



REPORT 200642R1

Revision 0

Hutchison Ports Australia
Gate B, 150-160 Foreshore Rd, Botany NSW 2019
Biannual Environmental Noise Compliance Monitoring
January 2021

PREPARED FOR:
Sydney International Container Terminals Pty Ltd
PO Box 734
Botany, NSW, 1455

1 March 2021



Hutchison Ports Australia

Gate B, 150-160 Foreshore Rd, Botany NSW 2019

Biannual Environmental Noise Compliance Monitoring

January 2021

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Reference	Status	Date	Prepared	Checked	Authorised
200642R1	Revision 0	1 March 2021	Dani Awad	Desmond Raymond	Rodney Stevens



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EXECUTIVE SUMMARY

Rodney Stevens Acoustics Pty Ltd (RSA) has been commissioned by Hutchison Ports Australia's Environmental Engineer to undertake environmental noise compliance monitoring for Hutchison Ports Australia's Sydney International Container Terminal Pty Ltd (SICTL) operations.

This report presents the findings of the bi-annual environmental noise compliance monitoring carried out for SICTL operations between the dates of 18 January to 31 January 2021. The monitoring periods were between 18 January to 1 February 2021 for the three sites.

Attended and unattended noise monitoring was carried out to determine compliance with the established noise limits at the nearest affected receivers as per EPL 20322, 1 September 2016.

Existing noise levels at the nearest receptors are considered high. Noise generated by surrounding industrial premises, container storage facilities, road traffic, local fauna, residential activities and aircraft activities were the primary contributors to the L_{Aeq} and L_{A1} descriptors during the daytime, evening and night-time measurements.

Due to the recent and ongoing Covid-19 pandemic, State and Federal Government have imposed restrictions on recommended activity to be carried out by residential and commercial operators. It is noted that during the early period of 2021, imposed restrictions have eased to the point where operational capacity has returned to normal.

It was observed that operational noise was not audible at the Chelmsford Avenue monitoring location and was just audible at the Botany Road and Dent Street monitoring locations when ambient levels were low. However, the direct source was indeterminable. Based on this observation, SICTL operational noise complies with the EPL day, evening and night-time noise limits.

It is a finding of this compliance assessment that the current operation complies with the established license limits at all locations during the daytime, evening, and night-time periods.

Assessment of the measured residential noise levels indicated no annoying characteristics (tonality) were present. No sleep disturbance issues were present.



1 INTRODUCTION

Rodney Stevens Acoustics Pty Ltd (RSA) has been commissioned by Hutchison's Environmental Engineer to undertake environmental noise compliance monitoring for Port Botany's Terminal SICTL operations.

This report presents the findings of an environmental noise compliance monitoring for SICTL operations.

The noise assessment has been completed with reference to the requirements of the SICTL site's current Environment Protection Licence EPL 20322, 1 September 2016, Clauses L3 and E1 at specified locations.

Ambient noise monitoring was undertaken at the nearest potentially affected receivers in the vicinity of the SICTL site. Results from the unattended and attended noise monitoring have been reported.

Noise monitoring for this assessment was undertaken between 18 January to 31 January 2021 for the three locations. The SICTL site was operating under standard conditions during the monitoring period.

Specific acoustic terminology is used in this report. An explanation of common acoustic terms is provided in Appendix A.

2 SCOPE OF ASSESSMENT

The scope of work for this study was to prepare a noise compliance assessment for the existing site operations with reference to the NSW Environment Protection Authority (EPA) Environmental Protection Licence (EPL) and other relevant EPA noise guidelines and requirements.

This required the following items:

assess the existing ambient noise environment in the areas surrounding the subject site;

compare the measured noise levels to EPL noise limits;

provide recommendations for further courses of action (where required).

3 ENVIRONMENT PROTECTION LICENCE (NOISE)

The noise emissions from the on-site operations are required to satisfy specific NSW EPA requirements outlined in the site's EPL (Licence No. 20322).

Condition L3 Noise Limits specifies the following:

L3.1 Noise from the premises must not exceed the noise limits presented in Table 3-1 below. Note the limits represent the noise contribution at the nominated receiver locations.



Table 3-1 Noise Limits – LAeq

Most affected residential location	Day L _{Aeq} (15 min)	Evening L _{Aeq} (15 min)	Night L _{Aeq} (15 min)	Night L _{Aeq} (9hours)
Chelmsford Avenue	40 dB(A)	40 dB(A)	40 dB(A)	38 dB(A)
Dent Street	45 dB(A)	43 dB(A)	43 dB(A)	43 dB(A)
Botany Road	47 dB(A)	43 dB(A)	43 dB(A)	45 dB(A)
Jennings Street	36 dB(A)	36 dB(A)	36 dB(A)	35 dB(A)
Australia Avenue	35 dB(A)	35 dB(A)	35 dB(A)	35 dB(A)
Military Road	42 dB(A)	42 dB(A)	42 dB(A)	40 dB(A)

L3.2 Noise from the premises must not exceed the noise limits presented in Table 3-2 below. Note the limits represent the noise contribution at the nominated receiver locations.

Table 3-2 Noise Limit – Night

Most affected residential location	Night L _{A1} (1min)
Chelmsford Avenue	53 dB(A)
Dent Street	55 dB(A)
Botany Road (North Golf Club)	55 dB(A)
Jennings Street	55 dB(A)
Australia Avenue	55 dB(A)
Military Road	55 dB(A)



L3.3 For the purposes of Conditions L3.1 and L3.2

Day is defined as the period from 7 am to 6 pm Monday to Saturday and 8 am to 6 pm Sundays and Public Holidays.

Evening is defined by the period from 6 pm to 10 pm on any day.

Night is defined as the period from 10 pm to 7 am Monday to Saturday and 10 pm to 8 am Sundays and Public Holidays.

L3.4 For the purposes of Condition L3.1 noise from the premises must be measured or computed at the most affected point on or within the residential boundary.

L3.5 For the purpose of Condition L3.1, if a residential dwelling is located more than 30m from the residential boundary, noise from the premises must be measured or computed at the most affected point within 30m of the dwelling.

L3.6 Noise from the premises is to be measured at one metre from the dwelling façade to determine compliance with the L_{A1} (one minute) noise limits in condition L3.2.

L3.7 The noise limits specified in condition L3.1 and L3.2 apply under the following meteorological conditions:

- (a) wind speeds up to 3 m/s at 10 m above ground level
- (b) temperature inversion conditions of up to 1.5 degrees C/100 m.

Condition E1 Noise Monitoring and Compliance Reporting specifies the following:

E1.1 The licensee must undertake noise monitoring as follows:

- (a) The noise monitoring must be undertaken within 6 months of the commencement of operations.
- (b) The noise monitoring must verify the assumptions and noise limits as outlined in the Port Botany Container Terminal Expansion Noise Assessment (2003), part of the Environmental Impact Statement submitted to the Department of Planning and Infrastructure in accordance with the Environmental Planning and Assessment Act 1979 for the approved container terminal development, and Conditions L3.1 and L3.2 of this license.

E1.2. Every 6 months, the Licensee must undertake a periodic noise monitoring program consisting of attended and unattended monitoring and provide a report within one month after completion of monitoring to the EPA's Manager, Sydney Industry at PO Box 668 Parramatta NSW 2124 containing the following information:

- (a) Unattended monitoring data for a continuous period of no less than 2 weeks
- (b) Attended monitoring data during the period outlined in subsection (a);
- (c) Monitoring data from a minimum of three locations specified in Conditions L3.1 and L3.2;
- (d) An assessment of the noise levels against Condition L3 including trend analysis; and
- (e) Details of any feasible and reasonable noise mitigation measures that have been or are proposed to be implemented further reduce noise levels below the limits prescribed in this license.



4 SITE IDENTIFICATION

4.1 Location and Operation

SICTL is located at B150-160 Sirius Road (off Foreshore Road), Botany, New South Wales (NSW) 2019 within Terminal 3 which is part of NSW Ports' Port Botany Expansion (PBE) Project that also includes other port operators and terminals. The SICTL Terminal 3 is situated parallel to the runway at Sydney International Airport.

The site occupies an approximate area of 63 hectares, extending 550 metres west and 1,300 metres north of the existing northern quay of Brotherson Dock. SICTL operates a modern international container terminal at Port Botany with key features being a 1300m Quay Line and two Rail Sidings equal to 1.6km of track.

The SICTL terminal is operational with the following key infrastructures:

- Six Automated Stacking Cranes (ASC);
- Engineering and Maintenance building – includes workshop and washing bay;
- Two Vessel Berths - HD1 and HD2;
- Four Quay Cranes (QCs);
- Shuttle carriers, reach stackers and other operational equipment;
- Railway sidings and freight train delivery and collection;
- Container yards, including Truck grids

Potential noise source areas originating from SICTL are presented in Appendix F.

4.2 Adjacent Land Use

Areas surrounding the site comprises industrial, port relate, commercial, residential and recreational land uses, as described below

4.2.1 Industrial and Commercial Uses

The main industrial land uses adjacent to the terminal are the Patrick's Ports Botany Container Terminal, Caltex Oil Terminal and DP World Australia (DP World container terminal). A number of additional industrial sites are located in the vicinity of the site, including the Opal, Orora Recycling, Orica, BOC, Air Liquid, Mobil and British Petroleum Oil Terminals, Savino Del Bene Australia, Warehouse Solutions International and Owens Transport. The Botany Industrial Park is located approximately one kilometre from the site.

Sydney (Kingsford Smith) Airport, Sydney's major domestic and international airport, is located approximately three kilometres west of the site. The Discovery Cove Business Park, a commercial business centre, is located in the vicinity of the SICTL on Botany Road.

A goods freight rail line operates from Port Botany and services SICTL, Patrick's Port Botany, DP World container terminal, Qube Logistics and Veolia. The Line links with the metropolitan freight and intermodal terminal Storage for goods occurs at the Cooks River and Botany Goods Yards, SICTL, Patrick's Port Botany container terminal, DP World container terminal and various nearby transport and logistic, and haulage and container handling facilities e.g. Sydney Haulage.

4.2.2 Residential, Recreation and Open Space Uses

Residential land uses are located to the east, north-east and north-west of the site, and include the suburbs of Botany, Banksmeadow, and Matraville. Residential receivers to the north and north-east are located from between 650 metres and 1,000 metres away. These residential areas identified are considered to be nearest to SICTL facility.

The nearest schools, as measured from the Terminal's northern point, are Banksmeadow Primary and Matraville Primary. They are located 1 kilometre and 1.6 kilometres away respectively.

There are a number of recreational areas in the surrounding suburbs, including several areas of open space.



Figure 4-1 Ambient noise monitoring locations (local context)



5 NOISE MONITORING METHODOLOGY

A brief outline of the methodology applied to the measurement of the existing ambient noise environment has been detailed below.

5.1 Instrumentation

Background noise level measurements were carried out using a Svantek 979 Type 1 Precision Sound Level Meter (serial numbers 21039 and 34075) and a Bruel and Kjaer 2250 Type 1 Precision Sound Level Meter (serial number 3011625) (operator attended noise monitoring), Acoustic Research Laboratories' statistical Environmental Noise Loggers, Type RION NL- 42 (serial numbers 133010, 546393, 546394) for long-term unattended noise monitoring. The instruments comply with Australian Standard *AS 1259 Acoustics – Sound Level Meters*.

All instrument sets were calibrated by a NATA accredited laboratory. A copy of the instrument sets calibration certificates has been included in Appendix H of this report.

The microphones were positioned approximately 1.5 m above ground level and were fitted with windsocks. Each instrument was calibrated before and after the measurement period to ensure the reliability and accuracy of the instrument. There were no significant variances observed in the reference signal between the pre-measurement and post-measurement calibrations.

The instruments were set on A-weighted, fast response and logged noise levels over fifteen-minute statistical intervals. Observations were recorded during logger establishment for unattended noise monitoring and during the measurement interval for attended noise monitoring.

5.2 Measurement Locations

Locations referenced are consistent with those specified in Conditions L3.1 and L3.2 of the latest EPL (dated 1 September 2016).

The monitoring program comprised of monitoring at a total of three locations selected accordance to Condition E 1.2. These locations are shown in Figure 4-1. Information obtained during the noise monitoring program provides an adequate characterization of the existing ambient noise profiles for the local area.



A description of each noise monitoring location is as follows.

5.2.1 Location 1: 34 Chelmsford Avenue, Botany

The unattended noise logger was located in the front yard of the residential property (facing the subject site). The noise logger was deployed approximately 2 metres from the front façade of the residential building, at a height of 1.5 metres above ground. Due to security reasons the logger was not able to be deployed at the front (western) boundary which is the nearest boundary to the subject site. The location was approximately 850 metres from the northern boundary of the SICTL site and approximately 1,120 metres from the berth docks. Attended monitoring was also carried out at this location.

Road traffic on Foreshore Road and Chelmsford Avenue, industry noise from the surrounding area and aircraft noise from Sydney Airport are the main noise contributors observed as influencing the local ambient noise environment.

5.2.2 Location 2: 26 Dent Street, Botany

The unattended noise logger was located in the backyard of the residential property (facing the subject site). The noise logger was deployed approximately 10 m from the rear façade of the property, at a height of 1.5 metres above ground. The location was approximately 430 metres from the northeast boundary of the SICTL site and approximately 765 metres from the berth docks. Attended monitoring was also carried out at this location.

Road traffic on Foreshore Road Dent Street and industrial activity and residential activity in the vicinity are the part noise contributors observed as influencing the local ambient noise environment. The ambient noise setting was consistent with that of an urban noise environment. Road traffic noise from Botany Road and Foreshore Road were dominant noise sources for the area.

5.2.3 Location 3: 1424 Botany Road, Botany

The unattended noise logger was located at the rear of the residential property (facing the subject site). The noise logger was deployed approximately 10 m from the rear façade of the property, at a height of 1.5 metres above ground. The location was approximately 435 metres from the northeast boundary of the SICTL site and approximately 835 metres from the berth docks. Attended monitoring was also carried out at this location.

Road traffic on Foreshore and Botany Roads, industrial activity from the area and Sydney Ports Container Terminal are the part noise contributors observed as influencing the local ambient noise environment.

The ambient noise setting was consistent with that of an urban noise environment. Road traffic noise from Botany Road and Foreshore Road were dominant noise sources for the area

5.3 Meteorological Conditions

Attended noise monitoring results were not affected by adverse meteorological conditions based on real-time local observations during the monitoring period. Any unattended noise monitoring data affected by inclement weather has been removed from the assessment with reference to the Bureau of Meteorology's (BOM) daily rainfall data.

6 AMBIENT NOISE MONITORING

Unattended noise monitoring was undertaken for a period of not less than 2 weeks as per Condition E1.2 of the EPL, between 18 January to 31 January 2021 for the three sites as indicated in Figure 4-1.

Attended noise monitoring at all of the locations was undertaken during the daytime period on Monday 25 January, evening period and night-time period on Tuesday 2 February 2021.

Local meteorological conditions were satisfactory during the attended monitoring program.

Observations made as part of these studies categorise the local noise environment as being urban with industrial interface. Observations of existing noise sources support this definition and are described as follows:



an 'urban hum' is a distinct feature of the ambient noise environment;

the primary noise source for the area is traffic noise originating from heavy and passenger vehicles travelling along major and local traffic routes; and

noise from multiple industrial sources is audible at several of the monitoring locations.

Residential activity and local fauna such as birds, bats and insects were also sporadically audible. Aircraft noise was audible. Noise emissions from train warning bells, installed at Goods Railway Line between the Caltex and the SICTL was also audible. Truck engines, engine brakes, forklifts and reversing beepers from surrounding roads and nearby industrial and container storage facilities were frequently audible during the monitoring. Ambient noise profiles were typical of an urban area.

Due to the recent and ongoing Covid-19 pandemic, State and Federal Government have imposed restrictions on recommended activity to be carried out by residential and commercial operators. Easing from these restrictions has been carried out over the latter months of 2020 and early months of 2021. RSA has been advised that operations have reverted to normalcy.

The daily noise descriptor graphs obtained as part of this assessment (included in the Appendices) show that the current ambient noise environment, as measured at each monitoring location, generally fluctuated in accordance with diurnal patterns.

Noise levels for the areas surrounding the monitoring locations were found to be primarily influenced by urban and industrial noise sources consistent with the setting of the area.

Background noise levels measured through the use of the environmental noise loggers are influenced by all local sources of noise. The results are to be viewed in conjunction with the attended noise levels presented in Section 6.2 of this report.

Observations during the attended noise monitoring program indicated short term peaks (warning alarms and impact events) either at Port Botany or surrounding industrial premises were generally audible at the nearest residential receivers to the site. Residential activity, off-site industrial noise and traffic flow noise (both distant and local) were primary influences of the measured ambient noise levels.

6.1 Unattended Noise Monitoring Results

Unattended noise monitoring was carried out at three noise monitoring locations (Locations 1 to 3) during the daytime, evening and night-time periods. The results of the unattended monitoring are discussed below.

6.1.1 Location 1: 34 Chelmsford Avenue, Botany

Table 6-1 presents the unattended noise monitoring results at Chelmsford Avenue, Botany.

Table 6-1 Unattended monitoring results (Location 1: 34 Chelmsford Avenue)

Date	Day (7.00 am–6.00 pm)			Evening (6.00 pm–10.00 pm)			Night (10.00 pm–7.00 am)		
	L _{Aeq}	L _{A1}	L _{A90}	L _{Aeq}	L _{A1}	L _{A90}	L _{Aeq}	L _{A1}	L _{A90}
18/1/21	56.2	64.6	43.6	51.1	63.3	40.6	54.2	58.9	42.8
19/1/21	59.4	66.1	51.4	54.7	63.1	47.3	53.0	58.9	43.6
20/1/21	57.7	65.9	46.8	51.1	60.6	43.4	49.4	55.3	39.3
21/1/21	53.6	64.3	42.3	52.3	62.8	44.7	50.6	52.7	38.1
22/1/21	53.9	64.2	40.9	52.2	63.3	43.1	50.0	55.3	41.8



Date	Day (7.00 am–6.00 pm)			Evening (6.00 pm–10.00 pm)			Night (10.00 pm–7.00 am)		
	L _{Aeq}	L _{A1}	L _{A90}	L _{Aeq}	L _{A1}	L _{A90}	L _{Aeq}	L _{A1}	L _{A90}
23/1/21	53.4	64.3	43.8	54.3	64	42.7	47.6	53.5	38.8
24/1/21	52.8	63.6	39.8	54.7	62.6	42.3	48.3	52.3	39.8
25/1/21	53.0	63.8	42.5	53.5	62.5	45.4	48.6	51.3	39.0
26/1/21	54.1	63.3	40.2	60.3	22.1	10.2	40.3	36.3	10.0
27/1/21	49.9	22.1	30.9	36.4	42.5	28.4	43.0	36.6	28.0
28/1/21	46.9	46.6	31.2	36.9	46	30.6	44.5	37	29.6
29/1/21	47.6	48	30.5	38.9	43.9	30.1	41.5	36.1	28.6
30/1/21	<i>41.8</i>	<i>47</i>	<i>28.2</i>	<i>49.8</i>	<i>60.1</i>	<i>40.7</i>	<i>48.8</i>	<i>56.2</i>	<i>39.1</i>
31/1/21	54.3	63.7	47.1	51.4	60.8	45.1	49.0	36.1	39.0
Median	53.5	63.8	41.6	53.3	61.7	42.5	49.1	52.5	39.0

Notes: Values expressed as dB(A)

Values in italics removed from Median calculation due to inclement weather

dB(A) = decibels, A-weighted, values rounded to nearest 1 dB(A)

L_{Aeq} = equivalent continuous (energy average) A-weighted sound pressure level

L_{A1} = A-weighted sound pressure level exceeded for 1% of the time

L_{A90} = A-weighted sound pressure level exceeded for 90% of the time (background)

Data measured during inclement weather has been removed from the median values shown.

Median L_{Aeq} unattended noise measurements exceed the EPL day, evening and night-time L_{Aeq} noise limits for Chelmsford Avenue. The daily average daytime, evening and night-time L_{Aeq} noise levels also exceed the EPL noise limits for majority of the days measured, however this is due to localised events in the vicinity of the residential site.

The median night-time L_{A1} noise level of 53 dB(A) complies with the night-time L_{A1} noise limit of 53 dB(A) for Chelmsford Avenue. The daily average night-time L_{A1} noise levels complied with the EPL noise limit on all of the monitoring days except for 18, 19, 20, 22 and 23 January 2021.

It should be noted that operational noise from the Botany Port vicinity was not audible during daytime evening and night-time operator attended noise monitoring. Based on this observation, operational noise from SICTL facility is considered to comply with the EPL noise limits at the residences on Chelmsford Avenue.

6.1.2 Location 2: 26 Dent Street, Botany

Table 6-2 presents the unattended noise monitoring results at Dent Street, Botany.



Table 6-2 Unattended monitoring results (Location 2: 26 Dent Street)

Date	Day (7.00 am–6.00 pm)			Evening (6.00 pm–10.00 pm)			Night (10.00 pm–7.00 am)		
	L _{Aeq}	L _{A1}	L _{A90}	L _{Aeq}	L _{A1}	L _{A90}	L _{Aeq}	L _{A1}	L _{A90}
18/1/21	54.6	58.2	43.0	47.9	52.7	44.9	49.5	53.3	44.0
19/1/21	54.0	59.4	49.3	50.0	54.8	41.9	49.1	53	44.4
20/1/21	54.4	57.4	45.4	46.5	52.3	43.8	48.0	51.9	42.4
21/1/21	52.2	57.5	43.4	49.4	56.8	50.2	45.9	50.6	40.6
22/1/21	54.3	59.2	41.9	51.8	57.7	43.1	47.1	50.8	41.1
23/1/21	60.2	60.2	42.6	50.8	58.2	46.4	46.7	50.1	42.0
24/1/21	49.7	57.1	41.5	50.6	58.5	41.2	47.4	50.1	41.6
25/1/21	52.1	57.4	43.2	54.6	62.5	41.8	46.9	49.6	41.6
26/1/21	50.1	56.7	43.5	52.4	58.7	42.0	52.4	55.9	45.7
27/1/21	54.8	59.8	50.7	55.4	58.6	46.4	50.8	54.4	46.2
28/1/21	53.4	57.9	48.3	51.8	56.3	46.6	47.7	51.6	43.5
29/1/21	51.3	55.9	47.8	56.5	55.8	41.0	47.4	53.3	42.5
30/1/21	53.3	56.6	40.2	61.0	66.2	40.6	47.1	50.9	40.8
31/1/21	50.8	57	46.5	47.6	52.6	43.7	48.2	51.0	42.9
Median	54.2	58	43.5	53.8	57.3	43.4	48.6	51.3	42.4

Notes: Values expressed as dB(A)

Values in italics removed from Median calculation due to inclement weather

dB(A) = decibels, A-weighted, values rounded to nearest 1 dB(A)

L_{Aeq} = equivalent continuous (energy average) A-weighted sound pressure level

L_{A1} = A-weighted sound pressure level exceeded for 1% of the time

L_{A90} = A-weighted sound pressure level exceeded for 90% of the time (background)

Data measured during inclement weather has been removed from the median values shown.

Median L_{Aeq} unattended noise measurements exceed the EPL day, evening and night-time L_{Aeq} noise limits for Dent Street. The daily average daytime, evening and night-time L_{Aeq} noise levels also exceed the EPL noise limits.

The median night-time L_{A1} noise level of 51 dB(A) complies with the night-time L_{A1} noise limit of 55 dB(A) for Dent Street. The daily average night-time L_{A1} noise levels complied with the EPL noise limit on all of the monitoring days except for 26 January 2021 by a negligible amount.

It should be noted that operational noise from the Port Botany vicinity was intermittently audible during daytime, evening and night-time operator attended noise monitoring. It must be noted that noise origins for exceedances of the EPL from the unattended monitoring are unlikely to be solely from SICTL operations. Based on this observation, operational noise from SICTL facility is considered to comply with the EPL noise limits at the residences on Dent Street.



6.1.3 Location 3: 1424 Botany Road, Botany

Table 6-3 presents the unattended noise monitoring results at Botany Road, Botany.

Table 6-3 Unattended monitoring results (Location 3: 1424 Botany Road)

Date	Day (7.00 am–6.00 pm)			Evening (6.00 pm–10.00 pm)			Night (10.00 pm–7.00 am)		
	L _{Aeq}	L _{A1}	L _{A90}	L _{Aeq}	L _{A1}	L _{A90}	L _{Aeq}	L _{A1}	L _{A90}
18/1/21	54.5	59.1	44.4	48.1	54	43.2	54.0	58.2	46.1
19/1/21	57.7	62.6	52.7	53.9	58.9	49.5	52.5	57.1	46.1
20/1/21	52.7	57.8	47.7	50.2	55.8	45.1	51.9	56.7	45.9
21/1/21	50.5	57	44.8	49.6	55.1	46.2	48.1	53.3	41.4
22/1/21	50.3	57.9	44.7	49.3	55.2	45.1	49.4	54.2	42.8
23/1/21	51.6	58.7	43.3	50.2	57.1	43.6	48.3	53.3	43.4
24/1/21	52.0	62.4	42.2	49.8	56.9	43.9	48.0	51.9	41.0
25/1/21	51.0	59.1	44.9	52.2	58	48.6	47.9	51.7	41.2
26/1/21	50.2	57.6	42.8	53.7	57.2	46.7	58.8	62.5	48.4
27/1/21	60.2	65.3	55.8	56.8	61.1	50.6	54.6	59.2	48.8
28/1/21	55.6	60.1	51.4	53.9	58.3	48.9	51.2	54.9	45.3
29/1/21	54.7	58.7	50.3	62.4	57.2	48.7	65.5	55.4	45.2
30/1/21	49.5	56.8	43.2	48.2	53.7	43.8	50.7	55	43.7
31/1/21	53.3	58.7	49.0	51.2	56.7	47.2	50.5	54.9	45.1
Median	54.3	58.7	44.8	54.4	57	46.5	56.2	55	45.1

Notes: Values expressed as dB(A)

Values in italics removed from Median calculation due to inclement weather

dB(A) = decibels, A-weighted, values rounded to nearest 1 dB(A)

L_{Aeq} = equivalent continuous (energy average) A-weighted sound pressure level

L_{A1} = A-weighted sound pressure level exceeded for 1% of the time

L_{A90} = A-weighted sound pressure level exceeded for 90% of the time (background)

Data measured during inclement weather has been removed from the median values shown.

Median L_{Aeq} unattended noise measurements exceed the EPL day, evening and night-time L_{Aeq} noise limits for Botany Road. The daily average daytime, evening and night-time L_{Aeq} noise levels also exceed the EPL noise limits.

The median night-time L_{A1} noise level of 55 dB(A) complies with the night-time L_{A1} noise limit of 55 dB(A) for Botany Road. The daily average night-time L_{A1} noise levels exceeded the EPL noise limit on 18, 19, 20, 26 and 27 January 2021.

It should be noted that operational noise was observed during the operator attended noise monitoring was not audible during daytime periods, and slightly audible intermittently during evening and night-time periods during



low ambient levels of between 46 dB(A) to 59 dB(A) and the source could not be determined. Hence, the exceedances of the EPL from the unattended monitoring are unlikely to be due solely to SICTL operations. Based on this observation, operational noise from SICTL facility is considered to comply with the EPL noise limits at the residences on Botany Road.

6.2 Attended Noise Monitoring Results

Attended noise monitoring was carried out at the three sensitive receiver noise monitoring locations during the daytime, evening and night-time periods. The results of the attended monitoring are presented in Table 6-4 to Table 6-6.

The results of the attended monitoring are discussed below.

6.2.1 Location 1: 34 Chelmsford Avenue, Botany

The results of the attended background noise monitoring undertaken at 34 Chelmsford Avenue are presented in Table 6-4 below.

Table 6-4 Attended monitoring results (Location 1: 34 Chelmsford Avenue)

Period	Date of measurement	Time	Measured Noise Level			Comments
			L _{A90}	L _{Aeq}	L _{A1}	
Day	25/1/2021	09:36-09:51	43	54	65	Distant road traffic 48-52 dB(A) Residential activity 55 dB(A) Vehicle pass by 70 dB(A) Dog noise 65 dB(A) S.S. 40 dB(A)
Evening	2/2/2021	20:45-21:00	49	54	61	Distant road traffic (Foreshore Rd 47-50dB(A) Car pass by 65 - 70 dB(A) S.S. 49 dB(A)
Night	2/2/2021	22:00-22:15	49	55	65	Distant road traffic (Foreshore Rd 46-48 dB (A) S.S. 39 dB(A)

Notes: Values expressed as dB(A) and rounded to nearest 1 dB(A)
 L_{A90} = A-weighted sound pressure level exceeded for 90% of the time (background)
 L_{Aeq} = equivalent continuous (energy average) A-weighted sound pressure level
 L_{A1} = A-weighted sound pressure level exceeded for 1% of the time
 dB(A) = decibels, A-weighted
 All values from comments are approximate readings
 SS (steady state) noise level is the operator observed baseline noise level where sources influencing the statistical results are determined.

From the attended measurements presented in Table 6-4 above, the operational noise from SICTL was not audible during day, evening and night-time periods. Based on this observation, the operational noise from SICTL is considered to comply with the EPL day, evening and night noise limits at this monitoring location.

Road traffic noise on Chelmsford Avenue and Foreshore Road was the dominant noise source during the attended measurements and influenced the L_{Aeq} and L_{A1} descriptors. Residential and community activity on Chelmsford Avenue was also audible.

6.2.2 Location 2: 26 Dent Street, Botany

The results of the attended background noise monitoring undertaken at 26 Dent Street are presented in Table 6-5 below.



Table 6-5 Attended monitoring results (Location 2: 26 Dent Street)

Period	Date of measurement	Time	Measured Noise Level			Comments
			L _{A90}	L _{Aeq}	L _{A1}	
Day	25/1/2021	10:11-10:26	46	52	65	Distant road traffic (Foreshore Rd) 50-55 dB(A) Truck pass by 70 dB(A) Car pass by 64 dB(A) Intermittent Port Botany crane operation 55 dB(A) S.S. 43 dB(A)
Evening	2/2/2021	21:37-21:52	52	55	60	Distant road traffic (Foreshore Rd) 50-53dB(A) Port Botany metal on metal noise 55 dB(A) S.S. 47 dB(A)
Night	2/2/2021	22:00-22:15	51	54	62	Distant road traffic (Foreshore Rd) 53-55 dB(A) Distant industrial activity 45 dB(A) Port Botany metal on metal noise 55 dB(A) Plane Flyover 60dB(A) S.S. 39 dB(A)

Notes: Values expressed as dB(A) and rounded to nearest 1 dB(A)
L_{A90} = A-weighted sound pressure level exceeded for 90% of the time (background)
L_{Aeq} = equivalent continuous (energy average) A-weighted sound pressure level
L_{A1} = A-weighted sound pressure level exceeded for 1% of the time
dB(A) = decibels, A-weighted
All values from comments are approximate readings
SS (steady state) noise level is the operator observed baseline noise level where sources influencing the statistical results are determined.

From the attended measurements presented in Table 6-5 above, operational noise from the general Port Botany vicinity was audible during day, evening and night time periods. Noise sources originating from the general Port Botany Terminal vicinity can be intermittently heard when ambient levels are low, however, exact origins of the noise sources cannot be determined. Based on this observation, the operational noise from SICTL is considered to comply with the EPL day, evening and night noise limits at this monitoring location.

Road traffic noise from Botany Road and Foreshore Road was the dominant noise source during the attended measurements and heavily influenced the L_{Aeq} and L_{Amax} descriptors. Noise generated by industrial activity on the opposite side of Botany Road was also audible during the measurements.



6.2.3 Location 3: 1424 Botany Road, Botany

The results of the attended background noise monitoring undertaken at 1424 Botany Road are presented in Table 6-6 below.

Table 6-6 Attended monitoring results (Location 3: 1424 Botany Road)

Period	Date of measurement	Time	Measured Noise Level			Comments
			L _{A90}	L _{Aeq}	L _{A1}	
Day	25/1/2021	10:48-11:03	45	53	61	Road traffic 52-57 dB(A) Fauna 60-63 dB(A) Truck pass by 58 dB(A) S.S. 43 dB(A)
Evening	2/2/2021	21:19-21:34	56	66	61	Traffic noise from Foreshore Road (constant throughout measurement) 50-55 dB(A) Port Botany Container metal on metal noise 55 dB(A) S.S. 54 dB(A)
Night	2/2/2021	23:26-23:41	54	65	59	Road traffic 44-48 dB(A) Container set down metal on metal noise (intermittently) 59 dB(A) S.S. 50 dB(A)

Notes: Values expressed as dB(A) and rounded to nearest 1 dB(A)
L_{A90} = A-weighted sound pressure level exceeded for 90% of the time (background)
L_{Aeq} = equivalent continuous (energy average) A-weighted sound pressure level
L_{A1} = A-weighted sound pressure level exceeded for 1% of the time
dB(A) = decibels, A-weighted
All values from comments are approximate readings
SS (steady state) noise level is the operator observed baseline noise level where sources influencing the statistical results are determined.

From the attended measurements presented in Table 6-6 above, the operational noise was not audible during daytime periods. The operational noise was audible during evening and night time periods at levels of between 48 dB(A) and 59 dB(A). Noise sources originating from the general Port Botany Terminal vicinity can be intermittently heard when ambient levels are low, however, exact origins of the noise sources cannot be determined to be coming from SICTL. Based on this observation, the operational noise from SICTL is considered to comply with the EPL day, evening and night noise limits at this monitoring location.

Road traffic noise from Botany Road and Foreshore Road in addition to fauna noise was the dominant noise source during the attended measurements and heavily influenced the L_{Aeq} and L_{A1} descriptors.

7 STATEMENT OF EXISTING INDUSTRIAL NOISE COMPLIANCE

In providing the statement of existing noise compliance status, the results of the noise monitoring have been reviewed. The steady state noise levels from SICTL operations at locations that were just audible were estimated through observations during periods of minimal extraneous noise. Multiple noise sources were audible at all locations and could not be totally eliminated from the monitoring period, therefore estimates are likely to be overly conservative and overall compliance is generally based on the observed site influence, and measurement statistics.

7.1 Operations

It is understood that standard operations of SICTL facility were taking place during the two-week monitoring period.

7.2 Review of Measured Noise Levels

7.2.1 Daytime Period

Measured ambient noise levels from the unattended monitoring and attended measurements show exceedances of the EPL daytime L_{Aeq} limits at Chelmsford Avenue, Dent Street, Botany Road,

However, operational noise from the Port Botany vicinity was audible at low levels at 1 of the 3 monitoring locations during the daytime attended noise surveys, but the noise could not be determined to originate from SICTL. Based on this observation, operational noise impacts from SICTL facility are considered to comply with the EPL daytime noise limits.

Dominant noise sources at all 3 monitoring locations were mainly road traffic noise from surrounding roads and local activity (residential, industrial and aircraft).

7.2.2 Evening Period

Measured ambient noise levels from the unattended monitoring and attended measurements show exceedances of the EPL evening L_{Aeq} limits at Chelmsford Avenue, Dent Street and Botany Road

Operational noise was just audible at the Botany Road location at low ambient levels of between 50-55 dB(A), but the source could not be determined. The operation noise observed was over a very short duration (usually no more than 30 seconds). Operational noise was observed at a level reaching 55 dB(A) however, the duration of this noise was of an impulsive nature and largely intermittent and the exact source could not be determined. This observed noise level from the monitoring locations complies with the relevant noise limits. It also complies with the Botany Road 47 dB(A) $L_{Aeq(15min)}$, 43 dB(A) $L_{Aeq(9hour)}$ and 55 dB(A) L_{A1} night-time noise limits.

Operational noise from SICTL was not audible at the Chelmsford Avenue, Dent Street, Australia Avenue and Jennings Street monitoring locations during the attended noise surveys. Based on these observations, operational noise impacts from SICTL facility are considered to comply with the EPL evening noise limits.

Dominant noise sources at all 3 monitoring locations were mainly road traffic noise from surrounding roads and local activity (residential, industrial and aircraft).

7.2.3 Night-time Period

Measured ambient noise levels from the unattended monitoring and attended measurements show exceedances of the EPL night-time L_{Aeq} limits at Chelmsford Avenue, Dent Street and Botany Road.

Operational noise was just audible at the Botany Road location at low ambient levels of between 42-55 dB(A), but the source could not be determined. The operation noise observed was over a very short duration (usually no more than 30 seconds). Operational noise was observed at a level reaching 59 dB(A) however, the duration of this noise was of an impulsive nature and largely intermittent and the exact source could not be determined. This observed noise level from the monitoring locations complies with their relevant noise limits.



Operational noise from SICTL was not audible at the Chelmsford Avenue and Dent Street monitoring locations during the attended noise surveys. Based on these observations, operational noise impacts from SICTL facility are considered to comply with the EPL night time noise limits.

Dominant noise sources at all 3 monitoring locations were mainly road traffic noise from surrounding roads and local activity (residential and industrial).

8 CONCLUSION

This report presents the findings of the January 2021 environmental noise compliance monitoring for the Sydney International Container Terminal Pty Ltd operations.

Attended and unattended noise monitoring was carried out to determine compliance with the established noise limits at the nearest affected receivers.

Existing noise levels at the nearest receptors are considered high. Noise generated by surrounding industrial premises, container storage facilities, road traffic, local fauna, residential activities and aircraft activities were the primary contributors to the L_{Aeq} and L_{A1} descriptors during the daytime, evening and night-time measurements.

Due to the recent and ongoing Covid-19 pandemic, State and Federal Government have imposed restrictions on recommended activity to be carried out by residential and commercial operators. It is noted that during the early period of 2021, imposed restrictions have eased to where normal operating capacity has resumed.

It should be noted that during low ambient noise periods, industrial activity from Port Botany operations could be audible during attended monitoring periods at 2 of the 3 monitoring locations however, the direct source and location could not be determined.

It was observed that operational noise was not audible at the Chelmsford Avenue monitoring location and was slightly audible at the Dent Street and Botany Road monitoring location when ambient levels were low, the direct source however was indeterminable. Based on this observation, SICTL operational noise complies with the EPL day, evening and night-time noise limits.

It is a finding of this compliance assessment that the current operation complies with the established license limits at all locations during the daytime, evening and night-time periods.

Assessment of the measured residential noise levels indicated no annoying characteristics (tonality) were present. No sleep disturbance issues were present.

Approved: -

Rodney Stevens - MAAS



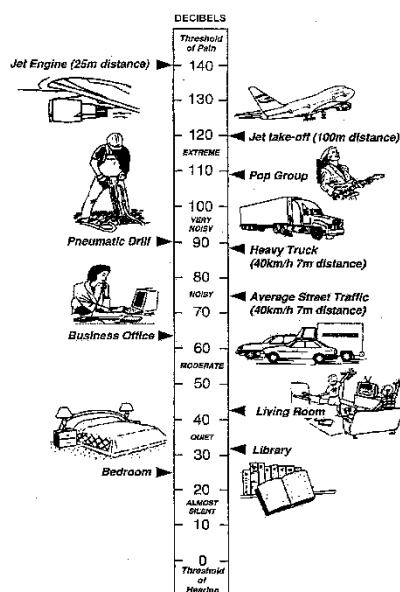
Appendix A – Acoustic Terminology

A-weighted sound pressure	The human ear is not equally sensitive to sound at different frequencies. People are more sensitive to sound in the range of 1 to 4 kHz (1000 – 4000 vibrations per second) and less sensitive to lower and higher frequency sound. During noise measurement an electronic ' <i>A-weighting</i> ' frequency filter is applied to the measured sound level $dB(A)$ to account for these sensitivities. Other frequency weightings (B, C and D) are less commonly used. Sound measured without a filter is denoted as linear weighted $dB(\text{linear})$.
Ambient noise	The total noise in a given situation, inclusive of all noise source contributions in the near and far field.
Community annoyance	<p>Includes noise annoyance due to:</p> <ul style="list-style-type: none">▪ character of the noise (e.g. sound pressure level, tonality, impulsiveness, low-frequency content)▪ character of the environment (e.g. very quiet suburban, suburban, urban, near industry)▪ miscellaneous circumstances (e.g. noise avoidance possibilities, cognitive noise, unpleasant associations)▪ human activity being interrupted (e.g. sleep, communicating, reading, working, listening to radio/TV, recreation).
Compliance	The process of checking that source noise levels meet with the noise limits in a statutory context.
Cumulative noise level	The total level of noise from all sources.
Extraneous noise	Noise resulting from activities that are not typical to the area. Atypical activities may include construction, and traffic generated by holiday periods and by special events such as concerts or sporting events. Normal daily traffic is not considered to be extraneous.
Feasible and reasonable measures	<p>Feasibility relates to engineering considerations and what is practical to build; reasonableness relates to the application of judgement in arriving at a decision, considering the following factors:</p> <ul style="list-style-type: none">▪ Noise mitigation benefits (amount of noise reduction provided, number of people protected).▪ Cost of mitigation (cost of mitigation versus benefit provided).▪ Community views (aesthetic impacts and community wishes).▪ Noise levels for affected land uses (existing and future levels, and changes in noise levels).
Impulsiveness	Impulsive noise is noise with a high peak of short duration or a sequence of these peaks. Impulsive noise is also considered annoying.
Low frequency	Noise containing major components in the low-frequency range (20 to 250 Hz) of the frequency spectrum.
Noise criteria	The general set of non-mandatory noise levels for protecting against intrusive noise (for example, background noise plus 5 dB) and loss of amenity (e.g. noise levels for various land use).



Noise level (goal)	A noise level that should be adopted for planning purposes as the highest acceptable noise level for the specific area, land use and time of day.
Noise limits	Enforceable noise levels that appear in conditions on consents and licences. The noise limits are based on achievable noise levels, which the proponent has predicted can be met during the environmental assessment. Exceedance of the noise limits can result in the requirement for either the development of noise management plans or legal action.
Performance-based goals	Goals specified in terms of the outcomes/performance to be achieved, but not in terms of the means of achieving them.
Rating Background Level (RBL)	The rating background level is the overall single figure background level representing each day, evening and night time period. The rating background level is the 10 th percentile min L _{A90} noise level measured over all day, evening and night time monitoring periods.
Receptor	The noise-sensitive land use at which noise from a development can be heard.
Sleep disturbance	Awakenings and disturbance of sleep stages.
Sound and decibels (dB)	Sound (or noise) is caused by minute changes in atmospheric pressure that are detected by the human ear. The ratio between the quietest noise audible and that which should cause permanent hearing damage is a million times the change in sound pressure. To simplify this range the sound pressures are logarithmically converted to decibels from a reference level of 2 x 10 ⁻⁵ Pa.

The picture below indicates typical noise levels from common noise sources.



dB is the abbreviation for decibel – a unit of sound measurement. It is equivalent to 10 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure.

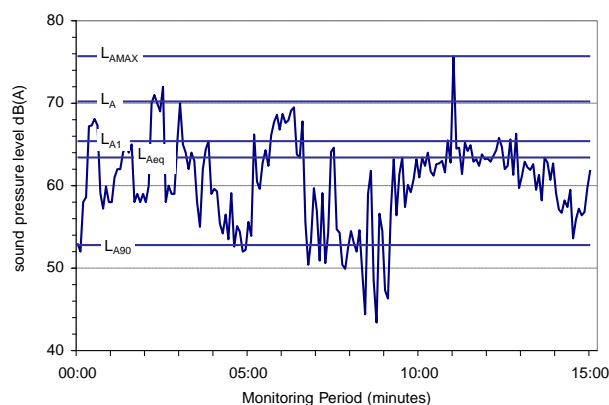
Sound Power Level (SWL)	The sound power level of a noise source is the sound energy emitted by the source. Notated as SWL, sound power levels are typically presented in dB(A).
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Sound Pressure Level (SPL) The level of noise, usually expressed as SPL in $dB(A)$, as measured by a standard sound level meter with a pressure microphone. The sound pressure level in $dB(A)$ gives a close indication of the subjective loudness of the noise.

Statistical noise levels Noise levels varying over time (e.g. community noise, traffic noise, construction noise) are described in terms of the statistical exceedance level.

A hypothetical example of A weighted noise levels over a 15-minute measurement period is indicated in the following figure:



Key descriptor

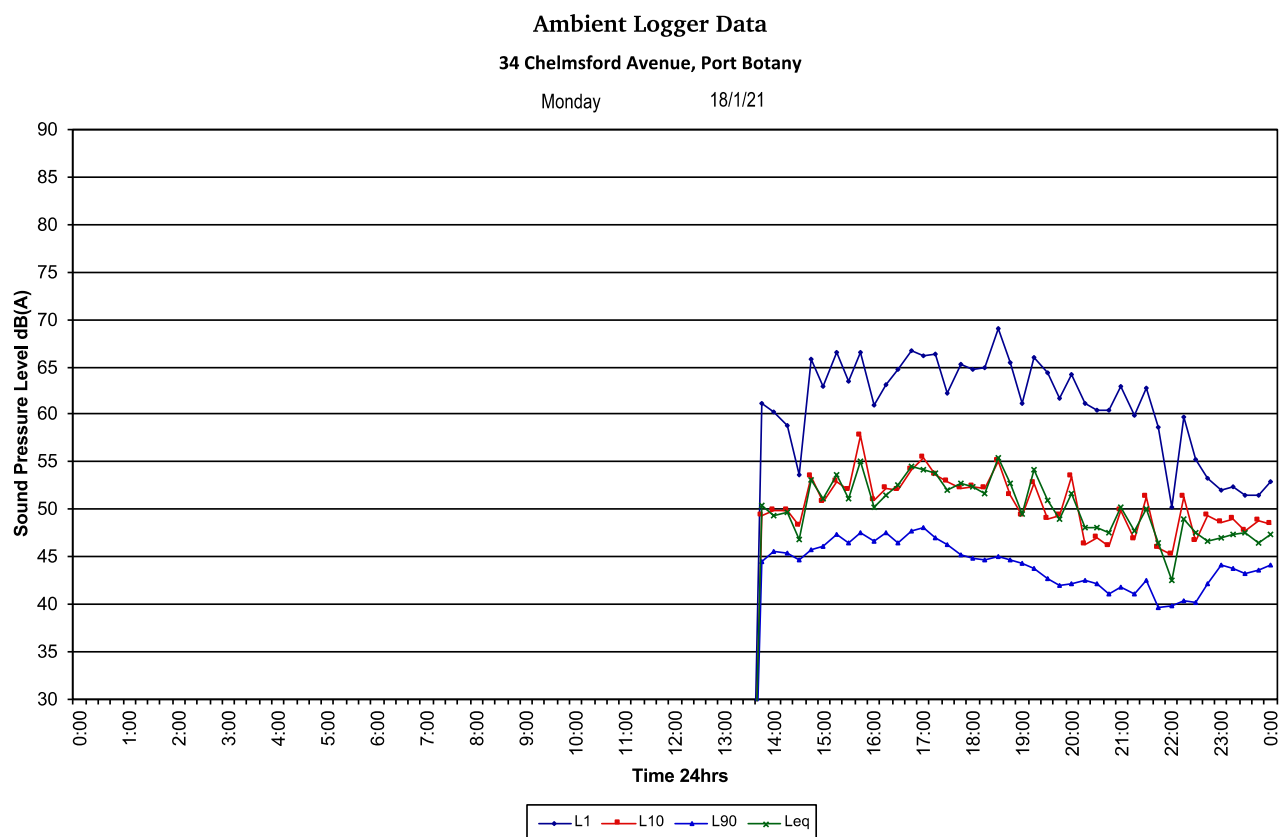
- **L_Amax** Maximum recorded noise level.
- **L_A1** The noise level exceeded for 1% of the 15 minute interval.
- **L_A10** Noise level present for 10% of the 15-minute interval. Commonly referred to the average maximum noise level.
- **L_Aeq** Equivalent continuous (energy average) A-weighted sound pressure level. It is defined as the steady sound level that contains the same amount of acoustic energy as the corresponding time-varying sound.
- **L_A90** Noise level exceeded for 90% of time (background level). The average minimum background sound level (in the absence of the source under consideration).

Threshold The lowest sound pressure level that produces a detectable response (in an instrument/person).

Tonality Tonal noise contains one or more prominent tones (and characterised by a distinct frequency components) and is considered more annoying. A 2 to 5 dBA penalty is typically applied to noise sources with tonal characteristics.



Appendix B – Unattended Logger Results – Chelmsford Avenue



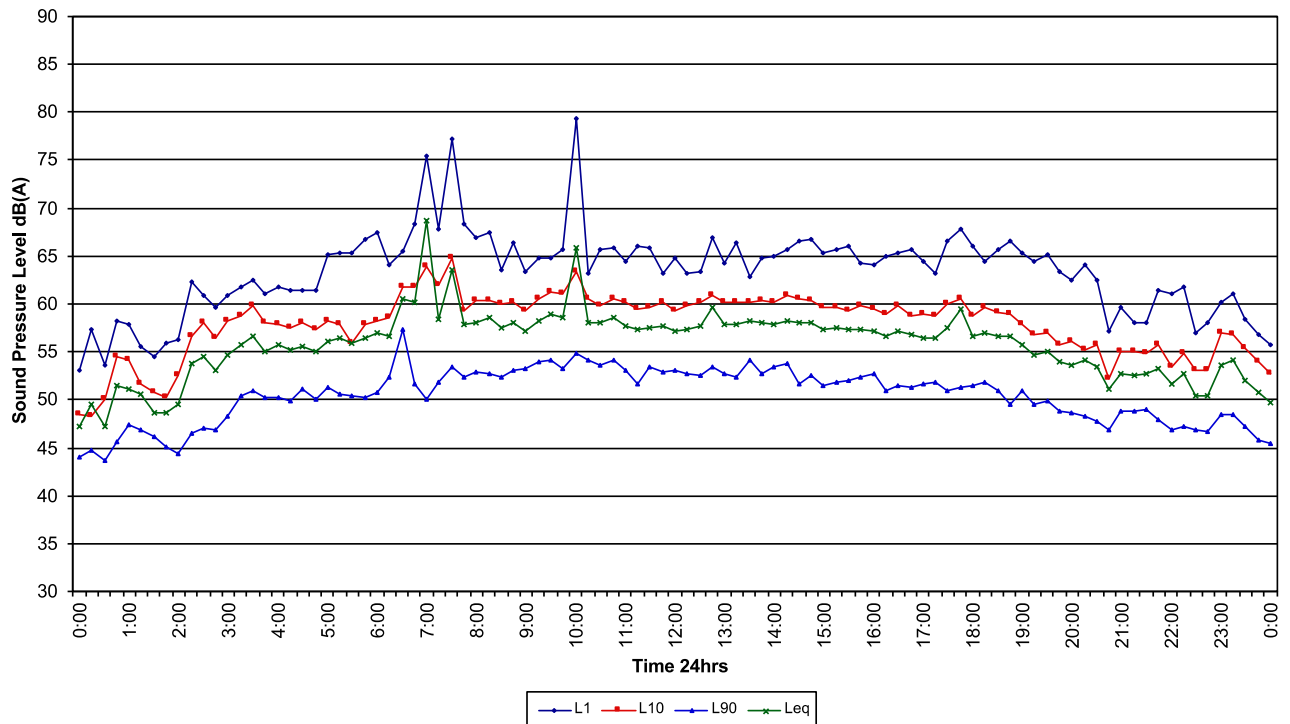


Ambient Logger Data

34 Chelmsford Avenue, Port Botany

Tuesday

19/1/21

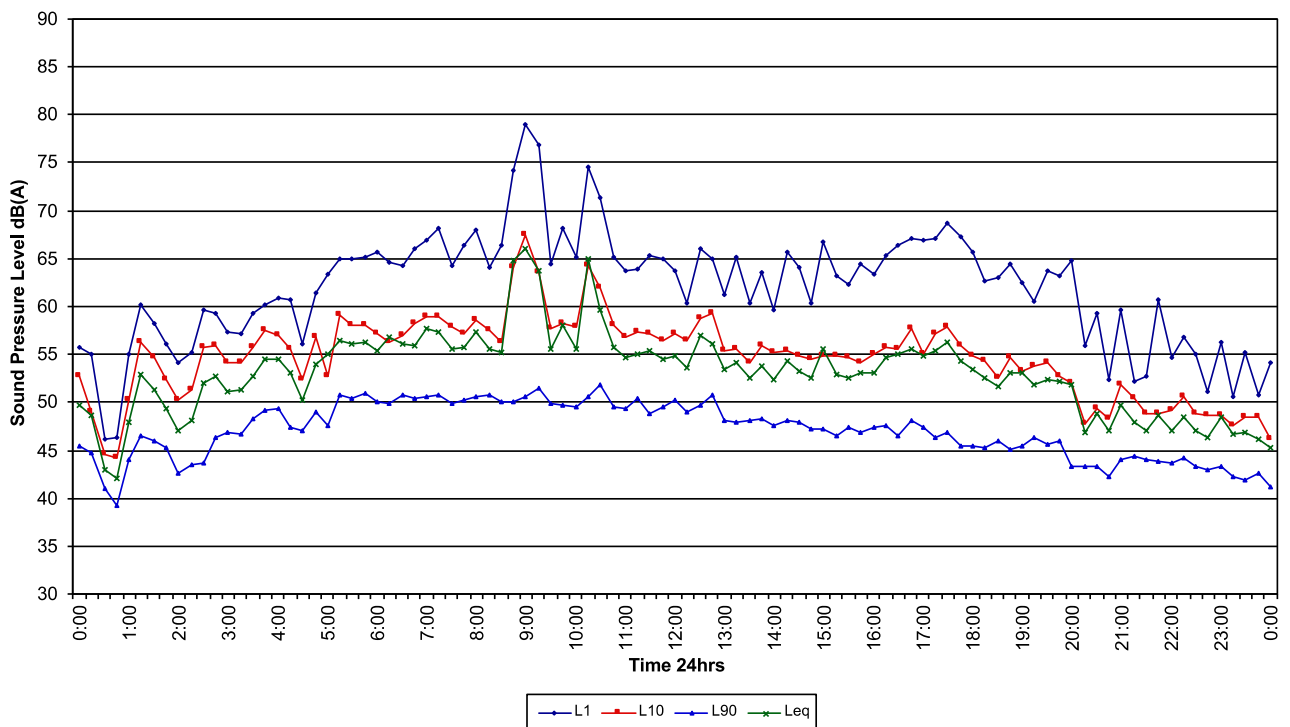


Ambient Logger Data

34 Chelmsford Avenue, Port Botany

Wednesday

20/1/21



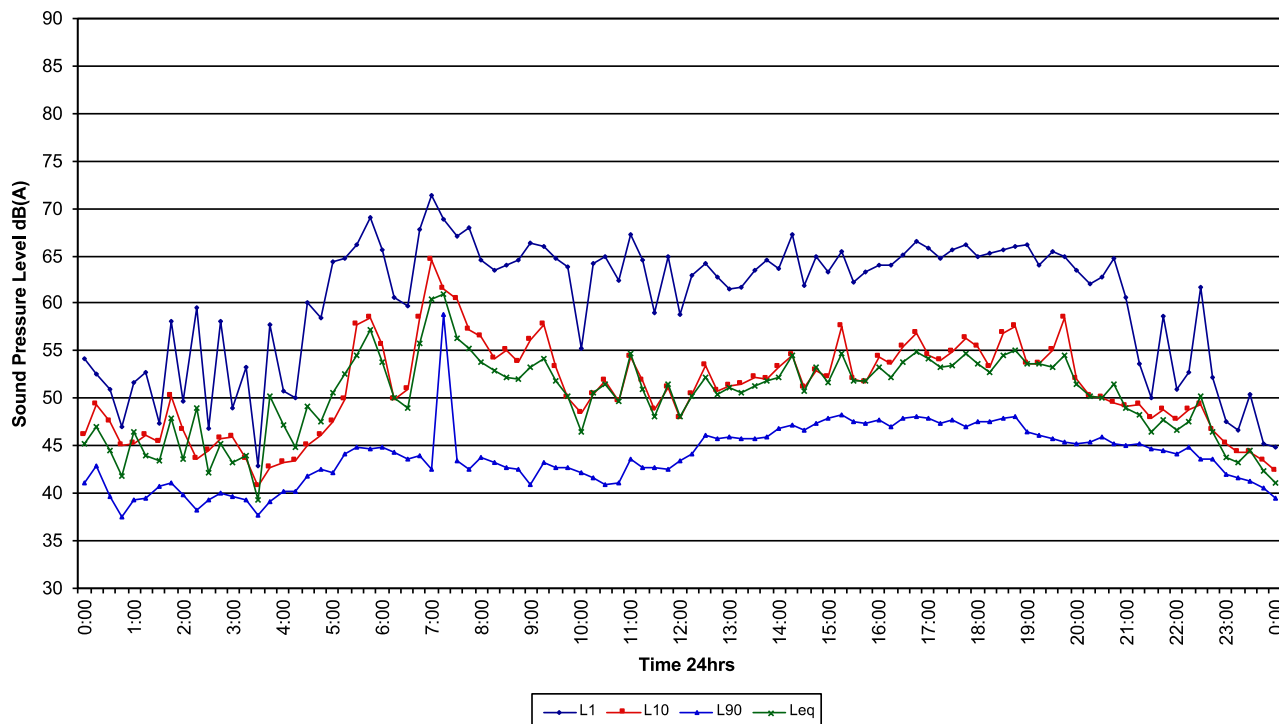


Ambient Logger Data

34 Chelmsford Avenue, Port Botany

Thursday

21/1/21

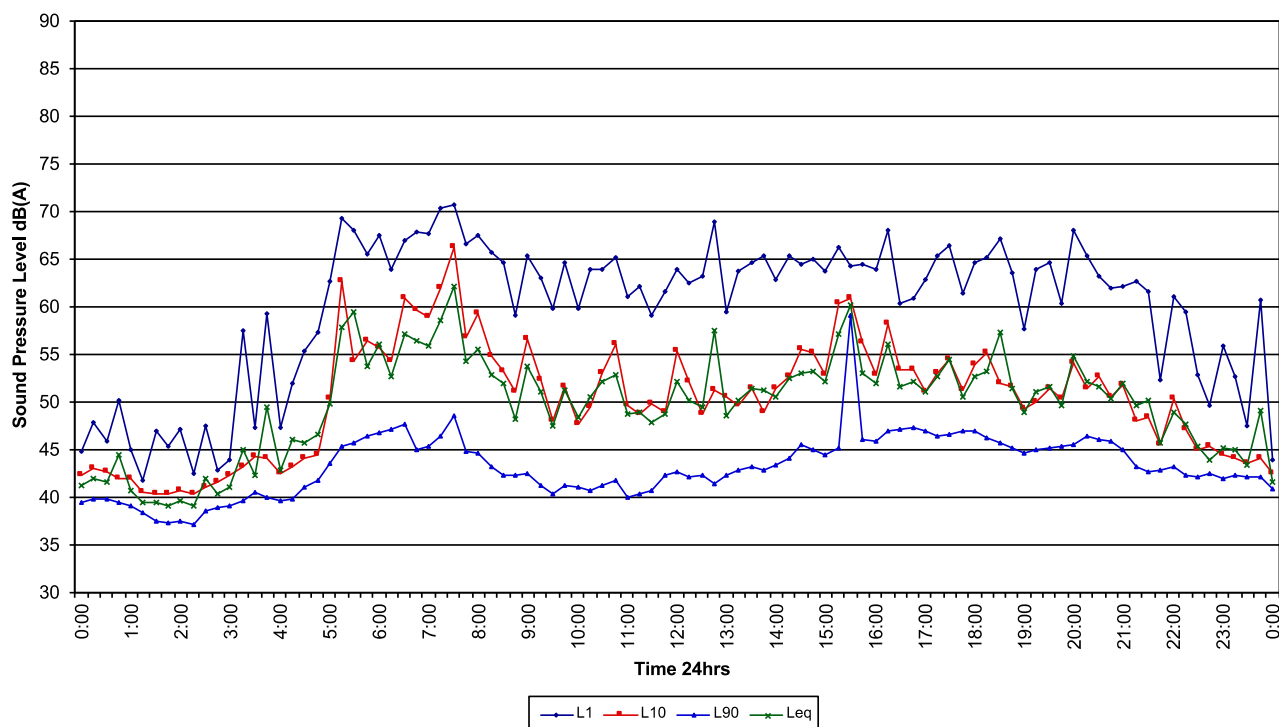


Ambient Logger Data

34 Chelmsford Avenue, Port Botany

Friday

22/1/21



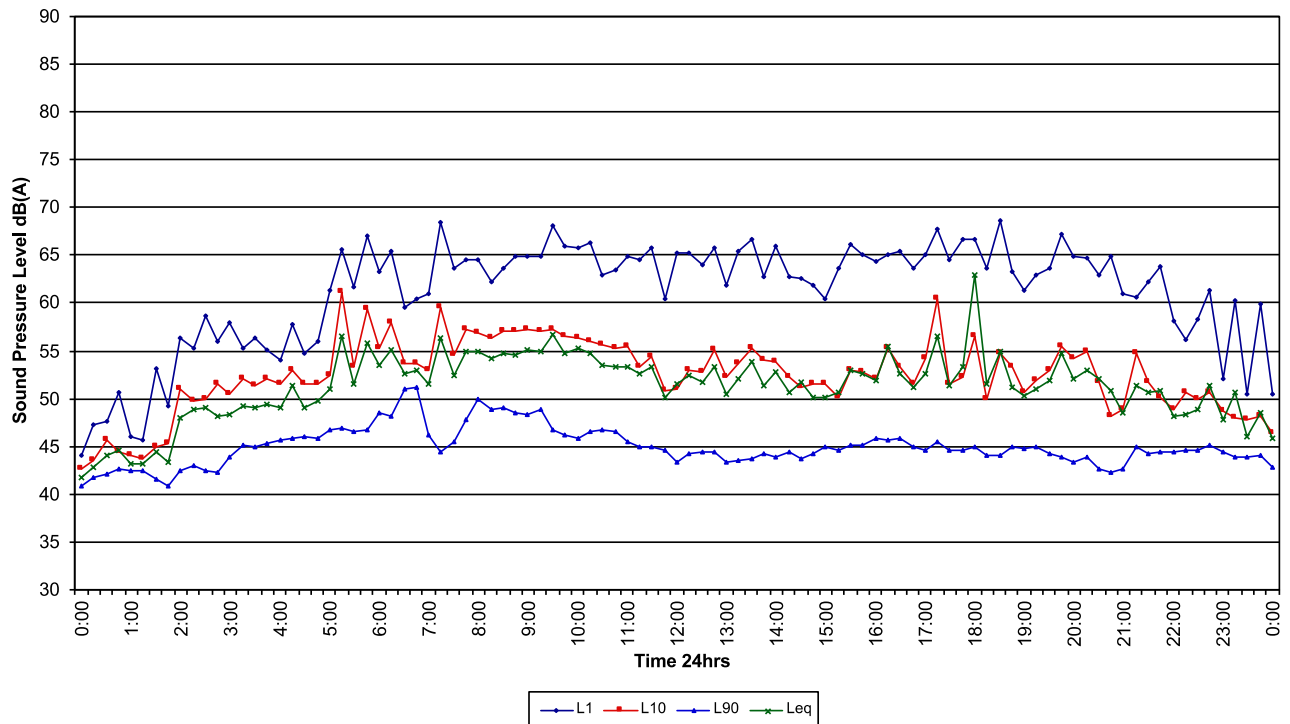


Ambient Logger Data

34 Chelmsford Avenue, Port Botany

Saturday

23/1/21

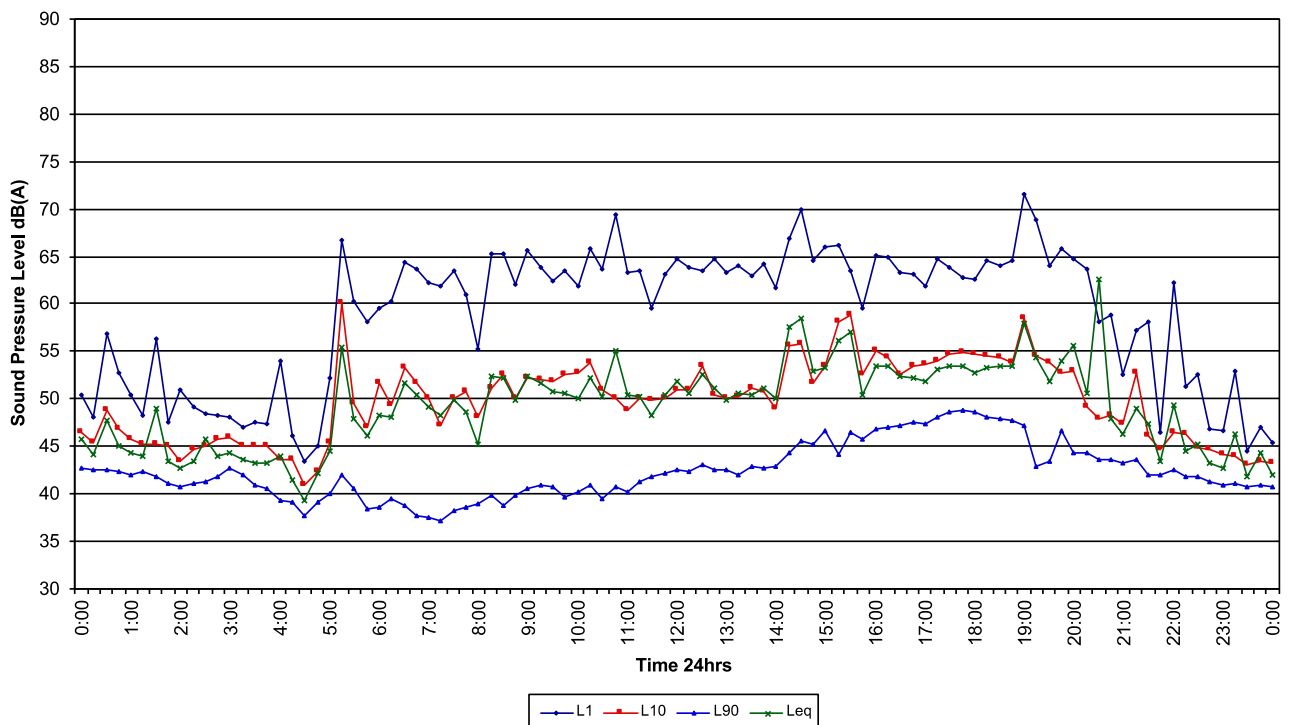


Ambient Logger Data

34 Chelmsford Avenue, Port Botany

Sunday

24/1/21



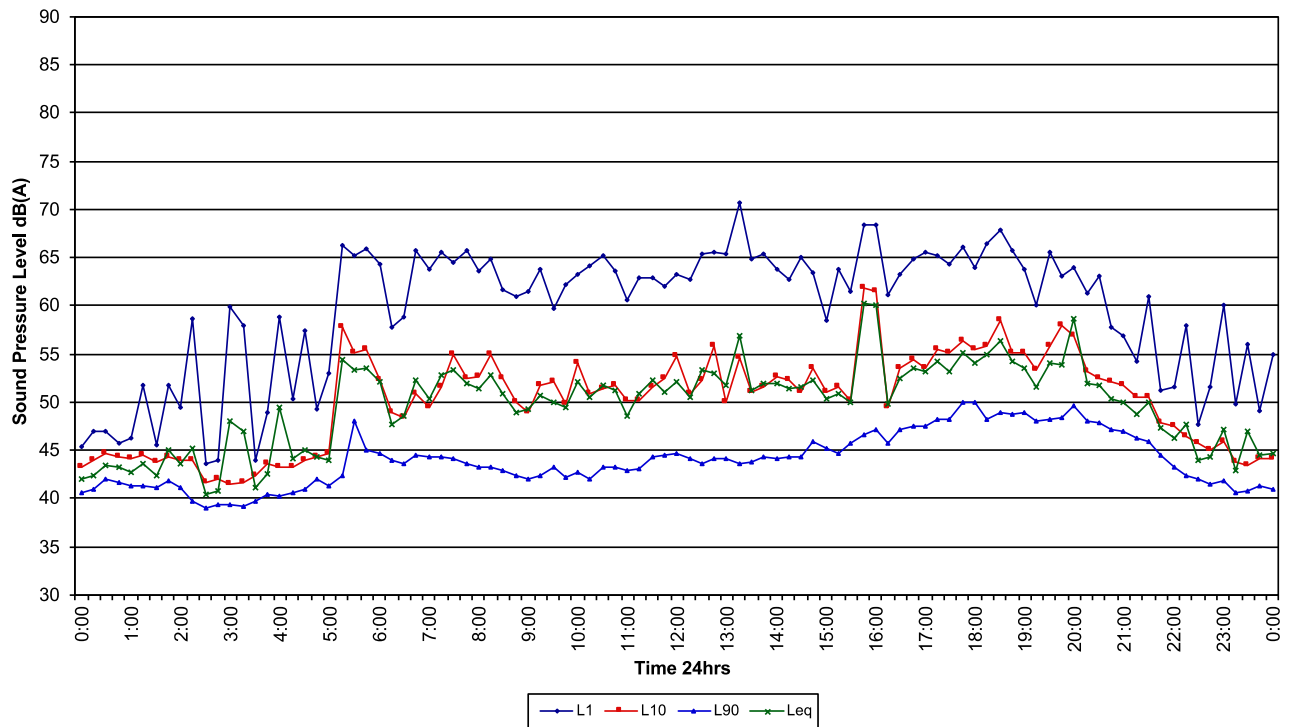


Ambient Logger Data

34 Chelmsford Avenue, Port Botany

Monday

25/1/21

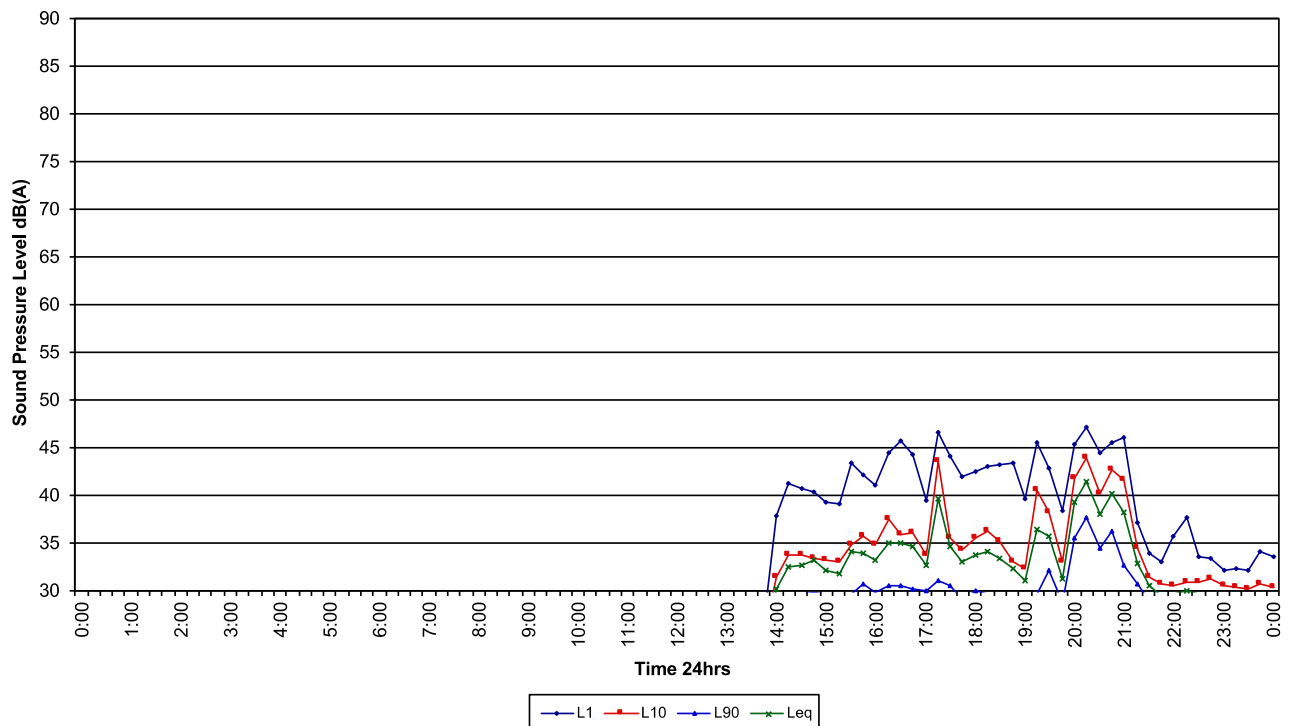


Ambient Logger Data

34 Chelmsford Avenue, Port Botany

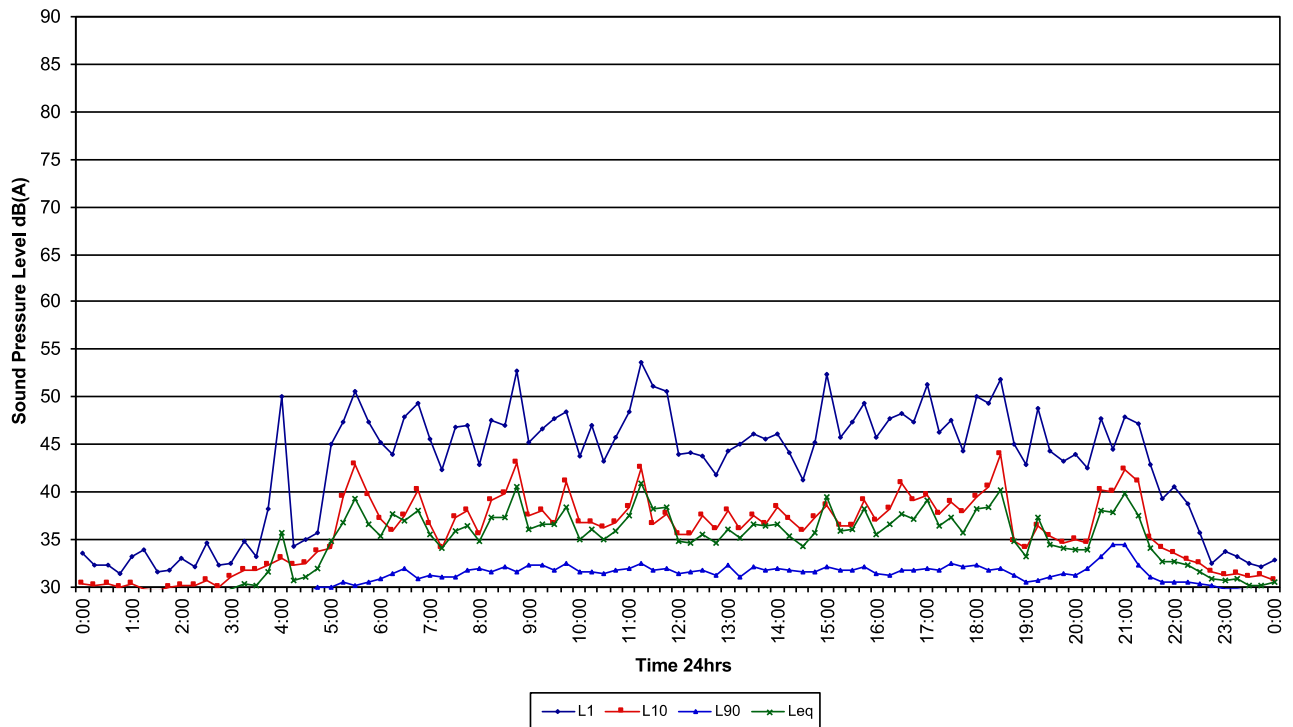
Wednesday

27/1/21

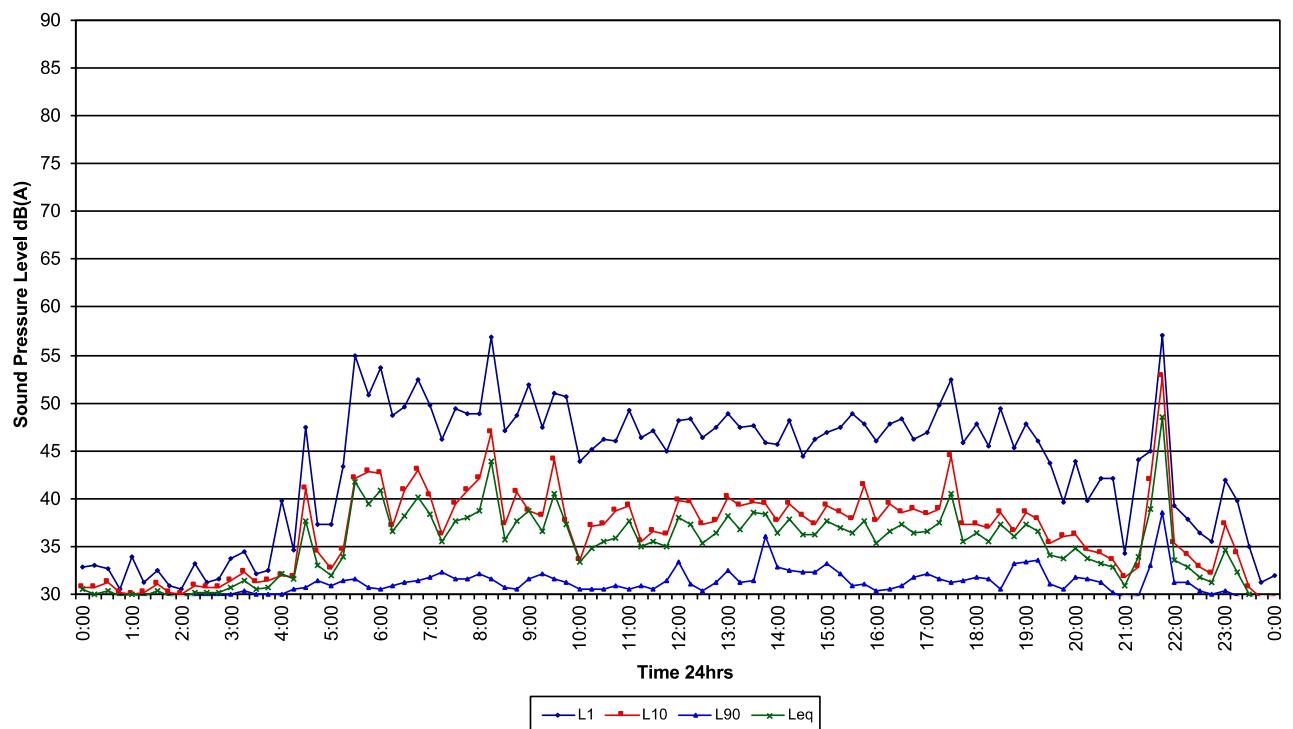




Ambient Logger Data
34 Chelmsford Avenue, Port Botany
Thursday 28/1/21

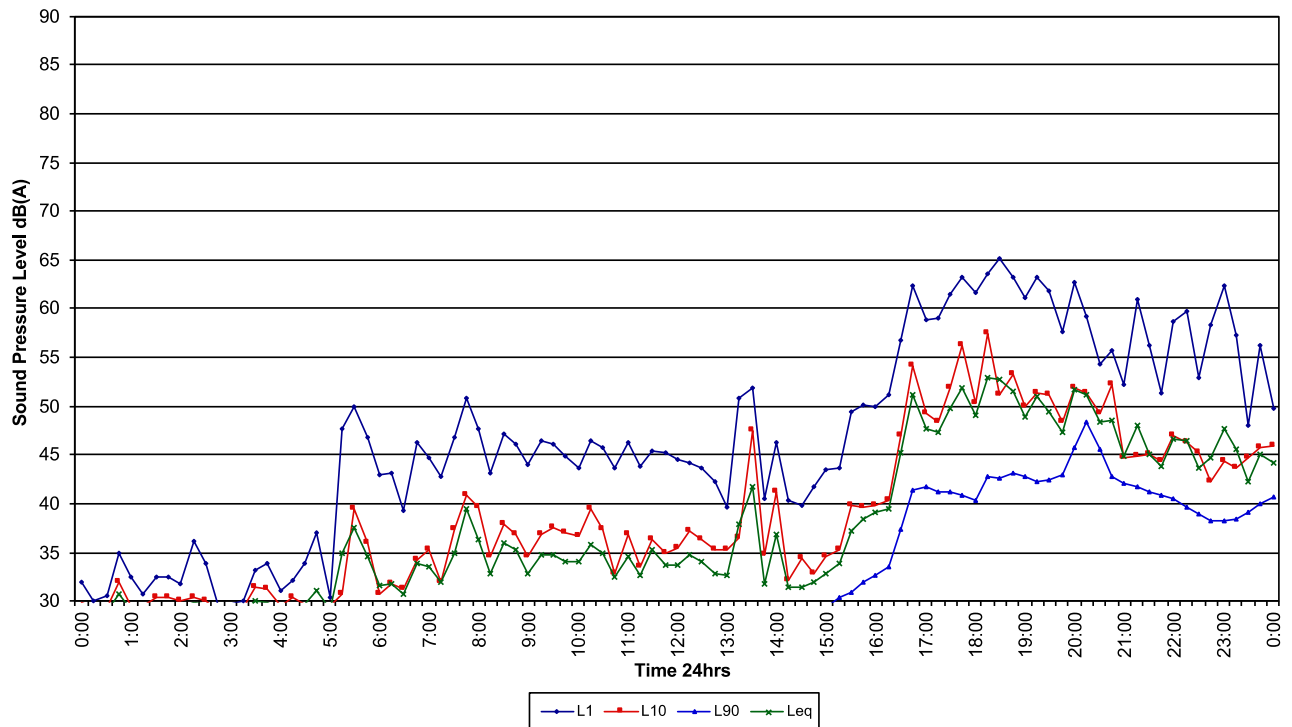


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Friday 29/1/21

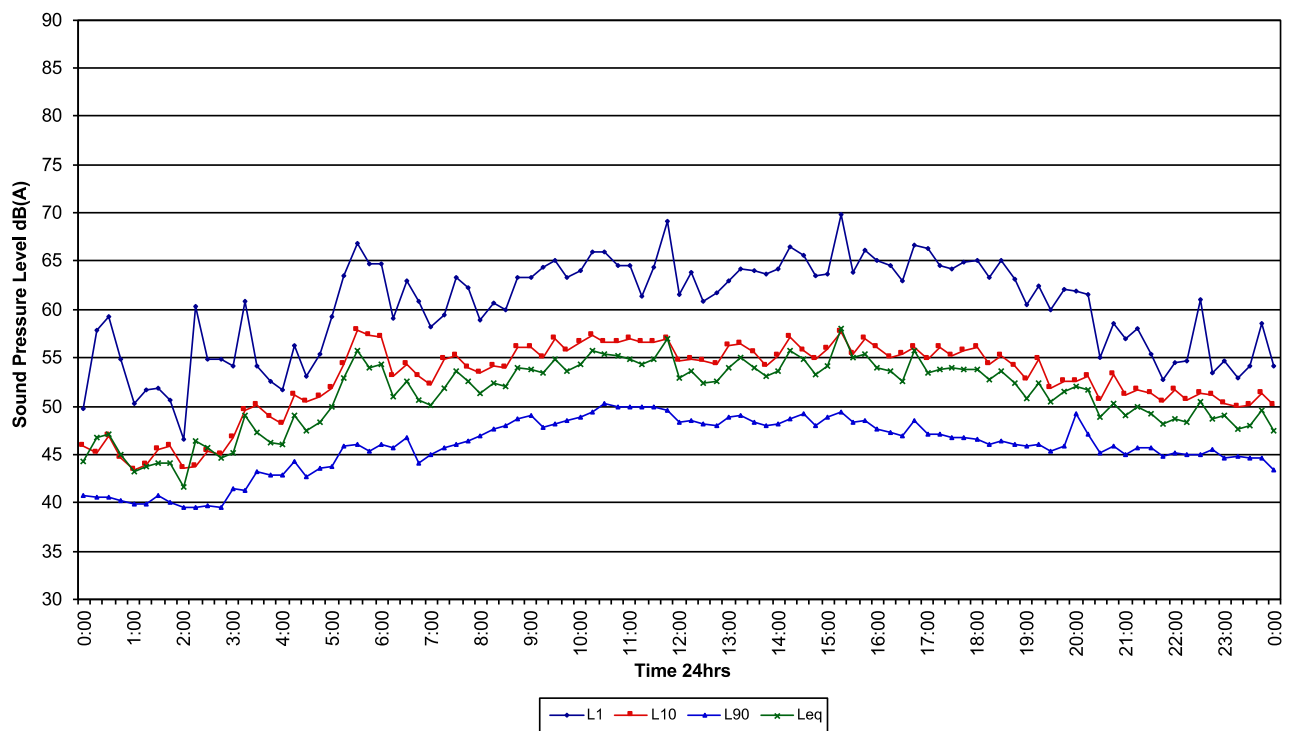




Ambient Logger Data
34 Chelmsford Avenue, Port Botany
Saturday 30/1/21



Ambient Logger Data
34 Chelmsford Avenue, Port Botany
Sunday 31/1/21



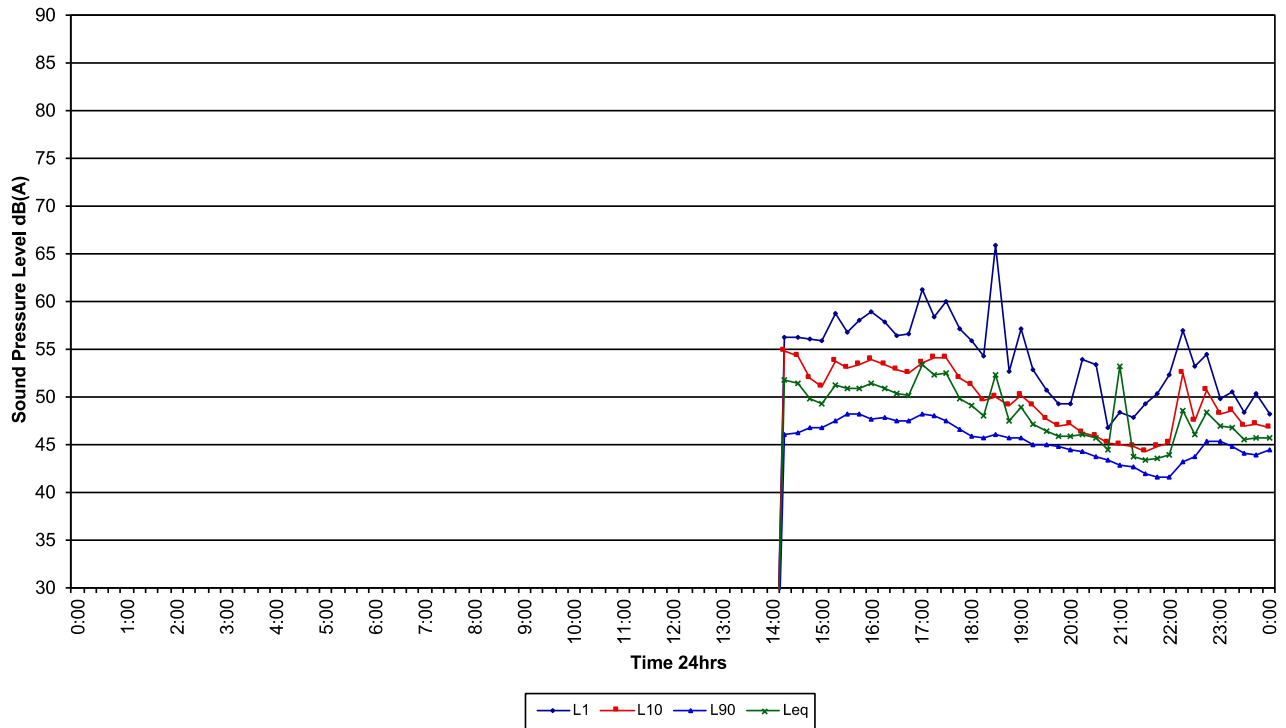


Appendix C – Unattended Logger Results – Dent Street

Ambient Logger Data

26 Dent Street, Botany

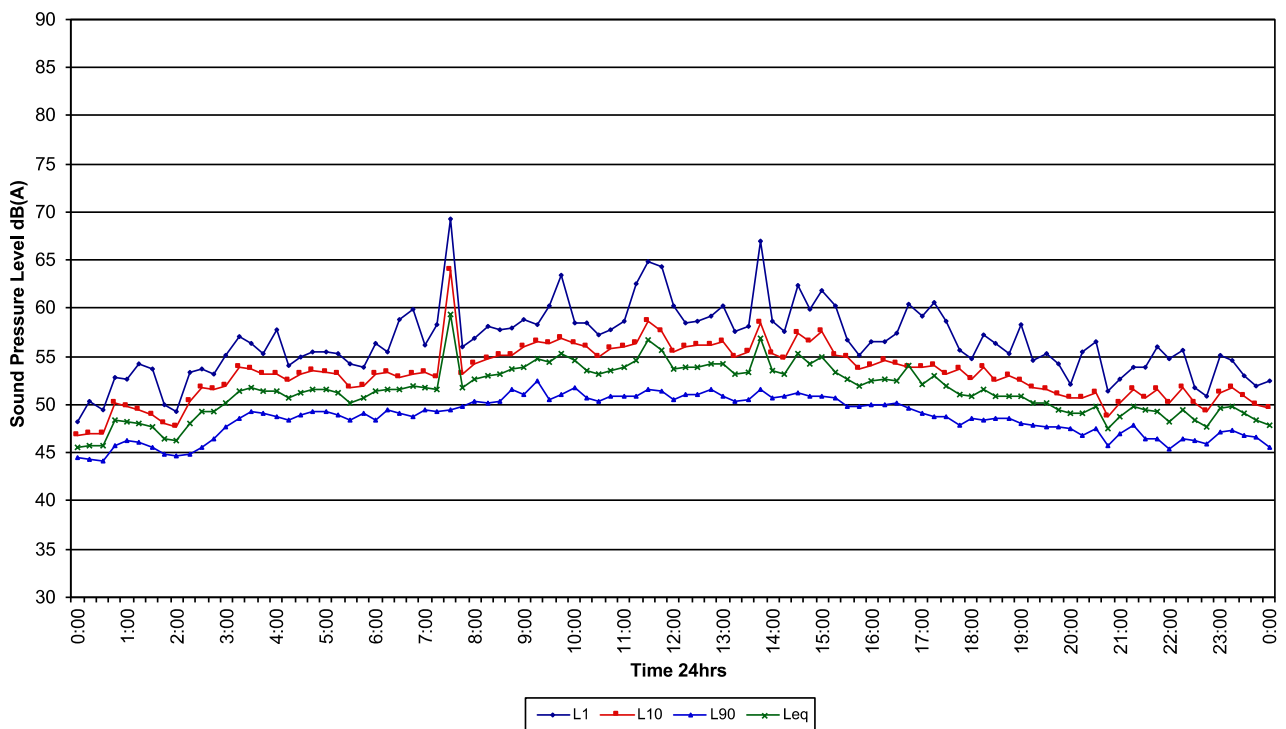
Monday 18/1/21



Ambient Logger Data

26 Dent Street, Botany

Tuesday 19/1/21

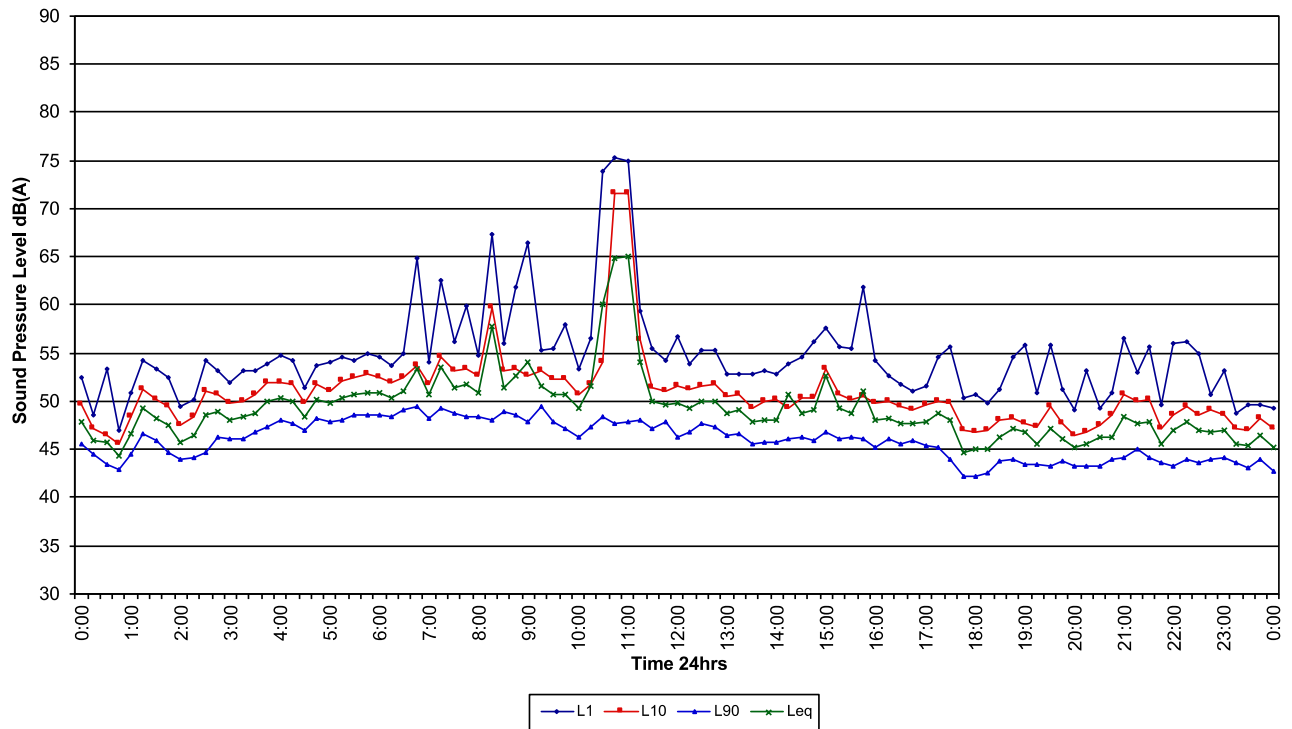




Ambient Logger Data

26 Dent Street, Botany

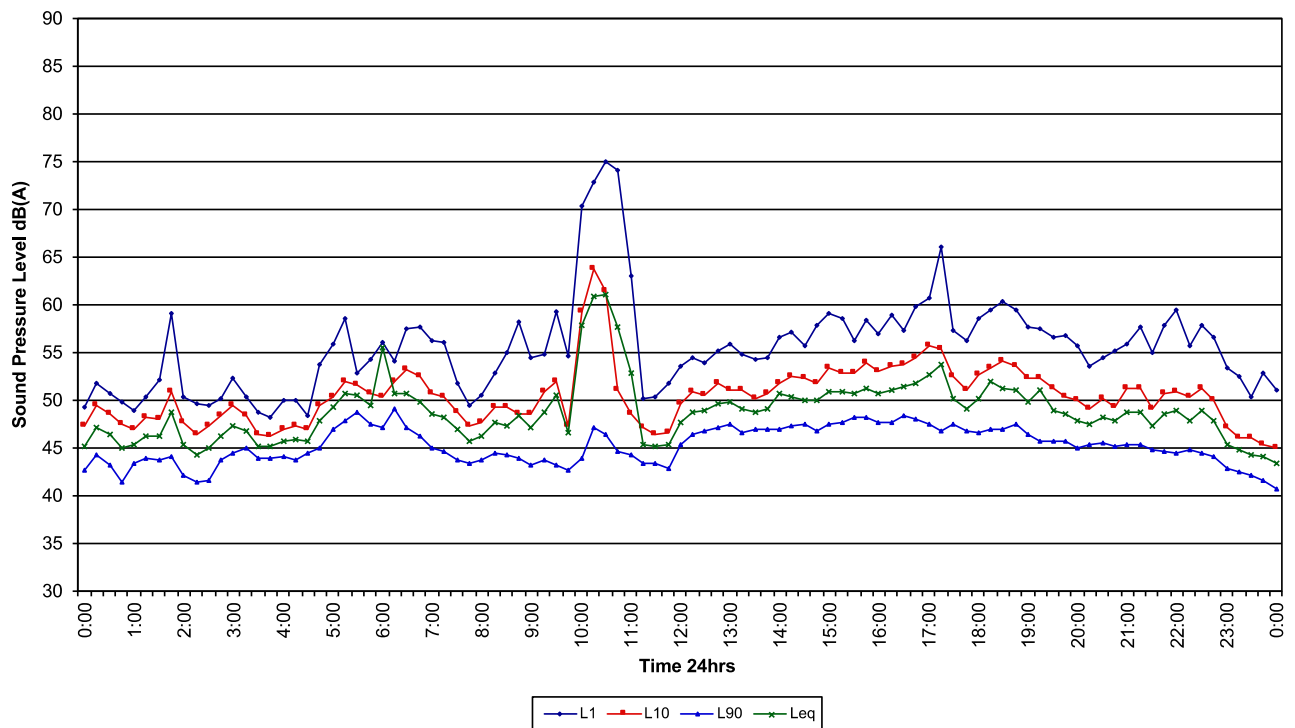
Wednesday 20/1/21



Ambient Logger Data

26 Dent Street, Botany

Thursday 21/1/21

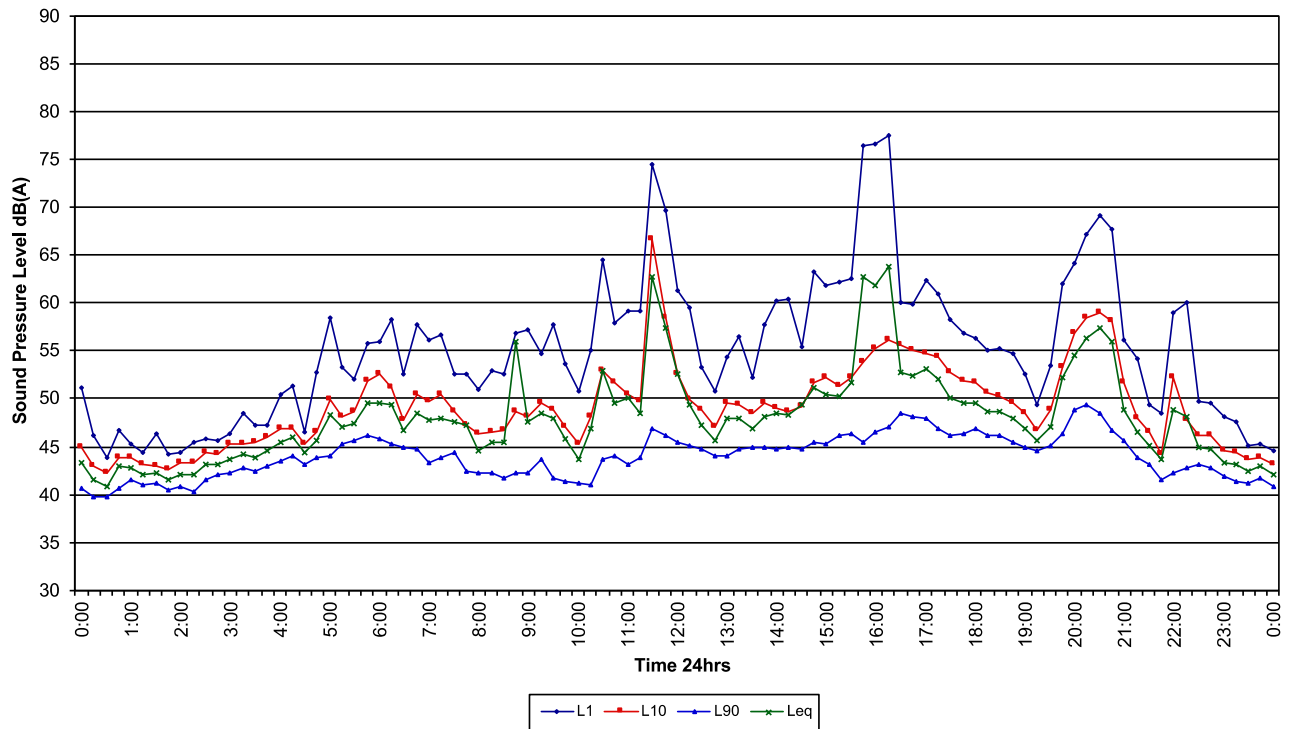




Ambient Logger Data

26 Dent Street, Botany

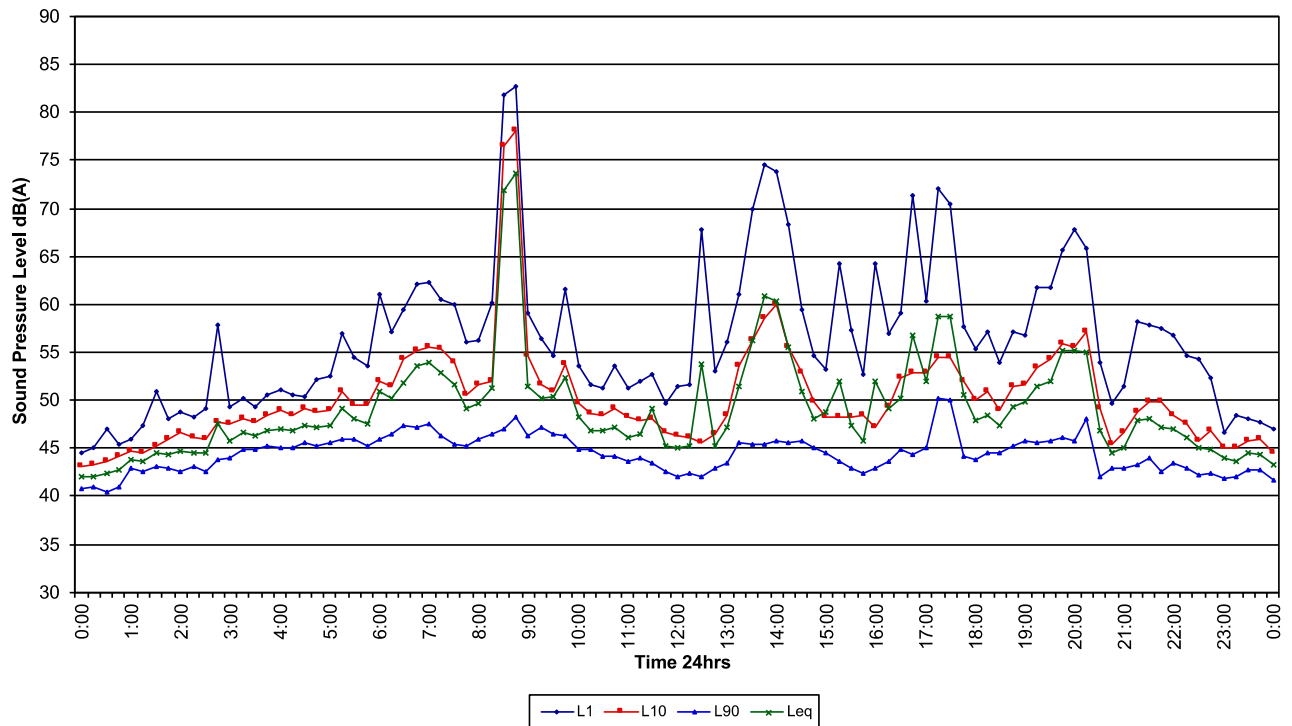
Friday 22/1/21



Ambient Logger Data

26 Dent Street, Botany

Saturday 23/1/21

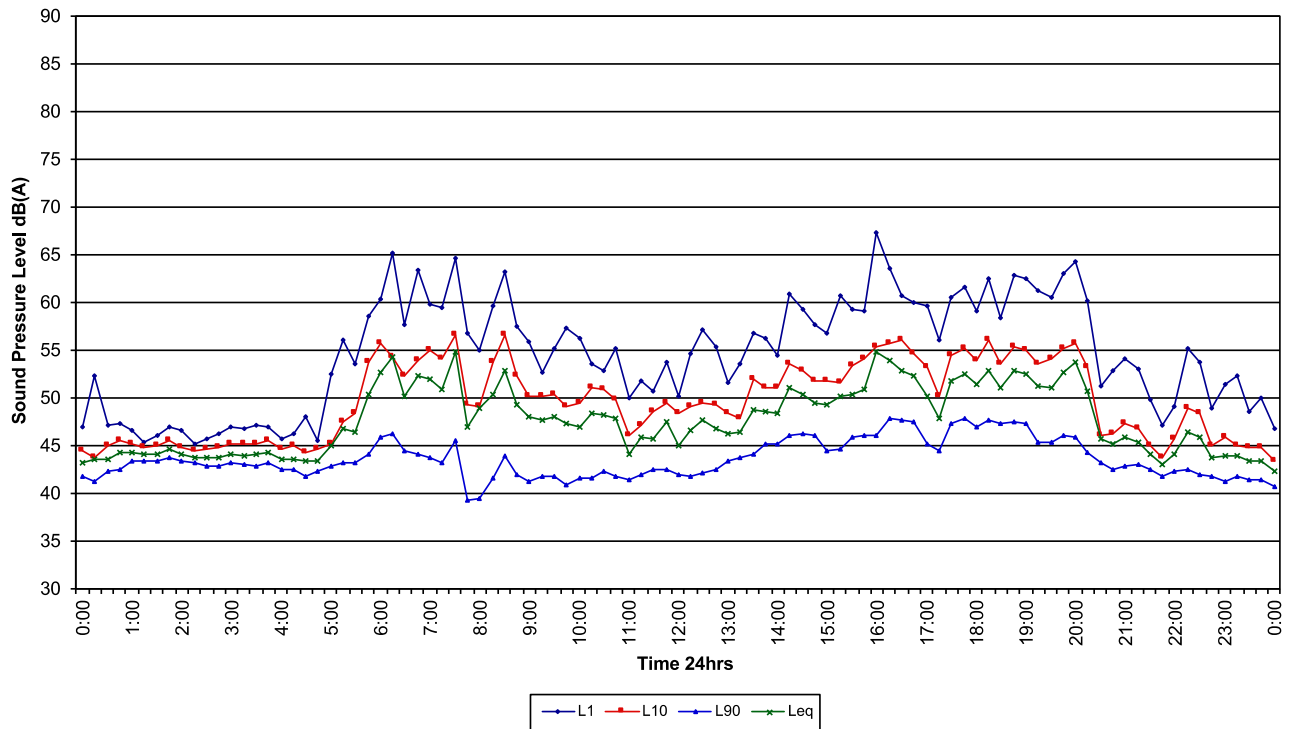




Ambient Logger Data

26 Dent Street, Botany

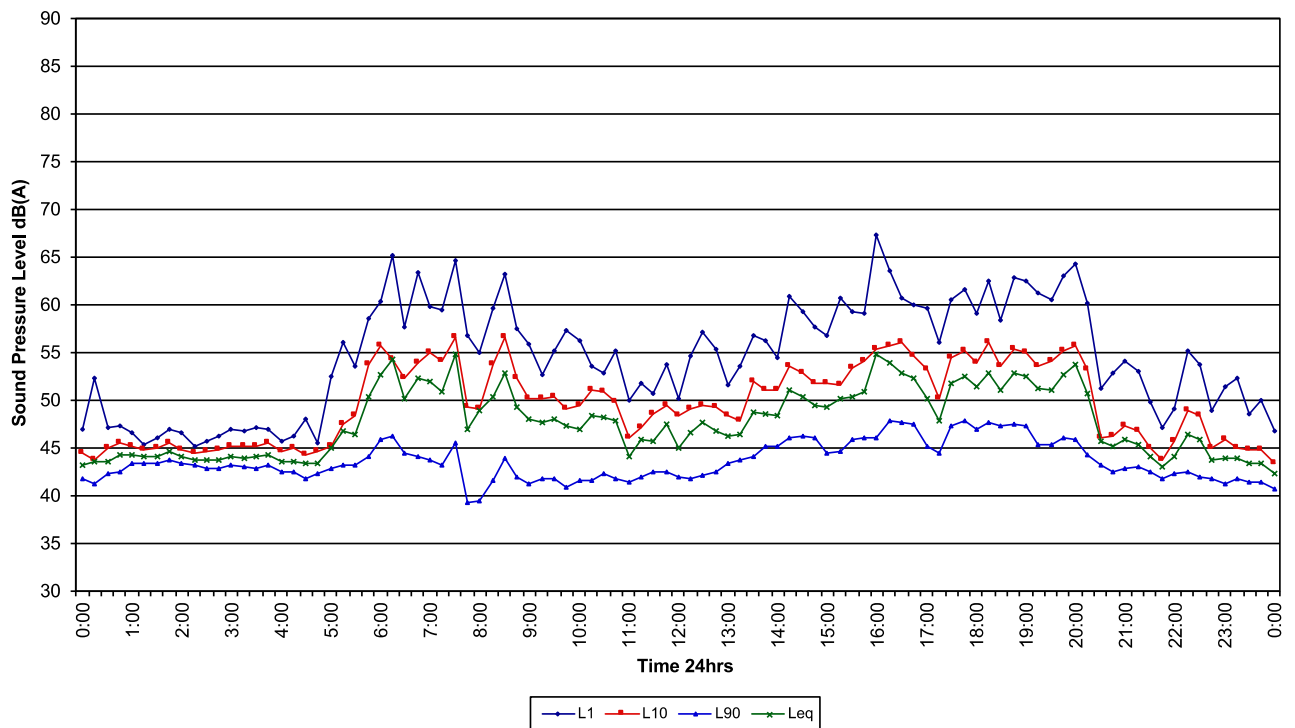
Sunday 24/1/21



Ambient Logger Data

26 Dent Street, Botany

Sunday 24/1/21



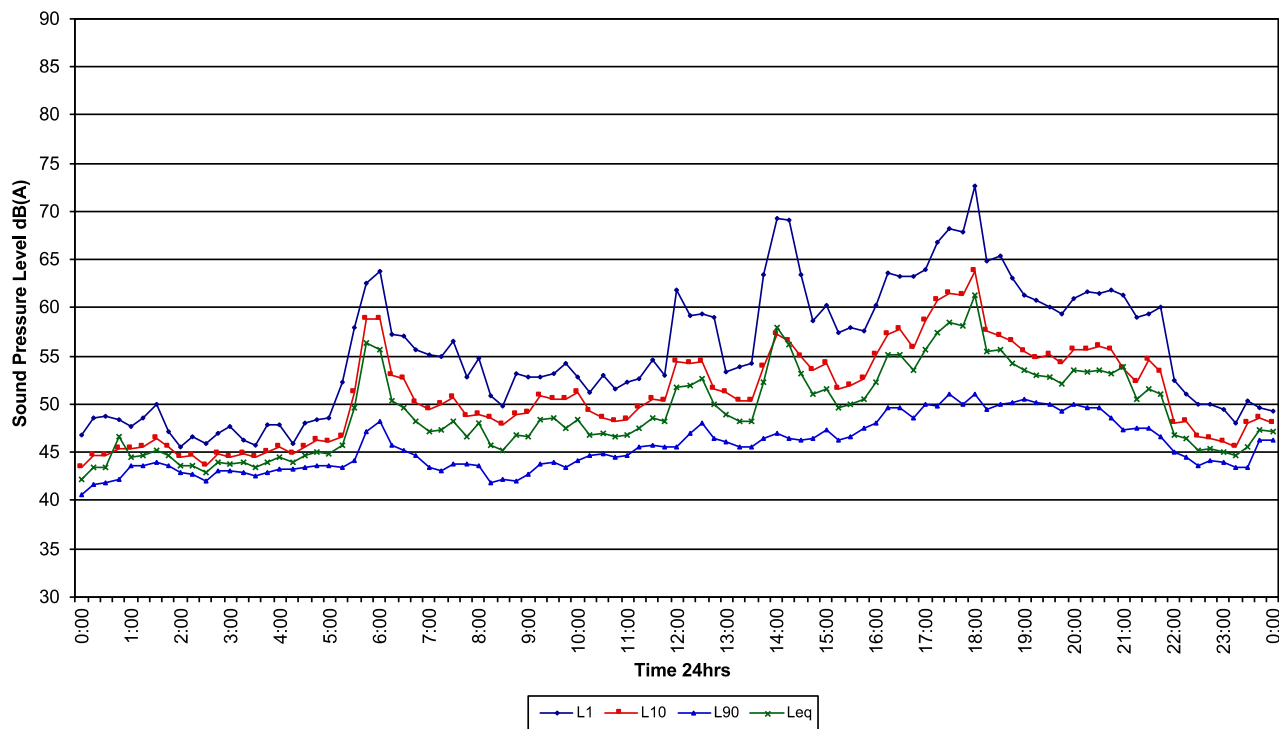


Ambient Logger Data

26 Dent Street, Botany

Monday

25/1/21

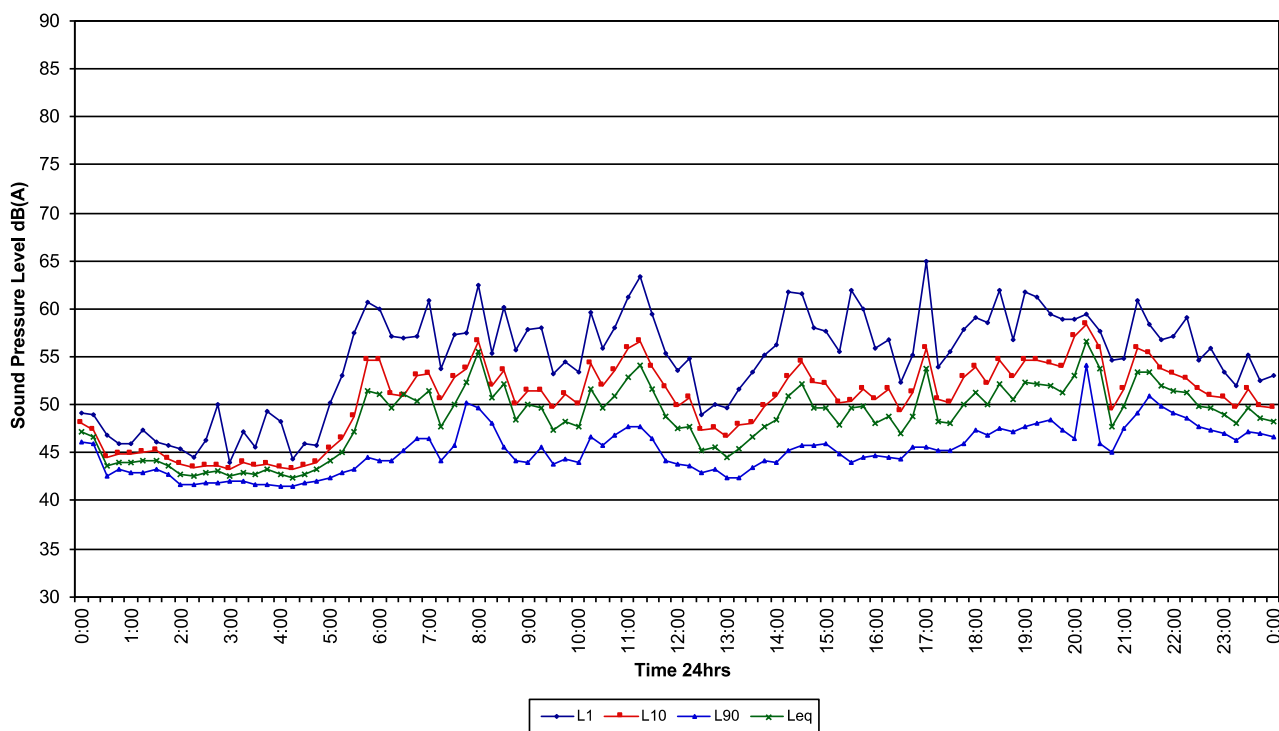


Ambient Logger Data

26 Dent Street, Botany

Tuesday

26/1/21

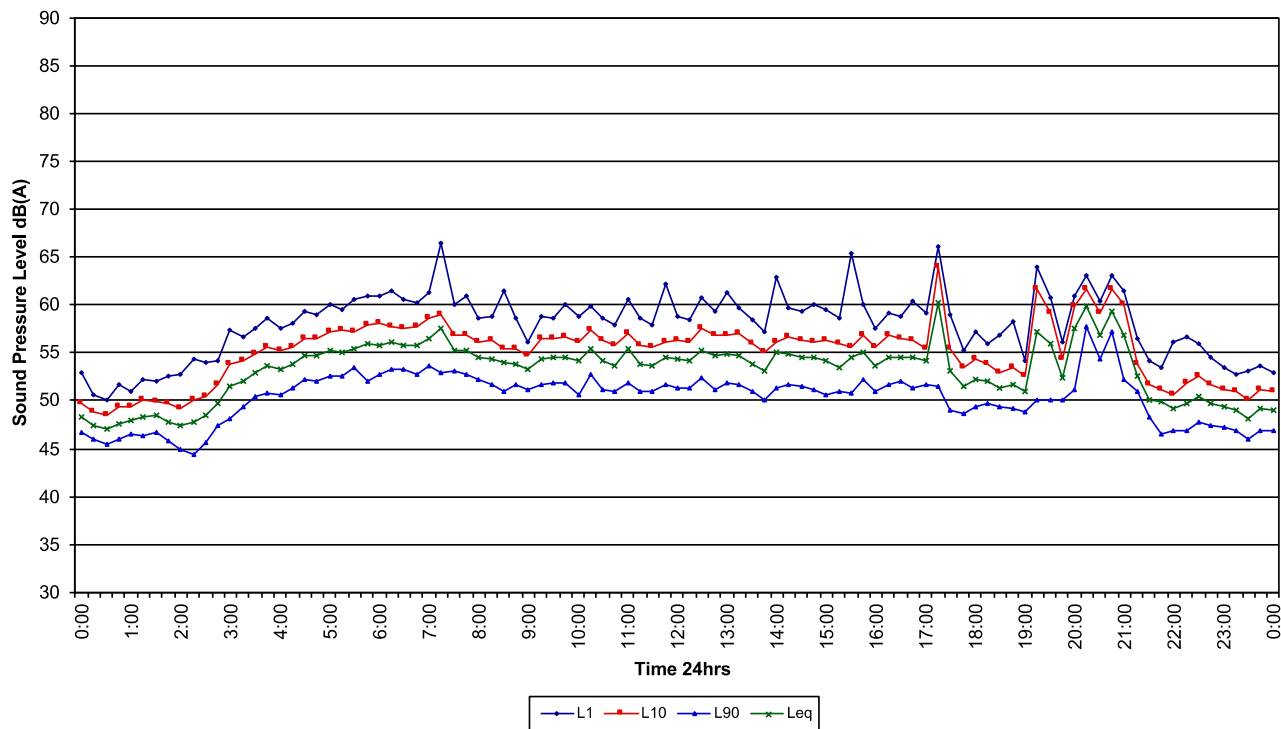




Ambient Logger Data

26 Dent Street, Botany

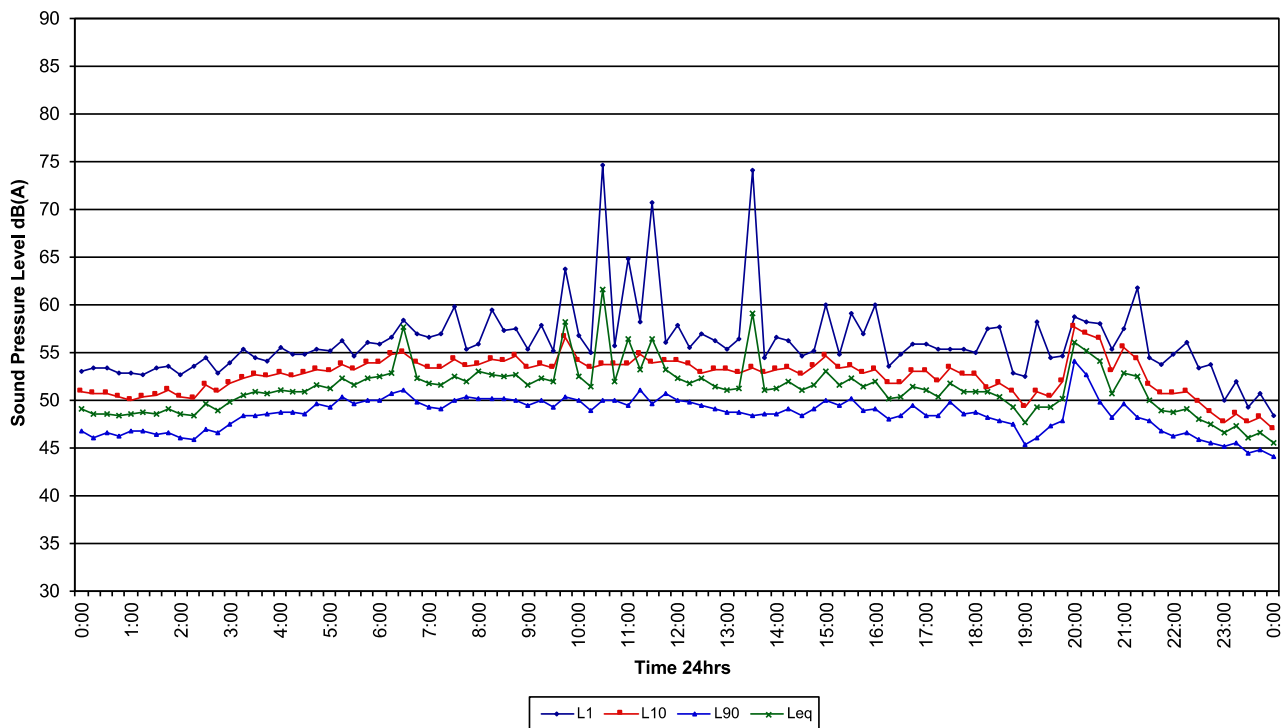
Wednesday 27/1/21



Ambient Logger Data

26 Dent Street, Botany

Thursday 28/1/21



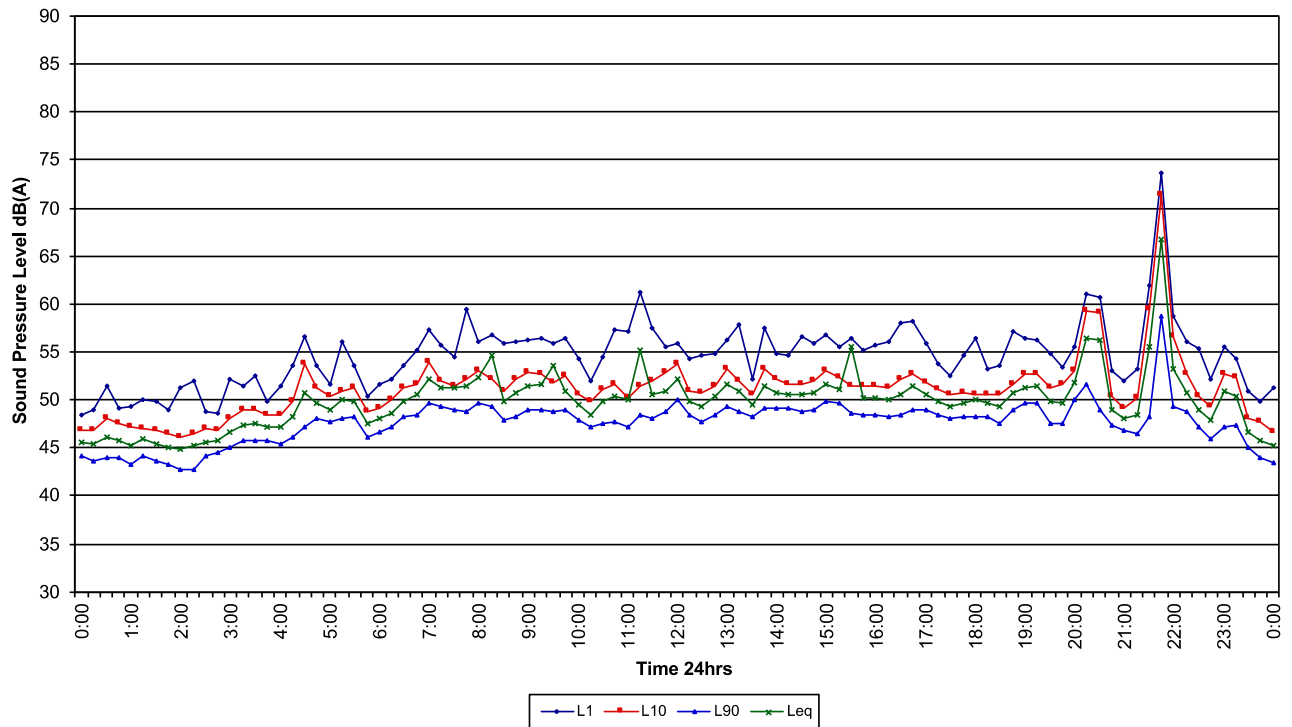


Ambient Logger Data

26 Dent Street, Botany

Friday

29/1/21

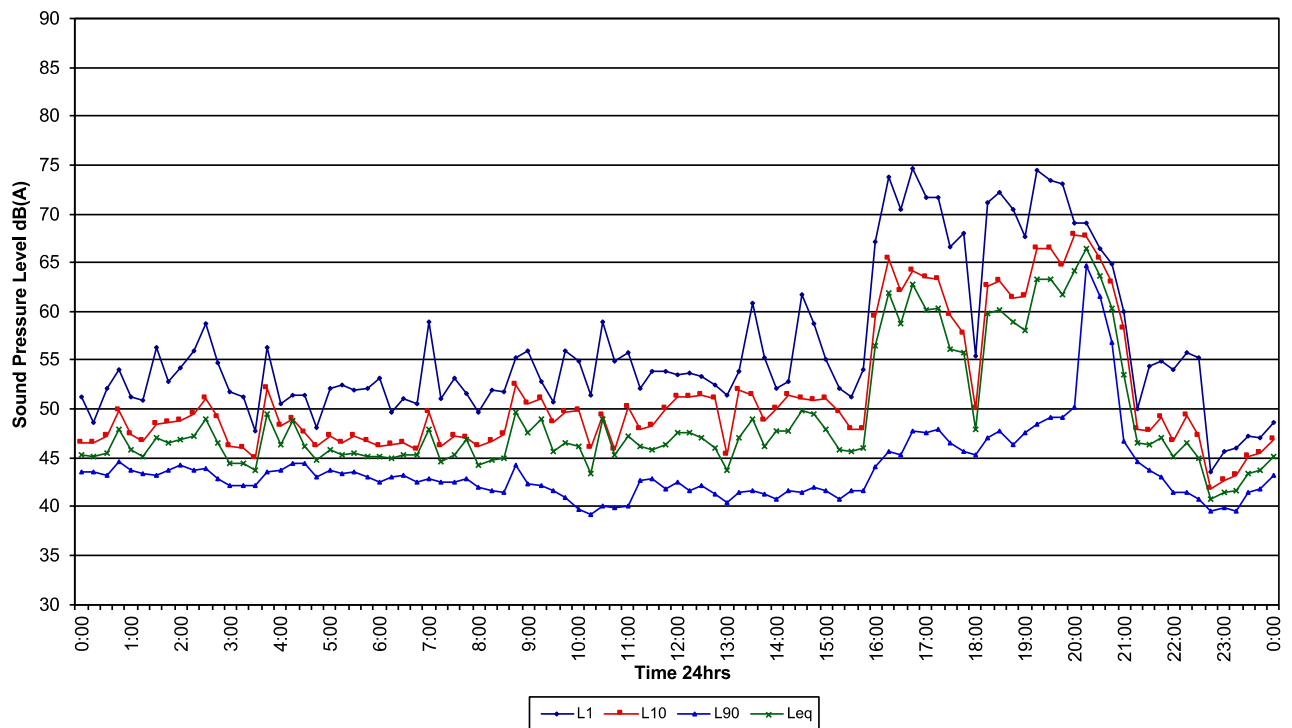


Ambient Logger Data

26 Dent Street, Botany

Saturday

30/1/21

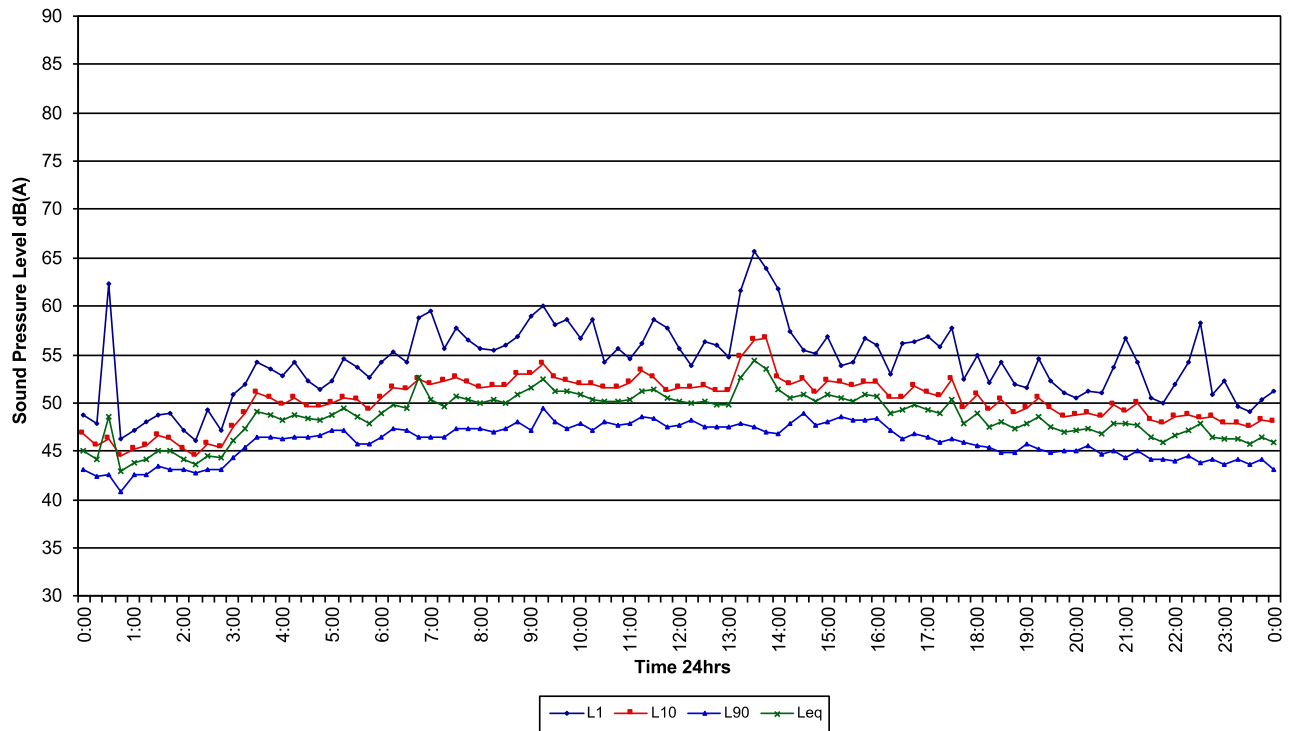




Ambient Logger Data

26 Dent Street, Botany

Sunday 31/1/21



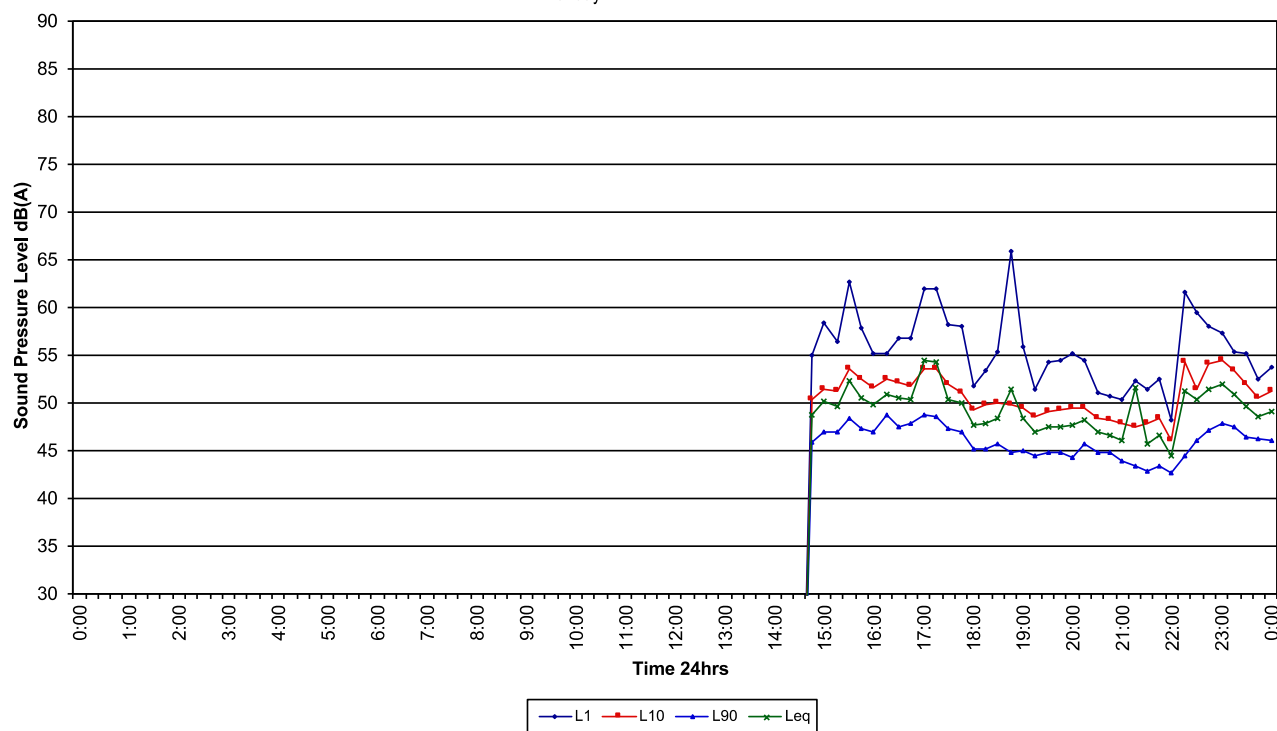


Appendix D – Unattended Logger Results – Botany Road

Ambient Logger Data

1424 Botany Road, Botany

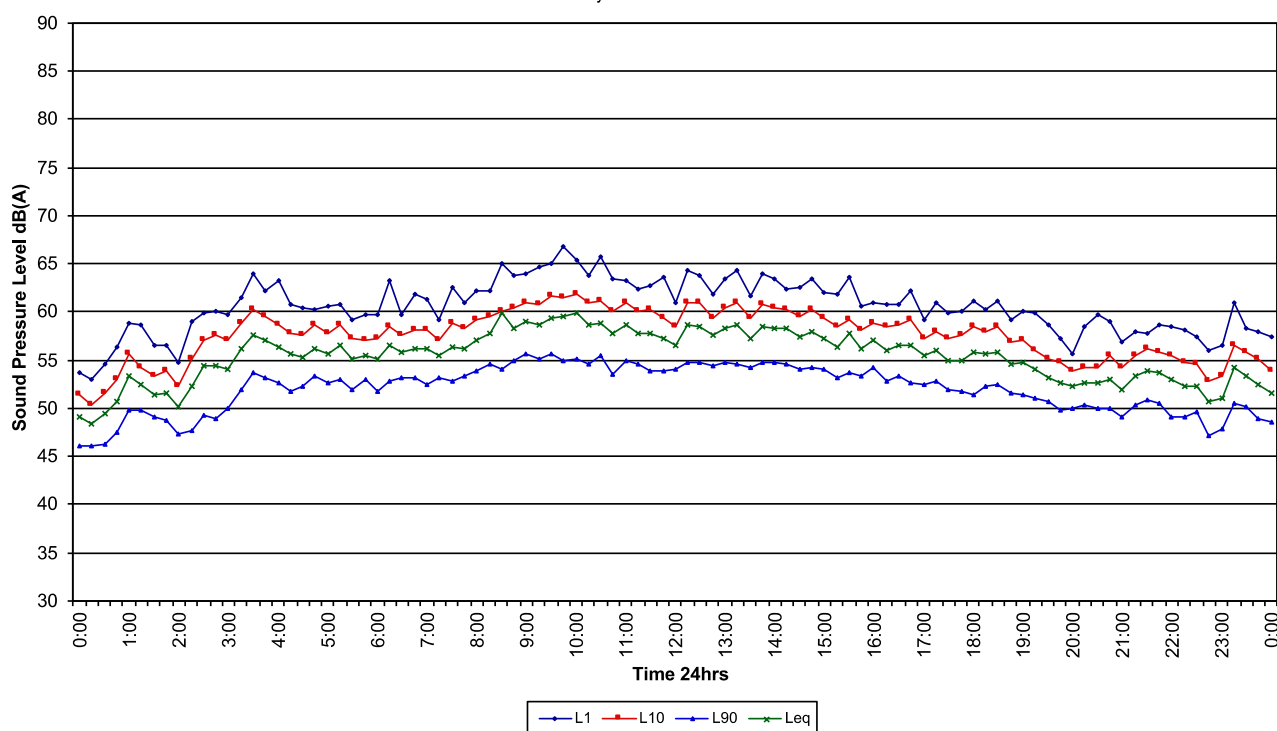
Monday 18/1/21



Ambient Logger Data

1424 Botany Road, Botany

Tuesday 19/1/21



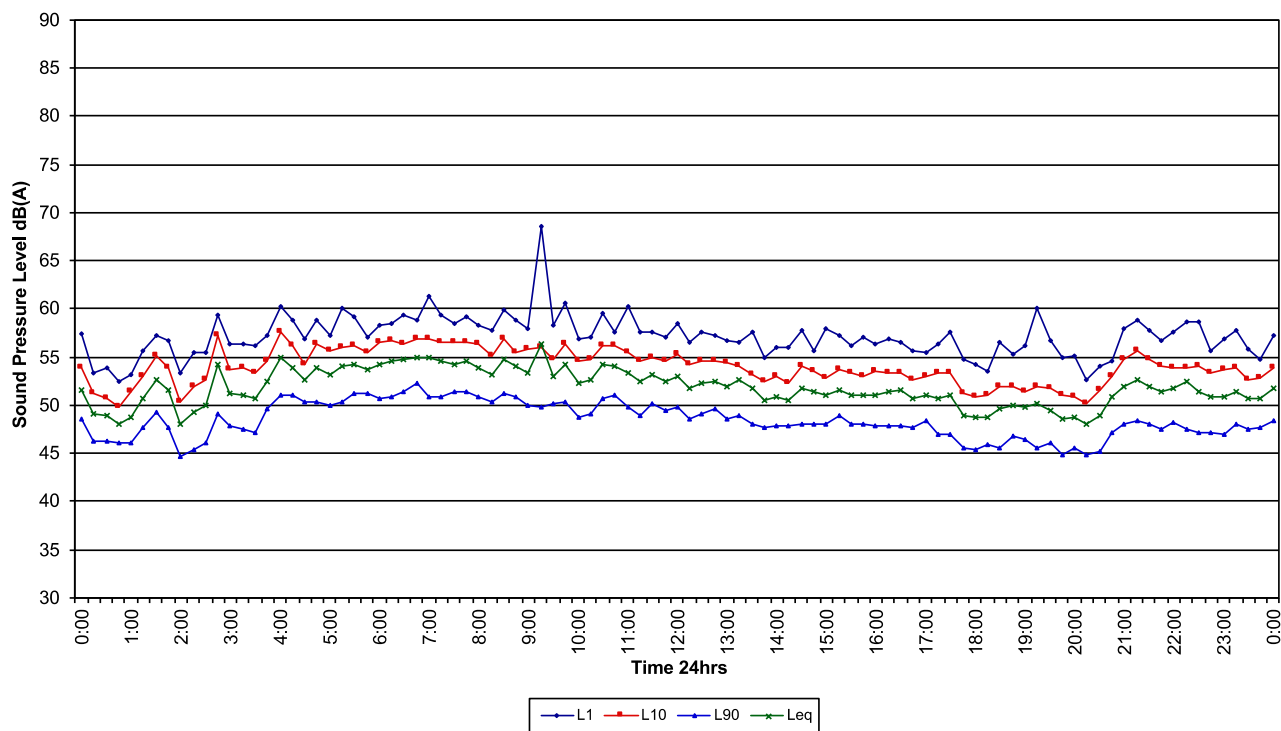


Ambient Logger Data

1424 Botany Road, Botany

Wednesday

20/1/21

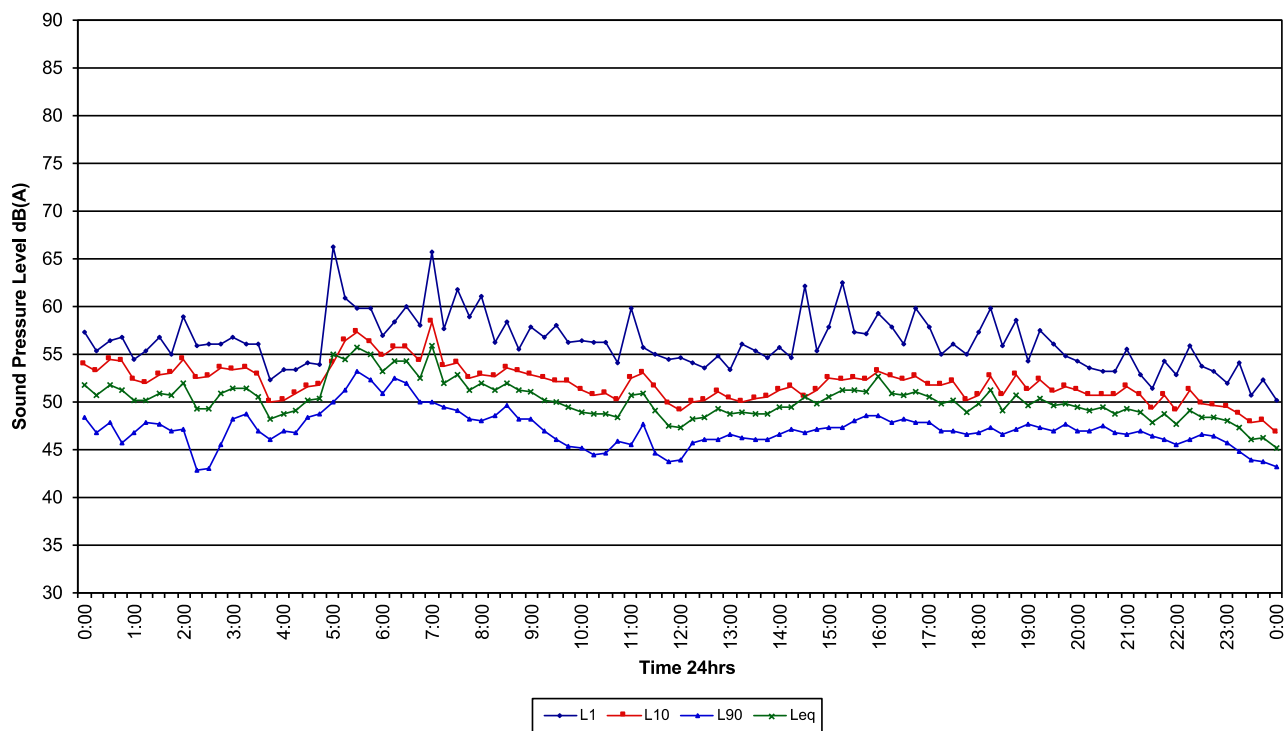


Ambient Logger Data

1424 Botany Road, Botany

Thursday

21/1/21



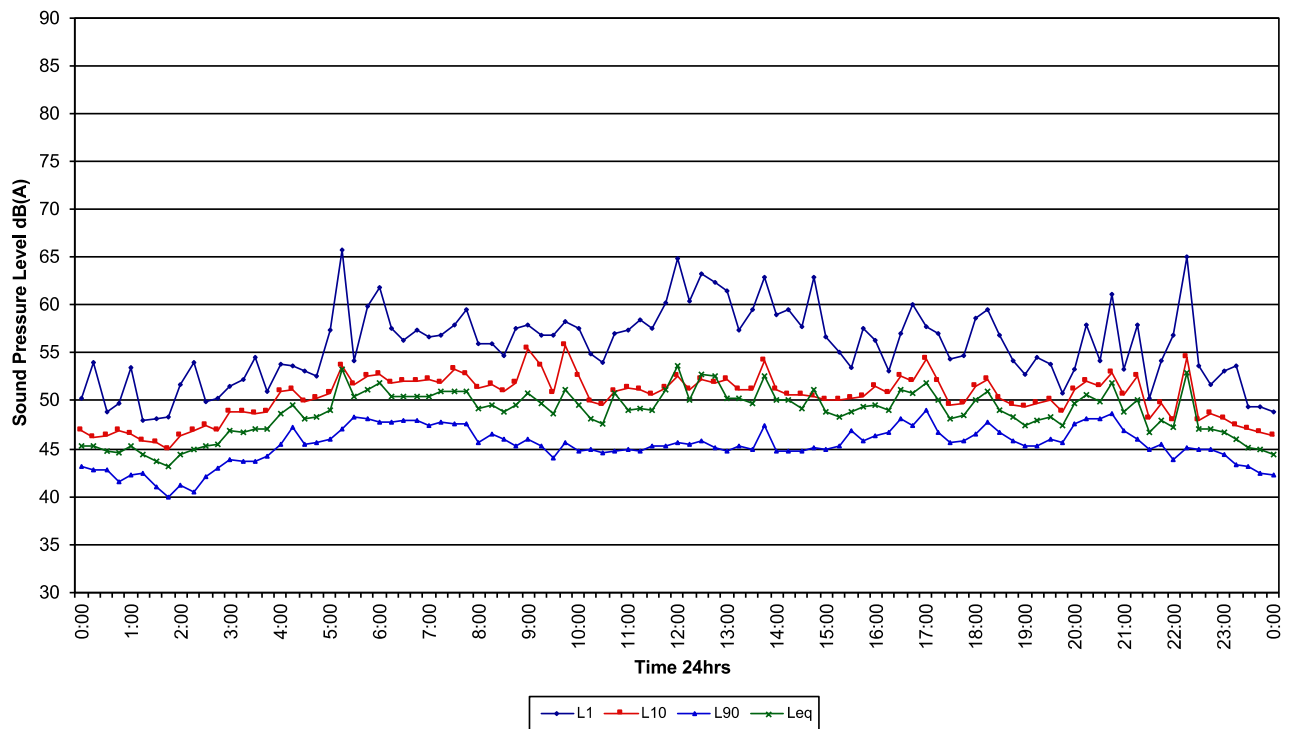


Ambient Logger Data

1424 Botany Road, Botany

Friday

22/1/21

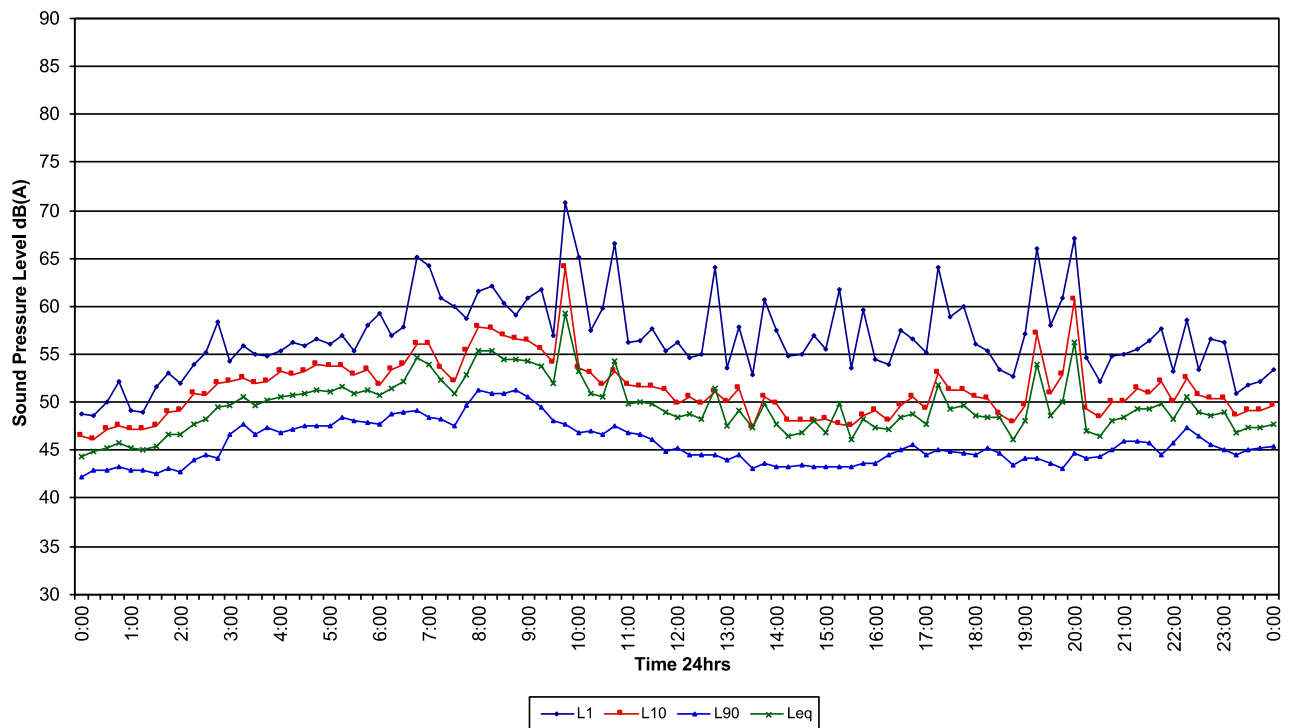


Ambient Logger Data

1424 Botany Road, Botany

Saturday

23/1/21



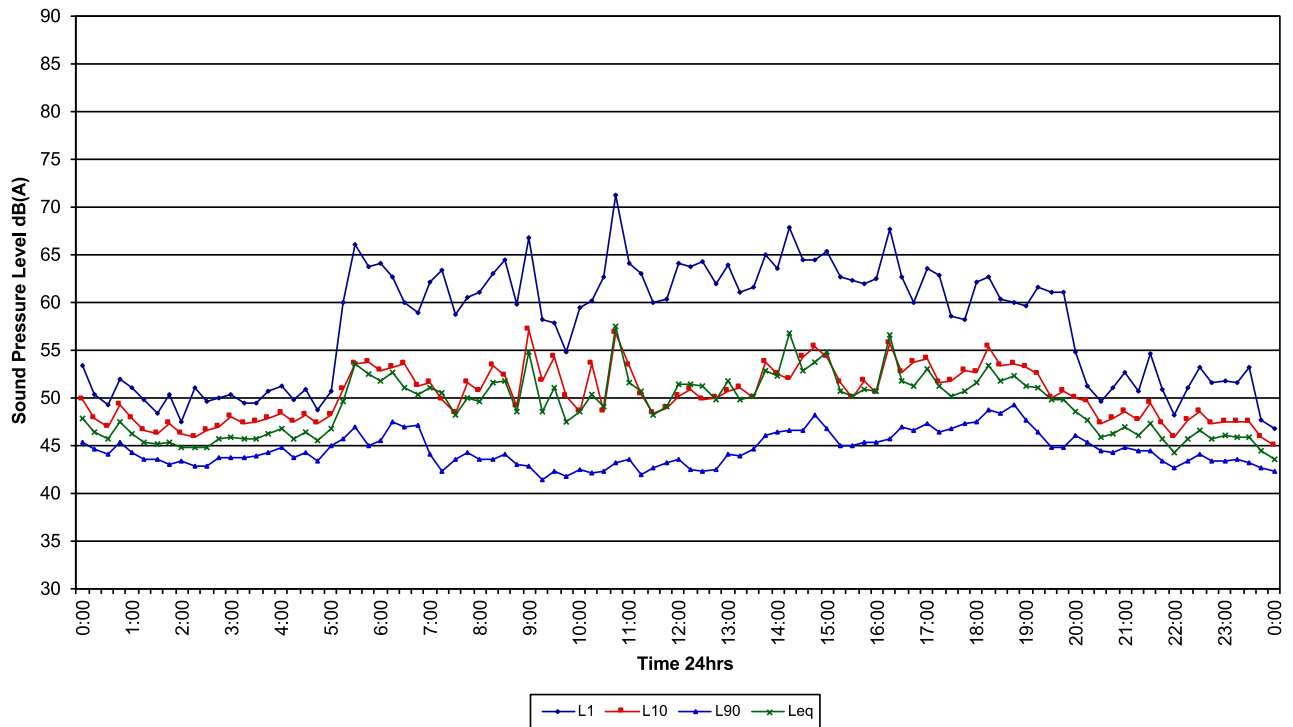


Ambient Logger Data

1424 Botany Road, Botany

Sunday

24/1/21

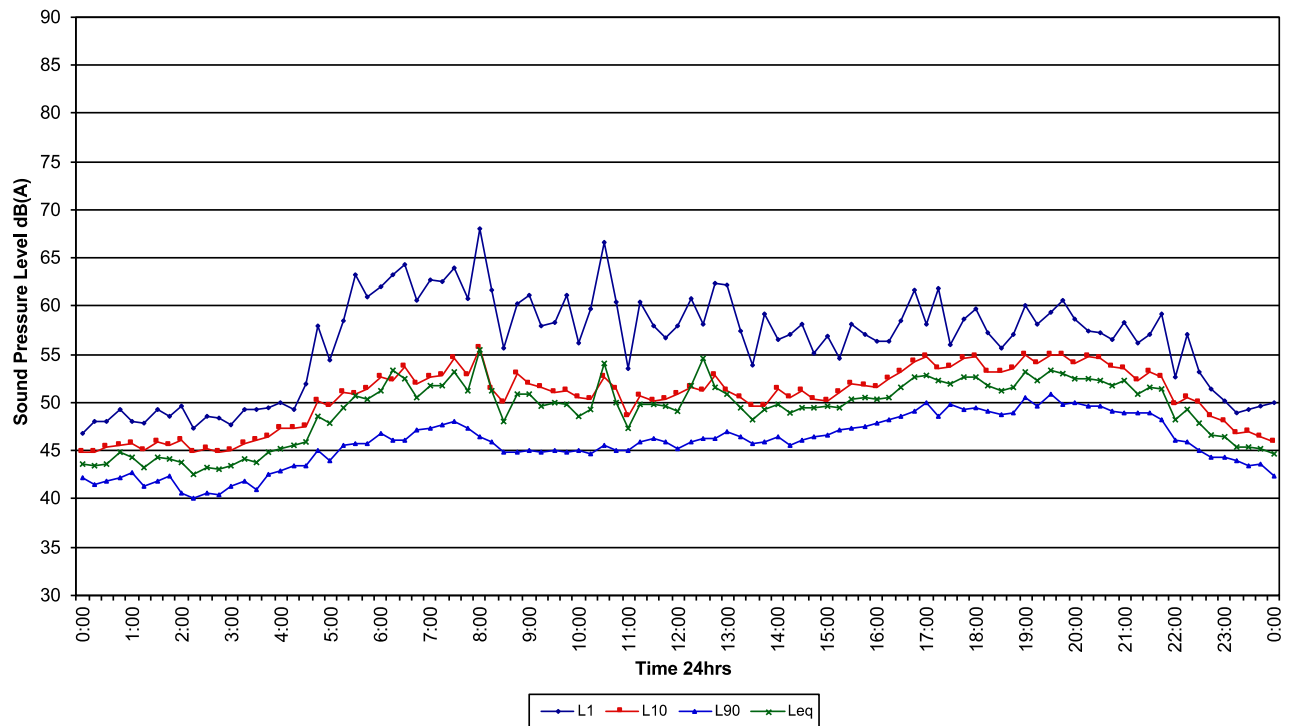


Ambient Logger Data

1424 Botany Road, Botany

Monday

25/1/21



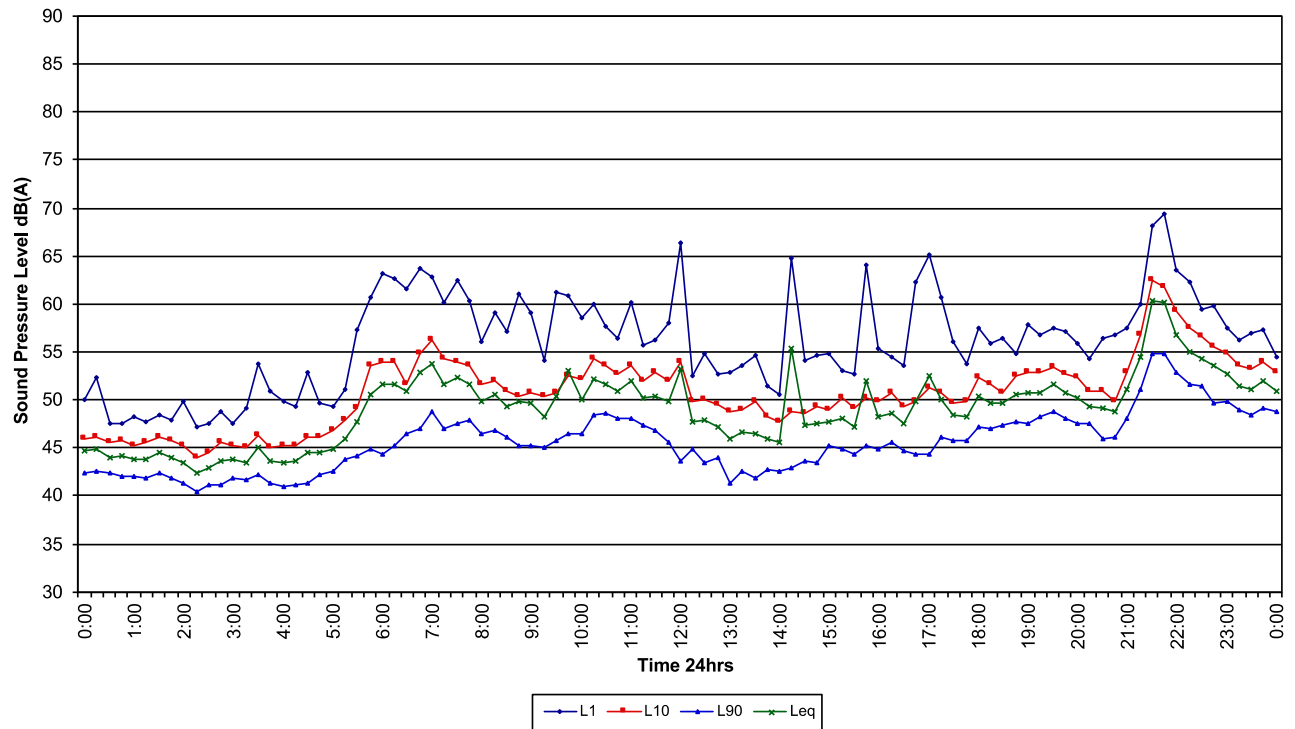


Ambient Logger Data

1424 Botany Road, Botany

Tuesday

26/1/21

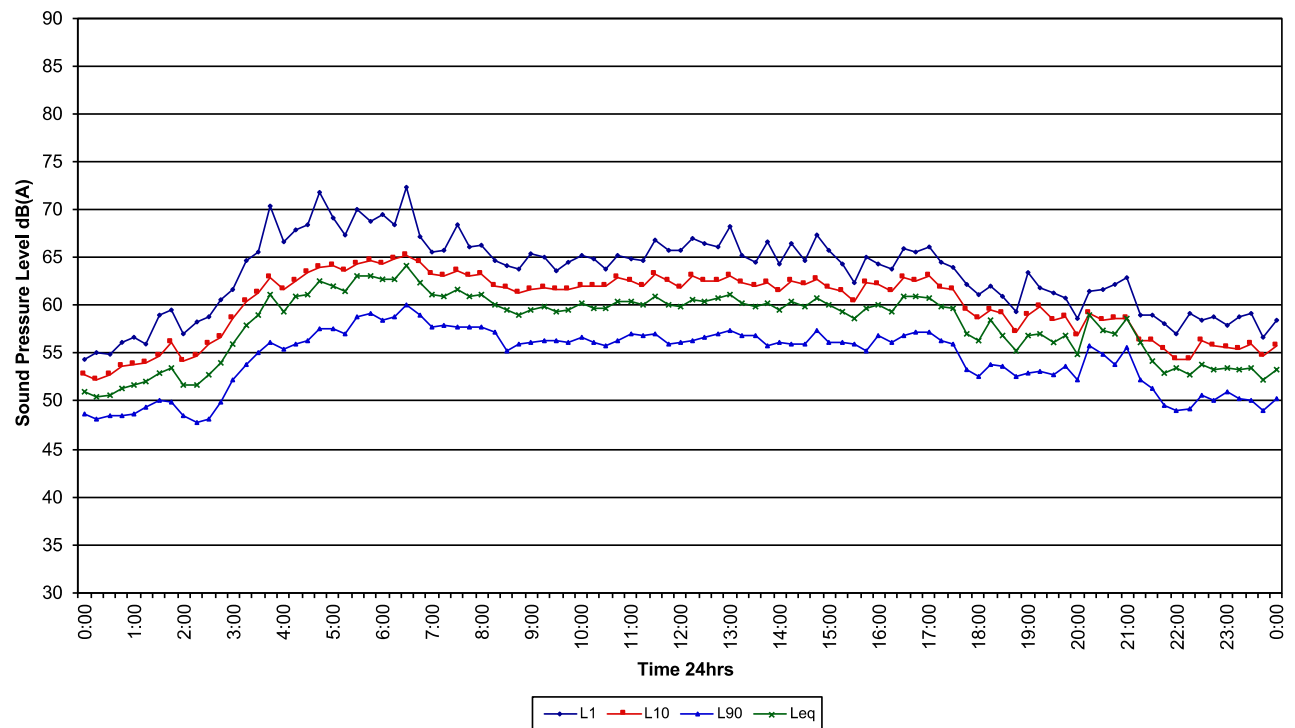


Ambient Logger Data

1424 Botany Road, Botany

Wednesday

27/1/21



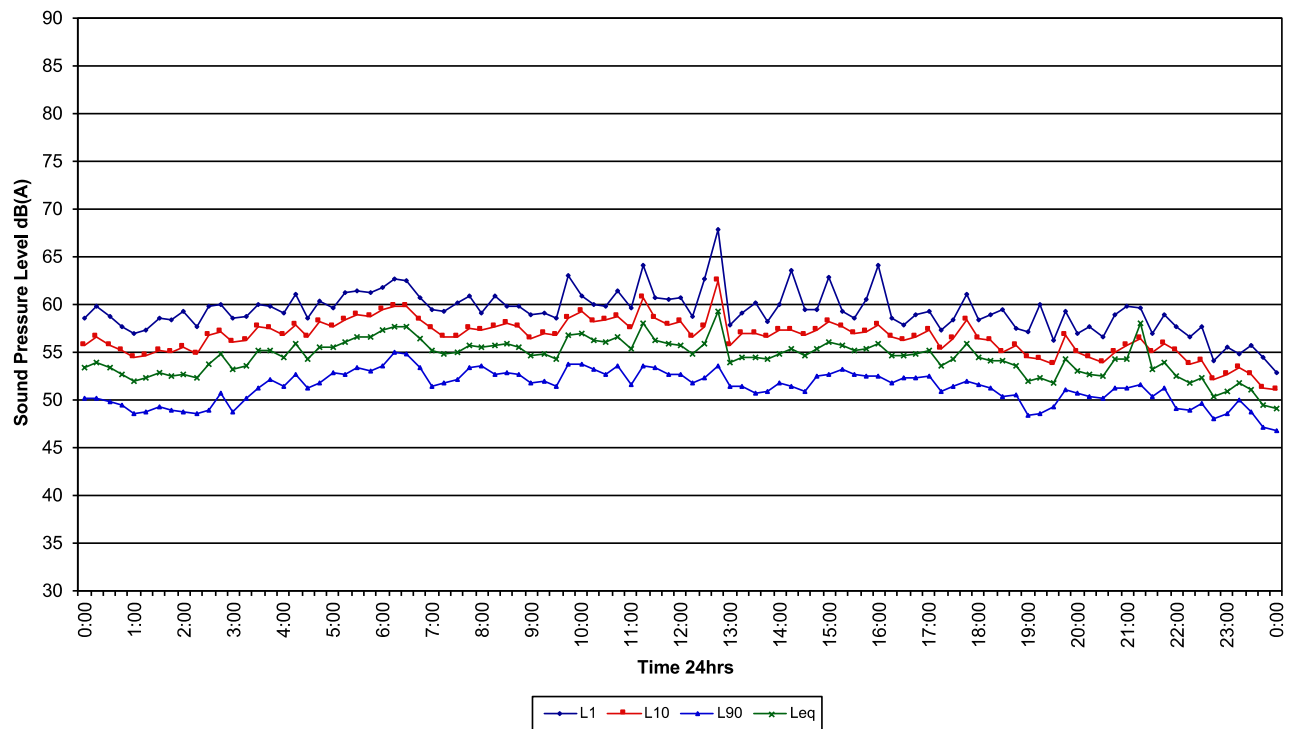


Ambient Logger Data

1424 Botany Road, Botany

Thursday

28/1/21

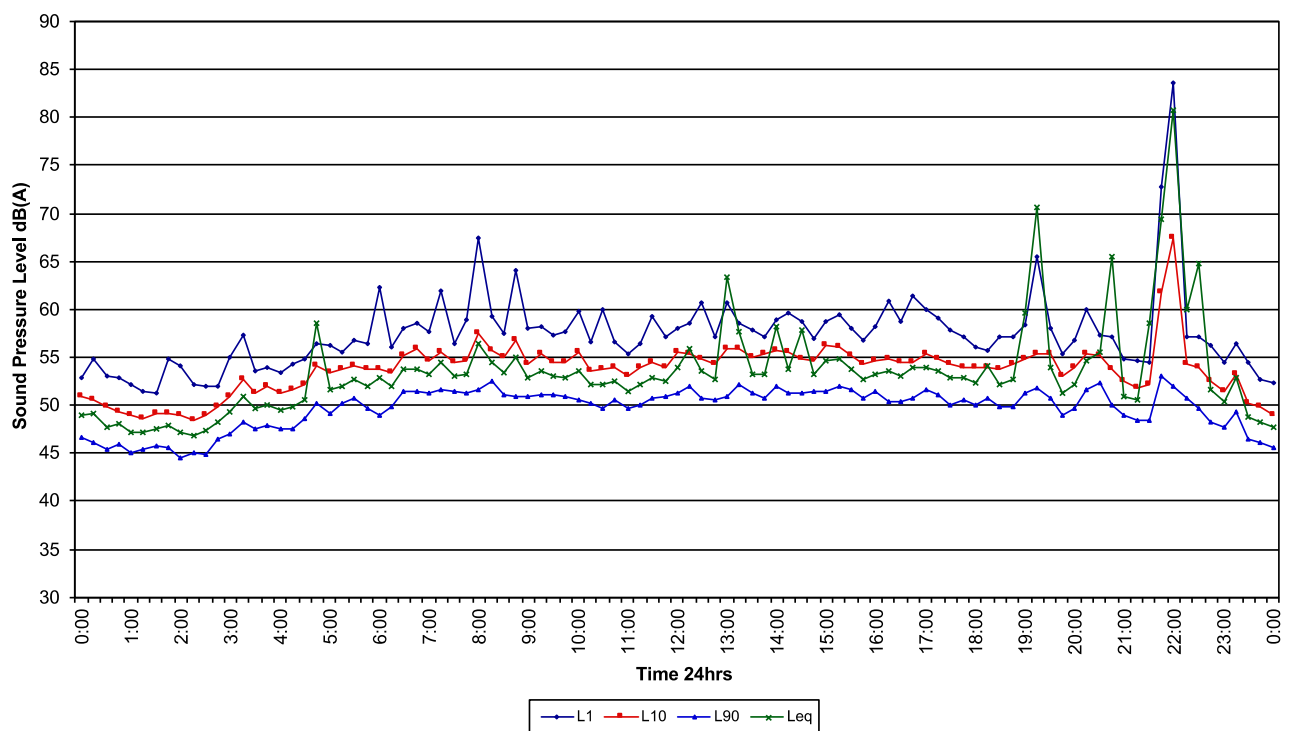


Ambient Logger Data

1424 Botany Road, Botany

Friday

29/1/21



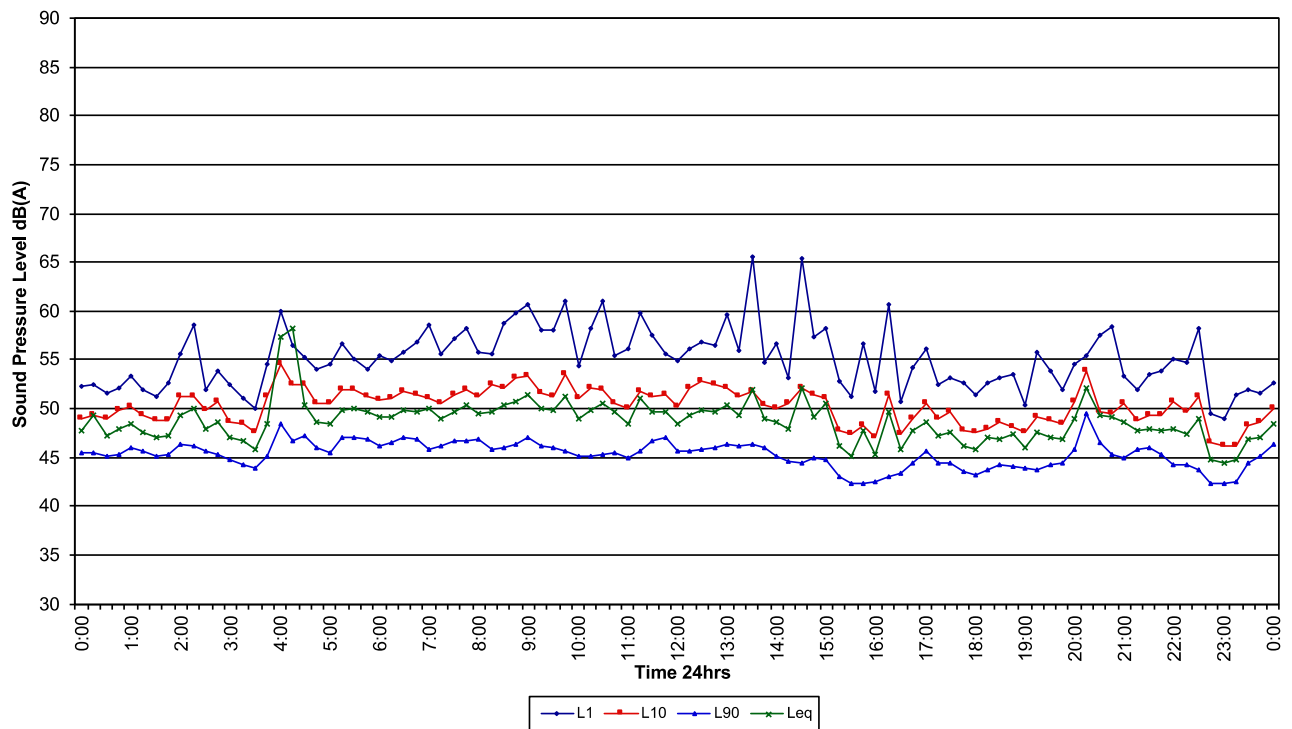


Ambient Logger Data

1424 Botany Road, Botany

Saturday

30/1/21

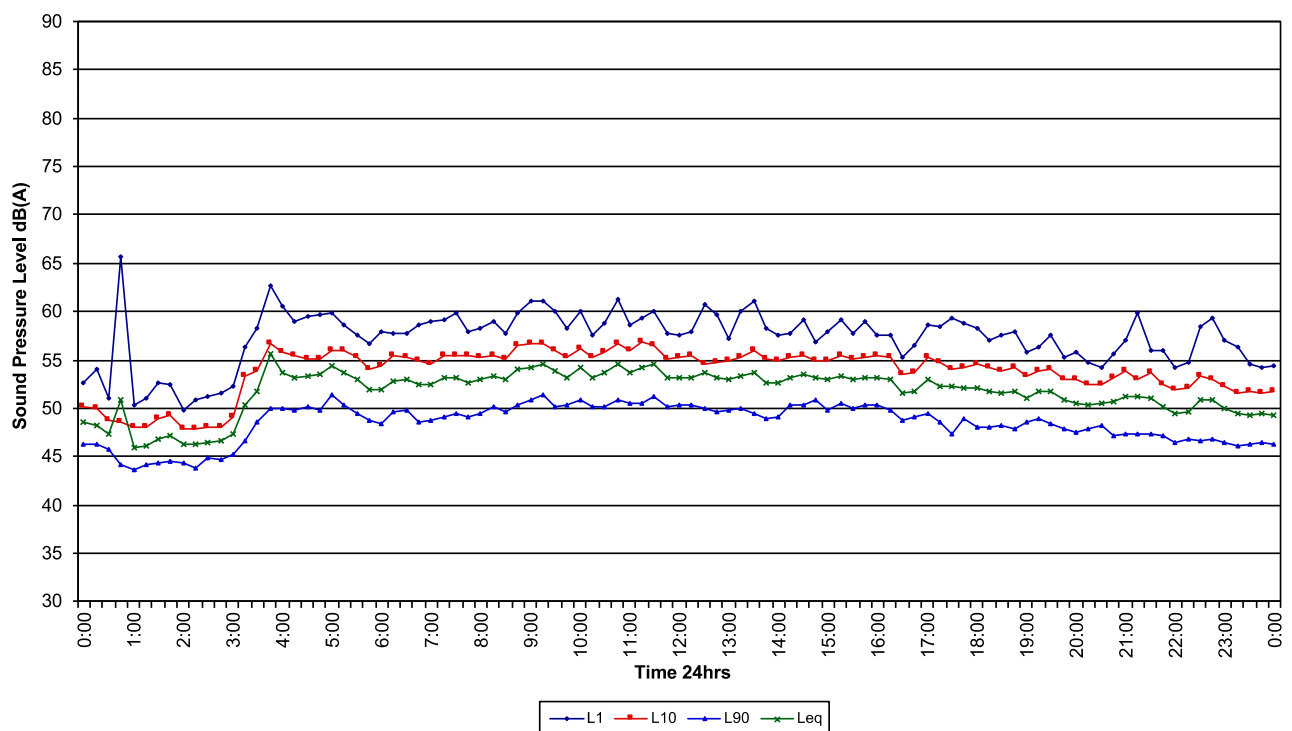


Ambient Logger Data

1424 Botany Road, Botany

Sunday

31/1/21





Appendix E – Calibration Certificates



**Acoustic
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Labs Pty Ltd**

Unit 36/14 Loyalty Rd
North Rocks NSW AUSTRALIA 2151
Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

Sound Level Meter
IEC 61672-3:2013
Calibration Certificate
Calibration Number C19389

Client Details Rodney Stevens Acoustics Pty Ltd
1 Majura Close
St Ives Chase NSW 2075

Equipment Tested/ Model Number : Rion NL-42EX
Instrument Serial Number : 00133010
Microphone Serial Number : 144601
Pre-amplifier Serial Number : 23060

Pre-Test Atmospheric Conditions
Ambient Temperature : 25°C
Relative Humidity : 41.7%
Barometric Pressure : 100.8kPa

Post-Test Atmospheric Conditions
Ambient Temperature : 24.8°C
Relative Humidity : 41.5%
Barometric Pressure : 100.8kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 2 Jul 2019

Secondary Check: Eloise Burrows
Report Issue Date : 8 Jul 2019

Approved Signatory :

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 2 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2013 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013 and because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
31.5 Hz to 8 kHz	±0.15dB	Temperature	±0.2°C
12.5 kHz	±0.2dB	Relative Humidity	±2.4%
16 kHz	±0.29dB	Barometric Pressure	±0.015kPa
Electrical Tests			
31.5 Hz to 20 kHz	±0.11dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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Sound Level Meter
IEC 61672-3:2013
Calibration Certificate

Calibration Number **C20580**

Client Details		Rodney Stevens Acoustics Pty Ltd 1 Majura Close St Ives Chase NSW 2075	
Equipment Tested/ Model Number :		Rion NL-42	
Instrument Serial Number :		00546394	
Microphone Serial Number :		172450	
Pre-amplifier Serial Number :		46606	
Pre-Test Atmospheric Conditions		Post-Test Atmospheric Conditions	
Ambient Temperature : 22.1°C		Ambient Temperature : 21.9°C	
Relative Humidity : 59.4%		Relative Humidity : 51.1%	
Barometric Pressure : 100.65kPa		Barometric Pressure : 100.58kPa	
Calibration Technician : Jeff Yu		Secondary Check: Max Moore	
Calibration Date : 21 Oct 2020		Report Issue Date : 23 Oct 2020	
Approved Signatory : 		Ken Williams	

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 2 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2013 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013 and because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	±0.12dB	Temperature	±0.2°C
1kHz	±0.11dB	Relative Humidity	±2.4%
8kHz	±0.13dB	Barometric Pressure	±0.015kPa
Electrical Tests	±0.10dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

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Sound Level Meter
IEC 61672-3:2013
Calibration Certificate
Calibration Number C20736

Client Details Rodney Stevens Acoustics Pty Ltd
1 Majura Close
St Ives Chase NSW 2075


Equipment Tested/ Model Number : Rion NL-42EX
Instrument Serial Number : 00546393
Microphone Serial Number : 152907
Pre-amplifier Serial Number : 46605

Pre-Test Atmospheric Conditions
Ambient Temperature : 22.5°C
Relative Humidity : 51.2%
Barometric Pressure : 99.9kPa

Post-Test Atmospheric Conditions
Ambient Temperature : 22.4°C
Relative Humidity : 50.2%
Barometric Pressure : 99.9kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 21 Dec 2020

Secondary Check: Max Moore
Report Issue Date : 22 Dec 2020

Approved Signatory : 

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 2 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2013 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013 and because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	±0.12dB	Temperature	±0.2°C
1kHz	±0.11dB	Relative Humidity	±2.4%
8kHz	±0.13dB	Barometric Pressure	±0.015kPa
Electrical Tests	±0.10dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172
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Sound Level Meter
IEC 61672-3:2013
Calibration Certificate
Calibration Number C20437

Client Details Rodney Stevens Acoustics Pty Ltd
1 Majura Close
St Ives Chase NSW 2075

Equipment Tested/ Model Number : SVANTEK SVAN 979
Instrument Serial Number : 21039
Microphone Serial Number : 128072
Pre-amplifier Serial Number : 52145

Pre-Test Atmospheric Conditions
Ambient Temperature : 23°C
Relative Humidity : 34.2%
Barometric Pressure : 100.2kPa

Post-Test Atmospheric Conditions
Ambient Temperature : 23.8°C
Relative Humidity : 34.3%
Barometric Pressure : 100.1kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 5 Aug 2020

Secondary Check: Max Moore
Report Issue Date : 6 Aug 2020

Approved Signatory :

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
+ 125Hz	±0.13dB	Temperature	±0.2°C
1kHz	±0.13dB	Relative Humidity	±2.4%
8kHz	±0.14dB	Barometric Pressure	±0.015kPa
Electrical Tests	±0.10dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

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Sound Level Meter
IEC 61672-3:2013
Calibration Certificate
Calibration Number C20032

Client Details Rodney Stevens Acoustics Pty Ltd
1 Majura close
St Ives Chase NSW 2075

Equipment Tested/ Model Number : Bruel & Kjaer Type 2250
Instrument Serial Number : 3011625
Microphone Serial Number : 3099640
Pre-amplifier Serial Number : 25774

Pre-Test Atmospheric Conditions
Ambient Temperature : 25.1°C
Relative Humidity : 64.3%
Barometric Pressure : 99.9kPa

Post-Test Atmospheric Conditions
Ambient Temperature : 25.6°C
Relative Humidity : 63%
Barometric Pressure : 99.8kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 17 Jan 2020

Secondary Check: Max Moore
Report Issue Date : 22 Jan 2020

Approved Signatory :

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2013 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013 and because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Least Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
31.5 Hz to 8kHz	±0.18dB	Temperature	±0.2°C
12.5kHz	±0.19dB	Relative Humidity	±2.4%
16kHz	±0.29dB	Barometric Pressure	±0.015kPa
Electrical Tests			
31.5 Hz to 20 kHz	±0.11dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

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Appendix F – Potential Areas of Container Landing Noise

