CONABEARE ACOUSTICS

ACOUSTIC REPORT
PLANT NOISE ASSESSMENT

Ref. No. CS 7402-2

D M^{c}D Restaurants
"Q"
29-33 Chalk Farm Road
London
NW1 8AJ

11th October 2013

Prepared By:

[redacted]

David Whymark – Director

Checked By:

[redacted]

Jason Paxford - Director

Client: **Technical Services Refrigeration & Air Conditioning Limited**
Clock House
Carnegie Road
Newbury
West Berkshire
RG14 5DJ

FORWARD

It is proposed to introduce new air conditioning equipment on the roof of 29-33 Chalk Farm Road, London, NW1 8AJ. The development is a mixture of student accommodation on the upper floors and retail & A3 uses on the ground floor.

A comprehensive noise impact assessment report has been carried out by messers 24Acoustics dated 8th February 2012 reference R4038-2 Rev 1.

This report details the results of an environmental survey carried out between 24th & 27th November 2011. As part of 24Acoustics report guidance has been provided as to the design requirement for the proposed new air conditioning equipment. This has been detailed below for reference purposes.

Conabeare Acoustics Limited has been commissioned to undertake a plant noise assessment based on the recommendations provided by 24Acoustics.

Acoustic calculations have been undertaken to enable checks to be made on the proposed mechanical services plant in order that they comply with planning recommendations made by 24Acoustics .

Summary as advised by 24Acoustics

The lowest measured Background Sound Levels $L_{A90.15MIN}$ were as follows:

$L_{A90.15MIN}$	47 dB(A) between 07:00 hours to 19:00 hours (Day Time)
$L_{A90.15MIN}$	54 dB(A) between 19:00 hours to 23:00 hours (Evening)
$L_{A90.15MIN}$	42dB(A) between 23:00 hours to 07:00 hours (Night Time)

Design requirement for mechanical services plant measured at 1m from the window of the nearest habitable residential room:

$L_{A90.15MIN}$	42 dB(A) between 07:00 hours to 19:00 hours (Day Time)
$L_{A90.15MIN}$	49 dB(A) between 19:00 hours to 23:00 hours (Evening)
$L_{A90.15MIN}$	37dB(A) between 23:00 hours to 07:00 hours (Night Time)

Note: If any item of plant is tonal in nature the design level for this item should be reduced by 5 dB

CONABEARE ACOUSTICS

CONTENTS

1. Author

David Whymark

The author has been practising in noise control engineering since 1983. He has gained a wide range of experience over this period and is a Managing Director of **Conabeare Acoustics Limited.**

2. Client

This plant noise assessment has been undertaken on behalf of:

Technical Services Refrigeration & Air Conditioning Limited
Clock House
Carnegie Road
Newbury
West Berkshire
RG14 5DJ

3. Introduction

It is proposed to introduce new air conditioning equipment on the roof of 29-33 Chalk Farm Road, London, NW1 8AJ. The development is a mixture of student accommodation on the upper floors and retail & A3 uses on the ground floor.

A comprehensive noise impact assessment report has been carried out by messers 24Acoustics dated 8th February 2012 reference R4038-2 Rev 1.

This report details the results of an environmental survey carried out between 24th & 27th November 2011. As part of 24Acoustics report guidance has been provided as to the design requirement for the proposed new air conditioning equipment. This has been detailed below for reference purposes.

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Acoustic calculations have been undertaken to enable checks to be made on the proposed mechanical services plant in order that they comply with planning recommendations made by 24Acoustics .

4. The Site

29 - 33 Chalk Farm Road is located in a mixed residential and commercial area with ambient noise levels controlled by local road traffic.

It is proposed to construct a mixed use development comprising student accommodation on upper floors and retail and A3 uses on the ground floor.

The nearest existing residential property is located to the rear façade of Hartland Road. The location of the proposed mechanical services plant is on the roof which is higher than the surrounding residential properties. The edge of the new roof level will therefore afford some acoustic screening to the rear façade of Hartland Road.

5. Planning Noise Requirements

24Acoustics state: -
Before the relevant uses commence, plans and acoustic information of any extract ventilating system/air-conditioning plant shall be submitted to the Council for approval, this shall include details of any acoustic isolation and sound attenuation. Noise levels at a point 1 metre external to sensitive facades shall be at least 5 dB(A) less than the existing background measurement (L_{A90}), expressed in dB(A) over 15 minutes when all plant/equipment (or any part of it) is in operation unless the plant/equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps), then the noise levels from that piece of plant/equipment at any sensitive façade shall be at least 10 dB(A) below the (L_{A90}), expressed in dB(A). The equipment and any acoustic isolation shall thereafter be maintained in effective order and to the reasonable satisfaction of the Council.

6. Assessment

The objective of any specification limiting sound should be to ensure that sound emissions from the proposed plant should not materially add to the existing ambient noise climate when measured 1m from the nearest effected property window.

The level at which the target should be set is has been advised by The London Borough of Camden within its Decision for the planning application ref: 2012/0974/P dated 9th October 2012. Based on the information provided by 24Acoustics the mechanical services plant should be designed to the following: -

The current design policy of council planners is that noise produced by mechanical plant should be at least 5dB(A) below the background sound level. The combined sound level of all new plant when measured at 1m from the closest residential window should therefore not exceed: -

$L_{A90.15MIN}$ 42 dB(A) between 07:00 hours to 19:00 hours (Day Time)
$L_{A90.15MIN}$ 49 dB(A) between 19:00 hours to 23:00 hours (Evening)
$L_{A90.15MIN}$ 37 dB(A) between 00:00 hours to 07:00 hours (Night Time)

The above limits should be achieved with all plant operating normally, any plant exhibiting characteristics which are tonal or intermittent in nature should be designed to criteria 5dB(A) more stringent than those levels shown above. Allowances should also be made for the additional effect of multiple noise sources.

From our survey it is felt that the nearest sound sensitive location from the proposed plant installation is as follows: -

The rear façade of the premises on Hartland Road.

Daytime & Evening Condition
For calculation purposes we have identified this location as "Location A assessment", we have illustrated on the attached calculation sheets that at 1 metre from the façade the Specific Sound Level would be 37dB(A). This figure is clearly below the design condition proposed for daytime 42dB(A) and evening operation 49dB(A) and would therefore in our opinion meet the planning requirements of the local authority.

Night Time Condition
It should also be noted that the mechanical services team have taken consideration of the fact that the area is mainly residential. As such they have selected the outdoor condensing units with a night time noise set back condition. This will reduce the sound level of these units from the normal daytime operating condition to 50dB(A) @ 1m at night. Unfortunately as no octave band spectra is available for this condition we can only estimate the resultant level at "Location A", this we feel would be reduced from 37dB(A) to a level in the order of 34dB(A). This 34dB(A) figure is clearly below the proposed night time design target of 37dB(A) and would therefore in our opinion meet the planning requirements of the local authority.

The above should be acceptable to the local authority; however as a matter of course this report should be verified with the local Environmental Health or Planning Departments.

The information we have received for the proposed new mechanical services plant is detailed within the following calculation sheets.

CONABEARE ACOUSTICS LTD CALCULATION SHEET - Calc 1

CLIENT: **Technical Services Ltd**	PROJECT: **"Q" 29-33 Chalk Farm Road, NW1**								
	DATE: **11/10/2013**								
Outdoor condensing unit servin	Conabeare Acoustics ref:								
Dining area	Octave Band Centre Frequency (Hz								
Description	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**dB(A)**
LOCATION 'A' ASSESSMENT									
RAV-SP1404AT-E Lp @ 1m	59	58	52	50	44	41	37	29	51
Distance from 1m to 19.5m to nearest window	-22	-22	-22	-22	-22	-22	-22	-22	
Additional surface reflections	6	6	6	6	6	6	6	6	
Screening via building 0.978m	-10	-12	-15	-17	-20	-23	-27	-29	
Façade Correction	3	3	3	3	3	3	3	3	
Lp @1m from receivers façade	**36**	**33**	**24**	**20**	**11**	**5**	**-3**	**-13**	**22**

Additional Attenuator - atmosphere side of plant									
Lp @1m from receivers façade	**36**	**33**	**24**	**20**	**11**	**5**	**-3**	**-13**	**22**

Notes

Calculations to the nearest top floor residential window of the property at the rear of Hartland Road

No allowance has been made for any noise/vibration transfer through floor/structure in the above calculations

Vibration isolation will be required for the new plant

CONABEARE ACOUSTICS LTD CALCULATION SHEET - Calc 2

CLIENT: **Technical Services Ltd**	PROJECT: **"Q" 29-33 Chalk Farm Road, NW1**								
	DATE: **11/10/2013**								
Outdoor condensing unit servin	Conabeare Acoustics ref:								
Dining area	Octave Band Centre Frequency (Hz								
Description	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**dB(A)**
LOCATION 'A' ASSESSMENT									
RAV-SM2804AT8-E Lp @ 1m	59	62	58	55	53	50	44	34	58
Distance from 1m to 18.6m to nearest window	-22	-22	-22	-22	-22	-22	-22	-22	
Additional surface reflections	6	6	6	6	6	6	6	6	
Screening via building 1.028m	-10	-13	-15	-17	-20	-24	-28	-29	
Façade Correction	3	3	3	3	3	3	3	3	
Lp @1m from receivers façade	**36**	**36**	**30**	**25**	**20**	**13**	**3**	**-8**	**27**

Additional Attenuator - atmosphere side of plant									
Lp @1m from receivers façade	**36**	**36**	**30**	**25**	**20**	**13**	**3**	**-8**	**27**

Notes

Calculations to the nearest top floor residential window of the property at the rear of Hartland Road

No allowance has been made for any noise/vibration transfer through floor/structure in the above calculations

Vibration isolation will be required for the new plant

CONABEARE ACOUSTICS LTD CALCULATION SHEET - Calc 3

CLIENT: **Technical Services Ltd**	PROJECT: **"Q" 29-33 Chalk Farm Road, NW1**								
	DATE: **11/10/2013**								
Outdoor condensing unit servin	Conabeare Acoustics ref:								
Grd Floor Upper Mezzannine	Octave Band Centre Frequency (Hz								
Description	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**dB(A)**
LOCATION 'A' ASSESSMENT									
RAV-SM2804AT8-E Lp @ 1m	59	62	58	55	53	50	44	34	58
Distance from 1m to 16.2m to nearest window	-20	-20	-20	-20	-20	-20	-20	-20	
Additional surface reflections	6	6	6	6	6	6	6	6	
Screening via building 1.042m	-10	-13	-15	-17	-20	-24	-28	-29	
Façade Correction	3	3	3	3	3	3	3	3	
Lp @1m from receivers façade	**38**	**38**	**32**	**27**	**22**	**15**	**5**	**-6**	**29**

Additional Attenuator - atmosphere side of plant									
Lp @1m from receivers façade	**38**	**38**	**32**	**27**	**22**	**15**	**5**	**-6**	**29**

Notes

Calculations to the nearest top floor residential window of the property at the rear of Hartland Road

No allowance has been made for any noise/vibration transfer through floor/structure in the above calculations

Vibration isolation will be required for the new plant

CONABEARE ACOUSTICS LTD CALCULATION SHEET - Calc 4

CLIENT: **Technical Services Ltd**	PROJECT: **"Q" 29-33 Chalk Farm Road, NW1**								
	DATE: **11/10/2013**								
Future outdoor condensing unit servin	Conabeare Acoustics ref:								
Staff office / Server room	Octave Band Centre Frequency (Hz								
Description	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**dB(A)**
LOCATION 'A' ASSESSMENT									
RAV-SP1404AT-E Lp @ 1m	59	58	52	50	44	41	37	29	51
Distance from 1m to 20.7m to nearest window	-22	-22	-22	-22	-22	-22	-22	-22	
Additional surface reflections	6	6	6	6	6	6	6	6	
Screening via building 1.013m	-10	-13	-15	-17	-20	-24	-28	-29	
Façade Correction	3	3	3	3	3	3	3	3	
Lp @1m from receivers façade	**36**	**32**	**24**	**20**	**11**	**4**	**-4**	**-13**	**22**

Additional Attenuator - atmosphere side of plant									
Lp @1m from receivers façade	**36**	**32**	**24**	**20**	**11**	**4**	**-4**	**-13**	**22**

Notes

Calculations to the nearest top floor residential window of the property at the rear of Hartland Road

No allowance has been made for any noise/vibration transfer through floor/structure in the above calculations

Vibration isolation will be required for the new plant

CONABEARE ACOUSTICS LTD CALCULATION SHEET - Calc 5

CLIENT: **Technical Services Ltd**	PROJECT: **"Q" 29-33 Chalk Farm Road, NW1**								
	DATE: **11/10/2013**								
Future outdoor condensing unit servin	Conabeare Acoustics ref:								
Roof mounted AHU	Octave Band Centre Frequency (Hz								
Description	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**dB(A)**
LOCATION 'A' ASSESSMENT									
RAV-SM2804AT8-E Lp @ 1m	59	62	58	55	53	50	44	34	58
Distance from 1m to 15.5m to nearest window	-20	-20	-20	-20	-20	-20	-20	-20	
Additional surface reflections	6	6	6	6	6	6	6	6	
Screening via building 0.666m	-10	-11	-13	-16	-18	-21	-25	-29	
Façade Correction	3	3	3	3	3	3	3	3	
Lp @1m from receivers façade	**38**	**40**	**34**	**28**	**24**	**18**	**8**	**-6**	**31**

Additional Attenuator - atmosphere side of plant									
Lp @1m from receivers façade	**38**	**40**	**34**	**28**	**24**	**18**	**8**	**-6**	**31**

Notes

Calculations to the nearest top floor residential window of the property at the rear of Hartland Road

No allowance has been made for any noise/vibration transfer through floor/structure in the above calculations

Vibration isolation will be required for the new plant

CONABEARE ACOUSTICS LTD CALCULATION SHEET - Calc 6

CLIENT: **Technical Services Ltd**	PROJECT: **"Q" 29-33 Chalk Farm Road, NW1**								
	DATE: **11/10/2013**								
Future outdoor condensing unit servin	Conabeare Acoustics ref:								
Roof mounted AHU	Octave Band Centre Frequency (Hz								
Description	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**dB(A)**
LOCATION 'A' ASSESSMENT									
RAV-SM2804AT8-E Lp @ 1m	59	62	58	55	53	50	44	34	58
Distance from 1m to 14.5m to nearest window	-19	-19	-19	-19	-19	-19	-19	-19	
Additional surface reflections	6	6	6	6	6	6	6	6	
Screening via building 0.696m	-10	-11	-13	-16	-18	-22	-25	-28	
Façade Correction	3	3	3	3	3	3	3	3	
Lp @1m from receivers façade	**39**	**41**	**35**	**29**	**25**	**18**	**9**	**-4**	**32**

Additional Attenuator - atmosphere side of plant									
Lp @1m from receivers façade	**39**	**41**	**35**	**29**	**25**	**18**	**9**	**-4**	**32**

Notes

Calculations to the nearest top floor residential window of the property at the rear of Hartland Road

No allowance has been made for any noise/vibration transfer through floor/structure in the above calculations

Vibration isolation will be required for the new plant

CONABEARE ACOUSTICS LTD CALCULATION SHEET - Calc 7

CLIENT: **Technical Services Ltd**		PROJECT: **"Q" 29-33 Chalk Farm Road, NW1**								
		DATE: **11/10/2013**								
Kitchen extract AHU		Conabeare Acoustics ref:								
		Octave Band Centre Frequency (Hz								
Description		**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**dB(A)**
LOCATION 'A' ASSESSMENT										
POLLUSTOP PS04	Lw	89	88	87	88	85	81	76	68	90
700 Mitre Bend		0	-2	-8	-5	-3	-3	-3	-3	
600 dia end reflection		-10	-5	-2	0	0	0	0	0	
108 degrees directivity		-1	-2	-4	-7	-16	-22	-28	-33	
Distance 22.9m to nearest window		-38	-38	-38	-38	-38	-38	-38	-38	
Additional surface reflections		6	6	6	6	6	6	6	6	
Screening via building	1.003m	-10	-12	-15	-17	-20	-23	-27	-29	
Façade Correction		3	3	3	3	3	3	3	3	
Lp @1m from receivers façade		**39**	**38**	**29**	**30**	**17**	**4**	**-11**	**-26**	**29**

Additional Attenuator - atmosphere side of plant									
Lp @1m from receivers façade	**39**	**38**	**29**	**30**	**17**	**4**	**-11**	**-26**	**29**

Notes

Calculations to the nearest top floor residential window of the property at the rear of Hartland Road

No allowance has been made for any noise/vibration transfer through floor/structure in the above calculations

Vibration isolation will be required for the new plant

CONABEARE ACOUSTICS LTD CALCULATION SHEET - Calc 8

CLIENT: **Technical Services Ltd**	PROJECT: **"Q" 29-33 Chalk Farm Road, NW1**								
	DATE: **11/10/2013**								
Fresh air AHU	Conabeare Acoustics ref:								
	Octave Band Centre Frequency (Hz								
Description	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**dB(A)**
LOCATION 'A' ASSESSMENT									
Hushon ref PW/15425 22/08/13 Lw	75	81	78	75	73	71	69	66	79
G4 Pleated panel filter	-1	-3	-4	-4	-5	-7	-9	-10	
1000 Mitre Bend	0	-5	-8	-4	-3	-3	-3	-3	
1000 x 1500 end reflection	-4	-1	0	0	0	0	0	0	
150 degrees directivity	-5	-9	-18	-24	-30	-33	-33	-33	
Distance 22.9m to nearest window	-38	-38	-38	-38	-38	-38	-38	-38	
Additional surface reflections	6	6	6	6	6	6	6	6	
Screening via building 1.152m	-11	-13	-15	-18	-21	-24	-28	-30	
Façade Correction	3	3	3	3	3	3	3	3	
Lp @1m from receivers façade	**25**	**21**	**4**	**-4**	**-15**	**-25**	**-33**	**-39**	**7**

Additional Attenuator - atmosphere side of plant									
Lp @1m from receivers façade	**25**	**21**	**4**	**-4**	**-15**	**-25**	**-33**	**-39**	**7**

Notes

Calculations to the nearest top floor residential window of the property at the rear of Hartland Road

No allowance has been made for any noise/vibration transfer through floor/structure in the above calculations

Vibration isolation will be required for the new plant

CONABEARE ACOUSTICS LTD CALCULATION SHEET - Summary Sheet

CLIENT: **Technical Services Ltd**	PROJECT: **"Q" 29-33 Chalk Farm Road, NW1**								
	DATE: **11/10/2013**								
	Conabeare Acoustics ref:								
	Octave Band Centre Frequency (Hz								
Description	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**dB(A)**
LOCATION 'A' ASSESSMENT									
Calculation sheet 1	36	33	24	20	11	5	-3	-13	22
Calculation sheet 2	36	36	30	25	20	13	3	-8	27
Calculation sheet 3	38	38	32	27	22	15	5	-6	29
Calculation sheet 4	36	32	24	20	11	4	-4	-13	22
Calculation sheet 5	38	40	34	28	24	18	8	-6	31
Calculation sheet 6	39	41	35	29	25	18	9	-4	32
Calculation sheet 7	39	38	29	30	17	4	-11	-26	29
Calculation sheet 8	25	21	4	-4	-15	-25	-33	-39	7
Lp @1m from receivers façade	**46**	**46**	**40**	**35**	**30**	**23**	**14**	**9**	**37**

Notes

Calculations to the nearest top floor residential windows of the property at the rear of Hartland Road

No allowance has been made for any noise/vibration transfer through floor/structure in the above calculations

Vibration isolation will be required for the new plant