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ACOUSTICAL REPORT

PROPOSED INDUSTRIAL COMPLEX

40 BRYANT STREET, PADSTOW NSW

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ACOUSTICAL REPORT
PROPOSED INDUSTRIAL COMPLEX
40 BRYANT STREET, PADSTOW NSW

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1.0 INTRODUCTION

Koikas Acoustics Pty Ltd was commissioned by Australia Silver Lake Gamma Pty Ltd to prepare a noise impact assessment for the proposed industrial development at 40 Bryant Street, Padstow NSW seeking approval for the construction of 52 industrial factory units.

For this DA, the acoustical adequacy of the proposed design must be assessed in terms of standard planning guidelines issued by the Canterbury/ Bankstown Local Environmental Plan 2023 (LEP), NSW Development Control Plan (DCP), and other standard planning guidelines related to common sources of noise.

Noise objectives and criteria applying to the proposed development are referenced from the following policy and guideline documents:

- Canterbury/ Bankstown Development Control Plan 2023 (DCP)
- Canterbury/ Bankstown Local Environment Plan 2023 (LEP)
- Noise Policy for Industry (NSW Environmental Protection Authority, 2017 - NPfI)

This report presents the results and findings of an acoustical assessment of the subject proposal. In-principle acoustic treatments and noise control measures detailed within this report are deemed necessary for the development to comply with the nominated acoustical planning levels/project noise objectives.



2.0 THE PROPOSED DEVELOPMENT

The industrial development is proposed to occupy the site at 40 Bryant Street, Padstow NSW.

This location is situated in an industrial area classified as IN2 'Light Industrial' as per relevant land zoning maps included in the NSW Planning Portal. The proposed development is permissible within this land zoning. Surrounding properties are also predominantly industrial in classification, also located within IN2 'Light Industrial' zoning. The closest non-industrial receiver 2/15 Bryant Street zoned as R2 'Low density Residential' approximately 100 m away from the subject site

The subject site and surrounding properties are identified in the aerial photograph in Figure 1.



Figure 1. Aerial photo of the subject site and surrounding area. Image Source – Six Maps

Prevailing ambient noise conditions on-site and in the local area are generally the result of typical environmental noise such as traffic noise from the M5 and localised industrial noise sources.

This acoustic report and any associated recommendations are based solely on the architectural design and drawings prepared by Algorry Zappia & Associates (Project No. P6301, Issue P03A dated June 2023). Any changes to the design may impact the findings of this report and associated noise control recommendations.

The following uses for the industrial premises have been considered as per the permitted use outlined in the LEP for IN2 'Light Industrial' zoning:

- Agricultural produce industries;
- Building identification signs;
- Business identification signs;

- Depots; Garden centres;
- Hardware and building supplies;
- Industrial training facilities;
- Landscaping material supplies;
- Light industries;
- Neighbourhood shops;
- Oyster aquaculture;
- Places of public worship;
- Plant nurseries;
- Resource recovery facilities;
- Restaurants or cafes; Roads;
- Take away food and drink premises;
- Tank-based aquaculture;
- Timber yards;
- Vehicle sales or hire premises;
- Warehouse or distribution centres

A detailed review should be conducted for each approved premise to determine which loudness category applies and associated recommendations. Some industrial uses may be restricted to daytime operation only if the noise emissions are excessive. Additional noise attenuation measures in the form of barriers, the use of quieter plant and equipment, undertaking noise works indoors etc could also be considered.

Each industrial factory unit will include either one 4 m x 5.5 m or 4.5 m x 5.5 m roller door and an office space located on a mezzanine level.



3.0 UNATTENDED AMBIENT NOISE SURVEY

An unattended noise logging survey was conducted to quantify the existing environmental noise levels for those residential receivers deemed sensitive to the proposed development. The instrument was installed in front of 15 Bryant Street from the 19th until the 24th of October 2023. The instrument was set up to measure sound pressure levels as 'A' frequency weighting and 'Fast' time response. Noise levels were stored within the logger memory at recurring 15-minute intervals. All instruments were field calibrated with a NATA-calibrated and certified Larson Davis CAL200 precision acoustic calibrator before and after the surveys. No system drift was observed for these instruments.

Weather records from the Bureau of Meteorology and the noise level trends observed from the survey suggest that one event of adverse weather influenced the results during the measurement period. This data has been excluded from the analysis as per guidelines in the NPfI. Extraneous noise events observed within the survey data were excluded.

The logger data was analysed and processed per the requirements of the NPfI with the summary results included below for reference.

Table 1. Summary of noise logger results [dB]			
Location	Period, T ¹	Ambient noise level L _{Aeq}	Rating background level L _{A90}
15 Bryant Street	Day	64	51
	Evening	60	49
	Night	59	42
Notes	1. The NSW EPA Noise Policy for Industry (NPfI) refers to: Daytime: 7 am – 6 pm Monday to Saturday and 8 am to 6 pm Sunday and public holidays. Evening: 6 pm – 10 pm Monday to Sunday Night: 10 pm – 7 am Monday to Saturday and 10 pm to 8 am Sunday and public holidays.		



4.0 ACOUSTICAL REQUIREMENTS

4.1 CANTERBURY/BANKSTOWN COUNCIL

Section 4.1 Acoustic privacy of chapter 9 of the DCP notes *Developments must consider the Noise Policy for Industry and the acoustic amenity of adjoining residential zoned land.*

In the absence of specific noise targets from the DCP, this assessment adopts the Project Noise Trigger Levels (PNTL) from the NSW EPA Noise Policy for Industry (NPfI) when setting noise limits for the site.

4.2 EPA NOISE POLICY FOR INDUSTRY

Noise emission design targets have been referenced from the *NSW Environmental Protection Authority (EPA) Noise Policy for Industry (NPfI)*.

The NPfI is designed to assess environmental noise impacts associated with scheduled activities prescribed within the Protection of the *Environment Operations Act 1997*, Schedule 1. It is also used as a reference tool for establishing suitable planning levels for noise generated by mechanical plant and equipment and noise emission from commercial operations.

For residential receivers, the guideline applies limits on the short-term intrusive nature of a noise or noise-generating development (project intrusive noise level), as well as applying an upper limit on cumulative industrial noise emissions from all surrounding development/industry (project amenity noise level).

The most stringent of the project intrusive noise level and project amenity noise level is applied as the **project noise trigger level (PNTL)**. To determine which of the intrusive and amenity noise criteria is more stringent, the underlying noise metrics must be the same.

As the intrusive noise level is defined in terms of an $L_{Aeq, 15 \text{ minutes}}$ and the amenity noise level is defined in terms of an $L_{Aeq, \text{Period}}$, a +3 dB correction is applied to the project amenity noise level to equate the $L_{Aeq, \text{Period}}$ to $L_{Aeq, 15 \text{ minutes}}$.

Non-residential receivers are assessed to project amenity noise levels relevant to the applicable



receiver category (industrial).

Where noise is measured or predicted below the project noise trigger level, the noise outcome is deemed acceptable. Above the project noise trigger level, management responses such as applying reasonable and feasible noise mitigation measures are to be recommended, along with assessing any residual noise impacts once noise mitigation has been considered.

The policy is designed in such a way that the assessing authority would consider the project noise trigger levels, reasonable and feasible mitigation measures, and any residual noise impacts when deciding on acceptable noise outcomes.

The project amenity noise level for the surrounding industrial areas is $L_{Aeq,15min}$ 68 dB.

The site-specific project noise trigger levels need only be considered for the hours under which the noise or activity occurs.

Table 2. NPfl planning levels – L _{Aeq, 15 minutes} [dB]								
Period,T	Intrusive		Amenity					Project noise trigger level
(Note 1)	RBL	RBL + 5	Area classification	Recommended amenity noise level	High traffic area	² Project amenity noise level		
						+3dB correction		
Day	51	56	Suburban	55	Yes	50	53	53
Evening	49	54	Suburban	45	Yes	³ 45	48	48
Night	42	47	Suburban	40	Yes	³ 44	47	47
Notes:	1. EPA defines the following periods: Day: 7 am to 6 pm Mon to Sat and 8 am to 6 pm Sun and public holidays, Evening: 6 pm to 10 pm Mon to Sun, Night: 10 pm to 7 am Mon to Sat and 10 pm to 8 am Sun and public holidays. 2. Project noise amenity level = recommended noise amenity level – 5 dB, except where specific circumstances are met, such as high traffic. 3. High-traffic noise provisions have been adopted for this period of the day. High traffic provision = Existing traffic levels - 15 dB(A)							



4.3 OFFENSIVE NOISE (POEO ACT 1997 DEFINITION)

In the definitions of the *Protection of the Environment Operations Act 1997*, 'offensive noise' means noise:

- (a) *that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:*
 - (i) *is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or*
 - (ii) *interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or*
- (b) *that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations.*

4.4 SLEEP DISTURBANCE/AROUSAL

The potential for noise-induced sleep disturbance should be considered where a noise source or activity from a particular development occurs before 7 am (Monday to Saturday) or 8 am (Sundays or public holidays) and/or after 10 pm (Monday to Sunday). The process followed by Koikas Acoustics when determining the potential for sleep disturbance is:

1. Conduct a screening assessment that identifies the potential for sleep disturbance impacts as per:
 - a. Section 2.5 of the NSW EPA Noise Policy for Industry (NPfI) 'Maximum noise level event assessment' and/or
 - b. Section 2.2.4 of the NSW EPA Noise Guide for Local Government (NGLG) 'Assessment of Sleep Disturbance'
2. Where the screening assessment identifies a potential for sleep disturbance, a further and more rigorous analysis of the maximum noise levels attributed to the noise source or activity under assessment is prepared. This detailed assessment would:
 - a. Compare the maximum noise levels and the number of maximum noise events from the subject source or activity to that of typical ambient maximum noise events in the local area such as from passing traffic etc.
 - b. Assess the maximum event noise level inside an affected residence and compare this to further guidance on sleep disturbance impacts presented in the NSW EPA Road Noise Policy (RNP).
3. Present a final opinion on the potential for sleep disturbance and/or the need for any specific noise mitigation and/or management.

For reference, the NPfI and NGLG screening levels and RNP internal maximum noise levels are



presented below.

Table 3. Sleep disturbance assessment levels			
Description	Assessment period	L_{Aeq} noise level	L_{Amax} noise level
Screening assessment 'a' NSW EPA Noise Policy for Industry (2017)	Night only 10 pm to 7 am (Mon-Sat) 10 pm to 8 am (Sun & pub hols)	L _{Aeq} 15 mins ≤ 40 dB or the RBL + 5, whichever is the greater	L _{Amax} outdoors ≤ 52 dB or the RBL + 15, whichever is the greater
Screening assessment 'b' NSW EPA Noise Guide for Local Government (2013)	Night only 10 pm to 7 am (Mon-Sat) 10 pm to 8 am (Sun & pub hols)	n/a	L _{Amax} outdoors ≤ RBL + 15 (L _{A1,1} minute may also be used where appropriate)
Internal L_{Amax} assessment NSW EPA Road Noise Policy (2013)	Night only 10 pm to 7 am (Mon-Sat) 10 pm to 8 am (Sun & pub hols)	n/a	L _{Amax} indoors ≤ 50-55 dB is "unlikely to cause awakenings"

It is also important to recognise that the point at which noise causes sleep disturbance is currently not well known and that the EPA advises that "more research is needed to better understand this relationship". The above should be used as a guide only and applied on a case-by-case basis.



5.0 OPERATIONAL NOISE ASSESSMENT

Operational noise emission has been assessed as per the indicative assessment scenarios in Section 5.3.

The design of the mechanical systems is not typically completed at the DA stage and thus an assessment of noise emission cannot yet be completed. A detailed review of any significant, high-use industrial mechanical plant shall be prepared by a qualified acoustical consultant if proposed to be used in any of the premises.

5.1 CADNA/A

Assessing noise emitted by the proposed industrial premises is based on predictive modelling conducted using Cadna/A. The program predicts noise levels to receiver points as well as presents a graphical representation of noise level contours for a defined area of interest. The input parameters to this model include the source sound power levels, ground contours, ground absorption/reflections, and the presence of any acoustic shielding objects.

Noise propagation calculations are determined under *ISO 9613 Acoustics – Attenuation of sound during propagation outdoors*. The sound propagation algorithms adopted in the ISO standard result in the calculation of a downwind sound pressure level which constitutes an assessment of noise-enhancing weather conditions.

The acoustic assessments consider a range of design parameters that directly influence the output of the noise prediction model. A summary of the relevant design parameters is provided below:

- Breakout noise was modelled as follows:
 - The roller door is assumed to be open at full capacity (4 m x 5.5 m or 4.5 m x 5.5 m where applicable) – modelled as a vertical area source with the respective internal noise level (Spatial L_{Aeq} 70-88 dB for 3 different sound sources within the factory) and R_w 0 for the open roller door.
 - Light-weight metal roof – modelled as an area source with respective internal noise level (Spatial L_{Aeq} 70-88 dB) and ceiling/roof system (R_w 21).
 - Windows and steel entry doors are expected to remain closed. This is typical of industrial parks. Noise through windows and timber entry doors is expected to be negligible.



- Noise transmission through the 150 mm thick concrete walls ($R_w \geq 50$) is expected to be negligible compared to noise emission through open roller doors and a lightweight metal roofing system.
- Small AC condenser units (no greater than 14 kW) and small toilet/kitchen fans are expected to be negligible and not included in this assessment.
- Ground absorption is generally taken as 0.02 to represent hard surfaces like concrete.
- Cumulative noise levels are calculated for all existing and proposed noise sources, assessed over any 15 minutes. All plant and equipment and work processes are considered operational at the same time and no corrections for source duration are applied. This presents an absolute worst-case assessment scenario that is unlikely to occur during a typical operation.
- All buildings have been modelled as a smooth façade i.e. 1 dB reflection loss.
- Koikas Acoustics database noise levels are used elsewhere as no site-specific noise data is available.

5.2 NOISE SOURCES

Noise levels used in the acoustic model have been sourced from database noise levels from previous measurements conducted by Koikas Acoustics at other similar sites.

Industrial lots have been divided into three (3) categories dependent on the loudness and an example of the type of industry. Some industries may be interchangeable between categories depending on the volume and specific type of equipment being used.

A detailed review of each industry should be conducted by a qualified acoustic consultant to determine which category applies.

The source sound power levels and internal room average noise levels for the proposed industrial premises are presented in the table below.



Table 4. Adopted noise levels			
Item	Examples of Industries	Noise Metric	Noise level [dB]
Low-noise industrial lot	• Depots • Timber yards • Vehicle sales or hire premises • Neighbourhood shops • Warehouse or distribution centres • Kiosks • Industrial training facilities; • Hardware and building supplies; • Light industries • Garden centres;	Spatial $L_{Aeq,15mins}$	70
Medium-noise industrial lot	• Low volume mechanic • Places of public worship • General industries • Landscaping material supplies • Industrial training facilities • Freight transport facilities • Automated packaging machines	Spatial $L_{Aeq,15mins}$	80
High-noise industrial lot	• Mechanical repairs • Panel beating • Metal fabrications • Stone cutting and polishing • Automated manufacturing machines	Spatial $L_{Aeq,15mins}$	88

5.3 ASSESSMENT SCENARIOS

The following design scenarios are assessed. Assumptions included in the design are also noted for reference.

Table 5. Design scenarios and assumptions	
Scenario	Design assumptions
1	• All 52 industrial lots operating simultaneously with a medium-noise level
2	• 26 industrial lots operating simultaneously (50% capacity) with a medium-noise level (allocated evenly throughout the industrial lot)
3	• 17 industrial lots operating simultaneously with a high-noise level (allocated evenly throughout Level 0 units 1-26) • 17 industrial lots operating simultaneously with a low-noise level (allocated evenly throughout remaining lots) • 18 industrial lots operating simultaneously with a medium-noise level (allocated evenly throughout remaining lots)

5.4 CALCULATED RECEIVER LEVELS

Operational noise levels have been predicted for nearby residential and industrial receivers by way of preparing an acoustic model and conducting point-to-point calculations based on standard sound propagation algorithms. All calculations consider the equipment as selected in the mechanical services plans, the associated sound levels and corresponding attenuators.



Reference should also be made to additional noise control recommendations included within Section 5.6 of this report, which also govern the calculated receiver noise levels.

Due to the size of the development, several potentially affected receiver locations must be assessed in terms of their respective noise exposure associated with the development. The most noise-sensitive receiver locations are summarised below. Refer to **Appendix A** for receiver locations.

Table 6. Assessment locations		
ID	Receiver type and address	Assessment location
R1	Residential / 15 Bryant Street	1.5 m above natural ground – NE corner of the boundary.
R1B	Residential / 1/15 Bryant Street	4 m above natural ground
R2	Residential / 15 Bryant Street	1.5 m above natural ground – Eastern side of the boundary.
R2B	Residential / 2/15 Bryant Street	4 m above natural ground
R3	Residential / 15 Bryant Street	1.5 m above natural ground – SE corner of the boundary.
R4	Residential / 24 Bryant Street	1.5 m above natural ground – SE corner of the boundary
R4B	Residential / 22 Bryant Street	4 m above natural ground – SE corner of the boundary.
R5	Industrial / 38 Bryant Street	1.5 m above natural ground – SE corner of the boundary.
R6	Industrial/ 17-34 Bryant Street	1.5 m above natural ground – NE corner of the boundary.
R7	Industrial / 35 Bryant Street	1.5 m above natural ground – North boundary, closest to the subject site.
R8	Industrial / 35 Bryant Street	1.5 m above natural ground – 5 m from structure.
R9	Industrial / 64 Bryant Street	1.5 m above natural ground – SW corner of the boundary
R10	Industrial / 41 Bryant Street	1.5 m above natural ground – NW corner of the boundary
R11	Industrial/ 78 Gibson Ave	1.5 m above natural ground – South side of the boundary
R12	Industrial/ 9 Wordie Place	1.5 m above natural ground – SW corner of the boundary
R13	Industrial/ 9 Wordie Place	1.5 m above natural ground – SE corner of the boundary

Predicted operations noise levels for the aforementioned noise-modelled scenarios are as follows:

Table 7. Calculated receiver noise levels - $L_{Aeq,15mins}$ [dB]			
Residential receivers Project noise criteria (47 dB)	Scenario 1	Scenario 2	Scenario 3
R1:	36	32	33
R1B:	38	35	31
R2:	29	25	28
R2B:	38	35	35
R3:	27	25	27
R4:	36	32	33
R4B:	33	30	35
Industrial receivers Project noise criteria (68 dB)			
R5:	40	37	37
R6:	35	31	34
R7:	41	38	43
R8:	40	37	40
R9:	35	33	34
R10:	35	31	33
R11:	35	32	33
R12:	36	34	35
R13:	34	31	31

Notes:

1. Refer to **Appendix A** for the receiver locations and Cadna/A noise contour maps.

Compliance has been achieved with the adopted noise criteria of the EPA's Noise Policy for Industry, provided the recommendations in Section 5.6 have been implemented.

The sleep disturbance recommended noise criteria for this project is L_{Amax} (outdoors) 57 dB from the EPA's Noise Policy for Industry. The L_{Amax} of most industrial noise sources is approximately 3-12 dB above the $L_{Aeq,15min}$. The calculated L_{Amax} from this model is between 41-50 dB at the closest residential receiver (R1B). Therefore, compliance with the adopted night-time project noise trigger levels assumes compliance will also be achieved with the recommended sleep disturbance noise criteria for this project.



5.5 OFFENSIVE NOISE CHECKLIST (EPA NOISE GUIDE FOR LOCAL GOVERNMENT, 2013)

The EPA NGLG provides a checklist that is proposed to assist with establishing if a particular noise is offensive. The checklist is summarised as follows:

- Is the noise loud in an absolute sense? Is it loud relative to other noise in the area?
Some industrial lots may be loud, however, expected to be within the project noise trigger levels and will be barely audible.
- Does the noise include characteristics that make it particularly irritating?
The noise may be considered impulsive or intermittent, however, based on its loudness, it is expected to be barely audible.
- Does the noise occur at times when people expect to enjoy peace & quiet?
Yes, some industrial lots may operate during the night-time, however, expected to be within the project noise trigger levels and barely audible.
- Is the noise atypical for the area?
No, there are existing industrial premises in the same area.
- Does the noise occur often?
The noise may occur often, however, expected to be within the project noise trigger levels and barely audible.
- Are a number of people affected by the noise?
Residential premises over 100 meters away may be affected, however, it is expected to be barely audible.



5.6 RECOMMENDATIONS

To achieve compliance with the nominated operational noise criteria for surrounding premises, the following noise mitigation measures and management procedures should be adopted:

- High-noise-level industrial activities are to be restricted to Level 0 of the complex.
- High-noise-level industrial lots may need some operational restrictions for day, evening and night-time periods. This should be reviewed by a suitably qualified acoustical consultant/engineer once the proposed use of a factory unit is known.
- Examples of high-noise industries include:
 - Mechanical repairs
 - Panel beating
 - Metal fabrications
 - Stone cutting and polishing
 - Automated manufacturing machines

5.7 COMPLAINTS HANDLING

A site contact and phone number should be distributed to all surrounding premises and displayed on the site noticeboard for any complaints arising due to noise and/or vibration generated during the operation of the site. The site should have clear complaints-handling procedures and staff who are well-versed in the complaints-handling procedures.

A register of all complaints must be kept on-site and readily available. Details within the complaints register should include, but not be limited to:

- Date and time of the complaint,
- The person receiving a complaint,
- Complainant's phone number,
- Site contact to whom the complaint was referred for action,
- Description of the complaint,
- Action to be taken,
- The time frame for action to be implemented.



All complaints should be given a fair hearing and adequately investigated. This may involve scheduling a relevant consultant to substantiate or refute any received complaint, and/or verifying any remedial action taken by the site manager by way of on-site testing.



6.0 CONCLUSION

Koikas Acoustics was requested to conduct a preliminary operational noise impact assessment and prepare a report for the proposed industrial development at 40 Bryant Street, Padstow. The acoustical report is to accompany a development application to be submitted to Canatubury/Bankstown Council.

The assessment considers potential noise impacts on surrounding residents and industrial lots such that acceptable acoustic amenity is maintained.

Acoustic planning levels have been referenced from current DCP, EPA, and POEO Act 1997 acoustic planning guidelines and requirements.

The included recommendations are based on designs prepared by Algorry Zappia & Associates.

The conclusions reached in this acoustical report should assist the Council in making their determination of the proposal. A further detailed acoustical report may be required for the CC submission should the building design be amended.

Of the assessed components of noise, the following conclusions have been reached:

- Operational noise assessment of the industrial lots to surrounding premises was found to reasonably achieve the project noise trigger levels, provided the recommended noise mitigation measures are implemented.
- The design of the mechanical systems is not completed at the DA stage and, therefore, an assessment of noise emission cannot be completed. A detailed review of any significant, high-use industrial mechanical plant shall be prepared by a qualified acoustical consultant if proposed to be used in any of the premises.

In our professional opinion, there is sufficient scope within the proposed building design to achieve the applied acoustic planning guidelines and have all factories operate at all hours and days of the week. A detailed review should be prepared by a suitably qualified acoustical consultant/engineer once the proposed use of a factory unit is known.



Daily Rainfall (millimetres)

PEAKHURST GOLF CLUB

Station Number: 066148 · State: NSW · Opened: 1969 · Status: Open · Latitude: 33.97°S · Longitude: 151.06°E · Elevation: 20 m

2023	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st	3.0	0	0	0	0	0	0	0	0	0	0	
2nd	1.0	0	0	8.0	0	0	0	0	0	0		
3rd	0	0	8.0	16.0	0	0	0	0	0	0		
4th	2.0	0	6.0	0	0	0	2.0	0	0	0		
5th	4.0	0	0	1.0	0	0	2.0	0	0	8.0		
6th	2.0	0	0	0	0	1.0	0	20.0	0	0		
7th	53.0	0	0	0	0	0	0	0	0	0		
8th	0	0	0	12.0	12.0	0	0	2.0	3.0	0		
9th	0	50.0	0	0	0	0	0	0	3.0	0		
10th	0	20.0	0	0	0	0	0	0	0	0		
11th	0	0	0	0	0	0	0	0	0	0		
12th	0	0	0	0	0	0	0	0	0	0		
13th	0	1.0	4.0	0	0	1.0	0	0	0	2.0		
14th	1.0	0	1.0	9.0	17.0	0	0	13.0	0	0		
15th	3.0	0	20.0	3.0	2.0	0	0	2.0	0	0		
16th	0	0	0	0	0	0	0	0	0	0		
17th	0	0	0	0	7.0	0	1.0	0	0	0		
18th	0	0	0	0	0	0	0	6.0	0	6.0		
19th	20.0	8.0	0	0	0	0	0	0	0	0		
20th	2.0	0	0	14.0	0	0	0	0	0	0		
21st	3.0	0	4.0	1.0	0	0	0	0	0	0		
22nd	4.0	42.0	1.0	0	0	0	0	0	7.0	0		
23rd	8.0	0	0	1.0	0	7.0	0	3.0	0	0		
24th	0	3.0	7.0	5.0	0	0	3.0	1.0	0	0		
25th	13.0	1.0	1.0	1.0	0	0	0	0	0	0		
26th	0	0	3.0	0	0	0	0	0	0	0		
27th	0	0	6.0	0	0	0	0	0	0	5.0		
28th	0	1.0	0	0	0	1.0	1.0	0	34.0	3.0		
29th	0		4.0	1.0	0	3.0	0	0	0	0		
30th	11.0		0	30.0	0	0	0	0	0	0		
31st	20.0		0		0		0	8.0		0		
Highest daily	53.0	50.0	20.0	30.0	17.0	7.0	3.0	20.0	34.0	8.0	0	
Monthly Total	150.0	126.0	65.0	102.0	38.0	13.0	9.0	55.0	47.0	24.0		

↓ This day is part of an accumulated total

Quality control: 12.3 Done & acceptable, 12.3 Not completed or unknown

Product code: IDCJAC0009 reference: 100448320



Australian Government
Bureau of Meteorology

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Daily Rainfall (millimetres)

PEAKHURST GOLF CLUB

Station Number: 066148 · State: NSW · Opened: 1969 · Status: Open · Latitude: 33.97°S · Longitude: 151.06°E · Elevation: 20 m

Statistics for this station calculated over all years of data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	88.9	107.7	124.8	75.6	72.6	88.0	53.6	54.3	45.2	66.2	73.1	53.6
Median	67.0	81.8	96.0	54.4	59.7	64.0	30.0	31.0	40.0	47.6	55.3	42.0
Highest daily	109.2	225.0	157.0	111.0	113.0	110.0	152.0	173.8	88.9	119.0	126.2	105.9
Date of highest daily	28th 1973	10th 2020	8th 2022	11th 1998	14th 2003	21st 1975	3rd 2022	6th 1986	2nd 1970	15th 2014	14th 1969	9th 1970

1) Calculation of statistics

Summary statistics, other than the Highest and Lowest values, are only calculated if there are at least 20 years of data available.

2) Gaps and missing data

Gaps may be caused by a damaged instrument, a temporary change to the site operation, or due to the absence or illness of an observer.

3) Further information

<http://www.bom.gov.au/climate/cdo/about/about-rain-data.shtml>.

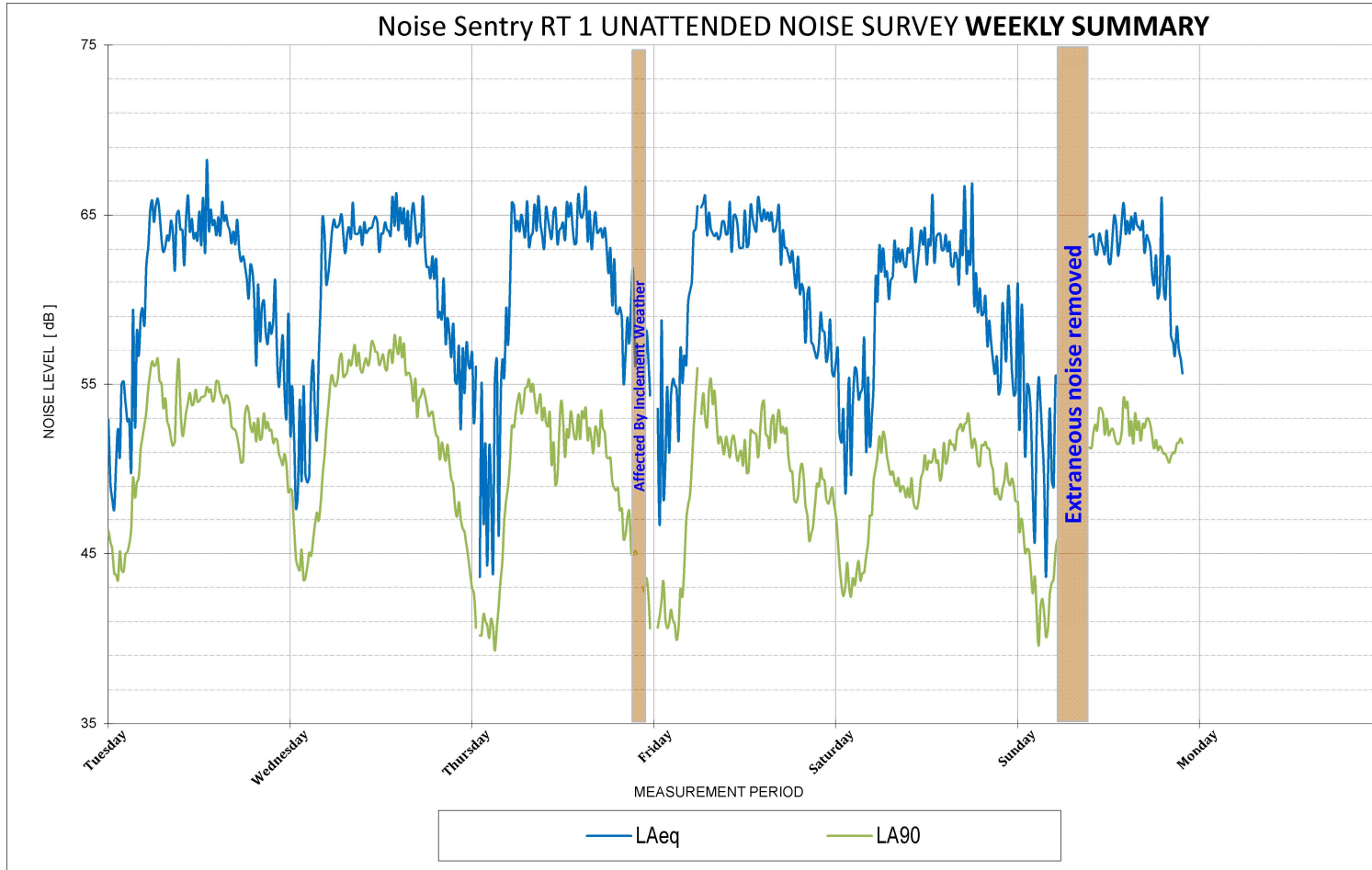
Product code: IDCJAC0009 reference: 100448320 Created on Thu 02 Nov 2023 09:47:42 AM AEDT



WEEKLY SUMMARY

LOGGER LOCATION: 15 - Bryant Street, Padstow

PERIOD: 19th to the 24th September 2023



Sundays and Public Holidays the hours change to 0800

SUMMARY OF AMBIENT LEVELS

	LA90 Daytime	LA90 Evening	LA90 Night-time
Day 1	52	52	44
Day 2	54	49	44
Day 3	51	45	40
Day 4	51	46	41
Day 5	48	49	43
Day 6	52	51	41
Day 7	NA	NA	NA
RBL	51	49	42

	LAeq Daytime	LAeq Evening	LAeq Night-time
Day 1	64	60	60
Day 2	64	60	60
Day 3	65	60	59
Day 4	64	60	60
Day 5	63	60	58
Day 6	64	61	56
Day 7	NA	NA	NA
Average	64	60	59

SUMMARY OF TRAFFIC LEVELS

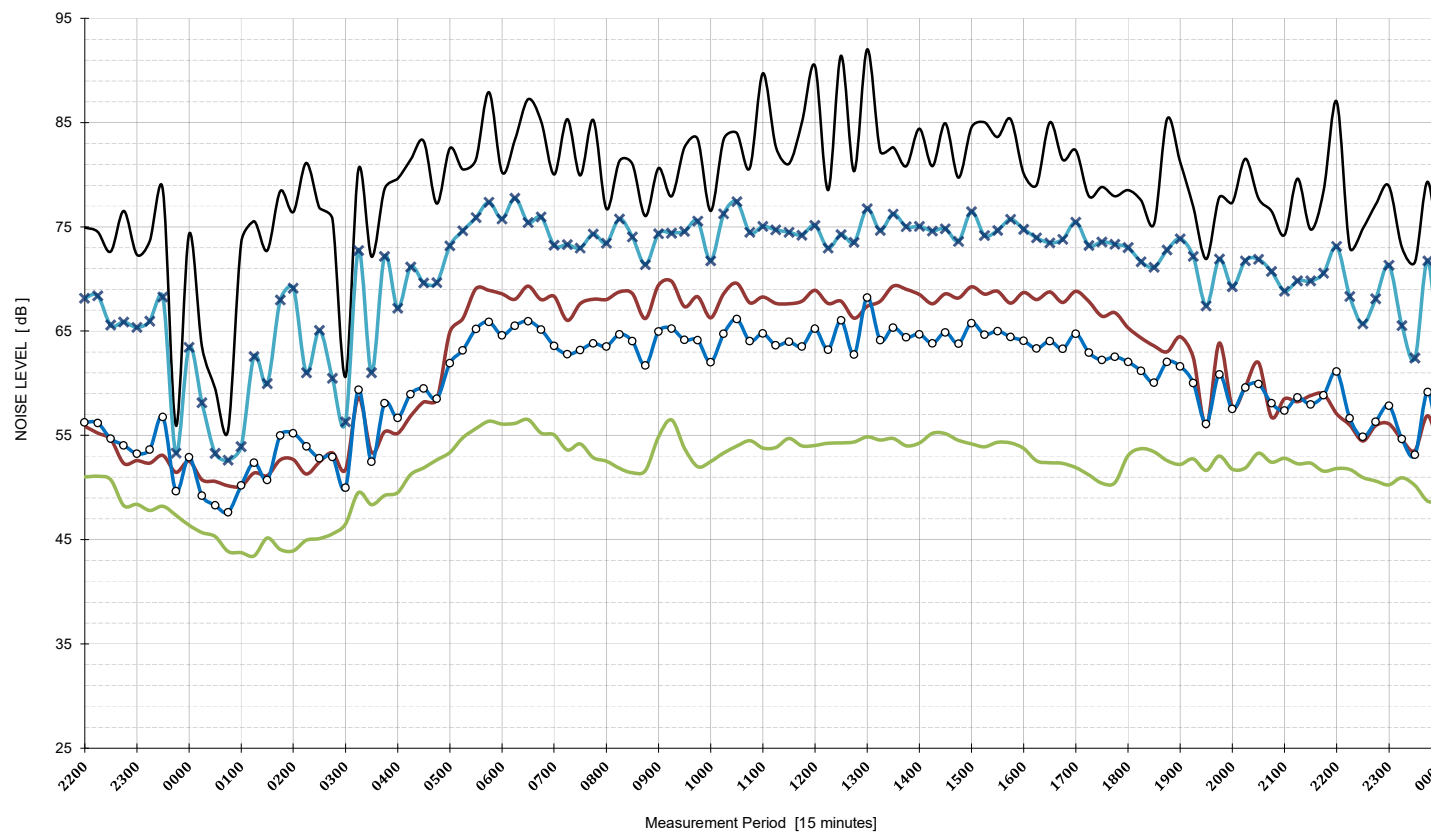
LAeq 15 hrs	0700-2200	70	dB
LAeq 9 hrs	2200-0700	66	dB
Max LAeq 1 hr	0700-2200	65	dB
Max LAeq 1 hr	2200-0700	64	dB

Maximum noise events as defined in the Environmental Noise Management Manual 7 day average - [L _{Amax} - L _{Aeq} ≥ 15]	27
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DAY 1

LOGGER LOCATION: 15 - Bryant Street, Padstow

DATE: Tuesday, 19 September 2023

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	52	dB
LA90 Evening	1800-2200	52	dB
LA90 Night-time	2200-0700	44	dB
LAeq Daytime	0700-1800	64	dB
LAeq Evening	1800-2200	60	dB
LAeq Night-time	2200-0700	60	dB

TRAFFIC & MISC. NOISE METRICS

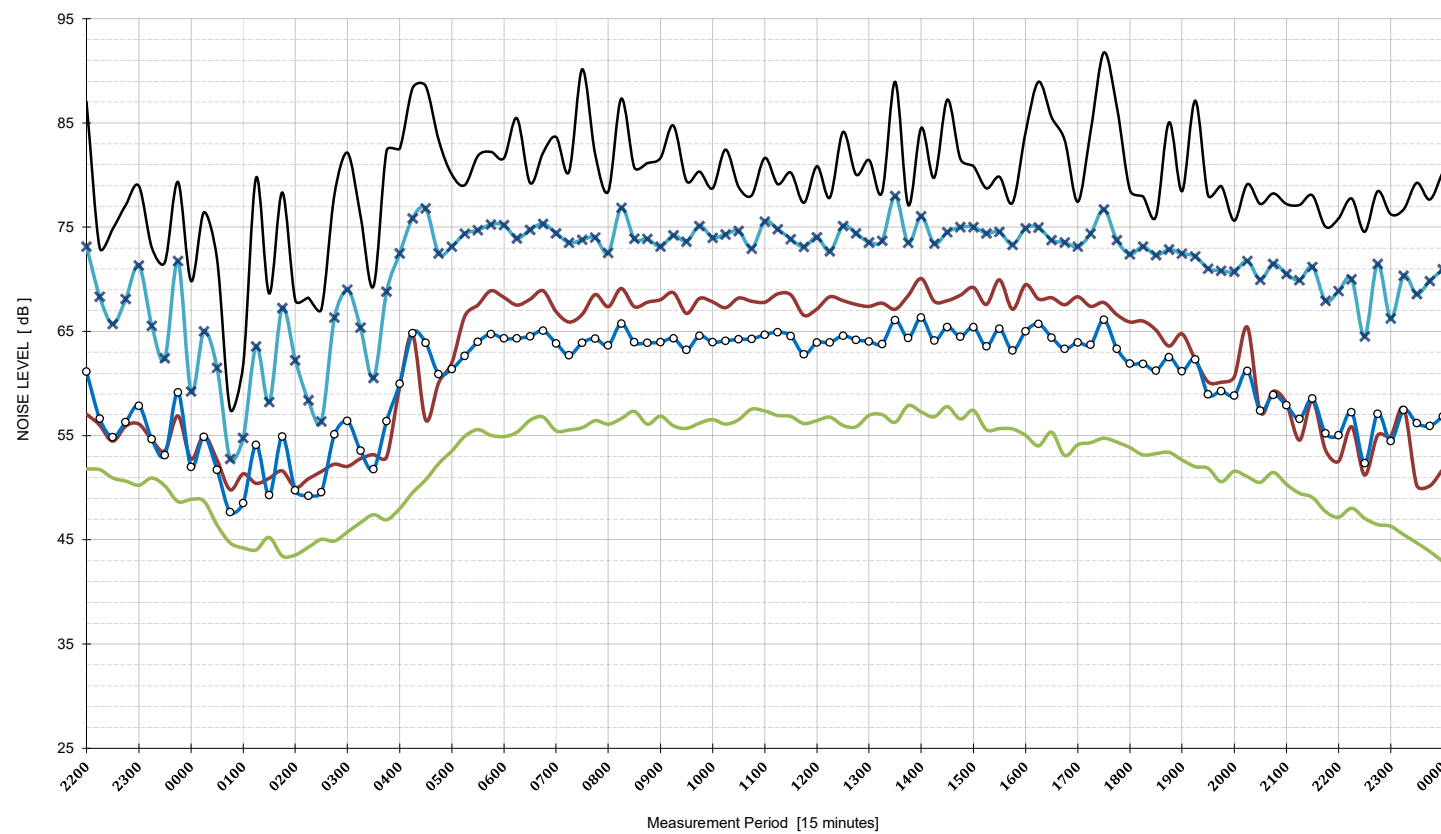
LAeq 15 hours	0700-2200	64	dB
LAeq 9 hours	2200-0700	60	dB
Max LAeq 1 hour	0700-2200	65	dB
Max LAeq 1 hour	2200-0700	65	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	31
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DAY 2

LOGGER LOCATION: 15 - Bryant Street, Padstow

DATE: Wednesday, 20 September 2023

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	54	dB
LA90 Evening	1800-2200	49	dB
LA90 Night-time	2200-0700	44	dB
LAeq Daytime	0700-1800	64	dB
LAeq Evening	1800-2200	60	dB
LAeq Night-time	2200-0700	60	dB

TRAFFIC & MISC. NOISE METRICS

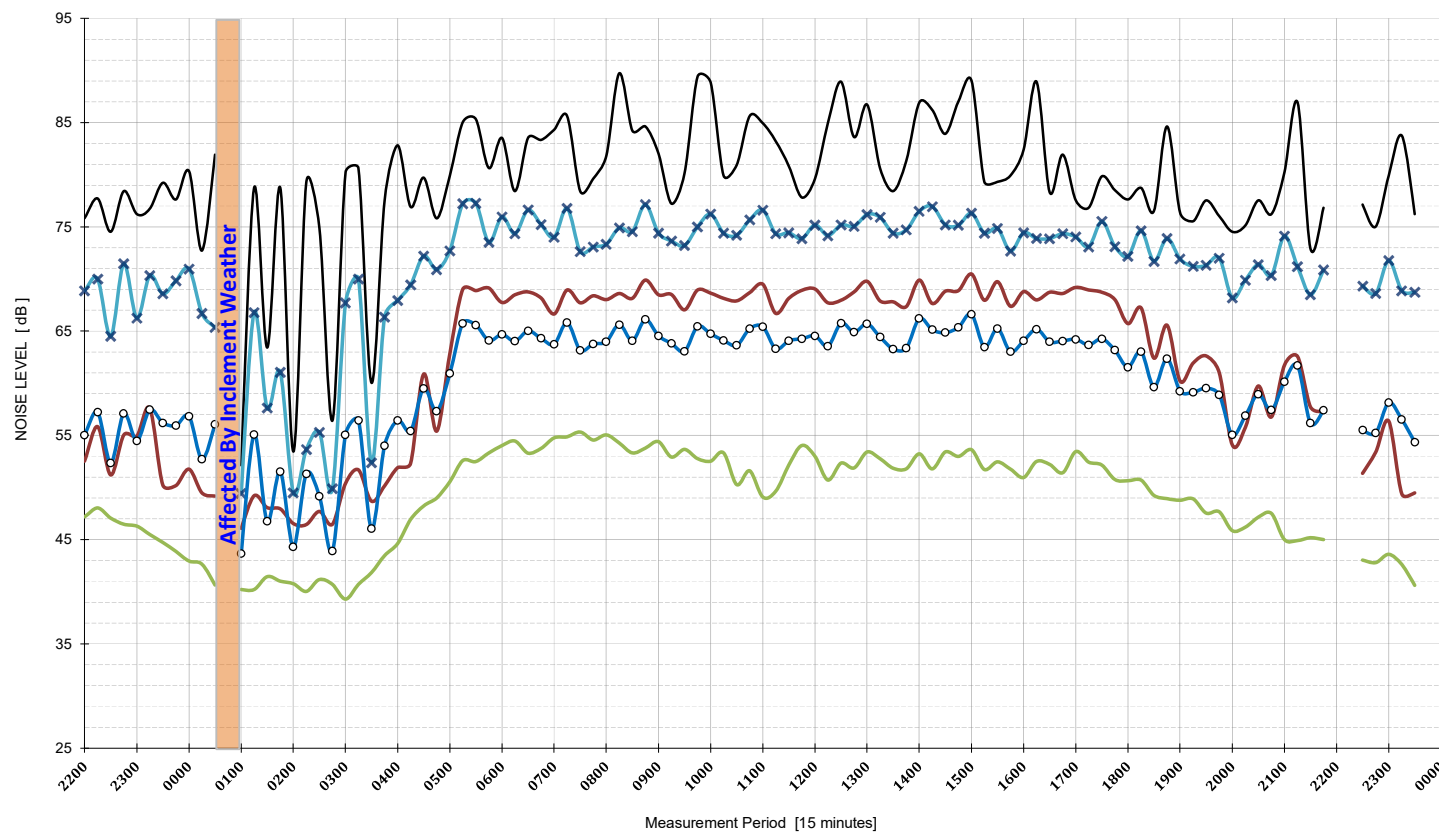
LAeq 15 hours	0700-2200	64	dB
LAeq 9 hours	2200-0700	60	dB
Max LAeq 1 hour	0700-2200	65	dB
Max LAeq 1 hour	2200-0700	64	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	33
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DAY 3

LOGGER LOCATION: 15 - Bryant Street, Padstow

DATE: Thursday, 21 September 2023

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	51	dB
LA90 Evening	1800-2200	45	dB
LA90 Night-time	2200-0700	40	dB
LAeq Daytime	0700-1800	65	dB
LAeq Evening	1800-2200	60	dB
LAeq Night-time	2200-0700	59	dB

TRAFFIC & MISC. NOISE METRICS

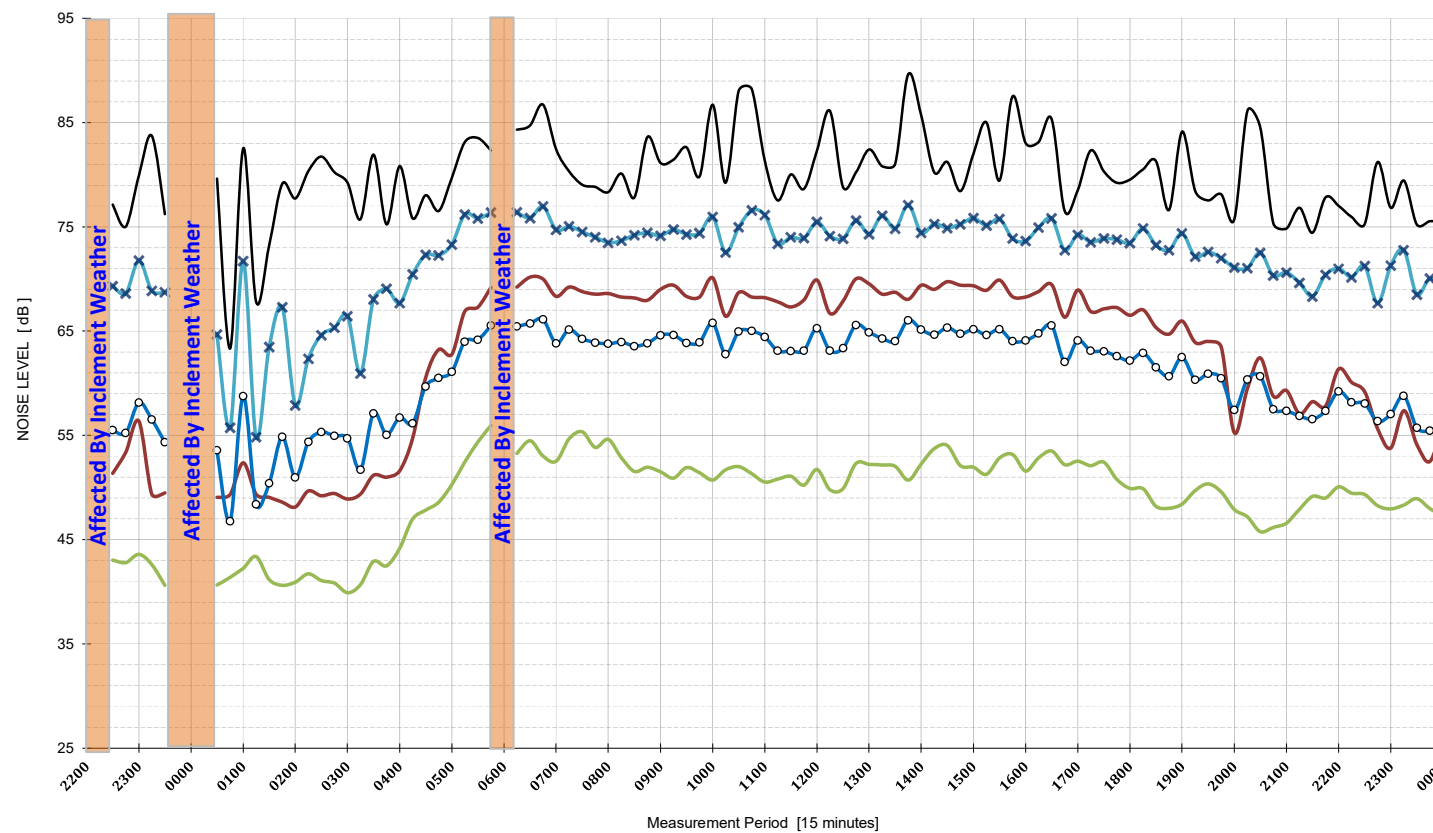
LAeq 15 hours	0700-2200	64	dB
LAeq 9 hours	2200-0700	59	dB
Max LAeq 1 hour	0700-2200	65	dB
Max LAeq 1 hour	2200-0700	64	dB

Maximum noise events as defined in the Environmental Noise Management Manual [$L_{Amax} - L_{Aeq} \geq 15$]	30
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DAY 4

LOGGER LOCATION: 15 - Bryant Street, Padstow

DATE: Friday, 22 September 2023

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	51	dB
LA90 Evening	1800-2200	46	dB
LA90 Night-time	2200-0700	41	dB
LAeq Daytime	0700-1800	64	dB
LAeq Evening	1800-2200	60	dB
LAeq Night-time	2200-0700	60	dB

TRAFFIC & MISC. NOISE METRICS

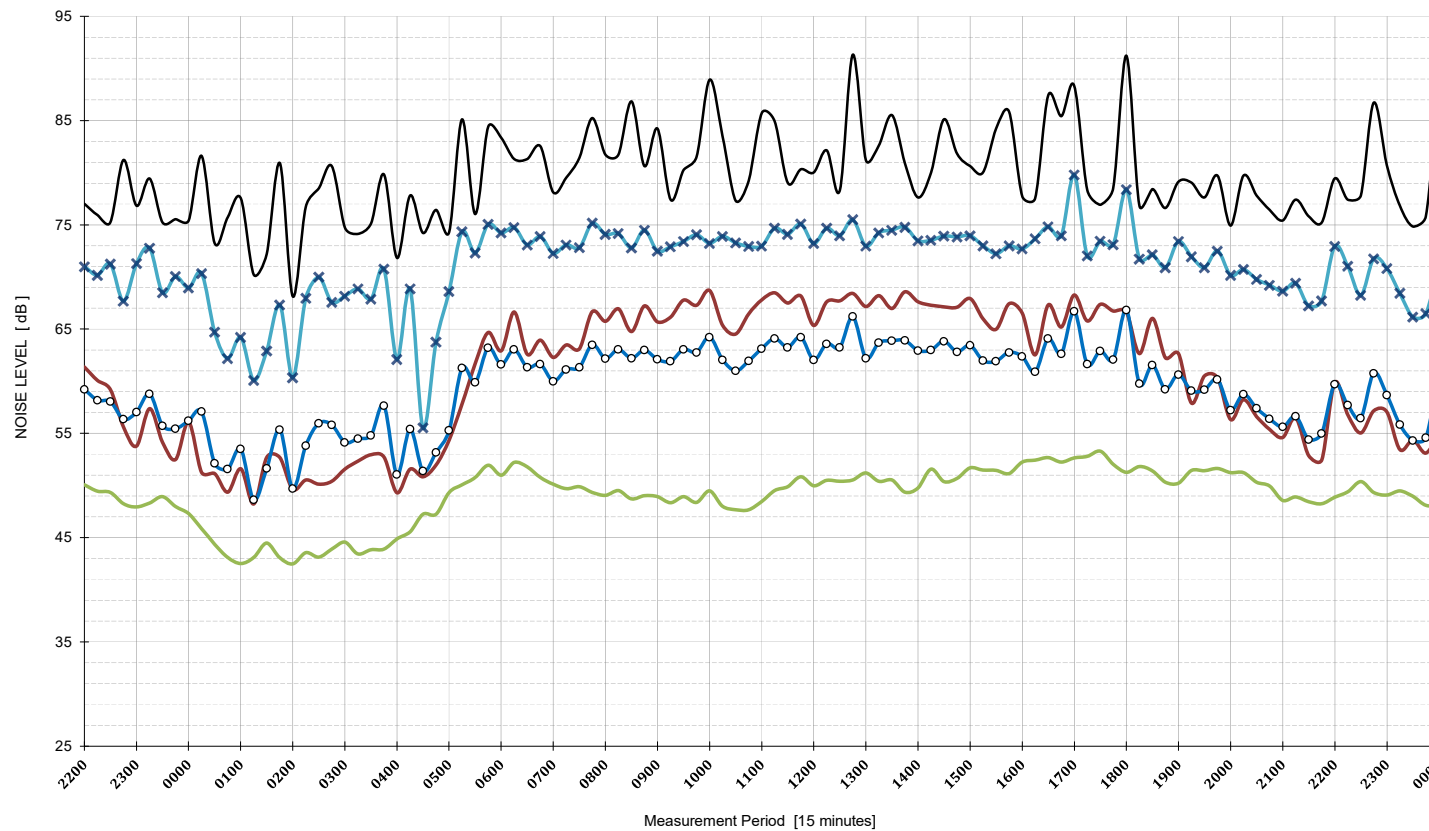
LAeq 15 hours	0700-2200	64	dB
LAeq 9 hours	2200-0700	60	dB
Max LAeq 1 hour	0700-2200	65	dB
Max LAeq 1 hour	2200-0700	64	dB

Maximum noise events as defined in the Environmental Noise Management Manual [$L_{Amax} - L_{Aeq} \geq 15$]	30
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DAY 5

LOGGER LOCATION: 15 - Bryant Street, Padstow

DATE: Saturday, 23 September 2023

**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	48	dB
LA90 Evening	1800-2200	49	dB
LA90 Night-time	2200-0700	43	dB
LAeq Daytime	0700-1800	63	dB
LAeq Evening	1800-2200	60	dB
LAeq Night-time	2200-0700	58	dB

TRAFFIC & MISC. NOISE METRICS

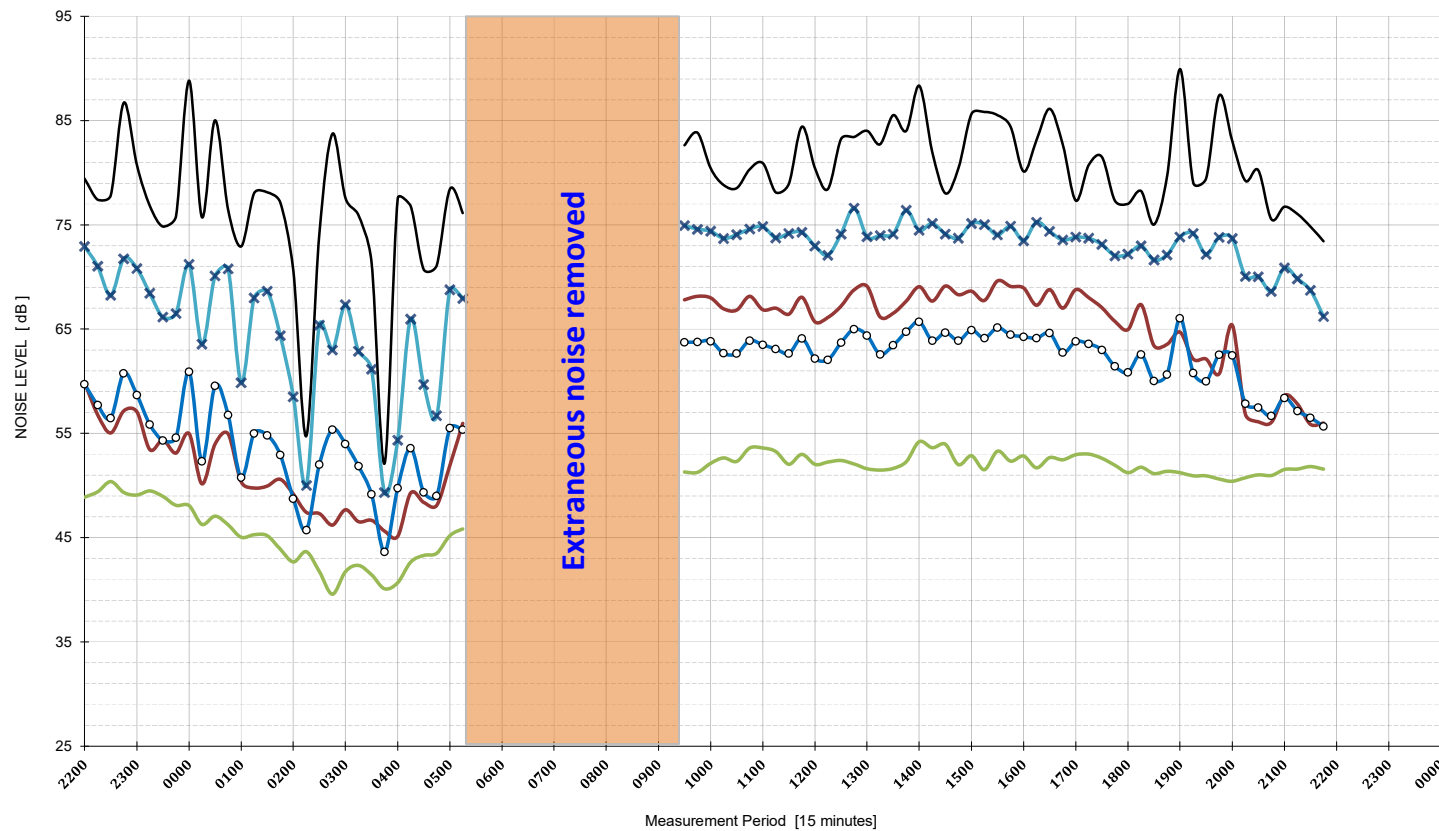
LAeq 15 hours	0700-2200	62	dB
LAeq 9 hours	2200-0700	58	dB
Max LAeq 1 hour	0700-2200	64	dB
Max LAeq 1 hour	2200-0700	61	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	36
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DAY 6

LOGGER LOCATION: 15 - Bryant Street, Padstow

DATE: Sunday, 24 September 2023

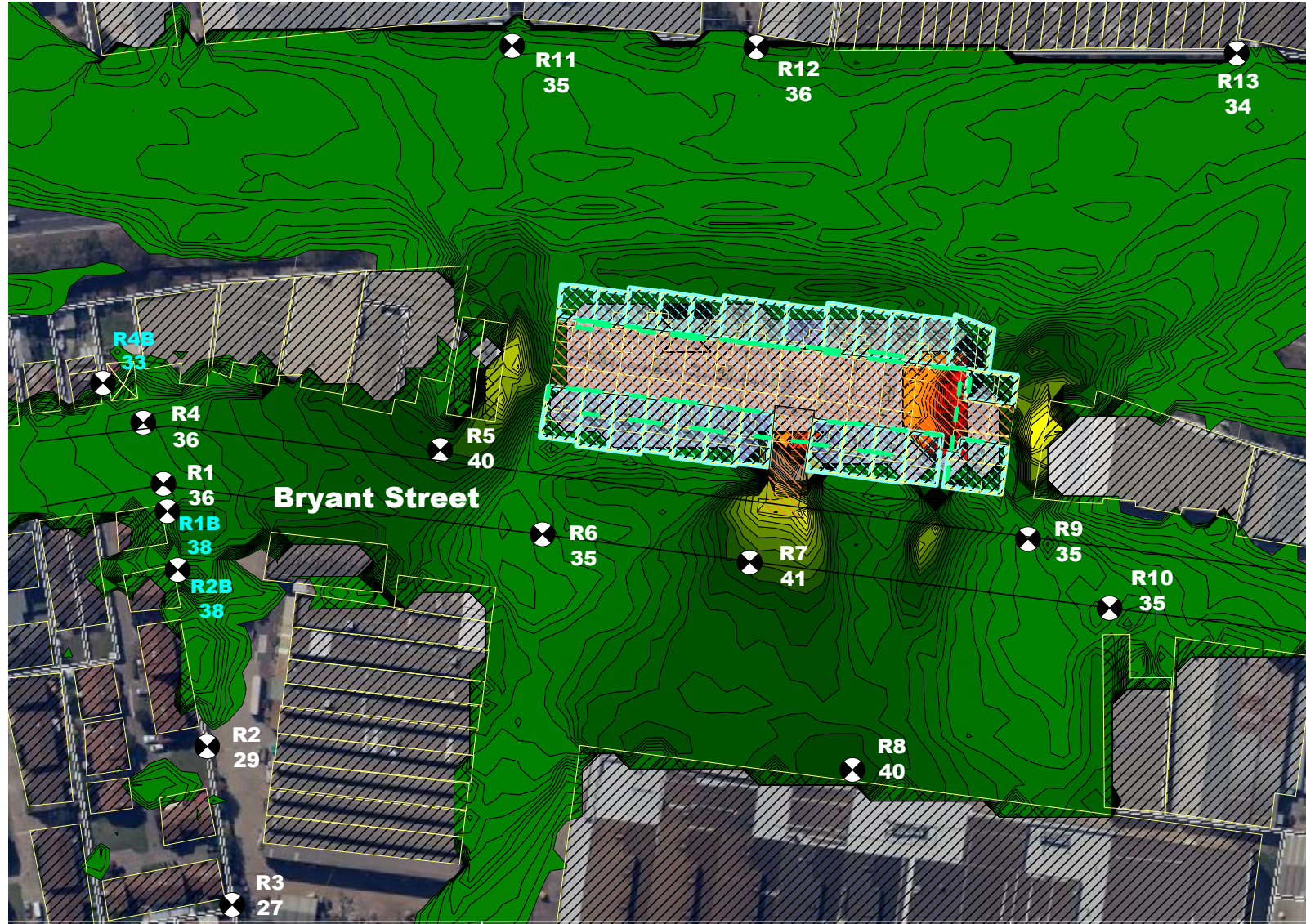
**AMBIENT NOISE METRICS**

Descriptor	Period	Level	Units
LA90 Daytime	0800-1800	52	dB
LA90 Evening	1800-2200	51	dB
LA90 Night-time	2200-0800	41	dB
LAeq Daytime	0800-1800	64	dB
LAeq Evening	1800-2200	61	dB
LAeq Night-time	2200-0800	56	dB

TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	63	dB
LAeq 9 hours	2200-0700	56	dB
Max LAeq 1 hour	0700-2200	65	dB
Max LAeq 1 hour	2200-0700	58	dB

Maximum noise events as defined in the Environmental Noise Management Manual [$L_{Amax} - L_{Aeq} \geq 15$]	28
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** NOISE SOURCES **

~ 52 units operating simultaneously (100% capacity) with a medium-noise level; 80 dB Spatial LAeq 15min.

Note:

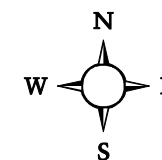
- LAeq noise level contours shown are at a height of 1.5 m above the natural ground.
- The maximum reading at the nearest resident at 1.5 m elevation is 36 dBA. (R4 & R1)
- The maximum reading at the nearest resident at 4 m elevation is 38 dBA. (R1B & R2B)

PRINT DATE: 10/11/2023

VERSION: S1- 100% Night

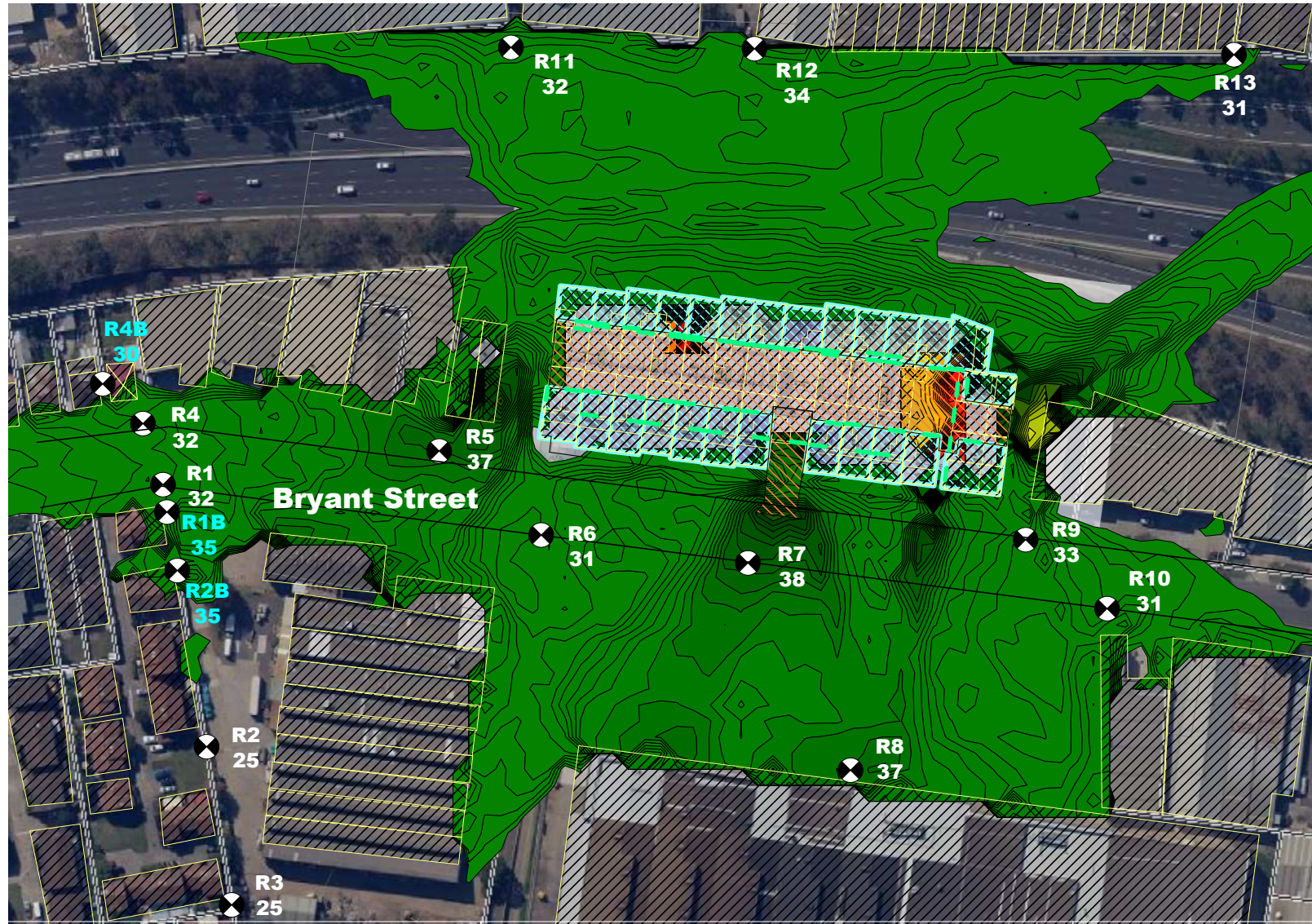
- Area Source
- vert. Area Source
- Building
- Barrier
- 3D-Reflector
- Contour Line
- Receiver
- Calculation Area

- > -99.0 dB
- > 35.0 dB
- > 40.0 dB
- > 45.0 dB
- > 50.0 dB
- > 55.0 dB
- > 60.0 dB



koikas **acoustics** PTY LTD
CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 6019 [Scenario 1 - 100% Capacity (Night)]
CLIENT: Australian Silver Lake Gamma Pty.Ltd
SITE ADDRESS: 40 Bryant Street, Padstow
ASSESSED TO: Noise Policy for Industry
Project Trigger Noise Level
LIMITING CRITERIA: Residential: 47 dBA (2200-0700)
Industrial: 68 dBA (all times)



** NOISE SOURCES **

~ 26 units operating simultaneously (50% capacity) with a medium-noise level ; distributed evenly throughout the industrial lot;
80 dB Spatial LAeq 15min.

Note:

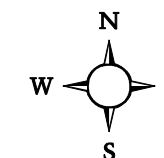
- LAeq noise level contours shown are at a height of 1.5 m above the ground.
- The maximum reading at the nearest resident at 1.5 m elevation is 32 dBA. (R4 & R1)
- The maximum reading at the nearest resident at 4 m elevation is 35 dBA. (R1B & R2B)

PRINT DATE:10/11/2023

VERSION: S2- 50% Night

- Area Source
- vert. Area Source
- Building
- Barrier
- 3D-Reflector
- Contour Line
- Receiver
- Calculation Area

- > -99.0 dB
- > 35.0 dB
- > 40.0 dB
- > 45.0 dB
- > 50.0 dB
- > 55.0 dB
- > 60.0 dB



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CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 6019 [Scenario 2 - 50% Capacity (Night)]
CLIENT: Australian Silver Lake Gamma Pty.Ltd
SITE ADDRESS: 40 Bryant Street, Padstow
ASSESSED TO: Noise Policy for Industry
Project Trigger Noise Level
LIMITING CRITERIA: Residential: 47 dBA (2200-0700)
Industrial: 68 dBA (all times)



** NOISE SOURCES **

~ 52 units operating simultaneously (100% capacity) with varying noise levels; Low 70 dB, Med 80 dB, High 88dB Spatial LAeq 15min.

Note:

- LAeq noise level contours shown are at a height of 1.5 m above the ground.
- The maximum reading at the nearest resident at 1.5 m elevation is 33 dBA. (R4 & R1)
- The maximum reading at the nearest resident at 4 m elevation is 35 dBA (R1B & R2B)

PRINT DATE:10/11/2023
VERSION: S3- 100% Night

- Area Source
- vert. Area Source
- Building
- Barrier
- 3D-Reflector
- Contour Line
- Receiver
- Calculation Area

- > -99.0 dB
- > 35.0 dB
- > 40.0 dB
- > 45.0 dB
- > 50.0 dB
- > 55.0 dB
- > 60.0 dB

koikasacoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 6019 [Scenario 3 - 100% Capacity (Night)]
CLIENT: Australian Silver Lake Gamma Pty.Ltd
SITE ADDRESS: 40 Bryant Street, Padstow
ASSESSED TO: Noise Policy for Industry
Project Trigger Noise Level
LIMITING CRITERIA: Residential: 47 dBA (2200-0700)
Industrial: 68 dBA (all times)

