

# Environmental Noise Monitoring Report 2015

Hunter Galvanizing

26 February 2015



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the environment



# Environmental Noise Monitoring Report 2015

## Hunter Galvanizing

### 26 February 2015

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## 1 Introduction

Hunter Galvanizing commissioned MJM Environmental to conduct Environmental Noise Quality Monitoring over 5 and 6 February 2015. The monitoring is required as per Hunter Galvanizing's Environmental Protection Licence (EPL) Number 12014 issued under the Protection of the Environment Operations Act 1997.

Noise quality monitoring was performed for  $L_{Aeq}$  and  $L_{A90}$  readings as identified in section L3 of Hunter Galvanizing's Environmental Protection Licence (EPL). The sampling points included Hunter Galvanizing's plant boundary at 13 Old Punt Road, Tomago, and at the closest residence to Hunter Galvanizing at 1 Old Punt Road, Tomago.

Sampling was conducted over 15 minute periods at the following times:

- Day period from 13:41 to 14:22 on 5 February 2015;
- Evening Period from 18:02 to 18:39 on 5 February 2015; and
- Night Period from 05:50 to 06:28 on 6 February 2015

This report outlines and evaluates results from the noise quality monitoring performed at Hunter Galvanizing and closest residence areas. Copies of the field notes and sound level meter results are attached in Appendix A, and calibration certificates are attached in Appendix B.

## 2 Methodology

### 2.1 Definition and Terminology

Definitions and terminology used in the following report are shown in Table 2-1.

**Table 2-1: Noise emission terminology**

Term	Definition
$L_A$	A-weighted root mean squared (RMS) noise level
$L_{A90}$	Noise level exceeded for 90% of the time; approximately average of the minimum noise cycles; often referred to as the 'background' noise level and commonly used to determine noise criteria for assessment purposes
$L_{Aeq}$	Average noise energy during a measurement period
dB(A)	Noise level measurement in unit decibels; A-weighting scale is used to describe human response to noise
SPL	The Sound Pressure Level (SPL) from a source. It can be used in distance attenuation calculations to determine noise emission values at intermediate distances.

### 2.2 Sampling Device and Monitoring

A Sound Pro SP-DL Sound Level Meter (serial number BJH070015) and a Quest QC-10 Sound Level Meter Calibrator (serial number QIH120145) were used for the attended monitoring to record representative site sources and existing ambient noise. The Bureau of Meteorology's Williamstown Station No. 61078 records were used for all weather data.

A calibration certificate for the Sound Pro SP-DL instrument is available in Appendix B.

### 2.3 Sample Locations and Identification

The locations monitored are identified in Table 2-2. The temperature, wind speed, cloud and solar radiation data are presented in Table 2-3.

Table 2-2: Sampling locations and identification

Location No.	Location ID	GPS Coordinates	Specific Location	Distance from Hunter Galvanizing Plant (m)
1	Residence	56379039E 6368051N	Opposite residence situated at 1 Old Punt Road, Tomago	280
2	Hunter Galvanizing	56379056E 6367779N	At boundary of Hunter Galvanizing site at 13 Old Punt Road, Tomago, closest to the residence	40

Table 2-3: Sampling dates and corresponding weather data\*

Date	Time	Sampling Period	Temperature (°C)	Average Wind (m/s)	Average Cloud Cover	Solar Radiation (W/m-2)
5/02/2015	13:41 - 14:22	Day	23.9	7.2	Overcast	258.10
5/02/2015	18:02 - 18:39	Evening	22.1	6.1	Overcast	258.10
6/02/2015	05:50 - 06:28	Night	15.2	1.9	Overcast	315.97

\*Weather observations sourced from Williamstown Station No. 61078 from <http://www.bom.gov.au>

The sampling locations monitored and distances are shown in Figure 2-1.





Figure 2-1: Sampling locations and distances (Google Maps 2014)

## 2.4 Quality Assurance and Quality Control

Sampling apparatus used for sampling environmental noise and their models are shown below in Figure 2-2.

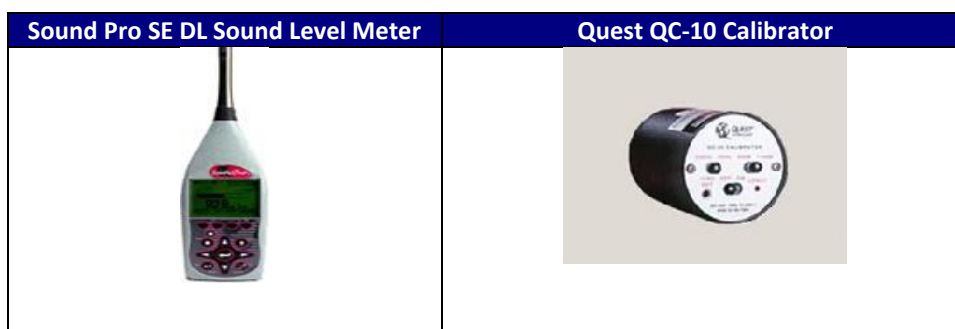


Figure 2-2: Sound Pro SE DL Sound Level Meter and Quest QC-10 Calibrator

The Sound Pro SE DL Type 1 sound level meter was calibrated before each day, evening and night time sampling period during the 5 and 6 February 2015 and calibration checked at the end of each time period.

The calibration and each calibration check had a variation of no more than +/- 1 dB. Calibration records are shown in Field Notes attached as Appendix A.

### 3 Assessment Criteria

#### 3.1 Assessment Criteria

The assessment criteria for environmental noise measured at Hunter Galvanizing was assessed using guidelines sourced from NSW EPA's NSW Industrial Noise Policy (2000), and NSW EPA's Noise Guide for Local Government (2013).

Hunter Galvanizing hold EPL No. 12014 issued under the *Protection of the Environment Operations Act 1997*. Below are the stated noise emission licence requirements for Hunter Galvanizing taken from EPL 12014:

*L3.1 Noise emissions from the operation of the premises must:*

- a) Not exceed an LAeq noise emission criteria of 52dB(A) during the day (7 am to 6 pm) at the nearest residential receiver.*
- b) Not exceed an LAeq noise emission criteria of 43dB(A) during the evening (6 pm to 10 pm) at the nearest residential receiver, and*
- c) Not exceed an LAeq noise emission criteria of 43dB(A) during the night (10 pm to 7 am) at the nearest residential receiver*

*The noise limits apply under winds of up to 3 metres per second (measured at 10 metres above ground level) and Pasquill stability class from A to F.*

*L3.2 For the purpose of noise measurement for condition L3.1, the  $L_{Aeq}$  noise level must be measured or computed at the most affected area within 30 metres of the residence or at the boundary, if the boundary is closer than 30 metres to the residence, over a period/s of 15 minutes using a "FAST" response on the sound level meter.*

*L3.3 For the purpose of the noise measurements referred to in Condition L3.1, 5dB must be added to the measured level if the noise is substantially tonal or impulsive in character.*

#### 3.2 Calculations

The formula for distance attenuation noise calculations used in this report is shown below.

Distance attenuation SPL2

$$SPL_2 = SPL_1 - 10 \log \left( \frac{R_2^2}{R_1^2} \right)$$

Where  $SPL_1$  = sound pressure level at point 1

$SPL_2$  = sound pressure level at point 2

$R_1$  = distance from sound source to point 1

$R_2$  = distance from sound source to point 2

## 4 Results

The noise levels were measured in 15 minute intervals during three periods, being:

- Daytime (07:00 – 18:00)
- Evening (18:00 – 22:00)
- Night time (22:00 – 07:00)

As per Hunter Galvanizing's licence assessment criteria  $L_{Aeq}$  was measured within 30 metres from the most affected residential receiver over 15 minute periods using a 'FAST' response on the sound level meter. Results for  $L_{Aeq}$  and  $L_{A90}$  at the nearest residential receiver and for Hunter Galvanizing's boundary during each period are shown in Table 4-1 to Table 4-3.

The nearest residential receiver is approximately 280 metres from Hunter Galvanizing's plant. Sound pressure level ( $SPL_{280}$ ) is used for calculations based on attenuated noise propagation from Hunter Galvanizing's plant to the nearest residential receiver at 1 Old Punt Road.

Condition L3.1 of the licence states that 5dB must be added to the measured level if the noise is substantially tonal or impulsive in character. For the purpose of this study the worst case scenario was assumed and a 5 dB correction factor has been added to the data.

### 4.1 Daytime Sampling

Table 4-1:  $L_{Aeq}$ ,  $L_{A90}$  and attenuation ( $SPL_{280}$ ) results for Daytime<sup>1</sup> monitoring

Monitoring Station	Date	Time	$L_{Aeq}$ dB(A)	$L_{A90}$ dB(A)	$SPL_{280}$ dB(A)	EPL Limit dB(A)
Residence	5/02/2015	13:41:45 – 13:56:54	73.4	48.8	44.4	52
Hunter Galvanizing	5/02/2015	14:07:40 – 14:22:50	61.3	53.5	-	-

<sup>1</sup> 07:00 to 18:00

### 4.2 Evening Sampling

Table 4-2:  $L_{Aeq}$ ,  $L_{A90}$  and attenuation ( $SPL_{280}$ ) results for Evening<sup>1</sup> monitoring

Monitoring Station	Date	Time	$L_{Aeq}$ dB(A)	$L_{A90}$ dB(A)	$SPL_{280}$ dB(A)	EPL Limit dB(A)
Residence	5/02/2015	18:23:58 – 18:39:02	58.8	45.0	45.8	43
Hunter Galvanizing	5/02/2015	18:02:40 – 18:17:44	62.7	53.1	-	-

<sup>1</sup> 18:00 to 22:00

### 4.3 Night Sampling

Table 4-3:  $L_{Aeq}$ ,  $L_{A90}$  and attenuation ( $SPL_{280}$ ) results for Night<sup>1</sup> monitoring

Monitoring Station	Date	Time	$L_{Aeq}$ dB(A)	$L_{A90}$ dB(A)	$SPL_{280}$ dB(A)	EPL Limit dB(A)
Residence	6/02/2015	5:50:15 – 6:05:17	73.5	48.4	42.5	43
Hunter Galvanizing	6/02/2015	6:13:18 – 6:28:21	59.4	50.7	-	-

<sup>1</sup> 22:00 to 07:00



## 4.4 Results Summary

Table 4-4: Summary of  $L_{Aeq}$ ,  $L_{A90}$  and  $SPL_{280}$  results over 24 h division of monitoring

Location	Time Period	$L_{Aeq}$ dB(A)	$L_{A90}$ dB(A)	$SPL_{280}$ dB(A)	EPL Limit dB(A)
Residence	Daytime	73.4	48.8	44.4	52
Hunter Galvanizing	Daytime	61.3	53.5	-	-
Residence	Evening	58.8	45.0	45.8	43
Hunter Galvanizing	Evening	62.7	53.1	-	-
Residence	Night	73.5	48.4	42.5	43
Hunter Galvanizing	Night	59.4	50.7	-	-

## 5 Pasquill Stability Class

Pasquill Stability Classes A to F were used to establish the level of atmospheric turbulence present during sampling periods. As illustrated in Table 5-1, Class A is categorised as the most turbulent of conditions and Class F as the most stable and least turbulent weather conditions. The Pasquill Stability Classes for the Tomago area on 5 and 6 February 2015 from A to F are shown in

Table 5-2 and Table 5-3. Data was obtained from the Australian Bureau of Meteorology using Williamtown station number 61078.

The incoming solar radiation for the 5 February 2015 was calculated at  $258.10 \text{ W/m}^2$  and  $315.97 \text{ W/m}^2$ . As shown in Table 5-2 these values correspond to a slight level of solar radiation ( $<300 \text{ W/m}^2$ ). Cloud cover during the day, night and evening was overcast (3 okta). Wind speed was variable throughout the sampling periods. The average wind speed during the night period of 1.9 m/s meets the licence requirement of  $<3 \text{ m/s}$ , however the day and evening periods did not meet the criteria with an average wind speed of 7.2 m/s and 6.1 m/s respectively. The distance from weather station 61078 at Williamtown NSW and Hunter Galvanizing's site is approximately 12.28 km and it is noted that some variation in weather conditions from the weather station 61078 to Hunter Galvanizing's site is probable.

Table 5-1: Pasquill stability classes and classification

Pasquill Stability Classes	
A: Extremely Unstable Conditions	D: Neutral Conditions
B: Moderately Unstable Conditions	E: Slightly Stable Conditions
C: Slightly Unstable Conditions	F: Moderately Stable Conditions

Pasquill Stability Class Table adapted from <http://www.arl.noaa.gov>

Table 5-2: Modified Pasquill stability class results

Surface Wind Speed (m/s)	Daytime Incoming Solar Radiation ( $\text{W/m}^2$ )				Night-time conditions		
					Thin overcast or $>4/8$ cloud	$\leq 4/8$ cloud	
	Strong ( $>600$ )	Moderate (300-600)	Slight ( $<300$ )	Overcast			
$<2$	N/A	N/A	N/A	N/A	N/A	<sup>3</sup> F	N/A
$<3$	N/A	N/A	N/A	N/A	N/A	N/A	N/A
$<5$	N/A	N/A	N/A	N/A	N/A	N/A	N/A
$<6$	N/A	N/A	N/A	N/A	N/A	N/A	N/A
$>6$	N/A	N/A	<sup>1&amp;2</sup> D	N/A	N/A	N/A	N/A

<sup>1</sup> Daytime condition

<sup>2</sup> Evening condition

<sup>3</sup> Night-time condition

N/A – Information is not applicable as the applicable values are based monitoring times only.

A summary of Pasquill Stability Class results for daytime, evening and night-time sampling periods is shown in Table 5-3. These results indicate weather conditions existent during the sampling periods ranged from neutral conditions to moderately stable conditions.

**Table 5-3: Pasquill stability class results for daytime, evening and night time periods**

Sampling Period	Stability Class (A-F)
Daytime	D
Evening	D
Night	F

## 6 Discussion and Limitations

The noise propagation measured at the nearest residence to Hunter Galvanizing at 1 Old Punt Road, Tomago included sources from surrounding industries, traffic including trucks, cars, motorbikes, and wildlife including crickets and birds in conjunction with Hunter Galvanizing's plant. The plant was not able to be shut down during sampling in order to accurately record the background levels of noise. Sources of contributing noise were recorded in field notes available in Appendix A.

Monitoring occurred over a 24-hour period and meteorological data showed slight solar radiation levels, overcast cloud cover, and wind speed that was at times above the EPL's limit applications. The Pasquill Stability Class results class ranged from D to F, and shows the overall atmospheric turbulence during the sampling periods was neutral to moderately stable.

Noise propagation as  $L_{Aeq}$  was measured as outlined in EPL 12014. The measurement was taken at the nearest residential receiver during the day, evening and night periods. Condition L3.1 of the licence states that 5dB must be added to the measured level if the noise is substantially tonal or impulsive in character. For the purpose of this study the worst case scenario was assumed and a 5 dB correction factor was added to the data.

The  $L_{Aeq}$  measurements displayed in summary Table 4-4 exceeded the EPL criteria for the day (52 dB(A)), evening (43 dB(A)) and night (43 dB(A)) sampling periods.

Noise monitoring results taken at Hunter Galvanizing's boundary as  $L_{Aeq}$  were lower than those recorded at the nearest residence over the daytime and night periods. The higher results recorded for the nearest residence may have been affected by heavy traffic and heavy industries located closer to the residence than Hunter Galvanizing.

In order to mathematically remove some noise emanating from surrounding industrial neighbours, a simulated noise distance attenuation formula was used to calculate the noise levels at the residence from Hunter Galvanizing's operations. The noise attenuation calculation results, expressed as  $SPL_{280}$ , were based on the distance of the residence from Hunter Galvanizing, being 280 metres.

The  $SPL_{280}$  values showed that the noise levels generated by Hunter Galvanizing alone during the day (44.4 dB(A)), and night (42.5 dB(A)) periods when experienced at the residence are below the noise levels stipulated in Hunter Galvanizing's EPL. During the evening period the  $SPL_{280}$  of 45.8 dB(A) was above the licence limit of 43 dB(A) and is therefore an exceedance of the EPL limits.

It is suggested that the noise attenuation calculations should be evaluated and used as a guideline value for compliance with the EPL conditions rather than using the measured value at the residence, as they can be more directly attributed to Hunter Galvanizing's operations. The measured values at the residence were influenced by factors outside of Hunter Galvanizing's operation, such as high background noise levels from other industries in the area, wildlife and constant vehicular movements. Results also showed the  $L_{A90}$  values, which represents background noise, were high for both the Residence and Hunter Galvanizing locations.

A wind factor of >6 m/s was also observed during the daytime and evening periods which is above the EPL requirement of <3 m/s. This would have influenced the results and may account for the evening period exceedance.

Therefore, the recorded value from the residence may not be reflecting the true noise propagation from Hunter Galvanizing. Using the attenuation values it could be said that Hunter Galvanizing are operating within their EPL limits for noise during the day and night periods, and were slightly above the licence conditions during the evening period.

## 7 Conclusion

Hunter Galvanizing commissioned MJM Environmental to complete an environmental noise assessment at the boundary of the plant and the most affected residence. The plant boundary and residence noise propagation was assessed using a Type 1 Sound Level Meter over a 24-hour period during February 2015. The results were compared to the Noise Limits presented in Section L3 of Hunter Galvanizing's EPL.

Hunter Galvanizing's site boundary had lower  $L_{Aeq}$  noise propagation results during the day and night periods when compared to the noise experienced at the closest and most affected residence. The higher noise measurements at the residence were observed to be caused by the combination of surrounding heavy industrial sites, and high volumes of traffic experienced near the residence.

In order to mathematically remove the noise emanating from surrounding industrial neighbours, a simulated distance attenuation calculation was performed to simulate the noise levels at the closest residence from Hunter Galvanizing's operations alone. The noise propagation simulated attenuation calculations gave results below the EPL noise condition limits at the residence during the day and night periods, and results marginally above the EPL limits during the evening period.

## **Appendix A      Field Notes and SLM Results**



# Environmental Noise Survey Sheet

Location Hunter Galvanising

Date ~~27-28 January~~  
5-6 February 2015

Equipment	Make & Model	Serial No.		
Meter	Sound Pro	BSH070015		
Microphone				
Octave Filter				
Calibrator	QC-10	QIH120145		
Initial Calibration (1 KHz)		Calibration Check (1 KHz)		
Time	dB	Time	dB	
13:38 5/2/15	114.0	14:26 5/2/15	114.0	
17:55 5/2/15	114.0	18:45 5/2/15	114.0	
5:40 6/2/15	114.0	6:33 6/2/15	114.0	
	Site Sketch			

(showing noise sources, meter positions, and approximate distances to residence)

See Report (As per previous sampling stations)



Source: H Gal

Date: ~~4/07~~ 5/2/15

Start time: ~~14:22~~ 14:07

Finish time: 14:22

Technician: AB

Number/frequency of samples: 90/10 seconds

Calibration (1Hz): 114.0

Calibration check: 114.0

[illegible]





Calibration check: 114.0

[illegible]



Calibration check: 114.0

[illegible]



Source: MGAL Residence

Technician: A B

Number/frequency of samples: 90/10 seconds

Calibration (1Hz): 114.0

Calibration check: 114.0

[illegible]



Source: M6AL

Date: 6/2/15

Start time: 6:13

Finish time: 6:28

Technician: AG

Number/frequency of samples: 90/10 seconds

Calibration (1Hz): 114.0

Calibration check: 114.0

[illegible]





Calibration check: 114.0

[illegible]

# Hunter Galvanising Day Time - Residence

## Information Panel

Name	HGal Day Res
Start Time	Thursday, 5 February 2015 13:41:45
Stop Time	Thursday, 5 February 2015 13:56:54
Device Model Type	SoundPro DL
Comments	

## General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	68.4 dB	Dose	1	0 %
Pdose	1	2.2 %	Lmin	1	46 dB
Lmax	1	87 dB	Lpk	1	99.9 dB
TWA	1	53.4 dB	OL%	1	0 %
ULtime	1	00:00:00	Takt	1	73.8 dB
SEL	1	98 dB	ExpSec	1	2.5 Pa2-Sec
UR%	1	0 %	L1	1	80.2 dB
L10	1	72.1 dB	L50	1	54.8 dB
L90	1	48.8 dB	Mntime	1	5/02/2015
1:56:53 PM					
Mxtime	1	5/02/2015 1:49:52 PM	PKtime	1	5/02/2015
1:41:46 PM					
Projected TWA	1	68.4 dB	Dose8	1	2.2 %
ExpHrs	1	0.00 Pa2-Hours	Dose	2	0 %
Pdose	2	2.1 %	Lmin	2	45.9 dB
Lmax	2	86.9 dB	Lpk	2	99.8 dB
Leq	2	68.3 dB	TWA	2	53.3 dB
OL%	2	0 %	ULtime	2	00:00:00
SEL	2	97.9 dB	ExpSec	2	2.4 Pa2-Sec
UR%	2	0 %	Mntime	2	5/02/2015
1:56:53 PM					
Mxtime	2	5/02/2015 1:41:46 PM	PKtime	2	5/02/2015
1:41:46 PM					
Projected TWA	2	68.3 dB	Dose8	2	2.1 %
ExpHrs	2	0.00 Pa2-Hours	Rtime	--	00:15:09
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	FAST	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	FAST	Criterion Level	1	85 dB
Criterion Time	1	8 hrs.	Count Rate	1	64 #
Projection Time	1	480 mins.	Int Threshold	1	80 dB
Int Threshold Enable	1	False	ULL	1	140 dB
Ln1	1	1 %	Ln2	1	10 %
Ln3	1	50 %	Ln4	1	90 %
MeterFloor	1	-20 dB	RangeCeiling	1	100 dB
Dynamic Range	1	90 dB	Log Rate	1	60 s
Peak Weighting	1	A			



# Hunter Galvanising Daytime - Site

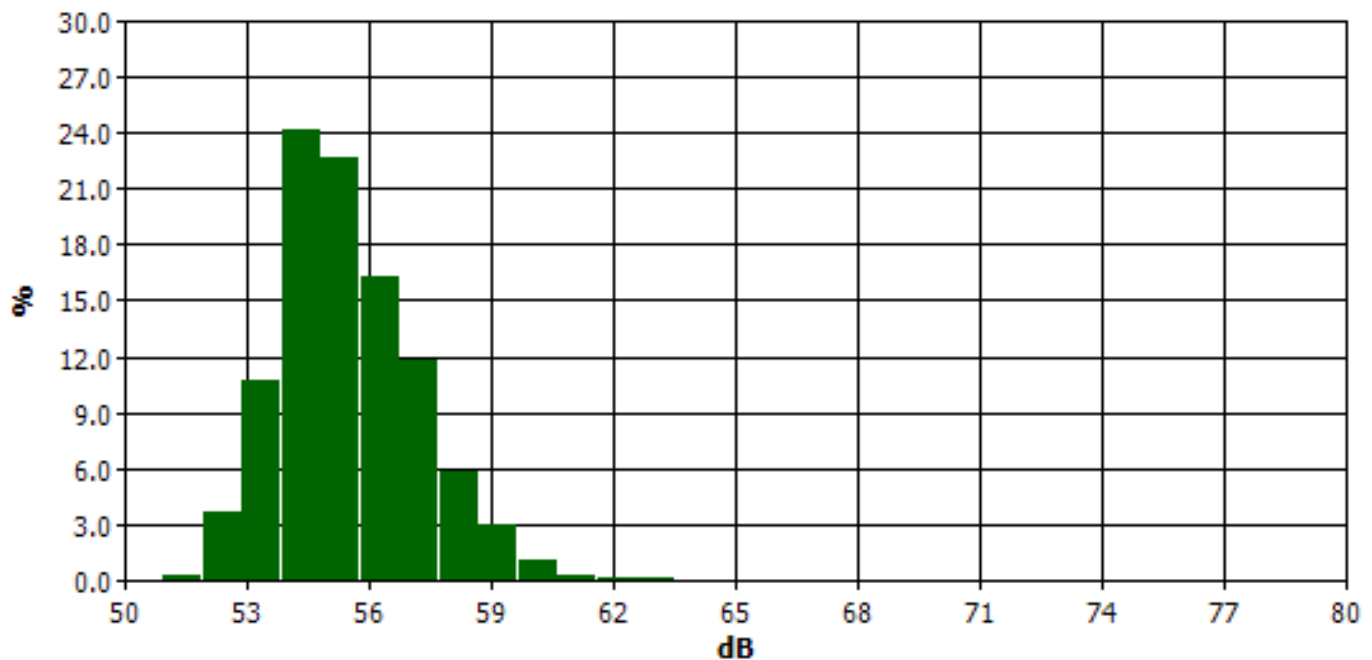
## Information Panel

Name	HGal Day Site
Start Time	Thursday, 5 February 2015 14:07:40
Stop Time	Thursday, 5 February 2015 14:22:50
Device Model Type	SoundPro DL
Comments	

## General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	56.3 dB	Rtime	--	00:15:10
Dose	2	0 %	Pdose	2	0.1 %
Lmin	2	51 dB	Lmax	2	75.9 dB
Lpk	2	94.8 dB	Leq	2	56.2 dB
TWA	2	41.2 dB	OL%	2	0 %
ULtime	2	00:00:00	SEL	2	85.8 dB
ExpSec	2	0.1 Pa2-Sec	UR%	2	0 %
Mntime	2	5/02/2015 2:16:01 PM	Mxtime	2	5/02/2015
2:07:47 PM					
PKtime	2	5/02/2015 2:07:47 PM	Projected TWA	2	56.2 dB
Dose8	2	0.1 %	ExpHrs	2	0.00 Pa2-
Hours					
Dose	1	0 %	Pdose	1	0.1 %
Lmin	1	51.1 dB	Lmax	1	76 dB
Lpk	1	94.9 dB	TWA	1	41.3 dB
OL%	1	0 %	ULtime	1	00:00:00
Takt	1	59.3 dB	SEL	1	85.9 dB
ExpSec	1	0.1 Pa2-Sec	UR%	1	0 %
L1	1	60.6 dB	L10	1	57.9 dB
L50	1	55.3 dB	L90	1	53.5 dB
Mntime	1	5/02/2015 2:16:01 PM	Mxtime	1	5/02/2015
2:07:47 PM					
PKtime	1	5/02/2015 2:07:47 PM	Projected TWA	1	56.3 dB
Dose8	1	0.1 %	ExpHrs	1	0.00 Pa2-
Hours					
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	FAST	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	FAST			

## Statistics Chart



# Hunter Galvanising Evening - Residence

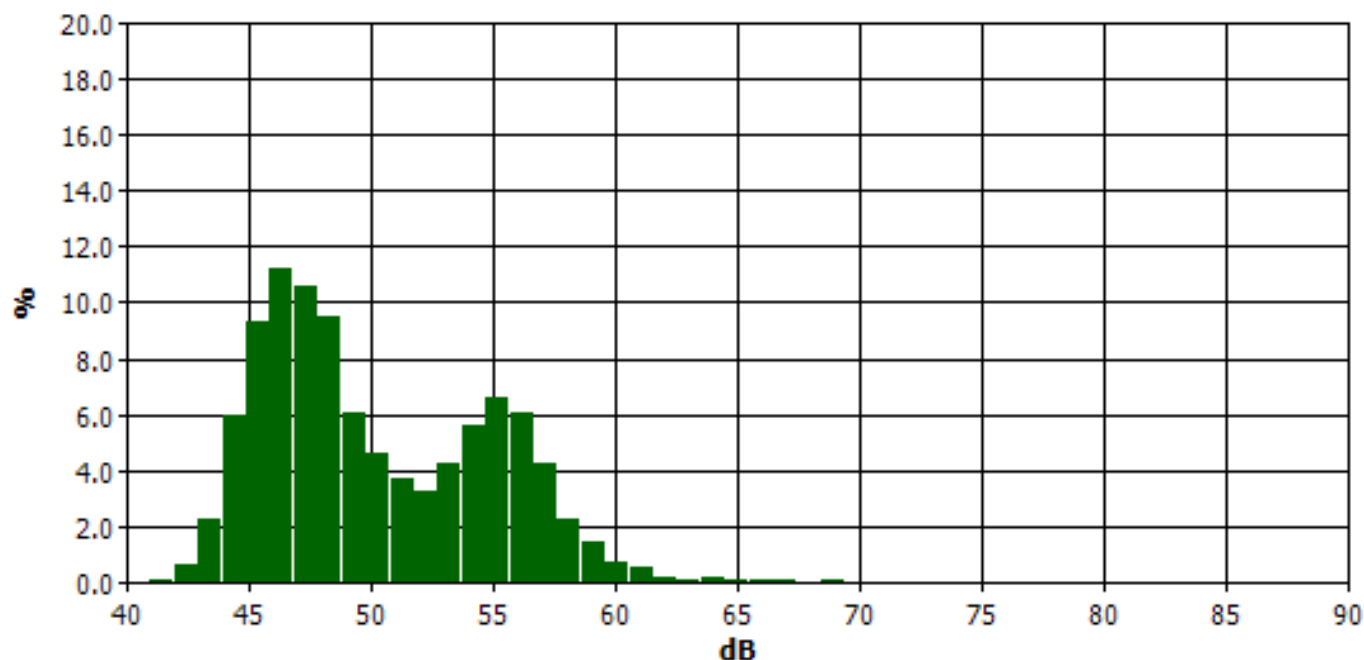
## Information Panel

Name	HGal Evening Res
Start Time	Thursday, 5 February 2015 18:23:58
Stop Time	Thursday, 5 February 2015 18:39:02
Device Model Type	SoundPro DL
Comments	

## General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	53.8 dB	Dose	1	0 %
Pdose	1	0 %	Lmin	1	41.3 dB
Lmax	1	80.2 dB	Lpk	1	102 dB
TWA	1	38.8 dB	OL%	1	0 %
ULtime	1	00:00:00	Takt	1	61 dB
SEL	1	83.4 dB	ExpSec	1	0 Pa2-Sec
UR%	1	0 %	L1	1	61.8 dB
L10	1	56.9 dB	L50	1	48.9 dB
L90	1	45 dB	Mntime	1	5/02/2015
6:36:03 PM			PKtime	1	5/02/2015
Mxtime	1	5/02/2015 6:24:17 PM			
6:24:17 PM			Dose8	1	0 %
Projected TWA	1	53.8 dB	Dose	2	0 %
ExpHrs	1	0.00 Pa2-Hours	Lmin	2	41.2 dB
Pdose	2	0 %	Lpk	2	101.9 dB
Lmax	2	80.1 dB	TWA	2	38.7 dB
Leq	2	53.7 dB	ULtime	2	00:00:00
OL%	2	0 %	ExpSec	2	0 Pa2-Sec
SEL	2	83.3 dB	Mntime	2	5/02/2015
UR%	2	0 %			
6:36:03 PM			PKtime	2	5/02/2015
Mxtime	2	5/02/2015 6:24:17 PM			
6:24:17 PM			Dose8	2	0 %
Projected TWA	2	53.7 dB	Rtime	--	00:15:04
ExpHrs	2	0.00 Pa2-Hours	Weighting	1	A
Exchange Rate	1	3 dB	Bandwidth	1	OFF
Response	1	FAST	Weighting	2	A
Exchange Rate	2	3 dB			
Response	2	FAST			

## Statistics Chart



# Hunter Galvanising Evening - Site

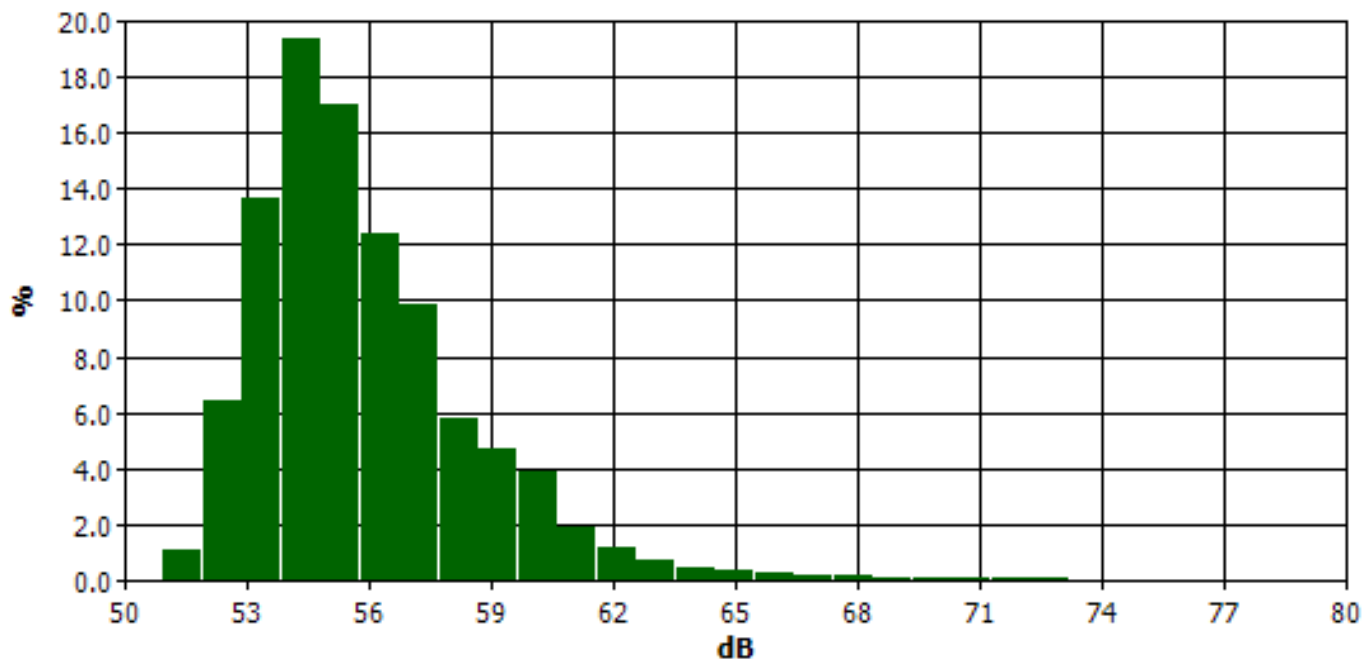
## Information Panel

Name	HGal Evening Site
Start Time	Thursday, 5 February 2015 18:02:40
Stop Time	Thursday, 5 February 2015 18:17:44
Device Model Type	SoundPro DL
Comments	

## General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	57.7 dB	Dose	1	0 %
Pdose	1	0.1 %	Lmin	1	51.2 dB
Lmax	1	78.6 dB	Lpk	1	96 dB
TWA	1	42.6 dB	OL%	1	0 %
ULtime	1	00:00:00	Takt	1	62.4 dB
SEL	1	87.2 dB	ExpSec	1	0.2 Pa2-Sec
UR%	1	0 %	L1	1	66.3 dB
L10	1	59.8 dB	L50	1	55.4 dB
L90	1	53.1 dB	Mntime	1	5/02/2015
6:09:05 PM			PKtime	1	5/02/2015
Mxtime	1	5/02/2015 6:02:48 PM			
6:02:47 PM			Dose8	1	0.1 %
Projected TWA	1	57.7 dB	Dose	2	0 %
ExpHrs	1	0.00 Pa2-Hours	Lmin	2	51.1 dB
Pdose	2	0.1 %	Lpk	2	95.9 dB
Lmax	2	78.5 dB	TWA	2	42.5 dB
Leq	2	57.6 dB	ULtime	2	00:00:00
OL%	2	0 %	ExpSec	2	0.2 Pa2-Sec
SEL	2	87.1 dB	Mntime	2	5/02/2015
UR%	2	0 %			
6:09:05 PM			PKtime	2	5/02/2015
Mxtime	2	5/02/2015 6:02:48 PM			
6:02:47 PM			Dose8	2	0.1 %
Projected TWA	2	57.6 dB	Rtime	--	00:15:04
ExpHrs	2	0.00 Pa2-Hours	Weighting	1	A
Exchange Rate	1	3 dB	Bandwidth	1	OFF
Response	1	FAST	Weighting	2	A
Exchange Rate	2	3 dB			
Response	2	FAST			

## Statistics Chart



# Hunter Galvanising Night - Residence

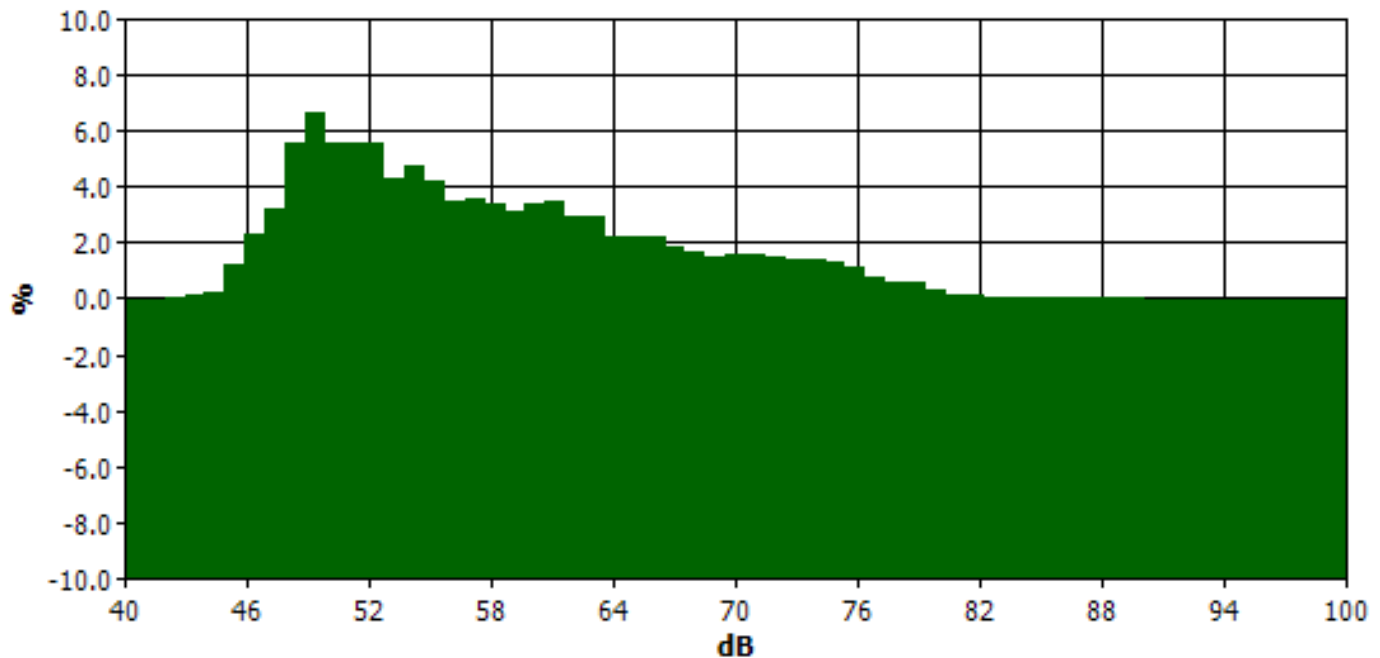
## Information Panel

Name HGal Night Res  
 Start Time Friday, 6 February 2015 05:50:15  
 Stop Time Friday, 6 February 2015 06:05:17  
 Device Model Type SoundPro DL  
 Comments

## General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	68.5 dB	Rtime	--	00:15:02
Dose	2	0 %	Pdose	2	2.2 %
Lmin	2	42.6 dB	Lmax	2	90.1 dB
Lpk	2	105.9 dB	Leq	2	68.4 dB
TWA	2	53.4 dB	OL%	2	0 %
ULtime	2	00:00:00	SEL	2	97.9 dB
ExpSec	2	2.5 Pa2-Sec	UR%	2	0 %
Mntime	2	6/02/2015 6:01:06 AM	Mxtime	2	6/02/2015
5:55:09 AM					
PKtime	2	6/02/2015 5:58:11 AM	Projected TWA	2	68.4 dB
Dose8	2	2.2 %	ExpHrs	2	0.00 Pa2-
Hours					
Dose	1	0 %	Pdose	1	2.2 %
Lmin	1	42.7 dB	Lmax	1	90.2 dB
Lpk	1	106 dB	TWA	1	53.5 dB
OL%	1	0 %	ULtime	1	00:00:00
Takt	1	73.8 dB	SEL	1	98 dB
ExpSec	1	2.5 Pa2-Sec	UR%	1	0 %
L1	1	79.6 dB	L10	1	71.6 dB
L50	1	56 dB	L90	1	48.4 dB
Mntime	1	6/02/2015 6:01:06 AM	Mxtime	1	6/02/2015
5:55:09 AM					
PKtime	1	6/02/2015 5:58:11 AM	Projected TWA	1	68.5 dB
Dose8	1	2.2 %	ExpHrs	1	0.00 Pa2-
Hours					
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	FAST	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	FAST			

## Statistics Chart



# Hunter Galvanising Night - Site

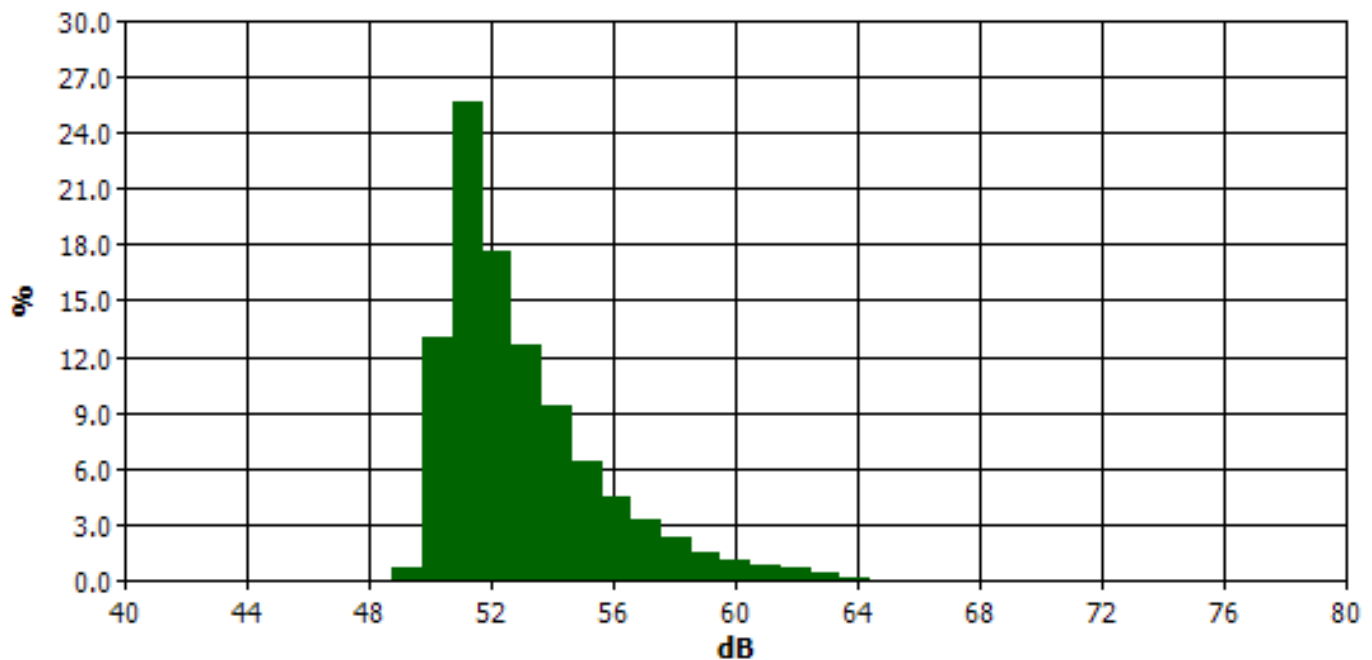
## Information Panel

Name HGal Night Site  
 Start Time Friday, 6 February 2015 06:13:18  
 Stop Time Friday, 6 February 2015 06:28:21  
 Device Model Type SoundPro DL  
 Comments

## General Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	54.4 dB	Dose	1	0 %
Pdose	1	0 %	Lmin	1	49.4 dB
Lmax	1	71.4 dB	Lpk	1	91.2 dB
TWA	1	39.3 dB	OL%	1	0 %
ULtime	1	00:00:00	Takt	1	58.2 dB
SEL	1	83.9 dB	ExpSec	1	0 Pa2-Sec
UR%	1	0 %	L1	1	62.3 dB
L10	1	56.9 dB	L50	1	52.4 dB
L90	1	50.7 dB	Mntime	1	6/02/2015
6:20:33 AM			PKtime	1	6/02/2015
Mxtime	1	6/02/2015 6:24:12 AM			
6:24:14 AM			Dose8	1	0 %
Projected TWA	1	54.4 dB	Dose	2	0 %
ExpHrs	1	0.00 Pa2-Hours	Lmin	2	49.3 dB
Pdose	2	0 %	Lpk	2	91.1 dB
Lmax	2	71.3 dB	TWA	2	39.2 dB
Leq	2	54.3 dB	ULtime	2	00:00:00
OL%	2	0 %	ExpSec	2	0 Pa2-Sec
SEL	2	83.8 dB	Mntime	2	6/02/2015
UR%	2	0 %			
6:20:33 AM			PKtime	2	6/02/2015
Mxtime	2	6/02/2015 6:24:12 AM			
6:24:14 AM			Dose8	2	0 %
Projected TWA	2	54.3 dB	Rtime	--	00:15:03
ExpHrs	2	0.00 Pa2-Hours	Weighting	1	A
Exchange Rate	1	3 dB	Bandwidth	1	OFF
Response	1	FAST	Weighting	2	A
Exchange Rate	2	3 dB			
Response	2	FAST			

## Statistics Chart



## **Appendix B      Monitoring Equipment Calibration Certificate**



**Sound Level Meter**

Instrument      Sound Pro  
Serial No.      BJH070015



Air-Met Scientific Pty Ltd  
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Battery Holder	✓	
	Alkaline Battery	✓	
	Cover	✓	
	Output	✓	
Switch/Keypad	Operation	✓	
Display	Intensity	✓	
	Operation	✓	
Microphone	Type	✓	
	Socket	✓	
	Plug	✓	
PCB	Condition	✓	
Calibrator	Condition	✓	
	Battery Holder	✓	
	IVAC Output	✓	
	Frequency	✓	
A Weighting	Operation	✓	
C Weighting	Operation	✓	
Software	Version		
Datalogger	Operation	✓	
Download	Operation	✓	
Other Tests			

**Certificate of Calibration**

This is to certify that the above instrument has been calibrated to the following specifications:

Frequency	dB	Volts AC	Certified	Calibration Equipment	Instrument Reading	
					Before	After
1Khz	114dB	1 Vac	NATA	QC10 QIE110231	114.4dB	114.0dB

Calibrated by:

Joanna Wong

Calibration date:

22/01/2015

Next calibration due:

21/07/2015



AirMet Scientific P/L  
7-11 Ceylon Street  
Nunawading  
Victoria 3131, Australia

## Calibration Certificate

This document hereby certifies that this instrument detailed has been calibrated to the parameters listed below.

Certificate Print Date Wednesday, 13 August, 2014

Call ID: 00161380

Calibration Date: 13 August, 2014

Valid to Date: Thursday, 13 August, 2015

Arrow Job Code:

Customer: AMS NSW RENTAL

Type: Sound & Noise

Model: QC-10

Serial No: QIH120145

Description CALIBRATOR

Instrument	Frequency	dB	AC output	DC output	Certified	Calibration equip details	Instrument Reading	
							Before	After
QC-10	1KHZ	114			13/08		113.5	114

Completed by: Shaun Stephen

Customer Configuration

Mode

Diffusion:

Signed:  Retained:

Aspirated: