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48 Blessington Road, St Leonards Tasmania

Acoustic Assessment

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1 INTRODUCTION

Acoustic Logic Consultancy (ALC) has been engaged by Pets Now Boarding Pty Ltd to conduct an Acoustic Assessment of the noise impact associated with the operation of the proposed Winston Play and Stay dog boarding kennel located at 48 Blessington Road, St Leonards Tasmania referred to hereafter as "the site".

The noise impact study assesses noise from operation of the proposed new kennel facility. This includes:

- Noise associated with dogs in both the outdoor exercise areas serving the kennels during the day and evening periods;
- Noise associated with dogs in the kennels during the day, evening and night time periods;
- Noise impact of proposed mechanical equipment on neighbouring residential receivers.

The following documents have been referenced in the report.

Table 1 – Referenced Documents

Prepared By	Document Name	Date
EPA Tasmania	Environment Protection Policy (Noise)	March 2009
City of Launceston	Launceston Interim Planning Scheme	2015
EPA Victoria	SEPP (Control of Noise from Commerce, Industry and Trade) No. N-1	June 1989
EPA	Noise from Industry in Regional Victoria (NIRV) – Publication 1411	October 2011
Therian Pty Ltd	Architectural Drawings A.1.0 – A.5.0	22/10/2019

SoundPlan™ Note

Noise levels have been predicted at the receiver locations using SoundPLAN™ modelling software implementing the ISO 9613-2:1996 "Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation" noise propagation Standard. Noise contour plots are included in Appendix 1.

2 SITE DESCRIPTION

The subject site is located at 48 Blessington Road, St Leonards Tasmania. The property is bounded by farmland in all directions with access to the property off Blessington road located to the east of the site. The nearest residential dwellings are approximately 300 meters southwest of the site. There are also residential properties 500 metres to the north and east. Other properties are located at least 1.0 kilometre from the site. Please refer to Figure 1 below.

The proposed development will consist of a two-storey building capable of housing up to 60 dogs over night with a total capacity of 130 dogs during the day and evening periods (boarding and day care). The ground floor of the building will consist of 3 day rooms, a rumpus room, 9 day kennels, canteen, food prep room, reception, staff room, offices, grooming room and a store. Nine exercise yards are proposed to be located around the northern, southern and western boundary of the building. The first floor will incorporate 6 separate rooms to accommodate up to 60 dogs over night as well as 2 staff bedrooms a kitchen-living area and bathroom.

It is understood that the hours of operation of the kennel are as follows (excluding pets residing overnight):

- Monday to Friday 7.00am 6.00pm
- Saturday 9.00am 12.00pm
- Sunday 2.00pm 5.00pm

It is proposed that there will be a total of 60 dogs over the overnight/weekend kennelling operations. It is noted that the total number of dogs to be located on site during the day period is limited to 130 while the maximum number of animals to be located in outdoor exercise areas will be limited to ensure compliance with noise emission criteria.

Figure 1 below details the subject site and its surrounding environment.

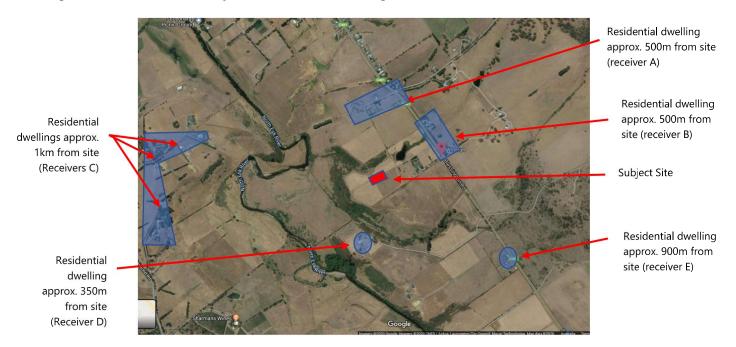


Figure 1 – Subject Site and Surrounds (Source: Google Maps)

3 ASSESSMENT CRITERIA

There are currently no noise limits with the Launceston Interim Planning Scheme or the EPA Tasmania guidelines. Following discussions with Mr. Bill Wilson, the Noise Specialist at EPA Tasmania, it is understood that noise limits are prescribed to industry on a case by case basis for Level 2 type activities (as categorised by the Environment Management and Pollution Control Act 1994 – Schedule 2 – Level 2 Activities).

The prescribed noise limits are understood to be generally not below 45 dB(A) during the day period, 40 dB(A) during the evening period and 35 dB(A) during the night period. However, it should be noted that a dog boarding kennel is not defined as a Level 2 type activity.

The Environment Protection Policy (Noise) 2009 (EPP-Noise 2009) refers to "WHO publication Guidelines for Community Noise (Berglund B, Lindvall T and Schwela D H, 1999)" for suitable noise indicator levels as shown in the table below. However, the noise levels specified below are indicative, non-mandatory noise levels.

Time base L_{Amax}fast Critical health effect(s) Specific environment [dB(A)] [hours] [dB] Serious annoyance, daytime and 55 16 evening Outdoor living area Moderate annoyance, daytime and 50 16 -Speech intelligibility & moderate Dwelling, indoors 35 16 annoyance, daytime & evening 30 Inside bedrooms 8 45 Sleep disturbance, night-time Sleep disturbance, window open 45 Outside bedrooms 8 60 (outdoor values)

Table 1 – Acoustic environment indicator levels

Following discussions with Mr. Duncan Payton (Planning Officer for the City of Launceston) it was agreed that the noise levels specified in the EPA Victoria guideline "Noise from Industry in Regional Victoria, Publication 1411 dated October 2011" (NIRV) are considered appropriate to address potential amenity impacts on nearby residential receivers.

The acoustic environment in St Leonards Tasmania can be assumed to be similar to the acoustic environment in Regional Victoria. As such, assessment has been based on criteria indicated in the NIRV. On this basis, the applicable noise limits are given below based on the receivers and generating zone being classified as "farming":

Receiver Location	Day dB(A) Leq 30min Mon-Fri (7am–6pm) Sat (7am–1pm)	Evening dB(A) Leq 30min Mon-Fri (6pm–10pm) Sat (1pm–10pm) Sun (7am–10pm)	Night dB(A) Leq 30min Mon-Sun (10pm–7am)
All residential receivers	46	<u>Δ</u> 1	36

Table 2 - Noise Criteria NIRV

Based on the above, the criteria indicated in Table 2 above have been adopted for assessment purposes

3.1.1 Sleep Disturbance Criteria

Sleep arousal is a function of both the noise level and the duration of the noise. As there are currently no enforceable sleep disturbance criteria in Tasmania or Victoria, the sleep disturbance criteria for the use of this facility have been based on those recommended in the NSW EPA Industrial Noise Policy. As recommended in the Application Notes to the EPA Industrial Noise Policy, to assess potential sleep arousal impacts, a two-stage test is carried out:

Step 1 - An "emergence" test is first carried out. That is, the L_1 noise level of any specific noise source should not exceed the background noise level (L_{90}) by more than 15 dB (A) outside a resident's bedroom window between the hours of 10pm and 7am. If the noise events are within this, then sleep arousal impacts are unlikely and no further analysis is needed. The guideline level is set out below.

Table 3 – Sleep Arousal Emergence Criteria (10pm-7am)

LOCATION	MEASURED BACKGROUND NOISE LEVEL dB(A)L ₉₀	EMERGENCE LEVEL (dB(A) L ₁)
Apartment Bedrooms	18	33

Step 2 - If there are noise events that could exceed the emergence level, then an assessment of sleep arousal impact is required to be carried out taking into account the level and frequency of noise events during the night, existing noise sources, etc. This test takes into account the noise level and number occurrences of each event with the potential to create a noise disturbance. As is recommended in the explanatory notes of the EPA Industrial Noise Policy, this more detailed sleep arousal test is conducted using the guidelines in appendix B of the EPA *Environmental Criteria for Road Traffic Noise*.

Appendix B states that maximum internal noise levels below 50–55dB(A) are unlikely to cause awakening reactions, and that one or two noise events per night with maximum internal noise levels of 65–70 dB(A) are not likely to affect health and wellbeing significantly. Based on the above, the sleep disturbance criteria for this development is detailed in Table 4 below.

Table 4 – Sleep Disturbance Criteria (10pm-7am)

LOCATION	Sleep Disturbance Criteria L _{max} dB (A)
Bedrooms	55

4 BACKGROUND NOISE LEVEL MEASUREMENTS

4.1 DATE OF MEASUREMENTS

An unmanned noise monitor was installed on site from 13 to 14 January 2020. Manned noise measurements were conducted to supplement unmanned noise measurements.

4.2 MEASUREMENT LOCATION

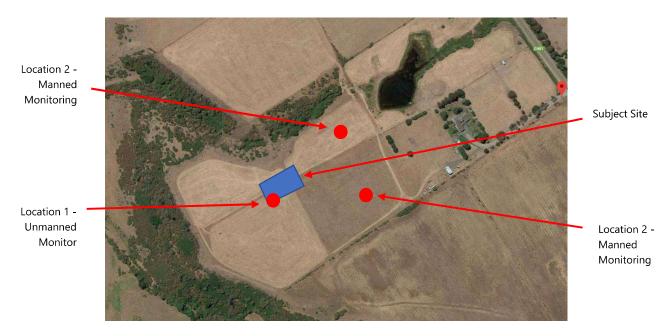


Figure 2 – Subject Site and Measurement Locations (Source: Google Maps)

Noise level measurements were conducted at the locations indicated in Figure 2 and described below.

- Location 1 An unmanned noise monitor was installed on the southwest boundary of the subject site. The microphone of the monitor was placed 1.5 metres above grade and the measurements were free field.
- Location 2 Manned noise level measurements were conducted approximately 20m away from the north-western boundary of the subject site. The microphone of the monitor was placed 1.5 metres above grade and the measurements were free field.
- Location 3 Manned noise level measurements were conducted approximately 20m away from the south-western boundary of the subject site. The microphone of the monitor was placed 1.5 metres above grade and the measurements were free field.

4.3 MEASUREMENT EQUIPMENT

Unmanned noise monitoring was conducted using a Rion NL-42 noise monitor. The monitor was programmed to store 15-minute statistical noise levels throughout the unmanned monitoring period. Equipment was calibrated at the beginning and the end of the measurement using a Rion NC-74 calibrator; no significant drift was detected. All measurements were taken on fast response mode.

A Rion NL-42 Sound Level Analyser was used for the manned noise level measurements. The equipment was calibrated at the beginning and the end of the measurement using a Rion NC-74 calibrator; no significant drift was detected. All measurements were taken on fast response mode.

4.4 MEASURED NOISE LEVELS

4.4.1 Unmanned Noise Measurements

The table below present the measured background noise levels at the subject site.

Table 5 – Measured Unmanned Background Noise Levels – Location 1

Period	Time	Measured Background dB(A) L _{90,15mins} ¹
Day	7am – 6pm (Mon – Fri)	32
Evening	6pm – 10pm (Mon – Fri)	24
Night	10pm – 7am	18

Note 1 – Typical lowest background noise level during the measurement period

4.4.2 Manned Noise Measurements

The table below present the measured background noise levels at the subject site.

Table 6 – Measured Manned Background Noise Levels

Measurement Location ¹	Date and Time of Measurements	Measured Noise Levels dB(A) L _{90,15mins}
	13/01/2020 (01:25pm-01:40pm) - Day	36
	13/01/2020 (11:00pm-11:15pm) - Night	22
Location 2	14/01/2020 (01:20 pm-01:35 pm) - Day	25
	14/01/2020 (01:35 pm-01:50 pm) - Day	25
	14/01/2020 (01:50 pm-02:05 pm) - Day	25
	14/01/2020 (02:05 pm-02:20 pm) - Day	24
Location 2	13/01/2020 (01:44pm-01:59pm) – Day	40
Location 3	13/01/2020 (11:18pm-11:33pm) - Night	22

Note 1 – Refer Figure 1 for measurement locations.

5 NOISE ASSESSMENT

5.1 NOISE ASSESSMENT METHODOLOGY

Noise from the operation of the kennels has been assessed for residents surrounding the facility. The methodology used to assess noise from the kennel is detailed below:

- 1. Establish noise limits for the day, evening and night-time periods for general operation during the week based on applicable guidelines (established in Section 3);
- 2. Conduct a comprehensive assessment of noise emissions from a closed kennel for the evening and night-time period assuming the kennel operating at maximum night-time capacity (60 dogs). That is; noise transmission through windows, walls, ceiling/roof and entry doors.
- 3. Conduct a comprehensive assessment of noise emissions from dogs for the daytime-period during the week including Saturdays. It is assumed that the kennel will operate at peak capacity during the day period, which will be a total of 72 dogs using the outdoor exercise yards and 58 dogs internally; and
- 4. Recommendation of acoustic treatment, operational and management controls to ensure that the acoustic criteria established in the assessment are maintained. (Detailed in Section 7).

The specific assumptions of operation including sound levels used for the assessment of the proposed kennel operation are presented in the discussion below.

5.2 DOG NOISE EMISSION FROM KENNELS

The typical nature of noise and the operation of the kennel during these two periods are discussed in detail below.

5.2.1 Noise Emission Levels

In order to undertake the SoundPLAN™ computer modelling, typical dog noise emission levels need to be established.

5.2.2 Noise from External Exercise Yards

The external yard may be used in the day and evening (between 7am to 6pm) period.

A typical noise emission level for dogs located externally has been determined from long-term data obtained at an existing kennel. A SoundPLAN™ computer model was developed representing the monitored kennels using the number of dogs housed at the kennels during the monitoring period and the layout of the monitored kennels. The model was calibrated by varying the noise emission level per dog until the noise level predicted by the modelling at the monitoring location matched the level measured at the monitoring location. This dog noise emission level is the level used in the subsequent modelling to determine the typical worst-case noise emission level per dog housed at the kennel.

The sound power level determined from this analysis was 96 dB(A) Leq per dog housed in the facility and permitted to use an external exercise yard. The noise emission level will be penalised (increased) to account for annoying characteristics (tonality) as per Section 5.2.3 below.

5.2.2.1 Breakout from within the Kennel

Noise emission levels for dogs within the kennel have been assessed based on the following:

- A typical noise emission level for dogs located within a kennel has been determined from long-term data obtained at an existing kennel;
- The sound power level determined from this analysis was 96 dB(A) Leq per dog housed in the facility.
- No correction for time has been implemented for dogs barking.
- The noise emission level will be penalised (increased) to account for annoying characteristics (tonality);

5.2.3 Corrections for Annoying Characteristics

Noise from dogs barking have been assessed for potentially annoying characteristics - tonality. Four half-hour monitoring periods were analysed for tonality using the methodology outlined in Section A3 of SEPP N-1. The results are summarised in the following table.

Table 7 – Tonality Penalty

Date	Time	Tonality Penalty dB(A)	Arithmetic Average Tonality Penalty dB(A)
24/12/2013 24/12/2013	11am to 11:30am	0.8	
	11:30am to 12:00am	0.7	0.5
	7am to 7:30am	0.4	0.5
	7:30am to 8:00am	0	

An intermittent correction has not been added as the monitoring indicates that dog barking is not intermittent in character during periods of high noise emissions.

5.3 NOISE EMISSION PREDICTIONS

A SoundPLAN™ computer model was developed for the proposed kennel and used to predict noise emissions from the kennels to the surrounding receivers. The predicted emissions have been evaluated for compliance against the criteria established in Section 3, specifically for compliance against NIRV and potential sleep arousal. See Table 8 and Table 9 below for predicted noise levels and comparison against assessment criteria.

The assumptions used in the model are:

- Layout of the kennels as depicted in the Therian drawing A-1.0 to A-5.0 dated 22/10/2019;
- The acoustic treatment and management conditions recommended in Section 7 of this report are adopted;
- ISO 9613-2:1996 "Acoustics Attenuation of Sound During Propagation Outdoors Part 2: General Method of Calculation" noise propagation Standard; and
- The model includes the noise reduction provided by the building fabric, distance losses, directivity, barrier effects, etc. Table 8 below shows the predicted noise levels from dog barking.

Table 8 – Predicted Activity Noise Levels at Nearest Noise Sensitive Receivers

Source	Receiver	Time	Predicted Noise Level dB(A) L _{eq}	Noise Level Criteria dB(A) L _{eq(30min)}	Complies
Monday to Saturday	Α	Day	43	46	Yes
Kennel – Max 72	В	Day	41	46	Yes
Dogs using outdoor exercise yards, 58	С	Day	<35	46	Yes
dogs inside the	D	Day	43	46	Yes
kennel	E	Day	35	46	Yes
Sunday	А	Evening	40	41	Yes
Kennel – Max 36	В	Evening	38	41	Yes
Dogs using outdoor exercise yards, 58	С	Evening	<32	41	Yes
dogs inside the	D	Evening	40	41	Yes
kennel	Е	Evening	32	41	Yes
	А	Night	< 25	36	Yes
Kennel – 60 Dogs are inside the kennel for night-time boarding	В	Night	< 25	36	Yes
	С	Night	< 25	36	Yes
	D	Night	29	36	Yes
	E	Night	29	36	Yes

Table 9 – Predicted Activity Noise Levels at Nearest Noise Sensitive Receivers

Source	Receiver	Time	Predicted Noise Level dB(A) Lmax	Sleep Disturbance Criteria dB(A) Lmax	Complies
Kennel – Dogs are inside the kennel for night-time boarding	А	Night	36	55	Yes
	В	Night	35	55	Yes
	С	Night	31	55	Yes
	D	Night	35	55	Yes
	Е	Night	31	55	Yes

6 DISCUSSION

6.1 MODELLING RESULTS

The modelling indicates that noise emissions from dogs barking will be below the assessment criterion during the day, evening period and night periods.

The predicted noise levels from the general operation of the kennel facility have been based on worst case scenarios for dog barking for the various periods during the day, evening and night periods.

For night-time noise this includes the assumption that all dogs are awake at night, which is a conservative assumption based on long-term monitoring noise of a similar kennel. The monitoring conducted previously indicated night-time noise levels are lower than the maximum level generated throughout the complete day.

7 MANAGEMENT CONTROLS AND ASSOCIATED ACOUSTIC MEASURES

7.1 RECOMMENDED MANAGEMENT CONDITIONS

- 1. Use of outdoor exercise yards should be limited a maximum of 72 dogs during the day-time period (Mon Fri 7:00am 6:00pm, Sat 7:00am 1:00pm only).
- 2. Use of outdoor exercise yards should be limited a maximum of 36 dogs during the evening period (Mon Fri 6:00pm 10:00pm, Sat 1:00pm 10:00pm, Sunday 7:00am 10:00pm only).
- 3. Kennels must be constructed to visually screen stimuli such as dogs, animals, traffic or passersby;
- 4. Feeding of the dogs must be restricted to the daytime hours of 7.30am 6.00pm;
- 5. Kennel access must only be open to staff or contractors;
- 6. All doors from the building to the outside must be kept closed at all times apart from when access into and out of the building is required, and shut at night to comply with the night-time criteria;
- 7. All external windows of the building must be kept closed at all times except for maintenance purposes; and
- 8. Noise from plant and equipment must be designed to ensure compliance with the criteria nominated in Section 3 above, in combination with noise from dogs. These aspects are to be reviewed by a suitably qualified acoustic consultant during the design stage.

7.2 RECOMMENDED ACOUSTIC TREATMENTS

Acoustic screens shall be installed to provide a screen to any nearby effected residents as indicated
in Figure 3 below. The screen can be constructed from materials such as sheet metal, double lapped
timber, FC sheet, masonry, steel, earth berm, or similar or combination or alternative as approved
by a suitably qualified acoustic consultant with all gaps minimised. The height of the screen shall be
a minimum of 2.4 meters above local ground level as indicated in Figure 3 below.

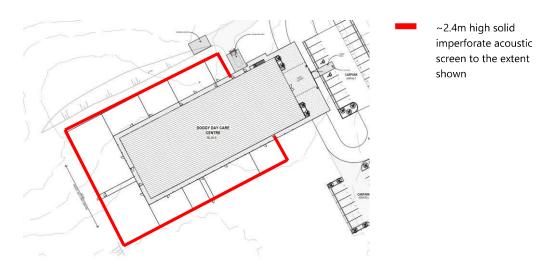


Figure 3 – Indicative Extent of Acoustic Treatment (Source: Google EarthTM)

- 1. All external glazing is to be minimum 6mm thick glass with full perimeter seals;
- 2. Solid screening must be installed between each kennel/room to prevent dogs seeing each other between kennel bays/rooms and to stop dogs looking across to opposing kennels. Note that these screens are not required to run full height;
- 3. External walls of the facility are Colourbond metal as indicated in Therian drawing A-3.02 with Internal walls of the facility are to be treated as follows:
 - o Min 6mm thick FC sheet (or 13mm plasterboard) installed behind sheet metal cladding
- 4. Roof of the facility has been assumed to be sheet metal as indicated in drawing A-3.02. The underside of the sheet metal roof within the boarding kennel area shall be lined on the underside with 40mm thick Envirospray 300 or alternative as approved by a suitably qualified acoustic consultant.
- 5. Doors from the foyer to the main kennel area must be minimum 35mm thick solid core doors or fully framed glazed doors with all gaps minimised.

7.3 MECHANICAL PLANT

Mechanical plant servicing the kennel facility is to be designed and installed to ensure compliance with the EPA Tasmania criteria in conjunction with noise emissions from the general operation of the facility. Notwithstanding, mechanical treatments should be determined (where necessary) prior to construction to ensure compliance with the EPA Tasmania criteria upon final selection of plant items. These aspects are to be reviewed by a suitably qualified acoustic consultant during the design stage.

7.4 MECHANICAL VENTILATION

Ventilation openings within the roof/walls of the building must be acoustically treated to maintain the acoustic rating of the building shell. This will be in the form of acoustic treatment/lined ductwork behind openings. Final treatment will be dependent on final size and locations of opening and will be confirmed during the design stage of the development. These aspects are to be reviewed by a suitably qualified acoustic consultant during the design stage.

8 CONCLUSION

This report presents an assessment of noise emissions from operation of the proposed Winston Play and Stay dog boarding facility to be located at 48 Blessington Road, St Leonards Tasmania. Noise emissions predictions of dogs barking within the proposed development have been assessed to the nearest sensitive receivers in the immediate vicinity of the site.

Acoustic treatments and management control conditions determined in Section 7 of this report have been formulated to ensure that noise levels will comply with the nominated noise limits. On the provision that the recommended acoustic treatment and management controls are implemented, the operation of the kennel will comply with the requirements of the criteria nominated in Section 3 of this report and be acceptable.

We trust this information is satisfactory. Please contact us should you have any further queries.

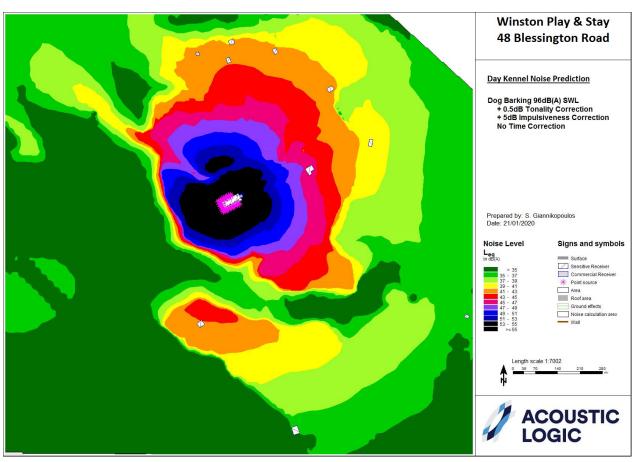
Yours faithfully,

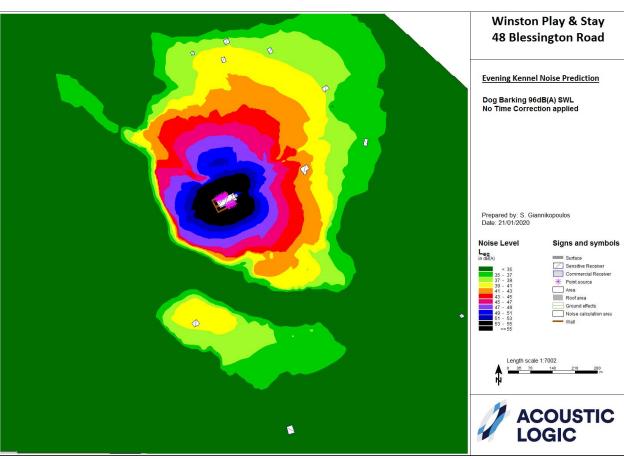
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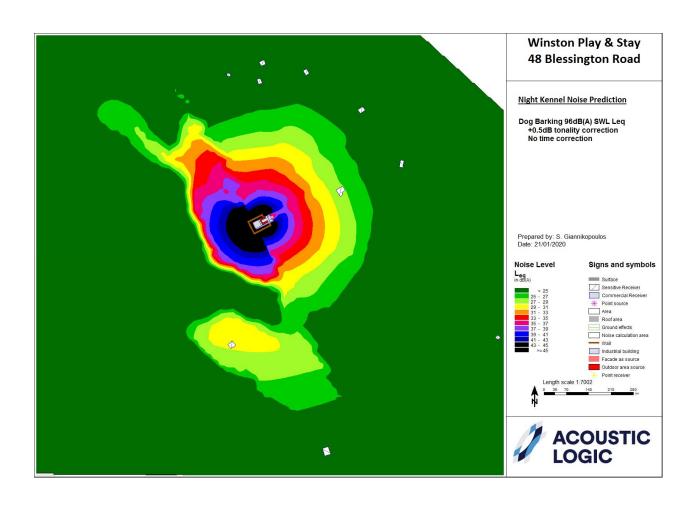
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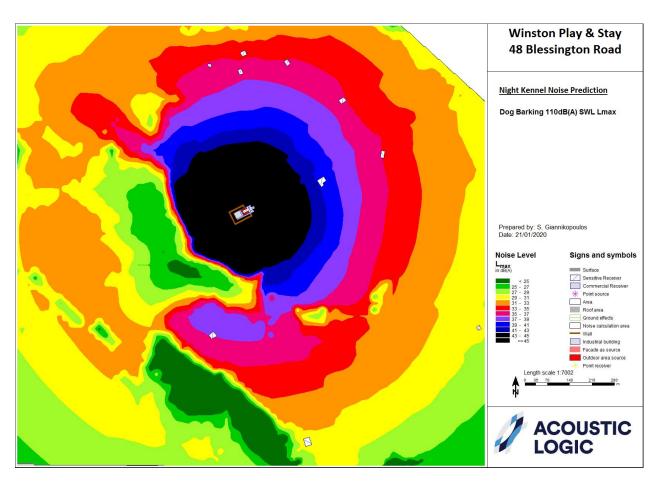
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APPENDIX 1 – SOUNDPLANT NOISE CONTOUR PLOTS









APPENDIX 2 – BACKGROUND NOISE MEASUREMENT

