

SANDY BROWN

Consultants in Acoustics, Noise & Vibration

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Take-Two Interactive

Planning noise assessment

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Version	Date	Comments	Author	Reviewer
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Summary

Sandy Brown has been commissioned to provide acoustic advice in relation to the Cat B fit-out of 30 Cleveland Street, London, which is to house office accommodation for Take-Two Interactive.

Due to the restrictions and changes to the noise climate as a result of Covid-19, a current noise survey is not considered to be appropriate as external noise levels are atypical. The IoA and ANC have released guidance on acoustic assessments during Covid-19 restrictions, which has been adopted by several London Boroughs. Where a survey would not yield meaningful or representative data, recent relevant assessments in the immediate area should be used.

An environmental noise survey has previously been carried out at 52 Tottenham Street adjacent to the site. Conditions are considered suitably similar.

The noise survey was carried out between 27 February 2019 and 4 March 2019. The representative background sound levels measured during the survey were $L_{A90,15mins}$ 49 dB during the daytime and $L_{A90,15mins}$ 48 dB at night, both measured to the rear of the property, while daytime measurements on Tottenham Street were a minimum of $L_{A90,5mins}$ 52 dB.

Based on the requirements of the London Borough of Camden and on the results of the noise survey, all plant must be designed such that the cumulative noise level at 1 m from the worst affected windows of the nearby noise sensitive premises does not exceed L_{Aeq} 39 dB to the rear, or L_{Aeq} 42 dB to the front during the daytime, and L_{Aeq} 38 dB in all areas during the night.

An assessment of the proposed external plant has been undertaken. The units are to be located externally within the basement lightwells, and a kitchen extract fan is to be installed to the rear. Breakout from the Comms room via the pressure relief damper has also been assessed.

The calculated sound pressure levels at the nearest noise sensitive receptor are L_{Aeq} 42 dB to the west, 38 dB to the north and 38 dB to the south. As such, the plant is expected to comply with the daytime and night-time external plant noise criteria.

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1 Introduction

Sandy Brown has been commissioned to provide acoustic advice in relation to the Cat B fit-out of 30 Cleveland Street, London, which is to house office accommodation for Take-Two Interactive.

Due to the restrictions and changes to the noise climate as a result of Covid-19, a current noise survey is not considered to be appropriate as external noise levels are atypical. The IoA and ANC have released guidance on acoustic assessments during Covid-19 restrictions, which has been adopted by several London Boroughs. Where a survey would not yield meaningful or representative data, recent relevant assessments in the immediate area should be used.

An environmental noise survey was carried out for a previous project on Tottenham Street in 2019, with noise levels expected to be sufficiently similar to the proposed development, and so the results are presented again here.

The key aim of the survey was to establish:

- background sound levels around the site and by nearby noise sensitive premises
- ambient and maximum noise levels at the site.

The background sound levels measured during the survey are used as the basis for setting limits for noise emission from proposed building services plant. These limits are set in accordance with the requirements of the London Borough of Camden.

This report provides details of the noise survey, including measurement results, and provides recommendations.

2 Site description

2.1 The site and its surroundings

The site location in relation to its surroundings is shown highlighted in red in Figure 1. It is located on Cleveland Street and Tottenham Street.



Figure 1 Aerial view of site (courtesy of Google Earth Pro)

2.2 Adjacent premises

The surrounding area is mostly made up of residential, retail and commercial office space. It is understood that the nearest residential premises are the residential units to the west on Cleveland Street, and also to the east on Tottenham Street, highlighted green in Figure 1. The nearest commercial developments are highlighted in yellow.

3 Development proposals

The office accommodation, when fitted out, is to include meeting rooms, cellular & open plan offices, demo/streaming rooms, wellness facilities, a gym & fitness studio together with breakout and other ancillary spaces.

3.1 Hours of operation

Plant is expected to operate at normal duty during normal business hours (09:00-18:00), with a setback at night.

3.2 Potential noise sources

The potential noise sources associated with the scheme consist of external plant located within the front lightwells, and a kitchen extract fan located on the east facade. Noise breakout from the comms room via the pressure relief damper has also been assessed.

The potential impact of these items of plant has been assessed and mitigation measures have been proposed to minimise impact on existing noise sensitive premises around the development.

4 Noise survey

4.1 Method

The survey included unattended and attended noise measurements.

4.1.1 *Unattended noise measurements*

Unattended noise monitoring was undertaken at the site over 4 days.

Details of the equipment used and the noise indices measured are provided in Appendix A.

The unattended measurements were taken over 15 minute periods between 10:45 on 27 February 2019 and 14:15 on 4 March 2019. The equipment was installed and collected by Ruairidh Carpenter.

The measurement position used during the survey is indicated in Figure 1, denoted by the letter 'L'. A photograph showing the measurement location is provided in Figure 2. This location was chosen to be reasonably representative of noise levels at the site and outside the nearest noise sensitive premises to the north of the development.

The microphone was positioned 1.5 m from the floor of the Ground floor roof terrace to the rear of the property and approximately 3 m from the nearest reflective surface. The noise levels at the measurement position are free field values.

4.1.2 *Attended noise measurements*

Attended sample measurements were taken by Ruairidh Carpenter at a location to the front of the site. This is indicated in Figure 1 as position 'A'. The attended measurements were carried out on 27 February 2019, over 5-minute periods. A photograph showing the measurement position is given in Figure 2.

At each position the microphone was mounted on a tripod approximately 1.5 m above the ground level and 1 m from the facade. Details of the equipment used and the noise indices measured are provided in Appendix A.



Figure 2 Photographs showing the unattended (left) and attended (right) measurement positions

4.2 Weather conditions

The weather conditions during the survey are described in Appendix A. The conditions during the monitoring are considered suitable for obtaining representative measurements.

4.3 Observations

The dominant noise sources observed at the site during the survey were construction noise from adjacent developments, traffic and plant noise.

Less significant noise sources included occasional aircraft and pedestrian noise.

4.4 Results

4.4.1 Unattended noise measurement

A graph showing the results of the unattended measurements is provided in Appendix B.

Day and night-time ambient noise levels measured during the unattended survey are presented in Table 1.

Table 1 Ambient noise levels measured during the unattended survey

Date	Daytime (07:00 – 23:00) $L_{Aeq,16h}$ (dB)	Night (23:00 – 07:00) $L_{Aeq,8h}$ (dB)
Wednesday 27 February 2019	-	49
Thursday 28 February 2019	58	49
Friday 1 March 2019	61	49
Saturday 2 March 2019	59	50
Sunday 3 March 2019	52	51
Average	58	50

In line with BS 4142:2014, representative background sound levels have been determined using statistical analysis of the continuous measurements.

Daytime and night time statistical analysis of representative values for the site are given in Figure 3 and Figure 4.

From this analysis, the representative background sound levels measured during the survey were $L_{A90,15min}$ 49 dB during the daytime and $L_{A90,15min}$ 48 dB at night.

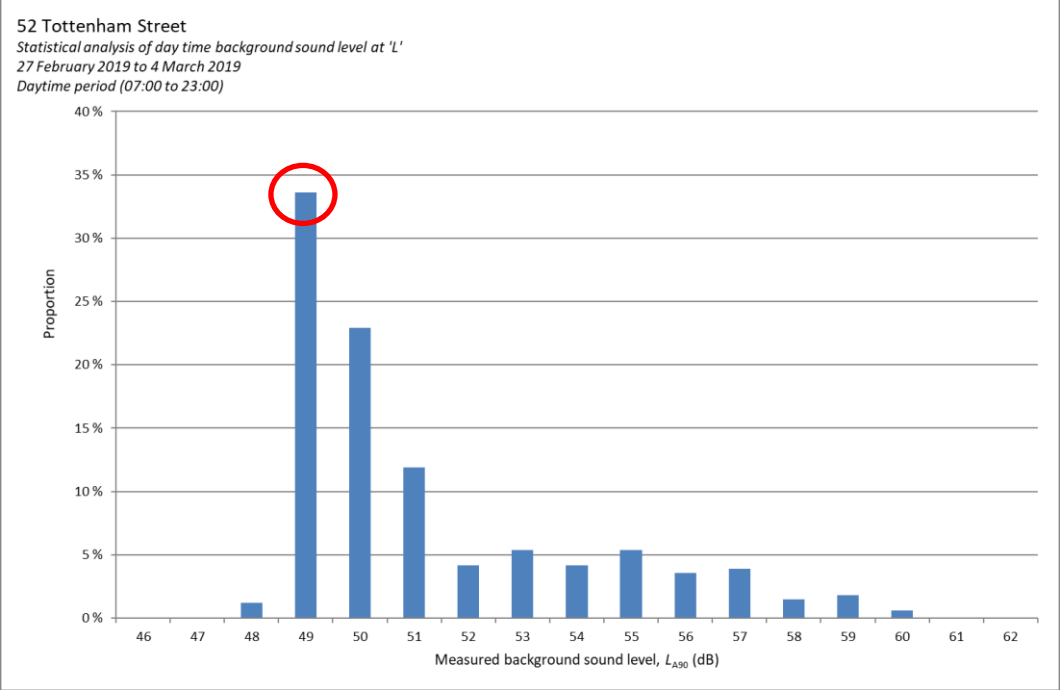


Figure 3 Statistical analysis of daytime background noise level

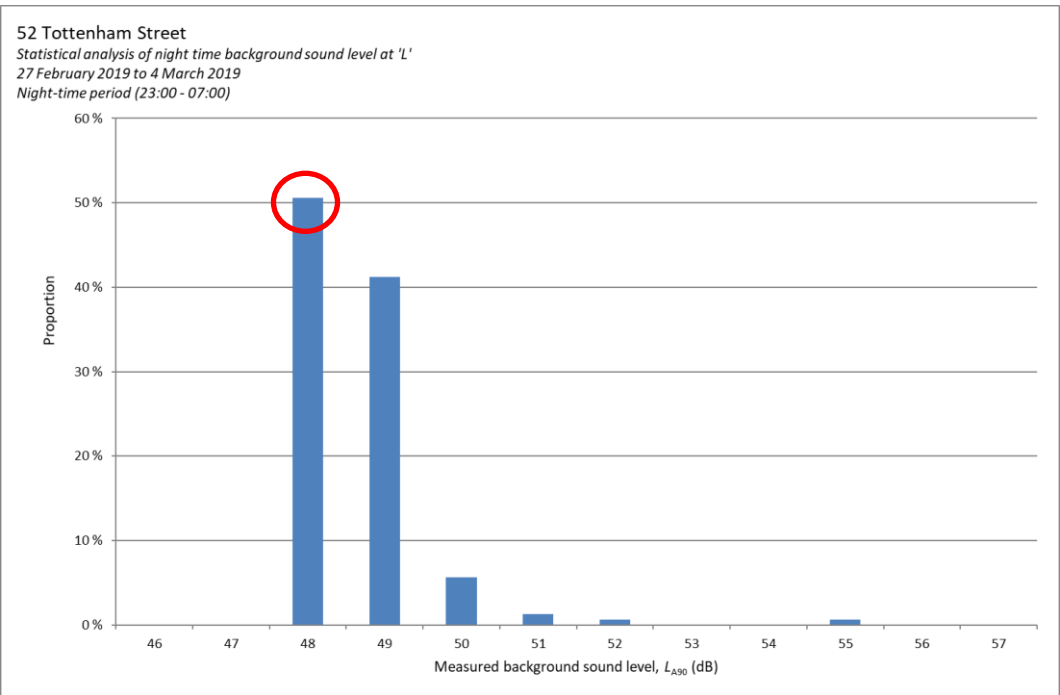


Figure 4 Statistical analysis of night-time background noise level

4.4.2 Attended noise measurement

Noise levels and key sources recorded during the attended measurements are summarised in Table 2. Measurements made at this position are considered facade noise levels.

During the attended measurement survey loading activities were occurring at the adjacent construction site. Measurements made during the period whilst noisy activity was occurring have not been included in Table 2.

Table 2 Noise levels and key noise sources from attended measurements at Position 'A'

Start time	Sound pressure levels (dB)		
	$L_{Aeq,5min}$	$L_{AFmax,5min}$	$L_{A90,5min}$
10:35	58	73	52
10:40	62	74	54
10:45	60	77	55
11:00	63	80	54
11:15	61	78	56
11:20	62	75	56

5 Criteria

5.1 NPPF and NPSE

The National Planning Policy Framework, February 2019 (NPPF) sets out the UK government's planning policies for England. It supersedes previous guidance notes such as PPG24. No specific noise criteria are set out in the NPPF, or in the Noise Policy Statement for England (NPSE) to which it refers.

The NPPF states:

'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life.*

- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.'*

and

'Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.'

The NPSE states that its aims are as follows:

'Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *Avoid significant adverse impacts on health and quality of life*
- *Mitigate and minimise adverse impacts on health and quality of life and*
- *Where possible, contribute to the improvement of health and quality of life.'*

As such, neither document sets out specific acoustic criteria for new residential developments, but they require consideration of the effect of existing noise on the new development and the effect of noise from the development on the surroundings.

5.2 Noise egress

5.2.1 Standard guidance

BS 4142:2014 *Methods for rating and assessing industrial and commercial sound* provides a method for assessing noise from items such as building services plant against the existing background sound levels at the nearest noise sensitive premises.

BS 4142 suggests that if the noise level is 10 dB or more higher than the existing background sound level, it is likely to be an indication of a significant adverse impact. If the level is 5 dB above the existing background sound level, it is likely to be an indication of an adverse impact. If the level does not exceed the background level, it is an indication of having a low impact.

If the noise contains 'attention catching features' such as tones, bangs etc, a penalty, based on the type and impact of those features, is applied.

5.2.2 Local Authority criteria

In relation to noise egress from industrial and commercial noise sources, London Borough of Camden's local plan (June 2017) states:

'Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 'Methods for rating and assessing industrial and commercial sound' (BS 4142) will be used. For such cases a 'Rating Level' of 10 dB below background (15 dB if tonal components are present) should be considered as design criterion.'

Based on the extract from Camden Local Plan, all external plant must be such that the cumulative noise 1 m away from the windows of the nearest noise sensitive receptors is 10 dB below the representative measured background level ($L_{A90, 15 \text{ min}}$).

6 Plant noise

6.1 Basic limits

Based on Camden Council's criteria set out in Section 5.2.2, and the results of the measurements, the cumulative noise level from the operation of all new plant should not exceed the limits set out in Table 3.

The limits apply at 1 m from the worst affected windows of the nearest noise sensitive premises and are presented as facade levels. In this case these limits would apply at the nearest noise sensitive premises, indicated in Figure 1.

Table 3 Plant noise limits at 1 m from the nearest noise sensitive premises

Time of day	Maximum sound pressure level at 1 m from noise sensitive premises, $L_{Aeq,15\text{min}}$ (dB)
Daytime (07:00-23:00)	39 (Rear), 42 (Front)
Night-time (23:00-07:00)	38

The limits set out in Table 3 do not include any attention catching features, which would incur a 5 dB penalty.

6.2 Proposed mechanical services strategy

All plant is proposed to be located in basement plant rooms with open grilles to the street above.

Two condensers are proposed to provide comms room cooling. There are also two AHUs providing ventilation, with supplementary condensers to provide temperature control.

6.3 Assessment

All building services plant will be designed to achieve the noise limits set out above.

An assessment of the externally located plant has been undertaken. The location of these units are shown in Figure 5 to Figure 7, highlighted in yellow. The nearest noise sensitive receptors are the residential units located west of the site at 25 Cleveland Street at a distance of 10 m from the floor-level grilles as indicated in Figure 1, and the residential units on Tottenham Street directly adjacent to the building to the south-east, located 10 m from the kitchen extract louvre.

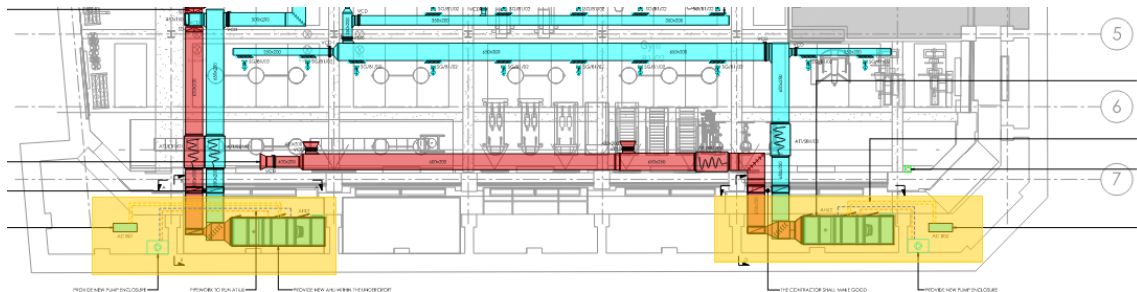


Figure 5 Drawings indicating proposed plant locations

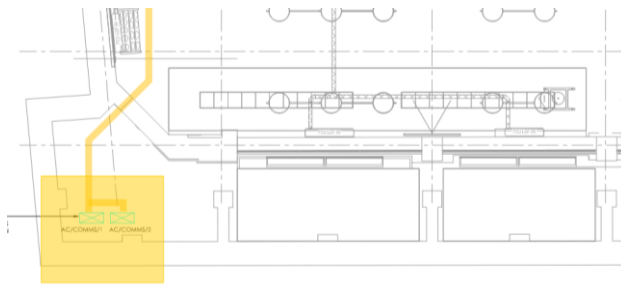


Figure 6 Drawings indicating comms cooling condenser location

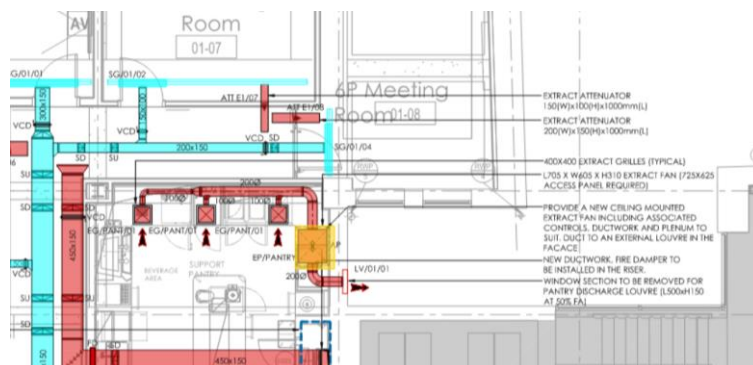


Figure 7 Drawing indicating kitchen extract fan location

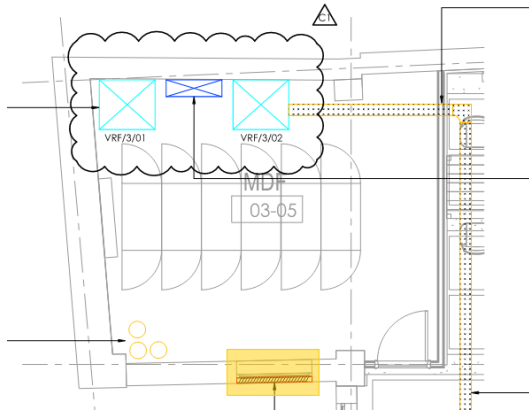


Figure 8 Drawing indicating location of pressure relief damper connected to comms room

The following noise data for each plant item has been used for the assessment:

- AHU L_{WA} 78 dB
- Comms condensers L_{Aeq} 47 dB at 1 m
- Ventilation condensers L_{Aeq} 59 dB at 1 m
- Kitchen extract fan L_{WA} 66 dB
- CRAC units L_{WA} 82 dB

The distance between the unit and the noise sensitive receptor to the west is 10 m, and line of sight screening is provided by the basement light well.

The calculated sound pressure level at the facade of the nearest noise sensitive receptor to the west is L_{Aeq} 42 dB.

The distance between the kitchen extract fan and the noise sensitive receptor to the south-east is 10 m, with no screening provided.

The calculated sound pressure level due to the kitchen extract fan at the facade of the nearest residential noise sensitive receptor to the south east is L_{Aeq} 38 dB.

The distance between the pressure relief damper and the noise sensitive receptor to the north is 3 m, with no screening provided.

The calculated sound pressure level at the facade of the nearest noise sensitive receptor to the north is L_{Aeq} 38 dB.

The plant is expected to comply with the daytime external plant noise limits.

The night-time limits are expected to be met with a setback in duty.

7 Conclusion

The representative background sound levels during the day were $L_{A90,15min}$ 49 dB to the rear, $L_{A90,5min}$ 52 dB to the front, and $L_{A90,15min}$ 48 dB during the night.

Based on the requirements of the Local Authority, the relevant plant noise limits at the worst affected existing noise sensitive premises are L_{Aeq} 39 dB to the rear of the building, and L_{Aeq} 42 dB to the front of the building during the day, and L_{Aeq} 38 dB during the night.

These limits are cumulative and apply with all plant operating under normal conditions. If plant items contain tonal or attention catching features, the limits will be 5 dB more stringent.

An assessment of the proposed external plant items associated with the development has been carried out.

The proposed plant strategy is expected to be suitable to achieve the plant noise limits.

Appendix A

Survey details

Equipment

The unattended and attended noise measurements were taken using a Rion NL-32 sound level meter and a Rion NL-52 sound level meter, respectively.

Calibration details for the equipment used during the survey are provided in Table A1.

Table A1 Equipment calibration data

Equipment description	Type/serial number	Manufacturer	Calibration expiry	Calibration certification number
Sound level meter	NL-52/00375679	Rion	6 Jul 19	TCRT17/1440
Microphone	UC-59/11168	Rion	6 Jul 19	TCRT17/1440
Pre-amp	NH-25/65806	Rion	6 Jul 19	TCRT17/1440
Calibrator	SV30A/10576	Svan	3 Jul 19	TCRT17/1418
Sound level meter	NL-32/00623761	Rion	06 Oct 19	TCRT17/1654
Microphone	UC-53A/319233	Rion	06 Oct 19	TCRT17/1654
Pre-amp	NH-21/36669	Rion	06 Oct 19	TCRT17/1654
Calibrator	NC-74/34536129	Rion	05 Oct 19	TCRT17/1650

Calibration of the meters used for the measurements is traceable to national standards. Calibration certificates for the sound level meters used in this survey are available upon request.

Calibration checks were carried out on the meters and their measurement chains at the beginning and end of the survey. No significant calibration deviation occurred.

Noise indices

Noise indices recorded included the following:

- $L_{Aeq,T}$ The A-weighted equivalent continuous sound pressure level over a period of time, T.
- $L_{AFmax,T}$ The A-weighted maximum sound pressure level that occurred during a given period, T, with a fast time weighting.
- $L_{ASmax,T}$ The A-weighted maximum sound pressure level that occurred during a given period, T, with a slow time weighting.
- $L_{A90,T}$ The A-weighted sound pressure level exceeded for 90% of the measurement period. Indicative of the background sound level.

Sound pressure level measurements are normally taken with an A-weighting (denoted by a subscript 'A', eg L_{A90}) to approximate the frequency response of the human ear.

A more detailed explanation of these quantities can be found in BS7445: Part 1: 2003 *Description and measurement of environmental noise, Part 1. Guide to quantities and procedures*.

Weather conditions

During the attended noise measurements, the weather was generally clear and dry with some occasional, light precipitation. Wind speeds were measured at each position and varied between 0 m/s and 4 m/s.

During the unattended noise measurements, weather reports for the area indicated that temperatures varied between 4°C at night and 18°C during the day, and the wind speed was less than 5 m/s.

These weather conditions are considered suitable for obtaining representative measurements.

Appendix B

Results of unattended measurements at Location 'L'

