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Addendum
To
Acoustic Survey Report
Reference 134976
The Fitzroy Tavern
16 Charlotte Street
London W1T 2LY

Client: Andrews & Boyd Consultants Ltd

Performed by: Mark Stagg BSc. (Hons) AMIOA

Date: 6th April 2016

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Addendum
To
Acoustic Survey Report
Reference 134976
The Fitzroy Tavern
16 Charlotte Street
London W1T 2LY

1 Introduction

1.1 A background noise level survey has previously been carried out to set a maximum level of noise emission from a mechanical plant installation proposed to be installed at the Fitzroy Tavern, 16 Charlotte Street. See Acoustic Survey Report 134976.

1.2 This addendum to the report provides details of the updated proposal and proposes acoustic mitigation measures to ensure compliance with the London Borough of Camden's standard planning requirements.

1.3 It is prepared solely for the use of Andrews & Boyd Consultants Ltd. Acoustic Engineering Services (UK) Ltd accepts no responsibility for its use by any third party.

1.4 The addendum is limited to addressing only the noise aspects specifically identified and is intended to be read in conjunction with the original report.

2 Plant Details

The proposed plant and manufacturer's noise output data is as follows -

2.1 Condensers and Coolers

2.11 Marstair CellarKing Cooler – 54dB(A) @ 3m

2.12 Daikin RXYSQ10TY1 Condenser – 55dB(A) @ 1m

Our Ref: 134976 ADD

2 Plant Details cont.

2.13 Daikin RXS60L Condenser – 49dB(A) @ 1m

2.14 Daikin RZQSG100L9V1 Condenser – 49dB(A) @ 1m

2.15 All quoted condenser and cooler noise levels are believed to be free field sound pressure level measurements made in anechoic conditions.

2.2 Kitchen extract and ventilation fans

2.21 Helios VEKA 1000/9 LT EKO
Casing radiated – 55dB(A) L_w
Air inlet – 69dB(A) Lw
Air outlet – 75dB(A) Lw

2.22 Helios GIGABOX GBD500/4/4
Casing radiated – 65dB(A) L_w
Air inlet – 77dB(A) L_w
Air outlet – 80dB(A) L_w

2.23 Helio GIGABO GBD560/4/4
Casing radiated - 64dB(A) L_w
Air inlet – 77dB(A) L_w
Air outlet – 81dB(A) L_w

2.24 All quoted fan noise levels are sound power levels.

3 Plant Layout

3.1 Our calculations have been based on the attached marked up drawings, Samuel Smith Architects Department drawing P016 B and A & K Air Conditioning Ltd drawing 4631-05 Rev E. As some of the information shown is out of date we have added on what we believe the layout will be, including air outlet terminations at roof level.

Our Ref: 134976 ADD

3 Plant Layout cont.

3.2 It is understood that screening will be added to the top of the parapet wall generally as marked on the drawing. It is recommended that the screening extend at least 500mm above the height of the tallest condenser and incorporates a ninety degree return as shown to maximise performance.

3.3 The closest neighbouring sensitive locations are the windows on the rear façade of 18 Charlotte Street as marked on the Samuel Smith drawing. Taking into account plant distances and screening the closest effective sensitive window is marked on the drawing as location A. All other surroundings are other blank walls or are windows belonging to the Fitzroy Tavern itself.

4 Planning Requirements

4.1 It is believed that the air-conditioning and kitchen ventilation plant will operate only between 07.00hrs and 23.00hrs but that the Marstair cellar cooler could operate at any time in a 24-hour period.

4.2 Based on the data contained within our previous report 134976, plant noise should be limited to the following levels at 1m from any sensitive location –

Day time 07.00hrs to 23.00hrs 42dB(A)

Night time 23.00hrs to 07.00hrs 41dB(A)

5 Calculations

5.10 Resultant noise levels have been calculated using the plant data and drawings and are detailed within calculation sheets 134976 ADD ACS1 to ACS5. They can be summarised as follows –

Our Ref: 134976 ADD

5 Calculations cont.

5.11 Day time noise levels

Condenser & Cooler Plant	42dB(A)
Fan casing radiated noise	33dB(A)
Low level duct breakout	32dB(A)
High level duct breakout	39dB(A)
Inlet / Outlet	49dB(A)

5.12 Night time noise levels

Cooler plant only	41dB(A)

5.2 Day time noise levels due to the combined effect of the condensers and cooler plant, fan casing radiated noise and low level duct noise breakout are a marginal 1dB above the 42dB(A) requirement. In practice it is unlikely that all plant will operate at maximum capacity at the same time so the 42dB(A) level would be met.

5.3 Day time noise from the extract fan discharges and associated ductwork exceed the maximum noise requirement by a significant degree and will require attenuation.

5.4 Night time noise emission from the cooler will meet the noise requirement.

5.5 Noise emissions to The Fitzroy Tavern itself are outside the scope of this report and have not been considered. It is assumed that suitable builder's work measures will be taken to limit noise break-in to acceptable levels.

6 Mitigation Measures

6.1 Our calculations indicate that the condenser and cooler installation will be compliant with the local authority's standard planning requirement provided that suitable acoustic screening is incorporated into the design.

6.2 The screening should extend at least 500mm above the height of the tallest condenser and should incorporate a return of at least 750mm to maximise the effect.

Our Ref: 134976 ADD

6 Mitigation Measures cont.

6.3 The screen should be of solid construction with a minimum surface density of 20kg/m^2. A typical acoustic panel comprising of a solid galvanised steel sheet outer with a perforated galvanised steel inner retaining a heavy density acoustically absorbent infill would be ideal. Typical thickness is 50mm.

6.4 In order that the ventilation systems meet with the noise requirement duct attenuators should be fitted to the outlet side of the GIGABOX units to reduce both discharge noise at the terminations and noise breakout from the connecting ductwork. Attenuators should achieve a minimum insertion loss of 18dB(A) and any exposed ductwork should be lagged accordingly.

7 Conclusion

7.1 A background noise level survey has previously been carried out at the Fitzroy Tavern, 16 Charlotte Street (Acoustic Survey Report 134976) to set a maximum level of noise emission from mechanical plant in line with the London Borough of Camden's standard planning requirements.

7.2 Calculations have been performed using manufacturer's plant details and a preliminary plant layout drawing indicating that the incorporation of solid panel acoustic screening in addition to the existing parapet wall and the addition of suitable duct mounted attenuators will ensure compliance with the expected noise restriction.

7.3 All findings are subject to local authority approval.

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ACOUSTIC CALCULATION SHEET 134976ADD ACS1

Client: Andrews Boyd

Date: 06.04.16

Project: The Fitzroy Tavern Charlotte Street W1

Description: Calculation of condenser noise levels at third floor window of 18 Charlotte Street

	Frequency / Hz								
	dB(A)	63	125	250	500	1k	2k	4k	8k
Marstair CKC 80 @ 1m	64								
Reflections	+6								
Directivity	-3								
Loss to 3.5m	-11								
Barrier attenuation	-15								
Resultant	41								
Daikin RXYSQ10TY @ 1m	55								
Reflections	+6								
Directivity	-3								
Loss to 3.5m	-11								
Barrier attenuation	-15								
Resultant	32								
Daikin RXS60L @ 1m	49								
Reflections	+6								
Directivity	-3								
Loss to 3.5m	-11								
Barrier attenuation	-15								
Resultant	26								
Daikin RZQSG100L9V1	49								
Reflections	+6								
Directivity	+3								
Loss to 3.5m	-11								
Barrier attenuation	-15								
Resultant	26								
Total condenser noise	***42***								

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ACOUSTIC CALCULATION SHEET 134976ADD ACS2

Client: Andrews Boyd

Date: 06.04.16

Project: The Fitzroy Tavern Charlotte Street London W1

Description: Calculation of fan casing breakout noise at third floor window of 18 Charlotte Street

		Frequency / Hz							
	dB(A)	63	125	250	500	1k	2k	4k	8k
Helios VEKA Fan Lw	55								
Reflections	+6								
Loss to 4.5m	-24								
Barrier attenuation	-15								
Resultant	22								
Helios GIGABOX GBD500/4/4 Lw	65								
Reflections	+6								
Loss to 5.5m	-26								
Barrier attenuation	-15								
Resultant	30								
Helios GIGABOX GBD5604/4 Lw	64								
Reflections	+9								
Loss to 7.5m	-28								
Barrier attenuation	-15								
Resultant	30								
Total fan casing noise	***33***								

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ACOUSTIC CALCULATION SHEET 134976ADD ACS3

Client: Andrews Boyd

Date: 06.04.16

Project: The Fitzroy Tavern Charlotte Street London W1

Description: Calculation of low level ductwork breakout noise at third floor window of 18 Charlotte Street

	Frequency / Hz								
	dB(A)	63	125	250	500	1k	2k	4k	8k
Helios VEKA Fan Lw	75								
Effective duct wall transmission loss	-15								
Reflections	+6								
Loss to 4.5m	-24								
Barrier attenuation	-15								
Resultant	27								
Helios GIGABOX GBD500/4/4 Lw	77								
Effective duct wall transmission loss	-15								
Reflections	+6								
Loss to 5.5m	-26								
Barrier attenuation	-15								
Resultant	27								
Helios GIGABOX GBD5604/4 Lw	77								
Effective duct wall transmission loss	-15								
Reflections	+9								
Loss to 7.5m	-28								
Barrier attenuation	-15								
Resultant	28								
Total low level duct breakout	***32***								

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ACOUSTIC CALCULATION SHEET 134976ADD ACS4

Client: Andrews Boyd

Date: 06.04.16

Project: The Fitzroy Tavern Charlotte Street London W1

Description: Calculation of high level ductwork breakout noise at third floor window of 18 Charlotte Street

	Frequency / Hz								
	dB(A)	63	125	250	500	1k	2k	4k	8k
Helios VEKA Fan Lw									
No high level ductwork									
Helios GIGABOX GBD500/4/4 Lw	80								
Effective duct wall transmission loss	-15								
Reflections	+3								
Loss to 7m	-28								
Barrier attenuation	-5								
Resultant	35								
Helios GIGABOX GBD5604/4 Lw	81								
Effective duct wall transmission loss	-15								
Reflections	+9								
Loss to 8.5m	-29								
Barrier attenuation	-5								
Resultant	36								
Total low level duct breakout	***39***								

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ACOUSTIC CALCULATION SHEET 134976ADD ACS5

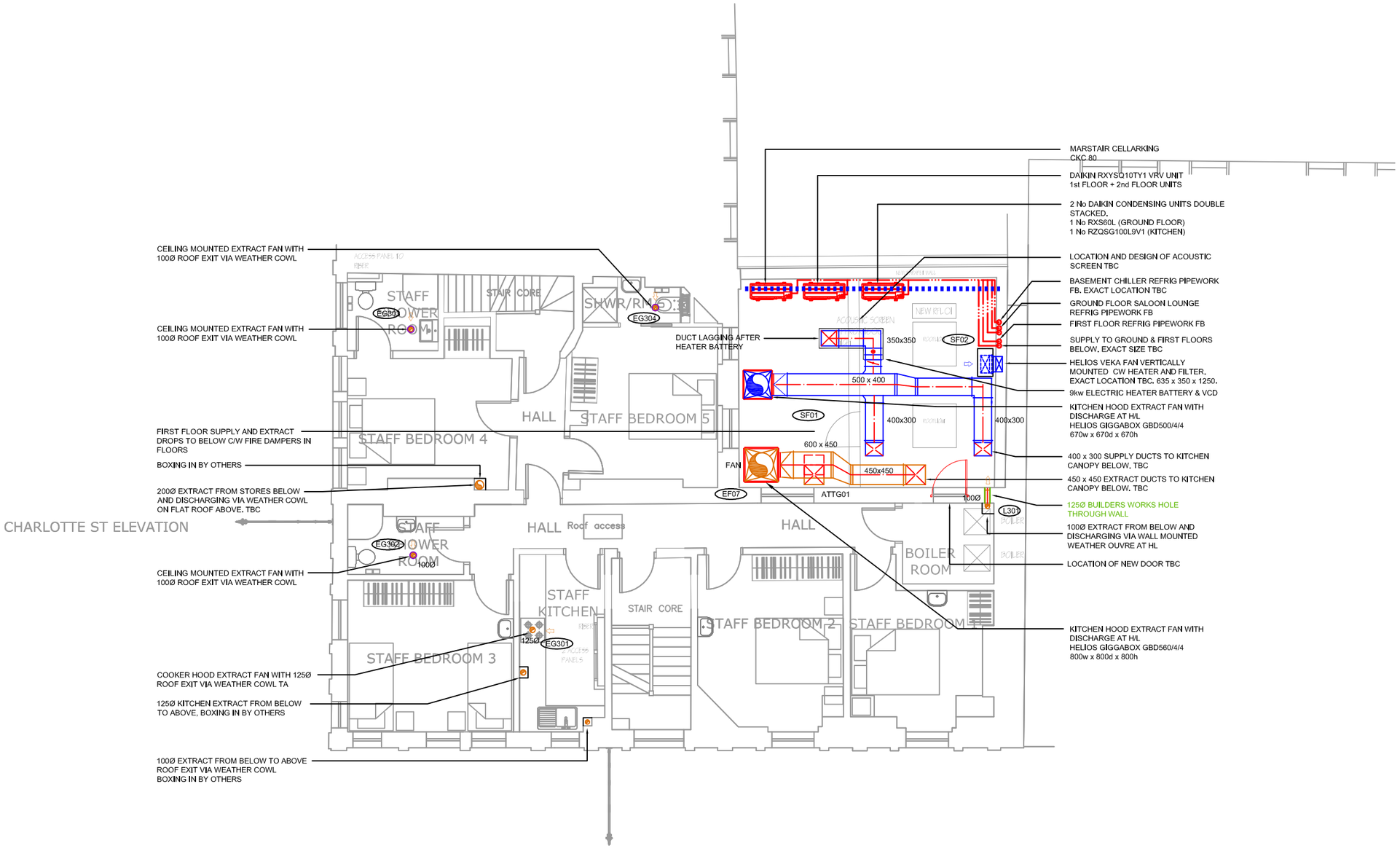
Client: Andrews Boyd

Date: 06.04.16

Project: The Fitzroy Tavern Charlotte Street London W1

Description: Calculation of intake / discharge noise at third floor window of 18 Charlotte Street

	Frequency / Hz								
	dB(A)	63	125	250	500	1k	2k	4k	8k
Helios VEKA Fan Lw	69								
Loss to 4.5m	-24								
Ninety degree directivity	-3								
Barrier attenuation	-15								
Resultant	27								
Helios GIGABOX GBD500/4/4 Lw	80								
Loss to 7m	-28								
140 degree directivity	-6								
Barrier attenuation	0								
Resultant	46								
Helios GIGABOX GBD5604/4 Lw	81								
Loss to 8.5m	-29								
140 degree directivity	-6								
Barrier attenuation	0								
Resultant	46								
Total fan intake / discharge noise	***49***								



Rev:	Date:	Details:
F		
E	05/11/15	Extract duct revised & BW holes shown
D	28/10/15	Revised to suit received comments
C	15/10/15	Revised to suit site survey
B	13/10/15	AHU's & EF01 removed. New supply fan added kitchen canopy
A	03/08/15	Fan modles updated

A & K Air conditioning ltd

Unit 19, Merlin Park
Mildenhall,
Suffolk,
IP28 7RD

Tel: 01638 716151 Fax: 01638 716141

All dimensions unless stated, in mm

Drawn: *R Butcher*	Date: 09/07/2015
Checked:	Date:
Scale: 1:50 @ A1	

Drawing Description:

Third Floor Ventilation Layout

Client:

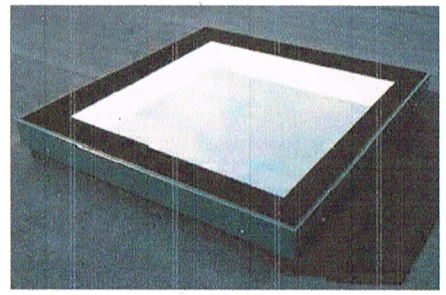
Wingrove

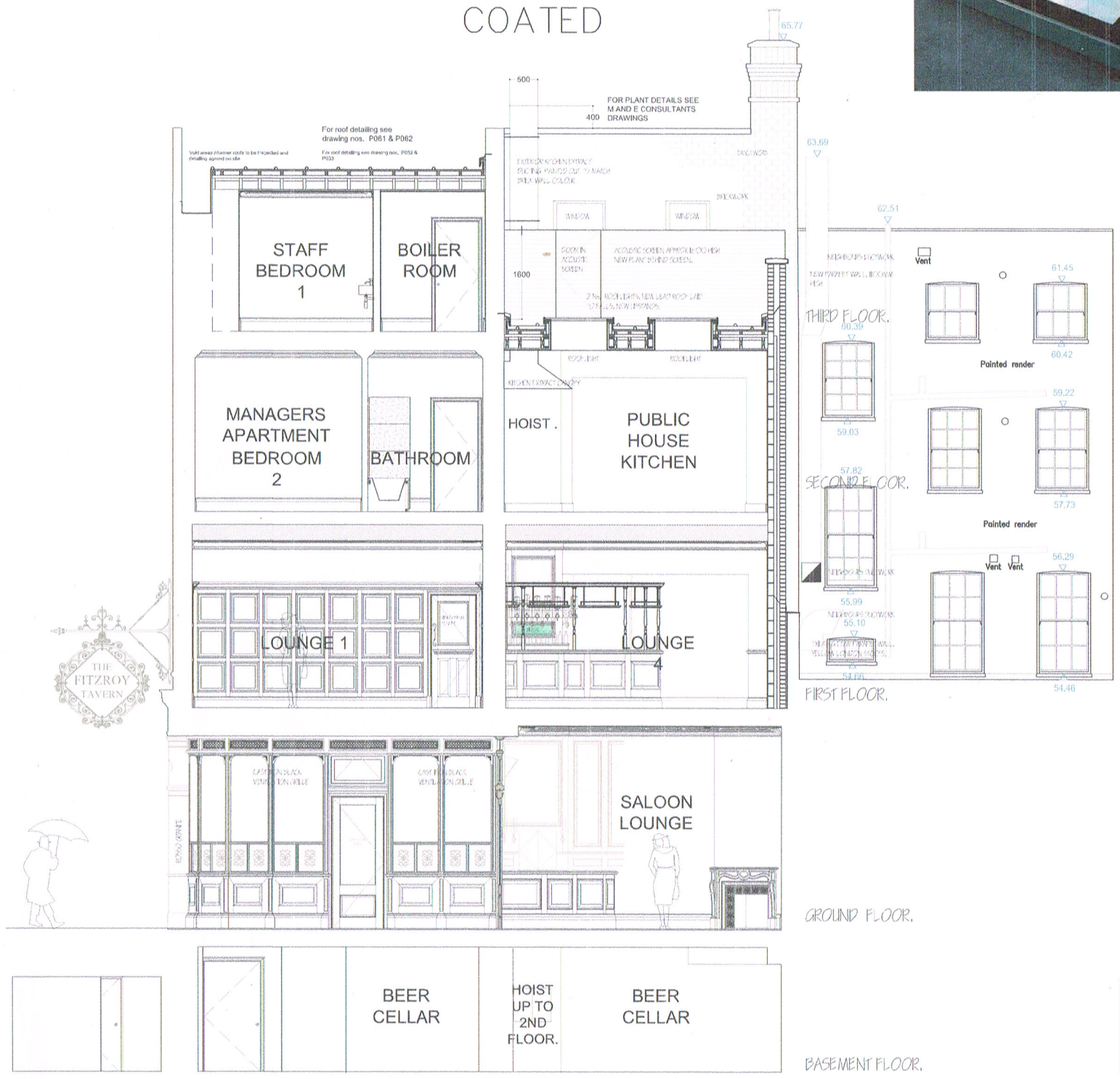
Project:

Fitzroy Tavern

Drawing No.	Rev. / Issue:
4631 - 05	E

ROOFLIGHT.
ALUMINIUM POWDER COATED

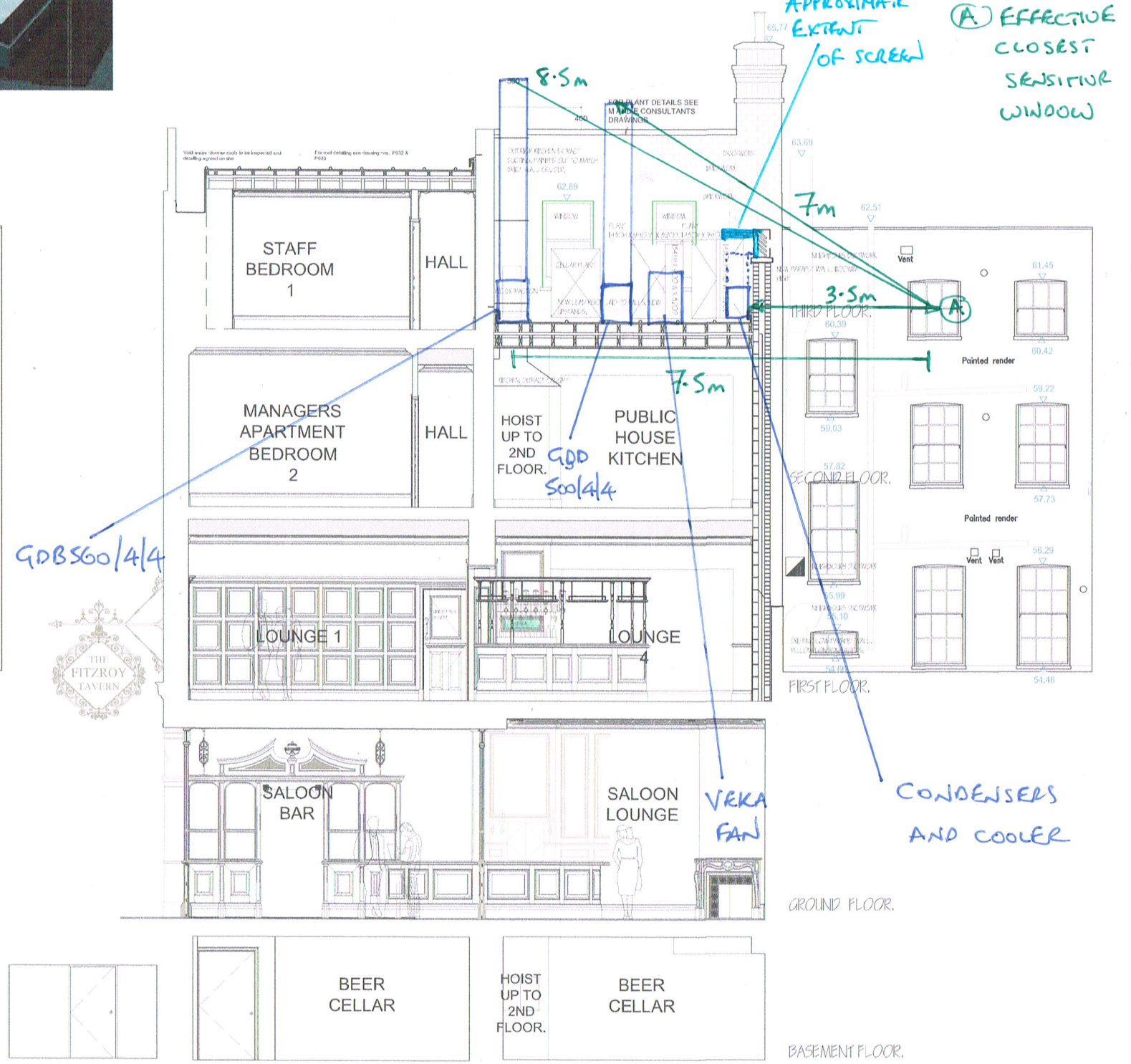




Section A - A

0 1 2 3 4 5 10 Metres

proposed
CONSTRUCTION ISSUE



Section B - B

0 1 2 3 4 5 10 Metres

REVISION B :- 25.06.2015
CONSTRUCTION ISSUE

REVISION A :- 08.02.2015
ADDITION OF ROOF DETAILS

North	Client		Project: THE FITZROY TAVERN. 16 Charlotte Street, London,W1T 2NA	
	Scale: 1:50 AT A1	Drawn by	Drawing Title: PROPOSED SECTIONS AA AND BB	
Project No.	Date: MAY 2014	Checked by	Drawing No.: P016	Revision: B

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