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BOO BOO'S DOGGY DAY CARE

51 FURNISS ROAD, DARCH

NOISE LEVEL ASSESSMENT

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BOO BOO'S DOGGY DAY CARE

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1. INTRODUCTION

Boo Boo's Doggy Day Care (Katherine Corkhill) have commissioned Herring Storer Acoustics to carry out an acoustic assessment of the proposed Dog Day-care Centre located at 51 Furniss Road, Darch.

It is understood approval is being sought from the City of Wanneroo to operate the dog day care with a maximum of thirty dogs within the facility at any given time. The proposed hours of operations for day care facility are to be 0700 to 1800, Monday to Friday.

This report contains the results of noise levels calculated at neighbouring boundary locations for a thirty dog scenario.

Results from this assessment have been assessed for compliance against the *Environmental Protection (Noise) Regulations 1997* and will also be used for comparison against noise levels at the same locations, if future monitoring is required.

2. SUMMARY

The objective of this assessment was to establish noise levels attributable to the dog day care, particularly dogs barking within the facility and assess against the regulatory criteria.

The location of the dog day care centre has been carefully chosen for the following factors:

- Situated in an industrial zone area.
- The building and wall system surrounding the site are constructed of concrete, providing a suitable noise barrier for potential noise emissions.
- High existing noise level due to neighbouring industry.

Noise levels for periods of dog barking at the nearest industrial receiver has been calculated to be 55 dB(A) for a scenario of all dogs barking at the same time. This can be compared to the applicable regulatory criteria where noise emissions are not to exceed 80 dB(A) at the nearest industrial boundary. Hence compliance with the *Environmental Protection (Noise) Regulations 1997* is achieved at all times.

Noise levels for periods of dog barking at the worst case residential premise has been calculated to be 58 dB(A) for a scenario of all dogs barking at the same time. This can be compared to the applicable regulatory criteria where noise emissions are not to exceed 59 dB(A) at the nearest industrial boundary. Hence compliance with the *Environmental Protection (Noise) Regulations 1997* is achieved for the proposed hours of operation.

3. CRITERIA

The acoustic criteria are as required in the *Environmental Protection (Noise) Regulations 1997*. These regulations stipulate maximum allowable external noise levels determined by the calculation of an influencing factor, which is then added to the base levels shown in Table 3.1. The influencing factor is calculated for the usage of land within the two circles, having radii of 100m and 450m from the premises of concern.

TABLE 3.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Residential	0700 – 1900 hours Monday to Saturday	45 +IF	55 +IF	65 +IF
	0900 - 1900 hours Sunday and Public Holidays	40 +IF	50 +IF	65 +IF
	1900 – 2200 hours all days	40 +IF	50 +IF	65 +IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	35 +IF	45 +IF	55 +IF
Commercial	All hours	60	75	80
Industrial	All Hours	65	80	90

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

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

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

“modulation” means a variation in the emission of noise that –

- (a) is more than 3dB L_{A Fast} or is more than 3 dB L_{A Fast} in any one-third octave band;
- (b) is present for more at least 10% of the representative assessment period; and
- (c) is regular, cyclic and audible;

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

- (a) the A-weighted sound pressure level in any one-third octave band; and
- (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

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

If the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 3.2 below.

TABLE 3.2 - ADJUSTMENTS TO MEASURED LEVELS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

The applicable criteria for neighbouring industrial premises to the proposed site are “industry to industry”. Residential noise sensitive premises are located to the south of the proposed day care center. Confirmation of the zoning was determined through the City of Wanneroo Intramaps, Public Planning Scheme. Therefore, the influencing factor has been calculated as follows, with the Assigned Noise Level at the various times of the day as listed in Table 3.3.

From previous experience, well-managed dog centres such as this day care, have adequate practices in place which will limit noise emissions associated with dogs barking. This being the case, dog barking is restricted and is present for less than 10% of the time. Therefore, assessment against the L_{A1} criteria has been used for the purpose of this study as it represents the most realistic situation:

Industrial usage Inner Circle	5%
Industrial usage outer Circle	37%
Total	42 % (+4dB)

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Residential	0700 – 1900 hours Monday to Saturday	49	59	69
Commercial	All hours	60	75	80
Industrial	All Hours	65	80	90

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

See Appendix A for location map.

4. METHODOLOGY

Noise immissions¹ at the nearest neighbouring industrial premises, due to noise associated with the proposed dog day care facility, were modelled with the computer programme SoundPlan. Sound power levels used for the calculations are based on measured sound pressure levels of a medium sized dog (Labrador / Collie).

The modelling of noise levels has been based on noise sources and sound power levels shown in Table 4.1.

Table 4.1 – Sound Power Level - Noise Sources

Element name	Unit	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	Sum dB(A)
Medium Sized Dog Barking	dB	-	-	66	71	83	99	86	71	60	-	101
		-	-	68	70	96	88	83	73	60	-	
		-	-	72	80	92	81	81	72	59	-	

¹ Immissions – noise received at a source

Based on noise emissions² from the above dog barking, an operating scenario has been developed. This scenario represents period of worst case noise emissions for the day care operations. The scenario contains the maximum number of dogs to be housed at the facility. It allows for all dogs barking at the same time. It should be noted that this is an unlikely event as the dogs will be in constant supervision of a handler, which will limit any barking, particularly for prolonged periods. Hence, noise emissions from dogs barking needs to comply with the assigned L_{A1} assigned noise level. Information provided is that the dogs are to be kept inside the unit.

This is understood to be representative of the maximum noise levels associated with the proposed dog day care.

The following input data was used in the calculations:

- a) Locality plan, shown in Figure A1 in Appendix A;
- b) Sound Power Levels listed in Table 4.1.

Weather conditions for modelling were as stipulated in the Environmental Protection Authority's "Draft Guidance for Assessment of Environmental Factors No. 8 - Environmental Noise" and for the day and night periods are as listed in Table 4.2.

Table 4.2 – Weather Conditions

Condition	Day	Night
Temperature	20°C	15°C
Relative humidity	50%	50%
Pasquil Stability Class	E	F
Wind speed	4 m/s*	3 m/s*

* From sources, towards receivers.

5. RESULTS

Calculated results have been summarised for ease of reporting, with the single receiver locations shown in Table 5.1 below. The L_{A1} parameter has been used due to the intermittent nature of dogs barking.

Table 5.1 Calculate Noise Level Results dB(A)

Scenario	Description	Location	Calculated Noise Level, dB(A)
Dog Day Care Centre	Dogs Barking inside the facility	Ind A	43
		Ind B	45
		Ind C	43
		Lot 469	45
		Lot 470	46
		Lot 471	47
		Lot 472	48
		Lot 473	45
		Lot 474	44
		Lot 475	42

² Emissions – noise emanating from a source and / or location

6. ASSESSMENT

The applicable adjustments to the calculated noise levels, in accordance with the *Environmental Protection (Noise) Regulations 1997*, are listed in Table 6.1. Based on calculated noise levels relative to the measured background noise levels, at the nearest industrial premises, noise levels are not likely to contain “annoying” characteristics in accordance with the *Environmental Protection (Noise) Regulations 1997*. However, to be conservative, we have included a +10 dB(A) adjustment for impulsiveness.

Table 6.1 – Applicable Adjustments and Assessable Level of Noise Emissions, dB(A)

Receiver	Calculated Noise Level, dB(A)	Applicable Adjustments To Measured Noise Levels, dB(A)			Assessable Noise Level, dB(A)
		Where Noise Emission Is Not Music			
		Tonality	Modulation	Impulsiveness	
Ind A	43	-	-	+10	53
Ind B	45	-	-	+10	55
Ind C	43	-	-	+10	53
Lot 469	45	-	-	+10	55
Lot 470	46	-	-	+10	56
Lot 471	47	-	-	+10	57
Lot 472	48	-	-	+10	58
Lot 473	45	-	-	+10	55
Lot 474	44	-	-	+10	54
Lot 475	42	-	-	+10	52

Hence, Table 6.2 summarises the applicable Assigned Noise Levels, and assessable noise level emissions, for all scenarios considered.

Table 6.2 – Assessment of Noise Levels

Scenario	Receiver	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable L _{A1} Assigned Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
Dogs Barking Inside Facility	Ind A	53	Day	80	Complies
	Ind B	55			Complies
	Ind C	53			Complies
	Lot 469	55		59	Complies
	Lot 470	56			Complies
	Lot 471	57			Complies
	Lot 472	58			Complies
	Lot 473	55			Complies
	Lot 474	54			Complies
	Lot 475	52			Complies

Well-managed kennels that have adequate practices in place will limit noise emissions from dogs barking. This being the case, dog barking is restricted and is present for less than 10% of the time. Hence, the assessment against the L_{A1} criteria has been used for the purpose of this study.

For the purpose of this study, noise emissions of all the dogs barking at once have been assessed. This provides noise levels that would be considered as a worst case scenario, even though it is an unlikely situation.

Additionally, to allow for further conservatism in the assessment, the noise levels at residential receivers have included a +10 dB(A) penalty for impulsiveness even though at calculated noise levels, the presence of annoying characteristics would be unlikely due to background noise associated with general industry activities.

7. CONCLUSION

The objective of this assessment was to establish noise levels attributable to the dog day care, particularly dogs barking within the facility and assess against the regulatory criteria.

The location of the dog day care centre has been carefully chosen for the following factors:

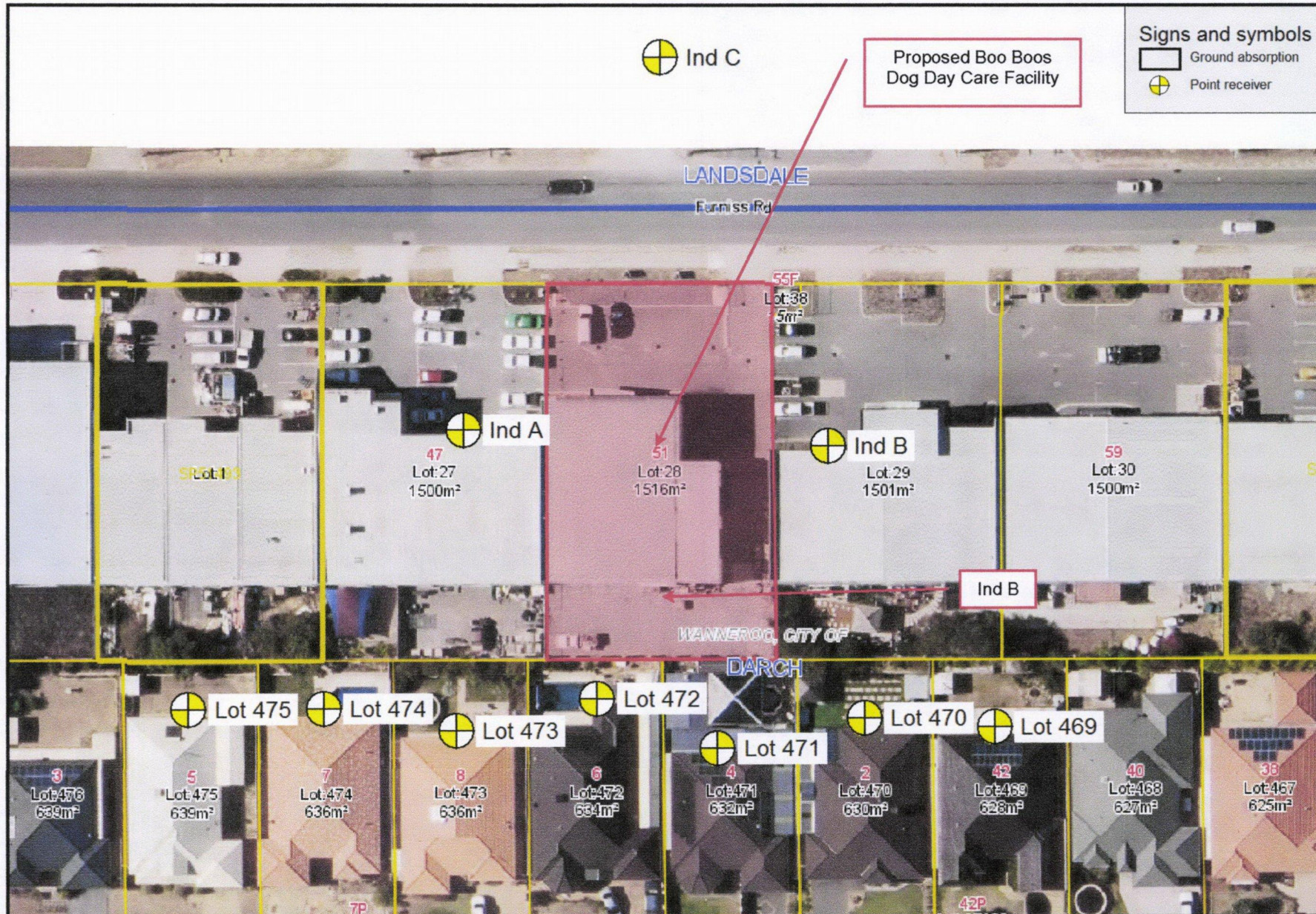
- Situated in an industrial zone area.
- The building and wall system surrounding the site are constructed of concrete, providing a suitable noise barrier for potential noise emissions.
- High existing noise level due to neighbouring industry.

Noise levels for periods of dog barking at the nearest industrial premises has been calculated to be 55 dB(A) for a scenario of all dogs barking at the same time. This can be compared to the applicable regulatory criteria where noise emissions are not to exceed 80 dB(A) at the nearest industrial boundary. Hence compliance with the *Environmental Protection (Noise) Regulations 1997* is achieved at all times.

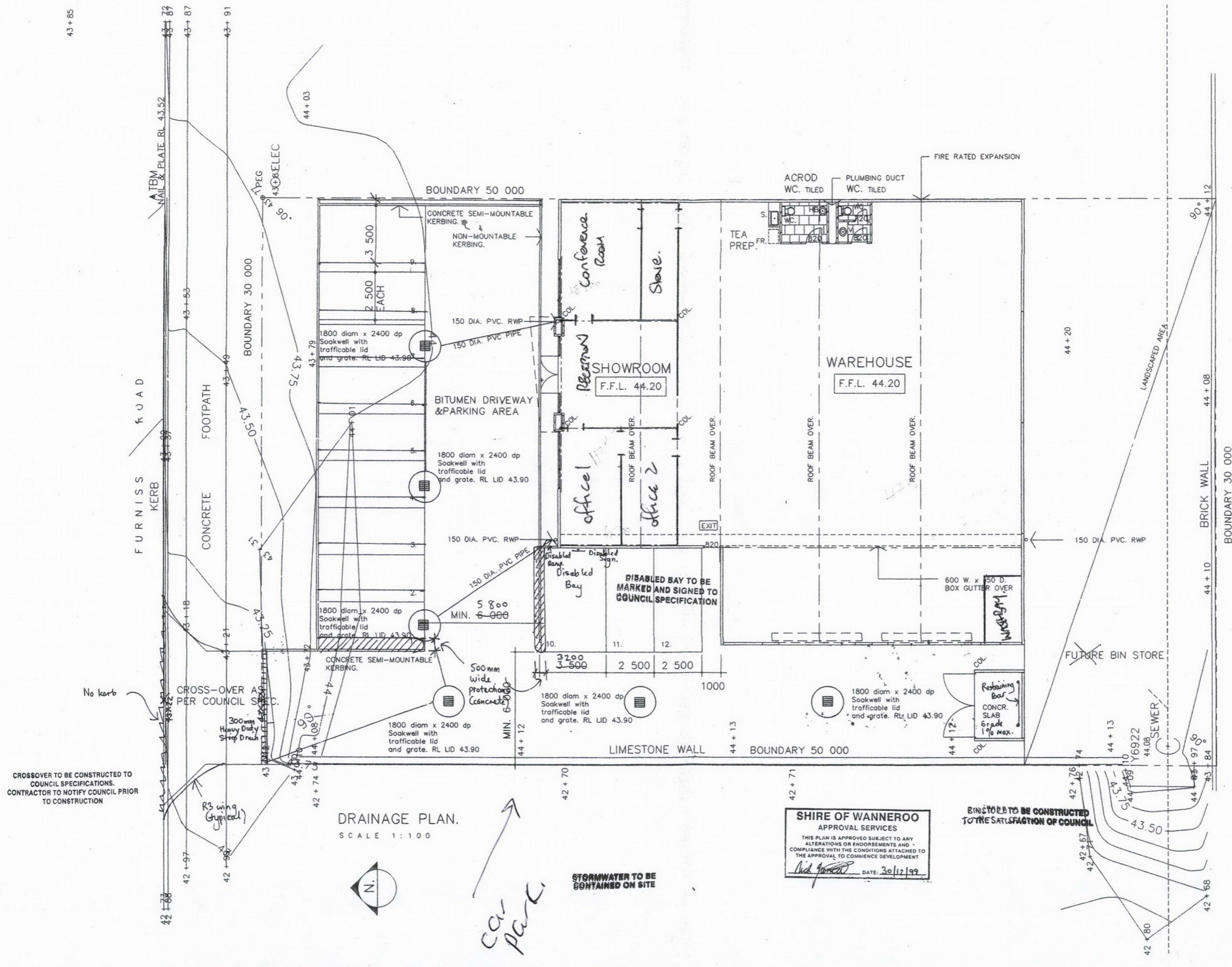
Noise levels for periods of dog barking at the worst case residential location has been calculated to be 58 dB(A) for a scenario of all dogs barking at the same time. This can be compared to the regulatory criteria where noise emissions are not to exceed 59 dB(A) at the nearest residences. Hence compliance with the *Environmental Protection (Noise) Regulations 1997* is achieved for the proposed hours of operation.

APPENDIX A

LOCALITY MAP



43+85



CITY OF WANNEROO
APPROVAL SERVICES
This Plan is Approved Subject to compliance with the Local Government (Miscellaneous Provisions) Act, 1983, Planning Codes, Building Regulations 1989 and Council Local Laws.

13 JAN 2000 99/7003

SHIRE OF WANNEROO
APPROVAL SERVICES
THIS PLAN IS APPROVED SUBJECT TO ANY ALTERATIONS OR ENDORSEMENTS AND COMPLIANCE WITH THE CONDITIONS ATTACHED TO THE APPROVAL TO COMMENCE DEVELOPMENT
And signed DATE: 30/12/99

BIN STORE TO BE CONSTRUCTED TO THE SATISFACTION OF COUNCIL

Rev.	Date	Comment
<p>WOLFE CONSTRUCTION CO.PTY LTD. 161 Chisholm Cres. Kewdale. 9 359 16 22</p>		
<p>Project PROPOSED SHOWROOM/WAREHOUSE LOT 23 FURNISS ROAD DARCH. FOR J.CALAUTTI</p>		
<p>Title</p>		
Drawn	Chkd	Job No. 99-81
Date	NOV. '99	Rev.
Scale	1 : 100, 20	Sheet