Sam's Liquid Waste & Hire

Annual Noise Monitoring 2019

September 2019

Executive summary

GHD Pty Ltd (GHD) has been engaged by Sam's Liquid Waste & Hire (Sam's) to conduct annual operational noise compliance monitoring at its facility located in Dubbo, NSW.

This report presents the findings of the 2019 operational noise compliance monitoring survey and assesses this monitoring data against noise criteria set out in Sam's Environmental Protection Licence EPL 20507, for this site.

Operator attended noise measurements were conducted at the one (1) location identified as Monitoring Point 2 (MP2) in the Environmental Protection Licence EPL 20507. Measurements were undertaken on Wednesday 17 July 2019 to Friday 19 July 2019.

The operator-attended operational noise monitoring results showed that the noise contributions from Sam's were compliant with Environmental Protection Licence EPL 20507 noise criteria at the monitoring location during this survey.

Glossary

Term	Definition
AS	Australian Standard
dB	Decibel is the unit used for expressing the sound pressure level (SPL) or power level (SWL) in acoustics.
dB(A)	Frequency weighting filter used to measure 'A-weighted' sound pressure levels, which conforms approximately to the human ear response, as our hearing is less sensitive at very low and very high frequencies.
NPI	Noise Policy for Industry
$L_{Aeq(period)}$	Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
$L_{A1(period)}$	The sound pressure level that is exceeded for 1% of the measurement period.
$L_{A10(period)}$	The sound pressure level that is exceeded for 10% of the measurement period.
$L_{A90(period)}$	The sound pressure level that is exceeded for 90% of the measurement period.
L_{Amax}	The maximum sound level recorded during the measurement period.
LGA	Local Government Area
Noise Sensitive Receiver	Noise sensitive land use that may be impacts by noise from the development.
PSNG	Project Specific Noise Goals
Rating Background Level (RBL)	The overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period.
Sam's	Sam's Liquid Waste & Hire

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1. Introduction

1.1 Overview

GHD Pty Ltd (GHD) has been engaged by Sam's Liquid Waste & Hire (Sam's) to conduct annual operational noise compliance monitoring at its facility located in Dubbo, NSW.

1.2 Purpose of this report

The purpose of this report is to present the findings of the 2019 operational noise compliance monitoring survey and assess this monitoring data against noise criteria set out in Sam's Environmental Protection Licence EPL 20507.

1.3 Scope of work

The scope of work undertaken by GHD for this assessment is summarised below:

- Operator attended operational compliance noise monitoring was undertaken at one (1) location identified as Point 2 (MP2) in the Environmental Protection Licence EPL 20507. Monitoring was undertaken for 1.5 hours during the daytime over three consecutive operating days.
- Access and permission was not granted to conduct noise monitoring at the nearest residential property. As a result, noise monitoring was undertaken at suitable locations on public property representative of the nearest potentially affected properties.
- Measured operational noise levels have been assessed against the Environmental Protection Licence conditions.
- If measured noise levels indicate that noise criteria was exceeded, GHD will consult with Sam's to determine a preferred noise control strategy.
- Where noise levels exceed noise criteria, in-principle noise mitigation recommendations have been provided.
- All measurements were conducted in accordance with the specifications detailed in the following documents:
  - Environmental Protection Licence EPL 20507
  - NSW Noise Policy for Industry 2017
  - Australia Standards AS1055 – 2018 Acoustics – Description and Measurement of Environmental Noise General Procedures

1.4 Limitations

This report has been prepared by GHD for Sam's Liquid Waste & Hire and may only be used and relied on by Sam's Liquid Waste & Hire for the purpose agreed between GHD and Sam's Liquid Waste & Hire as set out in Sections 1.2 and 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than Sam's Liquid Waste & Hire arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The noise monitoring results outlined in this report represent the findings apparent at the date and time of the conducted measurements and the conditions of the area at the time. It is the nature of environmental assessments that all variations in environmental conditions cannot be accessed and all uncertainty concerning the conditions of the ambient noise environment cannot be eliminated. Professional judgement must be exercised in the investigation and interpretation of observations.

In conducting this assessment and preparing the report, current guidelines for noise were referred to. This work has been conducted in good faith with GHD's understanding of the client's brief and the generally accepted consulting practice.

No other warranty, expressed or implied, is made as to the information and professional advice included in this report. It is not intended for other parties or other uses.

2. Site description

Sam’s Liquid Waste & Hire is located at 18 R Narromine Road, Dubbo NSW 2830 and is located within the Dubbo Regional Council Local Government Area.

The site is comprised of a site office, storage sheds and a number of outdoor laydown areas where equipment is stored.

The current hours of operations are:

8:00 am to 5:00 pm	Monday to Friday
Closed	Saturday & Sunday

Figure 2-1 shows the regional locality of Sam’s as well as the closest sensitive receptor, surrounding businesses and the monitoring location.

Paper Size ISO A4

0 25 50 75 100

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

Sam's Liquid Waste & Hire
Sam's Liquid Waste & Hire Annual Noise Monitoring

Site locality and noise sensitive receiver locations

Project No. **22-20331**
Revision No. **0**
Date **05/09/2019**

FIGURE 2-1

\\ghdnet\ghd\AU\Newcastle\Projects\22\20331\GIS\Maps\ANM_0.aprx\2220331_NMA001_Location_0
Print date: 05 Sep 2019 - 14:44

Data source: LPI: DTDB?DCDB, 2017. World Imagery: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
Created by: kpsroba

3. Noise criteria

3.1 Environmental Protection Licence (EPL) 20507

The sections of the EPL 20507 relating to noise are reproduced in Appendix A.

3.2 Project specific noise criteria

The relevant project specific noise criteria for Sam's Liquid Waste & Hire are presented in Table 3-1.

Table 3-1 Project specific noise criteria

Monitoring location	Receiver ID	Day $L_{Aeq(15\ minute)}$ dBA
MP2	*Point 2*	35
MP3	*Point 3*	35

Note 1: Day is defined as the period from 7:00 am to 6:00 pm.
Note 2: The noise criteria in Table 3-1 are to apply under all meteorological conditions except the following:
a) wind speed greater than 3 metres/second at 10 metres above ground level; or
b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
c) Stability category G temperature inversion conditions.

Section P1 of the EPL 20507 (see Appendix A) describes the location of monitoring points MP2 and MP3 respectively as "Lot 52 DP 609149 (Watters Residence)" and "any other residential receiver".

The nearest residential receivers are approximately 1.0 to 1.3 kilometres away from the subject site. For the purposes of compliance it is considered that if noise emissions from the subject site are compliant at location MP2 they will also be compliant at the next closest residential receivers designated as MP3.

3.3 NSW Noise Policy for Industry

3.3.1 Corrections for annoying noise characteristics

Where a noise source contains certain characteristics, such as tonality, intermittency, irregularity or dominant low-frequency content, there is evidence to suggest that it can cause greater annoyance than other noise at the same noise level. The NSW Noise Policy for Industry (2017) outlines correction factors that are to be applied to the source noise level at the receiver before comparison with the project specific noise levels, to account for the additional annoyance caused by these modifying factors. Table 3-2 sets out the corrections to be applied.

Table 3-2 Modifying factors corrections

Factor	Assessment/ measurement	When to apply	Correction[1]	Comments
Tonal noise	One-third octave band analysis using the objective method for assessing the audibility of tones in noise – simplified method (ISO1996.2-2007 – Annex D).	Level of one-third octave band exceeds the level of the adjacent bands on both sides by: • 5 dB or more if the centre frequency of the band containing the tone is in the range 500–10,000 Hz • 8 dB or more if the centre frequency of the band containing the tone is in the range 160–400 Hz • 15 dB or more if the centre frequency of the band containing the tone is in the range 25–125 Hz	5 dB[2,3]	Third octave measurements should be undertaken using unweighted or Z-weighted measurements. Note: Narrow-band analysis using the reference method in ISO1996-2:2007, Annex C may be required by the consent/regulatory authority where it appears that a tone is not being adequately identified, e.g. where it appears that the tonal energy is at or close to the third octave band limits of contiguous bands.
Low-frequency noise	Measurement of source contribution C-weighted and A-weighted level and one-third octave measurements in the range 10–160 Hz	Measure/assess source contribution C- and A-weighted $L_{eq,T}$ levels over same time period. Correction to be applied where the C minus A level is 15 dB or more and: • Where any of the one-third octave noise levels in Table C2 are exceeded by up to and including 5 dB and cannot be mitigated, a 2 dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period. • Where any of the one-third octave noise levels in Table C2 are exceeded by more than 5 dB and cannot be mitigated, a 5 dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period and a 2-dB(A) positive adjustment applies for the daytime period.	2 or 5 dB[2]	A difference of 15 dB or more between C- and A-weighted measurements identifies the potential for an unbalance spectrum and potential increased annoyance. The values in Table C2 are derived from Moorhouse (2011) for DEFRA fluctuating low-frequency noise criteria with corrections to reflect external assessment locations.
Intermittent noise	Subjectively assessed but should be assisted with measurement to gauge the extent of change in noise level.	The source noise heard at the receiver varies by more than 5 dB(A) and the intermittent nature of the noise is clearly audible.	5 dB	Adjustment to be applied for night-time only.

Factor	Assessment/ measurement	When to apply	Correction[1]	Comments
Duration	Single-event noise duration may range from 1.5 min to 2.5 h.	One event in any assessment period.	0 to 20 dB(A)	The project noise trigger level may be increased by an adjustment depending on duration of noise (see Table C3).
Maximum adjustment	Refer to individual modifying factors.	Where two or more modifying factors are indicated.	Maximum correction of 10 dB(A)[2] (excluding duration correction).	

Notes:
1. Corrections to be added to the measured or predicted levels, except in the case of duration where the adjustment is to be made to the criterion.
2. Where a source emits tonal and low-frequency noise, only one 5-dB correction should be applied if the tone is in the low-frequency range, that is, at or below 160 Hz.
3. Where narrow-band analysis using the reference method is required, as outlined in column 5, the correction will be determined by the *ISO1996-2:2007* standard.

Table 3-3 One-third octave low-frequency noise threshold

Hz/dB(Z)	One-third octave $L_{Zeq,15\text{-}min}$ threshold level												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44

Notes:

- dB(Z) = decibel (Z frequency weighted).
- For the assessment of low-frequency noise, care should be taken to select a wind screen that can protect the microphone from wind-induced noise characteristics at least 10 dB below the threshold values in Table C2 for wind speeds up to five metres per second. It is likely that high performance larger diameter wind screens (nominally 175 mm) will be required to achieve this performance (Hessler, 2008). In any case, the performance of the wind screen and wind speeds at which data will be excluded needs to be stated.
- Low-frequency noise corrections only apply under the standard and/or noise-enhancing meteorological conditions.
- Where a receiver location has had architectural acoustic treatment applied (including alternative means of mechanical ventilation satisfying the Building Code of Australia) by a proponent, as part of consent requirements or as a private negotiated agreement, alternative external low-frequency noise assessment criteria may be proposed to account for the higher transmission loss of the building façade.
- Measurements should be made between 1.2 and 1.5 metres above ground level unless otherwise approved through a planning instrument (consent/approval) or environment protection licence, and at locations nominated in the development consent or licence.

Intermittent noise

Noise where the level suddenly drops/increases several times during the assessment period, with a noticeable change in source noise level of at least 5 dB(A); for example, equipment cycling on and off. The intermittency correction is not intended to be applied to changes in noise level due to meteorology.

Correction for duration

This is applied where a single-event noise is continuous for a period of less than two and a half hours in any assessment period. The allowable exceedance of the $L_{Aeq,15min}$ equivalent noise criterion is shown in Table 3-4 for the duration of the event. This adjustment is designed to account for unusual and one-off events, and does not apply to regular and/or routine high-noise level events.

Table 3-4 Adjustment for duration

Allowable duration of noise (one event in any 24-hour period)	Allowable exceedance of $L_{Aeq,15\text{-}min}$ equivalent project noise trigger level at receptor for the period of the noise event, dB(A)	
	Daytime and evening (7:00 am – 10:00 pm)	Night-time (10:00 pm – 7:00 am)
1 to 2.5 hours	2	Nil
15 minutes to 1 hour	5	Nil
6 minutes to 15 minutes	7	2
1.5 minutes to 6 minutes	15	5
less than 1.5 minutes	20	10

Note: Where the duration of the noise event is smaller than the duration of the project noise trigger level (that is, less than 15 minutes) the allowable adjusted project noise trigger level becomes:

$$10Log_{10}\left(\left(10^{\frac{PNTL}{10}} x \left(\frac{900 - duration}{900}\right)\right) + \left(10^{\frac{PNTL+allowable\ exceedance\ (Table\ C3)}{10}} x\ duration\right)\right)$$

Maximum correction

The maximum correction to be applied to the predicted or the measured level where two or more modifying factors are present. The maximum adjustment is 10 dB(A) where the noise contains two or more modifying factors (excluding the duration correction).

4. Annual compliance noise monitoring methodology

4.1 Operator attended compliance noise monitoring

4.1.1 General requirements

The operational noise monitoring programme was conducted with reference to the Environmental Protection Licence EPL 20507, and *AS 1055-2018 Acoustics –Description and Measurement of Environmental Noise.*

Operator attended noise surveys were conducted at the MP2 location, (refer to Table 4-1) for 1.5 hours during the day time over three consecutive operating days to determine the character and relative contribution of ambient noise sources and site contributions.

Attended noise measurements were taken using a SVAN 977 Type 1 sound level meter (serial number 36821). This instrument is capable of measuring continuous A-weighted 1/3 octave sound pressure levels and able to record L_{Amin}, L_{A90}, L_{A10}, L_{A1}, L_{Amax} and L_{Aeq} noise descriptors.

The contribution from the site was estimated based on the observations of site equipment sound pressure level and their duration.

Field calibrations were checked by GHD immediately before and after each set of measurements using a Larson and Davis CAL200 sound level calibrator (serial number 9193). In all cases, pre and post calibration checks were within the acceptable range of 94 dB +/- 0.5 dB.

All instrumentation used during noise measurements comply with the requirements of AS IEC 61672.1-2019 *Electroacoustics - Sound Level Meters – Specifications*, AS IEC 61672.2-2019, AS IEC 61672.3-2019 and carry current NATA or manufacturer calibration certificates. Calibration Certificates for the sound level meters during the monitoring have been attached in Appendix B .

4.1.2 Monitoring locations

In accordance with EPL 20507, operator-attended noise surveys at the monitoring location listed in Table 4-1 and shown in Figure 2-1, will occur annually within the reporting period of the Environment Protection Licence.

Table 4-1 Monitoring locations

Monitoring location	Receiver ID	UTM Zone 56		Photo
		Easting (mE)	Northing (mN)	
1	MP2	648211.81	6433461.71	

It is relevant to note that permission to access the residential property was not obtained and as such all noise monitoring was conducted on the boundary fence of the sensitive receiver in line with the dwelling.

5. Operator attended compliance noise monitoring

5.1 Operator attended noise monitoring results

Operator attended noise measurements were conducted on Wednesday 17 July 2019 to Friday 19 July 2019 at the location identified in Table 4-1.

The results of the operator attended noise measurements are given in Table 5-2 to Table 5-4. Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, subject site operations as well as any other industrial operations.

The tables provide the following information:

- Monitoring location
- Date and start time
- Sound level meter
- Typical maximum (L_{Amax}) and contributed noise levels

Typical weather conditions measured on ground during each monitoring period are provided in Table 5-1.

Table 5-1 Observed weather conditions during measurement periods

Monitoring period	Weather conditions
Day 17 July 2019 3:15 pm to 5:00 pm	• Wind speed: 0.7 to 3.4 m/s • Direction: Southwest • Temperature: 12 to 14° C • Relative humidity: 54 to 59 % • Cloud cover: 0 %
Day 18 July 2019 10:30 am to 12:30 pm	• Wind speed: 0.8 to 2.6 m/s • Direction: Southwest • Temperature: 12 to 14° C • Relative humidity: 55 to 67 % • Cloud cover: 5 %
Day 19 July 2019 8:30 am to 10:30 am	• Wind speed: Calm • Direction: n/a • Temperature: 4 to 7° C • Relative humidity: 81 to 97 % • Cloud cover: 0 %

Furthermore, the monitoring results are presented graphically in Appendix C and the weather data during the noise monitoring measured at Dubbo Airport AWS is provided in Appendix D.

Table 5-2 Day time operator attended noise survey results – Wednesday 17 July 2019

Location Date/start time (operator) SLM Details	Relevant criteria $L_{Aeq(15\ minute)}$ dBA EPL 20507	Primary noise descriptor (dBA re 20 µPa) L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	Description of noise emission and typical maximum levels L_{Amax} (dBA)
MP2 17/07/2019 15:23 SVAN 977 S/N 36821	35	82	77	53	45	61	Highway road traffic 45 to 61 dBA Birds 48 to 58 dBA Wind in trees 49 to 51 dBA Power tools at nearby site 53 to 54 dBA Airplane passby overhead 49 to 82 dBA Noise from subject site just audible at times but unable to accurately measure due to extraneous noise. Road traffic noise was the dominant noise source.
		Estimated Site Contribution: 34 dBA					
MP2 17/07/2019 15:39 SVAN 977 S/N 36821	35	86	72	60	45	59	Highway road traffic 45 to 56 dBA Birds 49 to 71 dBA Airplanes passby overhead 54 to 80 dBA Air gun nearby 59 to 86 dBA Noise from subject site just audible at times but unable to accurately measure due to extraneous noise. Road traffic noise was the dominant noise source.
		Estimated Site Contribution: 35 dBA					
MP2 17/07/2019 15:55 SVAN 977 S/N 36821	35	81	72	56	45	58	Highway road traffic 45 to 55 dBA Birds 46 to 48 dBA Airplanes passby overhead 50 to 81 dBA Tractor enter site nearby 56 dBA Noise from subject site just audible at times but unable to accurately measure due to extraneous noise. Road traffic noise was the dominant noise source.
		Estimated Site Contribution: 34 dBA					

Location Date/start time (operator) SLM Details	Relevant criteria $L_{Aeq(15\ minute)}$ dBA	Primary noise descriptor (dBA re 20 µPa)					Description of noise emission and typical maximum levels L_{Amax} (dBA)
	EPL 20507	L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
MP2 17/07/2019 16:11 SVAN 977 S/N 36821	35	58	53	50	45	48	Highway road traffic 43 to 55 dBA Birds 52 to 58 dBA Forklift at nearby premises 46 to 55 dBA Road traffic noise was the dominant noise source.
		Estimated Site Contribution: 34 dBA					
MP2 17/07/2019 16:28 SVAN 977 S/N 36821	35	73	60	53	45	52	Highway road traffic 44 to 55 dBA Birds 50 to 58 dBA Airplanes passby overhead 50 to 73 dBA Noise from Sam's just audible at times but unable to accurately measure due to extraneous noise. Road traffic noise was the dominant noise source.
		Estimated Site Contribution: 34 dBA					
MP2 17/07/2019 16:44 SVAN 977 S/N 36821	35	64	56	52	45	50	Highway road traffic 44 to 57 dBA Birds 46 to 63 dBA Local road traffic 50 to 55 dBA Only small amounts of activity on the Sam's site. Noise is only just audible at times and unable to accurately measure due to extraneous noise. Road traffic noise and nearby birds were the dominant noise sources.
		Estimated Site Contribution: 34 dBA					

Note 1: Day is defined as the period from 7:00 am to 6:00 pm.

Table 5-3 Day time operator attended noise survey results – Thursday 18 July 2019

Location Date/start time (operator) SLM Details	Relevant criteria $L_{Aeq(15\ minute)}$ dBA EPL 20507	Primary noise descriptor (dBA re 20 µPa) L_{Amax}	 L_{A1}	 L_{A10}	 L_{A90}	 L_{Aeq}	Description of noise emission and typical maximum levels L_{Amax} (dBA)
MP2 18/07/2019 10:37 SVAN 977 S/N 36821	35	67	56	50	43	48	Highway road traffic 45 to 57 dBA Birds 46 to 58 dBA Wind in trees 41 to 42 dBA Power tools at nearby site 48 to 53 dBA Forklift at nearby site 48 to 50 dBA Forklift horn 66 dBA Truck idling at nearby site 44 to 46 dBA Truck exiting nearby site 61 dBA Noise from Sam's only just audible at times but unable to accurately measure due to extraneous noise. Road traffic noise was the dominant noise source.
		Estimated Site Contribution: 32 dBA					
MP2 18/07/2019 10:53 SVAN 977 S/N 36821	35	68	54	49	42	46	Highway road traffic 40 to 56 dBA Birds 50 to 63 dBA Power tools at nearby site 46 to 49 dBA Small engine at nearby site 44 to 45 dBA Airplane passby overhead 48 to 52 dBA Noise from Sam's only just audible at times but unable to accurately measure due to extraneous noise. Road traffic noise as well as the small engine running on the nearby premises were the dominant noise sources.
		Estimated Site Contribution: 31 dBA					

Location Date/start time (operator) SLM Details	Relevant criteria $L_{Aeq(15\ minute)}$ dBA	Primary noise descriptor (dBA re 20 µPa)					Description of noise emission and typical maximum levels L_{Amax} (dBA)
	EPL 20507	L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
MP2 18/07/2019 11:10 SVAN 977 S/N 36821	35	79	72	57	42	58	Highway road traffic 43 to 57 dBA Birds 43 to 55 dBA Power tools at nearby site 50 to 52 dBA Small engine at nearby site 43 to 44 dBA Airplane passby overhead 44 to 74 dBA Garbage truck at residence 62 to 79 dBA Noise from Sam's only just audible at times but unable to accurately measure due to extraneous noise. Road traffic noise as well as the small engine running on the nearby premises were the dominant noise sources.
		Estimated Site Contribution: 31 dBA					
MP2 18/07/2019 11:26 SVAN 977 S/N 36821	35	68	59	47	41	47	Highway road traffic 41 to 53 dBA Birds 42 to 47 dBA Wind in trees 49 to 55 dBA Local road traffic 62 to 68 dBA Operator sneeze 56 dBA Noise from Sam's just audible during breaks in road traffic noise. Mostly reverse beeper noise. Not much activity on site. Estimate reverse beepers to be 43 to 44 dBA. Estimate forklift operations to be 41 to 42 dBA. Road traffic noise was the dominant noise source.
		Estimated Site Contribution: 30 dBA					

Location Date/start time (operator) SLM Details	Relevant criteria $L_{Aeq(15\ minute)}$ dBA	Primary noise descriptor (dBA re 20 µPa)					Description of noise emission and typical maximum levels L_{Amax} (dBA)
	EPL 20507	L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
MP2 18/07/2019 11:42 SVAN 977 S/N 36821	35	66	58	50	40	47	Highway road traffic 45 to 50 dBA Birds 43 to 61 dBA Local road traffic 47 to 55 dBA Tools being used at residence 40 to 43 dBA Local road traffic 62 to 68 dBA Forklift operating at nearby site 43 to 44 dBA Noise from Sam's only just audible at times but unable to accurately measure due to extraneous noise. Low amount of activity on site. Road traffic noise was the dominant noise source.
		Estimated Site Contribution: 29 dBA					
MP2 18/07/2019 12:00 SVAN 977 S/N 36821	35	71	60	49	42	49	Highway road traffic 44 to 54 dBA Birds 44 to 59 dBA Local road traffic 50 to 60 dBA Wind in trees 43 to 44 dBA Airplane passby overhead 50 to 71 dBA Truck enter nearby site 53 dBA Truck idle at nearby site 44 to 45 dBA Truck airbrakes at nearby site 48 dBA Forklift operating at nearby site 42 to 44 dBA Power tools at nearby site 49 to 52 dBA No discernible noise from the Sam's. Road traffic noise was the dominant noise source.
		Estimated Site Contribution: Not discernible					

Note 1: Day is defined as the period from 7:00 am to 6:00 pm.

Table 5-4 Day time operator attended noise survey results – Friday 19 July 2019

Location Date/start time (operator) SLM Details	Relevant criteria $L_{Aeq(15\ minute)}$ dBA EPL 2057	Primary noise descriptor (dBA re 20 µPa) L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	Description of noise emission and typical maximum levels L_{Amax} (dBA)
MP2 19/07/2019 8:40 SVAN 977 S/N 36821	35	75	62	52	42	53	Highway road traffic 41 to 49 dBA Birds 43 to 55 dBA Local road traffic 48 to 55 dBA Power tools at nearby site 46 to 50 dBA Forklift at nearby site 42 to 48 dBA Airbrakes at nearby site 48 dBA Airplane passby overhead 50 to 75 dBA No discernible noise from the Sam's site. Road traffic noise was the dominant noise source.
		Estimated Site Contribution: 31 dBA					
MP2 18/07/2019 8:56 SVAN 977 S/N 36821	35	65	53	47	40	45	Highway road traffic 39 to 45 dBA Birds 42 to 55 dBA Local road traffic 52 to 60 dBA Power tools at nearby site 44 to 52 dBA Forklift at nearby site 42 to 44 dBA Forklift horn at nearby site 54 dBA Airbrakes at nearby site 46 to 51 dBA Dog Barks 43 to 48 dBA Noise from Sam's only just audible at times for very short periods. Unable to accurately measure due to extraneous noise. Power tools being used on a nearby site was the dominant noise source.
		Estimated Site Contribution: 29 dBA					

Location Date/start time (operator) SLM Details	Relevant criteria $L_{Aeq(15\ minute)}$ dBA EPL 2057	Primary noise descriptor (dBA re 20 µPa) L_{Amax}	 L_{A1}	 L_{A10}	 L_{A90}	 L_{Aeq}	Description of noise emission and typical maximum levels L_{Amax} (dBA)
MP2 18/07/2019 9:13 SVAN 977 S/N 36821	35	79	72	57	42	58	Highway road traffic 39 to 45 dBA Birds 45 to 53 dBA Power tools at nearby site 45 to 50 dBA Forklift at nearby site 42 to 44 dBA Forklift horn at nearby site 49 dBA Truck movement at nearby site 45 to 47 dBA Airplane passby overhead 47 to 60 dBA Noise from Sam's only just audible at times for very short periods. Unable to accurately measure due to extraneous noise. Forklift movement on nearby site as well as power tools being used were the dominant noise sources.
		Estimated Site Contribution: 28 dBA					
MP2 18/07/2019 9:29 SVAN 977 S/N 36821	35	67	52	47	37	44	Highway road traffic 39 to 47 dBA Birds 46 to 67 dBA Forklift at nearby site 42 to 45 dBA Airplane passby overhead 49 to 54 dBA No discernible noise from the Sam's site. Forklift movement on nearby site and bird calls were the dominant noise sources.
		Estimated Site Contribution: Not discernible					
MP2 18/07/2019 9:45 SVAN 977 S/N 36821	35	65	61	50	36	48	Highway road traffic 38 to 50 dBA Birds 45 to 58 dBA Forklift at nearby site 41 to 46 dBA Tractor at nearby site 41 to 50 dBA Airplane passby overhead 44 to 65 dBA No discernible noise from the Sam's site. Forklift movement on nearby site and bird calls were the dominant noise sources.
		Estimated Site Contribution: Not discernible					

Location Date/start time (operator) SLM Details	Relevant criteria $L_{Aeq(15\ minute)}$ dBA	Primary noise descriptor (dBA re 20 µPa)					Description of noise emission and typical maximum levels L_{Amax} (dBA)
	EPL 2057	L_{Amax}	L_{A1}	L_{A10}	L_{A90}	L_{Aeq}	
MP2 18/07/2019 10:01 SVAN 977 S/N 36821	35	59	47	40	35	39	Highway road traffic 38 to 41 dBA Birds 36 to 56 dBA Local road traffic 39 to 50 dBA Airplane passby overhead 37 to 43 dBA Impact noises at nearby site 46 to 48 dBA No discernible noise from the Sam's site. Bird calls were the dominant noise source.
		Estimated Site Contribution: Not discernible					

Note 1: Day is defined as the period from 7:00 am to 6:00 pm.

It is relevant to note that property access was not possible during the noise monitoring periods, the monitoring location was undertaken at the property boundary fence to obtain the $L_{Aeq(15minute)}$ noise contributions.

5.2 Operational compliance noise monitoring discussion of results

5.2.1 Operational noise

A summary of the operational noise compliance results are presented in Table 5-5.

Table 5-5 Operational noise compliance results summary

Measurement location	Period[1]	Estimated site noise level $L_{Aeq\ (15minute)}$ dBA	Relevant criteria $L_{Aeq(15minute)}$ dBA EPL 20507	Compliance
MP2	Day – 17/07/2019	34	35	Yes
	Day – 18/07/2019	31	35	
	Day – 19/07/2019	29	35	

Note 1: Day is defined as the period from 7:00 am to 6:00 pm.
Note 2: The noise limits apply under all meteorological conditions except for any one of the following:
d) wind speed greater than 3 metres/second at 10 metres above ground level; or
e) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
f) Stability category G temperature inversion conditions.
Note 3: The EPA NSW Industrial Noise Policy (INP 2000) states: A development will be deemed to be in non-compliance with a noise consent or licence condition if the monitored noise level is more than 2 dB above the statutory noise limit specified in the consent or licence condition.

The attended operational noise monitoring results summary presented in Table 5-5 indicate that the measured noise contributions from Sam's Liquid Waste & Hire comply with the EPL 20507 noise criteria at the monitoring location and during all assessed time periods.

It should be noted that during the measurements undertaken on 17 July and 18 July the measured wind speed at Dubbo Airport AWS was greater than 3 metres/second for all of the measurements while at the monitoring location the observed wind speeds were generally lower than 3 metres/second. The lower wind speeds observed at the monitoring position may be due to the shielding provided from buildings and trees located nearby. As the measured wind speeds at the airport weather station are greater than 3 metres/second the noise limits do not apply during these periods. However, based on observations while on site the noise emissions from Sam's are predicted to be compliant with the noise criteria regardless.

6. Recommendations

Given the noise monitoring results presented in Section 5 indicate compliance with the EPL 20507 criteria, additional noise mitigation is not required.

7. Conclusion

GHD was engaged by Sam's Liquid Waste & Hire to conduct an annual noise compliance assessment in accordance with Environmental Protection Licence EPL 20507.

Operator-attended noise measurements were conducted at one (1) residential property closest to the site on Wednesday 17 July 2019 to Friday 19 July 2019.

The attended operational noise monitoring results indicated that the noise contributions from Sam's Liquid Waste & Hire comply with the EPL 20507 noise criteria at the monitoring location and during all assessed time periods.

8. References

Australian Standard AS1055-2018. *Acoustics – Description and Measurement of Environmental Noise, Part 1 General Procedures*

AS IEC 61672.1-2019 Electroacoustics - Sound level meters – Specifications

Environmental Protection License (EPL) 20507

NSW EPA, 2017, New South Wales Noise Policy for Industry

Appendices

Appendix A – Environmental Protection Licence 20507

Relevant section of Environmental Protection Licence 20507 are reproduced below.

P1 Location of monitoring/discharge points and areas.

P1.3 The following points referred to in the table below are identified in this licence for the purposes of weather and/or noise monitoring and/or setting limits for the emission of noise from the premises.

EPA identification No.	Type of monitoring point.	Location description
2	Noise monitoring	Lot 52 DP 609149 (Watters Residence)
3	Noise monitoring	Any other residential receiver

L3 Noise limits

L3.1 Noise generated at the premises that is measured at each noise monitoring point established under this licence must not exceed the noise levels specified in Column 4 of the table below for that point during the corresponding time periods specified in Column 1 when measured using the corresponding measurement parameters listed in Column 2.

Point 2

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-$L_{Aeq\ (15\ minute)}$	Yearly	35

Point 3

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-$L_{Aeq\ (15\ minute)}$	Yearly	35

L3.2 Note: The locations (Point 2 and 3) referred to in the table above are indicated by Liquid Trade Waste Treatment Facility – Lot 80 DP 1117848 Richardson Road, Dubbo, Tim Fitzroy and Associates, May 2011.

L3.3 For the purpose of this Noise Limits condition:

- Day is defined as the period 7:00 am to 6:00 pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays
- Evening is defined as the period 6:00 pm to 10:00 pm.
- Night is defined as the period from 10:00 pm to 7:00 am Monday to Saturday and 10:00 pm to 8:00 am Sundays and Public Holidays.

L3.4 The noise emission limits set out in Condition L3.1 apply under all meteorological conditions except for the following:

g) wind speed greater than 3 metres/second at 10 metres above ground level; or

h) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or

i) Stability category G temperature inversion conditions.

L3.5 For the purpose of condition L4.2:

b) Data recorded by the BOM meteorological station identified as 'Dubbo Airport AWS' must be used to determine meteorological conditions.

L3.6 Determining Compliance

To determine compliance:

a) With the $L_{eq(15\ minute)}$ noise limits in the Noise Limits table, the noise measurement equipment must be located:

i. Approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or

ii. Within 30 metres of a dwelling façade, but not closer than 3 m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or where applicable

iii. Within approximately 50 metres of the boundary of a National Park or Nature Reserve.

b) With the $L_{A1\ (1\ minute)}$ noise limits in the Noise Limits table, the noise measurement equipment must be located:

i. At the most affected point at a location where there is no dwelling at the location; or

ii. At the most affected point within an area at a location prescribed by part (a) or part (b) of this condition.

L3.7 A non-compliance of condition L3.1 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- At a location other than an area prescribed by conditions L3.6(a) and L3.6(b); and/or
- At a point other than the most affected point at a location.

L3.8 For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

Note: Additions to definition of Terms of the Licence

- NSW Industrial Noise Policy – the document entitled "New South Wales Industrial Noise Policy published by the Environment Protection Authority in January 2000."
- Noise – sound pressure levels for the purposes of conditions L3.1 to L3.7.

M7 Noise monitoring

M7.1 To assess compliance with Condition L3.1, attended noise monitoring must be undertaken in accordance with Conditions L3.6:

a) At each of the locations listed in Condition L3.1;

b) Occur annually in a reporting period;

c) Occur during each day period as defined in the NSW Industrial Noise Policy for a minimum of 1.5 hours during the day; and

d) Occur for three consecutive operating days.

Appendix B – Calibration certificates

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: SLM 24491 & FILT 5122

Equipment Description:	Sound & Vibration Analyser		
Manufacturer:	Svantek		
Model No:	Svan-977	**Serial No:**	36821
Microphone Type:	7052E	**Serial No:**	52114
Preamplifier Type:	SV12L	**Serial No:**	30276
Filter Type:	1/3 Octave	**Serial No:**	36821
Comments:	All tests passed for class 1. (See over for details)		
Owner:	GHD Pty Ltd Level 3, 24 Honeysuckle Drive Newcastle, NSW 2300		
Ambient Pressure:	1009 hPa ±1.5 hPa		
Temperature:	23 °C ±2° C	**Relative Humidity:**	54% ±5%
Date of Calibration:	15/04/2019	**Issue Date:**	16/04/2019
Acu-Vib Test Procedure:	AVP10 (SLM) & AVP06 (Filters)		

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....
Jack Kielt

Accredited for compliance with ISO/IEC 17025 - Calibration
The results of the tests, calibration and/or measurements included in this document are traceable to Australian/national standards.

NATA
WORLD RECOGNISED ACCREDITATION

ACU-VIB
ELECTRONICS
HEAD OFFICE
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
Tel: (02) 96808133 Fax: (02)96808233
Mobile: 0413 809806
web site: www.acu-vib.com.au

Accredited Lab. No. 9262
Acoustic and Vibration Measurements

CERTIFICATE NO.: SLM 24491 & FILT 5122

The performance characteristics listed below were tested. The tests are based on the relevant clauses of IEC 61672-3:2013

Tests Performed:	*Clause*	*Result*
Absolute Calibration	10	Pass
Acoustical Frequency Weighting	12	Pass
Self Generated Noise	11.1	Entered
Electrical Noise	11.2	Entered
Long Term Stability	15	Pass
Electrical Frequency Weightings	13	Pass
Frequency and Time Weightings	14	Pass
Reference Level Linearity	16	Pass
Range Level Linearity	17	Pass
Toneburst	18	Pass
Peak C Sound Level	19	Pass
Overload Indicator	20	Pass
High Level Stability	21	Pass

Statement of Compliance: 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 organization responsible for approving the results of pattern evaluation tests 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 IEC61672-1:2013.
A full technical report is available if required.

This Sound Level Meter included an Octave Filter Set. Tests were based on IEC 1260: 1995 and AS/NZS 4476 - 1997 and were conducted to test the following performance characteristics:

1. Relative attenuation clause 5.3

Date of Calibration: 15/04/2019 **Issue Date:** 16/04/2019

Checked by: RKB

Accredited for compliance with ISO/IEC 17025 - Calibration
The results of the tests, calibration and/or measurements included in this document are traceable to Australian/national standards.

NATA
WORLD RECOGNISED ACCREDITATION

Accredited Lab. No. 9262
Acoustic and Vibration Measurements

ACU-VIB ELECTRONICS
HEAD OFFICE
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
Tel: (02) 96808133 Fax: (02)96808233
Mobile: 0413 809806
web site: www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: 24520

EQUIPMENT TESTED: Sound Level Calibrator

Manufacturer: Larson Davis
Type No: CAL200 **Serial No:** 9193
Owner: GHD Pty Ltd
Level 3, 24 Honeysuckle Drive
Newcastle, NSW 2300

Tests Performed: Measured output pressure level was found to be:

Parameter	Pre-Adj	Adj Y/N	Output: (db re 20 µPa)	Frequency: (Hz)	THD&N (%)
Level 1:	NA	N	94.13	999.97	1.58
Level 2:	NA	N	114.19	1000.00	0.56
Uncertainty:			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

CONDITION OF TEST:
Ambient Pressure: 1010 hPa ±1.5 hPa **Relative Humidity:** 55% ±5%
Temperature: 23 °C ±2° C
Date of Calibration: 16/04/2019 **Issue Date:** 16/04/2019
Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017
CHECKED BY: JKB **AUTHORISED SIGNATURE:** .....
Jack Kielt

Accredited for compliance with ISO/IEC 17025 - Calibration
The results of the tests, calibration and/or measurements included in this document are traceable to Australian/national standards.
The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

NATA
WORLD RECOGNISED ACCREDITATION
Accredited Lab. 9262
Acoustic and Vibration Measurements

ACU-VIB ELECTRONICS
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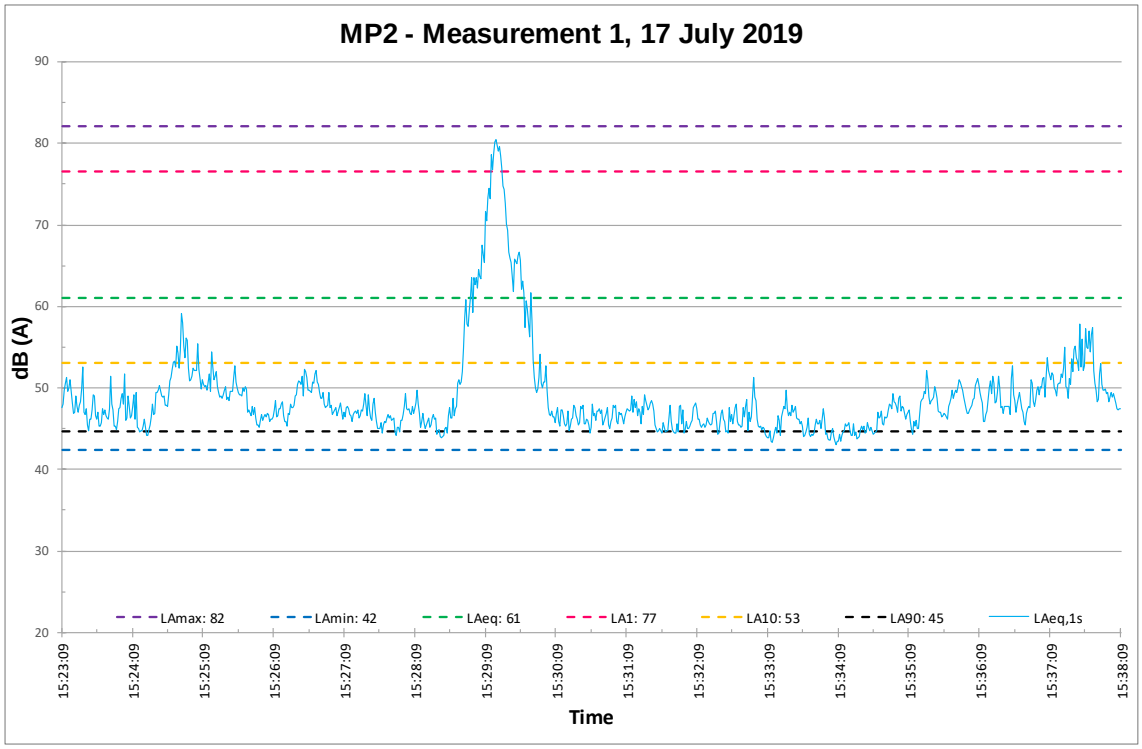
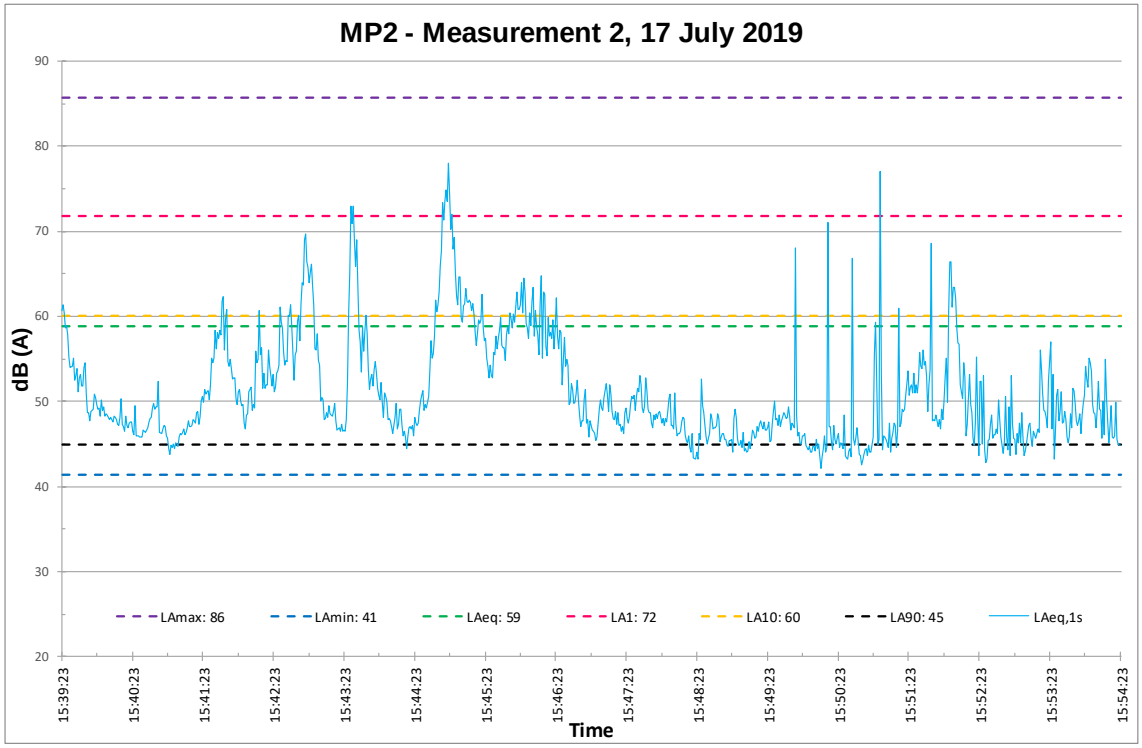
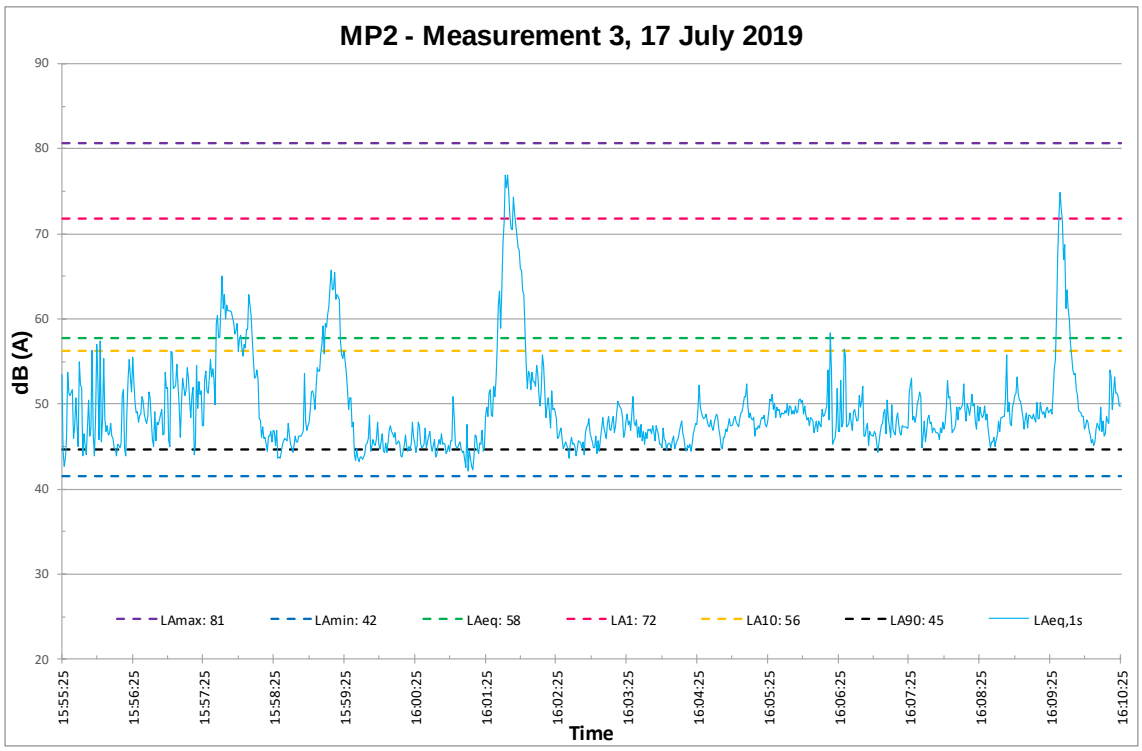
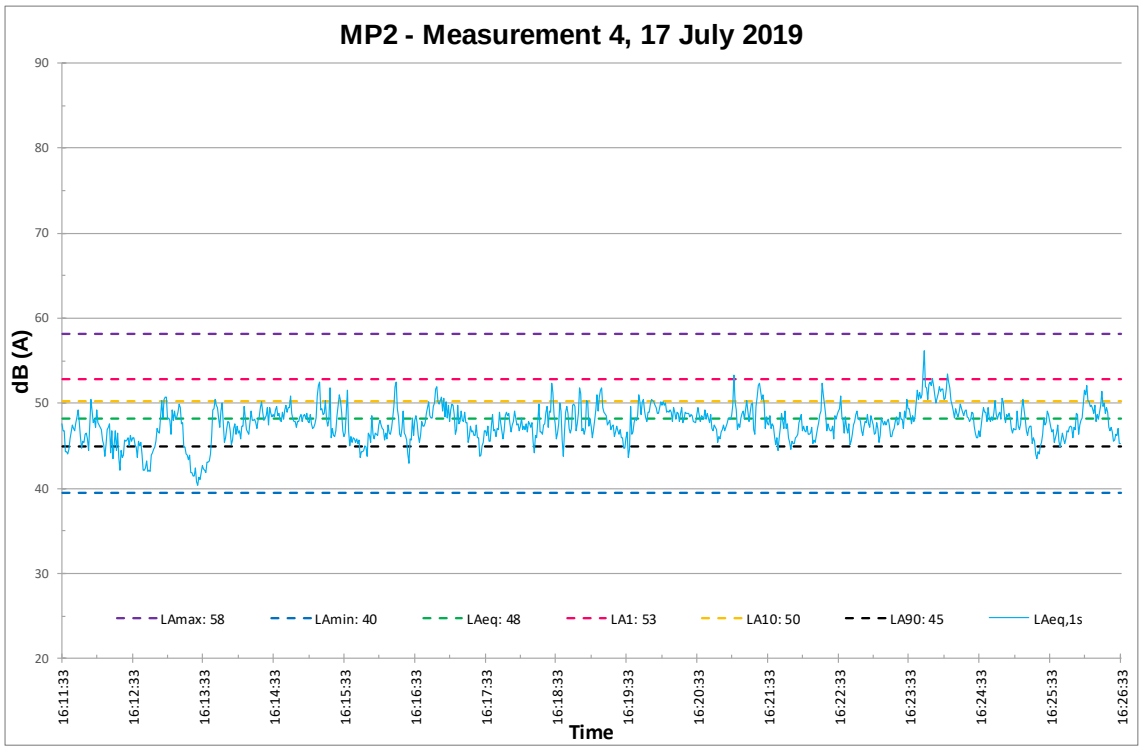
Mobile: 0413 809806
Web site: www.acu-vib.com.au

Appendix C – Operator attended noise monitoring results – MP2






MP2 - Measurement 3, 17 July 2019
dB (A)
90
80
70
60
50
40
30
20
LAmax: 81
LAmin: 42
LAeq: 58
LA1: 72
LA10: 56
LA90: 45
LAeq,1s
15:55:25
15:56:25
15:57:25
15:58:25
15:59:25
16:00:25
16:01:25
16:02:25
16:03:25
16:04:25
16:05:25
16:06:25
16:07:25
16:08:25
16:09:25
16:10:25
Time


MP2 - Measurement 4, 17 July 2019
dB (A)
90
80
70
60
50
40
30
20
LAmax: 58
LAmin: 40
LAeq: 48
LA1: 53
LA10: 50
LA90: 45
LAeq,1s
16:11:33
16:12:33
16:13:33
16:14:33
16:15:33
16:16:33
16:17:33
16:18:33
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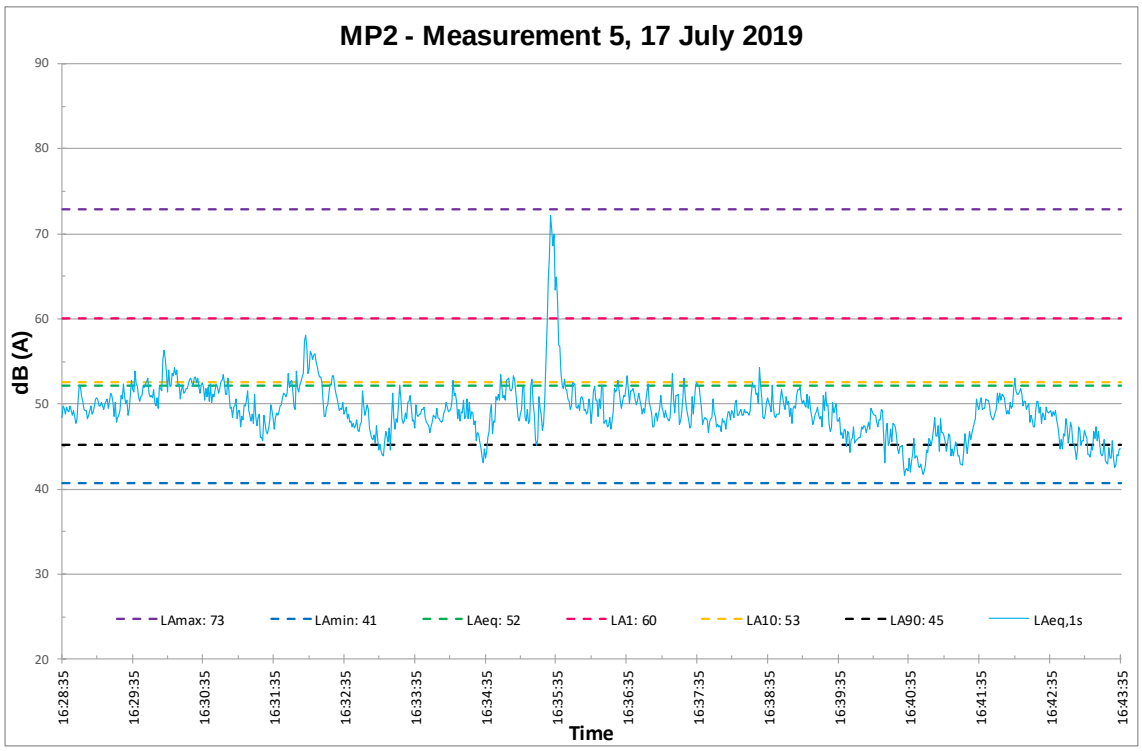
16:26:33
Time


MP2 - Measurement 5, 17 July 2019
dB (A)
90
80
70
60
50
40
30
20
LAmax: 73
LAmin: 41
LAeq: 52
LA1: 60
LA10: 53
LA90: 45
LAeq,1s
16:28:35
16:29:35
16:30:35
16:31:35
16:32:35
16:33:35
16:34:35
16:35:35
16:36:35
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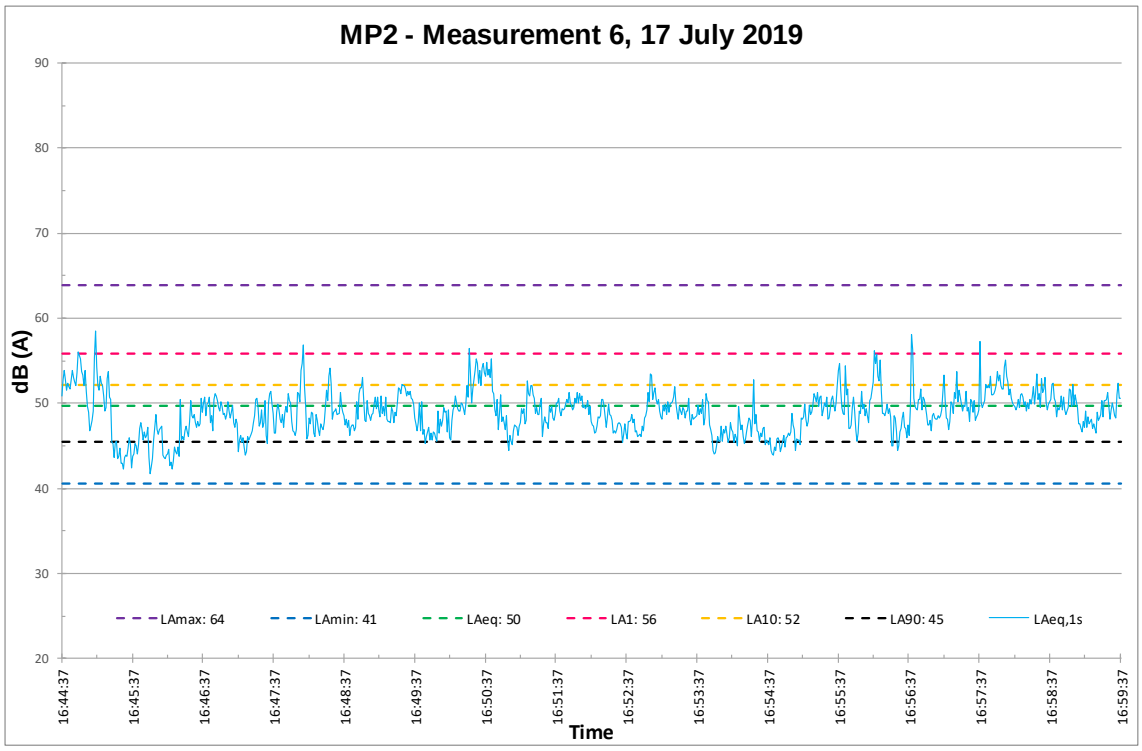
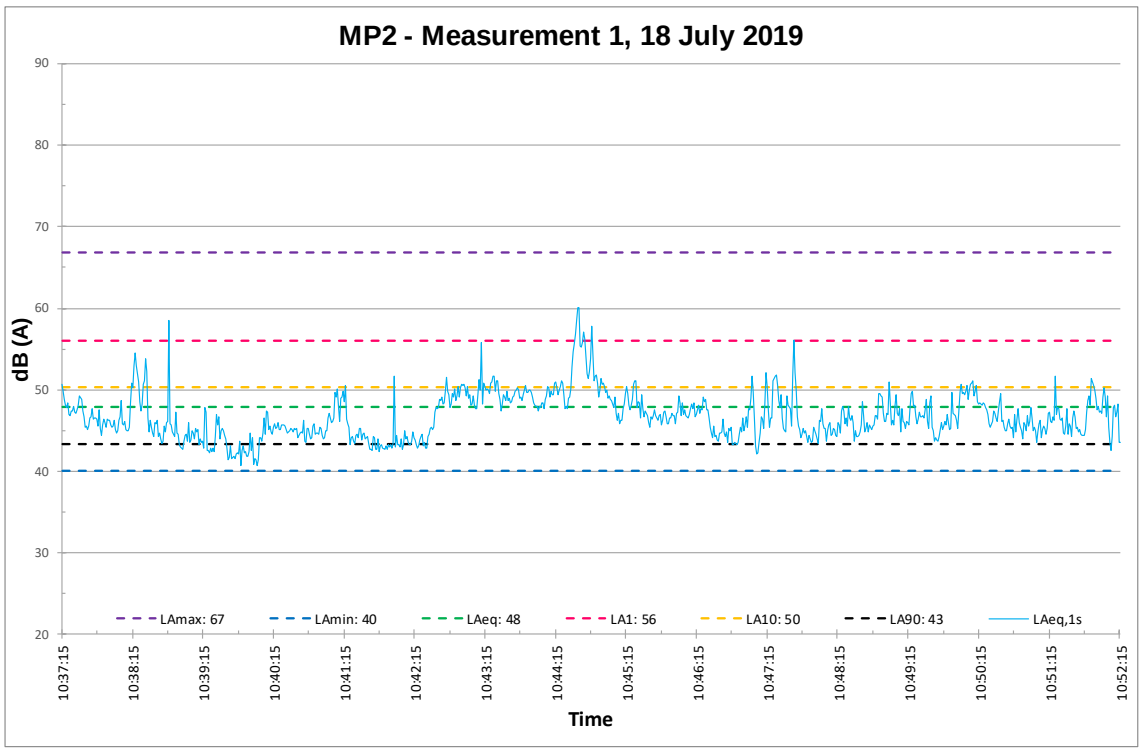
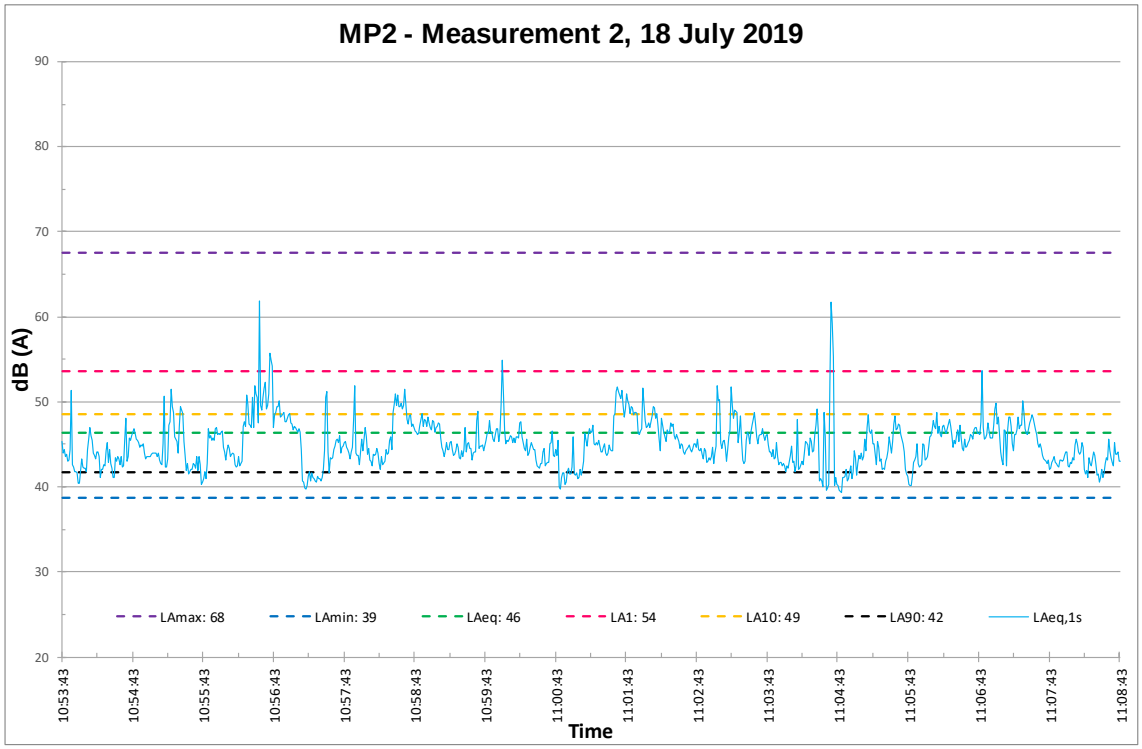
16:40:35
16:41:35
16:42:35
16:43:35
Time


MP2 - Measurement 6, 17 July 2019
dB (A)
90
80
70
60
50
40
30
20
LAmax: 64
LAmin: 41
LAeq: 50
LA1: 56
LA10: 52
LA90: 45
LAeq,1s
16:44:37
16:45:37
16:46:37
16:47:37
16:48:37
16:49:37
16:50:37
16:51:37
16:52:37
16:53:37
16:54:37
16:55:37
16:56:37
16:57:37
16:58:37
16:59:37
Time


MP2 - Measurement 1, 18 July 2019
dB (A)
90
80
70
60
50
40
30
20
LAmax: 67
LAmin: 40
LAeq: 48
LA1: 56
LA10: 50
LA90: 43
LAeq,1s
10:37:15
10:38:15
10:39:15
10:40:15
10:41:15
10:42:15
10:43:15
10:44:15
10:45:15
10:46:15
10:47:15
10:48:15
10:49:15
10:50:15
10:51:15
10:52:15
Time


MP2 - Measurement 2, 18 July 2019
dB (A)
90
80
70
60
50
40
30
20
LAmax: 68
LAmin: 39
LAeq: 46
LA1: 54
LA10: 49
LA90: 42
LAeq,1s
10:53:43
10:54:43
10:55:43
10:56:43
10:57:43
10:58:43
10:59:43
11:00:43
11:01:43
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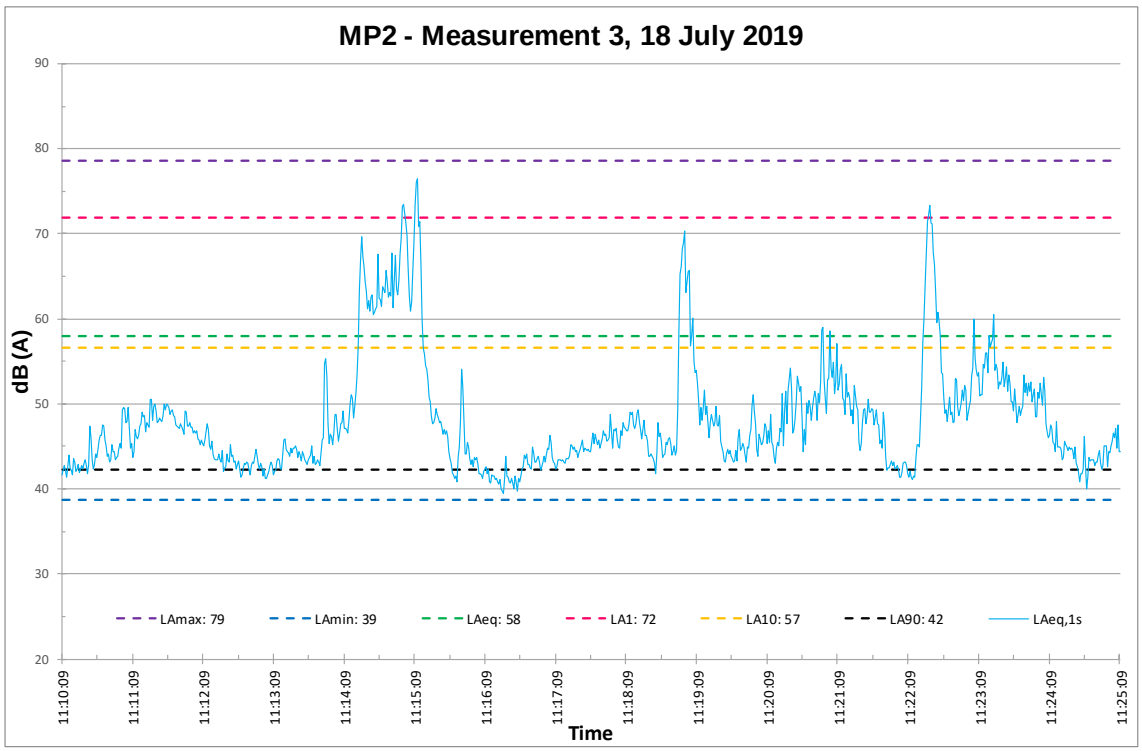
11:03:43
11:04:43
11:05:43
11:06:43
11:07:43
11:08:43
Time


MP2 - Measurement 3, 18 July 2019
dB (A)
90
80
70
60
50
40
30
20
LAmax: 79
LAmin: 39
LAeq: 58
LA1: 72
LA10: 57
LA90: 42
LAeq,1s
11:10:09
11:11:09
11:12:09
11:13:09
11:14:09
11:15:09
11:16:09
11:17:09
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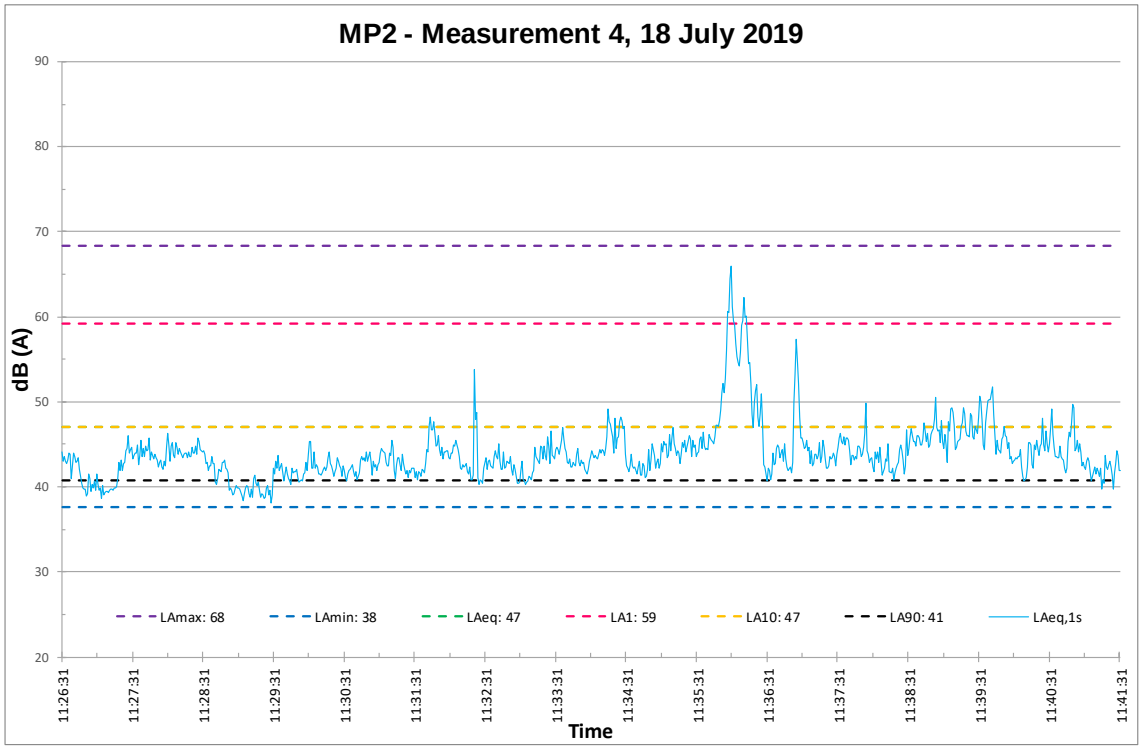
Time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dB (A)
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70
60
50
40
30
20
LAmax: 68
LAmin: 38
LAeq: 47
LA1: 59
LA10: 47
LA90: 41
LAeq,1s
11:26:31
11:27:31
11:28:31
11:29:31
11:30:31
11:31:31
11:32:31
11:33:31
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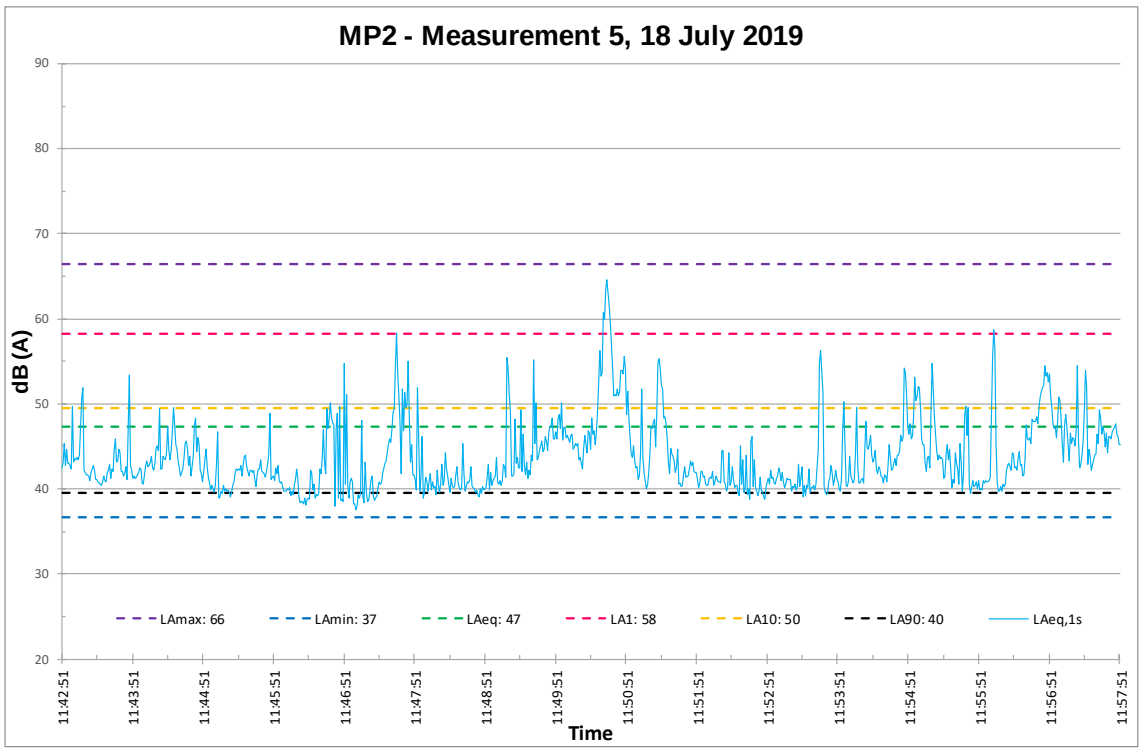
11:39:31
11:40:31
11:41:31
Time


MP2 - Measurement 5, 18 July 2019
dB (A)
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80
70
60
50
40
30
20
LAmax: 66
LAmin: 37
LAeq: 47
LA1: 58
LA10: 50
LA90: 40
LAeq,1s
11:42:51
11:43:51
11:44:51
11:45:51
11:46:51
11:47:51
11:48:51
11:49:51
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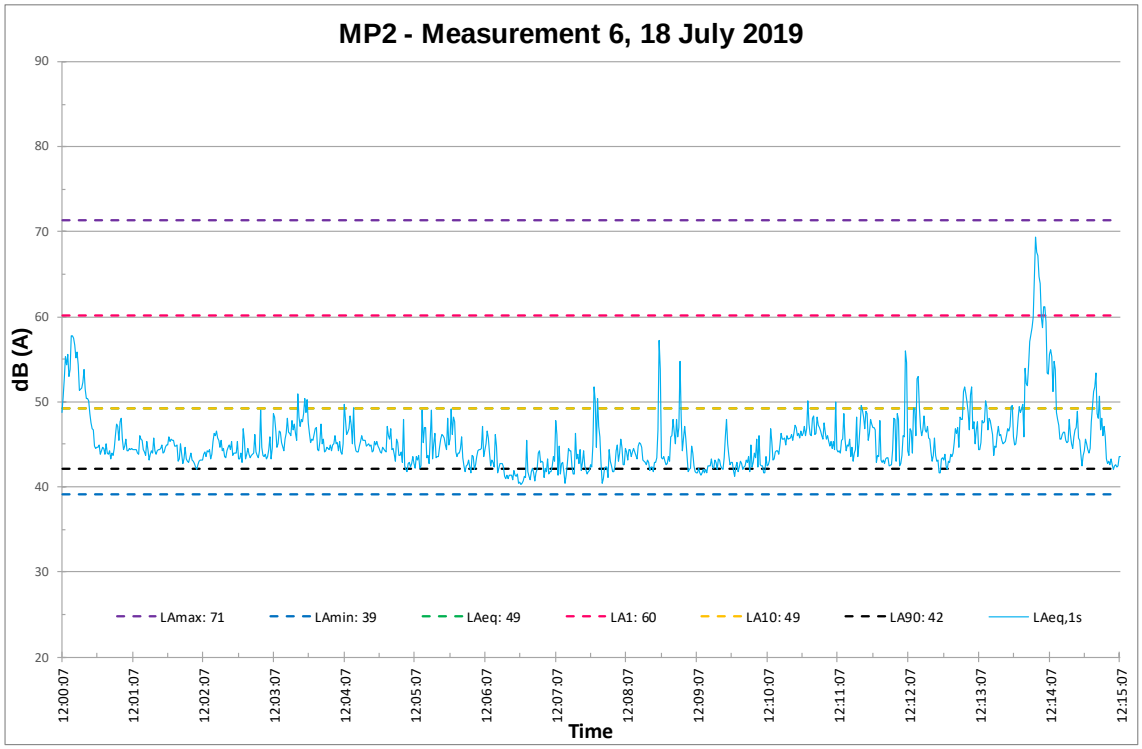
11:55:51
11:56:51
11:57:51
Time


MP2 - Measurement 6, 18 July 2019
dB (A)
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80
70
60
50
40
30
20
LAmax: 71
LAmin: 39
LAeq: 49
LA1: 60
LA10: 49
LA90: 42
LAeq,1s
12:00:07
12:01:07
12:02:07
12:03:07
12:04:07
12:05:07
12:06:07
12:07:07
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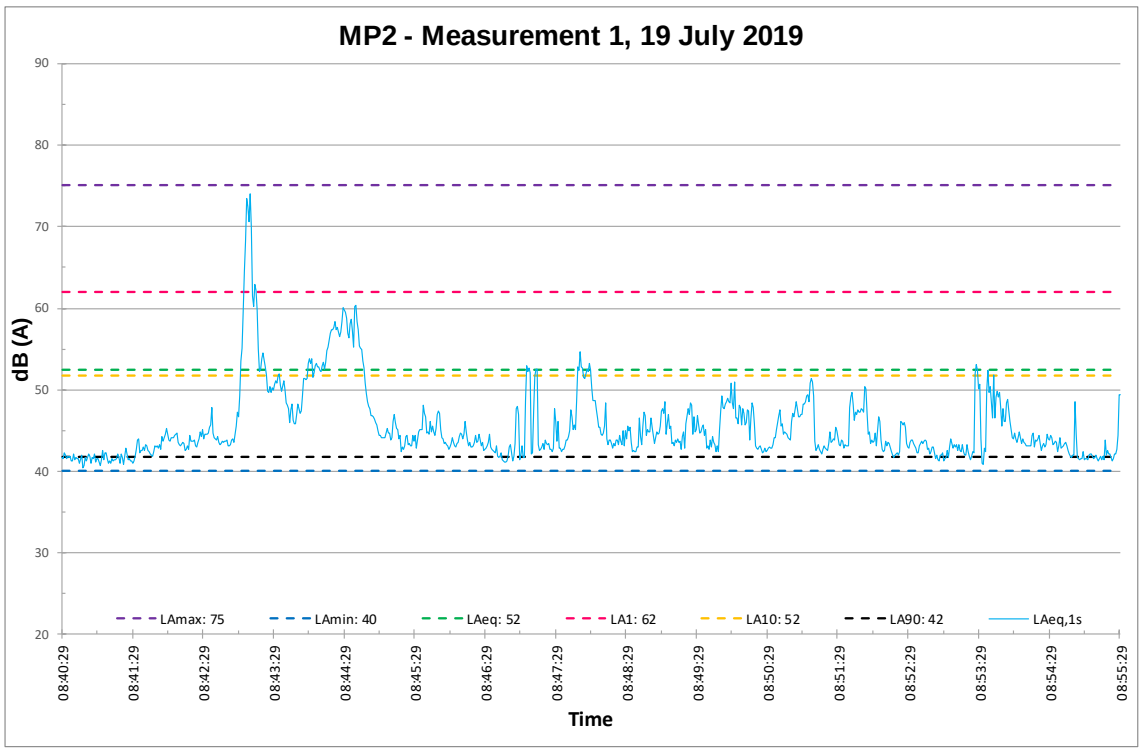
12:13:07
12:14:07
12:15:07
Time


MP2 - Measurement 1, 19 July 2019
dB (A)
90
80
70
60
50
40
30
20
LAmax: 75
LAmin: 40
LAeq: 52
LA1: 62
LA10: 52
LA90: 42
LAeq,1s
08:40:29
08:41:29
08:42:29
08:43:29
08:44:29
08:45:29
08:46:29
08:47:29
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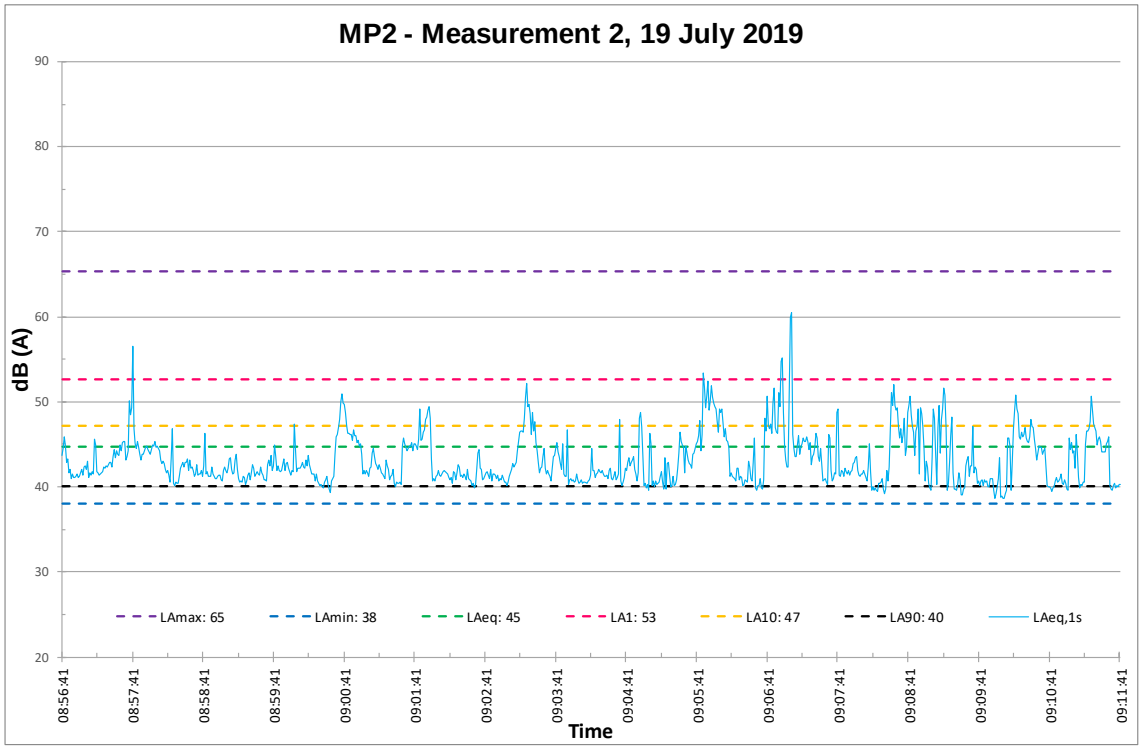
08:54:29
08:55:29
Time


MP2 - Measurement 2, 19 July 2019
dB (A)
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80
70
60
50
40
30
20
LAmax: 65
LAmin: 38
LAeq: 45
LA1: 53
LA10: 47
LA90: 40
LAeq,1s
08:56:41
08:57:41
08:58:41
08:59:41
09:00:41
09:01:41
09:02:41
09:03:41
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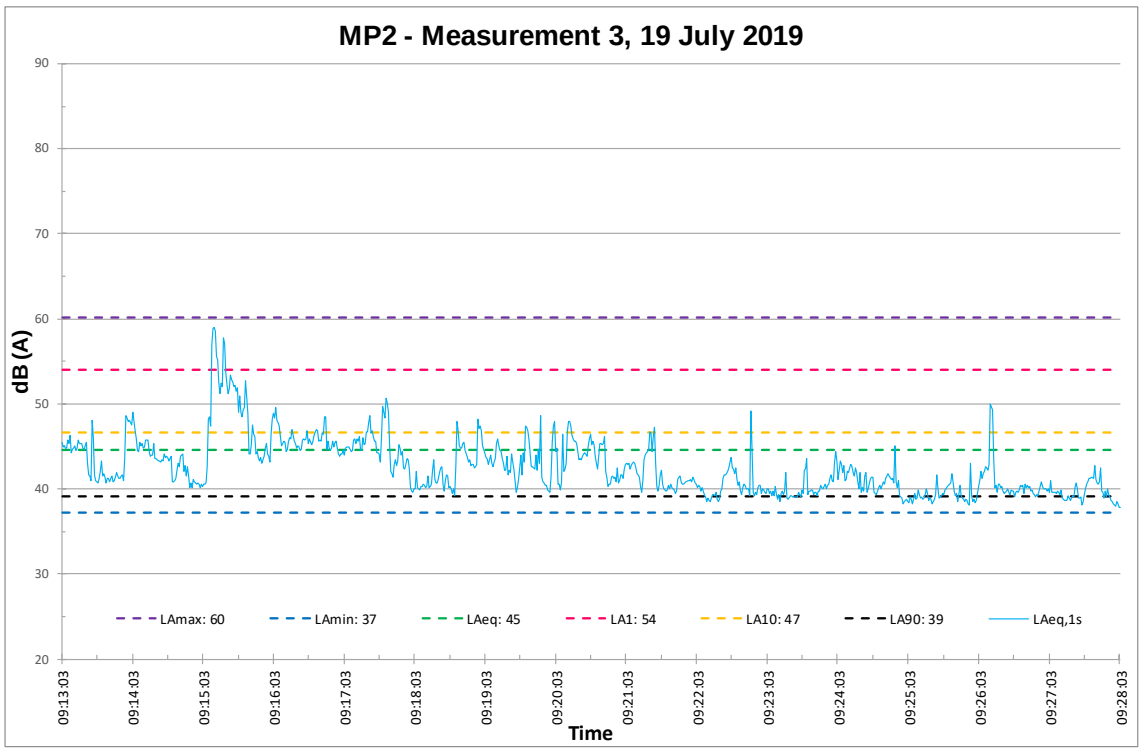
09:09:41
09:10:41
09:11:41
Time


MP2 - Measurement 3, 19 July 2019
dB (A)
90
80
70
60
50
40
30
20
LAmax: 60
LAmin: 37
LAeq: 45
LA1: 54
LA10: 47
LA90: 39
LAeq,1s
09:13:03
09:14:03
09:15:03
09:16:03
09:17:03
09:18:03
09:19:03
09:20:03
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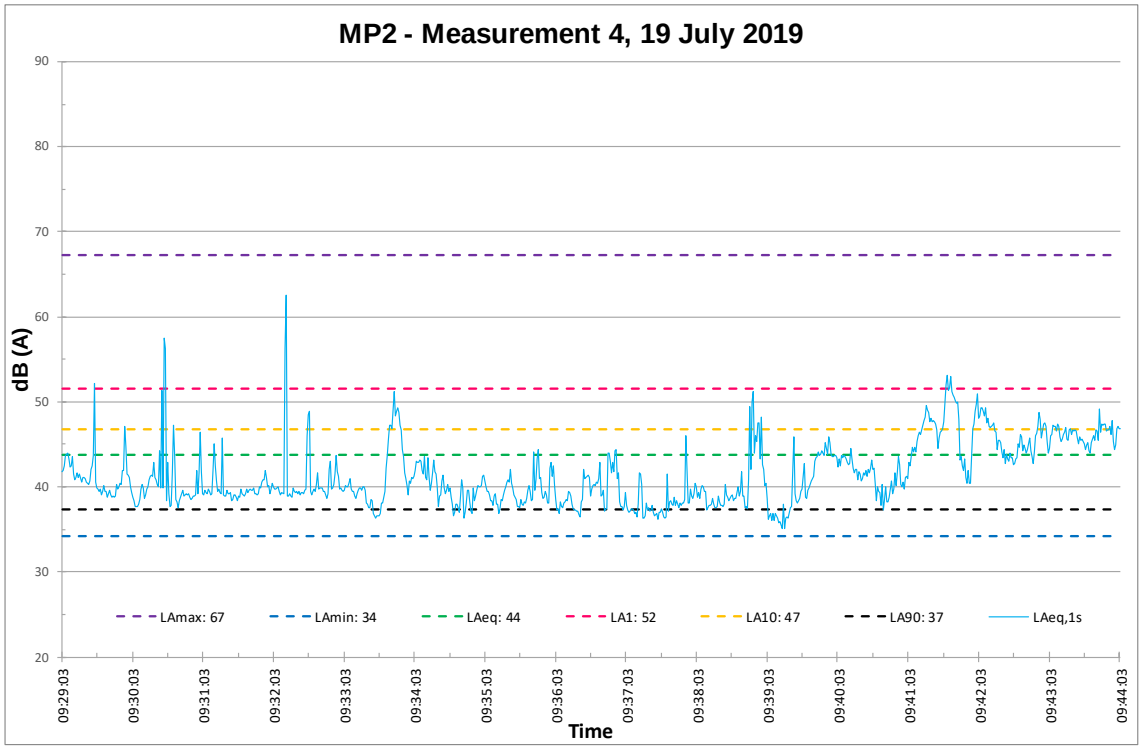
09:26:03
09:27:03
09:28:03
Time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dB (A)
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80
70
60
50
40
30
20
LAmax: 67
LAmin: 34
LAeq: 44
LA1: 52
LA10: 47
LA90: 37
LAeq,1s
09:29:03
09:30:03
09:31:03
09:32:03
09:33:03
09:34:03
09:35:03
09:36:03
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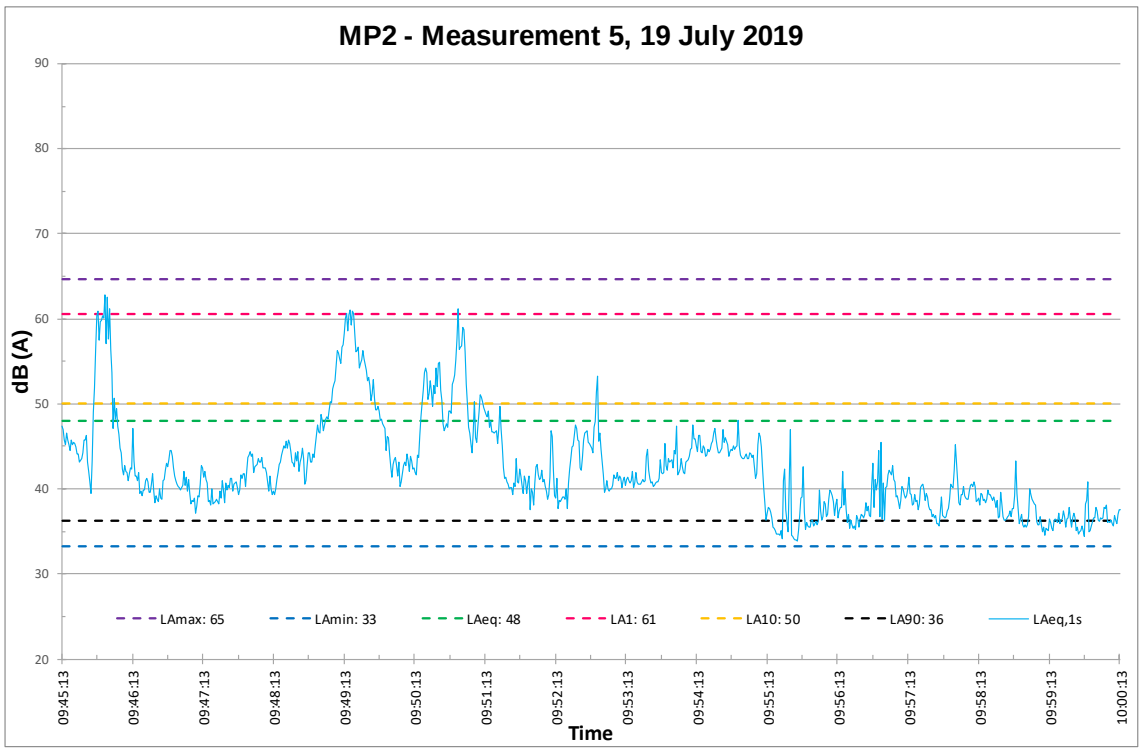
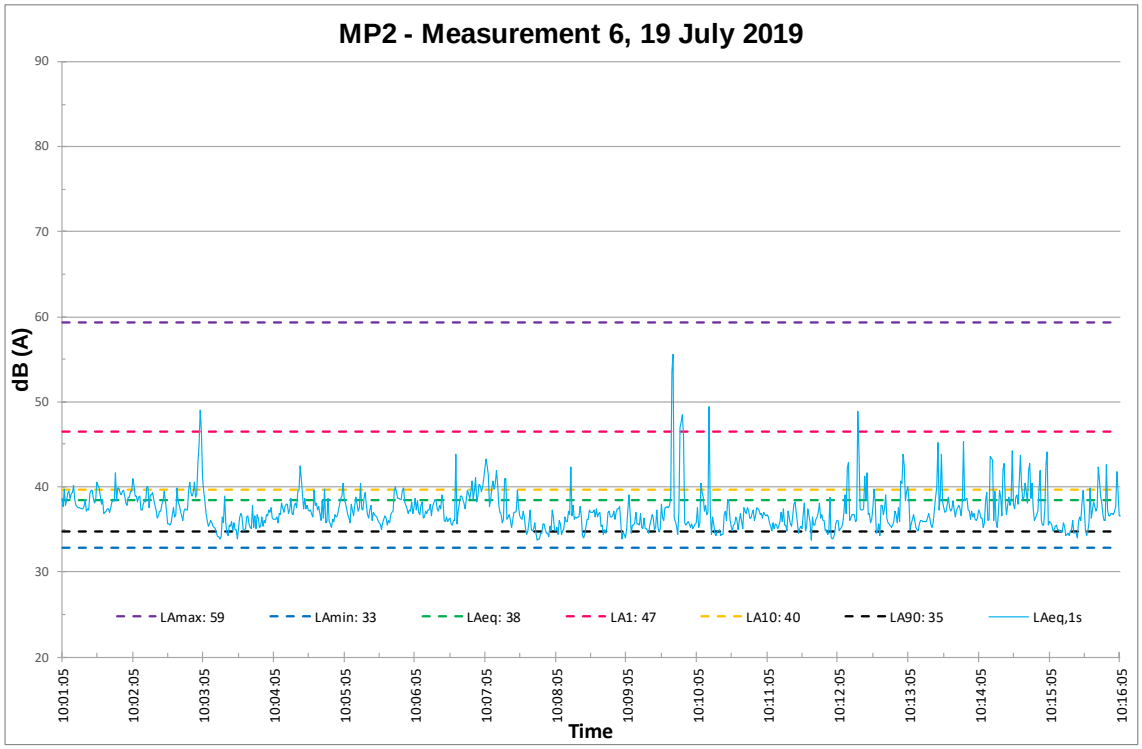
09:44:03
Time


MP2 - Measurement 5, 19 July 2019
dB (A)
90
80
70
60
50
40
30
20
LAmax: 65
LAmin: 33
LAeq: 48
LA1: 61
LA10: 50
LA90: 36
LAeq,1s
09:45:13
09:46:13
09:47:13
09:48:13
09:49:13
09:50:13
09:51:13
09:52:13
09:53:13
09:54:13
09:55:13
09:56:13
09:57:13
09:58:13
09:59:13
10:00:13
Time


MP2 - Measurement 6, 19 July 2019
dB (A)
90
80
70
60
50
40
30
20
LAmax: 59
LAmin: 33
LAeq: 38
LA1: 47
LA10: 40
LA90: 35
LAeq,1s
10:01:05
10:02:05
10:03:05
10:04:05
10:05:05
10:06:05
10:07:05
10:08:05
10:09:05
10:10:05
10:11:05
10:12:05
10:13:05
10:14:05
10:15:05
10:16:05
Time

Appendix D – Dubbo Airport AWS

Date/Time	Temp(°C)	Humidity (%)	Rain(mm)	Wind Direction (°)	Wind Speed (m/s)
17/07/2019 15:15	14.5	47.0	0.0	247.5	6.7
17/07/2019 15:30	14.6	46.0	0.0	247.5	6.1
17/07/2019 15:45	14.1	46.0	0.0	270.0	6.1
17/07/2019 16:00	14.1	47.0	0.0	270.0	5.3
17/07/2019 16:15	13.6	48.0	0.0	247.5	6.1
17/07/2019 16:30	13.5	48.0	0.0	247.5	5.6
17/07/2019 16:45	13.2	49.0	0.0	247.5	5.6
17/07/2019 17:00	12.4	51.0	0.0	247.5	5.3
18/07/2019 10:30	11.9	59.0	0.0	202.5	5.6
18/07/2019 10:45	11.9	59.0	0.0	247.5	5.3
18/07/2019 11:00	12.8	55.0	0.0	202.5	4.7
18/07/2019 11:15	13.4	52.0	0.0	225.0	4.7
18/07/2019 11:30	13.2	51.0	0.0	225.0	4.7
18/07/2019 11:45	13.5	52.0	0.0	270.0	3.6
18/07/2019 12:00	14.0	51.0	0.0	270.0	5.6
18/07/2019 12:15	14.1	50.0	0.0	270.0	6.1
18/07/2019 12:30	14.2	50.0	0.0	270.0	5.6
19/07/2019 8:30	3.3	89.0	0.0	112.5	2.5
19/07/2019 8:45	4.4	86.0	0.0	90.0	1.9
19/07/2019 9:00	4.5	82.0	0.0	112.5	1.9
19/07/2019 9:15	5.5	79.0	0.0	112.5	1.7
19/07/2019 9:30	7.0	72.0	0.0	90.0	1.9
19/07/2019 9:45	8.2	68.0	0.0	90.0	2.5
19/07/2019 10:00	8.6	65.0	0.0	112.5	1.9
19/07/2019 10:15	9.4	61.0	0.0	157.5	1.1
19/07/2019 10:30	10.0	61.0	0.0	135.0	1.1

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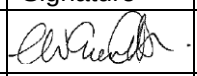
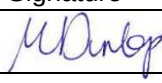
Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	B Elder	C Evenden		M Dunlop		05/09/2019

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