Graham Powell Consultants
Building Services and Environmental Engineering Consultants

Mr.Henry Courtier
Pegasus Group
23 Hanover Square
London
W1S 1JB

17th December 2014

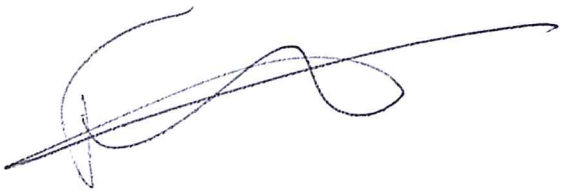
Our ref: 14100.7/KG/dk

Dear Henry

Please find enclosed/attached Environmental Noise Survey at 74 Charlotte Street, London, W1T 4QH.

The 24 hour survey was undertaken to obtain statistical noise data and to establish the background noise levels at the site. The survey data has been used, in accordance with relevant British Standards, Camden Council's development policies and codes of good design practice to set noise rating levels at the closest premises and establish noise design criteria the development will need to achieve.

Yours Sincerely



K. Gkortsopoulos

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GRAHAM POWELL CONSULTANTS

BUILDING SERVICES AND ENVIRONMENTAL
ENGINEERING CONSULTANTS

ACOUSTIC CONSULTANCY REPORT

Environmental Noise Survey
at
74 Charlotte Street, London, W1T 4QH

PREPARED FOR

KCB GEOTECHNICS SND BHD

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CONTENTS

1.0 INTRODUCTION

New air conditioning and ventilation plant is to be installed at 74 Charlotte Street, London, W1T 4QH to serve the new mixed use development. The proposed plant will be installed externally as indicated on the relevant Architect's layouts.

An environmental noise survey was undertaken to obtain statistical noise data and to establish the background noise levels at the site. This information will be used in accordance with relevant British Standards and codes of good design practice to set noise rating levels at the closest premises.

It is assumed, for the purpose of this report, that the operational period of the mechanical plant equipment will potentially be 24 hours. There are no restrictions on operating hours for the existing plant serving the building.

The assessment of the survey data will take into consideration the guidance, principles and recommendations contained in the following documents:

BS 4142:1997	"Method for rating industrial noise affecting mixed industrial and residential areas"
BS 8233:1999	"Sound insulation and noise reduction for buildings"

2.0 SITE DESCRIPTION

74 Charlotte Street is a terraced property comprising basement, ground and three upper floors. The basement, ground floor and 1st floor were a restaurant and nightclub. The 2nd floor comprises offices and back of house associated with the restaurant/nightclub. The 3rd floor is a residential flat.

The property fronts onto Charlotte Street, a busy street with a high density of road traffic, shops and restaurants.

The basement, ground and 1st floor extend to the rear of the property onto Charlotte Mews, a less busy street of offices and residential units.

Existing air conditioning condensing units and ventilation plant is located on the 1st floor roof to the rear of the property. Similar plant and equipment is located on the roofs of the adjacent and surrounding buildings at 1st and 2nd floor levels.

An existing kitchen extract duct rises up the rear facade past the 2nd and 3rd floors and discharges at roof level.

The proposed works at the site is to create a commercial unit on basement and ground floor levels and 5 No residential units on the floors above.

The proposed external plant is to be situated on the 2nd floor roof at the rear of the building as indicated on drawing PL005 (Appendix A)

Ventilation plant intake points are proposed for ground floor rear and at 1st floor roof level (Drawing PL010 Appendix A). Extract ventilation discharge is proposed at roof level. (Drawing PL008 Appendix A).

The nearest noise sensitive dwellings will be the new residential flats that form part of the development. The nearest existing noise sensitive buildings are judged to be on Charlotte Mews.

Other noise sensitive residential and commercial facades in the vicinity were considered to be at a greater distance and are not considered further.

3.0 LOCAL NOISE CLIMATE

3.1 ROAD TRAFFIC

At the measuring positions, noise from road traffic was deemed as usual city centre background traffic noise and was observed throughout the survey. The road traffic noise essentially comprised two components, continuous traffic rumble, and discrete event type emissions due mainly to heavy goods traffic, the latter being observed throughout the duration of the survey.

3.2 RAIL TRAFFIC NOISE

There was no perceptible noise from Rail Traffic or noise and vibration from the Underground Rail System, anywhere around the site.

3.3 AIRCRAFT NOISE

Aircraft over flights were not observed during the attended period of the survey. Their possible contribution to the background and ambient noise climate is considered minimal.

3.4 EXISTING MECHANICAL AND BUILDING SERVICES PLANT NOISE SOURCES

The measurement position for the survey was chosen so that any effect due to mechanical noise sources upon the background noise levels was minimal.

The existing air conditioning heat pump plant on the 1st floor roof was enabled during the survey to maintain background heating to the building, but by its nature the operation of the external plant is intermittent. The measuring position was selected to minimise the impact of the plant noise.

Roof-mounted plant on the adjacent properties also appeared to be operating during the survey but again its impact was minimised by the selection of the measuring position

In addition sound measurements were taken at two locations to record the existing plant noise during plant operation. Plant noise was the dominant noise at both of these locations the noise levels that were recorded are considered to be representative throughout the operation of the plant.

The plant noise was measured at the following positions:

a) In Charlotte Mews, 1 metre from the basement weather louvre serving the bar cellar. The bar cellar contains extract plant and cellar cooling plant.

b) At 3rd floor level rear 1 metre from the centre pane of the residential window nearest to the kitchen extract fan with the extract fan operating.

4.0 MEASURING EQUIPMENT

Sound pressure level measurements were obtained using the following instrumentation complying with the Type 1 specification of IEC 651:1979 Amend.1 and IEC 804:1985 Amend.2:

CASELLA CEL Type 63X Sound Level Meter, – Manufacturers Serial No. 3011107

Date of Last Full Calibration: 02/02/2012

Certificate Number: STD43302

Calibration checks prior to and after completion of each measurement run were made with a B&K 4226 Calibrator (Lab0174), complying with IEC 942:1988 Class 1L, Serial No 1551580 Certificate Number C1009558.

Calibration level 114 dB $^{+}$/- 0.3 dB @ 1kHz.

All instrumentation carried current BSRIA conformity certification traceable to National Standards.

5.0 MEASUREMENTS

The sound level meter was mounted on a tripod and a windshield was fitted. The selected measuring position, Position A, was 1 metre from the facade of the nearest noise sensitive dwelling at the 3rd floor rear of the site.

This position is considered representative of the background noise at the rear of the building and is applicable to other dwellings and occupied buildings adjacent to the property.

Statistical broadband measurements were made from approximately 16:00 pm on the 9th February 2012 to 14:00 pm on 10th February 2012.

The measurements from approximately 01:00 am were corrupted. Measurements will be retaken for the full night time period and this report will be amended accordingly.

The measurement period and profile is considered suitable for establishing the occurrence of the lowest background noise level for the daytime period.

The night time readings can be used for a preliminary consideration only of the occurrence of lowest background levels for the night time periods. Experience from other surveys in similar London locations suggest that the lowest background levels normally occurs during the period between 1 am and 4 am.

Measurements of the percentile level $L_{A90,T}$ were made with a measurement time interval T_m = 5minutes.

These results are shown in Appendix B, 10.2.

Plant noise measurements of the equivalent continuous sound level $L_{Aeq,T}$ were taken at two further locations to record the existing plant noise while the plant was operating.

Position B: Charlotte Mews. 1m metre from centre of weather louvre. meter mounted on tripod at 1.2 metres above ground.

Position C: 1m from centre pane of 3rd floor window. 1.5 metres from the extract duct. Kitchen extract fan running.

The weather conditions during the survey were very cold. Snow fell and settled during the night. Wind speeds were judged to be within the acoustical limits of the microphones' windshield.

The statistical data shown in Appendix B are defined as follows:

$L_{Aeq,T}$ The A-weighted equivalent continuous noise level for the duration of the measurement time interval, T.

$L_{A90,T}$ The A-weighted sound pressure level exceeded for 90% of the measurement time interval, T.

6.0 RESULTS

The full set of measurement results is given in Appendix B 10.2. The lowest daytime and night time background levels L_{A90} are summarised below:

Table 1: Lowest measured background levels

Reference	Measurement Location	Daytime $L_{A90\ (07.00\text{-}23.00)}$	Night $L_{A90\ (23.00\text{-}07.00)}$
A	Rear 3rd floor 1m from centre pane of residential window	**48 dB**	**46 dB**

Table 2: Plant Noise

Reference	Measurement Location	L_{Amin}
B	Charlotte Mews 1 m from louvre	**66.1 dB**
C	Rear 3rd floor 1m from centre pane of residential window with kitchen extract fan running	**57.4 dB**

7.0 EVALUATION OF CRITERIA

Although the area within which the site is set contains residential and commercial developments, it is considered that the adjacent residential dwellings will constitute the most sensitive premises.

7.1 RESIDENTIAL DESIGN CRITERIA

7.1.1 BS 4142 : 1997

BS 4142: 1997 "Method for rating industrial noise affecting mixed residential and industrial areas" describes a method for determining the level of noise of an industrial nature, together with procedures for assessing whether the noise in question is likely to give rise to complaints from persons living in the vicinity. In general, the likelihood of complaint in response to a noise depends upon factors including the margin by which it exceeds the background noise level. The standard states that *"a difference of around 5dB is of marginal significance"*.

7.1.2 CAMDEN DEVELOPMENT POLICIES

Camden Development Policy DP28 Table E provides guidance for the noise from plant and machinery. Table E is reproduced below.

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	55dB$L_{Aeq'}$

Since plant noise may be expected to be intermittent and could contain distinguishable tones the rating level of noise caused by fixed plant needs to be 10dB below the broadband $\mathbf{L_{A90,T}}$ background level

Therefore the rating level shall be:

Rating Level = $L_{A90,T}$ - 10 dB

8.0 TARGET DESIGN NOISE LIMITS

In order to limit the increase in the background noise level due to the new external plant to no more than 10 dBA below the existing background levels a rating level ($L_{Ar,T}$) is applied at 1.0 metre external to the windows of the nearest affected buildings. The actual design rating levels to be adopted for this project are set out in Table 3.

Table 3 Recommended design rating levels, $L_{Ar,T}$

Reference	Receiver Premises	Distance from Plant	$L_{Ar,T}$ (07.00-23.00)	$L_{Ar,T}$ (23.00-07.00)*
R1	74 Charlotte Street 2nd Floor Apartment 3 Bedroom	1.5m from acoustic plant screen 3.5m from intake louvre	38 dB	36 dB
R2	74 Charlotte Street 3rd Floor Apartment 5 Bedroom	2.5m above open plant area 6m from intake louvre	38 dB	36 dB
R3	10 Charlotte Mews	15m from roof plant area 8m from ground floor intake louvre	38 dB	36 dB
R4	5 Charlotte Mews	4m from ground floor intake louvre	38 dB	36 dB
R5	4 Charlotte Mews	16 m from roof plant area	38 dB	36 dB
R6	74a Charlotte Street (Rear)	4m from ground floor intake louvre	38 dB	36 dB

Note:

*These are preliminary predictions based on the available data obtained until 01:00 am 10/02/12. Measurements will be retaken for the full night time period and this report will be amended accordingly

The design rating level $L_{Ar,T}$ includes a 5dB acoustic feature allowance for noise that contains a distinguishable, discrete, continuous tone,

distinct impulses or is irregular enough to attract attention at the assessment location.

Predictions for plant noise transmission shall be corrected for multiple source addition, distance, reflections, directivity, and barrier effects where applicable, and must include contributions from all appropriate sources.

Since the design rating level will be below the background noise level at the reference position, it will not be possible to obtain measurements that can be directly compared to the specification. To obtain the necessary evidence of compliance for commissioning purposes, measurements shall be obtained at locations where the specific noise level exceeds the ambient level by at least 10 dB(A). Calculations shall then be applied to the specific noise level measurement to predict the rating level at the exact reference position, for direct comparison with the specification.

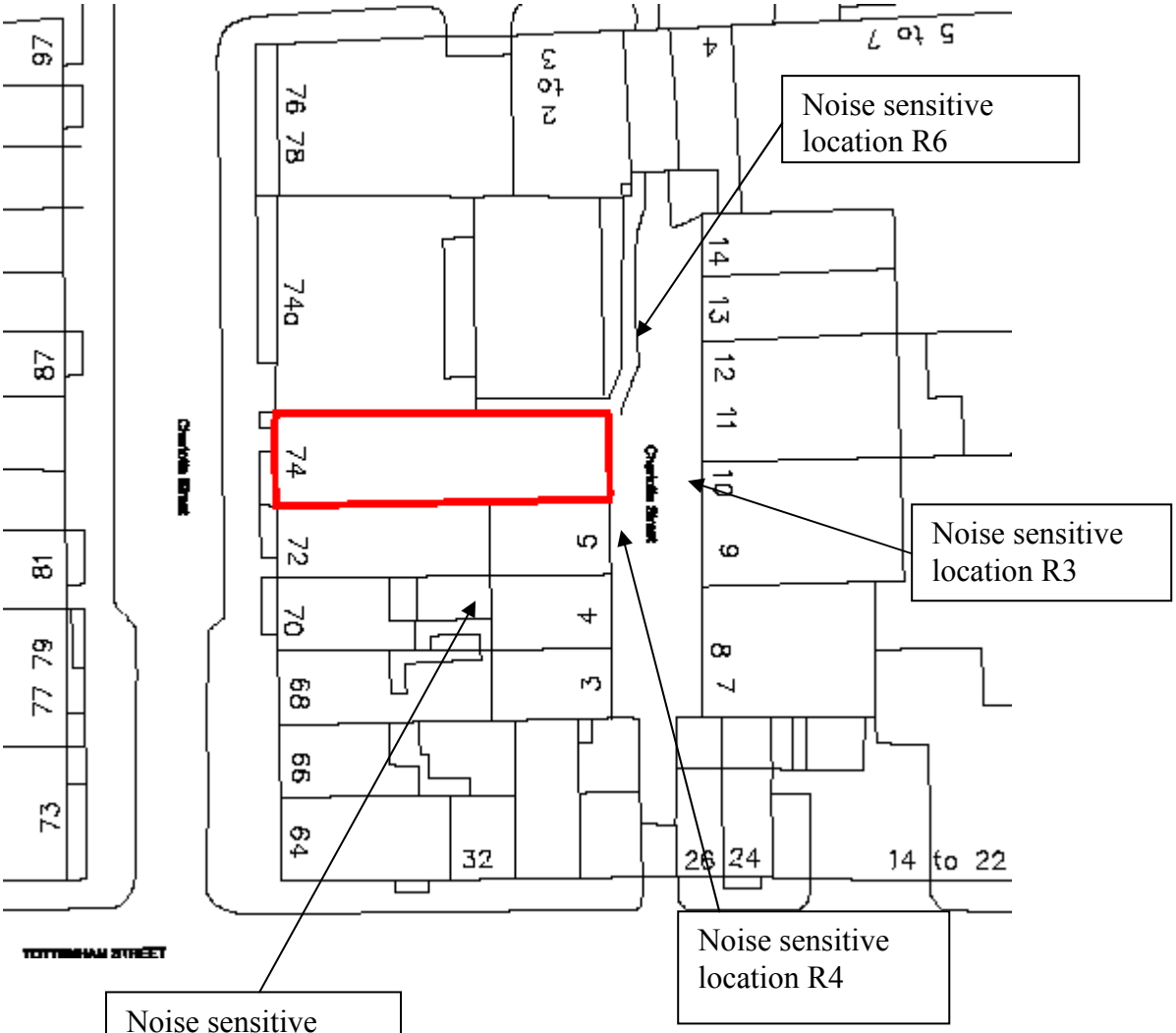
9.0 CONCLUSION AND RECOMMENDATIONS

An environmental noise survey was undertaken in order to establish the existing noise climate in the vicinity of the site. The data obtained has subsequently been used to derive noise design criteria in accordance with appropriate forms of guidance, including the relevant Local Authority Policy. The achievement of the design limits stated in Table 2, will therefore be sufficient in principle to ensure compliance with the relevant codes of good design practice referred to earlier within this report, thereby minimising the risk of justifiable noise complaints from the occupants of neighbouring properties.

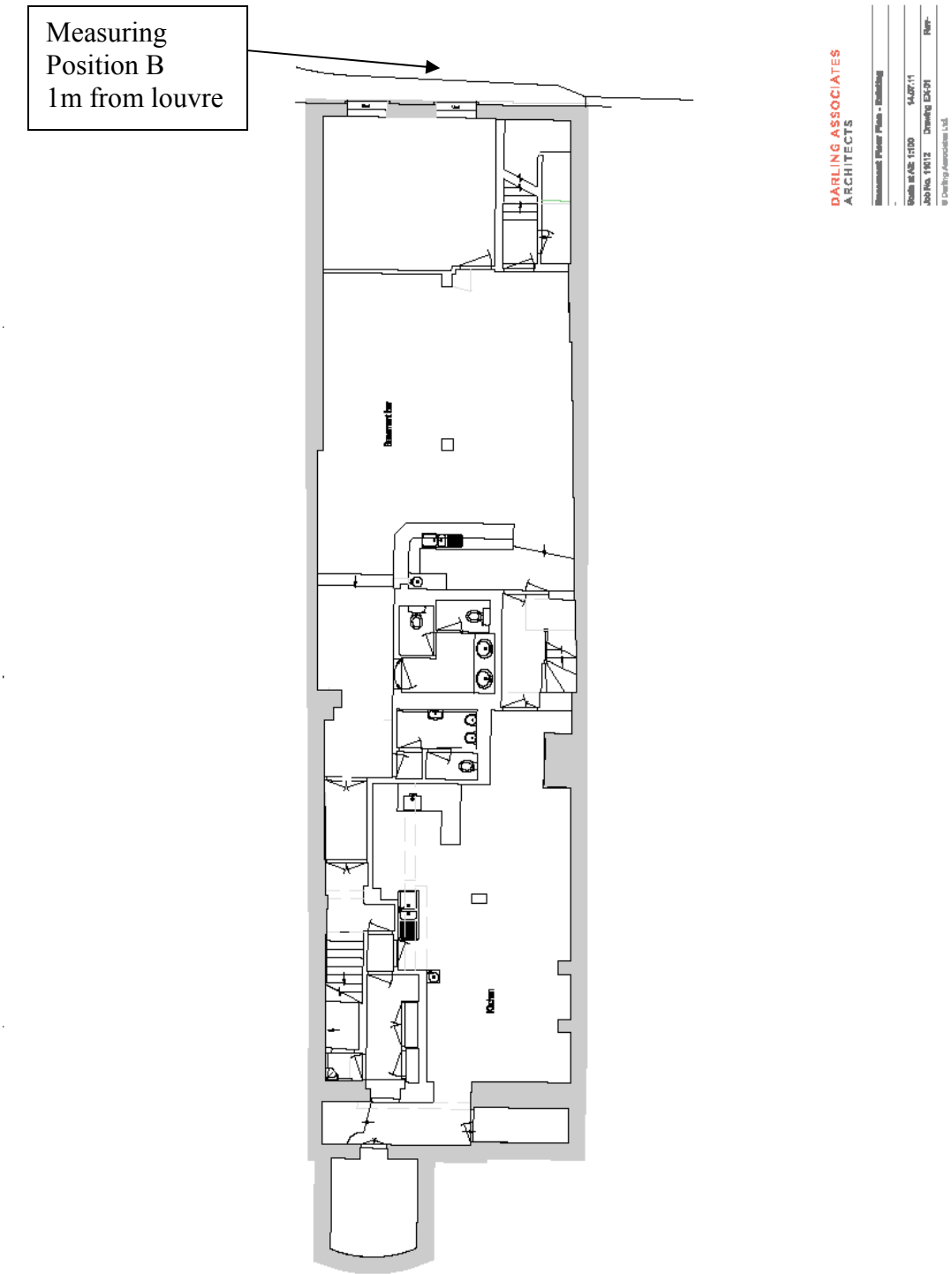
The new equipment proposed will be acoustically treated in order to achieve the recommended design rating levels stated in Table 3.

10.0 APPENDICES

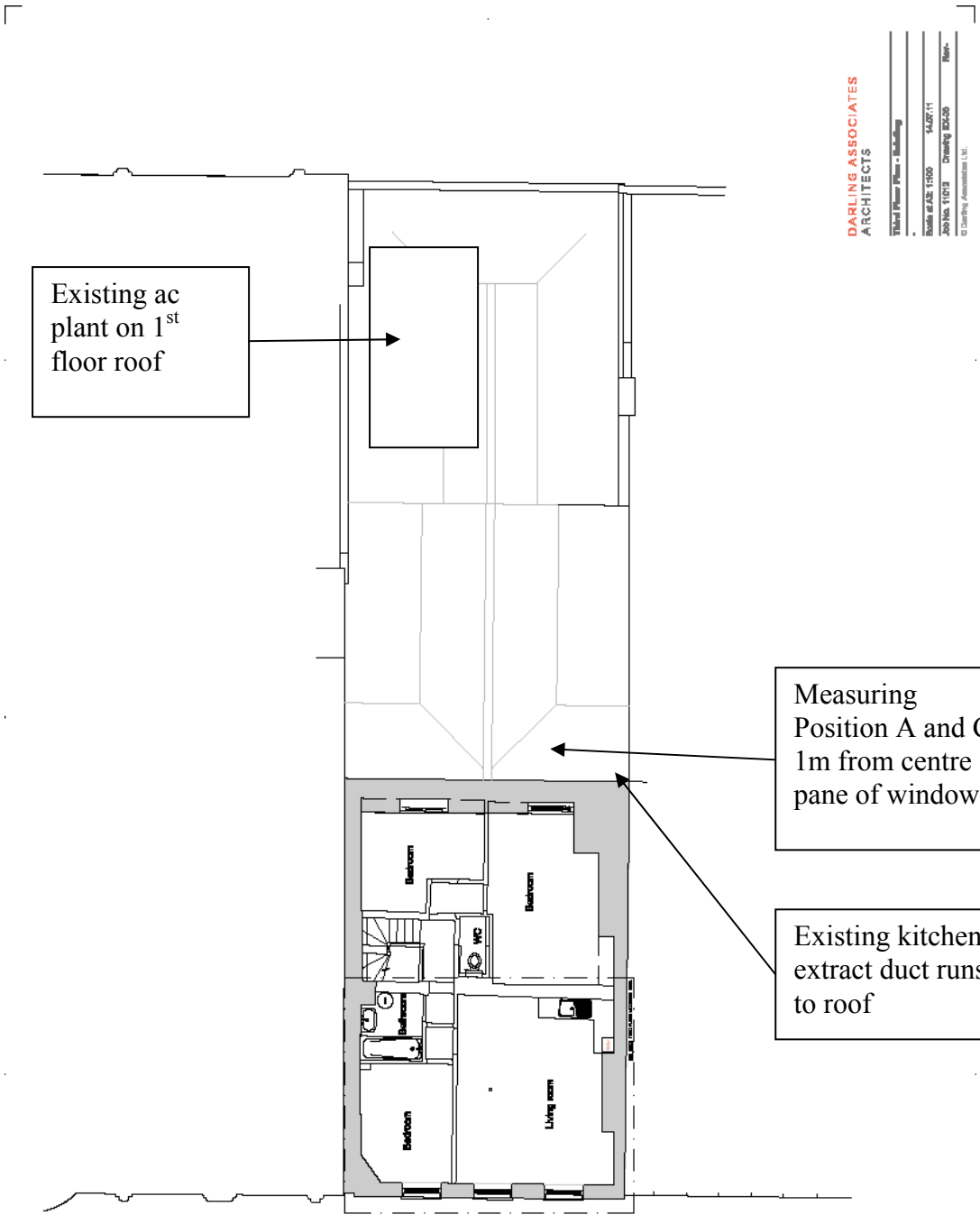
10.1 APPENDIX A – DRAWINGS



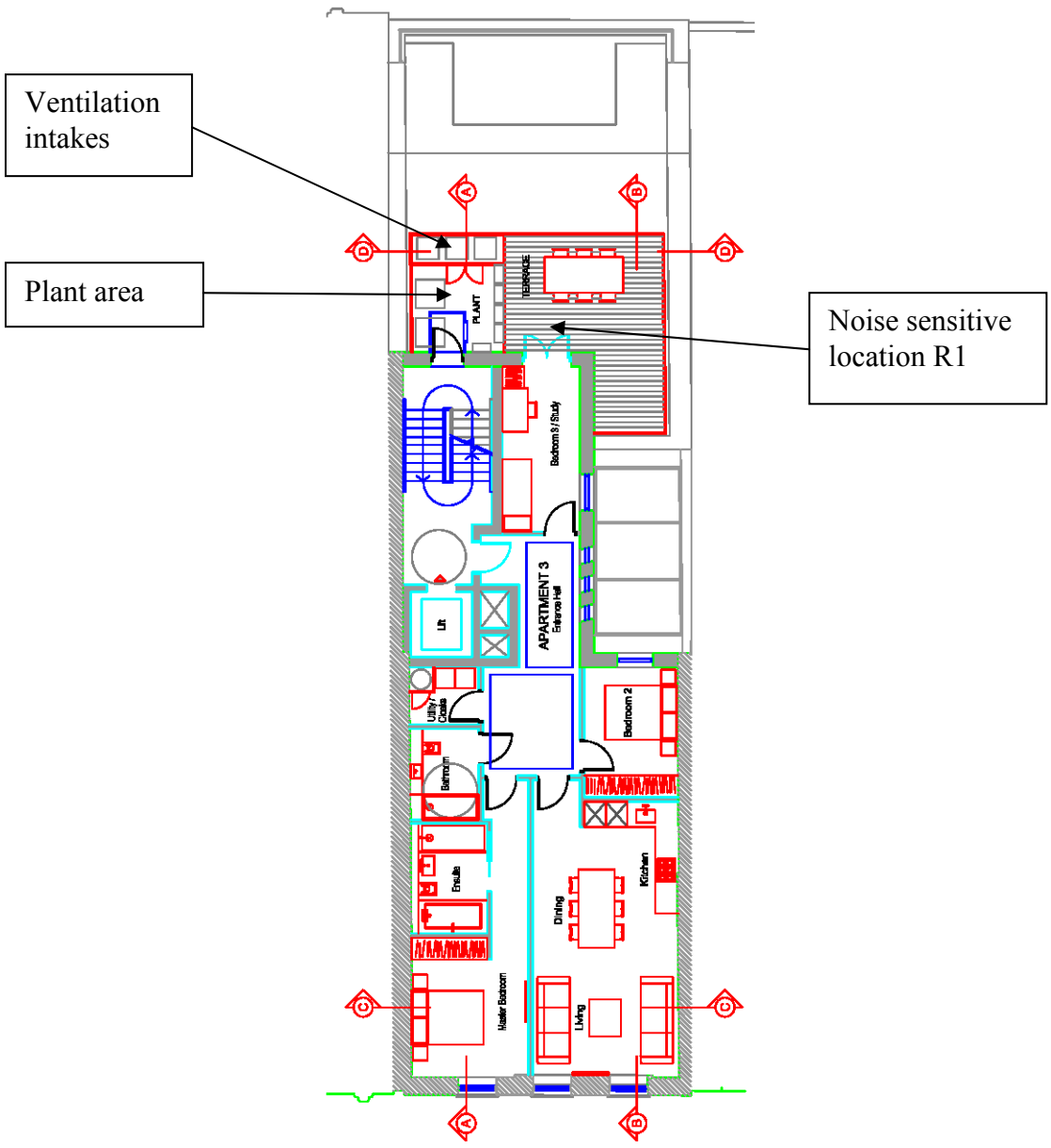
SITE PLAN



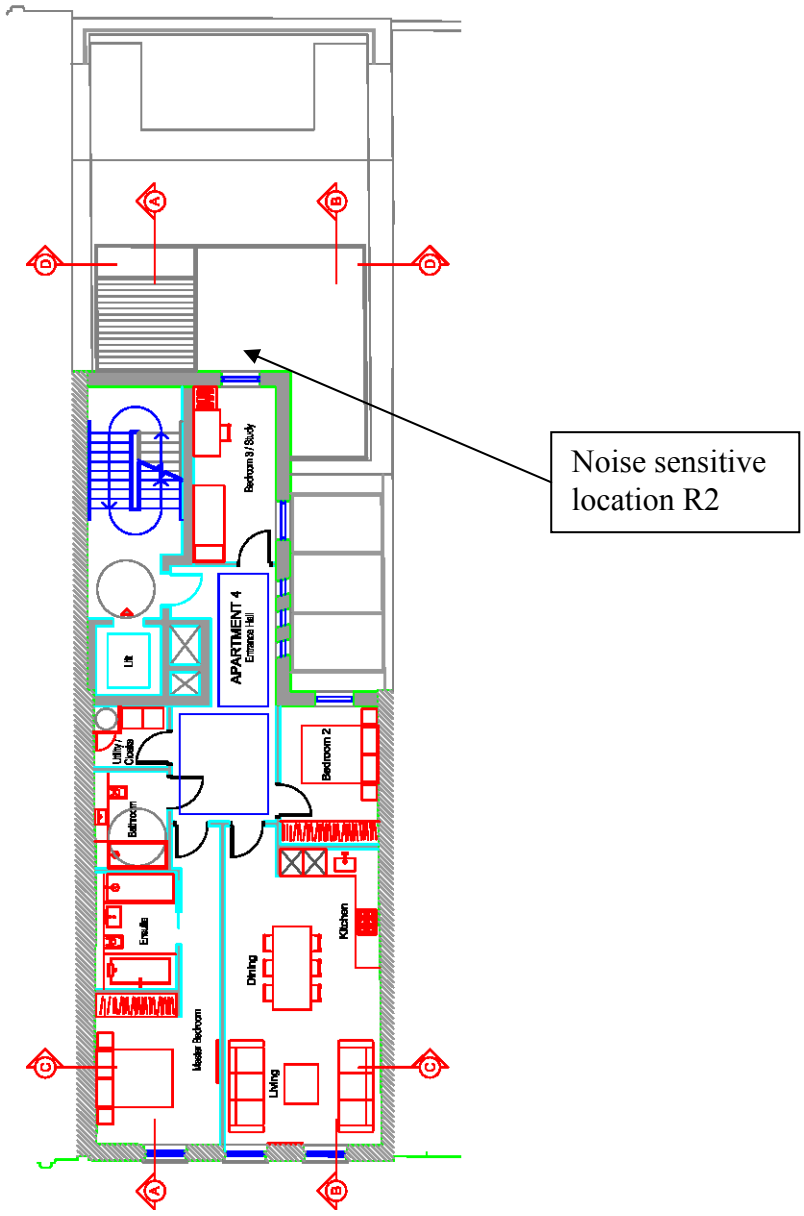
Existing Basement Layout Indicating Measuring Position C



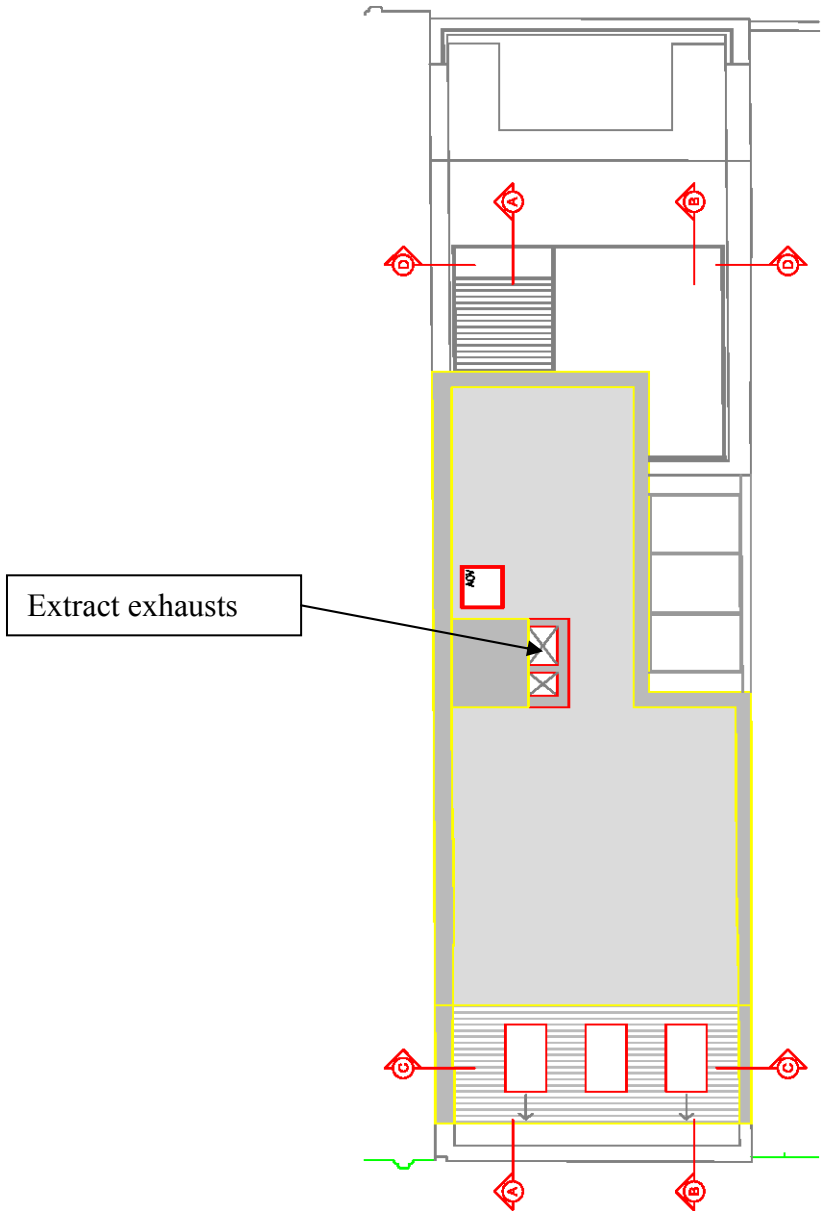
Existing 3rd floor layout indicating measuring position A and C



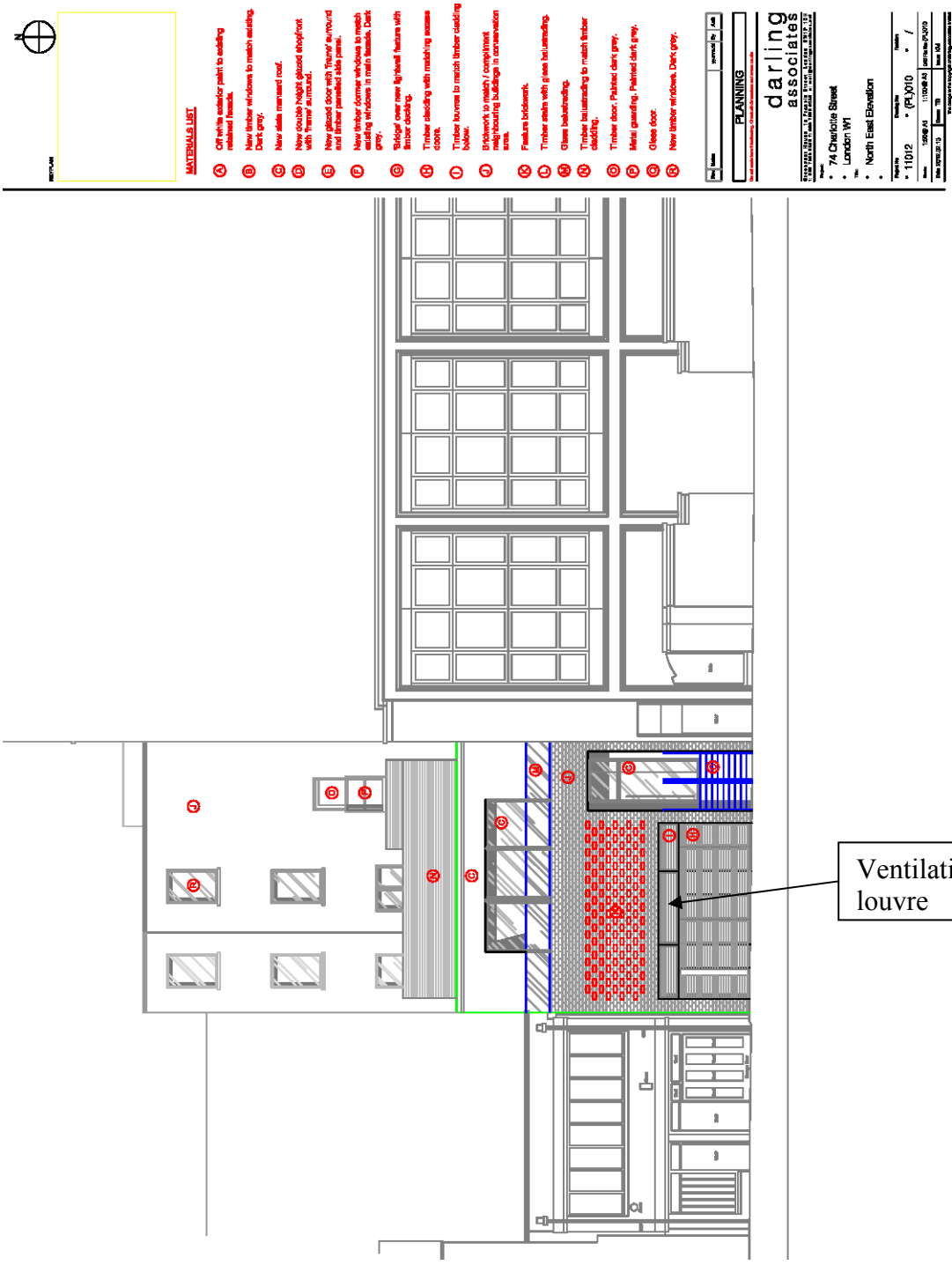
Proposed 2nd Floor layout indicating plant and nearest noise sensitive location



Propose 3rd floor level indicating noise sensitive location



Roof level indicating proposed ventilation exhaust location



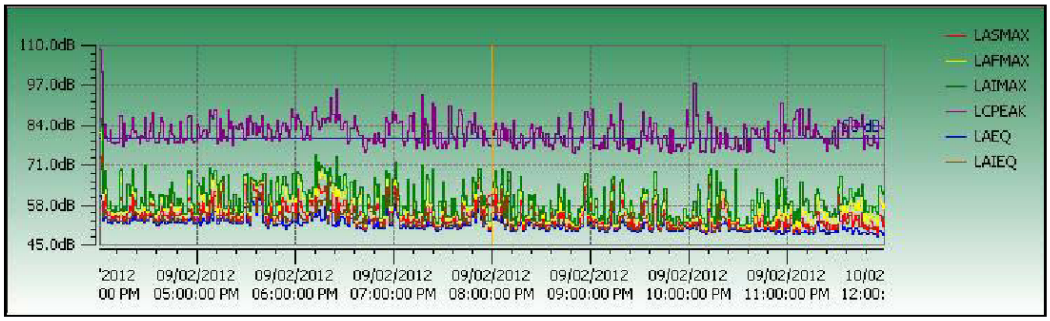
Charlotte Mews elevation

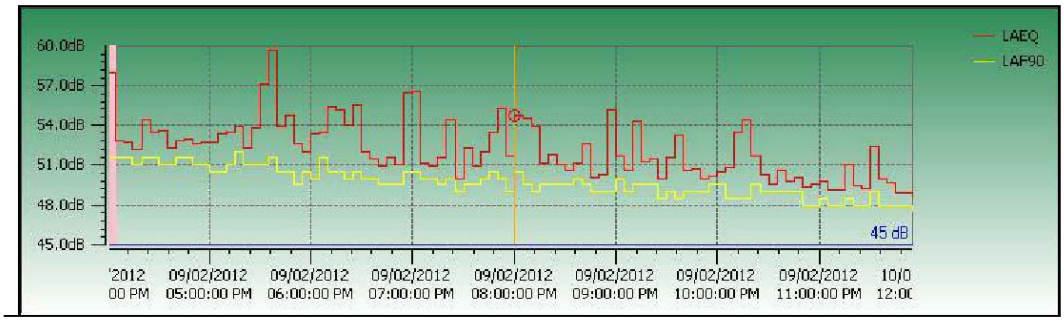
10.2 APPENDIX B MEASUREMENTS

Casella CEL Ltd.

Report On CEL-63X

Instrument Model	**CEL-633C**		
End Date & Time	09/02/2012 23:59:59	Start Date & Time	09/02/2012 16:01:20
Run Number	14	Calibration (Before) Date	09/02/2012 14:32:52
Serial Number	3011107	LAeq	52.7642 dB





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Casella CEL Ltd.

Report On CEL-63X

Instrument Model	**CEL-633C**		
End Date & Time	10/02/2012 13:31:56	Start Date & Time	10/02/2012 00:00:00
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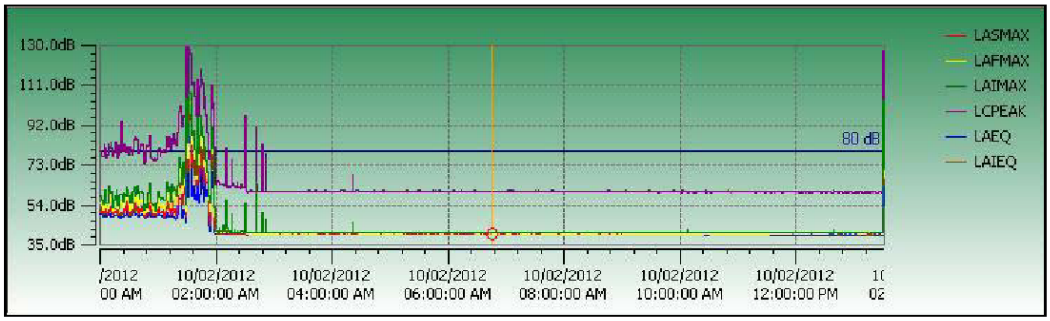
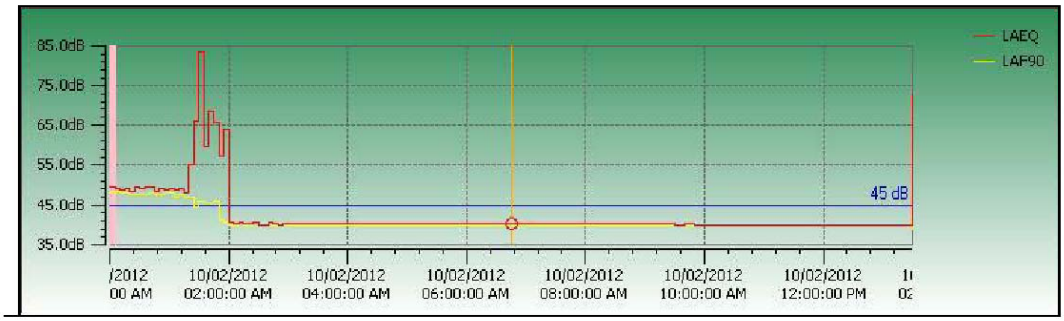
Serial Number	3011107	LAeq	62.0184 dB





Casella CEL Ltd.

Report On CEL-63X

Instrument Model	**CEL-633C**		
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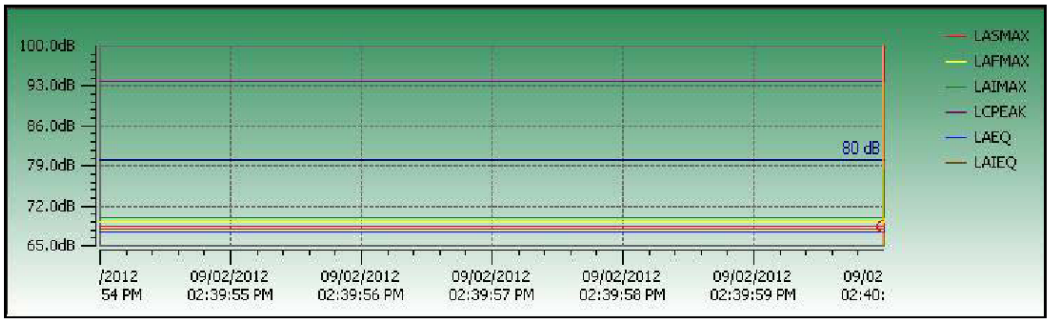
LAFmin with Time	66.1 dB (09/02/2012 14:39:57)	LAeq	71 dB
Run Number	5		



Casella CEL Ltd.

Report On CEL-63X

Instrument Model	**CEL-633C**		
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LAFmin with Time	56.7 dB (09/02/2012 15:33:13)	LAeq	59.9 dB
Run Number	10