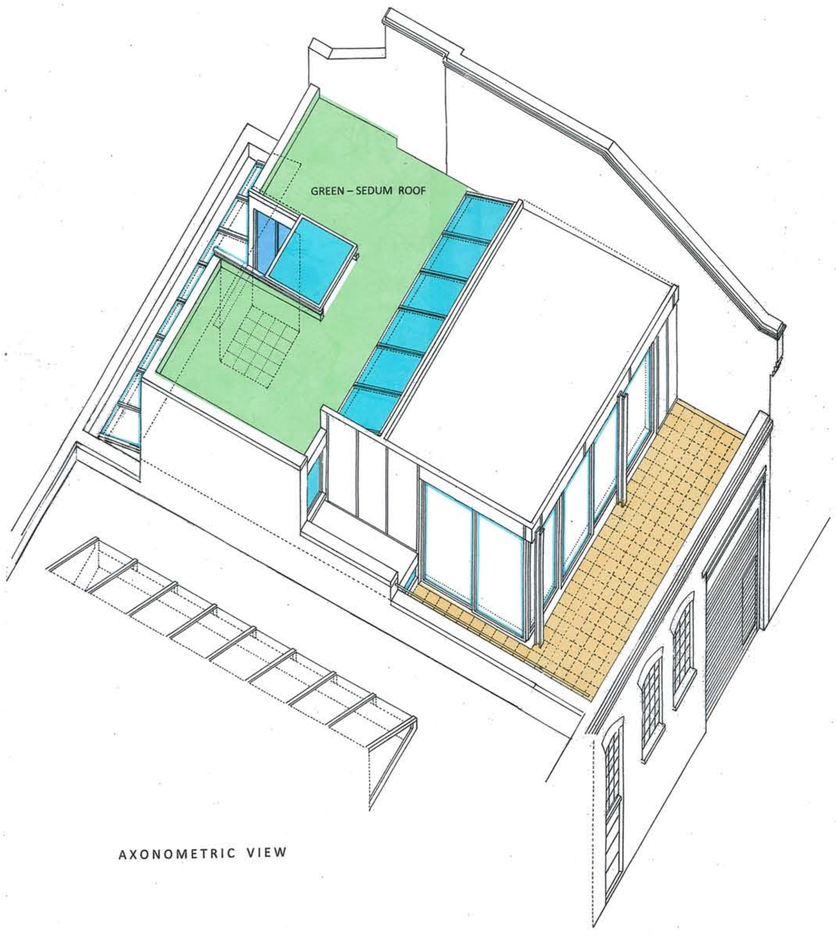
SCALE 1:50 (A1) 1:100 (A3)

JOB NO. DWG NO. REV. 322 / P1

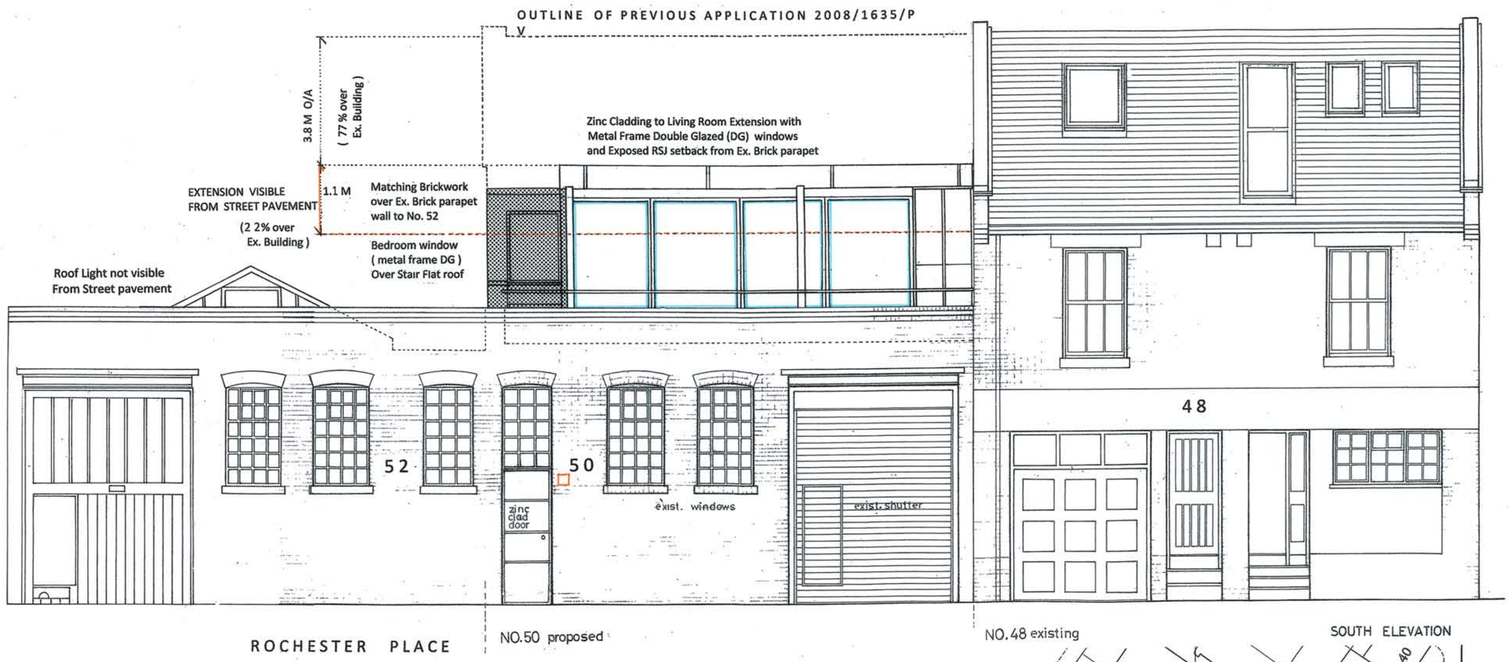
DETAIL PLANNING APPLICATION

0 1 2 3 4 5

SCALE 1:100 (A3 size) SCALE 1:50 A1 SIZE

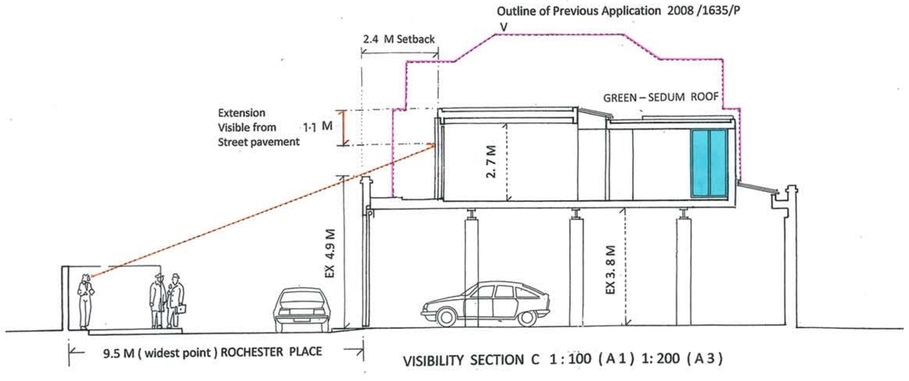


AXONOMETRIC VIEW

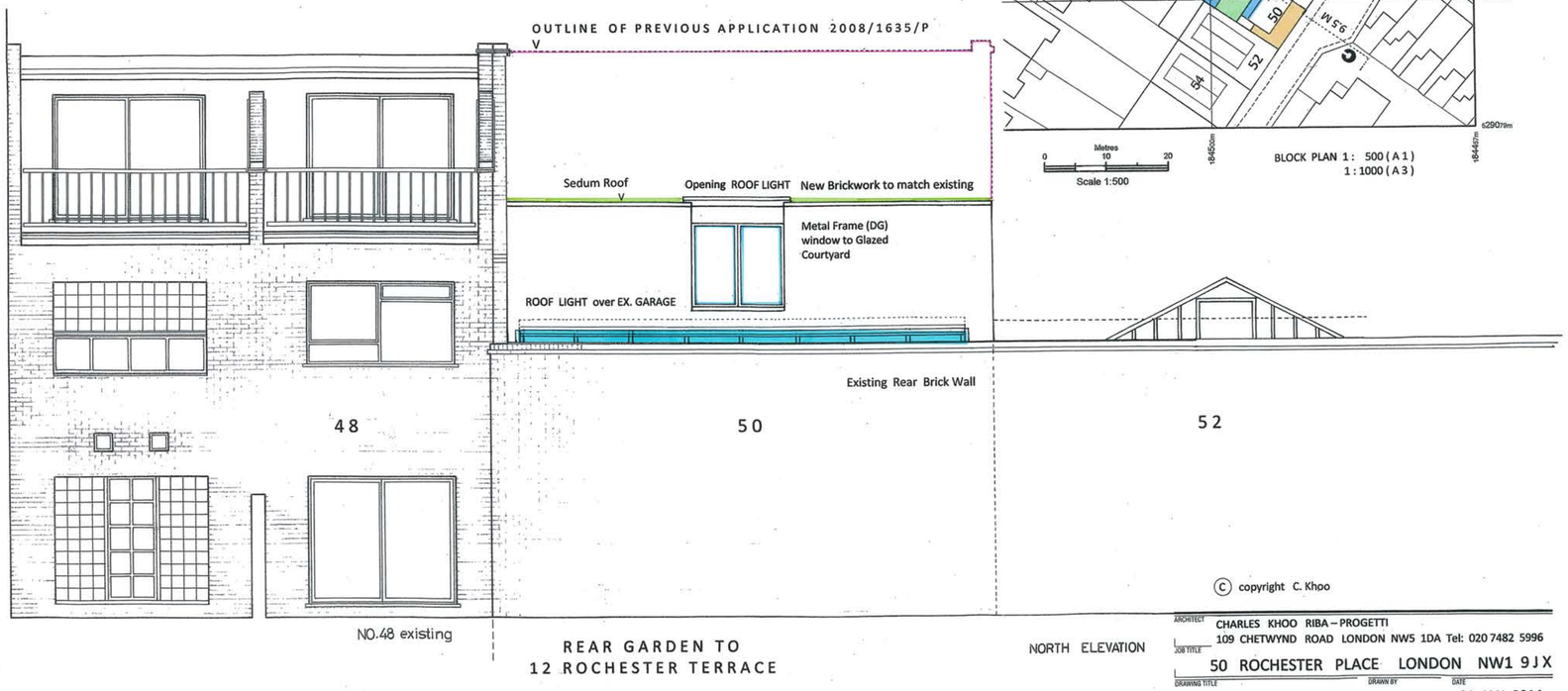


PROPOSED FRONT–SOUTH ELEVATION
1:50(A1) 1:100(A3)

BLOCK PLAN 1: 500 (A1)
1:1000 (A3)



VISIBILITY SECTION C 1:100 (A1) 1:200 (A3)



REAR GARDEN TO
12 ROCHESTER TERRACE

PROPOSED REAR-NORTH ELEVATION
1:50 (A1) 1:100(A3)

NORTH ELEVATION

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JOB TITLE
50 ROCHESTER PLACE LONDON NW1 9JX

DRAWING TITLE
EXISTING PROPOSED
PLANS SECTIONS
ELEVATIONS.

DRAWN BY
DATE
31 JAN 2014
SCALE
1:50 (A1) 1:100 (A3)
JOB NO. 322 / DWG.NO. P2 REV.

APPENDIX B

London Borough of Camden Policy DP28 Noise And Vibration

DP28. Noise and vibration

28.1 Noise and vibration can have a major effect on amenity and health and therefore quality of life. Camden's high density and mixed-use nature means that disturbance from noise and vibration is a particularly important issue in the borough. Camden's Core Strategy recognises the importance of this issue for Camden's residents and policy DP28 contributes to implementing a number of Core Strategy policies, including CS5 – *Managing the impact of growth and development*, CS9 – *Achieving a successful Central London*, CS11 – *Promoting sustainable and efficient travel* and CS16 – *Improving Camden's health and well-being.*

DP POLICY

DP28 – Noise and vibration

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.

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.

The Council will seek to minimise the impact on local amenity from the demolition and construction phases of development. Where these phases are likely to cause harm, conditions and planning obligations may be used to minimise the impact.

28.2 The effect of noise and vibration can be minimised by separating uses sensitive to noise from development that generates noise and by taking measures to reduce any impact. Noise sensitive development includes housing, schools and hospitals as well as offices, workshops and open spaces, while noise is generated by rail, road and air traffic, industry, entertainment (e.g. nightclubs, restaurants and bars) and other uses.

28.3 The Council will only grant planning permission for development sensitive to noise in locations that experience noise pollution, and for development likely to generate noise pollution, if appropriate attenuation measures are taken, such as double-glazing. Planning permission will not be granted for development sensitive to noise in locations that have unacceptable levels of noise. Where uses sensitive to noise are proposed close to an existing source of noise or when development that generates noise is proposed, the Council will require an acoustic report to ensure compliance with PPG24: *Planning and noise*. A condition will be imposed to require that the plant and equipment which may be a source of noise pollution is kept working efficiently and within the required noise limits and time restrictions. Conditions may also be imposed to ensure that attenuation measures are kept in place and effective throughout the life of the development.

28.4 In assessing applications, we will have regard to the Noise and Vibration Thresholds, set out below. These represent an interpretation of the standards in PPG24 and include an evening period in addition to the day and night standards contained in the PPG, which provide a greater degree of control over noise and vibration during a period when noise is often an issue in the borough.

Table A: Noise levels on residential sites adjoining railways and roads at which planning permission will not be granted

Noise description and location of measurement	Period	Time	Sites adjoining railways	Sites adjoining roads
Noise at 1 metre external to a sensitive façade	Day	0700-1900	74 dB L_{Aeq},12h	72 dB L_{Aeq},12h
Noise at 1 metre external to a sensitive façade	Evening	1900-2300	74 dB L_{Aeq},4h	72 dB L_{Aeq},4h
Noise at 1 metre external to a sensitive façade	Night	2300-0700	66 dB L_{Aeq},8h	66 dB L_{Aeq},8h

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

Noise description and location of measurement	Period	Time	Sites adjoining railways	Sites adjoining roads
Noise at 1 metre external to a sensitive façade	Day	0700-1900	65 dB L_{Aeq},12h	62 dB L_{Aeq},12h
Noise at 1 metre external to a sensitive façade	Evening	1900-2300	60 dB L_{Aeq},4h	57 dB L_{Aeq},4h
Noise at 1 metre external to a sensitive façade	Night	2300-0700	55 dB L_{Aeq},1h	52 dB L_{Aeq},1h
Individual noise events several times an hour	Night	2300-0700	>82 dB L_{Amax} (S time weighting)	>82 dB L_{AMAX} (S time weighting)

Table C: Vibration levels on residential sites adjoining railways and roads at which planning permission will not be granted

Vibration description and location of measurement	Period	Time	Vibration levels
Vibration inside critical areas such as a hospital operating theatre	Day, evening and night	0000-2400	0.1 VDV ms-1.75
Vibration inside dwellings	Day and evening	0700-2300	0.2 to 0.4 VDV ms-1.75
Vibration inside dwellings	Night	2300-0700	0.13 VDV ms-1.75
Vibration inside offices	Day, evening and night	0000-2400	0.4 VDV ms-1.75
Vibration inside workshops	Day, evening and night	0000-2400	0.8 VDV ms-1.75

Where dwellings may be affected by ground-borne regenerated noise internally from, for example, railways or underground trains within tunnels, noise levels within the rooms should not be greater than 35dB(A)max

Table D: Noise levels from places of entertainment on adjoining residential sites at which planning permission will not be granted

Noise description and measurement location	Period	Time	Sites adjoining places of entertainment
Noise at 1 metre external to a sensitive façade	Day and evening	0700-2300	L_{Aeq}, 5m shall not increase by more than 5dB*
Noise at 1 metre external to a sensitive façade	Night	2300-0700	L_{Aeq}, 5m shall not increase by more than 3dB*
Noise inside any living room of any noise sensitive premises, with the windows open or closed	Night	2300-0700	L_{Aeq}, 5m (in the 63Hz Octave band measured using the 'fast' time constant) should show no increase in dB*

* As compared to the same measure, from the same position, and over a comparable period, with no entertainment taking place

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

Noise description and location of measurement	Period	Time	Noise level
Noise at 1 metre external to a sensitive façade	Day, evening and night	0000-2400	5dB(A) <LA90
Noise that has a distinguishable discrete continuous note (whine, hiss, screech, hum) at 1 metre external to a sensitive façade.	Day, evening and night	0000-2400	10dB(A) <LA90
Noise that has distinct impulses (bangs, clicks, clatters, thumps) at 1 metre external to a sensitive façade.	Day, evening and night	0000-2400	10dB(A) <LA90
Noise at 1 metre external to sensitive façade where LA90>60dB	Day, evening and night	0000-2400	55dBL_{Aeq},

Key evidence and references

- Camden's Noise Strategy, 2002
- The London Plan (Consolidated with Alterations since 2004), 2008
- Planning Policy Guidance 24: Planning and noise

APPENDIX C

Noise Survey Instrumentation

Site: 50 Rochester Place, London NW1 9JX

Reference: 14076-003 Appendix C

Date: April 2014

NOISE SURVEY INSTRUMENTATION

Noise Survey Samples Including Octave Band Levels Within MDA Motors Garage:

- Bruel & Kjaer sound level meter type 2260 Class 1 serial number 2497368 plus Bruel & Kjaer microphone type 4189 serial number 2508712 with tripod;
- Bruel & Kjaer calibrator type 4231 serial number 2642929 (UKAS certified).

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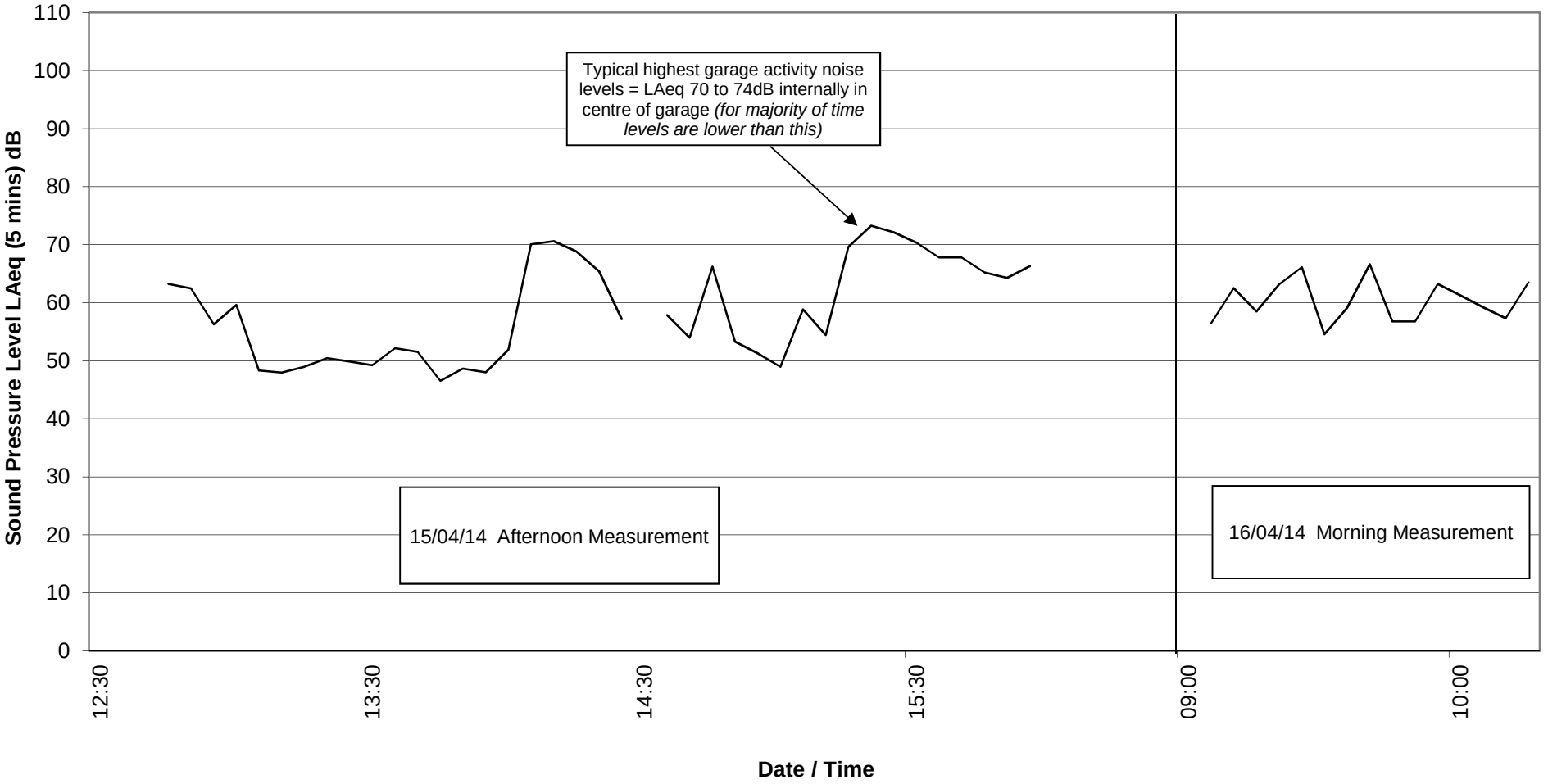
APPENDIX D

Noise Survey Results Inside MDA Motors Garage

RAW DATA NOISE SURVEY RESULTS OVER TYPICAL AFTERNOON AND MORNING PERIOD
INSIDE MDA MOTORS GARAGE AT 50 ROCHESTER PLACE, LONDON NW1 9JX



APPENDIX E

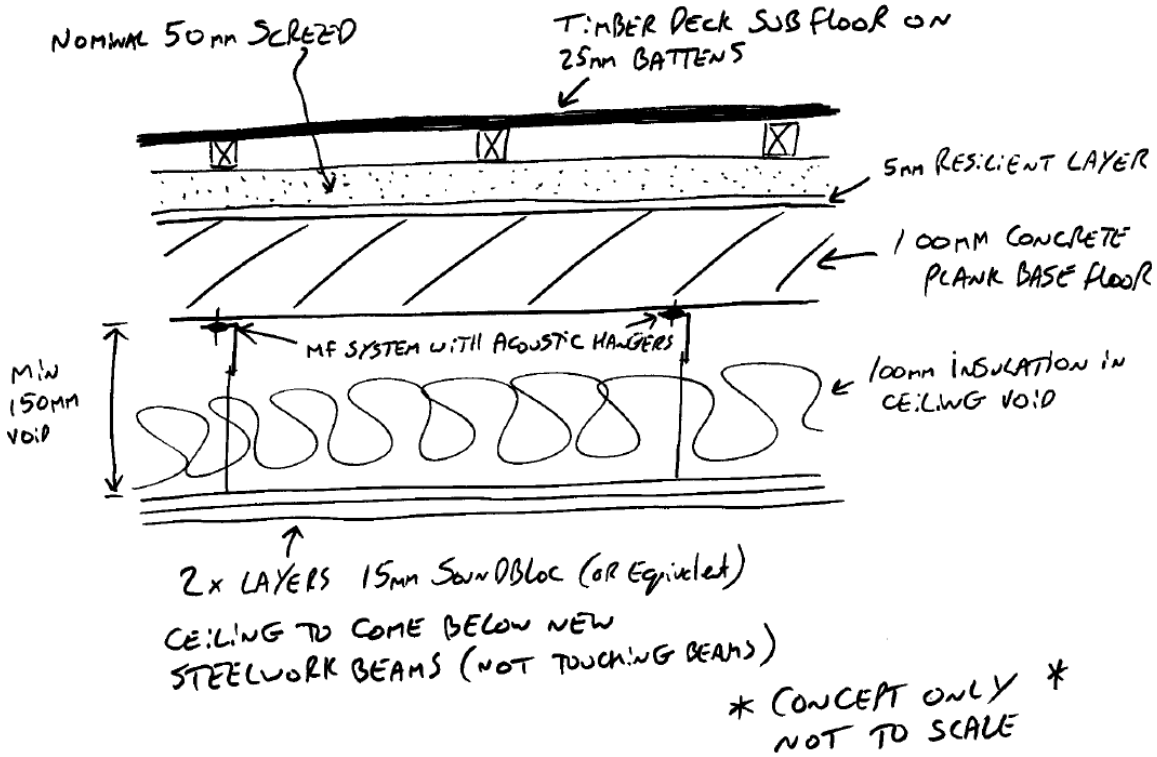
Concept Sketch Detail For Proposed Separating Floor Structure

Site: 50 Rochester Place, London NW1 9JX

Reference: 14076-003 Appendix E

Date: April 2014

CONCEPT SKETCH DETAIL FOR SEPARATING FLOOR STRUCTURE WITH ACOUSTIC TREATMENT ADDED



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