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Proposed Animal Shelter
6-8 Teamsters Close
Craiglie

ACOUSTIC REPORT

Client:
Homeless Animal Society and
Boarding Kennels Inc.
Attn: Michael Kerr

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2018205 R01D 6-8 Teamsters Close Craiglie ENV

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1. Introduction

The following revised report is in response to a request by the Homeless Animal Society and Boarding Kennels Inc. for an environmental noise assessment of a proposed animal shelter located at 6-8 Teamsters Close, Craiglie. The revised report addresses Schedule 1, Part 1A of Douglas Shire Council's preliminary approval for the development (Ref: MCUI 2711/2018 (866422)). To facilitate the assessment, unattended noise monitoring and attended measurements were conducted in the vicinity of nearby sensitive receivers to determine the criteria and compliance of onsite activities.

2. Site Description

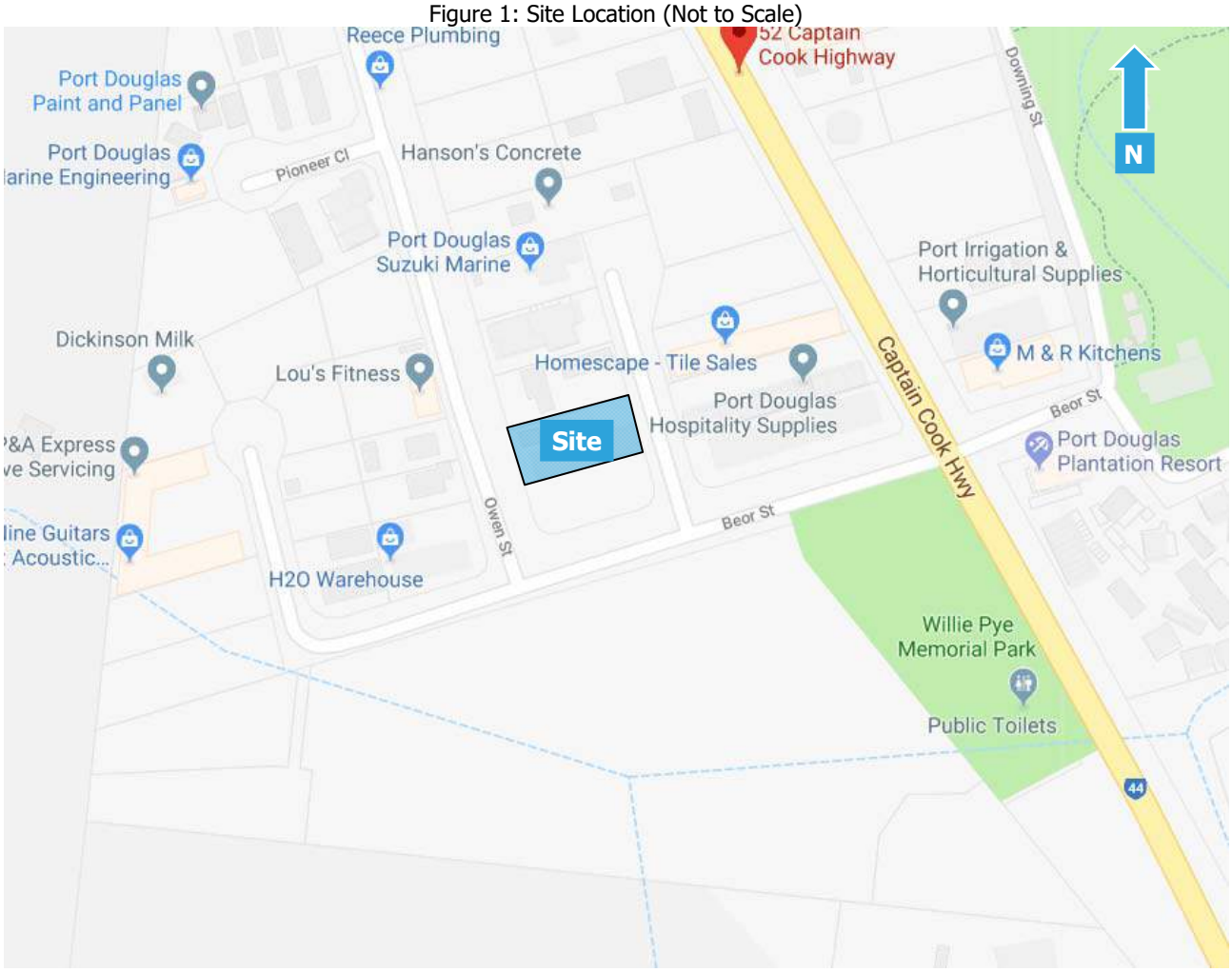
2.1 Site Location

The site is described by the following:

6-8 Teamsters Close, Craiglie
Lot 10 on RP804923

Refer to Figure 1 for site location.

Figure 1: Site Location (Not to Scale)



A comprehensive site survey was conducted on the 18th of June 2018 which identified the following:

a) The site currently consists of two single storey shed structures which will be refurbished for the development.
b) A Cleanaway waste truck depot bounds the site to the north with an Origin Energy gas depot located on the southern boundary.
c) Teamsters Close bounds the site to the south, separating the development from commercial land uses.
d) Owen Street bounds the site to the north, separating the development from commercial land uses.

During the site survey a number of caretaker's residences were identified in proximity to the site and were considered in the assessment.

2.2 Proposal

The site currently consists of two sheds which shall be refurbished for the development. The larger shed located on the southern portion of the site will be converted into the animal shelter, with the smaller one located on the north-western portion of the site to be converted into a caretaker's dwelling. The animal shelter will consist of the following;

- 38 dog kennels, 10 puppy kennels and 3 isolation kennels.
- Cattery.
- Reception and shop.
- Quarantine area, grooming, administration, staff and store rooms.

Dog runs will be provided adjacent to the northern and western façades of the animal shelter building for use between 8am and 4pm. A total of 8 dogs will use the 4 external dog runs at any one time. At all other times dogs will be located within the shelter building, which will be fully enclosed and air-conditioned.

2.3 Acoustic Environment

The surrounding area is primarily affected by road traffic noise from the local road network with nearby commercial properties potentially impacting residents in the area.

3. Equipment

The following equipment was used to record noise levels:

- Rion NL42 Environmental Noise Monitor
- Norsonic NOR140 Sound Level Meter
- BSWA Technology Co. Ltd Sound Calibrator

The Rion NL42 Environmental Noise Monitor and Norsonic NOR140 Sound Level Meter hold current NATA Laboratory Certification and were field calibrated before and after the monitoring period, with no significant drift from the reference signal recorded.

4. Receivers and Noise Monitoring Locations

4.1 Receiver Locations

The nearest sensitive receiver locations were identified as follows;

1. A single storey residential dwelling is located to the west at 52 Ramsey Road.
2. The Plantation Resort consists of two storey unit buildings and is located to the east at 1 Boer Street.
3. A 2 storey dwelling is located to the southeast at 5903 Captain Cook Highway.
4. A caretaker's residence is located adjacent the northern site boundary at 10-12 Teamsters Close.
5. Commercial and light industrial uses are located on the eastern side of Teamsters Close.
6. A caretaker's residence is located adjacent to the east at 9-11 Teamsters Close.
7. Commercial and light industrial uses are located on the western side of Owen Street.

Note that in accordance with Performance Outcome 10 of the DSC Industry Zone Code, the development must not lower the standards of amenity with respects to noise at any sensitive receiver outside of the Industry Zone. In addition, Douglas Shire Council has requested that surrounding commercial and caretaker's properties are also included in the assessment (Ref: MCUI 2711/2018 (866422)). Therefore, the above locations were chosen as being representative of the nearest residential receivers in proximity to the proposed development. Refer to Figure 2 for these locations.

Figure 2: Receivers and Noise Monitoring Location

4.2 Unattended Noise Monitoring

The Rion NL42 environmental noise monitor was placed at the Plantation Resort (1 Boer Street) to measure ambient noise levels. The location was selected as it was considered representative of the ambient noise environment at the nearest potentially affected receiver identified in Figure 2. The monitor was located in a free field position with the microphone approximately 1.4 metres above ground surface level. The noise monitor was set to record noise levels between the 18th and 25th of June 2018.

The environmental noise monitor was set to record noise levels in "A" weighting, Fast response using 15 minute statistical intervals. Ambient noise monitoring was conducted generally in accordance with Australian Standard AS1055:1997 *Acoustics – Description and measurement of environmental noise*.

For the unattended noise monitoring location refer to Figure 2.

5. Measured Noise Levels

5.1 Measured Ambient Noise Levels

Table 1 presents the measured ambient noise levels from the unattended noise monitoring location. Any periods of extraneous noise were omitted from the measured data prior to determining the results.

Table 1: Measured road traffic and ambient noise levels - all time periods

Day	Date	L90 dB(A)		
		Day	Evening	Night
Monday	18/06/18	49	39	30
Tuesday	19/06/18	50	37	30
Wednesday	20/06/18	50	36	28
Thursday	21/06/18	49	37	29
Friday	22/06/18	49	39	30
Saturday	23/06/18	48	37	31
Sunday	24/06/18	48	39	31
Overall value		49	38	30

Refer to the appendix for graphical representation of the measured noise levels.

5.2 Measured Offsite Activity Noise Levels

Noise measurements were performed at the location of the proposed caretaker's dwelling on Monday 18th of June 2018 between 12:45pm and 1.15pm to determine any requirements for acoustic treatments, with the results as follows;

Table 2: Attended noise measurement results

Activity assessed	Measured activity noise level dB(A) Leq 15min	Time	Comments
Offsite commercial and industrial activity	52	12:45am-1:00pm	Observed noise included; • Voices, reverse alarms, power tools, metal drops from industrial premises to the north. • Concrete truck and vehicle movements on surrounding roads. • Distant continuous plant noise.
Offsite commercial and industrial activity	49	1:00pm-1:15pm	Observed noise included; • Voices, reverse alarms, power tools, metal drops from industrial premises to the north. • Concrete truck and vehicle movements on surrounding roads. • Distant continuous plant noise

The measured noise impacts by attended measurement were found to be 49-52 dB(A) Leq 15min, with levels dominated by traffic and offsite industrial activity. A summary of the measured levels is provided in Section 7.2.

6. Environmental Noise Criteria

6.1 Environmental Noise Policy 2008

The noise criteria as applied under the *Environmental Protection (Noise) Policy 2008* are as follows;

6.1.1 Acoustic Quality Objectives

Table 3 below presents the acoustic quality objectives at noise sensitive receptors as detailed in Schedule 1 of the EPP (Noise) 2008.

Table 3: Acoustic Quality Objectives at Noise Sensitive Properties

Sensitive Receptor	Time of Day	Acoustic Quality Objectives, dB(A)		
		$L_{Aeq,adj,1hr}$	$L_{A10,adj,1hr}$	$L_{A1,adj,1hr}$
Dwelling (outdoors)	Day and Evening (7am – 10pm)	50	55	65
Dwelling (Indoors)	Day and Evening (7am – 10pm)	35	40	45
	Night (10pm - 7am)	30	35	40
Commercial and retail activity (indoors)	When the activity is open for business	45	-	-

6.1.2 Background Creep

The Background Creep criteria are as follows;

Time-varying noise:

$$L_{Aeq,adj,T,} \leq \text{Ambient } L_{A90,T} + 5\text{dB(A)}$$

Steady-state noise:

$$L_{A90,T} \leq \text{Ambient } L_{A90,T}$$

The time period (T) is a time interval of at least 15 minutes, or if the noise continues for less than 15 minutes, the duration of the noise source.

Based on the results of ambient noise monitoring, the project specific background creep noise limits are shown in Table 4.

Table 4: Background Creep Noise Limits

Time Period	Noise Level Limits SPL dB(A)	
	$L_{Aeq,T}$	$L_{A90,T}$
Day 7am – 6pm	54	49
Evening 6pm – 10pm	43	38
Night 10pm – 7am	35	30

7. Environmental Assessment

7.1 Onsite Activities

Noise associated with the proposed development was assessed based on measurements of similar activities including boarding kennels. The calculations assume that the nominated activities are located at a representative distance within the development site to each receiver location. Any relevant shielding or building transmission loss is taken into account for these activities.

7.1.1 Acoustic Quality Objectives

The average maximum noise source levels and predicted levels at the receiver locations are shown in Table 5 and Table 6. Note: L_{A10} and L_{A1} results are not shown in cases where the total duration of the events is less than the minimum time required e.g. $L_{A10(1hr)}$ requires noise events to occur for at least 360 seconds of an hour long period. L_{Aeq} results are not shown where the calculated total is less than 0dBA.

Table 5: Acoustic Quality Objective Noise Levels, 1 hour – Receivers 1-3

Receivers
1. 52 Ramsey Rd
2. Plantation Resort, 1 Captain Cook Highway.
3. 5903 Captain Cook Highway
4. Caretaker 10-12 Teamsters Cl.
5. Commercial Teamster Cl
6. Caretakers 9-11 Teamsters Cl.
7. Commercial Owen St

Receiver	Description	Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	No. of events per 1hr Day	No. of events per 1hr Eve	No. of events per 1hr Night	Duration per event	Distance (m)	Barrier (height (m)) No	Barrier screening dB	Building TL or shield dB	Topo screening dB	Dist atten. @-6dB/dd	LAeq adj.,1hr ext. dB(A) Day	LAeq adj.,1hr int. dB(A) Day	LAeq adj.,1hr ext. dB(A) Eve	LAeq adj.,1hr int. dB(A) Eve	LAeq adj.,1hr ext. dB(A) Night	LAeq adj.,1hr int. dB(A) Night	LA10 adj.,1hr ext. dB(A) Day	LA10 adj.,1hr int. dB(A) Day	LA10 adj.,1hr ext. dB(A) Eve	LA10 adj.,1hr int. dB(A) Eve	LA10 adj.,1hr ext. dB(A) Night	LA10 adj.,1hr int. dB(A) Night	LA1 adj.,1hr ext. dB(A) Day	LA1 adj.,1hr int. dB(A) Day	LA1 adj.,1hr ext. dB(A) Eve	LA1 adj.,1hr int. dB(A) Eve	LA1 adj.,1hr ext. dB(A) Night	LA1 adj.,1hr int. dB(A) Night	Amenity LAeq Compliance: Day / eve	Day / eve indoor	Night indoor	LA10 Compliance: Day / eve	Day / eve indoor	Night indoor	LA1 Compliance: Day / eve	Day / eve indoor	Night indoor
	Criteria																																	50	35	30	55	40	35	65	45	40
1	Car door closure	75	2	77	20	20	4	2	254					-49	8		8		1									14	4	14	4			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car passby	69		69	20	20	4	15	254					-48	10		10		3									15	5	15	5	15	5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car start	74	2	76	20	20	4	2	254					-48	7		7											13	3	13	3			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	4			900	230			-20		-47	28	18					29	19						34	24					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Dog kennel 38 dogs (eve)	90	2	92		4		900	230			-20		-47			24	14					1							6				n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			4	900	230			-20		-47					18	8					1						6		n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	4			900	247			-7		-48	39	29					40	30						45	35					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 2	92		92	4			900	238			-7		-48	37	27					38	28						43	33					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 3	92	2	94	4			900	232			-7		-47	39	29					40	30						45	35					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 4	92		92	4			900	215			-7		-47	38	28					39	29						44	34					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Total														44	34	25	15	19	9	45	35						50	40	20	10	17	7	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
	Criteria																																50	35	30	55	40	35	65	45	40
2	Car door closure	75	2	77	20	20	4	2	206					-47	10		10		3									16	6	16	6			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car passby	69		69	20	20	4	15	206					-46	12	2	12	2	5									17	7	17	7	17	7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car start	74	2	76	20	20	4	2	206					-46	10		10		3									16	6	16	6			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	4			900	226			-20		-47	29	19					30	20						35	25					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Dog kennel 38 dogs (eve)	90	2	92		4		900	226			-20		-47			25	15					1							6				n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			4	900	226			-20		-47					19	9					1						6		n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	4			900	224			-7		-47	40	30					41	31						46	36					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 2	92		92	4			900	232			-7		-47	38	28					39	29						44	34					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 3	92	2	94	4			900	240			-7		-48	39	29					40	30						45	35					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 4	92		92	4			900	255	2	-10			-48	34	24					35	25						40	30					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Total														44	34	26	16	20	10	45	35						50	40	22	12	18	8	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
	Criteria																																50	35	30	55	40	35	65	45	40
3	Car door closure	75	2	77	20	20	4	2	296					-50	7		7											13	3	13	3			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car passby	69		69	20	20	4	15	296					-49	9		9		2									14	4	14	4	14	4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car start	74	2	76	20	20	4	2	296					-49	7		7											13	3	13	3			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	4			900	275			-20		-49	27	17					28	18						33	23					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Dog kennel 38 dogs (eve)	90	2	92		4		900	275			-20		-49			23	13					1							6				n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			4	900	275			-20		-49					17	7					1						6		n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	4			900	290			-10		-49	35	25					36	26						41	31					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 2	92		92	4			900	290			-10		-49	33	23					34	24						39	29					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 3	92	2	94	4			900	290			-10		-49	35	25					36	26						41	31					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 4	92		92	4			900	285	2	-10			-49	33	23					34	24						39	29					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Total														40	30	24	14	18	8	41	31						46	36	19	9	16	6	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

*Correction due to tonality and impulsiveness as per AS1055:1997.

Table 6: Acoustic Quality Objective Noise Levels, 1 hour – Receivers 4-7

Receivers
1. 52 Ramsey Rd
2. Plantation Resort, 1 Captain Cook Highway.
3. 5903 Captain Cook Highway
4. Caretaker 10-12 Teamsters Cl.
5. Commercial Teamster Cl
6. Caretakers 9-11 Teamsters Cl.
7. Commercial Owen St

Receiver	Description	Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	No. of events per 1hr Day	No. of events per 1hr Eve	No. of events per 1hr Night	Duration per event	Distance (m)	No	Barrier (height (m))	Barrier screening dB	Building TL or shield dB	Topo screening dB	Dist atten. @-6dB/dd	LAeq adj,1hr ext. dB(A) Day	LAeq adj,1hr int. dB(A) Day	LAeq adj,1hr ext. dB(A) Eve	LAeq adj,1hr int. dB(A) Eve	LAeq adj,1hr ext. dB(A) Night	LAeq adj,1hr int. dB(A) Night	LA10 adj,1hr ext. dB(A) Day	LA10 adj,1hr int. dB(A) Day	LA10 adj,1hr ext. dB(A) Eve	LA10 adj,1hr int. dB(A) Eve	LA10 adj,1hr ext. dB(A) Night	LA10 adj,1hr int. dB(A) Night	LA1 adj,1hr ext. dB(A) Day	LA1 adj,1hr int. dB(A) Day	LA1 adj,1hr ext. dB(A) Eve	LA1 adj,1hr int. dB(A) Eve	LA1 adj,1hr ext. dB(A) Night	LA1 adj,1hr int. dB(A) Night
	Criteria																																		
4	Car door closure	75	2	77	20	20	4	2	22			-5			-27	25	5	25	5	18								31	11	31	11				
	Car passby	69		69	20	20	4	15	26			-5			-28	25	5	25	5	18								30	10	30	10	30	10		
	Car start	74	2	76	20	20	4	2	22			-5			-27	25	5	25	5	18								31	11	31	11				
	Dog kennel 38 dogs (day)	94	2	96	4			900	24				-25		-28	43	23					44	24					49	29						
	Dog kennel 38 dogs (eve)	90	2	92		4		900	24				-25		-28			39	19					1					6						
	Dog kennel 38 dogs (night)	84	2	86			4	900	24				-25		-28					33	13					1					6			
	2 Dogs, Dog run 1	92	2	94	4			900	19		-20			-5	-26	43	23					44	24					49	29						
	2 Dogs, Dog run 2	92		92	4			900	14		-20			-5	-23	43	23					44	24					49	29						
	2 Dogs, Dog run 3	92	2	94	4			900	14		-20			-5	-23	45	25					46	26					51	31						
	2 Dogs, Dog run 4	92		92	4			900	30		-20			-5	-30	37	17					38	18					43	23						
	Total															50	30	40	20	34	14	51	31					56	36	35	15	30	10		
	Criteria																																		
5	Car door closure	75	2	77	20	20	4	2	38						-32	25	5	25	5	18								31	11	31	11				
	Car passby	69		69	20	20	4	15	38						-32	27	7	27	7	20								32	12	32	12	32	12		
	Car start	74	2	76	20	20	4	2	38						-32	25	5	25	5	18								31	11	31	11				
	Dog kennel 38 dogs (day)	94	2	96	3.8			900	56				-20		-35	41	21					42	22					47	27						
	Dog kennel 38 dogs (eve)	90	2	92		4		900	56				-20		-35			37	17					1					6						
	Dog kennel 38 dogs (night)	84	2	86			4	900	56				-20		-35					31	11					1					6			
	2 Dogs, Dog run 1	92	2	94	4			900	53						-34	59	39					60	40					65	45						
	2 Dogs, Dog run 2	92		92	4			900	62						-36	56	36					57	37					62	42						
	2 Dogs, Dog run 3	92	2	94	4			900	69						-37	57	37					58	38					63	43						
	2 Dogs, Dog run 4	92		92	4			900	89				-10		-39	42	22					43	23					48	28						
	Total															62	42	38	18	32	12	63	43					68	48	36	16	32	12		
	Criteria																																		
6	Car door closure	75	2	77	20	20	4	2	36						-32	25	5	25	5	18								31	11	31	11				
	Car passby	69		69	20	20	4	15	32						-30	28	8	28	8	21	1							33	13	33	13	33	13		
	Car start	74	2	76	20	20	4	2	36						-31	25	5	25	5	18								31	11	31	11				
	Dog kennel 38 dogs (day)	94	2	96	3.8			900	65				-20		-36	40	20					41	21					46	26						
	Dog kennel 38 dogs (eve)	90	2	92		4		900	65				-20		-36			36	16					1					6						
	Dog kennel 38 dogs (night)	84	2	86			4	900	65				-20		-36					30	10					1					6			
	2 Dogs, Dog run 1	92	2	94	4			900	54		-14				-35	45	25					46	26					51	31						
	2 Dogs, Dog run 2	92		92	4			900	63		-14				-36	41	21					42	22					47	27						
	2 Dogs, Dog run 3	92	2	94	4			900	71		-14				-37	42	22					43	23					48	28						
	2 Dogs, Dog run 4	92		92	4			900	91				-10		-39	42	22					43	23					48	28						
	Total															49	29	37	17	31	11	50	30					55	35	37	17	33	13		
	Criteria																																		
7	Car door closure	75	2	77	20	20	4	2	83						-39	18		18		11								24	4	24	4				
	Car passby	69		69	20	20	4	15	83						-38	20		20		13								25	5	25	5	25	5		
	Car start	74	2	76	20	20	4	2	83						-38	18		18		11								24	4	24	4				
	Dog kennel 38 dogs (day)	94	2	96	3.8			900	52				-20		-34	41	21					42	22					47	27						
	Dog kennel 38 dogs (eve)	90	2	92		4		900	52				-20		-34			38	18					1					6						
	Dog kennel 38 dogs (night)	84	2	86			4	900	52				-20		-34					32	12					1					6			
	2 Dogs, Dog run 1	92	2	94	4			900	76		-10				-38	46	26					47	27					52	32						
	2 Dogs, Dog run 2	92		92	4			900	68		-10				-37	45	25					46	26					51	31						
	2 Dogs, Dog run 3	92	2	94	4			900	59		-10				-35	48	28					49	29					54	34						
	2 Dogs, Dog run 4	92		92	4			900	41		-10				-32	49	29					50	30					55	35						
	Total															54	34	38	18	32	12	55	35					60	40	29	9	25	5		

Amenity LAeq Compliance			LA10 Compliance			LA1 Compliance		
Day / eve	Day / eve indoor	Night indoor	Day / eve	Day / eve indoor	Night indoor	Day / eve	Day / eve indoor	Night indoor
50	35	30	55	40	35	65	45	40
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a
n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes
Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
Yes	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
	45							
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	**Yes**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
50	35	30	55	40	35	65	45	40
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a
n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes
Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
Yes	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
	45							
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	**Yes**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**

*Correction due to tonality and impulsiveness as per AS1055:1997.

Compliance is predicted with the Acoustic Quality Objectives for all activities associated with the development provided the recommendations in Section 8 are implemented. As the surrounding commercial and caretaker's properties are air conditioned, a 20dB reduction from outside to inside was applied to Receivers 4-7, as allowed for in Table 7 of the Ecoaccess Guideline.

7.1.2 Background Creep

The noise source levels and predicted levels at the residential receiver locations (Receivers 1-4 & 6) are shown as follows;

Table 7: Background Creep Noise Levels, 15min

Receivers
1. 52 Ramsey Rd
2. Plantation Resort, 1 Captain Cook Highway.
3. 5903 Captain Cook Highway
4. Caretaker 10-12 Teamsters Cl.
5. Commercial Teamster Cl
6. Caretakers 9-11 Teamsters Cl.
7. Commercial Owen St

Receiver	Description	Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	No. of events per 15 min Day	No. of events per 15 min Eve	No. of events per 15 min Night	Duration per event	Distance (m)	Barrier (height (m)) No	Barrier screening dB	Building TL or shield dB	Topo screening/absorption dB	Dist atten. @-6dB/dd	LAeq adj, T ext. dB(A) Day	LAeq adj, T ext. dB(A) Eve	LAeq adj, T ext. dB(A) Night	LAeq 15 min Compliance Day	Eve	Night
1	Criteria																	54	43	35
	Car door closure	75	2	77	5	5	1	2	254					-49	8	8	1	Yes	Yes	Yes
	Car passby	69		69	5	5	1	15	254					-48	10	10	3	Yes	Yes	Yes
	Car start	74	2	76	5	5	1	2	254					-49	7	7		Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	1			900	230			-20		-48	28			Yes	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		1		900	230			-20		-48		24		n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			1	900	230			-20		-48			18	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	1			900	247			-7		-48	39			Yes	n/a	n/a
	2 Dogs, Dog run 2	92		92	1			900	238			-7		-48	37			Yes	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	1			900	232			-7		-48	39			Yes	n/a	n/a
	2 Dogs, Dog run 4	92		92	1			900	215			-7		-47	38			Yes	n/a	n/a
	Total														44	25	19	**Yes**	**Yes**	**Yes**
2	Criteria																	54	43	35
	Car door closure	75	2	77	5	5	1	2	206					-47	10	10	3	Yes	Yes	Yes
	Car passby	69		69	5	5	1	15	206					-46	12	12	5	Yes	Yes	Yes
	Car start	74	2	76	5	5	1	2	206					-46	10	10	3	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	1			900	226			-20		-47	29			Yes	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		1		900	226			-20		-47		25		n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			1	900	226			-20		-47			19	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	1			900	224			-7		-47	40			Yes	n/a	n/a
	2 Dogs, Dog run 2	92		92	1			900	232			-7		-47	38			Yes	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	1			900	240			-7		-48	39			Yes	n/a	n/a
	2 Dogs, Dog run 4	92		92	1			900	255	2	-10			-48	34			Yes	n/a	n/a
	Total														44	26	20	**Yes**	**Yes**	**Yes**
3	Criteria																	54	43	35
	Car door closure	75	2	77	5	5	1	2	296					-50	7	7		Yes	Yes	Yes
	Car passby	69		69	5	5	1	15	296					-49	9	9	2	Yes	Yes	Yes
	Car start	74	2	76	5	5	1	2	296					-49	7	7		Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	1			900	275			-20		-49	27			Yes	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		1		900	275			-20		-49		23		n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			1	900	275			-20		-49			17	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	1			900	290			-10		-49	35			Yes	n/a	n/a
	2 Dogs, Dog run 2	92		92	1			900	290			-10		-49	33			Yes	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	1			900	290			-10		-49	35			Yes	n/a	n/a
	2 Dogs, Dog run 4	92		92	1			900	285	2	-10			-49	33			Yes	n/a	n/a
	Total														40	24	18	**Yes**	**Yes**	**Yes**
4	Criteria																	54	43	35
	Car door closure	75	2	77	5	5	1	2	22		-5			-27	25	25	18	Yes	Yes	Yes
	Car passby	69		69	5	5	1	15	26		-5			-28	25	25	18	Yes	Yes	Yes
	Car start	74	2	76	5	5	1	2	22		-5			-27	25	25	18	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	1			900	24			-25		-28	43			Yes	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		1		900	24			-25		-28		39		n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			1	900	24			-25		-28			33	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	1			900	19		-20		-5	-26	42			Yes	n/a	n/a
	2 Dogs, Dog run 2	92		92	1			900	14		-20		-5	-23	44			Yes	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	1			900	14		-20		-5	-23	46			Yes	n/a	n/a
	2 Dogs, Dog run 4	92		92	1			900	30		-20		-5	-30	37			Yes	n/a	n/a
	Total														50	40	34	**Yes**	**Yes**	**Yes**
6	Criteria																	54	43	35
	Car door closure	75	2	77	5	5	1	2	36					-32	25	25	18	Yes	Yes	Yes
	Car passby	69		69	5	5	1	15	32					-30	28	28	21	Yes	Yes	Yes
	Car start	74	2	76	5	5	1	2	36					-31	25	25	18	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	1			900	65			-20		-36	40			Yes	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		1		900	65			-20		-36		36		n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			1	900	65			-20		-36			30	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	1			900	54		-14			-35	44			Yes	n/a	n/a
	2 Dogs, Dog run 2	92		92	1			900	63		-14			-36	42			Yes	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	1			900	71		-14			-37	43			Yes	n/a	n/a
	2 Dogs, Dog run 4	92		92	1			900	91			-10		-39	43			Yes	n/a	n/a
	Total														50	37	31	**Yes**	**Yes**	**Yes**

*Correction due to tonality and impulsiveness as per AS1055:1997.

Compliance is predicted with the Background Creep criteria for all activities associated with the development provided the recommendations in Section 8 are implemented.

7.2 Measured Offsite Activity Noise Levels

The internal acoustic quality objectives for proposed onsite caretakers residence within a habitable room is Leq 35 dB(A) during the daytime and Leq 30 dB(A) during the night time. Based on the measured noise levels, a maximum noise reduction (from outside to inside) of 22 dB(A) would be required to satisfy the criteria, refer to Section 8 for further recommendations.

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8. Recommendations

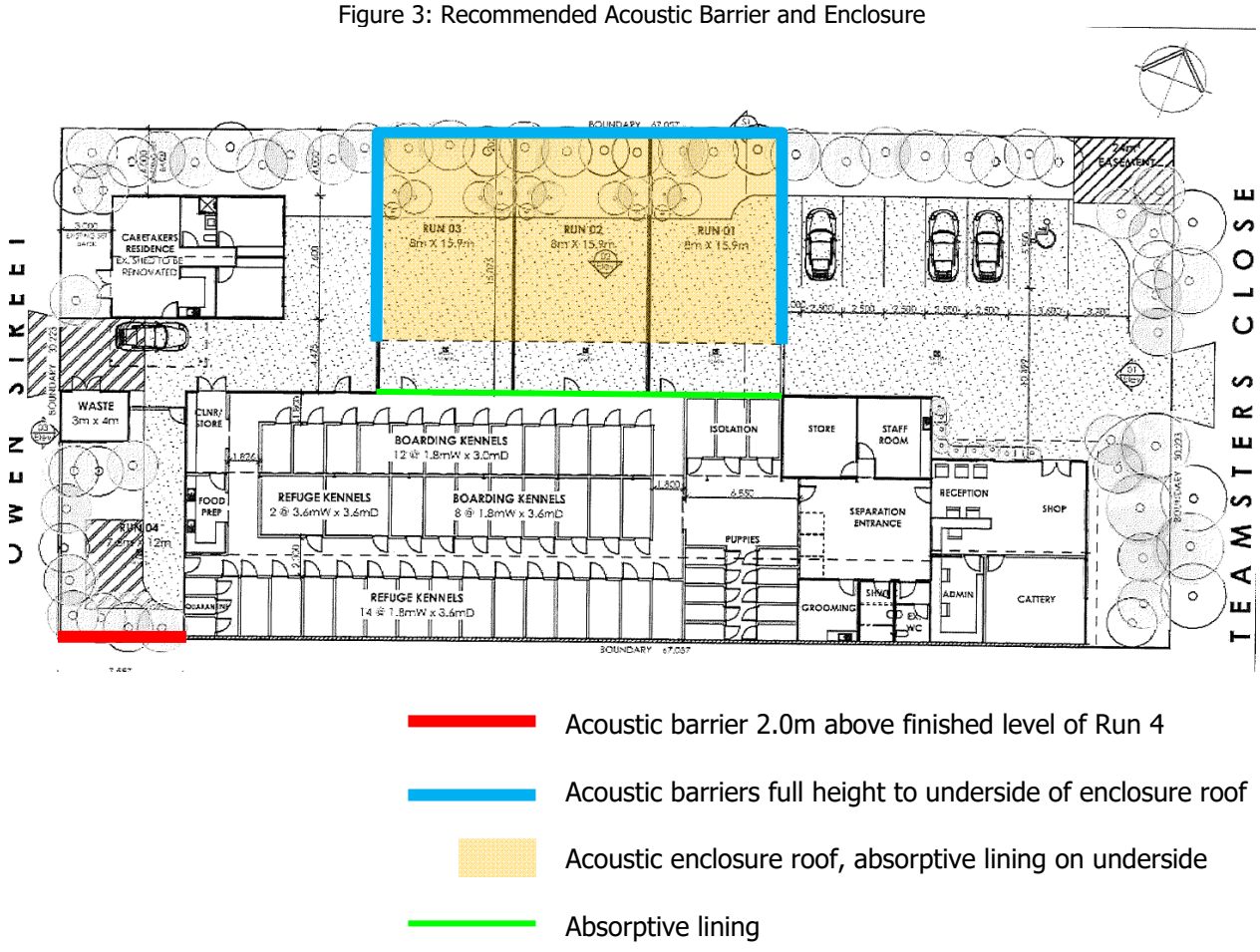
8.1 Acoustic Barrier/Enclosure and Absorptive Lining

To reduce noise from the external dog runs at sensitive receivers, acoustic barrier and partial enclosures are recommended to be constructed along the southern and northern boundaries nominated in Figure 3.

The acoustic barrier and roof shall be constructed using materials that achieve a minimum surface density of 10kg/m^2. Suitable materials may include lapped 19mm thick pine palings with 40% overlap, 9mm fibre cement sheet, masonry, aerated concrete, glass or other materials which satisfy the minimum surface density requirement. The barrier and enclosure should be free of gaps and holes.

Absorptive linings are recommended to be installed on the underside of the enclosure roof and along part of the northern facade of the existing shed, as shown in Figure 3. The lining on the shed façade should commence approximately 750mm above ground level and continue to the height of the enclosure roof. The lining is to use 50mm thick Autex AAB32-50 insulation with a density of 32kg/m^3 faced with perforated FC backed with a minimum open are of 11%. The lining to the underside of the roof will cover the entire area (light fitting's exempt) and shall utilise foil faced insulation similar to 50mm thick Anticon insulation or Autex AAB32-50.

Figure 3: Recommended Acoustic Barrier and Enclosure



Acoustic barrier 2.0m above finished level of Run 4

Acoustic barriers full height to underside of enclosure roof

Acoustic enclosure roof, absorptive lining on underside

Absorptive lining

8.2 Management Controls

The assessment has demonstrated that onsite activities are predicted to comply with the criteria in Section 6 on the condition the external dog runs are limited to the daytime period (8am-4pm), 7 days per week.

8.3 Building Treatments

8.3.1 Caretaker's Residence

To achieve a suitable level of internal amenity for offsite commercial activity noise, we recommend the following:

- The external facade and roof shall achieve minimum Rw 35.
- External windows shall require minimum thickness 4mm float with acoustic seals (minimum Rw 27)
- External sliding doors shall require minimum thickness 4mm toughened glazing with acoustic seals (minimum Rw 27).

A lightweight construction option for the external walls is as follows;

- Rw 35: 6mm FC externally with 70mm stud and 75mm glasswool batts (14kg/m³) in the cavity with 13mm plasterboard internally.

For the roof system, we recommend construction as follows;

- Rw 35: Metal sheet roof with Bradford Anticon 55 insulation, 75mm glasswool Batts in the cavity with 10mm plasterboard internally, maintain a minimum cavity of 100mm.

Penetrations shall not reduce the overall acoustic performance of the installed façade/roof/ceiling systems.

8.3.2 Boarding Kennel Shed

To achieve a suitable level of amenity for onsite activity to offsite receivers, we recommend the upgrading the boarding kennel shed as follows:

- If not already existing, upgrade the external sheet metal walls and roof to include an internal lining spaced a minimum of 75mm of the sheet metal using 6mm FC with 75mm thick 14kg/m^3 polyester insulation in the resulting wall cavity.
- All access doors of the boarding kennel shed are required to be a minimum 40mm solid core doors with full perimeter and drop seals with the gap at the base of the doors to be a maximum of 5mm.
- Upgrade all façade glazing of the boarding kennel shed to a minimum thickness of 6.38 laminate glass with acoustic seals (e.g. Q-lon or an equivalent product, mohair seals are not acceptable), the installed system shall achieve a minimum Rw 30.

8.3.3 Alternative Ventilation

We recommend that the animal shelter shed and all habitable rooms of the caretaker's residence have the provision for an alternative ventilation system similar to air-conditioning or mechanical ventilation to allow windows and doors to be closed.

8.4 Onsite Mechanical Plant

No information regarding mechanical services was available at the time of the assessment. We recommend that any new mechanical plant is designed to comply with the criteria as nominated in 6.1.2. We recommend an assessment by qualified acoustic consultant be conducted prior to installation to determine any requirements for acoustic treatments to mechanical plant.

9. Conclusion

An environmental noise assessment was conducted for the proposed animal shelter located at 6-8 Teamsters Close, Craiglie. The assessment has considered all onsite activities associated with the proposal to sensitive receivers in the vicinity of the site, on the condition the recommendations detailed in Section 8 are implemented, compliance is predicted with assessment criteria detailed in Section 6.

If you should have any queries please do not hesitate to contact us.

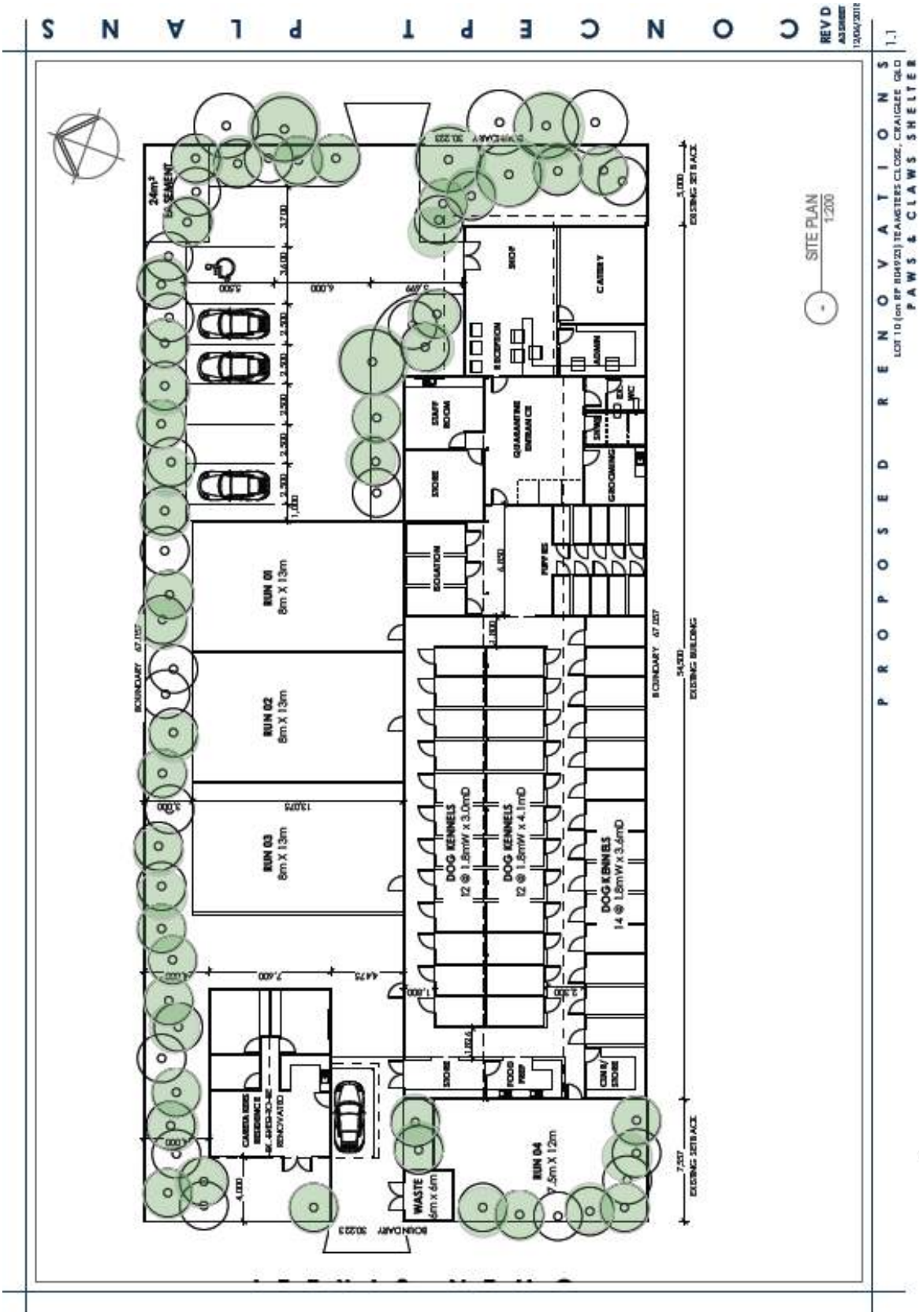
Report prepared by

GREG PEARCE B.Eng (Mech)
Director

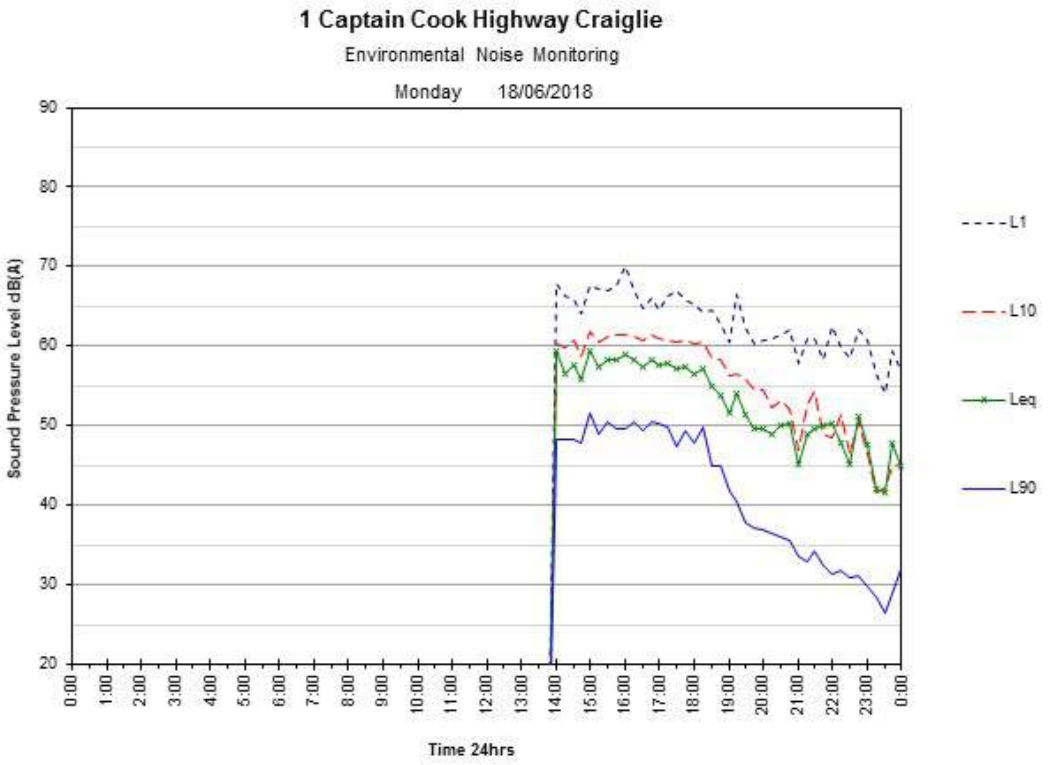
acousticworks)))

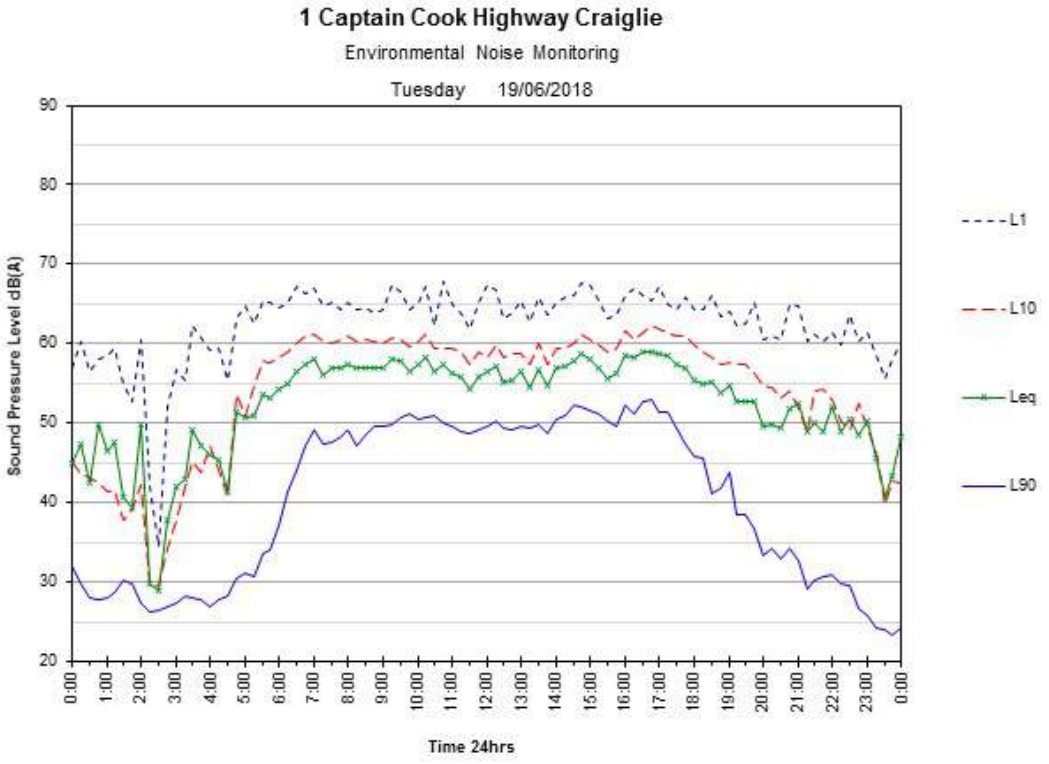
10. Appendices

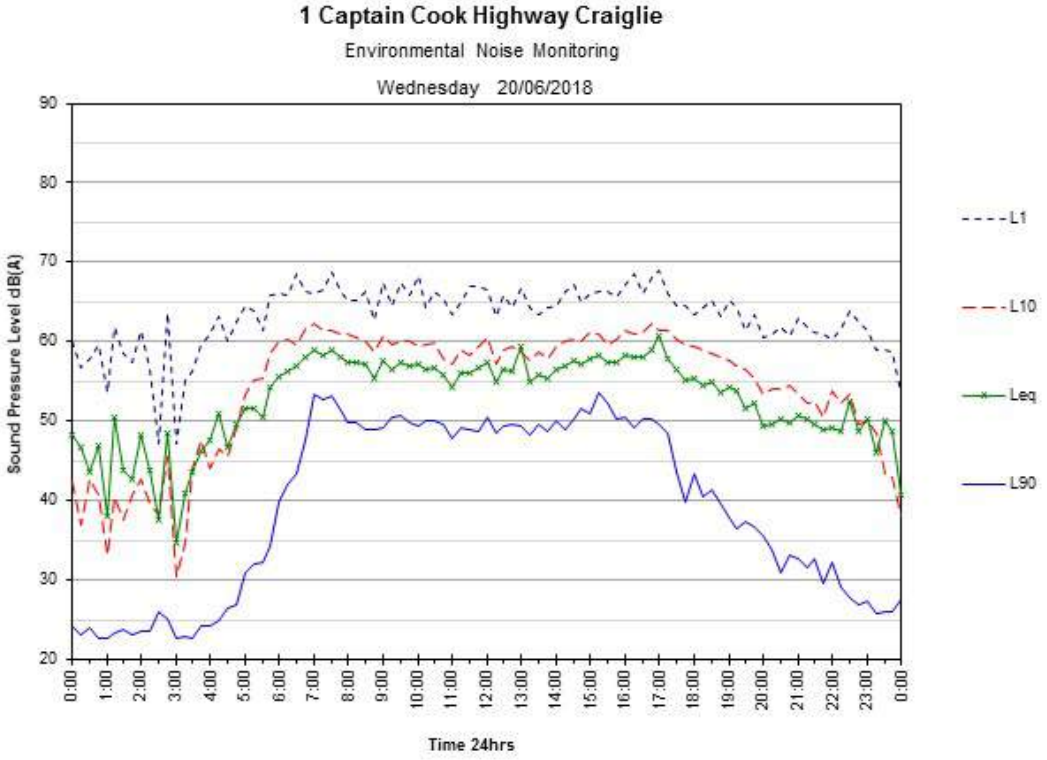
10.1 Development Plans

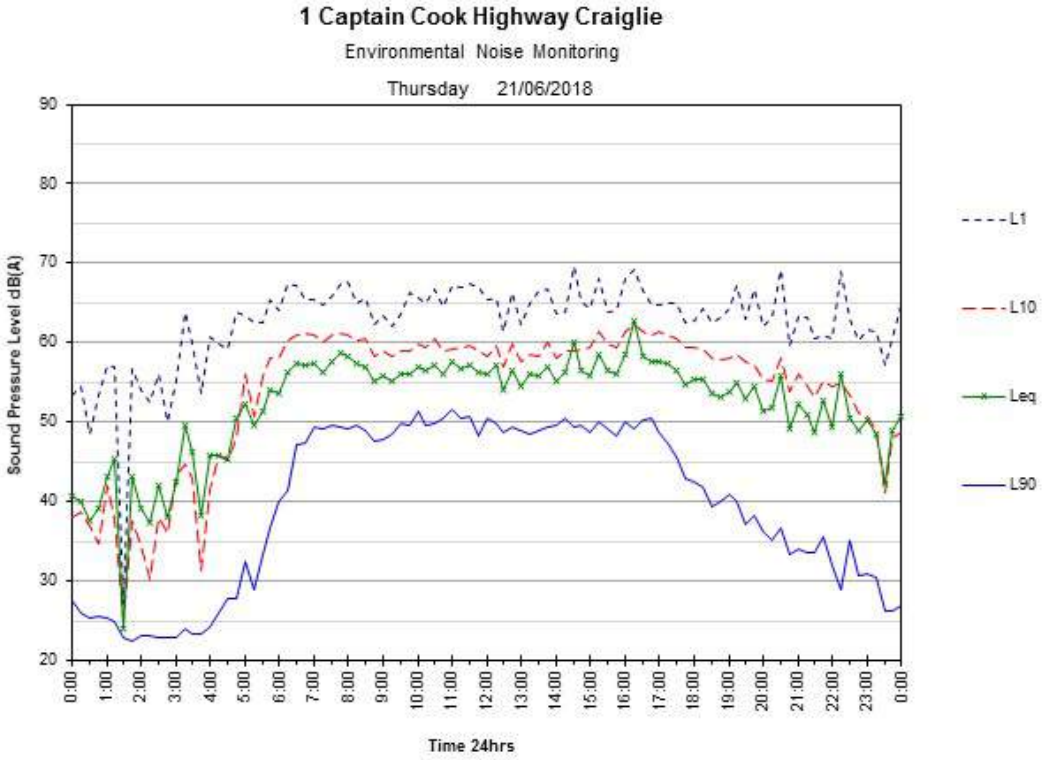


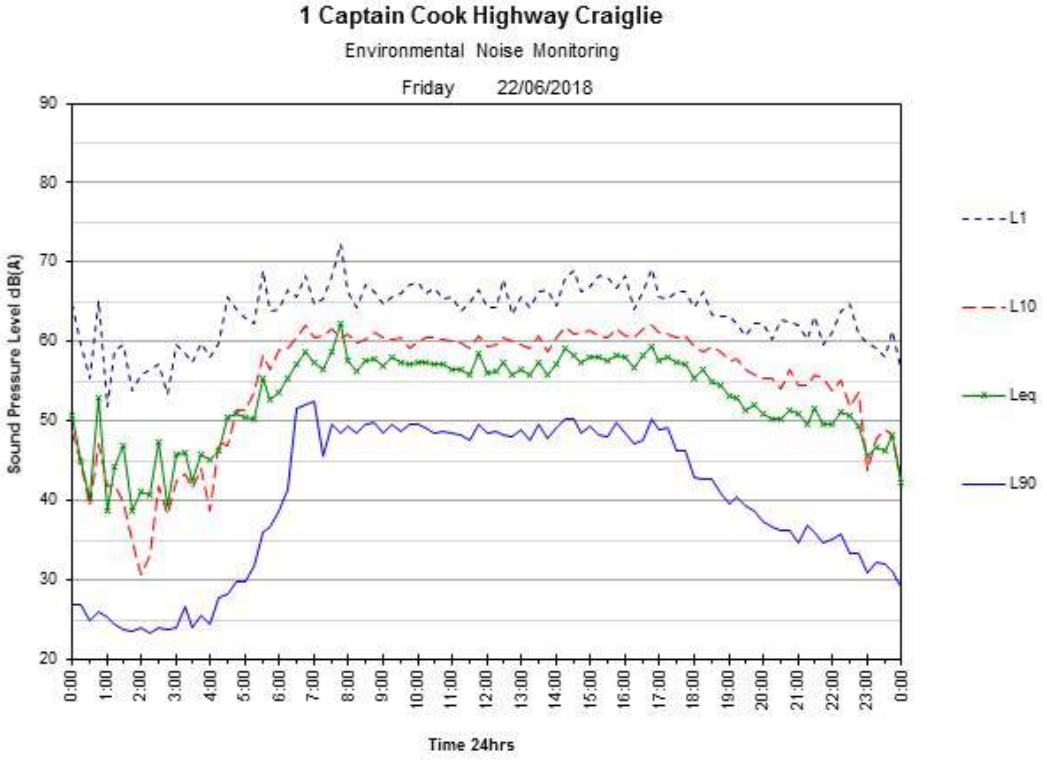
10.2 Noise Monitoring Charts

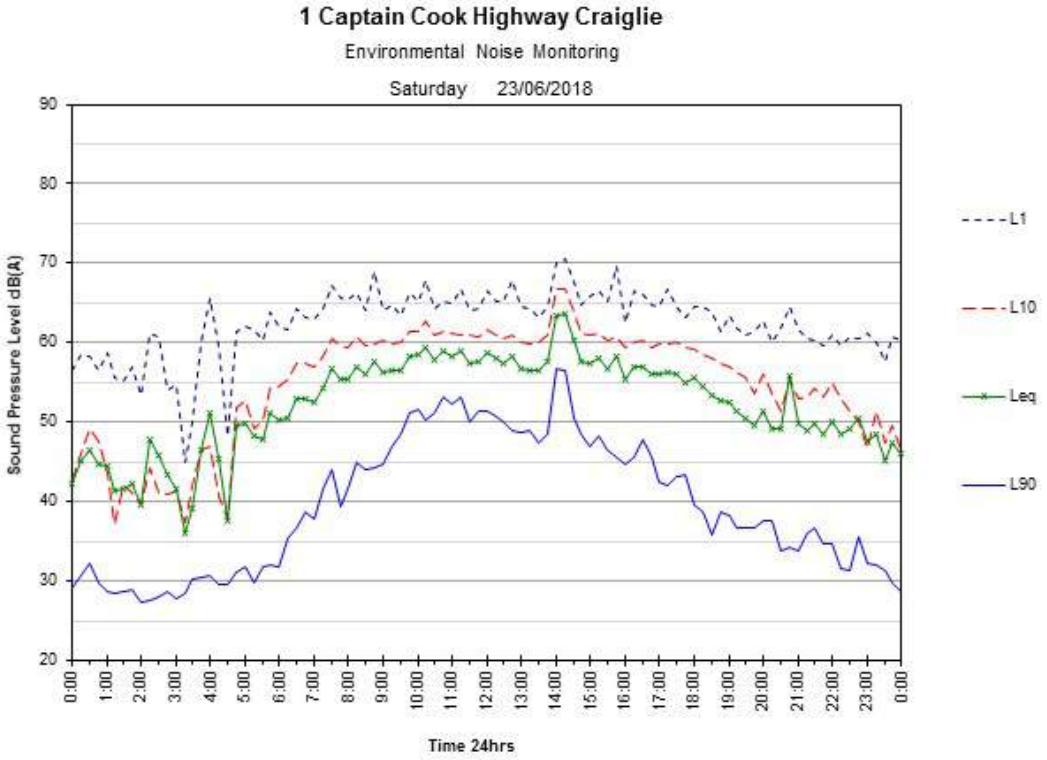


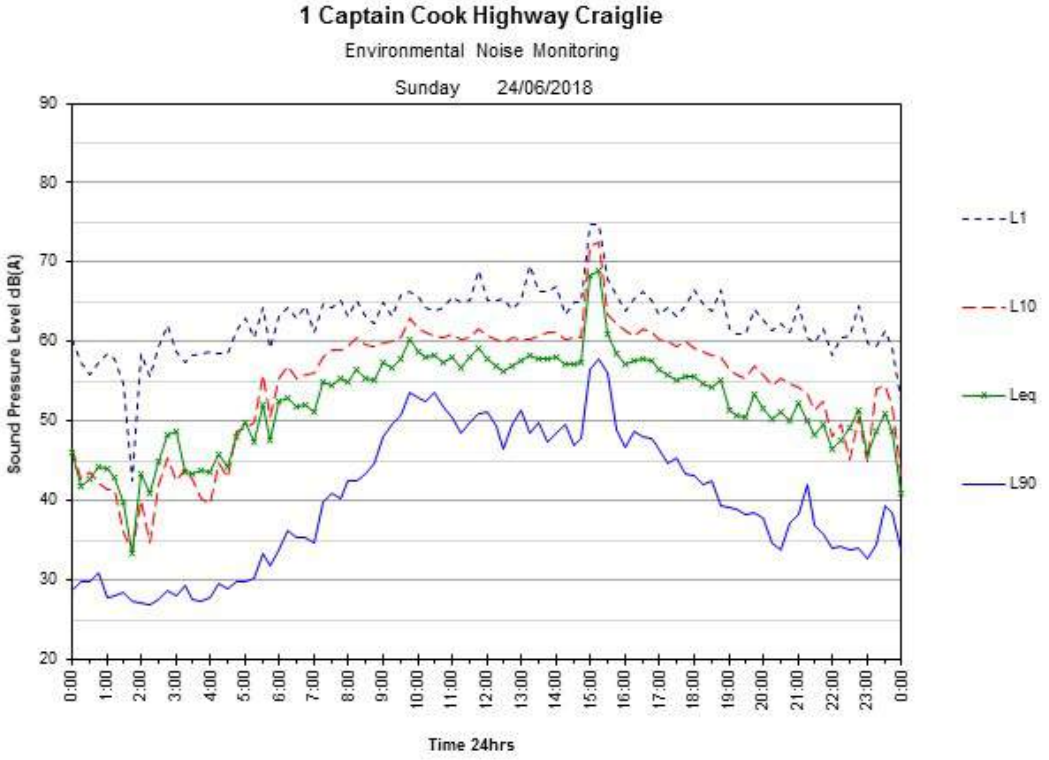


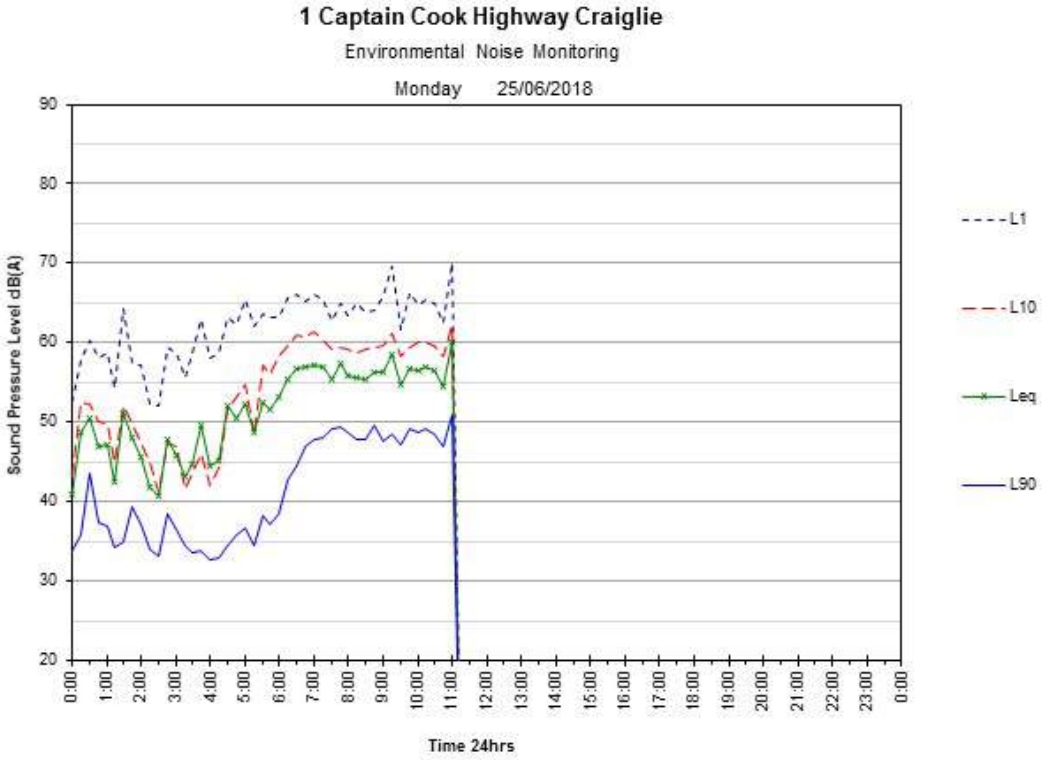

1 Captain Cook Highway Craiglie
Environmental Noise Monitoring
Wednesday 20/06/2018
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
Leq
L90


1 Captain Cook Highway Craiglie
Environmental Noise Monitoring
Thursday 21/06/2018
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
Leq
L90


1 Captain Cook Highway Craiglie
Environmental Noise Monitoring
Friday 22/06/2018
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
Leq
L90


1 Captain Cook Highway Craiglie
Environmental Noise Monitoring
Saturday 23/06/2018
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
Leq
L90


1 Captain Cook Highway Craiglie
Environmental Noise Monitoring
Sunday 24/06/2018
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
Leq
L90


1 Captain Cook Highway Craiglie
Environmental Noise Monitoring
Monday 25/06/2018
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
Leq
L90

acousticworks)))

27 August 2018
Reference: *2018205 L02A 6-8 Teamsters Close Craiglie ENV RFI Response*

Neil Beck
Douglas Shire Council
64-66 Front Street
Mossman

RE: 6-8 Teamsters Close, Craiglie ENV – Request for Further Information

The following letter is in response to Douglas Shire Council's information request in relation to the development application for the proposed animal shelter at 6-8 Teamsters Close, Craiglie. In relation to the acoustic issues raised we provide the following response;

Council Request

1. The noise profile of the existing industrial estate which contains a mix of light industry and commercial service / office type uses; This has not been done. The noise measurements taken for the original report taken adjacent and on the other side of the Captain Cook Highway is not adequate to meet this condition. It is measuring traffic noise outside the estate. The condition required an understanding of the noise profile in and around the existing estate. From discussions with the author this morning, the noise measurements taken onsite in June 2018 are being relied upon. However this noise monitoring was taken for a duration of 30 minutes and doesn't contain background noise levels for day evening or night?

Response

The proposed site is located in an industrial area highly affected by extraneous noise source associated with the existing businesses; therefore any logging would be highly affected by existing activities within the area and not provide accurate criteria for all parties. To allow an accurate assessment, noise logging was undertaken away from the industrial activities at the nearest residential receivers behind an acoustic barrier, providing screening from the road which would further reduce noise levels. All noise monitoring was conducted in accordance with Australian Standard AS1055 (parts 1 to 3) and the relevant state policies. The monitoring location was selected for 2 reasons, it eliminated extraneous industrial noise sources from the assessment and provided a conservative background levels for use in determining the EPP2008 Background Creep criteria.

If noise logging within the industrial site was used to establish the criteria, the measured levels could be challenged due to the monitor proximity to industrial, highly affected by extraneous noise and not representative of the existing environment. This was further confirmed during the site investigation when it was observed that extraneous noise associated with the existing industrial and commercial was clearly present.

In accordance with the Environmental Protection Noise Policy 2008 assessment requirements for the existing commercial, industrial and caretakers residence, the criteria nominated in (EPP2008) Acoustic Quality Objectives was utilised to determine compliance. In addition the background creep criteria from the noise logging was utilised to establish an external criteria for existing caretakers residences.

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Council Request

2. The generation of noise associated with the proposed use; This is an estimation based on bark dB levels. I discussed with the author of the report as to why noise levels decrease at night and evening when compared to day. At the time, this was acknowledged by the author who advised this was an error and would be amended in the revised report. This has remained unchanged and there is no explanation why noise levels are lower at evening and night times. The chosen dB levels for dogs needs to be explained as they differ to other reports reviewed.

Response

To clarify the levels used and the reduction in the bark dB noise levels, data and acoustic analysis is based on assessments previously carried out over 7 days for a facility containing 60 dogs. The kennel was of combined masonry and lightweight wall construction, as well as sections open to the exterior. The measurements were taken in the direction of open mesh fence side to provide 'worst-case' scenario'.

The noise was measured using two noise loggers set up at distances of 3m and 20m respectively from the open face of the kennels. The noise monitors were set to measure in 15 minute periods and the highest average maximum 15 minute results determined for each of the time periods. Noise levels were then converted to provide a 'source' noise level at equivalent distance of 1m.

Calculated source noise levels for 60 dogs based on the measured levels are as follows;

Table 1: Equivalent source noise levels due to 60 dogs

Time period	Source noise pressure level dB(A) @1m
	Leq
Day	96
Evening	92
Night	86

Noise levels are then adjusted to allow for 38 mature dogs as proposed;

Table 2: Equivalent source noise levels due to 38 dogs

Time period	Source noise pressure level dB(A) @1m
	Leq
Day	94
Evening	90
Night	84

These noise levels were used for the basis of the analysis.

Council Request

3. The construction of the existing building in which the animals will be housed and the performance of any noise attenuation treatments of the existing building to mitigate

the impacts of noise; There is no assessment of existing attenuation treatments in the shed which was relied upon in the development application. The purpose of this condition was to have this investigated and assessed so any additional noise attenuation treatments can supplement what exists now.

The additional dB reduction for the nearby care takers for inside levels based on this residence being an enclosed air conditioned building is noted. It is unreasonable to expect that the caretaker must have the place air conditioned 24/7 or otherwise be subject to noise impacts. Further explanation / details is required to address or qualify what the impact may be. There are no noise monitoring results of the existing conditions for the caretaker present.

Response

The existing shed construction and the proposed caretakers residence was taken in account, with specific upgrades specified in the acoustic report in relation to the minimum structural upgrades detailed in section 8.3 of the report.

In regards to the assumed 20dB reduction as noted in the report, this has only been applied to the caretaker's residence during the daytime period when the surrounding area is active; we have assumed during the night time period that windows and doors will be open. This assumption was made on the basis that observations onsite showed that levels of extraneous noise were present during the daytime period at the offsite caretaker's residences. If the report assumed that windows and doors were open, then compliance would still be achieved with the EPP2008 Background Creep criteria, with only a minor exceedance of the acoustic quality objectives during the daytime period, note the surrounding activities would also not comply.

Council Request

4. Detail any additional noise attenuation measures required to be performed to the building to minimise the impact of noise on the existing acoustic environment external to the site. Recommendations are noted for the shed and caretakers.

Response

The existing shed construction of the kennel and the proposed caretakers residence was taken into account, with specific upgrades specified in the acoustic report in relation to the minimum structural upgrades as detailed in section 8.3 of the report.

Council Request

5. Any other matters considered relevant by the acoustic engineer to ensure the proposed development does not unduly impact on neighbouring or surrounding properties.

   The tonal correction (2dB) is not explained but appears low). Dog barking would lean towards impulsive noise and have a higher annoyance factor. Dog barking is also intrusive and particularly distracting. It is unlike steady background noise such as traffic. It is suspected that the ambient noise level in the light industrial area is very low in the evening and at night but we have no background measurements. The house in Ramsey Road would likely have an even lower background noise in the evening and at night. The physical sound qualities of dog barking and psychological factors aren't considered. The barking noise is being introduced to an area and to receptors (people) who do not have that type of sound impacting on them at the

moment. Any barking heard will be a new intrusive sound and likely be particularly annoying.

Response
All treatment requirements are detail in section 8 of the acoustic report with the tonal corrections in accordance with AS1055.

In regards to the impacts at Ramsay Road, during the night period are predicted to occur at 25dB(A) externally, 8 dB below the current criteria and 15dB(A) below the internal criteria. Further noise reduction can be achieved by installing absorptive lining within the kennels, which could further reduce noise impact by 5dB with noise impacts predicted to comply at all residential receivers.

Further Comments
Although the kennel has been designed to comply at all receivers, this does not mean noise impacts associated with dogs barking will be inaudible, onsite management will be required to manage the kennel in addition to the acoustic treatments nominated. To design the kennel to be inaudible, noise levels would need to be 10dB below the existing background levels. Consideration is required of the existing area, the area is zoned industrial and as such the proposed kennel should have the same criteria as applied as other industries in the area.

In regards to the impacts to commercial and industrial receivers, the predicted impacts contained within the report show even at the closest location, dog barking will occur at levels 10-15dB below normal conversation (65dB(A) at 1 metre) for the external areas. This level will be further reduced over distance and internally with an additional 10-20dB reduction from standard construction depending on whether the business operates with doors and windows closed.

The report provided has shown the proposed kennel can achieve predicted compliance with the council assessment requirements nominated in the EPP2008 at the neighbouring receivers. If further noise reduction are required above those normally accepted for other industrial businesses, then council may want to consider financing the extra works to achieve the requirements above those normally applied to similar operations. If required the design can be further upgraded to achieve further noise reduction not required under the current planning scheme.

We trust this information meets your current requirements. If you should have any further queries, please do not hesitate to contact us.

Yours faithfully,

GREG PEARCE B.Eng (Mech)
Director

acousticworks)))

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Proposed Animal Shelter
6-8 Teamsters Close
Craiglie

ACOUSTIC REPORT

Client:
Homeless Animal Society and
Boarding Kennels Inc.
Attn: Michael Kerr

Reference:
2018205 R01F 6-8 Teamsters Close Craiglie ENV

Date Issued:
30th August 2018

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1. Introduction

The following revised report is in response to a request by the Homeless Animal Society and Boarding Kennels Inc. for an environmental noise assessment of a proposed animal shelter located at 6-8 Teamsters Close, Craiglie. The revised report addresses Schedule 1, Part 1A of Douglas Shire Council's preliminary approval for the development (Ref: MCUI 2711/2018 (866422)). To facilitate the assessment, unattended noise monitoring and attended measurements were conducted in the vicinity of nearby sensitive receivers to determine the criteria and compliance of onsite activities.

2. Site Description

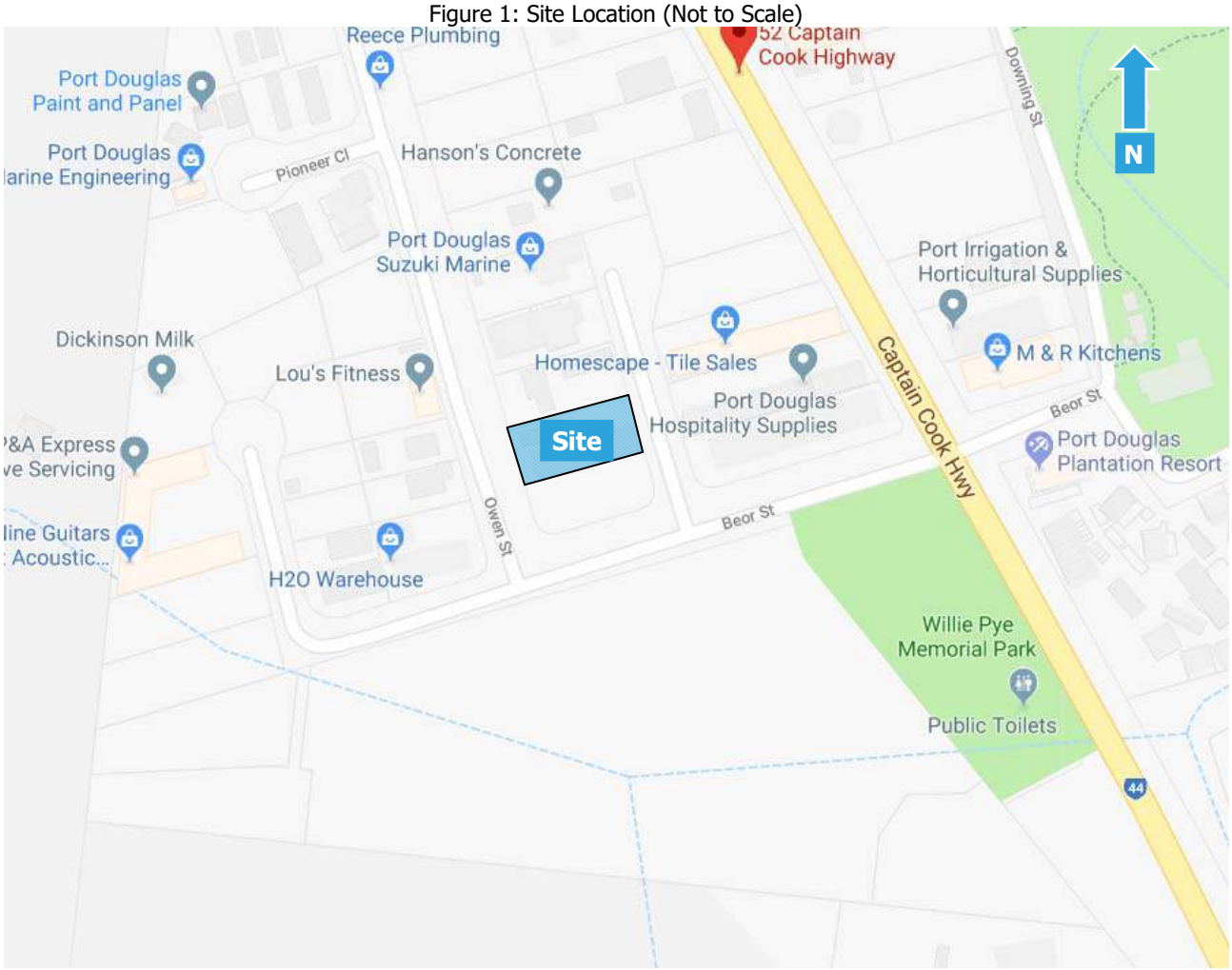
2.1 Site Location

The site is described by the following:

6-8 Teamsters Close, Craiglie
Lot 10 on RP804923

Refer to Figure 1 for site location.

Figure 1: Site Location (Not to Scale)



A comprehensive site survey was conducted on the 18th of June 2018 which identified the following:

a) The site currently consists of two single storey shed structures which will be refurbished for the development.
b) A Cleanaway waste truck depot bounds the site to the north with an Origin Energy gas depot located on the southern boundary.
c) Teamsters Close bounds the site to the south, separating the development from commercial land uses.
d) Owen Street bounds the site to the north, separating the development from commercial land uses.

During the site survey a number of caretaker's residences were identified in proximity to the site and were considered in the assessment.

2.2 Proposal

The site currently consists of two sheds which shall be refurbished for the development. The larger shed located on the southern portion of the site will be converted into the animal shelter, with the smaller one located on the north-western portion of the site to be converted into a caretaker's dwelling. The animal shelter will consist of the following;

- 38 dog kennels, 10 puppy kennels and 3 isolation kennels.
- Cattery.
- Reception and shop.
- Quarantine area, grooming, administration, staff and store rooms.

Dog runs will be provided adjacent to the northern and western façades of the animal shelter building for use between 8am and 4pm. A total of 8 dogs will use the 4 external dog runs at any one time. At all other times dogs will be located within the shelter building, which will be fully enclosed and air-conditioned.

2.3 Acoustic Environment

The surrounding area is primarily affected by road traffic noise from the local road network with nearby commercial properties potentially impacting residents in the area.

3. Equipment

The following equipment was used to record noise levels:

- Rion NL42 Environmental Noise Monitor
- Norsonic NOR140 Sound Level Meter
- BSWA Technology Co. Ltd Sound Calibrator

The Rion NL42 Environmental Noise Monitor and Norsonic NOR140 Sound Level Meter hold current NATA Laboratory Certification and were field calibrated before and after the monitoring period, with no significant drift from the reference signal recorded.

4. Receivers and Noise Monitoring Locations

4.1 Receiver Locations

The nearest sensitive receiver locations were identified as follows;

1. A single storey residential dwelling is located to the west at 52 Ramsey Road.
2. The Plantation Resort consists of two storey unit buildings and is located to the east at 1 Boer Street.
3. A 2 storey dwelling is located to the southeast at 5903 Captain Cook Highway.
4. A caretaker's residence is located adjacent the northern site boundary at 10-12 Teamsters Close.
5. Commercial and light industrial uses are located on the eastern side of Teamsters Close.
6. A caretaker's residence is located adjacent to the east at 9-11 Teamsters Close.
7. Commercial and light industrial uses are located on the western side of Owen Street.

Note that in accordance with Performance Outcome 10 of the DSC Industry Zone Code, the development must not lower the standards of amenity with respects to noise at any sensitive receiver outside of the Industry Zone. In addition, Douglas Shire Council has requested that surrounding commercial and caretaker's properties are also included in the assessment (Ref: MCUI 2711/2018 (866422)). Therefore, the above locations were chosen as being representative of the nearest residential receivers in proximity to the proposed development. Refer to Figure 2 for these locations.

Figure 2: Receivers and Noise Monitoring Location

4.2 Unattended Noise Monitoring

The Rion NL42 environmental noise monitor was placed at the Plantation Resort (1 Boer Street) to measure ambient noise levels. The location was selected as it was considered representative of the ambient noise environment at the nearest potentially affected receiver identified in Figure 2. The monitor was located in a free field position with the microphone approximately 1.4 metres above ground surface level. The noise monitor was set to record noise levels between the 18th and 25th of June 2018.

The environmental noise monitor was set to record noise levels in "A" weighting, Fast response using 15 minute statistical intervals. Ambient noise monitoring was conducted generally in accordance with Australian Standard AS1055:1997 *Acoustics – Description and measurement of environmental noise*.

For the unattended noise monitoring location refer to Figure 2.

5. Measured Noise Levels

5.1 Measured Ambient Noise Levels

Table 1 presents the measured ambient noise levels from the unattended noise monitoring location. Any periods of extraneous noise were omitted from the measured data prior to determining the results.

Table 1: Measured road traffic and ambient noise levels - all time periods

Day	Date	L90 dB(A)		
		Day	Evening	Night
Monday	18/06/18	49	39	30
Tuesday	19/06/18	50	37	30
Wednesday	20/06/18	50	36	28
Thursday	21/06/18	49	37	29
Friday	22/06/18	49	39	30
Saturday	23/06/18	48	37	31
Sunday	24/06/18	48	39	31
Overall value		49	38	30

Refer to the appendix for graphical representation of the measured noise levels.

5.2 Measured Offsite Activity Noise Levels

Noise measurements were performed at the location of the proposed caretaker's dwelling on Monday 18th of June 2018 between 12:45pm and 1.15pm to determine any requirements for acoustic treatments, with the results as follows;

Table 2: Attended noise measurement results

Activity assessed	Measured activity noise level dB(A) Leq 15min	Time	Comments
Offsite commercial and industrial activity	52	12:45am-1:00pm	Observed noise included; • Voices, reverse alarms, power tools, metal drops from industrial premises to the north. • Concrete truck and vehicle movements on surrounding roads. • Distant continuous plant noise.
Offsite commercial and industrial activity	49	1:00pm-1:15pm	Observed noise included; • Voices, reverse alarms, power tools, metal drops from industrial premises to the north. • Concrete truck and vehicle movements on surrounding roads. • Distant continuous plant noise

The measured noise impacts by attended measurement were found to be 49-52 dB(A) Leq 15min, with levels dominated by traffic and offsite industrial activity. A summary of the measured levels is provided in Section 7.2.

5.3 Measured Offsite Activity Noise Levels

To determine the the bark dB noise levels, data and acoustic analysis is based on assessments previously carried out over 7 days for a facility containing 60 dogs. The kennel was of combined masonry and lightweight wall construction, as well as sections open to the exterior. The measurements were taken in the direction of open mesh fence side to provide 'worst-case' scenario'.

The noise was measured using two noise loggers set up at distances of 3m and 20m respectively from the open face of the kennels. The noise monitors were set to measure in 15 minute periods and the highest average maximum 15 minute results determined for each of the time periods. Noise levels were then converted to provide a 'source' noise level at equivalent distance of 1m.

Calculated source noise levels for 60 dogs based on the measured levels are as follows;

Table 3: Equivalent source noise levels due to 60 dogs

Time period	Source noise pressure level dB(A) @1m
	Leq
Day	96
Evening	92
Night	86

Noise levels are then adjusted to allow for 38 mature dogs as proposed;

Table 4: Equivalent source noise levels due to 38 dogs

Time period	Source noise pressure level dB(A) @1m
	Leq
Day	94
Evening	90
Night	84

These noise levels were used for the basis of the analysis.

6. Environmental Noise Criteria

6.1 Environmental Noise Policy 2008

The noise criteria as applied under the *Environmental Protection (Noise) Policy 2008* are as follows;

6.1.1 Acoustic Quality Objectives

Table 5 below presents the acoustic quality objectives at noise sensitive receptors as detailed in Schedule 1 of the EPP (Noise) 2008.

Table 5: Acoustic Quality Objectives at Noise Sensitive Properties

Sensitive Receptor	Time of Day	Acoustic Quality Objectives, dB(A)		
		$L_{Aeq,adj,1hr}$	$L_{A10,adj,1hr}$	$L_{A1,adj,1hr}$
Dwelling (outdoors)	Day and Evening (7am – 10pm)	50	55	65
Dwelling (Indoors)	Day and Evening (7am – 10pm)	35	40	45
	Night (10pm - 7am)	30	35	40
Commercial and retail activity (indoors)	When the activity is open for business	45	-	-

6.1.2 Background Creep

The Background Creep criteria are as follows;

Time-varying noise:

$$L_{Aeq,adj,T,} \leq \text{Ambient } L_{A90,T} + 5\text{dB(A)}$$

Steady-state noise:

$$L_{A90,T} \leq \text{Ambient } L_{A90,T}$$

The time period (T) is a time interval of at least 15 minutes, or if the noise continues for less than 15 minutes, the duration of the noise source.

Based on the results of ambient noise monitoring, the project specific background creep noise limits are shown in Table 6.

Table 6: Background Creep Noise Limits

Time Period	Noise Level Limits SPL dB(A)	
	$L_{Aeq,T}$	$L_{A90,T}$
Day 7am – 6pm	54	49
Evening 6pm – 10pm	43	38
Night 10pm – 7am	35	30

7. Environmental Assessment

7.1 Onsite Activities

Noise associated with the proposed development was assessed based on measurements of similar activities including boarding kennels. The calculations assume that the nominated activities are located at a representative distance within the development site to each receiver location. Any relevant shielding or building transmission loss is taken into account for these activities.

7.1.1 Acoustic Quality Objectives

The average maximum noise source levels and predicted levels at the receiver locations are shown in Table 7 and Table 8. Note: L_{A10} and L_{A1} results are not shown in cases where the total duration of the events is less than the minimum time required e.g. $L_{A10(1hr)}$ requires noise events to occur for at least 360 seconds of an hour long period. L_{Aeq} results are not shown where the calculated total is less than 0dBA.

Table 7: Acoustic Quality Objective Noise Levels, 1 hour – Receivers 1-3

Receivers
1. 52 Ramsey Rd
2. Plantation Resort, 1 Captain Cook Highway.
3. 5903 Captain Cook Highway
4. Caretaker 10-12 Teamsters Cl.
5. Commercial Teamster Cl
6. Caretakers 9-11 Teamsters Cl.
7. Commercial Owen St

Receiver	Description	Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	No. of events per 1hr Day	No. of events per 1hr Eve	No. of events per 1hr Night	Duration per event	Distance (m)	Barrier (height (m)) No	Barrier screening dB	Building TL or shield dB	Topo screening dB	Dist atten. @-6dB/dd	LAeq adj.,1hr ext. dB(A) Day	LAeq adj.,1hr int. dB(A) Day	LAeq adj.,1hr ext. dB(A) Eve	LAeq adj.,1hr int. dB(A) Eve	LAeq adj.,1hr ext. dB(A) Night	LAeq adj.,1hr int. dB(A) Night	LA10 adj.,1hr ext. dB(A) Day	LA10 adj.,1hr int. dB(A) Day	LA10 adj.,1hr ext. dB(A) Eve	LA10 adj.,1hr int. dB(A) Eve	LA10 adj.,1hr ext. dB(A) Night	LA10 adj.,1hr int. dB(A) Night	LA1 adj.,1hr ext. dB(A) Day	LA1 adj.,1hr int. dB(A) Day	LA1 adj.,1hr ext. dB(A) Eve	LA1 adj.,1hr int. dB(A) Eve	LA1 adj.,1hr ext. dB(A) Night	LA1 adj.,1hr int. dB(A) Night	Amenity LAeq Compliance: Day / eve	Amenity LAeq Compliance: Day / eve indoor	Amenity LAeq Compliance: Night indoor	LA10 Compliance: Day / eve	LA10 Compliance: Day / eve indoor	LA10 Compliance: Night indoor	LA1 Compliance: Day / eve	LA1 Compliance: Day / eve indoor	LA1 Compliance: Night indoor
	Criteria																																50	35	30	55	40	35	65	45	40
1	Car door closure	75	2	77	20	20	4	2	254					-48	8		8		1									14	4	14	4			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car passby	69		69	20	20	4	15	254					-48	10		10		3									15	5	15	5	15	5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car start	74	2	76	20	20	4	2	254					-48	7		7											13	3	13	3			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	4			900	230			-29		-47	19	9					20	10						25	15					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Dog kennel 38 dogs (eve)	90	2	92		4		900	230			-29		-47			15	5					1							6				n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			4	900	230			-29		-47					9						1						6		n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	4			900	247			-7		-48	39	29					40	30						45	35					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 2	92		92	4			900	238			-7		-48	37	27					38	28						43	33					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 3	92	2	94	4			900	232			-7		-47	39	29					40	30						45	35					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 4	92		92	4			900	215			-7		-47	38	28					39	29						44	34					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Total														44	34	18	8	14	4	45	35						50	40	20	10	17	7	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
	Criteria																																50	35	30	55	40	35	65	45	40
2	Car door closure	75	2	77	20	20	4	2	206					-46	10		10		3									16	6	16	6			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car passby	69		69	20	20	4	15	206					-46	12	2	12	2	5									17	7	17	7	17	7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car start	74	2	76	20	20	4	2	206					-46	10		10		3									16	6	16	6			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	4			900	226			-29		-47	20	10					21	11						26	16					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Dog kennel 38 dogs (eve)	90	2	92		4		900	226			-29		-47			16	6					1							6				n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			4	900	226			-29		-47					10						1						6		n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	4			900	224			-7		-47	40	30					41	31						46	36					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 2	92		92	4			900	232			-7		-47	38	28					39	29						44	34					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 3	92	2	94	4			900	240			-7		-48	39	29					40	30						45	35					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 4	92		92	4			900	255	2	-10			-48	34	24					35	25						40	30					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Total														44	34	19	9	15	5	45	35						50	40	22	12	18	8	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
	Criteria																																50	35	30	55	40	35	65	45	40
3	Car door closure	75	2	77	20	20	4	2	296					-50	7		7											13	3	13	3			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car passby	69		69	20	20	4	15	296					-49	9		9		2									14	4	14	4	14	4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car start	74	2	76	20	20	4	2	296					-49	7		7											13	3	13	3			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	4			900	275			-29		-49	18	8					19	9						24	14					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Dog kennel 38 dogs (eve)	90	2	92		4		900	275			-29		-49			14	4					1							6				n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			4	900	275			-29		-49					8						1						6		n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	4			900	290			-10		-49	35	25					36	26						41	31					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 2	92		92	4			900	290			-10		-49	33	23					34	24						39	29					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 3	92	2	94	4			900	290			-10		-49	35	25					36	26						41	31					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 4	92		92	4			900	285	2	-10			-49	33	23					34	24						39	29					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Total														40	30	17	7	13	3	41	31						46	36	19	9	16	6	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

*Correction due to tonality and impulsiveness as per AS1055:1997.

Table 8: Acoustic Quality Objective Noise Levels, 1 hour – Receivers 4-7

Receivers
1. 52 Ramsey Rd
2. Plantation Resort, 1 Captain Cook Highway.
3. 5903 Captain Cook Highway
4. Caretaker 10-12 Teamsters Cl.
5. Commercial Teamster Cl
6. Caretakers 9-11 Teamsters Cl.
7. Commercial Owen St

Receiver	Description	Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	No. of events per 1hr Day	No. of events per 1hr Eve	No. of events per 1hr Night	Duration per event	Distance (m)	Barrier (height (m)	Barrier screening dB	Building TL or shield dB	Topo screening dB	Dist atten. @ -6dB/dd	LAeq adj.,1hr ext. dB(A) Day	LAeq adj.,1hr int. dB(A) Day	LAeq adj.,1hr ext. dB(A) Eve	LAeq adj.,1hr int. dB(A) Eve	LAeq adj.,1hr ext. dB(A) Night	LAeq adj.,1hr int. dB(A) Night	LA10 adj.,1hr ext. dB(A) Day	LA10 adj.,1hr int. dB(A) Day	LA10 adj.,1hr ext. dB(A) Eve	LA10 adj.,1hr int. dB(A) Eve	LA10 adj.,1hr ext. dB(A) Night	LA10 adj.,1hr int. dB(A) Night	LA1 adj.,1hr ext. dB(A) Day	LA1 adj.,1hr int. dB(A) Day	LA1 adj.,1hr ext. dB(A) Eve	LA1 adj.,1hr int. dB(A) Eve	LA1 adj.,1hr ext. dB(A) Night	LA1 adj.,1hr int. dB(A) Night	Amenity LAeq Compliance Day / eve	Amenity LAeq Compliance Day / eve indoor	Amenity LAeq Compliance Night indoor	LA10 Compliance Day / eve	LA10 Compliance Day / eve indoor	LA10 Compliance Night indoor	LA1 Compliance Day / eve	LA1 Compliance Day / eve indoor	LA1 Compliance Night indoor
	Criteria																																	50	35	30	55	40	35	65	45	40
4	Car door closure	75	2	77	20	20	4	2	22		-5			-27	25	5	25	5	18	8								31	11	31	11					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car passby	69		69	20	20	4	15	26		-5			-28	25	5	25	5	18	8								30	10	30	20	30	20	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car start	74	2	76	20	20	4	2	22		-5			-27	25	5	25	5	18	8								31	11	31	21			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	4			900	24			-29		-28	39	19					40	20						45	25					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Dog kennel 38 dogs (eve)	90	2	92		4		900	24			-29		-28			35	15					1						6				n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			4	900	24			-29		-28					29	19					1					6		n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	4			900	19		-20		-5	-26	43	23					44	24						49	29					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 2	92		92	4			900	14		-20		-5	-23	44	24					45	25						50	30					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 3	92	2	94	4			900	14		-20		-5	-23	46	26					47	27						52	32					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 4	92		92	4			900	30		-20		-5	-30	37	17					38	18						43	23					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Total														50	30	36	16	30	20	51	31						56	36	35	15	30	20	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Criteria																																		45							
5	Car door closure	75	2	77	20	20	4	2	38					-32	25	5	25	5	18	8								31	11	31	11			n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Car passby	69		69	20	20	4	15	38					-32	27	7	27	7	20	10								32	12	32	22	32	22	n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Car start	74	2	76	20	20	4	2	38					-32	25	5	25	5	18	8								31	11	31	21			n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Dog kennel 38 dogs (day)	94	2	96	4			900	56			-29		-35	32	12					33	13						38	18					n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		4		900	56			-29		-35			28	8					1						6				n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Dog kennel 38 dogs (night)	84	2	86			4	900	56			-29		-35					22	12					1					6		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	2 Dogs, Dog run 1	92	2	94	4			900	53		-12			-34	47	27					48	28						53	33					n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	2 Dogs, Dog run 2	92		92	4			900	62		-12			-36	44	24					45	25						50	30					n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	4			900	69		-12			-37	45	25					46	26						51	31					n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	2 Dogs, Dog run 4	92		92	4			900	89			-15		-39	38	18					39	19						44	24					n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Total														51	31	32	12	26	16	52	32						57	37	36	16	32	22	n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Criteria																																	50	35	30	55	40	35	65	45	40
6	Car door closure	75	2	77	20	20	4	2	36					-32	25	5	25	5	18	8								31	11	31	11			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car passby	69		69	20	20	4	15	32					-30	28	8	28	8	21	11								33	13	33	23	33	23	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Car start	74	2	76	20	20	4	2	36					-31	25	5	25	5	18	8								31	11	31	21			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	4			900	65			-29		-36	31	11					32	12						37	17					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Dog kennel 38 dogs (eve)	90	2	92		4		900	65			-29		-36			27	7					1						6				n/a	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			4	900	65			-29		-36					21	11					1					6		n/a	n/a	n/a	n/a	n/a	Yes	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	4			900	54		-14			-35	45	25					46	26						51	31					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 2	92		92	4			900	63		-14			-36	42	22					43	23						48	28					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 3	92	2	94	4			900	71		-14			-37	43	23					44	24						49	29					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	2 Dogs, Dog run 4	92		92	4			900	91			-10		-39	43	23					44	24						49	29					Yes	Yes	n/a	Yes	Yes	n/a	Yes	Yes	n/a
	Total														49	29	33	13	26	16	50	30						55	35	37	17	33	23	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Criteria																																		45							
7	Car door closure	75	2	77	20	20	4	2	83					-39	18		18		11	1								24	4	24	4			n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Car passby	69		69	20	20	4	15	83					-38	20		20		13	3								25	5	25	15	25	15	n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Car start	74	2	76	20	20	4	2	83					-38	18		18		11	1								24	4	24	14			n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Dog kennel 38 dogs (day)	94	2	96	4			900	52			-29		-34	33	13					34	14						39	19					n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		4		900	52			-29		-34			29	9					1						6				n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Dog kennel 38 dogs (night)	84	2	86			4	900	52			-29		-34					23	13					1					6		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	2 Dogs, Dog run 1	92	2	94	4			900	76		-10			-38	46	26					47	27						52	32					n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	2 Dogs, Dog run 2	92		92	4			900	68		-10			-37	45	25					46	26						51	31					n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	4			900	59		-10			-35	48	28					49	29						54	34					n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	2 Dogs, Dog run 4	92		92	4			900	41		-10			-32	50	30					51	31						56	36					n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Total														54	34	30	10	24	14	55	35						60	40	29	9	25	15	n/a	Yes	n/a	n/a	n/a	n/a	n/a	n/a	n/a

*Correction due to tonality and impulsiveness as per AS1055:1997.

Compliance is predicted with the Acoustic Quality Objectives for all activities associated with the development provided the recommendations in Section 8 are implemented.

Based on the existing industrial environment, the surrounding ambient noise levels from offsite activities were found to be approximately 49-52dB(A), as detailed in Section 5.2. Therefore it is highly likely that caretaker residence's will close windows and doors and utilise air-conditioning or mechanical ventilation during the day/evening time period, hence a 20dB reduction from outside to inside was applied to Receivers 4 & 6 as allowed for in Table 7 of the Ecoaccess Guideline. As this 20dB(A) reduction is only relevant for the day/evening time period, the standard 10dB(A) reduction was applied for the night time period.

As the surrounding commercial properties are also air conditioned, the 20dB reduction from outside to inside was also applied to Receivers 5 & 7.

7.1.2 Background Creep

The noise source levels and predicted levels at the residential receiver locations (Receivers 1-4 & 6) are shown as follows;

Table 9: Background Creep Noise Levels, 15min

Receivers
1. 52 Ramsey Rd
2. Plantation Resort, 1 Captain Cook Highway.
3. 5903 Captain Cook Highway
4. Caretaker 10-12 Teamsters Cl.
5. Commercial Teamster Cl
6. Caretakers 9-11 Teamsters Cl.
7. Commercial Owen St

Receiver	Description	Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	No. of events per 15 min Day	No. of events per 15 min Eve	No. of events per 15 min Night	Duration per event	Distance (m)	Barrier (height (m)) No	Barrier screening dB	Building TL or shield dB	Topo screening/absorption dB	Dist atten. @-6dB/dd	LAeq adj, T ext. dB(A) Day	LAeq adj, T ext. dB(A) Eve	LAeq adj, T ext. dB(A) Night	LAeq 15 min Compliance Day	Eve	Night
1	Criteria																	54	43	35
	Car door closure	75	2	77	5	5	1	2	254					-49	8	8	1	Yes	Yes	Yes
	Car passby	69		69	5	5	1	15	254					-48	10	10	3	Yes	Yes	Yes
	Car start	74	2	76	5	5	1	2	254					-49	7	7		Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	1			900	230			-20		-48	28			Yes	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		1		900	230			-20		-48		24		n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			1	900	230			-20		-48			18	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	1			900	247			-7		-48	39			Yes	n/a	n/a
	2 Dogs, Dog run 2	92		92	1			900	238			-7		-48	37			Yes	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	1			900	232			-7		-48	39			Yes	n/a	n/a
	2 Dogs, Dog run 4	92		92	1			900	215			-7		-47	38			Yes	n/a	n/a
	Total														44	25	19	**Yes**	**Yes**	**Yes**
2	Criteria																	54	43	35
	Car door closure	75	2	77	5	5	1	2	206					-47	10	10	3	Yes	Yes	Yes
	Car passby	69		69	5	5	1	15	206					-46	12	12	5	Yes	Yes	Yes
	Car start	74	2	76	5	5	1	2	206					-46	10	10	3	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	1			900	226			-20		-47	29			Yes	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		1		900	226			-20		-47		25		n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			1	900	226			-20		-47			19	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	1			900	224			-7		-47	40			Yes	n/a	n/a
	2 Dogs, Dog run 2	92		92	1			900	232			-7		-47	38			Yes	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	1			900	240			-7		-48	39			Yes	n/a	n/a
	2 Dogs, Dog run 4	92		92	1			900	255	2	-10			-48	34			Yes	n/a	n/a
	Total														44	26	20	**Yes**	**Yes**	**Yes**
3	Criteria																	54	43	35
	Car door closure	75	2	77	5	5	1	2	296					-50	7	7		Yes	Yes	Yes
	Car passby	69		69	5	5	1	15	296					-49	9	9	2	Yes	Yes	Yes
	Car start	74	2	76	5	5	1	2	296					-49	7	7		Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	1			900	275			-20		-49	27			Yes	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		1		900	275			-20		-49		23		n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			1	900	275			-20		-49			17	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	1			900	290			-10		-49	35			Yes	n/a	n/a
	2 Dogs, Dog run 2	92		92	1			900	290			-10		-49	33			Yes	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	1			900	290			-10		-49	35			Yes	n/a	n/a
	2 Dogs, Dog run 4	92		92	1			900	285	2	-10			-49	33			Yes	n/a	n/a
	Total														40	24	18	**Yes**	**Yes**	**Yes**
4	Criteria																	54	43	35
	Car door closure	75	2	77	5	5	1	2	22		-5			-27	25	25	18	Yes	Yes	Yes
	Car passby	69		69	5	5	1	15	26		-5			-28	25	25	18	Yes	Yes	Yes
	Car start	74	2	76	5	5	1	2	22		-5			-27	25	25	18	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	1			900	24			-25		-28	43			Yes	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		1		900	24			-25		-28		39		n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			1	900	24			-25		-28			33	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	1			900	19		-20		-5	-26	42			Yes	n/a	n/a
	2 Dogs, Dog run 2	92		92	1			900	14		-20		-5	-23	44			Yes	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	1			900	14		-20		-5	-23	46			Yes	n/a	n/a
	2 Dogs, Dog run 4	92		92	1			900	30		-20		-5	-30	37			Yes	n/a	n/a
	Total														50	40	34	**Yes**	**Yes**	**Yes**
6	Criteria																	54	43	35
	Car door closure	75	2	77	5	5	1	2	36					-32	25	25	18	Yes	Yes	Yes
	Car passby	69		69	5	5	1	15	32					-30	28	28	21	Yes	Yes	Yes
	Car start	74	2	76	5	5	1	2	36					-31	25	25	18	Yes	Yes	Yes
	Dog kennel 38 dogs (day)	94	2	96	1			900	65			-20		-36	40			Yes	n/a	n/a
	Dog kennel 38 dogs (eve)	90	2	92		1		900	65			-20		-36		36		n/a	Yes	n/a
	Dog kennel 38 dogs (night)	84	2	86			1	900	65			-20		-36			30	n/a	n/a	Yes
	2 Dogs, Dog run 1	92	2	94	1			900	54		-14			-35	44			Yes	n/a	n/a
	2 Dogs, Dog run 2	92		92	1			900	63		-14			-36	42			Yes	n/a	n/a
	2 Dogs, Dog run 3	92	2	94	1			900	71		-14			-37	43			Yes	n/a	n/a
	2 Dogs, Dog run 4	92		92	1			900	91			-10		-39	43			Yes	n/a	n/a
	Total														50	37	31	**Yes**	**Yes**	**Yes**

*Correction due to tonality and impulsiveness as per AS1055:1997.

Compliance is predicted with the Background Creep criteria for all activities associated with the development provided the recommendations in Section 8 are implemented.

7.2 Measured Offsite Activity Noise Levels

The internal acoustic quality objectives for proposed onsite caretakers residence within a habitable room is Leq 35 dB(A) during the daytime and Leq 30 dB(A) during the night time. Based on the measured noise levels, a maximum noise reduction (from outside to inside) of 22 dB(A) would be required to satisfy the criteria, refer to Section 8 for further recommendations.

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8. Recommendations

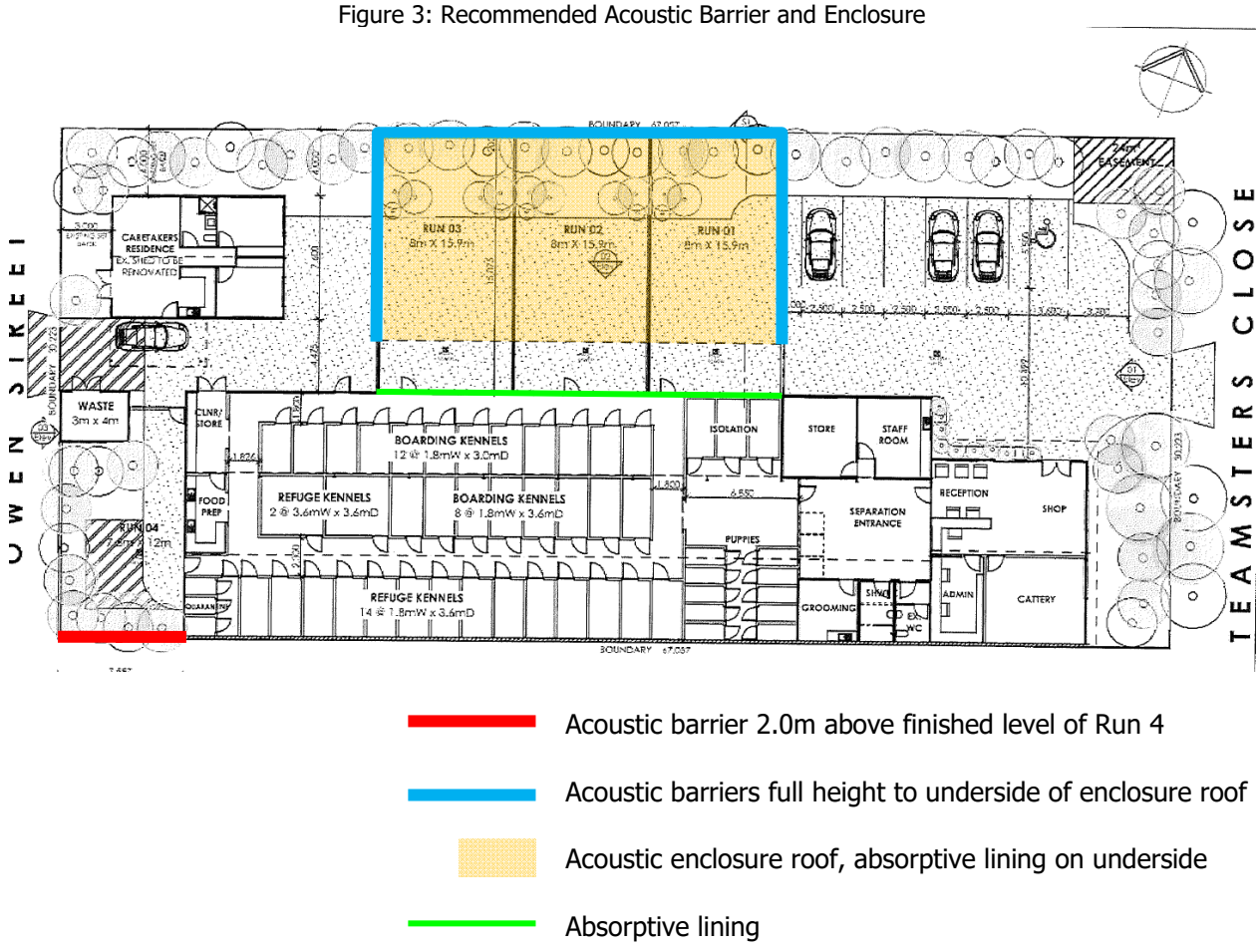
8.1 Acoustic Barrier/Enclosure and Absorptive Lining

To reduce noise from the external dog runs at sensitive receivers, acoustic barrier and partial enclosures are recommended to be constructed along the southern and northern boundaries nominated in Figure 3.

The acoustic barrier and roof shall be constructed using materials that achieve a minimum surface density of 10kg/m^2. Suitable materials may include lapped 19mm thick pine palings with 40% overlap, 9mm fibre cement sheet, masonry, aerated concrete, glass or other materials which satisfy the minimum surface density requirement. The barrier and enclosure should be free of gaps and holes.

Absorptive linings are recommended to be installed on the underside of the enclosure roof and along part of the northern facade of the existing shed, as shown in Figure 3. The lining on the shed façade should commence approximately 750mm above ground level and continue to the height of the enclosure roof. The lining is to use 50mm thick Autex AAB32-50 insulation with a density of 32kg/m^3 faced with perforated FC backed with a minimum open are of 11%. The lining to the underside of the roof will cover the entire area (light fitting's exempt) and shall utilise foil faced insulation similar to 50mm thick Anticon insulation or Autex AAB32-50.

Figure 3: Recommended Acoustic Barrier and Enclosure



Acoustic barrier 2.0m above finished level of Run 4

Acoustic barriers full height to underside of enclosure roof

Acoustic enclosure roof, absorptive lining on underside

Absorptive lining

8.2 Management Controls

The assessment has demonstrated that onsite activities are predicted to comply with the criteria in Section 6 on the condition the external dog runs are limited to the daytime period (8am-4pm), 7 days per week.

8.3 Building Treatments

8.3.1 Caretaker's Residence

To achieve a suitable level of internal amenity for offsite commercial activity noise, we recommend the following:

- The external facade and roof shall achieve minimum Rw 35.
- External windows shall require minimum thickness 4mm float with acoustic seals (minimum Rw 27)
- External sliding doors shall require minimum thickness 4mm toughened glazing with acoustic seals (minimum Rw 27).

A lightweight construction option for the external walls is as follows;

- Rw 35: 6mm FC externally with 70mm stud and 75mm glasswool batts (14kg/m³) in the cavity with 13mm plasterboard internally.

For the roof system, we recommend construction as follows;

- Rw 35: Metal sheet roof with Bradford Anticon 55 insulation, 75mm glasswool Batts in the cavity with 10mm plasterboard internally, maintain a minimum cavity of 100mm.

Penetrations shall not reduce the overall acoustic performance of the installed façade/roof/ceiling systems.

8.3.2 Boarding Kennel Shed

To achieve a suitable level of amenity for onsite activity to offsite receivers, we recommend the upgrading the boarding kennel shed as follows:

- If not already existing, upgrade the external sheet metal walls and roof to include an internal lining spaced a minimum of 75mm of the sheet metal using 6mm FC with 75mm thick 14kg/m^3 polyester insulation in the resulting wall cavity.
- All access doors of the boarding kennel shed are required to be a minimum 40mm solid core doors with full perimeter and drop seals with the gap at the base of the doors to be a maximum of 5mm.
- Upgrade all façade glazing of the boarding kennel shed to a minimum thickness of 10.38 laminate glass with acoustic seals (e.g. Q-lon or an equivalent product, mohair seals are not acceptable), the installed system shall achieve a minimum Rw 34.

8.3.3 Alternative Ventilation

We recommend that the animal shelter shed and all habitable rooms of the caretaker's residence have the provision for an alternative ventilation system similar to air-conditioning or mechanical ventilation to allow windows and doors to be closed.

8.4 Onsite Mechanical Plant

No information regarding mechanical services was available at the time of the assessment. We recommend that any new mechanical plant is designed to comply with the criteria as nominated in 6.1.2. We recommend an assessment by qualified acoustic consultant be conducted prior to installation to determine any requirements for acoustic treatments to mechanical plant.

9. Conclusion

An environmental noise assessment was conducted for the proposed animal shelter located at 6-8 Teamsters Close, Craiglie. The assessment has considered all onsite activities associated with the proposal to sensitive receivers in the vicinity of the site, on the condition the recommendations detailed in Section 8 are implemented, compliance is predicted with assessment criteria detailed in Section 6.

If you should have any queries please do not hesitate to contact us.

Report prepared by

GREG PEARCE B.Eng (Mech)
Director

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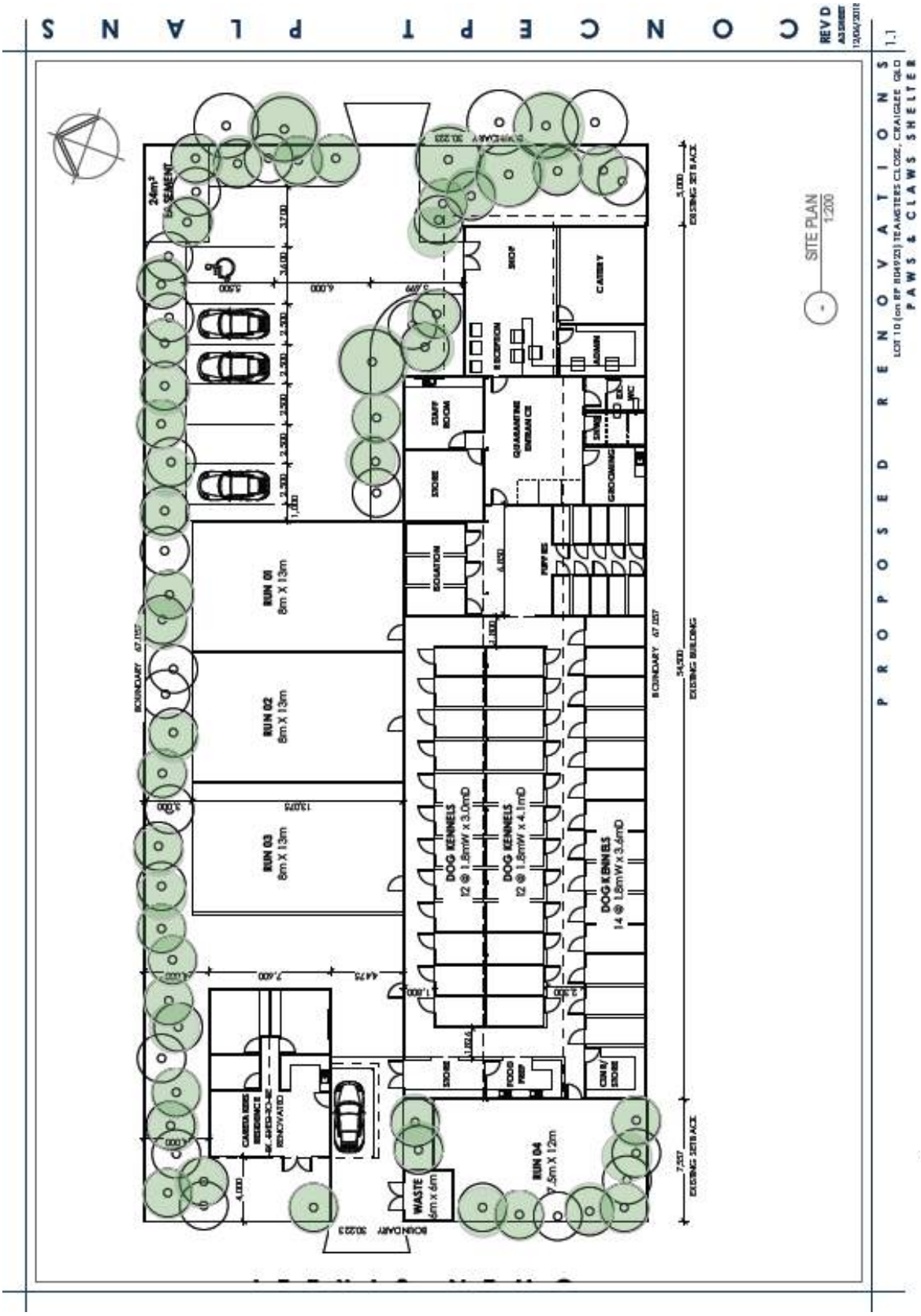
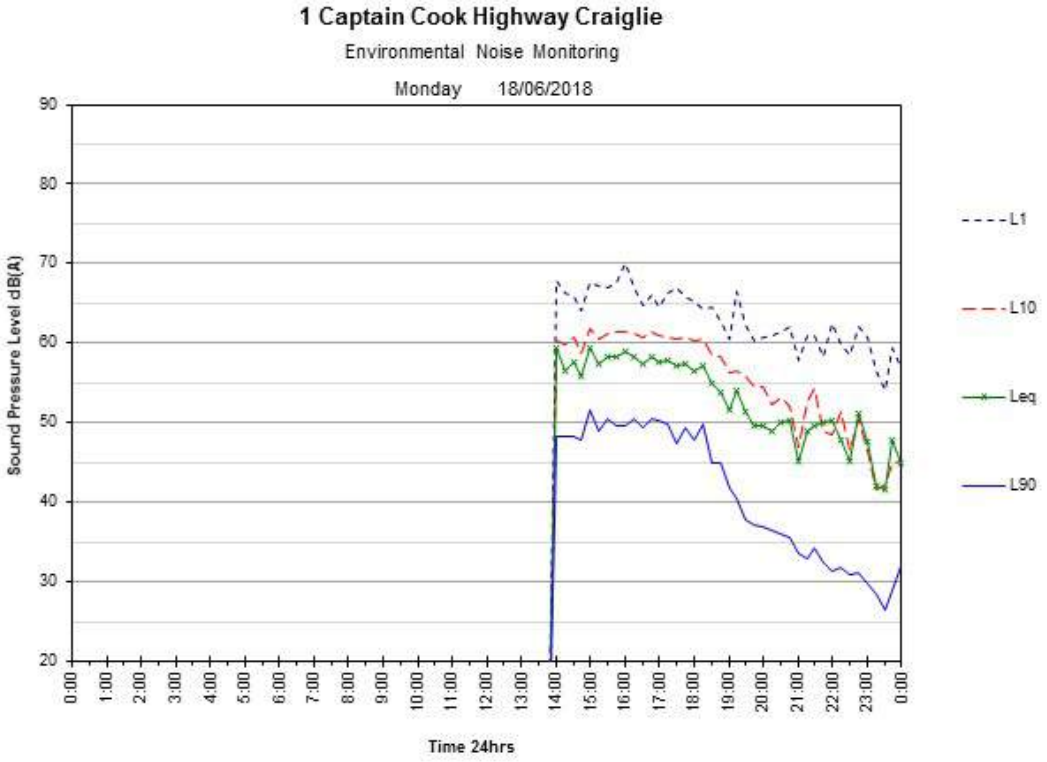
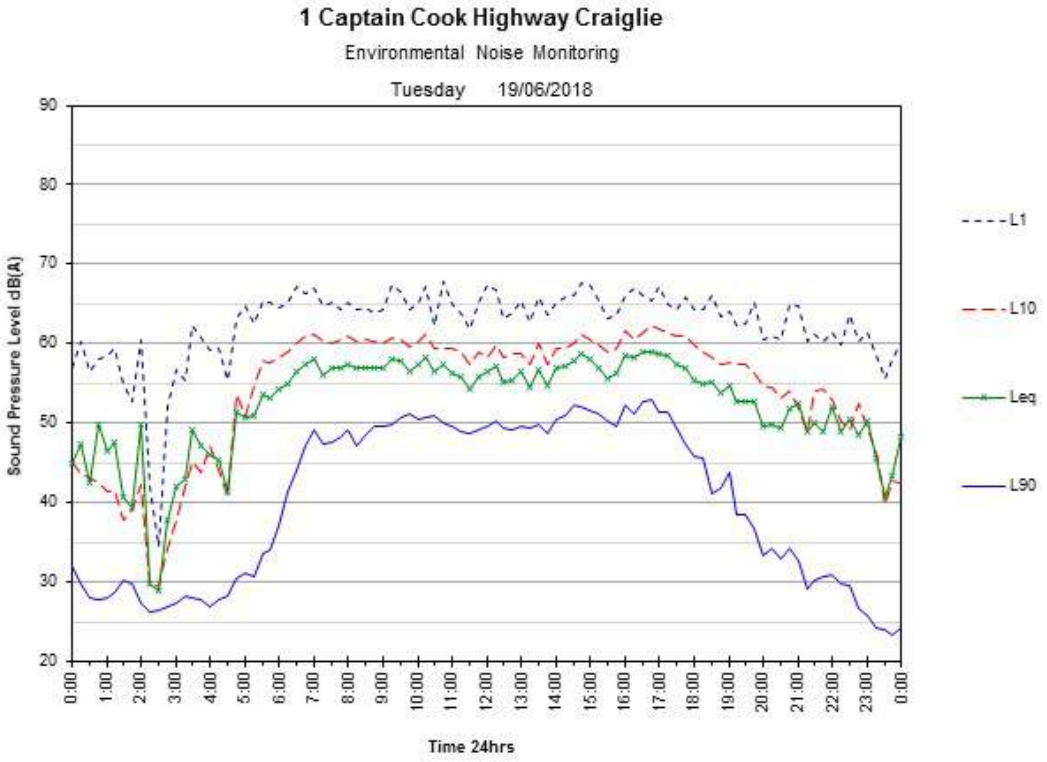
10. Appendices

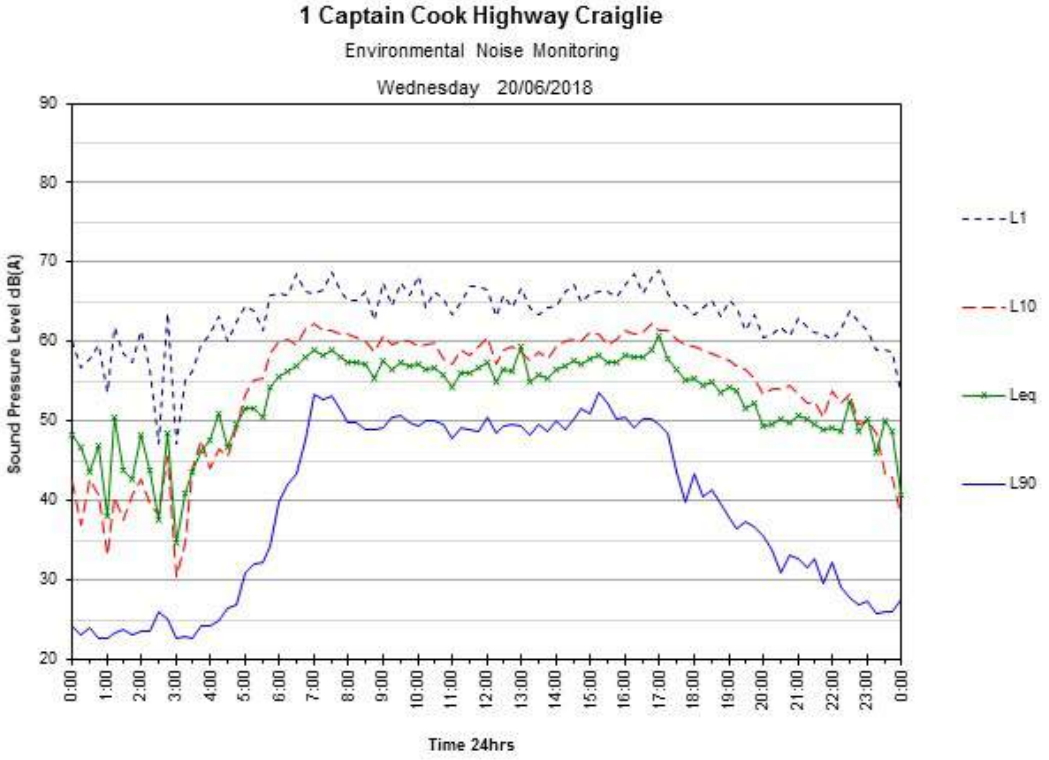
10.1 Development Plans



10.2 Noise Monitoring Charts



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Environmental Noise Monitoring
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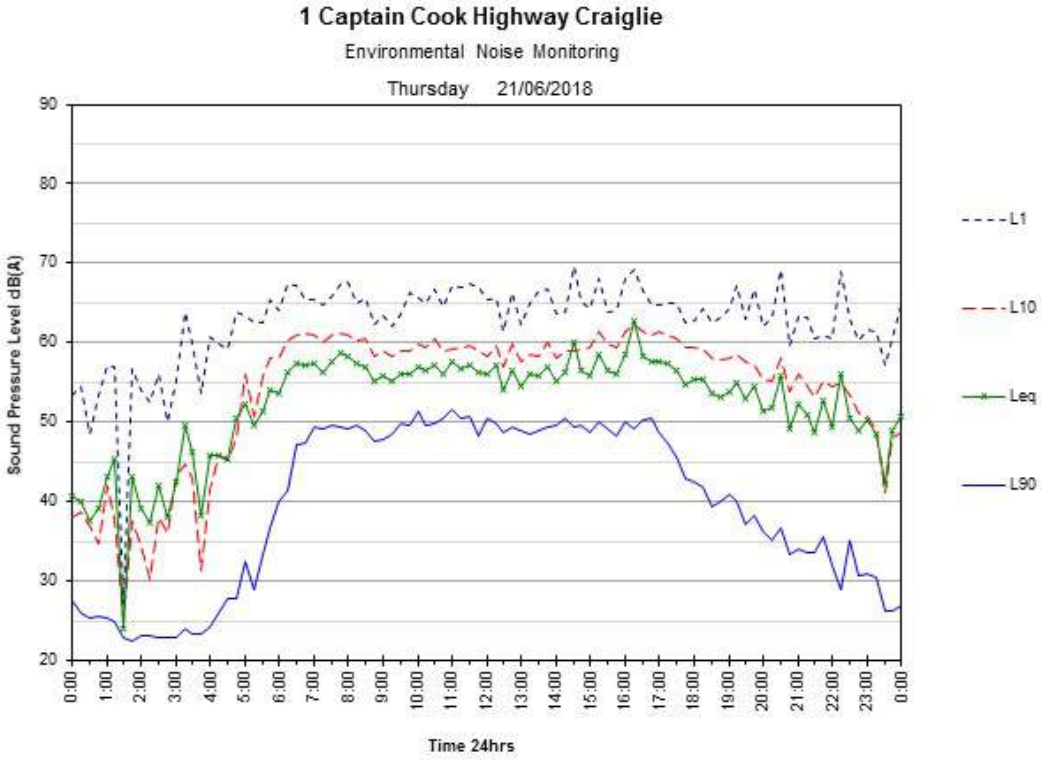
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
Leq
L90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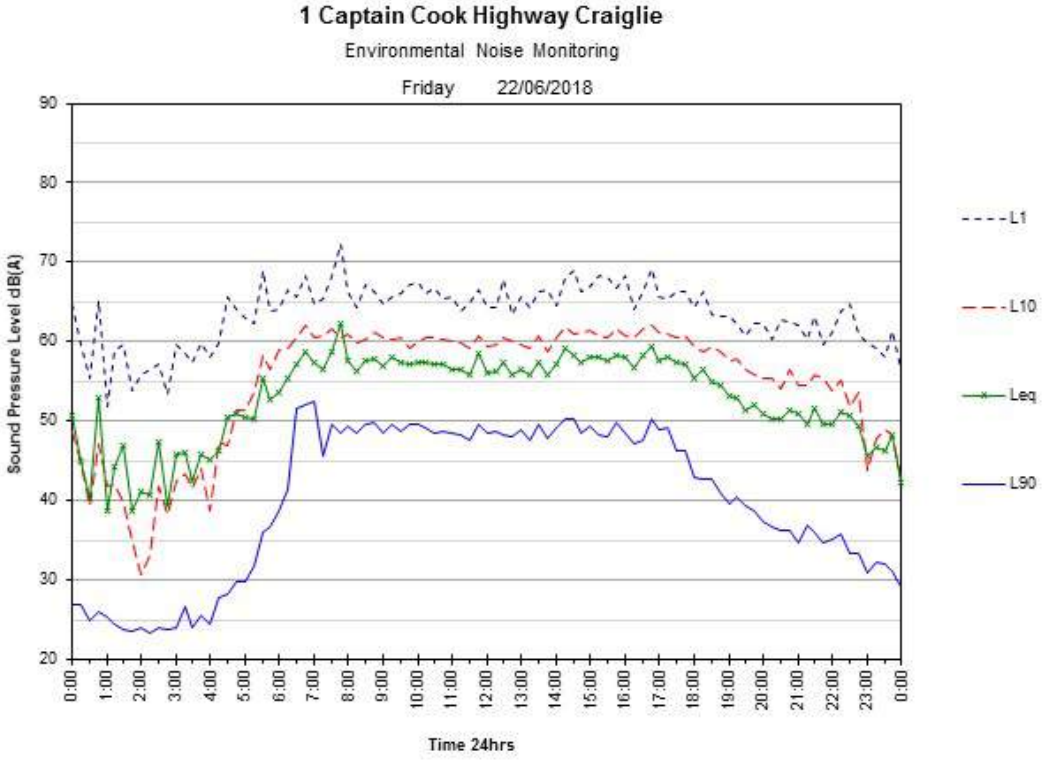
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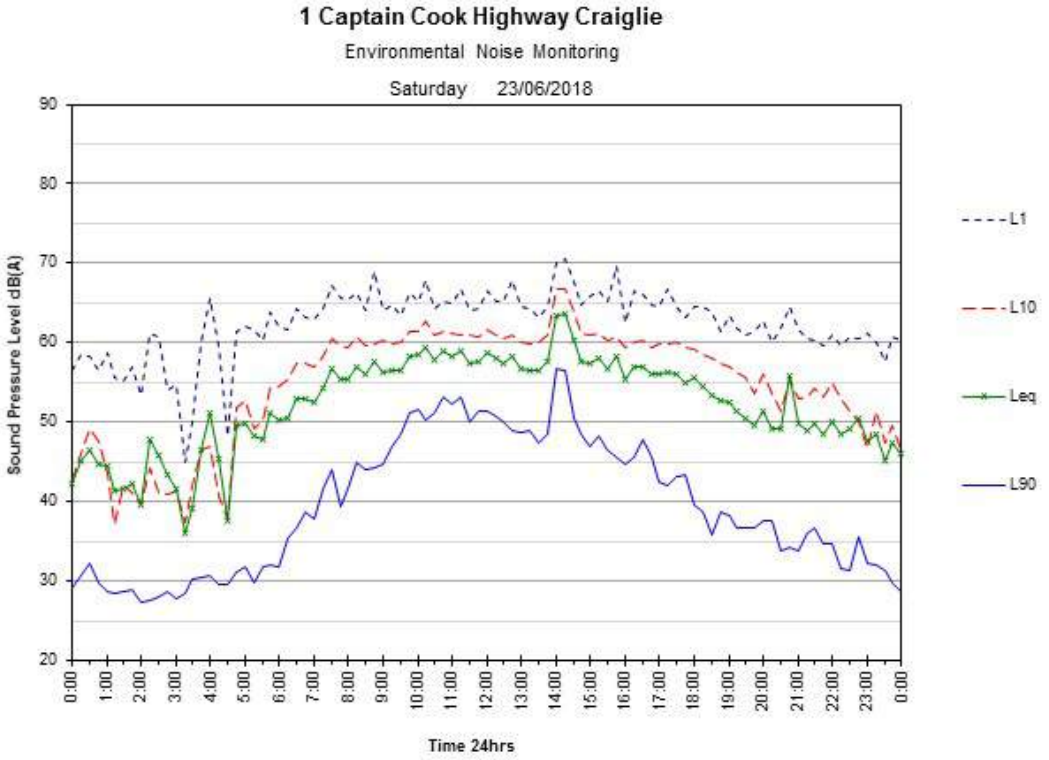
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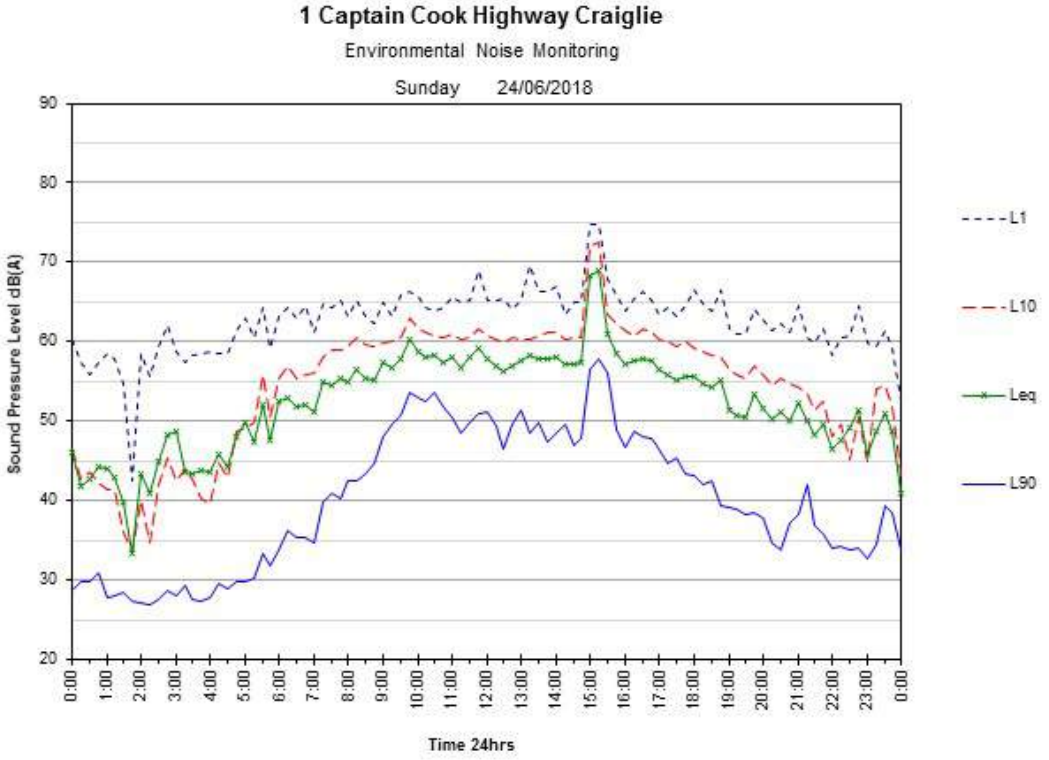
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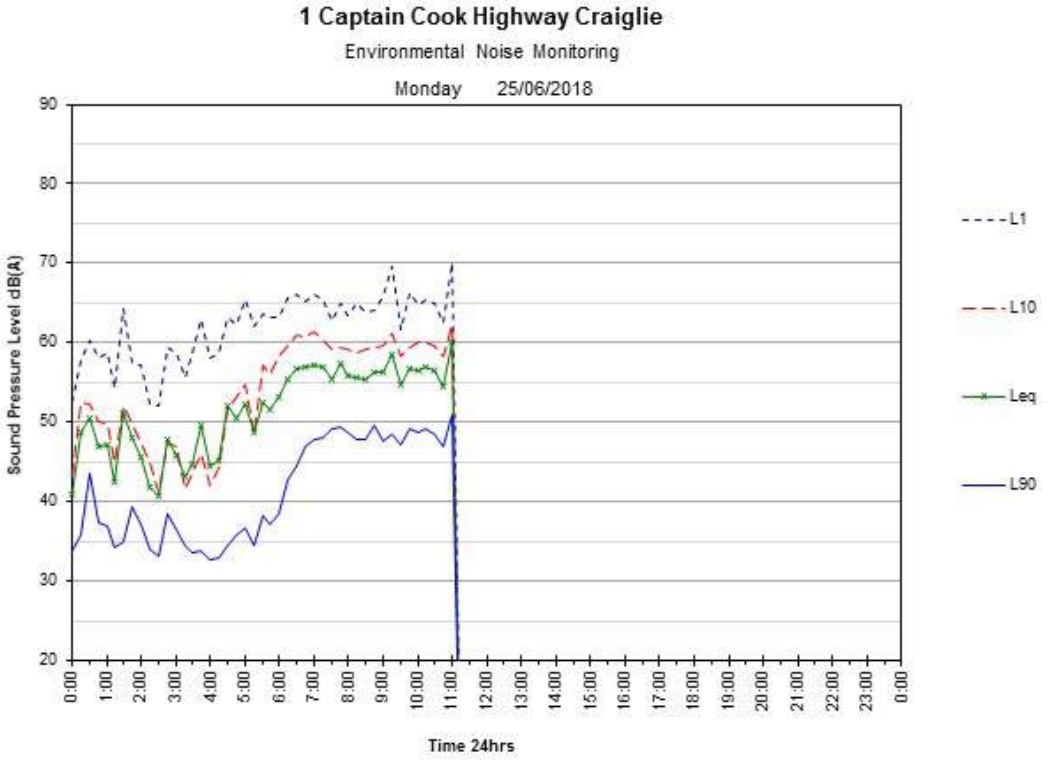
1 Captain Cook Highway Craiglie
Environmental Noise Monitoring
Monday 25/06/2018
Sound Pressure Level dB(A)
Time 24hrs
L1
L10
Leq
L90

acousticworks)))

30 August 2018
Reference: *2018205 L03A 6-8 Teamsters Close Craiglie Supporting Information*

Neil Beck
Douglas Shire Council
64-66 Front Street
Mossman

RE: 6-8 Teamsters Close, Craiglie ENV – Supporting Information

The following letter is in response to Douglas Shire Council's request for supporting information in relation to the development application for the proposed animal shelter located at 6-8 Teamsters Close, Craiglie. The purpose of the document is to provide clarification in relation to the proposal and provide clarification in relation to noise issues raised by the complainants in support of the current application.

Background Information

From discussion with council officers and the applicants for the development approval, the previous animal shelter resulted in numerous complaints regard the operation of the centre due to dogs barking, eventually resulting in the closure of the shelter. Discussions regarding the previous centre clearly indicate that noise issues arose due to the lack of acoustic design for the attenuation of dogs barking to sensitive receivers including the fact the shelter was not designed to maintain the acoustic amenity within the area.

Acoustic Works has been involved in the assessment and design of many dog kennels over the past years, from experience we know that unless specific criteria and detailed assessment is undertaken, most kennels are simply designed to fail. This results from the operator not considering the amenity of the occupants in the area. For an animal shelter or dog kennel to be successful, they must operate in a manner that minimises noise impacts to sensitive receiver in the area including appropriate acoustic design as required.

Criteria

Currently Douglas Shire Council does not have specific noise criteria relating to the operation of dog kennels or shelters, this is not unusual for smaller council who simply don't have the expertise, funding or the resources of large councils to implement such policies. Douglas Shire Council realising this has been proactive in utilising state planning policies, the purpose of the state policies is to provide criteria to maintain the acoustic amenity and assessment requirements. It should also be noted that a number of Councils including Cairns, Townville, Gold Coast to name a few have implemented the same policy due to the high level assessment requirements required. Furthermore most legal cases refer to the State Policies to set the minimum noise criteria in regards to disputes.

Referenced in Council's planning scheme is the *Environmental Protection (Noise) Policy 2008,* the policy provides specific criteria for the assessment of noise in relation to all sensitive receivers including industrial, commercial and residential. The EPP (Noise) 2008 has 2 parts that consider not only the existing ambient noise levels, but specific internal assessment requirements to guarantee a level acoustic amenity. In addition the document reference other state policies which outlines how the assessment process will take place, measurement procedures and allows standards for noise to be put in place if ever complaints are received.

Acoustic Assessment

Acoustic Works was engaged by the Homeless Animal Society and Boarding Kennels Inc. to conduct an environmental noise assessment of a proposed animal shelter located at 6-8 Teamsters Close, Craiglie. Understanding that this shelter was a major issues of contention for occupant of the area, the detailed assessment consider not only residential receiver but the existing business and caretakers residences in the area. The assessment was based on noise monitoring, EPP (Noise) 2008 internal and external criteria to determine compliance of the operation.

The assessment determined that unless specific design upgrades were implemented, the shelter would exceed the EPP (Noise) 2008 criteria at sensitive receivers. Once this was determined, the buildings and dog runs were acoustically designed to allow compliant operation and to maintain a reasonable level of amenity in the area. The first part was consideration of the dog runs based on the dogs barking continually, although unlikely to occur the worst case must be consider with barriers and lined enclosure designed to reduce noise impacts to compliant levels.

Hours were limited for the dog runs with the existing buildings for the kennel significantly upgraded to maintain the acoustic amenity during the evening and night periods. The full recommendations are provided in the Acoustic Works (ref: *2018205 R01F 6-8 Teamsters Close Craiglie ENV)* in section 8 of the report which also includes specific upgrades to walls, roof, doors and glazing.

Clarification of Noise Impacts

Acoustic Works was informed of major concerns of occupants in the industrial area, specifically noise due to the dogs barking impeding the ability to conduct business and cause annoyance. To put this into perspective we provide the following points:

- At the nearest location within the industrial estate from all dogs barking, noise impacts are predicted to be 15dB(A) below the levels of normal conversation outside.
- All noise impacts are predicted to occur at levels of less that 30dB(A) at the nearest internal commercial receiver locations, usually the background levels within office spaces are 35-45dB(A).
- The impact of dogs barking at the existing residential receivers at 52 Ramsey Road and The Plantation Resort during the evening and night time is predicted to be inaudible on the condition the recommendation in the acoustic report are implanted.

To provide perspective of the worst possible noise impacts from the kennel, a car passby is 75dB(A), conversation is 65dB(A) and a truck idling is 84dB(A) with impacts from the shelter predicted to be 15dB(A) below.

Safeguards for Sensitvie Receviers

Obviously there are concerns that once the development is approved, the occupants of the industrial estate and residents in the area will have no rights, this couldn't be further from the truth. The purpose of the Development Approval is to establishment specific noise criteria and safeguards for the animal shelter including operation controls, any approval will set out the minimum requirements to be required to complied with. This will include complying with the recommendations of the acoustic report, the EPP (Noise) 2008 criteria at

sensitive receives (commercial, industrial and residential) and a final inspection to prove they have implemented all recommendations.

This is not the end of the process either; if noise complaints are received the shelter would be required to conduct a compliance noise assessment by an acoustic consultant to prove they comply, if they are found to exceed the criteria the issues would require rectification. Failure to comply with the assessment requirements could result in heavy fines and closure of the centre.

The Development Approval of the animal shelter is only the first step and establishes safeguards for future operation with a high level of consideration on the existing occupants of the area and their amenity. After the approval, further detailed design will be undertaken with certification to ensure the proposal has been constructed in accordance with all DA requirements.

We trust this information meets your current requirements. If you should have any further queries, please do not hesitate to contact us.

Yours faithfully,

GREG PEARCE B.Eng (Mech)
Director

acousticworks)))