10 RICHBOROUGH ROAD
CRICKLEWOOD, NW2 3LU

Conversion of existing property in flats

Discharge of Planning Conditions: 4

Application Reference : 2021/3707/P
Planning Permission Date: 18/02/2022

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September 2022

Condition 4

The development shall be constructed with an enhanced sound insulation value DnT,w and L'nT,w of at least 5dB above the Building Regulations value, for the floor/ceiling structures separating the kitchen/diner of the ground floor flat from the rear bedroom of the flat above, and the kitchen/bathroom of the first floor flat from the bedroom of the flat below.

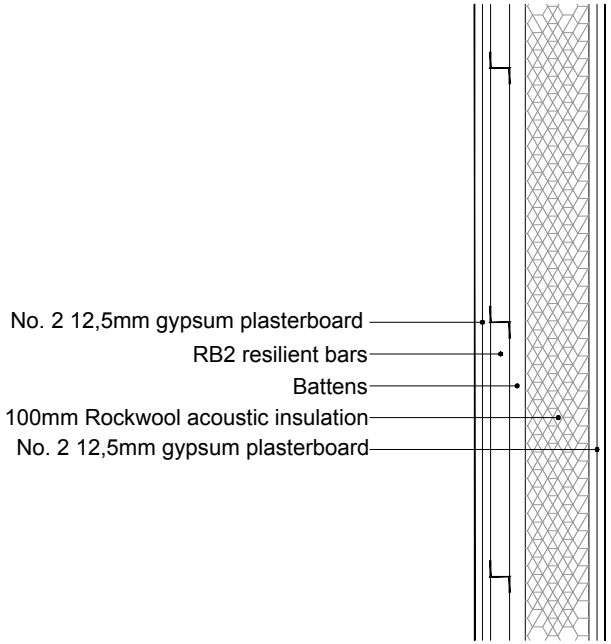
The walls between residential units and the communal areas have an airborne sound insulation DnTw of 48dB or greater and an impact sound insulation LnTw of 59dB or lower, achieving 5dB above the building regulations minimum requirements for sound insulation.
The Approved Building Regulations Document - Part E states the a minimum airborne sound insulation DnTw of 43dB and a minimum impact sound insulation LnTw of 64dB for residential units formed from the conversion of use.The development is meeting the planning and building regulations requirements of a DnTw and a LnTw 5dB above the building regulations minimum requirements.

Thereafter, the sound insulation scheme shall be maintained in perpetuity in accordance with the approved details.

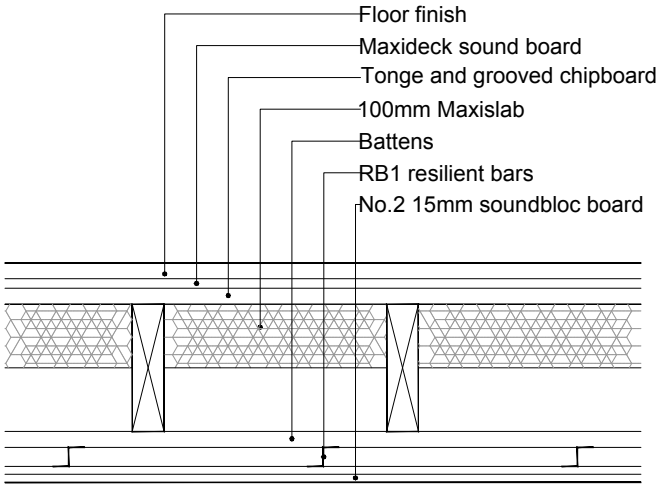
PROVISIONS FOR SOUND INSULATION BETWEEN FLATS:

Soundproofing between flats according to the sound test report attached

PARTITION WALL BETWEEN FLATS
TYPICAL DETAIL



FLOOR BETWEEN FLATS TYPICAL DETAIL



Atachments

1. Sound test report
2. Approved plans

SPRATT+HAMER

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Sound Insulation Test Report

Client Details	
Client	Worxzone Limited
Client Address	63 Starling Place Boundary Way Watford Hertfordshire WD25 7SP
Site Address	10 Richborough Road London NW2 3LU
Reference	20141S

Quality Assurance	
Prepared by	Rhys Noble BA (Hons)
Authorised by	Ben Bielicki BSc (Hons) MIOA

Version History			
Version	Date	Editor	Comment
V1	07/09/2022	Rhys Noble BA (Hons)	First issue

UKAS TESTING
4088

1 Introduction

Spratt & Hamer Limited has been commissioned to undertake pre-completion testing at the above site under the provisions of Building Regulations 2010 Approved Document E 2003 (incorporating 2015 amendments.

The site consists of an existing building converted into three apartments.

1.1 Pre-Completion Testing

A sample of separating elements has been tested. Floors were tested for both airborne and impact sound insulation.

2 Performance Requirements

Pre-completion testing of the sound insulation between dwellings is required in accordance with Building Regulations 2010 Approved Document E 2003. The performance requirements specified in Section 0 of Approved Document E are outlined in the following below.

Description		Minimum airborne sound insulation $D_{nT,w} + C_{tr}$ dB	Maximum impact sound insulation $L'_{nT,w}$ dB
Purpose-built dwelling-houses and flats	Walls	45	-
	Floors and stairs	45	62
Dwelling-houses and flats formed by material change of use	Walls	43	-
	Floors and stairs	43	64
Purpose-built rooms for residential purposes	Walls	43	-
	Floors and stairs	45	62
Rooms for residential purposes formed by material change of use	Walls	43	-
	Floors and stairs	43	64

Table 1: Performance Requirements

2.1 Local Authority Criteria

London Borough of Camden have stated in condition 4 of decision notice for application ref. 2020/5391/P:

The development shall be constructed with an enhanced sound insulation value $D_{nT,w}$ and $L'_{nT,w}$ of at least 5dB above the Building Regulations value, for the floor/ceiling structures separating the kitchen/diner of the ground floor flat from the rear bedroom of the flat above, and the kitchen/bathroom of the first floor flat from the bedroom of the flat below.

2.2 Criteria Summary

All separating elements tested will be assessed to meet the Local Authority requirements for a 5 dB improvement over the ADE requirements for dwelling-houses and flats formed by material change of use.

3 Test Environment

3.1 Site Attendance

Technician	Test date
Chris Thomas Affiliate IOA	27/07/22

Table 2: Technician Name and Test Date

3.2 Site Conditions

Rooms were all complete and ready to test.

3.3 Test Sample

Testing was carried out on a sample of separating elements. Results apply to the sample as received.

3.4 Construction Details

The following tables show the construction details of the separating elements tested on site.

Floor
Maxideck acoustic flooring T & G Chipboard Timber joists with 100mm insulation Battens RB1 Resilient bars 2no. 15mm SoundBloc plasterboard

Table 3: Separating Floor Detail

4 Test Procedure

4.1 Test Equipment

Description	Manufacturer	Model	Serial No.
Integrating Sound Level Meter and Analyser	Brüel & Kjær	Type 2260	2466959
Acoustic Calibrator	Brüel & Kjær	Type 4231	2528207
Loudspeaker	Brüel & Kjær	Type 4292	013024
Amplifier and Signal Generator	Norsonic	Nor280	2803652
Tapping Machine	Sources Line	EOS	NG E05 188

Table 4: Equipment Used During Testing

4.2 Calibration

The sound level meter was calibrated with the field calibrator prior to measurement and checked again on completion. No significant drift in calibration was observed.

All meters and calibrators used for testing meet the accuracy requirements for Class 1 instruments.

Test equipment is periodically sent to a calibration laboratory in accordance with the current standards.

Calibration certificates are available on request.

4.3 Pre-Completion Sound Insulation

Tests were undertaken following procedures in *BS EN ISO 140-4:1998 Acoustics – Measurement of sound insulation in buildings and of building elements – Part 4: Field measurement of sound insulation between rooms* and *BS EN ISO 140-7:1998 Acoustics – Measurement of sound insulation in buildings and of building elements – Part 7: Field measurements of impact sound insulation of floors*, and in accordance with Annex B of Approved Document E (2003).

The rating of sound insulation test results has been carried out in accordance with *BS EN ISO 717-1:1997 Acoustics – Rating of sound insulation in buildings and of building elements. Part 1. Airborne sound insulation,* and *BS EN ISO 717-2:1997 Acoustics – Rating of sound insulation in buildings and of building elements. Part 2. Impact sound insulation.*

4.4 Airborne Sound Insulation

A loudspeaker source was used to generate high volume pink noise, positioned to create a diffuse sound field, in two independent measurement positions. A special average of the resulting one-third-octave band sound pressure levels between 100 Hz and 3150 Hz was obtained by using a moving microphone technique over a minimum period of 30 seconds at each of the two positions. The same measurement procedure was followed in the receiver room.

4.5 Impact Sound Insulation

A tapping machine complying with the requirements of BS EN ISO 140-7 Annex A was placed in four positions in the source room in accordance with the standard. The resulting one-third-octave band sound pressure levels between 100 Hz and 3150 Hz were measured in the receiver room using, six second fixed microphone positions at each of the four positions.

4.6 Reverberation Time

The reverberation time was measured in the receiver room to correct for the effect of room reverberant characteristics on the receiver room levels.

High volume pink noise was generated in the receiver room and stopped instantaneously to measure the reverberation time in each of the one-third-octave bands between 100 Hz and 3150 Hz.

This was repeated for a minimum of two loudspeaker positions and six microphone positions to obtain an average result.

4.7 Background Noise

Background noise levels were measured in the receiver room to correct for the influence of the prevailing noise climate on the receiver room measurement in accordance with BS EN ISO 140 parts 4 and 7.

4.8 Deviations from Standard Test Method

All procedures described in Annex B of Building Regulations 2010 Approved Document E 2003 have been followed.

5 Results

The following table shows the measurement results compared against the required performance standards of Building Regulations 2010 Approved Document E 2003 (ADE) as well as the Local Authority (LA) criteria. The test results are shown in standard tabular and graphical format in the Appendix.

The performance standards are rated in terms of the Weighted Standardized Level Difference and Spectrum Adaptation Term, $D_{nT,w} + C_{tr}$ (airborne), and the Weighted Standardised Impact Sound Pressure level, $L'_{nT,w}$ (impact), in accordance with ISO 717 part 1 (airborne) and part 2 (impact).

Test Ref.	Source	Receiver	Comment	ADE Target	LA Target	Result
20141S-1	First Floor, Apartment A, Master Bedroom	Ground Floor, Apartment B, Bedroom	Airborne Floor	≥ 43 dB	≥ 48 dB	49 dB
20141S-2	First Floor, Apartment A, Master Bedroom	Ground Floor, Apartment B, Bedroom	Impact Floor	≤ 64 dB	≤ 59dB	52 dB
20141S-3	Ground Floor, Apartment C, Studio	First Floor, Apartment B, Bedroom 3	Airborne Floor	≥ 43 dB	≥ 48 dB	48 dB
20141S-4	First Floor, Apartment A, Bedroom 3	Ground Floor, Apartment B, Bedroom	Impact Floor	≤ 64 dB	≤ 59 dB	54 dB

Table 5: Measurement Results

Pass Fail Indicates if the test results achieve the requirements of both ADE and the Local Authority criteria for an additional 5 dB.

6 Conclusion

The results demonstrate that all separating elements tested achieved the airborne and impact sound insulation requirements for dwelling-houses and flats formed by material change of use in accordance with Building Regulations 2010 Approved Document E 2003 (incorporating 2015 amendments), as well as the additional 5 dB requested by the Local Authority.

Appendix: Results of Testing in Standard Tabular and Graphical Format

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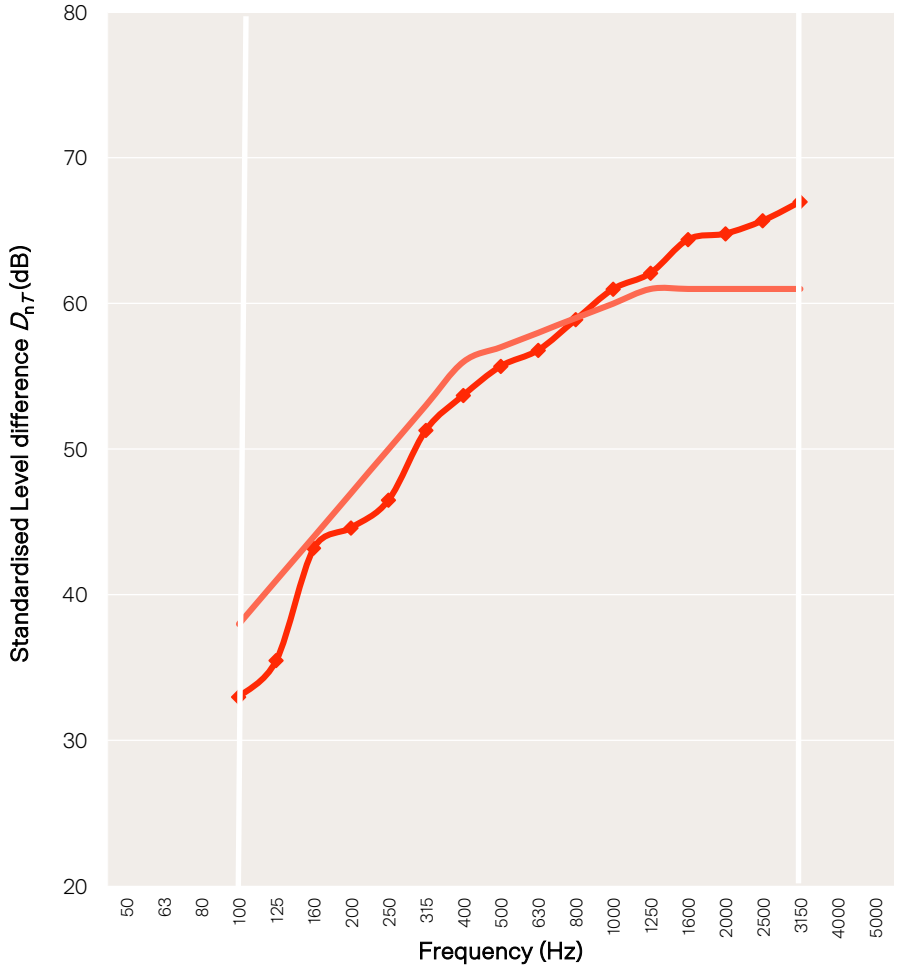
Airborne Sound Insulation Floor Test

Field measurements of airborne sound insulation between rooms

Client Name	Worxzone Limited
Site Address	10 Richborough Road, London, NW2 3LU.
Date of Test	27/07/2022
Name of Technician	C. Thomas Affiliate IOA
Source Room	First Floor, Apartment A, Master Bedroom
Source Room Volume	48.0m³
Receiver Room	Ground Floor, Apartment B, Bedroom
Receiver Room Volume	40.0m³
Area of Test Element	15.0m²
Construction Type	Timber Floor
Construction Detail	Maxideck acoustic flooring, T & G Chipboard, Timber joists with 100mm insulation between, Battens, RB1 Resillient bars, 2no. 15mm SoundBloc plasterboard



Rating according to ISO 717-1
(Higher $D_{nT,w}$ + C_{tr} figures denote better sound insulation performance)

$D_{nT,w}$ = 57 dB

C_{tr} = -8 dB

$D_{nT,w} + C_{tr}$ = 49 dB

Frequency range according to the curve of reference values (ISO 717-1)
Evaluation based on field measurement results obtained by an engineering method

Standardised Level Difference according to BS EN ISO 140-4:1998

Frequency (Hz)	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
D_{nT} (dB)	N/A	N/A	N/A	33.0	35.5	43.2	44.6	46.5	51.3	53.7	55.7	56.8	58.9	≥61.0	≥62.1	≥64.4	≥64.8	≥65.7	67.0	N/A	N/A

" ≥" shows the limit of measurement due to background noise

Test Reference: 20141S-1 V1

SPRATT+HAMER

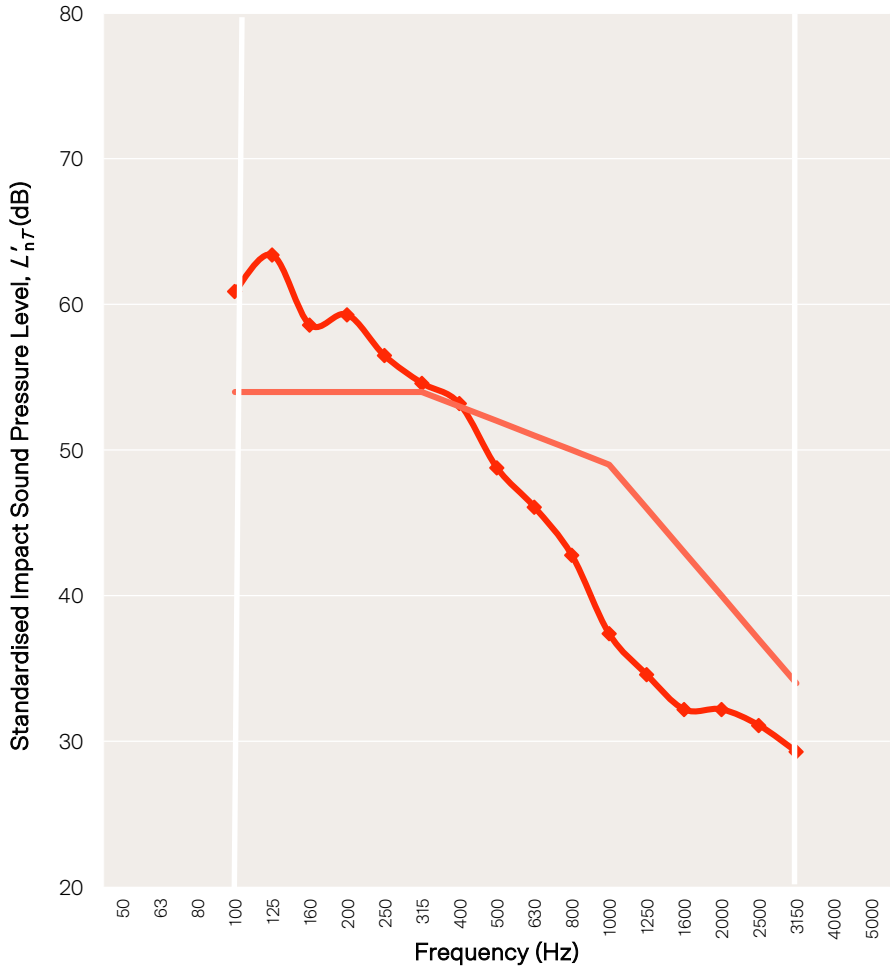
Impact Sound Insulation Floor Test

Field measurements of impact sound insulation of floors

Client Name	Worxzone Limited
Site Address	10 Richborough Road, London, NW2 3LU.
Date of Test	27/07/2022
Name of Technician	C. Thomas Affiliate IOA
Source Room	First Floor, Apartment A, Master Bedroom
Source Room Volume	48.0m³
Receiver Room	Ground Floor, Apartment B, Bedroom
Receiver Room Volume	40.0m³
Area of Test Element	15.0m²
Construction Type	Timber Floor
Construction Detail	Maxideck acoustic flooring, T & G Chipboard, Timber joists with 100mm insulation between, Battens, RB1 Resillient bars, 2no. 15mm SoundBloc plasterboard

Rating according to ISO 717-2
(Lower $L'_{nT,w}$ figures denote better sound insulation performance)

$$L'_{nT,w} = 52\ \text{dB}$$



Frequency range according to the curve of reference values (ISO 717-2)
Evaluation based on field measurement results obtained by an engineering method

Standardised Impact Sound Pressure Level according to ISO 140-7:1998

Frequency (Hz)	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
L'_{nT} (dB)	N/A	N/A	N/A	60.9	63.4	58.6	59.3	56.5	54.6	53.2	48.8	46.1	42.8	37.4	34.6	32.2	32.2	31.1	29.3	N/A	N/A

Test Reference: 20141S-2 V1

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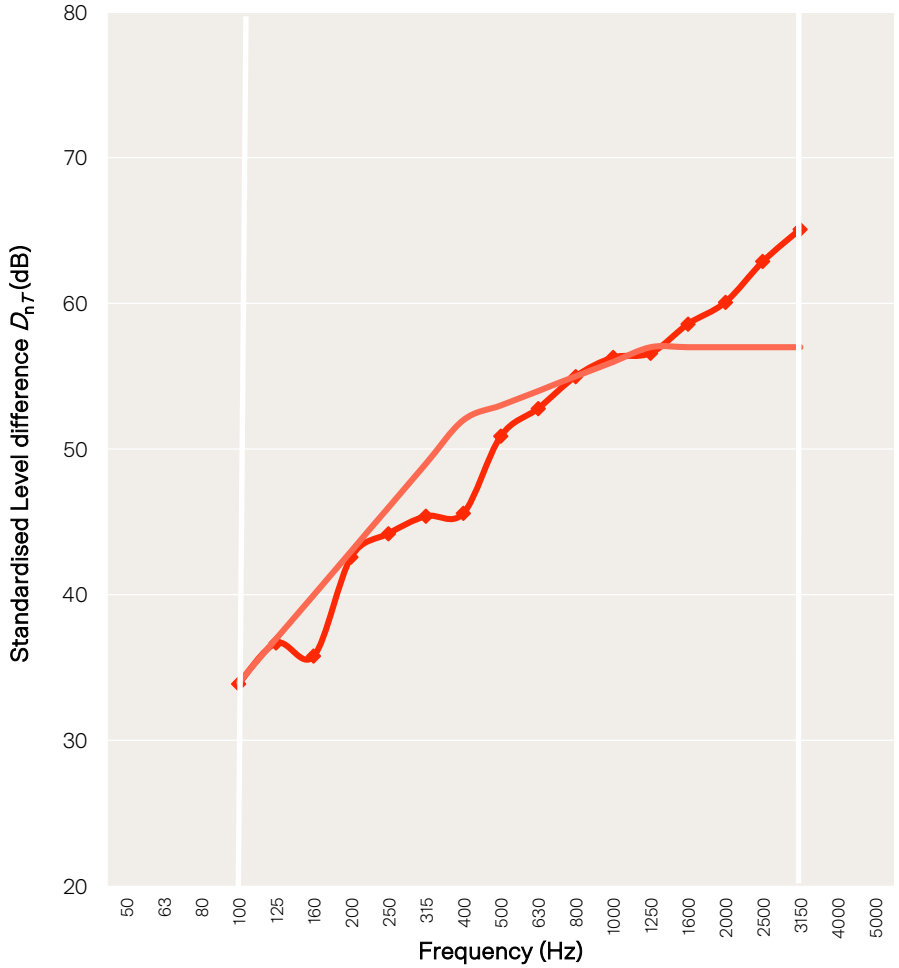
Airborne Sound Insulation Floor Test

Field measurements of airborne sound insulation between rooms

Client Name	Worxzone Limited
Site Address	10 Richborough Road, London, NW2 3LU.
Date of Test	27/07/2022
Name of Technician	C. Thomas Affiliate IOA
Source Room	Ground Floor, Apartment C, Studio
Source Room Volume	87.0m³
Receiver Room	First Floor, Apartment A, Bedroom 3
Receiver Room Volume	37.0m³
Area of Test Element	15.0m²
Construction Type	Timber Floor
Construction Detail	Maxideck acoustic flooring, T & G Chipboard, Timber joists with 100mm insulation between, Battens, RB1 Resillient bars, 2no. 15mm SoundBloc plasterboard



Rating according to ISO 717-1
(Higher $D_{nT,w}$ + C_{tr} figures denote better sound insulation performance)

$D_{nT,w}$ = 53 dB

C_{tr} = -5 dB

$D_{nT,w} + C_{tr}$ = 48 dB

Frequency range according to the curve of reference values (ISO 717-1)
Evaluation based on field measurement results obtained by an engineering method

Standardised Level Difference according to BS EN ISO 140-4:1998

Frequency (Hz)	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
D_{nT} (dB)	N/A	N/A	N/A	33.9	36.7	35.8	42.6	44.2	45.4	45.6	50.9	52.8	55.0	56.3	56.6	58.6	60.1	≥62.9	≥65.1	N/A	N/A

" ≥" shows the limit of measurement due to background noise

Test Reference: 20141S-3 V1

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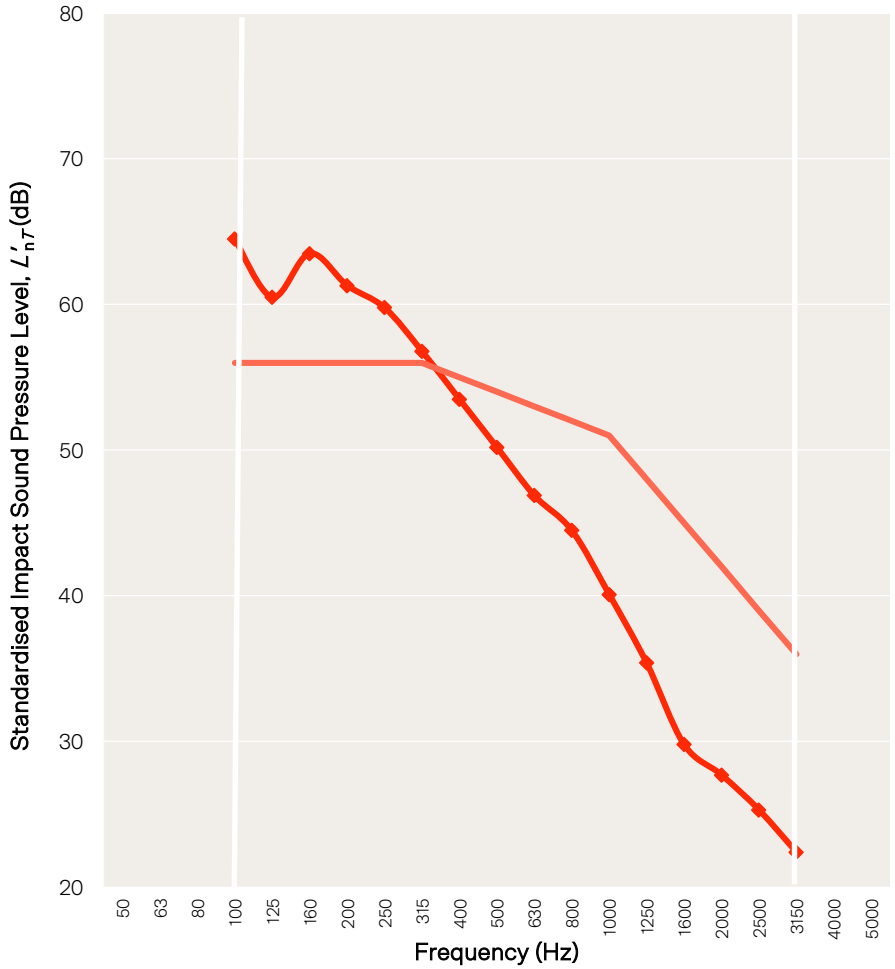
Impact Sound Insulation Floor Test

Field measurements of impact sound insulation of floors

Client Name	Worxzone Limited
Site Address	10 Richborough Road, London, NW2 3LU.
Date of Test	27/07/2022
Name of Technician	C. Thomas Affiliate IOA
Source Room	First Floor, Apartment A, Bedroom 3
Source Room Volume	37.0m³
Receiver Room	Ground Floor, Apartment C, Studio
Receiver Room Volume	87.0m³
Area of Test Element	15.0m²
Construction Type	Timber Floor
Construction Detail	Maxideck acoustic flooring, T & G Chipboard, Timber joists with 100mm insulation between, Battens, RB1 Resillient bars, 2no. 15mm SoundBloc plasterboard

Rating according to ISO 717-2
(Lower $L'_{nT,w}$ figures denote better sound insulation performance)

$L'_{nT,w}$ = 54 dB



Frequency range according to the curve of reference values (ISO 717-2)
Evaluation based on field measurement results obtained by an engineering method

Standardised Impact Sound Pressure Level according to ISO 140-7:1998

Frequency (Hz)	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
L'_{nT} (dB)	N/A	N/A	N/A	64.5	60.5	63.5	61.3	59.8	56.8	53.5	50.2	46.9	44.5	40.1	35.4	29.8	27.7	25.3	22.4	N/A	N/A

Test Reference: 20141S-4 V1

SPRATT+HAMER

Online
sprattandhamer.co.uk

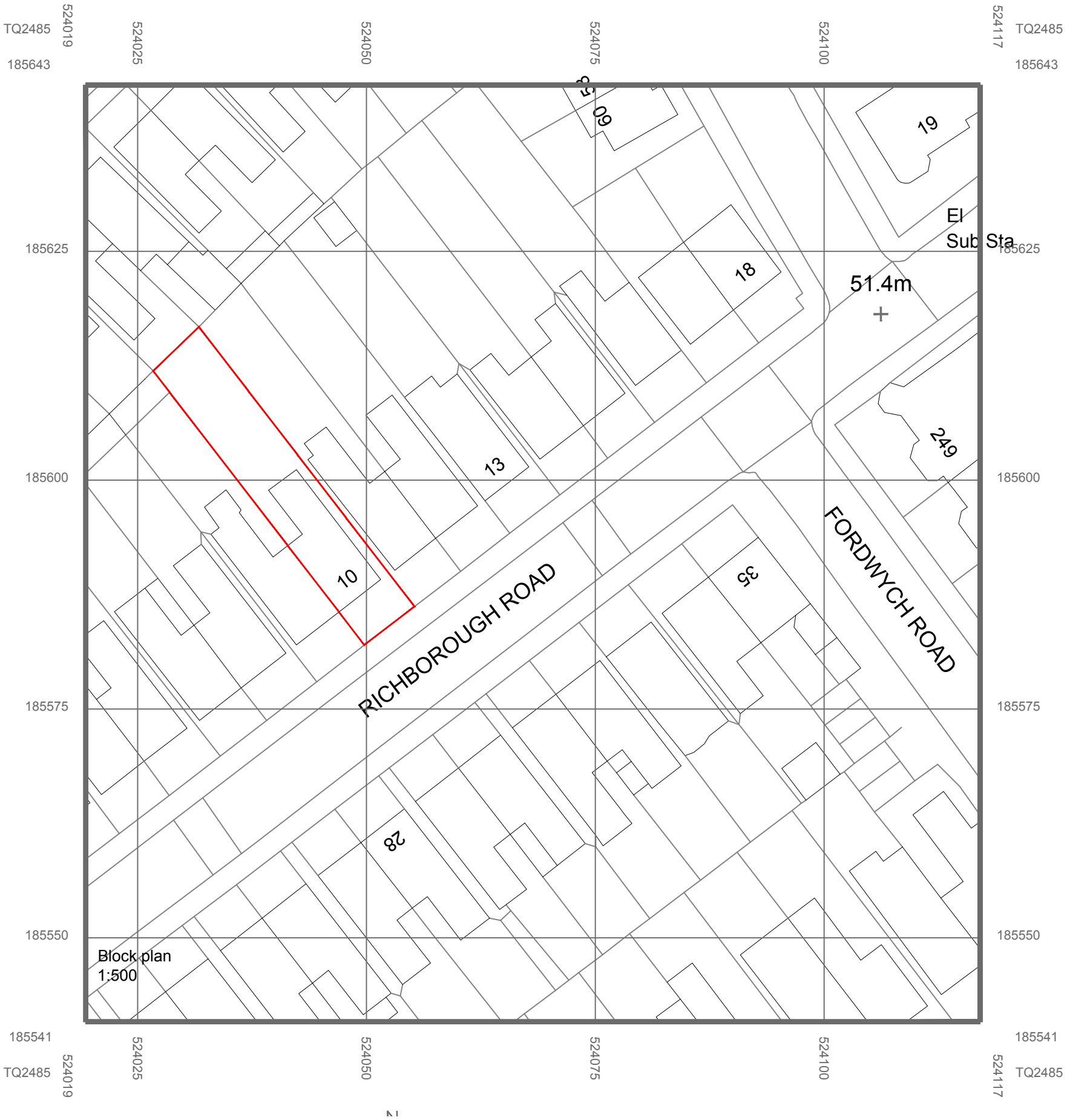
Email
info@sprattandhamer.co.uk

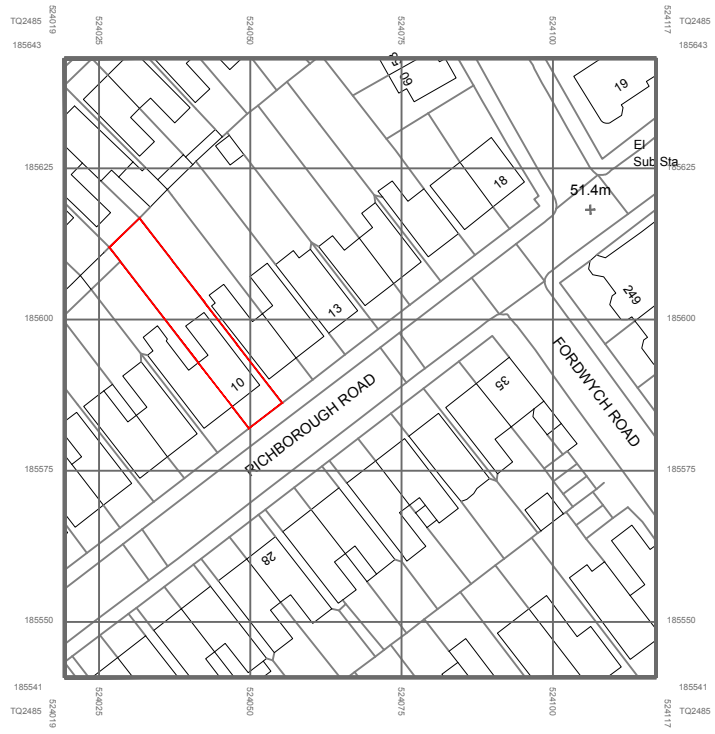
Birmingham
Lewis Building, Bull Street
Birmingham, B4 6AF
0121 828 3120

London
100 Borough High Street,
London, SE1 1LB
0203 286 2019

Liverpool
23 Roscoe Street, Liverpool
L1 2SX
0151 933 6186

Manchester
Peter House, Oxford Street
Manchester, M1 5AN
0161 521 9383





Location plan
1:1250

N

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description: Flat Conversion at	client: Mr Sanjay	scale: 1:1250 @ A3	000
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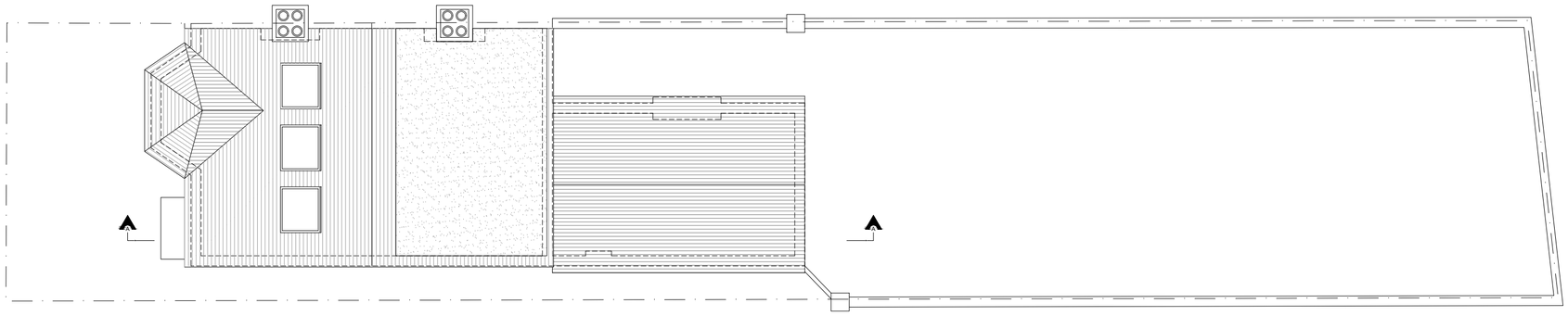
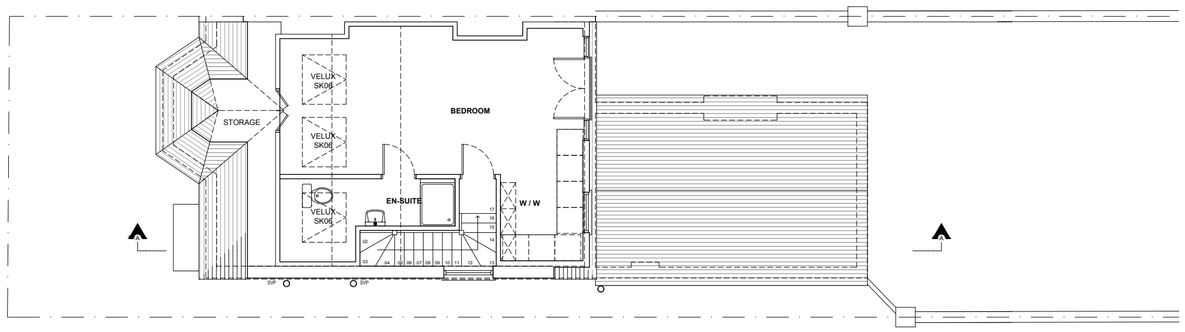


EXISTING ROOF PLAN



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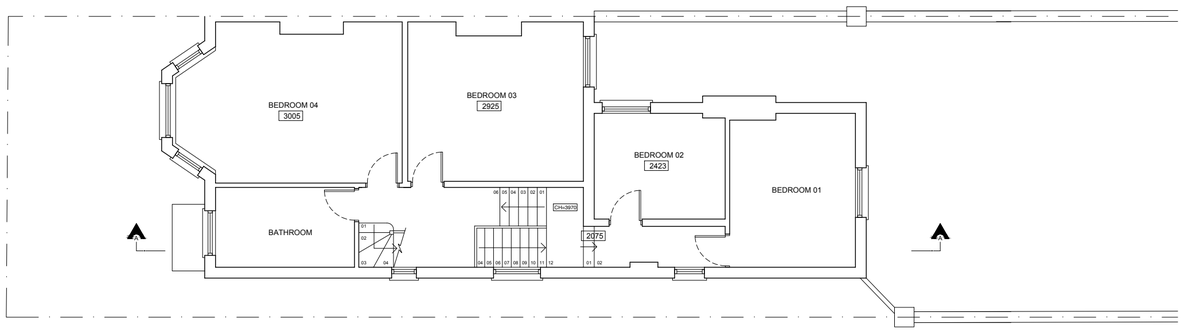

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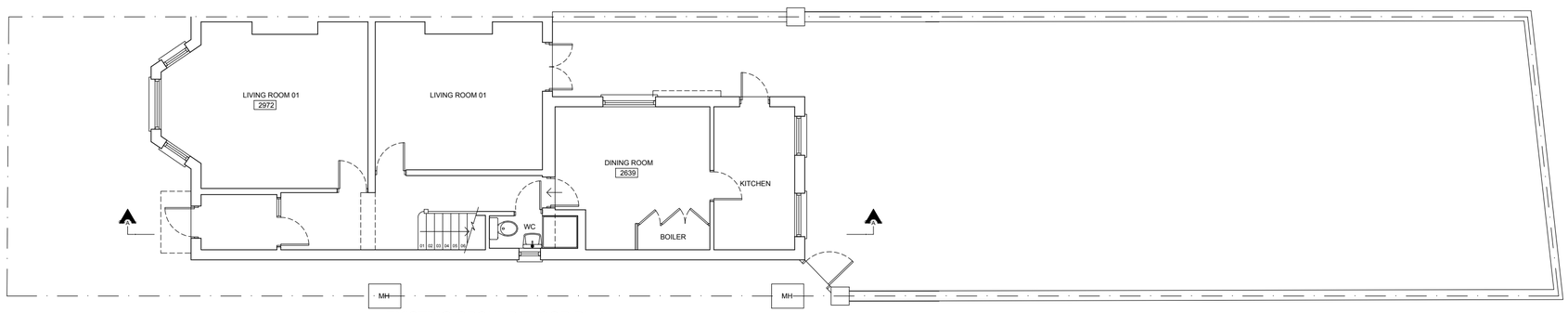

EXISTING GROUND FLOOR PLAN

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1:50
0 1 2 5m

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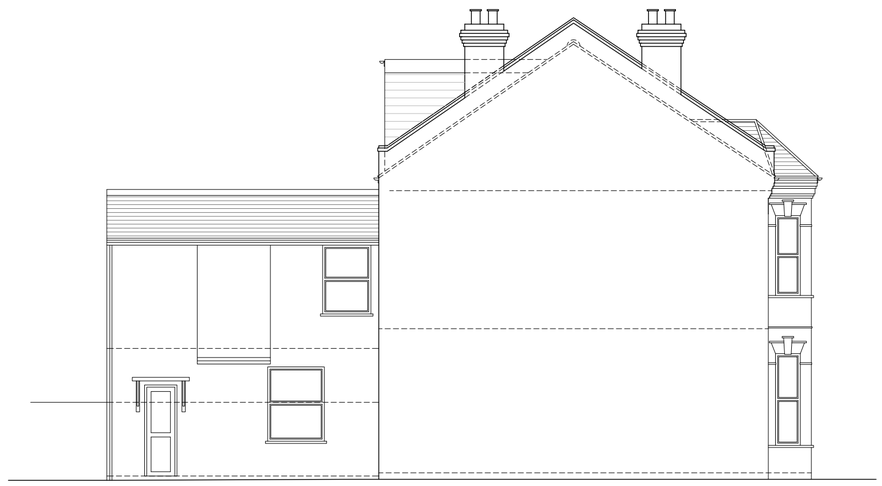
EXISTING FRONT ELEVATION

EXISTING SIDE ELEVATION 01

EXISTING REAR ELEVATION



EXISTING SIDE ELEVATION 02

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1:50
0 1 2 5m

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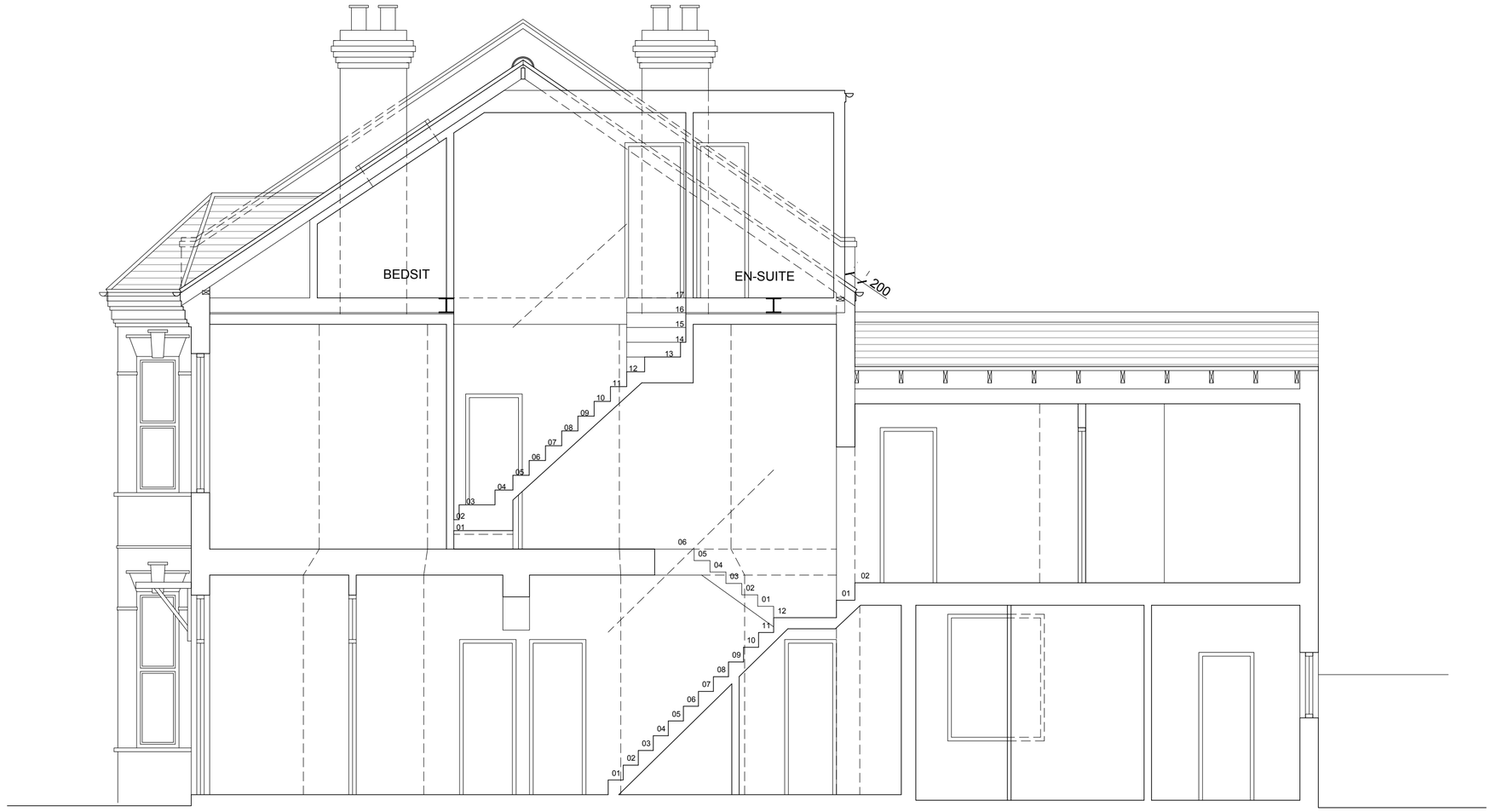

EXISTING SECTION A-A

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1:50
0 1 2 5m

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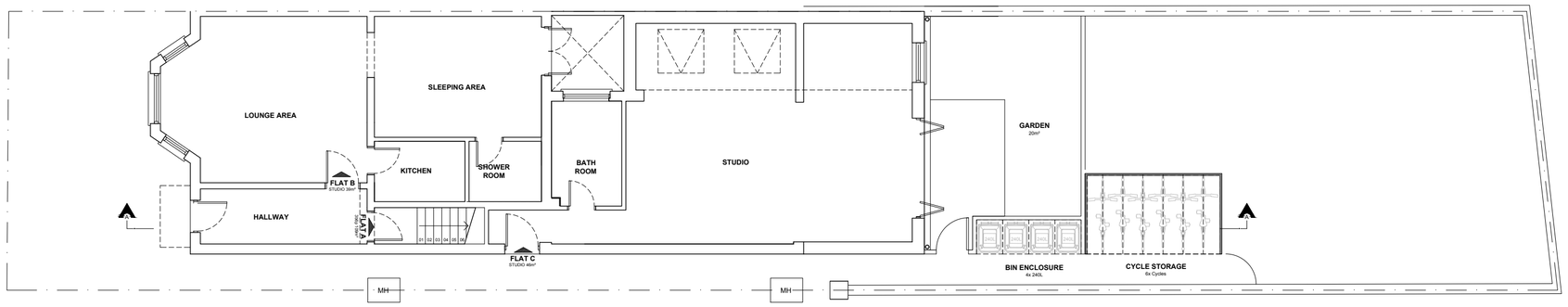
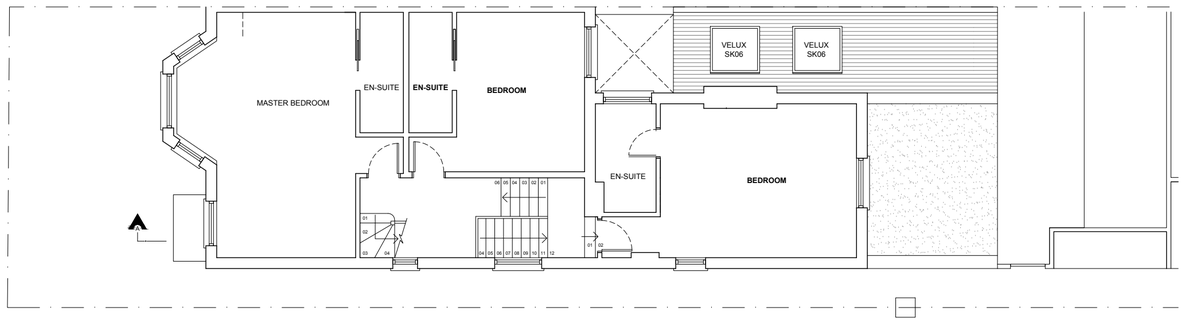


PROPOSED GROUND FLOOR PLAN



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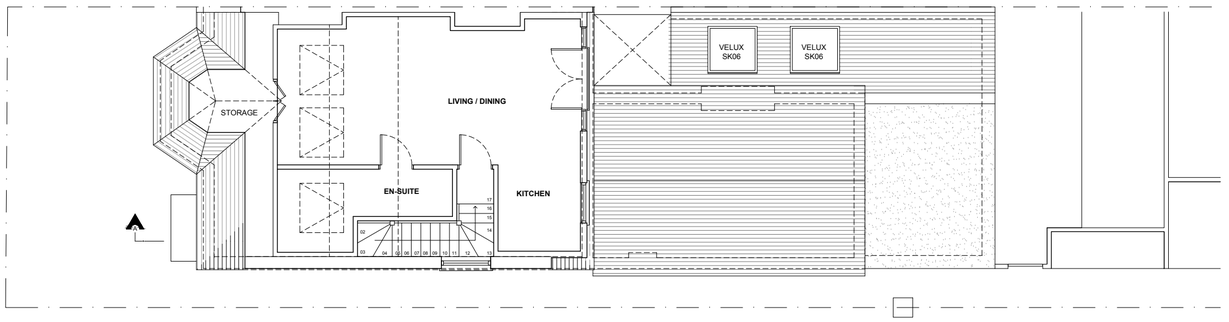

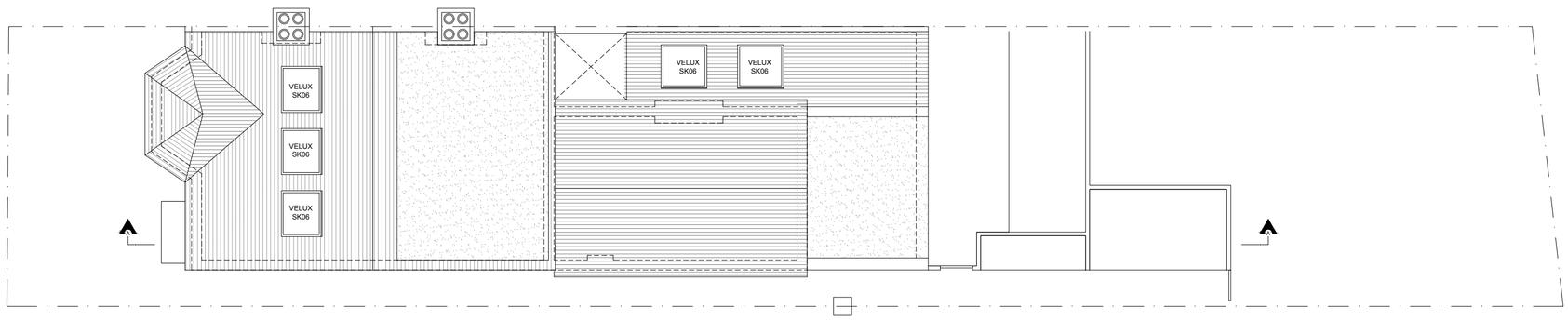

PROPOSED ROOF PLAN

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1:50 0 1 2 5m

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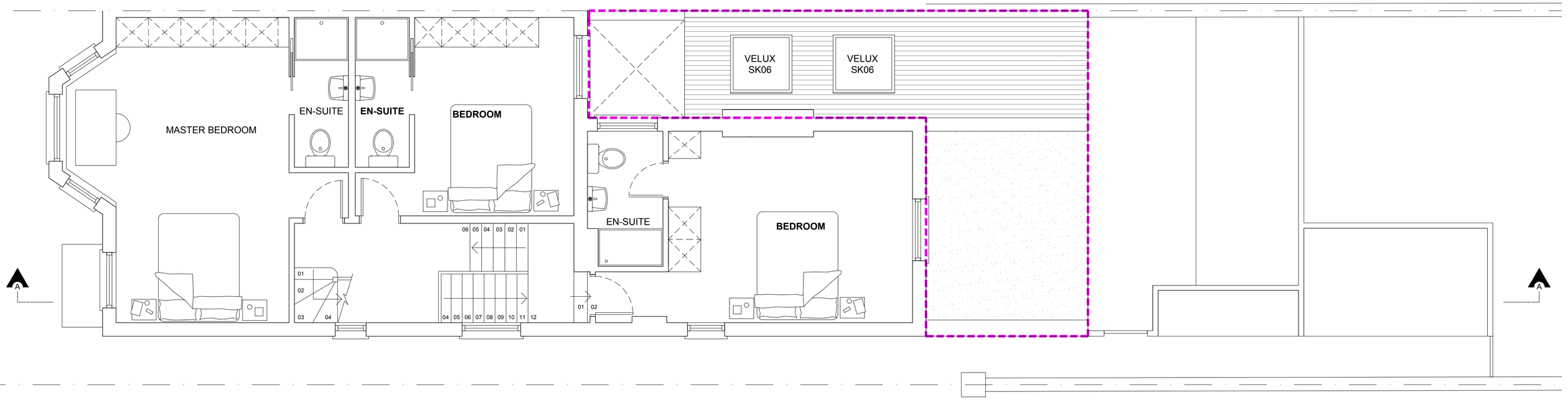
		drawn: JDS / checked: JDS	rev: -

AS APPROVED IN 08/07/2021
APP REF 2020/5391/P



PROPOSED FIRST FLOOR PLAN

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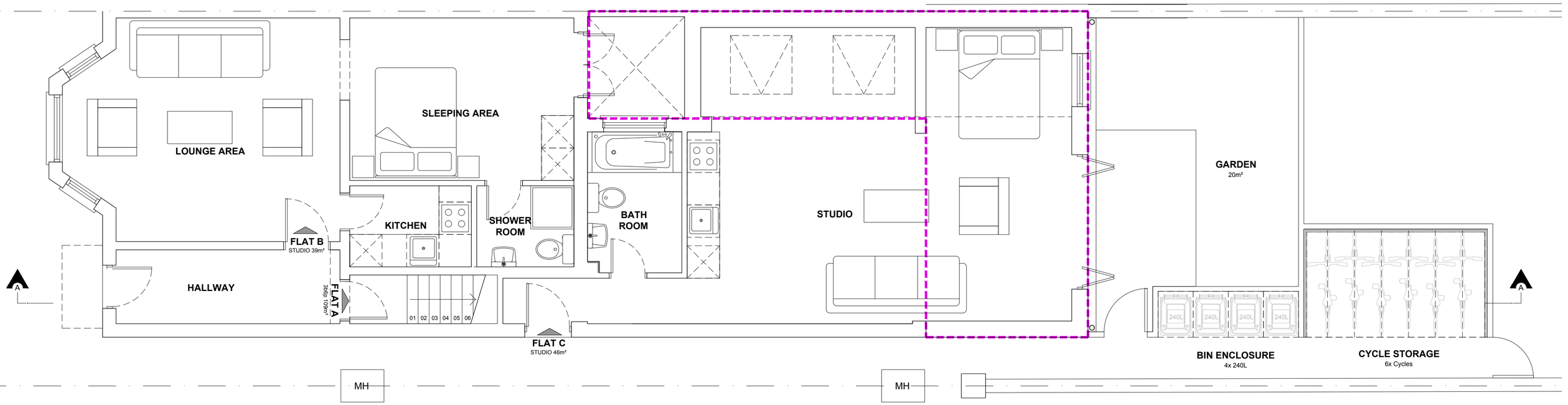
APP REF 2020/5391/P



PROPOSED GROUND FLOOR PLAN

1:100
0 2 4 7 10m
1:50
0 1 2 5m

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AS APPROVED IN 08/07/2021
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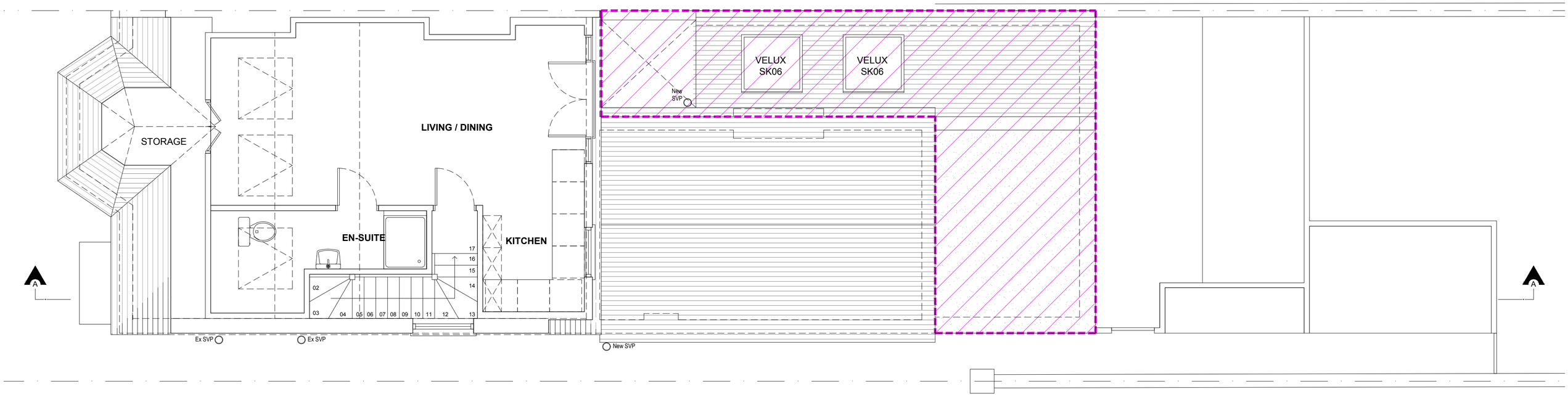
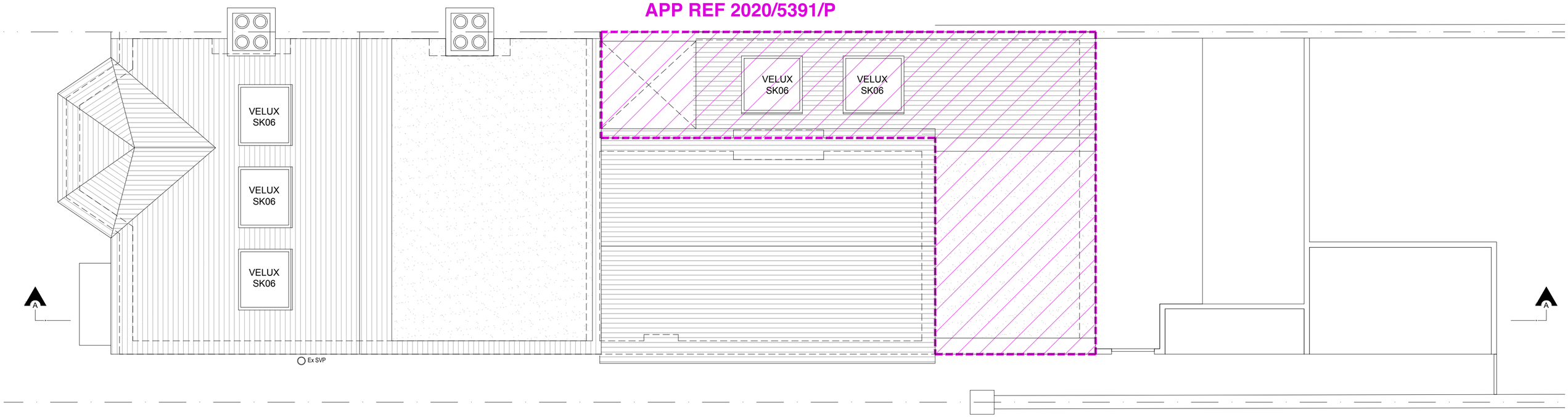


AS APPROVED IN 08/07/2021
APP REF 2020/5391/P



PROPOSED ROOF PLAN

1:100 0 2 4 7 10m
1:50 0 1 2 5m

FOR PLANNING PURPOSE ONLY

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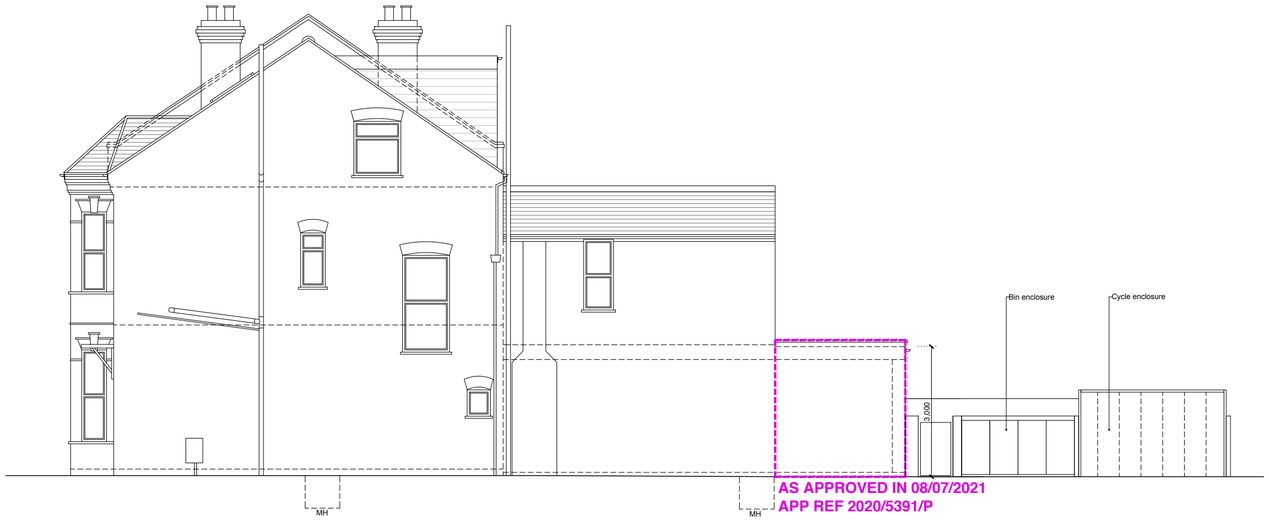
www.archcorearchitects.com
info@archcorearchitects.co.uk

description: Flat Conversion at	client: Mr Sanjay	scale: 1:50 @ A2	112
address: 10 Richborough Road, London, NW2 3LU	title: Proposed plans	date: 10/20/2020	
		drawn: JDS / checked: JDS	rev: -

PROPOSED FRONT ELEVATION



AS APPROVED IN 08/07/2021
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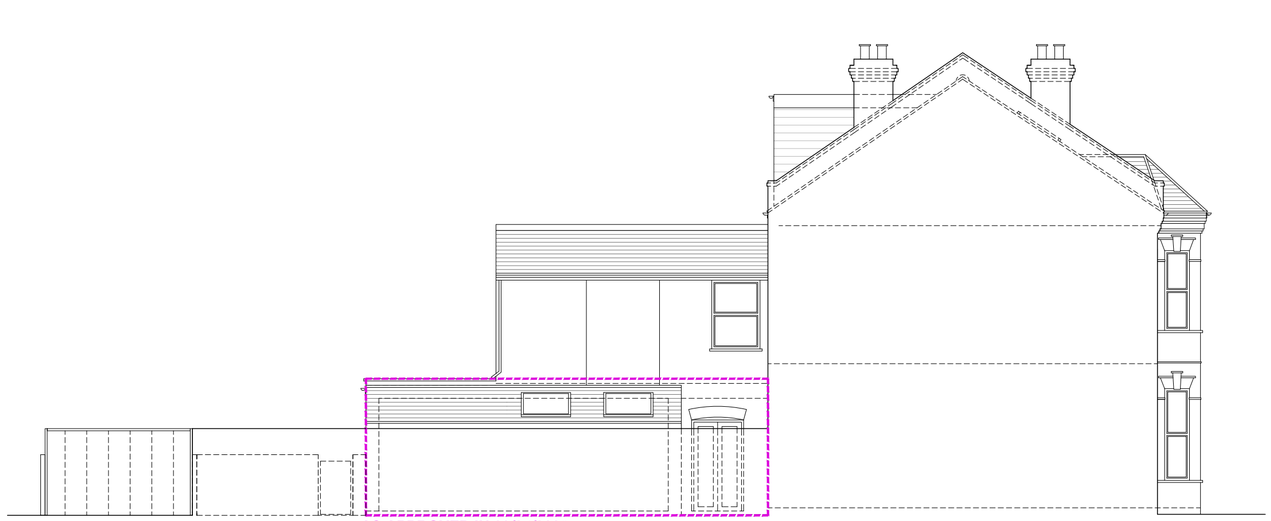
PROPOSED SIDE ELEVATION 01

AS APPROVED IN 08/07/2021
APP REF 2020/5391/P

PROPOSED REAR ELEVATION



AS APPROVED IN 08/07/2021
APP REF 2020/5391/P

PROPOSED SIDE ELEVATION 02

1:100 0 2 4 7 10m

1:50 0 1 2 5m

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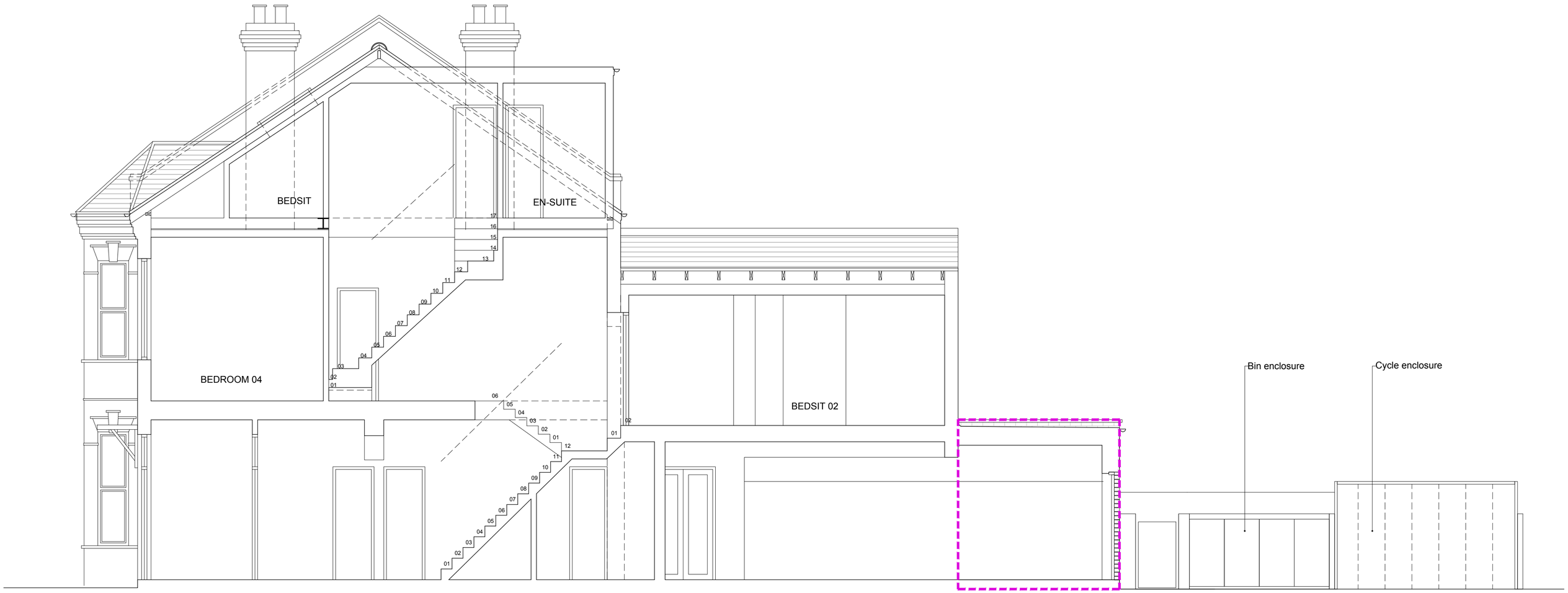
description: Flat Conversion at	client: Mr Sanjay	scale: 1:100 @ A2	120
address: 10 Richborough Road, London, NW2 3LU	title: Proposed elevations	date: 10/20/2020	
		drawn: JDS / checked: JDS	rev: -



PROPOSED SECTION A-A

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1:100 0 2 4 7 10m
1:50 0 1 2 5m

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description: Flat Conversion at	client: Mr Sanjay	scale: 1:50 @ A2	130
address: 10 Richborough Road, London, NW2 3LU	title: Proposed Sections	date: 10/20/2020	
		drawn: JDS / checked: JDS	rev: -