

# Report

## **Environmental Monitoring**

March, 2020

Hunter Galvanising Pty Ltd

1 April, 2020 Rev 0 (Final)



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#### 1. INTRODUCTION

Advitech Pty Limited was engaged by Hunter Galvanising Pty Ltd (Hunter Galvanising) to undertake attended noise monitoring at its Tomago facility. The objective of the monitoring was to evaluate compliance with the conditions of the Environment Protection Licence (EPL) No.12014.

It should be noted that this report was prepared by Advitech Pty Limited for Hunter Galvanising Pty Ltd (Hunter Galvanising) ('the customer') in accordance with the scope of work and specific requirements agreed between Advitech and the customer. This report was prepared with background information, terms of reference and assumptions agreed with the customer. The report is not intended for use by any other individual or organisation and as such, Advitech will not accept liability for use of the information contained in this report, other than that which was intended at the time of writing.

#### 1.1 Environmental Monitoring

Attended noise monitoring was undertaken to satisfy condition L3 of Hunter Galvanising's Environmental Protection Licence (EPL) 12014. The monitoring locations (shown in **Figure 1**) include:

- A monitoring point within 30 metres of the closest identified receiver to Hunter Galvanising operations (HGO) at 1 Old Punt Road, Tomago. The purpose of monitoring at this location was to evaluate levels at the nearest sensitive receiver to the Hunter Galvanising operations;
- An onsite monitoring point on the north western boundary of the Hunter Galvanising site at 13 Old Punt Road, Tomago. Measurements at this location serve as a reference for noise emissions leaving the site and enable assessment of potential contributions in more distant receiving environments subject to high levels of ambient noise.

Monitoring was undertaken over 15-minute intervals during the following periods:

- Day Period from 17:10 to 17:50 on 24 March, 2020;
- Evening Period from 18:00 to 18:35 on 24 March, 2020; and
- Night Period from 22:00 to 22:40 on 24 March, 2020.

Noise emissions from activities within the Hunter Galvanising site were evaluated against the noise limits specified in EPL 12014.

#### 2. METHODOLOGY

#### 2.1 Operational Noise Monitoring

Operator attended noise monitoring was undertaken as a means of assessing the character of, and to identify the noise sources contributing to measured noise levels at each of the monitoring locations. Attended noise monitoring was undertaken at each location for a period of 15 minutes:

- in accordance with the methodology established in AS1055-2018: Acoustics Description and measurement of environmental noise;
- following guidance established in the NSW Industrial Noise Policy (INP) and Noise Policy for Industry (NPfl).

Details of instrumentation used are provided in **Table 1**. Copies of the calibration certificates are attached in **Appendix I**.



Parameter	SLM
Sound Level Meter (SLM)	Svantek 971
SLM Serial Number	60686
SLM Calibration Date	9/5/2019
Field Calibrator	Svantek SV35A
Field Calibrator Serial Number	90218
Field Calibrator Calibration Date	16/5/2019
Frequency Weighting(s),(Response), Units	A, C, Lin (Fast), dB SPL

#### Table 1: Operator attended noise monitoring equipment

The Sound Level Meter (SLM) was calibrated prior to each measurement and checked periodically through the measurement campaign. Calibration drifts of more than 0.5 dB were not observed. Monitoring location information is outlined in **Table 2** (below) and visualised in **Figure 1**(overleaf).

#### Table 2: Description of monitoring locations

Location	ID	Description	Coordinates (MGA 56)	Mes Height	Distance to Hunter Galvanising Operations (m)
1	Residence (Offsite)	Closest identified receiver to Hunter Galvanising operations at 1 Old Punt Road, Tomago.	379029 m E 6368076 m S	RL+1.5m	290
2	Hunter Galvanising (Onsite)	Onsite monitoring point north west boundary of Hunter Galvanising's operations at 13 Old Punt Road, Tomago.	379056 m E 6367779 m S	RL+1.5m	40





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#### 2.2 Noise Assessment Criteria

Hunter Galvanizing in accordance with conditions established in EPL 12014, issued under the Protection of the Environment Operations Act 1997. The licence conditions relating to noise emissions include:

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

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

In order to evaluate compliance with these conditions, assessment of both measured noise levels and meteorological conditions is required.

#### 2.3 Meteorological Observations

Assessment of prevailing meteorology was undertaken with reference to observations from the Williamtown Automatic Weather Station (AWS) (ID061078), located approximately 10km to the east of the site. These observations are used to determine wind speed and atmospheric stability conditions in accordance with Condition L3.1 of the EPL. Supplementary assessment of ground level wind conditions at the monitoring location was also obtained using a handheld anemometer. A summary of meteorological conditions is presented in **Table 3** below.

	Iable	J. Observer			ioning r enous		
				Wind Speed	l (m/s)	Cloud	Stability
Date	Time	Period	Temp (°C)	Williamtown AWS (RL+10m)	Local (RL+1.5m)	Cover (Octas)	Class <sup>2</sup>
24/03/2020	17:10 to 17:50	Day	23	5.5	Calm	6	D
24/3/02020	18:00 to 18:35	Evening	24	4.7	Calm	7	D
24/03/2020	22:00 to 22:40	Night	24	3.9	Calm	0	D

#### Table 3: Observed Meteorological data During Monitoring Periods

Note 1: wind speed observations assessed at measurement location using handheld anemometer.

Note 2: Stability class evaluated in accordance with advice contained in Table D4 of the NSW NPfl



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#### 2.4 Evaluating Operational Source Contributions

Review of off-site receiving environments indicates significant influence from extraneous sources. Measured noise levels were dominated by surrounding industry and road traffic noise, which masked audible contributions from HGO. In order to evaluate potential contributions from HGO, the following calculation was used to extrapolate from the on-site reference monitoring location:

$$SPL_2 = SPL_1 - 10\log\left(\frac{r_2^2}{r_1^2}\right)$$

Where: SPL1 = sound pressure level at point 1 (on-site)

SPL<sub>2</sub> = sound pressure level at point 2 (off-site)

R1 = distance from sound source to point 1

 $R_2$  = distance from sound source to point 2

Without the ability to directly measure noise levels at the sensitive receiver, this calculation enables assessment of the theoretical contribution from HGO against noise limits. This method is considered consistent with the requirement to 'measure or compute' noise levels outlined in Condition L3.2 of EPL12014.

#### 2.4.1 Exclusions Based on Operator Observation

Where contributions from extraneous noise sources are considered to influence measured noise levels from HGO, operator observations may be used to exclude discrete events, or identify alternate descriptors representative of noise contributions from the operations. These may include:

- exclusion of a portion of the measurement influenced by short term extraneous events (for example, the passage of a vehicle), allowing recalculation of results from remaining data; or
- use of the L<sub>A90</sub> descriptor, where the character of the noise source under assessment is typically continuous, with little variation in level.

Alternative methods are available where extraneous sources cannot be reasonably excluded based on measurement descriptors or discrete events.

#### 2.4.2 Band Pass Filters

Where multiple sources cannot be excluded on the basis of operator observations and are found to contribute in different parts of the spectrum, a frequency band filter may be applied to isolate contributions from specific sources. The extent of band pass filtering is determined based on operator observations at the time of monitoring. Following application of a band pass filter, the LAeq (band pass) noise level may be recalculated as a means of evaluating the contribution from Hunter Galvanising operations.

During monitoring on 24 March, 2020, a continuous tonal extraneous contribution was observed from a source to the east of HGO. To identify the characteristic of this source, measurements were conducted at the eastern boundary of HGO (**Figure 2**). Review of these measurements (**Figure 3**) indicates noise measurements at the Hunter Galvanising site may be subject to significant (continuous) influence from extraneous sources between frequencies of 630 to 800Hz during the day, evening and night monitoring periods. Harmonic frequencies of 6300 to 8000Hz were also observed in measurements taken at the eastern boundary to identify the extraneous source but were not observed during measurements taken onsite.



For this reason, only band frequencies from 630 to 800Hz were removed from site measurements during the analysis of HGO contributions to the receiving environment. Insect noise was also identified as a significant continuous extraneous noise source at HGO during the night period. To exclude this contribution an additional band pass filter was applied in the range of 3150 to 6300Hz for measurements conducted at HGO during the night period.



Figure 2: Tonal Investigation Measurements



Figure 3: Analysis of continuous tonal extraneous contribution



#### 3. RESULTS

A summary of the results from attended noise monitoring is provided in **Table 4**. Results are provided for comparison against the relevant  $L_{Aeq, 15minute}$  noise criteria stipulated in Conditions L3.1 to L3.3 in the EPL (12014). On-site monitoring indicates that noise emissions from HGO are characterised by:

- frequent noise events generated by forklift movements within and outside the plant;
- the arrival and dispatch of loaded and unloaded flatbed transport trucks;
- reverse alarms from forklifts within and outside the warehouse facilities;
- low frequency noise associated with the operation of overhead cranes within the facility;
- intermittent impact noise generated by the movement of metal pickets and various other metal items; and
- infrequent use of power tools such as rattle guns and angle grinders.

The off-site receiving environment was dominated by:

- traffic noise associated with both light vehicle and heavy vehicle movements along Old Punt Road (tyre and engine noise);
- reverse alarms from nearby vehicles;
- continuous insect noise during the night period;
- noise associated with heavy vehicle refuelling activities adjacent to the sensitive receiver; and
- infrequent noise associated with power tool use at a nearby commercial facility about the north west.



Audible noise contributions from HGO were not observed during any monitoring period at the nearest sensitive receiver on the 24 March, 2020. A summary of measured and calculated noise levels is provided in **Table 4** to **Table 6**. Results are provided for comparison against the relevant L<sub>Aeq,15minute</sub> noise criteria stipulated in Conditions L3.1 to L3.3 in the EPL (12014).

Location	Criteria	Date	L <sub>Aeq</sub>	La90	Site Contribution <sup>2</sup>	Description of Noise Environment	Compliance Assessment
On-site (HGO)	n/a1	24/03/2020 17:10	57	54	55	Continuous extraneous tonal influence, at 630 - 800Hz dominant throughout sample. Band filter analysis identifies that tonal influences contribute 2dB(A) to overall LAeq,15minute measurement. Frequent impact noise from the handling of steel beams and movement of forklifts onsite. Reverse alarm on forklift observed infrequently at intervals of 2 to 5 seconds.	n/a <sup>1</sup>
Off-site (Sensitive Receiver)	52	24/03/2020 17:34	65	45	Inaudible, not exceeding 52dB(A) calculated contribution 38db(A)	Traffic noise was the dominant source during monitoring period. Traffic noise contributions were identified as heavy vehicle arriving and idling at the adjacent refuelling station and pass by events by both light and heavy vehicles. A nearby warehouse to the west was also conducting activities involving handheld power tools, an air compressor and a grinder during measurement. No audible contribution from HGO	Compliant

#### Table 4: Day period monitoring results, dB(A)

Note 1: not a sensitive location, not applicable

Note 2: subject to band pass filters in accordance with Section 2.4.2



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Location	Criteria	Date	L <sub>Aeq</sub>	L <sub>A90</sub>	Site Contribution <sup>2</sup>	Description of Noise Environment	Compliance Assessment
On-site	n/a <sup>1</sup>	24/03/2020 18:21	59	54	57	Continuous extraneous tonal influence, at 630 - 800Hz dominant throughout sample. Band filter analysis identifies that tonal influences contribute 2dB(A) to overall LAeq,15minute measurement. Frequent impact noise from the handling of steel beams and movement of forklifts onsite. Reverse alarm on forklift observed infrequently at intervals of 2 to 5 seconds. Overhead crane heard briefly.	n/a <sup>1</sup>
Off-site	43	05/01/2019 21:40	66	47	Inaudible but not exceeding 43dB(A) calculated contribution 40db(A)	Noise levels at monitoring location dominated by traffic noise, and power tools from adjacent industry. No audible contribution from the HGO.	Compliant

#### Table 5: Evening period monitoring results dB(A)

Note 1: not a sensitive location, not applicable

Note 2: subject to band pass filters in accordance with Section 2.4.2

#### Table 6: Night period monitoring results, dB(A)

Location	Criteria	Date	L <sub>Aeq</sub>	Lago	Site Contribution <sup>2</sup>	Description of Noise Environment	Compliance Assessment
On-site	n/a <sup>1</sup>	05/01/201922:26	56	53	54	Continuous extraneous tonal influence, at 630 - 800Hz dominant throughout sample. Band filter analysis identifies that tonal influences contribute 2dB(A) to overall LAeq,15minute measurement. Frequent impact noise from the handling of steel beams and movement of forklifts onsite. Reverse alarm on forklift observed infrequently at intervals of 2 to 5 seconds. Extraneous noise from insects	n/a <sup>1</sup>
Off-site	43	05/01/201922:01	62	46	Inaudible but not exceeding 43dB(A) calculated contribution 36dB(A)	Insects, idling motors from parked heavy vehicles refuelling adjacent to receiver, road traffic. No audible contribution from the HGO.	Compliant

Note 1: not a sensitive location, not applicable

Note 2: subject to band pass filters in accordance with Section 2.4.2



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Detailed assessment of monitoring results, including measured noise levels, and description of the ambient noise environment indicates that contributions from HGO were compliant with noise limits established in EPL12014 during the assessment period.

#### 4. CONCLUSION

Advitech Pty Limited was engaged by Hunter Galvanising to undertake attended noise monitoring adjacent to its operations at Tomago, NSW. The objective of the monitoring was to evaluate compliance with the conditions of the Environment Protection Licence (EPL) No. 12014.

Operator attended noise monitoring was undertaken to satisfy condition L3 of Hunter Galvanising's Environmental Protection Licence (EPL) 12014. The monitoring campaign involved measurement at the nearest sensitive receiver, and an on-site reference location. The purpose of the reference location was to enable calculation of potential contribution from the site activities, as high levels of ambient noise present difficulties for direct measurement.

Meteorological conditions recorded from the Williamtown Airport AWS at the time of the assessment were such that the criteria established in EPL 12014 would not be applicable, however, local conditions were identified as compliant. Despite these conditions, no audible contributions from activities within the Galvanising plant were observed off-site, and computed contributions were also below criteria levels. On this basis, emissions from the site were considered compliant with the criteria established in EPL12014.

#### 5. REFERENCES

The following information was used in the preparation of this report:

- 1. AS1055-2018: Acoustics Description and measurement of environmental noise;
- 2. AS1259 1990. Acoustics Sound Level Meters.
- 3. AS2659 1998: Guide to the use of sound measuring equipment portable sound level meters.
- 4. AS 2706-1984: Numerical Values: Rounding and interpretation of limiting values.
- 5. EPA, 2000. NSW Industrial Noise Policy, NSW Environment Protection Agency, Sydney;
- 6. EPA, 2017. NSW Noise Policy for Industry, NSW Environment Protection Agency, Sydney;
- 7. Hunter Galvanising Pty Ltd Environmental Protection Licence (EPL) (12014);





## Appendix I Calibration Certificates

### CERTIFICATE OF CALIBRATION

#### CERTIFICATE NO.: SLM 24705 & FILT 5190

Equipment Description: Sound & Vibration Analyser

Manufacturer:	Svantek		
Model No:	Svan-971	Serial No:	60686
Microphone Type:	7052E	Serial No:	66701
Preamplifier Type:	SV18	Serial No:	62787
Filter Type:	1/3 Octave	Serial No:	60686
Comments:	All tests pass	sed for class	1.
Owner:	Advitech Pty 7 Riverside I Mayfield We	Ltd Drive st NSW 2304	
Ambient Pressure:	1012 hPa ±	1.5 hPa	
Temperature:	24 °C ±2°	C Relative H	umidity: 48% ±5%
Date of Calibration:	15/05/2019	Issue Dat	te: 16/05/2019 Filters)

CHECKED BY: 1KB

AUTHORISED SIGNATURE:

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.



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IN



# CERTIFICATE OF CALIBRATION

CERTIFICATE NO: 24702

EQUIPMENT TESTED: Sound Level Calibrator

Manufacturer: Type No: Owner:

Svantek SV35A Serial No: 90218 Advitech Pty Ltd 7 Riverside Drive Mayfield West NSW 2304

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

**THD&N (%)** Parameter Pre-Adj Adj Output: (db Frequency: Y/N re 20 µPa) (Hz) 93.70 94.05 1000.02 Level 1: 1.41 Y Level 2: 113.70 Y 114.05 1000.02 0.35 Uncertainty: ±0.11 dB ±0.05% ±0.20 % Uncertainty (at 95% c.l.) k=2 CONDITION OF TEST: 1016 hPa ±1.5 hPa Relative Humidity: 48% ±5% **Ambient Pressure:** 24 °C ±2° C **Temperature:** Date of Calibration: 15/05/2019 Issue Date: 16/05/2019 Acu-Vib Test Procedure: AVP02 (Calibrators) Test Method: AS JEC 60942 - 2017 CHECKED BY: WKS AUTHORISED SIGNATURE: Hein Sec 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 guoted 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%.



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> End of Calibration Certificate 02 Rev. 1.4 05.02.18 Page 1 of 1 AVCERT02

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