AHRENS 120

AUSWASTE CARDBOARD RECYCLING PLANT
14 EXCHANGE PLACE, EAST ROCKINGHAM

ACOUSTIC ASSESSMENT

SEPTEMBER 2025

OUR REF: 35312-1-25328

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
HERRING STORER ACOUSTICS
P.O. Box 219, Como, W.A. 6952
(08) 9367 6200
hsa@hsacoustics.com.au

DOCUMENT CONTROL PAGE

ACOUSTIC ASSESSMENT

AUSWASTE CARDBOARD RECYCLING PLANT
14 EXCHANGE PLACE, EAST ROCKINGHAM

Job No: 25328

Document Reference: 35312-1-25328

AHRENS 120

DOCUMENT INFORMATION			
Author:	[redacted]	**Checked By:**	[redacted]
Date of Issue :	18th September 2025		

REVISION HISTORY

Revision	Description	Date	Author	Checked

DOCUMENT DISTRIBUTION

Copy No.	Version No.	Destination	Hard Copy	Electronic Copy
1	1	Ahrens 120 [redacted]		✓

CONTENTS

APPENDICES

1. INTRODUCTION

Herring Storer Acoustic was commissioned by Ahrens 120 on behalf of Auswaste to undertake an assessment of noise emissions associated with a proposed cardboard recycling plant at 14 Exchange Place, East Rockingham.

The facility is intended to operate from 07:00 to 17:00 Monday to Friday. The primary noise sources at the facility are vehicle movements, both of working vehicles within the plant and of truck movements carrying material to and from the site. While there is to be fixed plant within the facility the noise emissions will be dominated by the vehicles.

The proposed facility is located in an industrial park away from residential areas, the nearest noise sensitive premises being located approximately 500m to the east and 750m to the southwest.

As part of the study, the following was carried out:

- Identification of individual operations and the associated noise levels.
- Measurement of the existing background noise levels.
- Assess the predicted noise levels at the nearest surrounding highly noise sensitive premises for compliance with the appropriate criteria.
- If exceedances are predicted, comment on possible noise amelioration options for compliance with the appropriate criteria.

For information, a locality plan is shown in Appendix A.

2. SUMMARY

Noise emissions from the proposed cardboard recycling facility are modelled and assessed against the *Environmental Protection (Noise) Regulations 1997*. These emissions are found to comply at all noise sensitive receivers during the hours of operation.

3. CRITERIA

3.1 REGULATIONS

The *Environmental Protection (Noise) Regulations 1997* stipulate the allowable noise levels at any noise sensitive premises from other premises. The allowable noise level is determined by the calculation of an influencing factor, which is added to the baseline criteria set out in Table 1 of the Regulations. The baseline assigned noise levels are listed in Table 3.1.

TABLE 3.1 – ASSIGNED NOISE LEVELS

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises within 15 metres of a dwelling	0700 - 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	35 + IF	45 + IF	55 + IF

Note: The L_{A10} noise level is the noise that is exceeded for 10% of the time.
The L_{A1} noise level is the noise that is exceeded for 1% of the time.
The L_{Amax} noise level is the maximum noise level recorded.

It is a requirement that noise from the site be free of annoying characteristics (tonality, modulation and impulsiveness) at other premises, defined below as per Regulation 9.

"impulsiveness" means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax\ slow}$ is more than 15dB when determined for a single representative event;

"modulation" means a variation in the emission of noise that –

(a) is more than 3dB $L_{A\ Fast}$ or is more than 3dB $L_{A\ Fast}$ in any one-third octave band;

(b) is present for more at least 10% of the representative assessment period; and

(c) is regular, cyclic and audible;

"tonality" means the presence in the noise emission of tonal characteristics where the difference between –

(a) the A-weighted sound pressure level in any one-third octave band; and

(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ slow}$ levels.

Where the above characteristics are present and cannot be practicably removed, the following adjustments are made to the measured or predicted level at other premises.

TABLE 3.2 – ADJUSTMENTS FOR ANNOYING CHARACTERISTICS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+ 5 dB	+ 5 dB	+ 10 dB

3.2 RECEIVERS

The nearest noise sensitive receivers are illustrated in Figure 3.1.

FIGURE 3.1 – DEVELOPMENT LOCATION AND SURROUNDS

The influencing factor for the noise sensitive receivers, including the child care centre, are calculated as in Table 3.3 and the resulting assigned levels are listed in Table 3.4.

TABLE 3.3 – INFLUENCING FACTOR CALCULATION

Component	R1		R2	
	Amount	IF	Amount	IF
Industrial within 100m	15%	1.5	0%	0
Industrial within 450m	16%	1.6	12%	1.2
Major road within 450m	1	2	1	2
Total		5		3

TABLE 3.4 - ASSIGNED OUTDOOR NOISE LEVELS

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
R1	0700 - 1900 hours Monday to Saturday	50	60	70
	0900 - 1900 hours Sunday and Public Holidays	45	55	70
	1900 - 2200 hours all days	45	55	60
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	40	50	60
R2	0700 - 1900 hours Monday to Saturday	48	58	68
	0900 - 1900 hours Sunday and Public Holidays	43	53	68
	1900 - 2200 hours all days	43	53	58
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	38	48	58

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

As the facility is to operate only between 7:00 am and 5:00 pm on weekdays the critical criteria are the 7:00 to 19:00 Monday to Saturday assigned levels.

4. MONITORED AMBIENT NOISE LEVELS

As per the "Draft Guidelines on Environmental Noise for Prescribed Premises" (released in May 2016), continuous noise monitoring has been conducted to establish the ambient noise levels. The monitoring took place over a period of a week beginning the 9th of September 2025. Table 4.1 summarises the measured noise levels between 07:00 and 17:00 on weekdays. A plot of the noise monitoring results is included in Appendix C.

It is noted that the locality is a new industrial area that is under development and many lots were vacant.

TABLE 4.1 – WEEKDAY DAYTIME NOISE LEVELS (dB(A))

Date	L_{AEq}	L_{A10}	L_{A90}
09/09/2025	51.3	52.6	49.1
10/09/2025	51.5	53.2	47.8
11/09/2025	52.7	54.3	45.4
12/09/2025	53.2	55.4	47.8
15/09/2025	55.1	56.8	49.8
16/09/2025	53.4	54.6	51.6

Weather conditions during the monitoring period were generally calm and dry with moderate winds and some rain only over the weekend between the 12th and 15th. Meteorological data for this period is included in Appendix D.

5. CALCULATED NOISE LEVELS

Noise emissions from the proposed facility were modelled the noise modelling package SoundPlan using the Concawe algorithms. Sound power levels used for the calculations are listed in Table 5.1.

TABLE 5.1 – MODEL SOUND POWER LEVELS

Source	Sound Power Level (dB(A))
B-Double Truck	98
Medium wheel loader (Volvo L90F or similar)	101
Telehandler (MLT-X 732 or similar)	104
Cardboard handling and bailing machinery	<93

These sound power levels are based on measured sound pressure levels of similar equipment or specification sheet sound power levels where available. The cardboard handling and bailing equipment sound power level is based on an assumed worst-case sound pressure level of 85 dB(A) at 1m.

Noise sources within the main building include the fixed cardboard handling plant and handling vehicle activities within the shed. This is modelled by one loader, one telehandler and various fixed plant operating concurrently. Noise levels are dominated by the noise of the handling vehicles.

Handling vehicles operating in the yard to the north are modelled by one loader and one telehandler operating concurrently.

While a variety of truck types are expected to bring material to and from the premises only the B-Double, the largest of these vehicles, is considered for this assessment. This represents the worst-case noise emissions from delivery vehicles.

Calculated noise levels received at the receivers are listed in Table 5.2. Noise contours are included in Appendix B.

TABLE 5.2 – CALCULATED NOISE LEVELS

Scenario	Noise level dB(A)	
	R1	R2
Main building operations	28	23
Handling vehicles outside	40	15
Truck movements	34	30

6. ASSESSMENT

Noise emissions from the proposed cardboard recycling facility are assessed against the assigned levels of the *Environmental Protection (Noise) Regulations 1997*.

6.1 MAIN BUILDING

Noise emissions from the operations within the main building are expected to be present throughout the 7:00 to 17:00 Monday to Friday operating hours. As such these are assessed against the daytime LA10 assigned levels. Due to the distance between the noise sources and the receivers and the variety of noise sources present these emissions are not expected to be tonal.

TABLE 6.1 – ASSESSMENT: MAIN BUILDING OPERATIONS

Receiver	Noise Level dB(A)	L_{A10} Assigned Level	Exceedance
R1	28	50	Complies
R2	23	48	Complies

6.2 VEHICLES OUTDOORS

Noise emissions from handling vehicles within the yard are expected to be intermittent throughout the day. These are assessed against the daytime LA10 assigned levels.

TABLE 6.2 – ASSESSMENT: MAIN BUILDING OPERATIONS

Receiver	Noise Level dB(A)	L_{A10} Assigned Level	Exceedance
R1	40	50	Complies
R2	15	48	Complies

6.3 TRUCK MOVEMENTS

As loading occurs on the north side of the development the main noise impact from truck movements is their movement through the access road around the south of the main building. Truck movements are assessed against the LA1 assigned levels.

TABLE 6.3 – ASSESSMENT: MAIN BUILDING OPERATIONS

Receiver	Noise Level dB(A)	L_{A1} Assigned Level	Exceedance
R1	34	60	Complies
R2	30	58	Complies

7. CONCLUSION

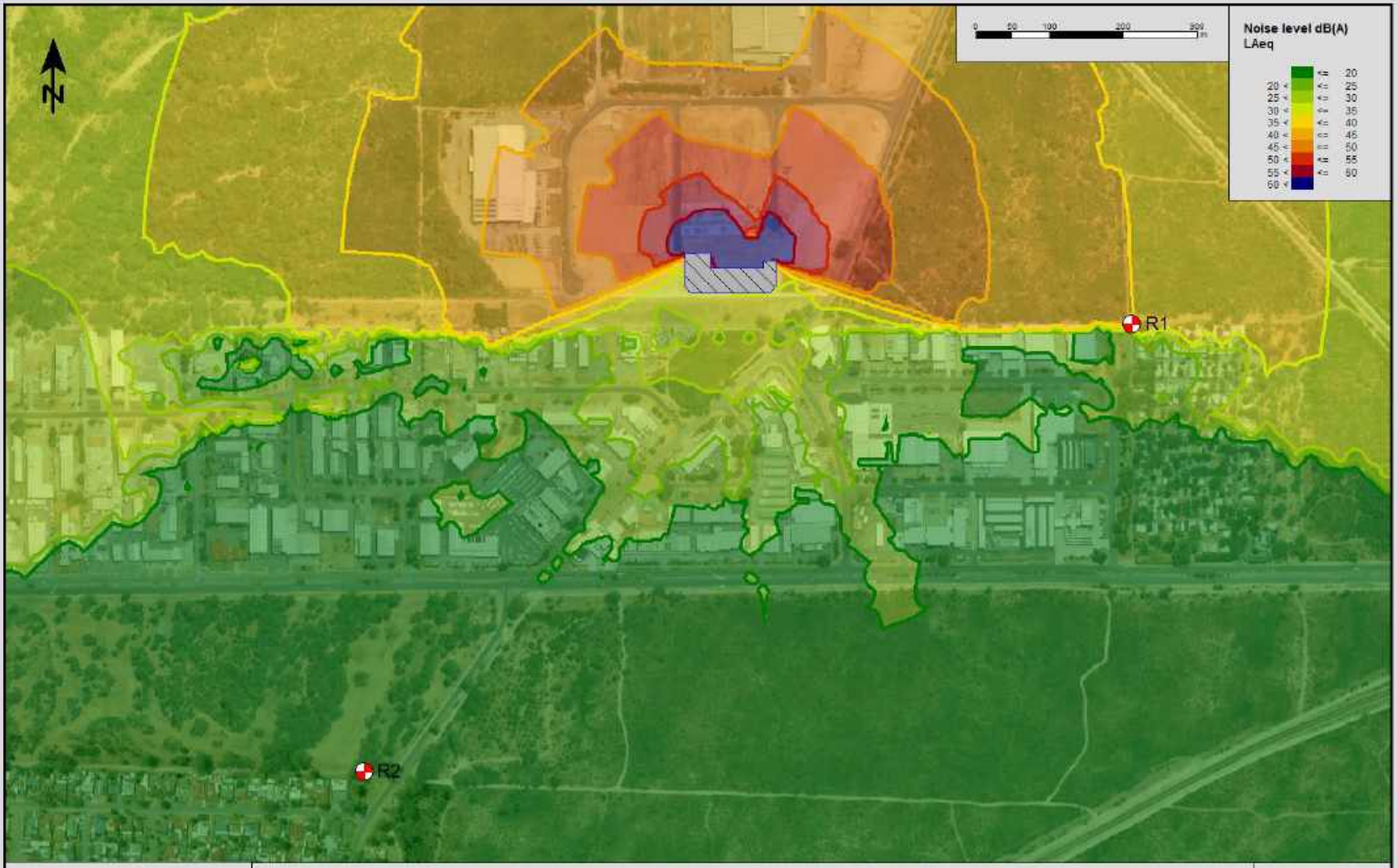
Noise emissions from the proposed cardboard recycling facility comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all nearby noise sensitive receivers during the hours of operation.

APPENDIX B

NOISE CONTOURS

Herring Storer Acoustics
Job No - 25328

AUSWASTE CARDBOARD RECYCLING PLANT
Main Building Operations
LAeq Noise Level Contour



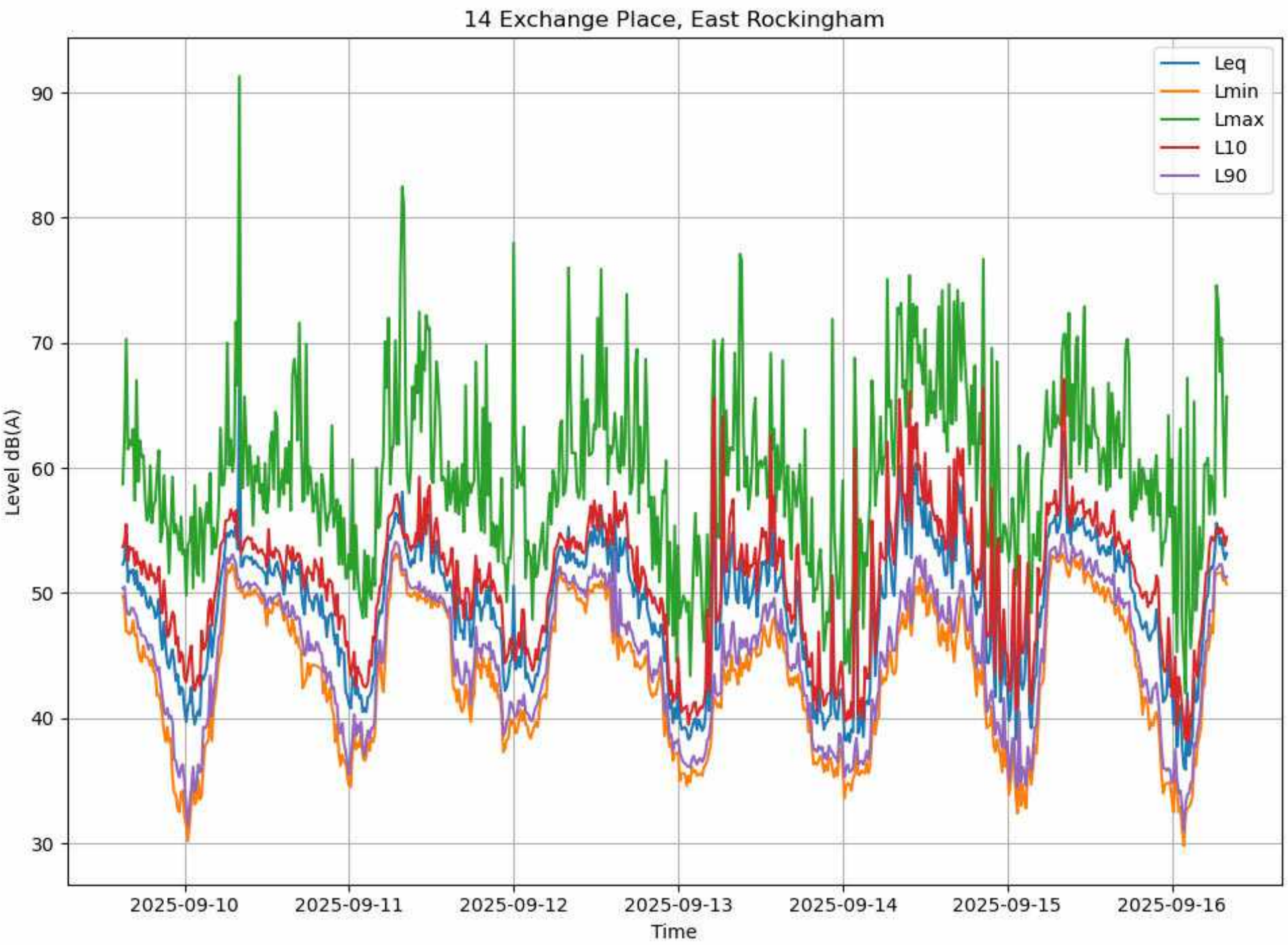
Herring Storer Acoustics Job No - 25328	AUSWASTE CARDBOARD RECYCLING PLANT Vehicles Outside LAeq Noise Level Contour	

Herring Storer Acoustics
Job No - 25328

AUSWASTE CARDBOARD RECYCLING PLANT
Truck Movements
LA1 Noise Level Contour

APPENDIX C

MONITORING


14 Exchange Place, East Rockingham
Leq
Lmin
Lmax
L10
L90
Level dB(A)
90
80
70
60
50
40
30
2025-09-10
2025-09-11
2025-09-12
2025-09-13
2025-09-14
2025-09-15
2025-09-16
Time

APPENDIX D

METEOROLOGY

Jandakot, Western Australia
September 2025 Daily Weather Observations

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9:00 AM						3:00 PM					
		Min	Max				Dir	Spd	Time	Temp	RH	Cld	Dir	Spd	MSLP	Temp	RH	Cld	Dir	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	8th		km/h	hPa	°C	%	8th		km/h	hPa
1	Mo	3.1	20.1	0		10.5	W	33	13:12	13.9	69			Calm	1023.2	19.4	46		W	17	1020.9
2	Tu	6.6	20.5	1.2		8.2	SW	28	14:31	14.4	85		NNE	7	1023.8	19.7	50		WSW	15	1020.6
3	We	6.7	21.4	0		10.4	SW	39	17:08	14.2	64		S	7	1018.7	20.1	51		SW	24	1014.2
4	Th	7.6	19	0		9.7	W	31	12:38	14.9	68		ESE	9	1015.6	18.4	55		W	17	1013
5	Fr	10.7	16.5	1.2		1.8	N	63	9:41	15.3	79	8	N	28	1002.3	12.8	93	8	WNW	2	999.1
6	Sa	8.8	16.2	46.6		4	SW	70	12:37	11.9	89	8	SW	28	1006.3	12.7	77	8	SW	35	1010.1
7	Su	7.8	16.9	7.6		6	SW	54	12:00	15.6	66	4	WNW	35	1013.6	15.2	63	8	SW	31	1013.1
8	Mo	5.8	15.6	9		10	SSW	46	13:23	10.3	64	1	S	11	1022.9	14.7	52	1	WSW	24	1023.4
9	Tu	2.2	17	0		10.5	WSW	35	14:52	11.8	71		ESE	9	1031.1	16.4	50	2	WSW	26	1028.5
10	We	3.3	19.7	0		10.8	SW	31	15:47	13.8	66		E	11	1031	18.5	49	3	WSW	17	1027.2
11	Th	4.9	22.5	0		11	NNE	33	8:58	16.3	50		NNE	24	1027	21.9	32		NNE	17	1023
12	Fr	6.7	26.3	0		10.9	N	59	13:42	19.1	35		NNE	31	1019.1	24.6	23		NNW	30	1015.6
13	Sa	13.3	22.7	0.2		7	NW	61	14:11	19.8	76	8	NW	22	1012.6	17	93	8	NW	24	1010.9
14	Su	14.2	17.2	24.8		3.2	W	78	15:24	15.1	84	8	WNW	56	1006.2	15.8	64	8	W	39	1007
15	Mo	10.3	16.1	12.6		8.8	WSW	57	7:04	10.9	82	8	SW	26	1017.2	14.8	56	8	SW	33	1017.8
16	Tu	4.5		2.4						12.8	67	4	NNE	11	1022.9	17.3	55	7	W	17	1019.8

IDCJDW6056.202509 Prepared at 08:20 UTC on Tuesday 16 September 2025