



RAPT
CONSULTING

Hunter Galvanizing Noise Monitoring Report

Prepared for
Hunter Galvanizing

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Relationships Attention Professional Trust

Document Details

Hunter Galvanizing Noise Monitoring Report

Prepared For:

Hunter Galvanizing

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1. Introduction

1.1 Background

RAPT Consulting has been engaged to undertake environmental noise monitoring for Hunter Galvanizing Pty Ltd (Hunter Galvanizing). The purpose of the monitoring was to assess compliance with the conditions of Environment Protection Licence (EPL) No. 12014.

1.2 Overview and Noise Criteria

Attended noise monitoring was undertaken to satisfy condition L3 of Hunter Galvanizing's EPL 12014. The site and monitoring locations are shown in Figure 1-1 and include:

- Location 1: An onsite monitoring point on the north-western boundary of the Hunter Galvanizing site at 13 Old Punt Road, Tomago. Measurements at this location serve as a reference for noise emissions propagating from the site and allow assessment of potential contributions in more distant locations exposed to high levels of ambient noise.
- Location 2: A monitoring point within 30 metres of the closest identified receiver to Hunter Galvanizing operations (HGO) at 10 Old Punt Road, Tomago. The purpose of monitoring at this location was to evaluate levels at the nearest sensitive receiver to the HGO (a truck stop)

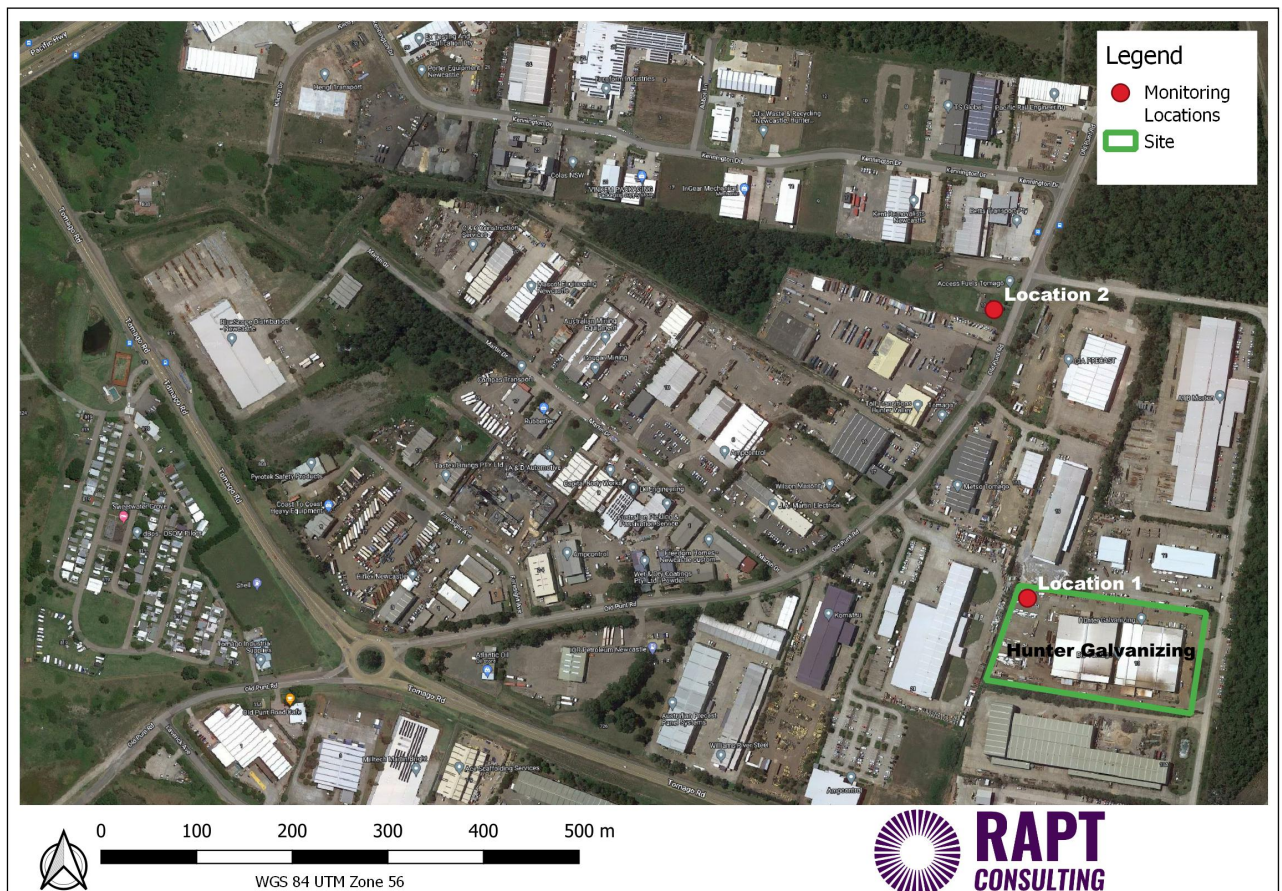


Figure 1-1 Site and Monitoring Locations

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

- Day Period from 1:40pm to 2:30pm on 16 March 2022
- Evening Period from 9:00pm to 9:45pm on 16 March 2022, and
- Night Period from 10:00pm to 10:45pm on 16 March 2022.

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

Criteria

EPL 12014 licence conditions relating to noise emissions include:

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

- *Not exceed an LAeq noise emission criteria of 52 dB(A) during the day (7 am to 6 pm) at the nearest residential receiver*
- *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*
- *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.

1.3 Limitations

The purpose of the report is to provide an independent acoustic assessment.

It is not the intention of the assessment to cover every element of the acoustic environment, but rather to conduct the assessment with consideration to the prescribed work scope.

The findings of the acoustic assessment represent the findings apparent at the date and time of the assessment undertaken. It is the nature of environmental assessments that all variations in environmental conditions cannot be assessed and all uncertainty concerning the conditions of the ambient 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 acoustics, noise were referred to. This work has been conducted in good faith with RAPT Consulting'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. Noise Monitoring

Noise monitoring was undertaken by RAPT Consulting on November 16 March at two locations as identified in Figure 1-1 and also Table 2-1 below.

Table 2-1 Description of Monitoring Locations

Location	ID	Description	Coordinates (MGA 56)	Measurement Height	Distance To HGO (m)
1	Hunter Galvanizing onsite	Onsite monitoring point NW boundary	379056mE 6367779mS	1.5m	40
2	Residence offsite	Closest identified receiver to HGO at 10 Old Punt Road, Tomago	379029mE 6368076mS	1.5m	290

The attended noise measurements were conducted using a RION NL-42 Sound Level Meter with Type 2 Precision. 1 x 15-minute measurements were undertaken at each location for the day, evening and night time periods. The attended noise surveys were conducted with consideration to the procedures described in Australian Standard AS 1055:2018, “Acoustics – Description and Measurement of Environmental Noise” and the NSW Noise Policy for Industry (NPfI). Calibration was checked before and after each measurement and no significant drift occurred. The acoustic instrumentation used carries current NATA calibration and complies with AS/NZS IEC 61672.1-2019-Electroacoustics – Sound level meters – Specifications. Logged data was reviewed and filtered to exclude any extraneous data during the monitoring period. The monitoring was undertaken during calm conditions.

Details regarding the noise monitoring are provided in Table 2-1.

Table 2-2 Noise Monitoring Details

Noise Monitoring Details						
Monitoring Location	L1	L1	L1	L2	L2	L2
Noise Monitor Type	Rion NL-42	Rion NL-42	Rion NL-42	Rion NL-42	Rion NL-42	Rion NL-42
Serial Number	00572567	00572567	00572567	00572567	00572567	00572567
Measurement Time	1:40pm – 1:55pm	9:25pm – 9:40pm	10:00pm – 10:15pm	2:15pm- 2:30pm	9:00pm – 9:15pm	10:30pm – 10:45pm
Pre-Measurement Reference	93.7	93.7	93.7	93.7	93.7	93.7
Post Measurement Reference	93.7	93.7	93.7	93.7	93.7	93.7
Time Response	Fast	Fast	Fast	Fast	Fast	Fast
Engineering Units	dB(A) SPL	dB(A) SPL	dB(A) SPL	dB(A) SPL	dB(A) SPL	dB(A) SPL
Temperature Celsius	28°	24°	24°	28°	24°	24°
Wind Speed	<5m/s	<5m/s	<5m/s	<5m/s	<5m/s	<5m/s

2.1 Noise Monitoring Results

The attended noise monitoring results are provided in Tables 2-2 – 2-4. The well-established inverse square law has been utilised to ascertain HGO noise levels to the nearest offsite residence given in the following formula:

$$SPL2 = SPL1 - 10 \log (R2^2 / R1^2)$$

Where:

- *SPL1 = Sound pressure level at point 1 (site)*
- *SPL2 = Sound pressure Level at point 2 (offsite)*
- *R1 = distance from sound source to point 1*
- *R2 = distance from sound source to point 2*

Table 2-3 Daytime Noise Monitoring Results dB(A)

Location	Criteria	L _{Aeq}	L _{A90}	Site Contribution	Description of Noise Environment	Compliance (Yes / No)
L1	N/A	59	55	57	Forklift operations material handling Trucks entering and exiting site, low frequency noise from other industry east of site	N/A
L2	52	65	55	(HGO Imperceptible 40)	cars & trucks on Old Punt Rd trucks pulling into & out of rest stop. Underlying 'hum'	Yes

Table 2-4 Evening Noise Monitoring Results dB(A)

Location	Criteria	L _{Aeq}	L _{A90}	Site Contribution	Description of Noise Environment	Compliance (Yes / No)
L1	N/A	57	54	53	Forklift operations, material handling, crickets, low frequency noise from other industry east of site	N/A
L2	43	60	58	(HGO Imperceptible) 36	cars & trucks on Old Punt Rd, trucks pulling into & out of rest stop. Underlying 'hum'	Yes

Table 2-5 Night Time Noise Monitoring Results dB(A)

Location	Criteria	L _{Aeq}	L _{A90}	Site Contribution	Description of Noise Environment	Compliance (Yes / No)
L1	N/A	54	51	51	Forklift operations, material handling, crickets, low frequency noise from other industry east of site	N/A
L2	43	58	46	(HGO Imperceptible) 34	cars & trucks on Old Punt Rd, trucks pulling into & out of rest stop. Underlying 'hum'	Yes

2.2 Discussion

Attended observations of HGO primary noise generating activities included:

- Forklift movements including reversing alarms occurred regularly within and outside the plant
- Arrival and dispatch of transport trucks
- Occasional material handling impact noises
- Occasional use of power tools such as angle grinders and rattle guns
- Operation of overhead gantry cranes

Offsite noise sources included a variety of adjoining industries.

Attended observations regarding off-site noise environment included:

- Traffic noise associated with both light vehicle and heavy vehicle movements along Old Punt Road
- noise associated with heavy vehicle refuelling activities adjacent to the monitoring location
- continuous insect noise during the evening and night periods, and

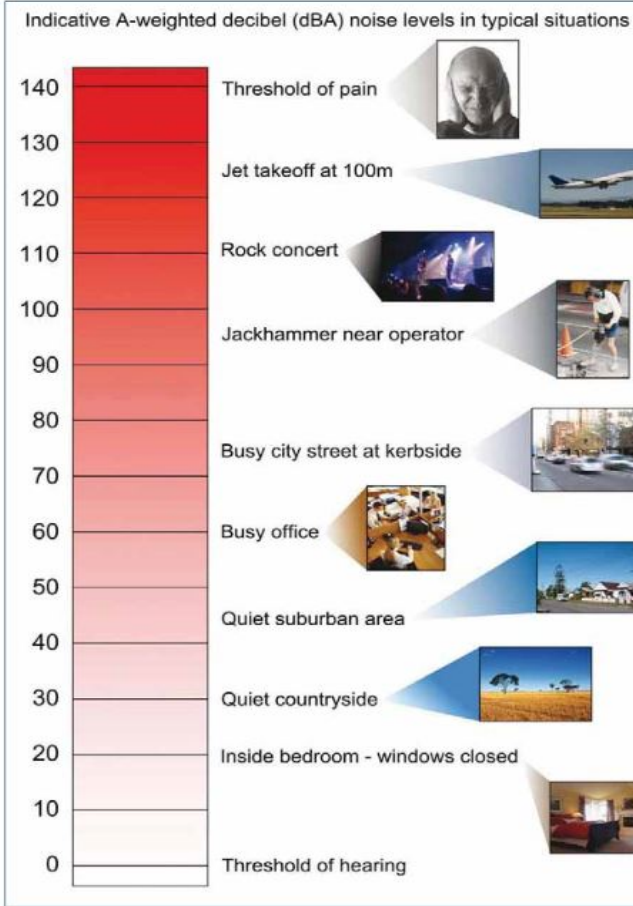
- noise associated with industrial activities and truck movements at nearby industrial sites.
- Noise from HGO was imperceptible.

3. Conclusion

This acoustic assessment has been undertaken for Hunter Galvanizing Pty Ltd (Hunter Galvanizing). The purpose of the monitoring was to assess compliance with the conditions of Environment Protection Licence (EPL) No. 12014.

The monitoring included measurement at the nearest sensitive receiver, and an on-site measurement reference location. The purpose of the reference location was to enable calculation of potential contribution from the site activities at other locations. No contributions from activities within the Galvanizing plant could be measured off-site, and computed contributions were also below criteria levels. Therefore, based on the results of the measurements and attended observations, emissions from the site were considered compliant with the criteria established in EPL12014.

Appendix A: Glossary of Acoustic Terms

Term	Definition
dB	Decibel is the unit used for expressing the sound pressure level (SPL) or power level (SWL) in acoustics. The picture below indicates typical noise levels from common noise sources.
	<p>Indicative A-weighted decibel (dBA) noise levels in typical situations</p> 
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.
$L_{Aeq}(\text{period})$	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.
$L_{A10}(\text{period})$	The sound pressure level that is exceeded for 10% of the measurement period.
$L_{A90}(\text{period})$	The sound pressure level that is exceeded for 90% of the measurement period.
L_{Amax}	The maximum sound level recorded during the measurement period.
Noise sensitive receiver	An area or place potentially affected by noise which includes:

	<p>A residential dwelling.</p> <p>An educational institution, library, childcare centre or kindergarten.</p> <p>A hospital, surgery or other medical institution.</p> <p>An active (e.g. sports field, golf course) or passive (e.g. national park) recreational area.</p> <p>Commercial or industrial premises.</p> <p>A place of worship.</p>
Rating Background Level (RBL)	The overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period.
Feasible and Reasonable (Noise Policy for Industry Definition)	<p>Feasible mitigation measure is a noise mitigation measure that can be engineered and is practical to build and/or implement, given project constraints such as safety, maintenance and reliability requirements.</p> <p>Selecting Reasonable measures from those that are feasible involves judging whether the overall noise benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the mitigation measure. To make a judgement, consider the following:</p> <p>Noise impacts</p> <p>Noise mitigation benefits</p> <p>Cost effectiveness of noise mitigation</p> <p>Community views.</p>
Sound power level (SWL)	The sound power level of a noise source is the sound energy emitted by the source. Notated as SWL, sound power levels are typically presented in dB(A).


Calibration Certificates



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Sound Level Meter
IEC 61672-3:2013
Calibration Certificate
Calibration Number C22063

Client Details	Rapt Consulting 18-19/10 Kenrick Street The Junction NSW 2291
Equipment Tested/ Model Number :	Rion NL-42EX
Instrument Serial Number :	00572567
Microphone Serial Number :	170404
Pre-amplifier Serial Number :	72905
Pre-Test Atmospheric Conditions	Post-Test Atmospheric Conditions
Ambient Temperature : 23°C	Ambient Temperature : 23.6°C
Relative Humidity : 48.2%	Relative Humidity : 47.7%
Barometric Pressure : 100.51kPa	Barometric Pressure : 100.51kPa
Calibration Technician : Lucky Jaiswal	Secondary Check: Rhys Gravelle
Calibration Date : 4 Feb 2022	Report Issue Date : 4 Feb 2022
Approved Signatory : 	Ken Williams

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

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

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

Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	$\pm 0.13dB$	Temperature	$\pm 0.1^{\circ}C$
1kHz	$\pm 0.13dB$	Relative Humidity	$\pm 1.9\%$
8kHz	$\pm 0.14dB$	Barometric Pressure	$\pm 0.014kPa$
Electrical Tests	$\pm 0.10dB$		

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



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

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

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

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

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Sound Calibrator
IEC 60942-2017

Calibration Certificate

Calibration Number **C21662**

Client Details
Rapt Consulting
18-19/10 Kenrick Street
The Junction, NSW, 2291

Equipment Tested/ Model Number : Pulsar Model 106
Instrument Serial Number : 79635

Atmospheric Conditions
Ambient Temperature : 24.9°C
Relative Humidity : 36.8%
Barometric Pressure : 99.7kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 07 Oct 2021

Secondary Check: Matthew Calleja
Report Issue Date : 8 Oct 2021

Approved Signatory :  Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	93.70	1000.40

The sound calibrator has been shown to conform to the class 2 requirements for periodic testing, described in Annex B of IEC 60942 2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed

Least Uncertainties of Measurement -			
Specific Tests		Environmental Conditions	
Generated SPL	± 1.1dB	Temperature	± 2°C
Frequency	± 1.8%	Relative Humidity	± 4%
Distortion	± 50%	Barometric Pressure	± 0.13kPa

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

* The tests - 1000 kHz are not covered by Acoustic Research Labs Pty Ltd NATA accreditation



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

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