DAY DESIGN PTY LTD
CONSULTING ACOUSTICAL ENGINEERS

SUITE 17, 808 FOREST ROAD, PEAKHURST 2210 ABN 73 107 291 494
P. 02 9046 3800 ACOUSTICS@DAYDESIGN.COM.AU WWW.DAYDESIGN.COM.AU

Environmental Noise Impact Assessment

Greyhound Facility
38-44 Keech Road, Castlereagh, NSW

REPORT NUMBER
6308-4.1R

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Prepared For:
Mr Mathew Pryce
1 Diamantina Avenue
Windsor Downs NSW 2756

Attention: Mr Mathew Pryce

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Draft	16/08/2019	Adam Shearer	Stephen Gauld	By email, for client review
Draft 2	05/09/2019	Adam Shearer	Stephen Gauld	Add roller door scenarios
Final	12/09/2019	Adam Shearer	Stephen Gauld	

Document 6308-4.1R, 19 pages plus attachments

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1.0 EXECUTIVE SUMMARY

A greyhound facility (the facility) located at 38-44 Keech Road, Castlereagh, NSW, requires an environmental noise impact assessment to accompany a development application for council.

The facility is located on the eastern side of Keech Road, situated on land zoned *RU4 - Primary Production Small Lots* under Penrith Local Environment Plan (LEP) 2010.

Rural residential properties bound the site to the north, east and south. Rural residential properties also exist on the opposite side of Keech Road to the west. The facility and the receptor locations are shown in Figure 1.

The proposal seeks approval for the facility to operate 10 kennels within an acoustically treated shed for up to 10 adult dogs, outdoor exercise yards, six outdoor kennels for up to 12 pups. The greyhound facility will have capacity for up to 22 dogs (10 adults and 12 pups).

The dogs will be kept inside the kenneling area between the hours of 10 pm and 7 am, 7 days a week, except on the occasional race day when they may be returned to the kennels after 10 pm.

This assessment addresses the potential noise impact from the facility at the neighbouring receptors.

Acceptable noise limits are derived from the NSW Environment Protection Authority (EPA) *Noise Guide for Local Government* at all receptors during the day, evening and night. Consideration is also given to the *Noise Guide for Local Government* sleep disturbance criterion of 48 dBA $L_{1,\ 1\ minute}$ during night time hours.

Measurements and calculations show that the level of noise emitted by the facility, complies with the EPA's acceptable noise limits at all nearby residential neighbours.

2.0 CONSULTING BRIEF

Day Design Pty Ltd was engaged by Mr Mathew Pryce to assess the environmental noise impact of a greyhound facility at 38-44 Keech Road, Castlereagh, NSW.

This commission involves the following:

Scope of Work:

- Inspect the site and environs
- Measure the background noise level at critical locations and times
- Prepare a site plan identifying the proposal and nearby noise sensitive locations
- Establish acceptable noise level criteria
- Quantify noise emission from the facility
- Calculate and measure the level of noise emission, taking into account building envelope transmission, distance loss, ground absorption, etc
- Provide recommendations for noise control if necessary
- Prepare an Environmental Noise Impact Assessment Report.

3.0 DEVELOPMENT HISTORY

Penrith City Council granted approval of an amended **Development Application**, number DA12/1295.01, for the use of the property 38-44 Keech Road Castlereagh as a site for a greyhound boarding, training and breeding establishment, on 6 May 2014. Condition 2 of DA12/1295.01, however, restricted the use of the site to a 12 month trial period, from the date of determination.

Day Design prepared an Environmental Noise Impact Assessment, Report No: 6308-1.1R**,** dated 1 September 2017 for the submission of a further **Development Application**, number DA17/1344, on 21 December 2017, seeking consent for the continued use of the site for the purposes outlined above. In addition to this, Day Design then prepared an Operating Scenario Assessment, Reference No: 6308-2.1L**,** dated 8 August 2018, in response to a request for further information from Penrith City Council, attached as Appendix L.

Penrith City Council prepared a **Major Assessment Report** (DA17/1344), Version 1 dated 19 September 2018, in response to this Development Application. The result of this assessment was a recommended Refusal of said Development Application, due to a series of key issues, several of which were related to acoustics and the acoustic assessment performed.

A Local Planning Panel Meeting was held on 26 September 2018 with Penrith City Council, the applicant and Day Design staff present, to clarify the issues raised in the **Major Assessment Report**. During this meeting, Day Design tabled an Acoustic Assessment, Reference No: 6308-3.1L, dated 26 September 2018, in order to rectify these issues. The matter of jurisdiction over the determination of the application was also raised in this meeting, with the responsibility being subsequently delegated to Penrith City Council.

On 10 January 2019, the Application (*DA17/1344*) was refused.

Penrith City Council then prepared a **Major Assessment Report** (ID.8555303), Version 1 dated 1 February 2019, in response to Development Application number DA17/1344 for the continued use of the site as a greyhound boarding, training and breeding establishment.

Day Design then tabled an Acoustic Assessment, Reference No: 6308-3.2L, dated 6 March 2019, in order to address the issues outlined in the **Major Assessment Report** (ID.8555303).

The client proposes to submit a new Development Application taking into consideration the findings of Penrith City Council's **Major Assessment Report** and a 40 % reduction to the capacity of dogs to be housed at the facility. This report forms part of that current application.

4.0 SITE AND DEVELOPMENT DESCRIPTION

4.1 Previous Development Applications

A Development Application (DA12/1295.01) was approved on 12 September 2014 for the use of the site at 38-44 Keech Road, Castlereagh as a Greyhound Facility, which has since lapsed. As part of the Development Application an Acoustical Assessment of the proposed use as a Greyhound Facility was conducted by Noise and Sound Services (NSS), Report No. nss 21895 – Final, dated February 2013, to ensure the operation would satisfy all relevant noise criteria.

Noise controls were recommended in the NSS Report, with the following being incorporated into the final building construction, site construction and noise management plan:

Site:

- A 1.8 metre high lapped and capped timber fence has been constructed along approximately 200 metres of the southern boundary of the site;
- A 2.4 metre high lapped and capped timber fence exists on a section of the northern boundary of the site.

Exercise Yards:

- The adult dog exercise yards are bounded by 1.8 metre high timber sound barriers.

Kennel Area:

- The internal northern, eastern and western walls of the shed are lined internally with 100 mm thick cool room panels;
- The southern wall (approximately 3 metres) is constructed with an internal layer of plasterboard and an external layer of fibre cement on a 90 mm timber stud with the cavity lined with 75 mm thick glasswool insulation;
- The pedestrian access doors located at the southern end of the kennel are of solid core construction;
- Kennels are separated by a solid divider.

Noise Management Plan:

- The operators follow a strict noise management plan;
- The roller door on the western side of the shed is only opened when necessary to move the dogs to the exercise yards during the day for approximately 30 minutes;
- Dogs returning to the shed after 10 pm are placed in the kennels through the doors on the southern side of the shed;
- The dogs are kept inside the kennels between the hours of 10 pm and 7 am, 7 days a week.

- Barking dogs are dealt with as soon as possible;
- All dogs are fed during the day, 7 am to 6 pm.

The noise management plan listed above will be incorporated into the continued use of the facility.

4.2 Site Description

The greyhound facility is located on the eastern side of Keech Street on land zoned RU4 'Primary Production Small Lots' under Penrith Local Environment Plan 2010.

Rural residential properties bound the site to the north, west and south. Rural residential properties also exist on the opposite side of Keech Road to the west. The facility and its closest receptors are shown in Figure 1 and as follows in Table 1:-

Table 1 Noise Sensitive Receptors

Receptor and Type	Address	Direction from site	Distance
R1 – Residence	32 Keech Road	North	85 m
R2 – Residence	81 Church Street	East	370 m
R3 – Residence	46-50 Keech Road	South	65 m
R4 – Residence	29-39 Keech Road	West	165 m

Distances are based from the centre of the kennel area (shed) to the assessment location at the receptors as a reference point. Each kennel (inside and outside) is at a different distance from the receptor, some closer and some further than the distance outlined above. Specific distances from each area where dogs may be located are used in all calculations.

4.3 Development Description

The site currently operates as a greyhound facility with capacity for 36 dogs.

The proposal seeks approval for the facility to operate 10 kennels within an acoustically treated shed for up to 10 adult dogs, outdoor exercise yards, six outdoor kennels for up to 12 pups. The greyhound facility will have capacity for up to 22 dogs (10 adults and 12 pups).

The 10 adult dogs are to be kept in the existing kennels within the acoustically treated shed for the majority of each day. Three times per day the adult dogs are moved, in groups of four, to fenced (lapped and capped timber) exercise yards at the rear of the shed for 5 minutes at a time. The maximum amount of adult dogs outside at any one time is four.

The adult dogs are to be kept inside the kenneling area between the hours of 10 pm and 7 am, 7 days a week, except on the occasional race day when they may be returned to the kennels after 10 pm.

The 12 pups are kept in six outdoor kennels at the rear of the site. The outdoor kennels are located within a fenced (cyclone wire) exercise yard. The pups are free to leave the kennels and exercise at any time of the day, evening or night.

As part of a previous Development Application, a 1.8 metre high lapped and capped timber fence has been constructed along approximately 200 metres of the southern boundary of the site. It is also noted that a 2.4 metre high lapped and capped timber fence exists on a section of the northern boundary of the site. Both boundary fences are shown in Figure 2.

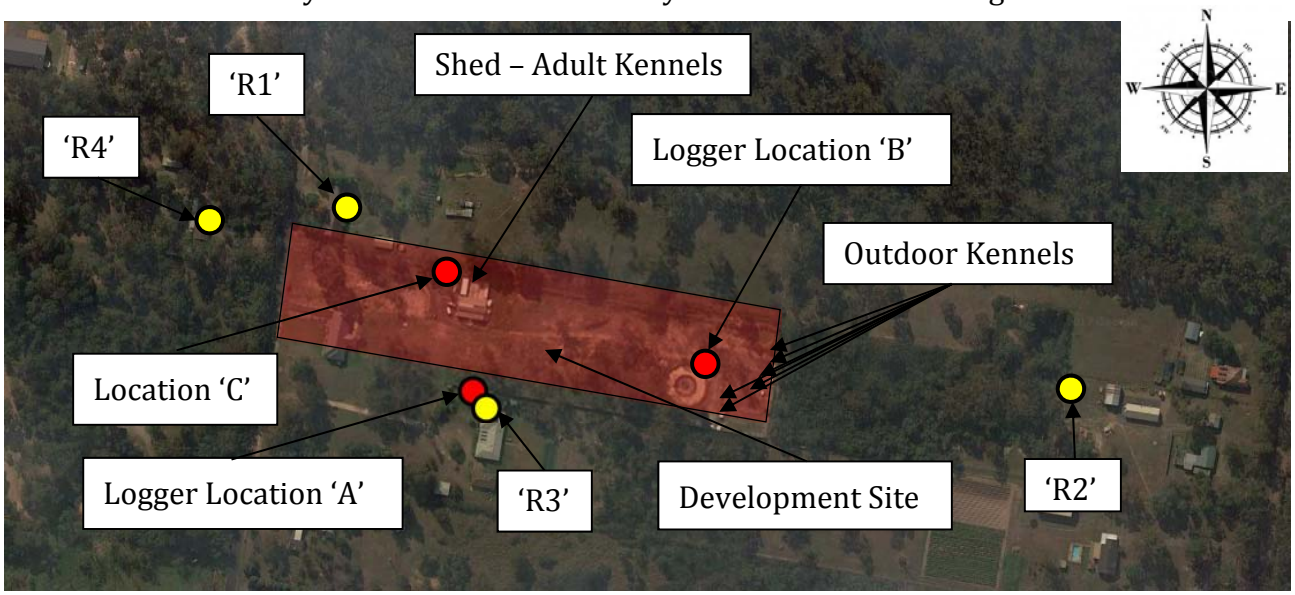


Figure 1. Location Plan – 38–44 Keech Road, Castlereagh, NSW.

Figure 2. Fence Locations – 38 – 44 Keech Road, Castlereagh, NSW.

5.0 ACOUSTICAL CRITERIA

This section presents the noise guidelines applicable to this proposal and establishes the project specific noise criteria.

5.1 Existing Ambient and Background Noise Levels

The L_{90} background noise level is a statistical measure of the sound pressure level that is exceeded for 90% of the measurement period (typically 15 minutes).

The Rating Background Level (RBL) is defined by the NSW EPA as the median value of the (lower) tenth percentile of L_{90} ambient background noise levels for day, evening or night periods, measured over a number of days during the proposed days and times of operation.

The background noise level should be measured at a location representative of the potentially affected receptors, in the absence of any noise sources that may be associated with the proposed development.

A noise logger was placed approximately 5 metres form the north-western façade of 46-50 Keech Road, Castlereagh, shown as Logger Location 'A' in Figure 1, from Monday 21 August to Monday 28 August 2017. The results of the background noise survey are shown in the attached Appendix B and below in Table 2.

Details of instrumentation used during the noise survey can be seen in the attached Appendix A.

Table 2 Rating Background Levels – 46–50 Keech Road, Castlereagh

Noise Measurement Location	Time Period	L_{90} Rating Background Level	Existing L_{eq} Noise Level
Logger Location 'A'	Day (7 am to 6 pm)	**33 dBA**	**46 dBA**
	Evening (6 pm to 10 pm)	**33 dBA**	**39 dBA**
	Night (10 pm to 7 am)	**33 dBA**	**42 dBA**

Meteorological conditions during noise monitoring consisted of clear skies with negligible wind and temperatures between 4 and 23°C. Conditions were ideal for noise monitoring.

5.2 Noise Guide for Local Government

The Environment Protection Authority (EPA) published the *Noise Guide for Local Government* (*NGLG*) in June 2013. The policy is specifically aimed at assessing noise from light industry, shops, entertainment, public buildings, air conditioners, pool pumps and other noise sources in residential areas.

5.2.1 Intrusive Noise Levels

The EPA in Section 2.2.1 of the *NGLG* states that a noise source is generally considered to be intrusive if the noise from the source when measured over a 15 minute period ($L_{eq,\ 15\ minute}$), exceeds the background noise ($L_{90,\ 15\ minute}$) by more than 5 dB.

The noise from the source is measured or assessed at the most affected point within the residential property boundary, or of that is more than 30 metres from the residence, at the most affected point within 30 metres of the residence. For upper floors the noise is assessed outside the nearest window.

5.2.2 Sleep Disturbance

The *NGLG* states in Section 2.2.4 that where sleep disturbance is being assessed, the $L_{A1,\ 1\ minute}$ or L_{Amax} noise level is most appropriate, and the measurement position should be outside the bedroom window. Sleep may be disturbed if the source noise level exceeds the background noise by more than 15 dB.

5.3 Project Specific Noise Criteria

The measured background noise levels at Logger Location 'A' have been used to establish the most stringent noise criteria at the receptor locations as follows:

Residential Receptors:

- (33 + 5 =) **38 dBA** $L_{eq,\ 15\ minute}$ during the day, evening and night; and
- (33 + 15 =) **48 dBA** $L_{1,\ 1\ minute}$ at night (10 pm – 7 am Monday to Saturday or 10 pm – 8 am on Sundays and Public Holidays)

5.4 Comment on Noise Policy for Industry Sleep Disturbance Criteria

The EPA's Noise Policy for Industry (NPI) was published in October 2017. The sleep disturbance criteria in Section 2.5 of the NPI is:

- $L_{Aeq,15\ min}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or
- L_{Amax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater.

In both cases above, the criteria from the NPI is higher (less stringent) than the criteria in Section 5.3. Therefore we have relied on the sleep disturbance noise criteria in the *NGLG*, which is the most stringent of the criteria available, being $L_{1,1min}$ (or L_{max})48 dBA.

6.0 GREYHOUND FACILITY NOISE EMISSION

The main source of noise from the facility is the dogs barking while inside kennels at night and in the exercise yards during the day.

We have been informed by the operators that all doors and windows to the shed are kept closed during the night.

6.1 Adult Dogs Barking In the Shed at Night

Unattended noise level measurements of adult dogs in the indoor kennels were carried out from Monday 21 August to Monday 28 August 2017 using two environmental noise loggers. Noise logger #106 was placed at the nearby residential receptor 'R3' (Logger Location 'A'), approximately 85 metres to the south of the shed with noise logger #116 placed inside the shed. **12 adults dogs** were kept in the indoor kennels over the seven nights of monitoring.

Subsequent to a review of the indoor noise level data, periods of barking were identified (noise levels > 80 dBA $L_{eq,\ 1\ second}$) on all nights. L_{eq} noise levels during the night time periods ranged between 23 and 103 dBA $L_{eq,\ 1\ second}$ inside the kennel area, with the corresponding outdoor noise levels ranging from 30 to 79 dBA $L_{eq,\ 1\ second}$. Several barks were identified over the seven night period.

We have overlaid the noise level graphs from inside and outside for the seven nights of monitoring and attached them as Appendix C to I. A detailed assessment of the graphs found a significant period which identified the correlation between dogs barking inside the kennels and the outdoor noise levels. The period of interest is attached as Appendix J with annotations provided to analyse the measured noise levels.

The measured $L_{eq,\ 1\ second}$ at the residential receptor was **45 dBA** when a dog / s was barking within the kennels, with the simultaneous $L_{eq,\ 1\ second}$ reverberant sound pressure level of 103 dBA within the kennels. This is equivalent to a $L_{eq,\ 15\ minute}$ noise level of 15 dBA for one dog bark at the receptor location.

Upon review of the ambient noise surveys, the maximum amount of time the dogs continuously barked (reverberant sound pressure of > 80 dBA) was for approximately 1.5 minutes (90 seconds). Assuming each bark lasts for 1 second and is at the measured noise level (103 dBA), 90 barks would result in an $L_{eq,\ 15\ minute}$ noise level of **35 dBA** at 'R3', which is within the noise criteria in Section 5, and is considered acceptable.

The measured noise levels are also below the sleep disturbance criterion of **48 dBA** $L_{1,\ 1\ minute}$, and are therefore acceptable.

Notwithstanding the above, in order to extrapolate the above information to a maximum capacity of 10 dogs in the indoor kennels, 1 dB should be subtracted using the formula:

- 10 x log (10/12), where 10 is the maximum capacity and 12 is the measured number of dogs.

Therefore the noise impact from 10 dogs in the indoor kennels is (45 – 1) **44 dBA $L_{eq,\ 1\ second}$** which is less than the sleep disturbance criterion of **48 dBA** $L_{1,\ 1\ minute}$ and (35 – 1) **34 dBA $L_{eq,\ 15\ minute}$**, which is less than the criteria of **38 dBA $L_{eq,\ 15\ minute}$**.

Day Design is of the opinion that compliance with the noise criteria at the nearest residential receptor, 'R3', will assure compliance at all other receptor locations.

6.2 Pups Barking In the Outdoor Kennels at Night

Unattended noise level measurements of the pups in the outdoor kennels were also carried out from Monday 21 August to Monday 28 August 2017 using two environmental noise loggers. Noise logger #106 was placed at the nearby residential receptor 'R3' (Logger Location 'A'), approximately 200 metres to the west of the outdoor kennels with noise logger #118 placed approximately 6 metres from the boundary of the exercise yards, shown as Logger Location 'B' in Figure 1. Six pups and two adult dogs were kept in the outdoor kennels over the seven nights of monitoring.

Subsequent to a review of the noise level data from logger #118, periods of barking were identified (noise levels > 60 dBA $L_{eq,\ 1\ second}$) on all nights. L_{eq} noise levels during the night time periods ranged between 40 and 84 dBA $L_{eq,\ 1\ second}$ next to the kennel area, with the corresponding noise levels at the nearby residence ranging from 30 to 79 dBA $L_{eq,\ 1\ second}$. Several barks were identified over the seven night period.

We have overlaid the noise level graphs from the two locations for the seven nights of monitoring and attached them as Appendix C to I. A detailed assessment of the graphs found a significant period which identified the correlation between pups barking inside the kennels and the outdoor noise levels. The period of interest is attached as Appendix K with annotations provided to analyse the measured noise levels.

The measured $L_{eq,\ 1\ second}$ at the residential receptor was **44 dBA** when a dog / s was barking in the outdoor kennel area, with the simultaneous $L_{eq,\ 1\ second}$ sound pressure level being 84 dBA 6 metres from the boundary of the exercise yards. This is equivalent to an $L_{eq,\ 15\ minute}$ noise level of 14 dBA for one dog bark at the receptor location.

Upon review of the ambient noise surveys, the maximum amount of time the dogs continuously barked (sound pressure of > 70 dBA) was for approximately 1 minute (60 seconds). Assuming each bark lasts for 1 second and is at the measured noise level (84 dBA), 60 barks would result in a $L_{eq,\ 15\ minute}$ noise level of **32 dBA** at 'R3', which is within the noise criteria in Section 5, and is considered acceptable.

The measured noise levels are also below the sleep disturbance criterion of **48 dBA** $L_{1,\ 1\ minute}$, and are therefore acceptable.

Notwithstanding the above, in order to extrapolate the above information to a maximum capacity of 12 pups in the outdoor kennels, 2 dB should be added using the formula:

- 10 x log (12/8), where 12 is the maximum capacity and 8 is the measured number of pups.

Therefore the noise impact from 12 pups in the outdoor kennels is (44 + 2) **46 dBA $L_{eq,\ 1\ second}$** which is less than the sleep disturbance criterion of **48 dBA** $L_{1,\ 1\ minute}$ and (32 + 2) **34 dBA $L_{eq,\ 15\ minute}$**, which is less than the criteria of **38 dBA $L_{eq,\ 15\ minute}$.**

Day Design is of the opinion that compliance with the noise criteria at the nearest residential receptor, 'R3', will assure compliance at all other receptor locations.

6.3 Adult Dogs in the Exercise Yards

Noise level measurements of dogs in the exercise yards of the facility were carried out on Monday 20 August, 2017, approximately 7 metres to the west of the adult exercise yards, shown as Location 'C' in Figure 1. Four dogs were moved to the exercise yards for 5 minutes at a time, with a total of eight barks being measured over approximately 5 minutes.

During our measurements the instantaneous sound pressure level (SPL) was noted when dogs barked within the exercise yards with maximum levels of 74 dBA.

Based on the measured instantaneous SPL and a 10 dB reduction for the 1.8 metre high sound barrier fences around the exercise yards, the calculated maximum $L_{eq,\ 15minute}$ noise level of dogs barking continuously for 1 minute (60 barks) at the residential receptor 'R3', is **33 dBA**. The calculated noise levels are within the acceptable noise criteria and is therefore considered acceptable. Up to 3.5 minutes of continuous barking (210 barks) will still comply with the noise criteria of 38 dBA.

Day Design is of the opinion that compliance with the noise criteria at the nearest residential receptor, 'R3', will assure compliance at all other receptor locations.

6.4 Cumulative Noise Levels

6.4.1 Measured Noise Levels

Upon reviewing the data in Appendices C to I, it is rare to find periods where the barking of adult dogs and pups occur simultaneously.

Nevertheless, it is possible that this may occur and so the noise impact (at 'R3') of 34 dBA from 10 adult dogs and 34 dBA from 12 pups is added together as 37 dBA using the formula:

- $\mathbf{L_{cumulative}}$ **37 dBA** = 10 x log(10^(34/10) + 10^(34/10))

This level is less than the criteria of **38 dBA $\mathbf{L_{eq,\ 15\ minute}}$,** and is therefore acceptable.

Day Design is of the opinion that compliance with the noise criteria at the nearest residential receptor, 'R3', will assure compliance at all other receptor locations.

6.4.2 Calculated Noise Levels – Roller Door Open & Half Open

The calculated cumulative noise level with the roller door left open in its current location are as follows:

- Calculated $\mathbf{L_{eq,\ 15\ minute}}$ of 10 adult dogs in the indoor kennels with the roller door fully open at 'R3' – **33 dBA**;
- Calculated $\mathbf{L_{eq,\ 15\ minute}}$ or 12 pups in the outdoor kennels at 'R3' – **34 dBA** (see Section 6.2); therefore
- $L_{cumulative}$ = 10 x log(10^(33/10) + 10^(34/10)) = **37 dBA.**

The calculated cumulative noise level with the roller door left half open in its current location are as follows:

- Calculated $\mathbf{L_{eq,\ 15\ minute}}$ of 10 adult dogs in the indoor kennels with the roller door half open at 'R3' – **31 dBA**;
- Calculated $\mathbf{L_{eq,\ 15\ minute}}$ or 12 pups in the outdoor kennels at 'R3' – **34 dBA** (see Section 6.2); therefore
- $L_{cumulative}$ = 10 x log(10^(31/10) + 10^(34/10)) = **36 dBA.**

The calculated cumulative noise level in both scenarios above are less than the criteria of **38 dBA $\mathbf{L_{eq,\ 15\ minute}}$,** and are therefore acceptable.

6.5 Distressed Dogs or Pups

We have assessed the noise from barking dogs and pups. We are advised by Mathew Pryce, owner and operator of the proposal, that the noise from distressed dogs or pups is no louder than barking dogs, and in many cases is quieter as the dogs tend to 'whine' rather than bark.

Therefore the noise impact of distressed dogs will be less than from barking dogs, and will not require further assessment.

6.6 Correlation between Sunrise Noise Events

Penrith City Council prepared a **Major Assessment Report** (ID.8555303), Version 1 dated 1 February 2019, in response to Development Application number DA17/1344 for the continued use of the site as a greyhound boarding, training and breeding establishment.

The **Major Assessment Report** identifies several reasons for refusal, one of which was related to noise impact causing sleep disturbance, mainly:

- Apparent data correlation between the closest residential receptor, R3, and noise levels from the outdoor 'pup' kennel and the indoor 'dog' kennel.

Short term data is presented as $L_{eq,\ 1\ sec}$ in Appendices C to K. The highest $L_{eq,\ 1\ sec}$ in any given time period is equal to the L_{max} noise level for that same time period.

Concern was raised with regard to the correlation between noise events at the residential receptor R3 (46-50 Keech Road) and noise levels from the outdoor 'pup' kennel and/or indoor kennel areas. The example events quoted by the Penrith City Council include:

- ~~**Night 1**~~[1] **Night 2** *22/08/2018 - 23/08/2017*

  6:00 am to 6:05 am
- ~~**Night 2**~~[2] **Night 3** *23/08/2018 - 24/08/2017*

  5:58 am to 6:04 am
- **Night 4** *24/08/2018 - 25/08/2017*

  5:58 am to 6:04 am.

From the graphs presented in Appendix C to I of **DD Report**, it can be seen that this early morning period of approximately 5 minutes on each day (approximately 5:58 am to 6:05 am) shows a similar noise event across all seven mornings when the noise was recorded.

From observational data for sunrise in the Castlereagh region (see Table 3), it can be seen that these noise events in the early hours of morning strongly correlate with the recorded periods for Morning Twilight, just prior to the sun rising. As such, it is the opinion of Day Design that the increase in noise level at the residential receptor at this time is likely to originate from other natural sources, the most likely of which would be bird noise.

[1] Council's report incorrectly identifies the first event as being during Night 1. We suspect this should refer to Night 2 based on the dates and times provided.
[2] Council's report incorrectly identifies the first event as being during Night 2. We suspect this should refer to Night 3 based on the dates and times provided.

Table 3 Correlation of Sunrise Noise Events

Night	Morning Sunrise Data (Morning Twilight – Sunrise) [3] (AM)	Period of Increased Noise Levels (AM)
Night 2	06:02 – 06:27	06:00 – 06:05
Night 3	06:00 – 06:26	05:58 – 06:04
Night 4	05:59 – 06:24	05:58 – 06:04

Additionally, the recorded noise levels from both indoor and outdoor kennels during the same period of Morning Twilight do not correlate with the measured increase in level at the residential receptor.

At times of prolonged increase of noise from inside the dog kennel (> 90 dBA), such as Appendix J of the DD Report or from the outdoor Pup Kennel (> 80 dBA), such as Appendix K of the DD Report, the measured noise level at the residential premises is no greater than 45 dBA (Appendix J) or 44 dBA (Appendix K).

[3] *Data taken from https://www.timeanddate.com/sun/australia/penrith?month=8&year=2018*

7.0 NOISE IMPACT STATEMENT

Day Design Pty Ltd was engaged by Mr Mathew Pryce to assess the environmental noise impact of an existing greyhound Facility at 38-44 Keech Road, Castlereagh, NSW.

Measurements and calculations show that the level of noise emitted by the greyhound facility meets the Environment Protection Authority's noise level requirements as detailed in Section 5 of this report, and is therefore acceptable

Adam Shearer, BCT (Audio), MDesSc(Audio & Acoustics), MAAS
Senior Acoustical Consultant
for and on behalf of Day Design Pty Ltd

AAAC MEMBERSHIP

Day Design Pty Ltd is a member company of the Association of Australasian Acoustical Consultants, and the work herein reported has been performed in accordance with the terms of membership.

Attachments:

Appendix A – Ambient Noise Survey Instrumentation
Appendix B – Ambient Noise Survey
Appendix C to I – Measured Noise Levels – Night 1 to 7
Appendix J – Measured Adult Dog Barking Event – Night 2 – 5.35 am to 5.37 pm
Appendix K – Measured Pup Barking Event – Night 2 – 11.29 pm to 11.30 pm
Appendix L – Operating Scenario Assessment, 8 August 2018

NOISE SURVEY INSTRUMENTATION Appendix A

Noise level measurements and analysis in this report were made with instrumentation as follows:

Table A – Noise Survey Instrumentation

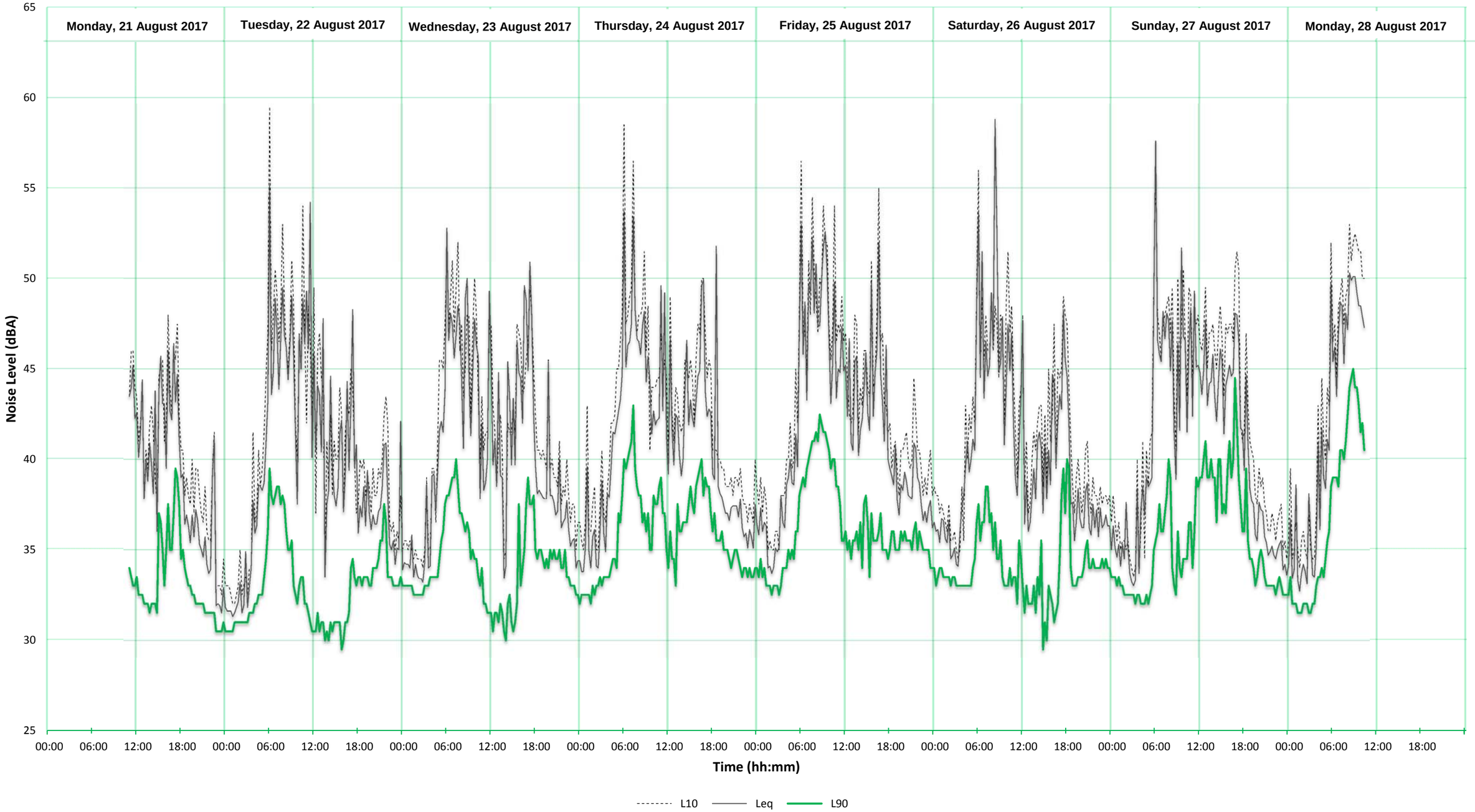
Description	Model No.	Serial No.
Infobyte Noise Logger (Type 2) Condenser Microphone 0.5" diameter	iM4 MK 250	106 106
Infobyte Noise Logger (Type 2) Condenser Microphone 0.5" diameter	iM4 MK 250	116 116
Infobyte Noise Logger (Type 2) Condenser Microphone 0.5" diameter	iM4 MK 250	118 118
Modular Precision Sound Analyser Condenser Microphone 0.5" diameter Acoustical Calibrator	B&K 2270 B&K 4189 B&K 4231	264 4584 263 8722 272 1949

An environmental noise logger is used to continuously monitor ambient noise levels and provide information on the statistical distribution of noise during an extended period of time. The Infobyte Noise Monitor iM4 is a Type 2 precision environmental noise monitor meeting all the applicable requirements of AS1259 for an integrating-averaging sound level meter.

The **B&K 2270 Sound Analyser** is a real-time precision integrating sound level meter with octave and third octave filters, that samples noise at a rate of 10 samples per second and provides L_{max} and L_{min} noise levels using both Fast and Slow response and L_{peak} noise levels on Impulse response time settings. The meter is frequency weighted to provide dBA, dBC or Linear sound pressure level readings as required.

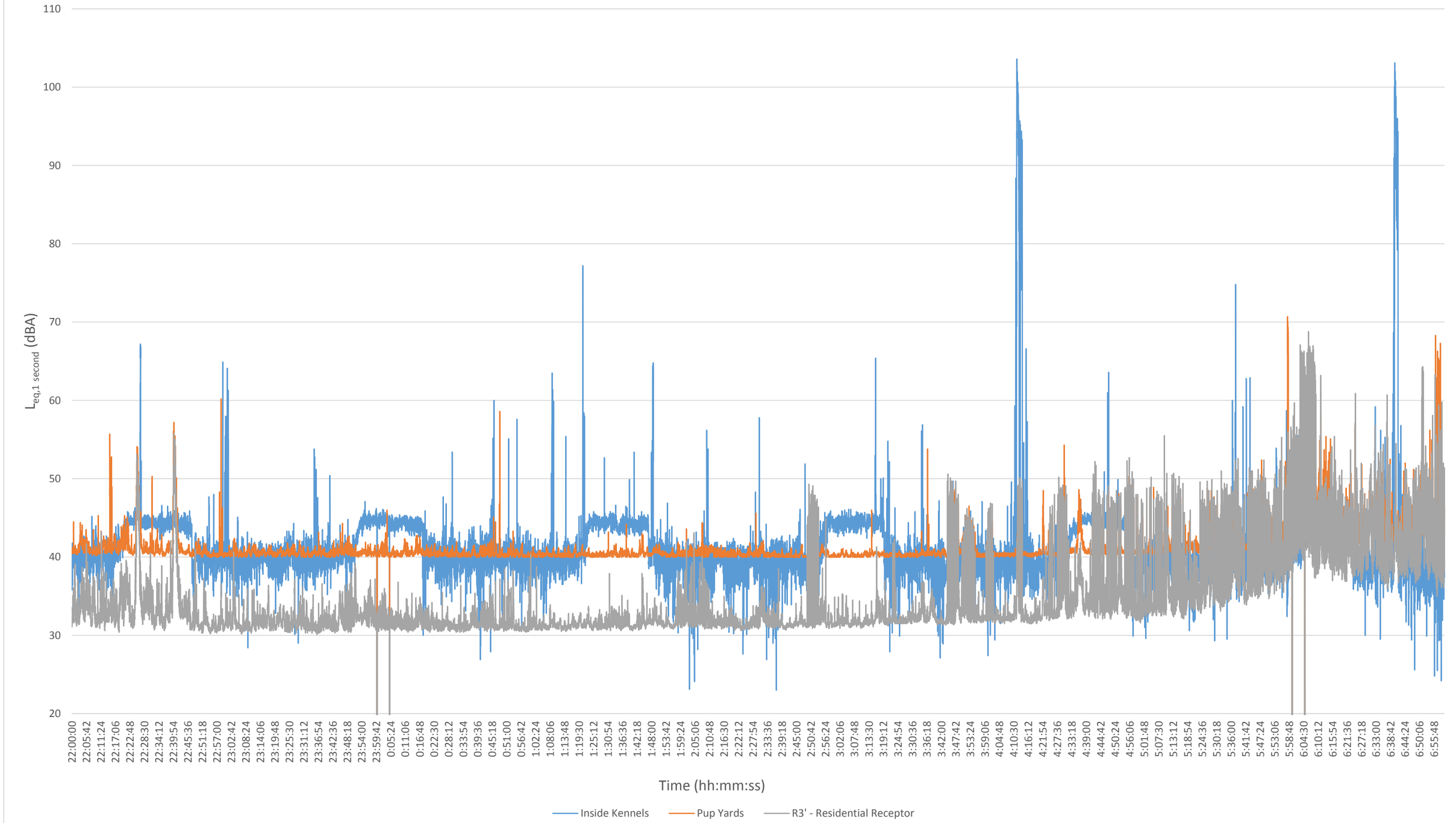
All instrument systems had been laboratory calibrated using instrumentation traceable to Australian National Standards and certified within the last two years thus conforming to Australian Standards. The measurement system was also field calibrated prior to and after noise surveys. Calibration drift was found to be less than 1 dB during attended and unattended measurements. No adjustments for instrument drift during the measurement period were warranted.

Located at 46 - 50 Keech Road, Castlereagh, NSW



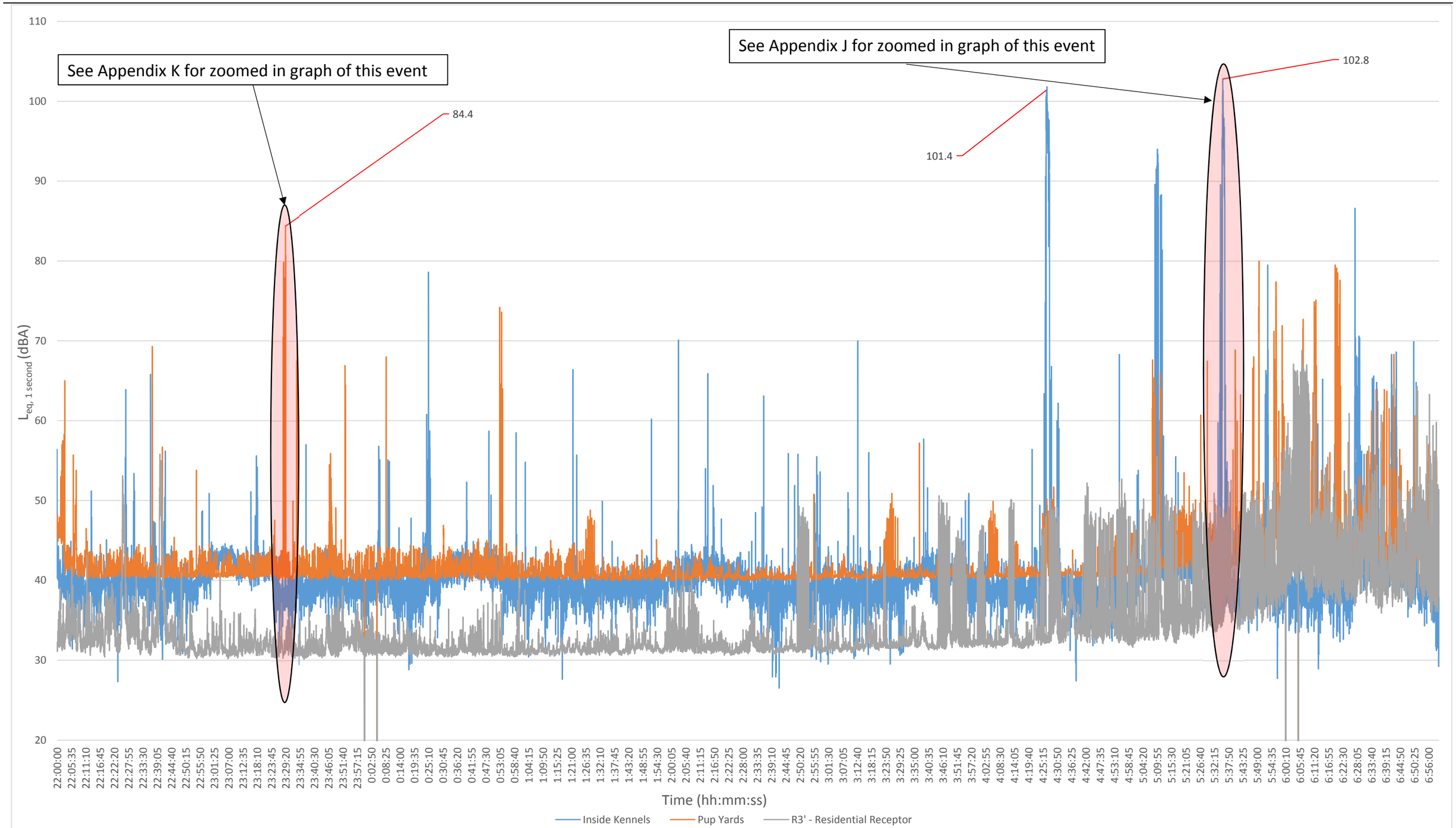
Comparison of $L_{eq,\ 1\ second}$ Noise Levels – Night 1, 10 pm – 7 am, 21/08/2017 – 22/08/2017

6308-1
Appendix C



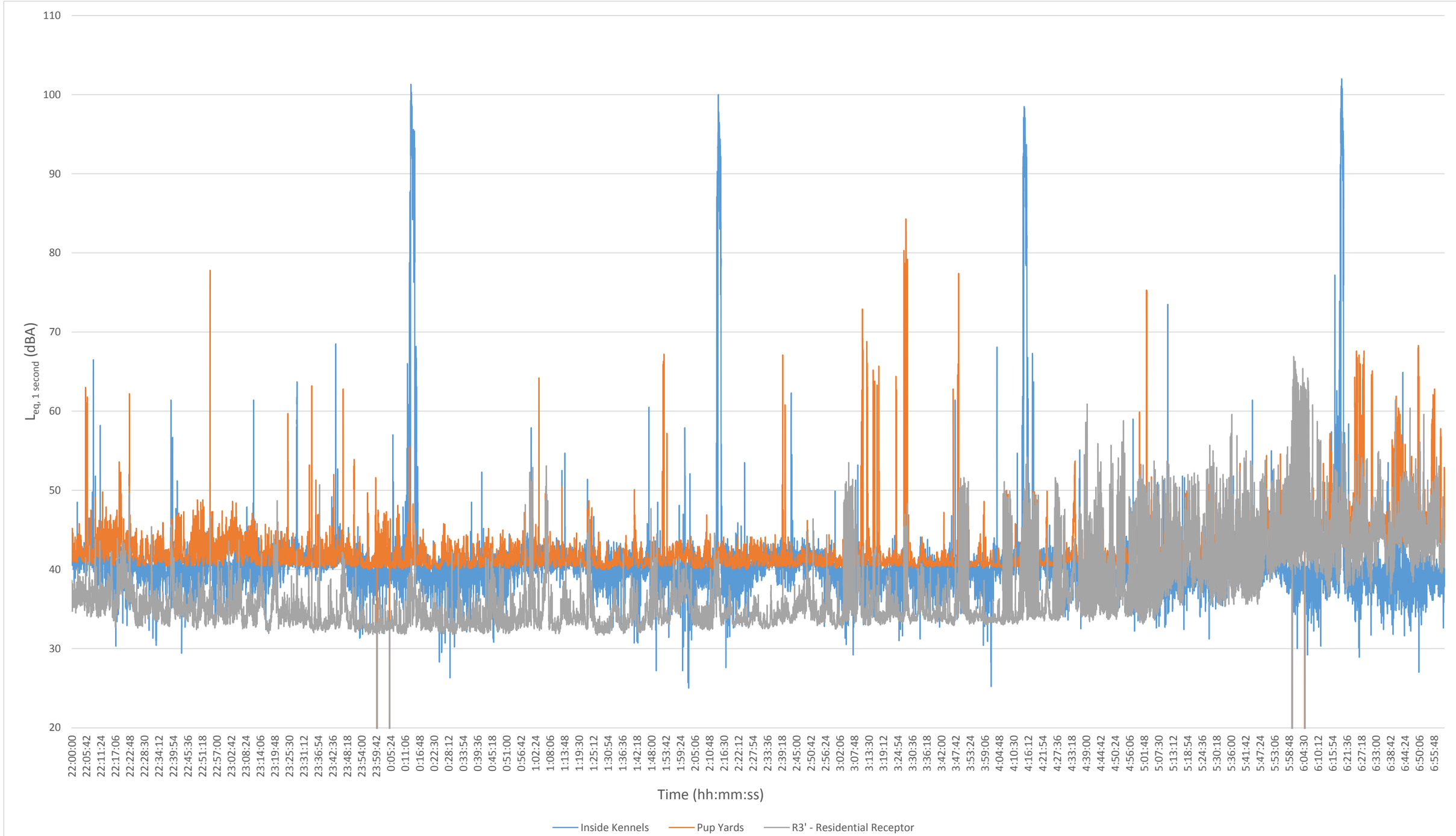
Comparison of $L_{eq,\ 1\ second}$ Noise Levels – Night 2, 10 pm – 7 am, 22/08/2017 – 23/08/2017

6308-1
Appendix D



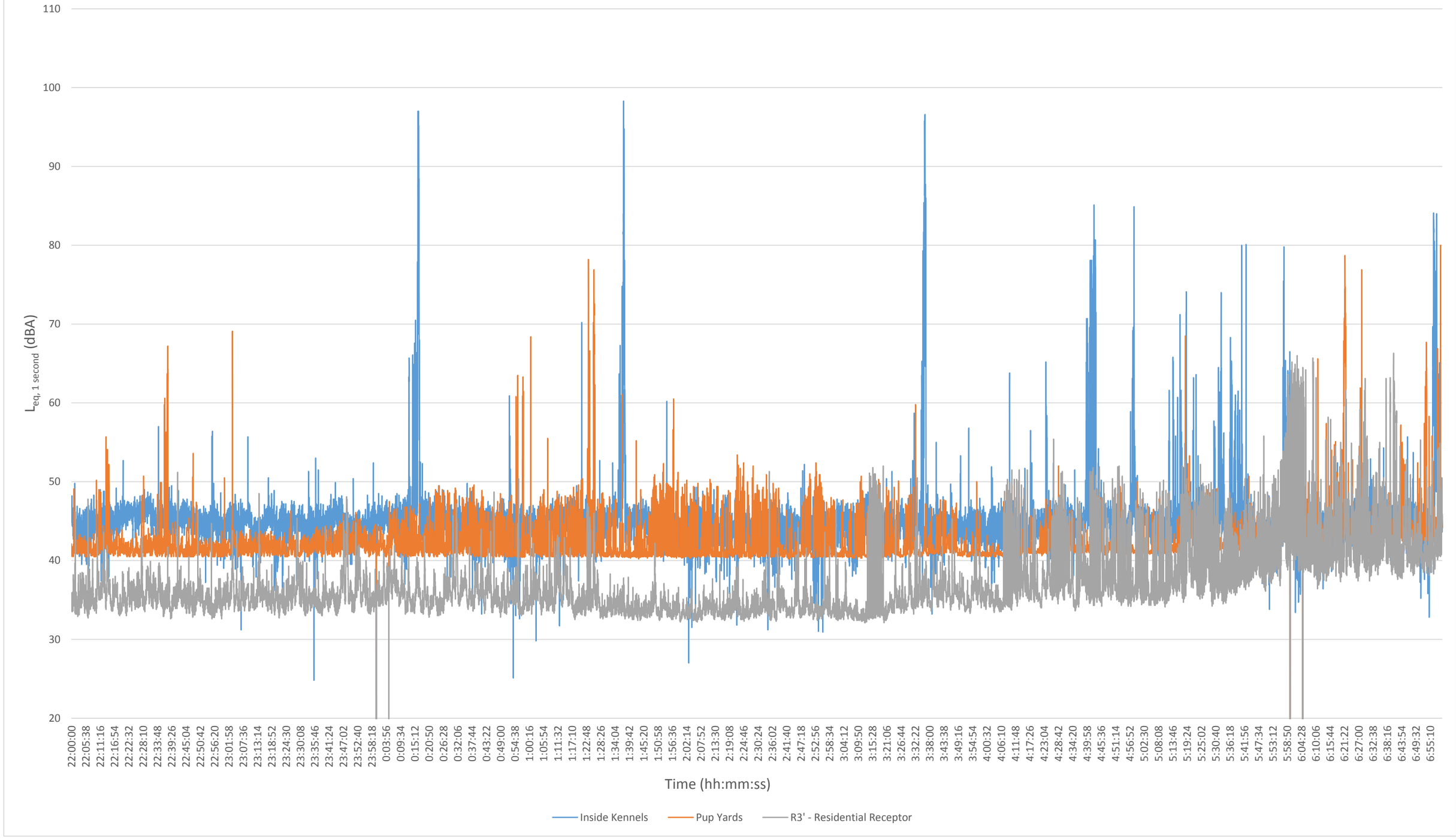
Comparison of $L_{eq,\ 1\ second}$ Noise Levels – Night 3, 10 pm – 7 am, 23/08/2017 – 24/08/2017

6308-1
Appendix E



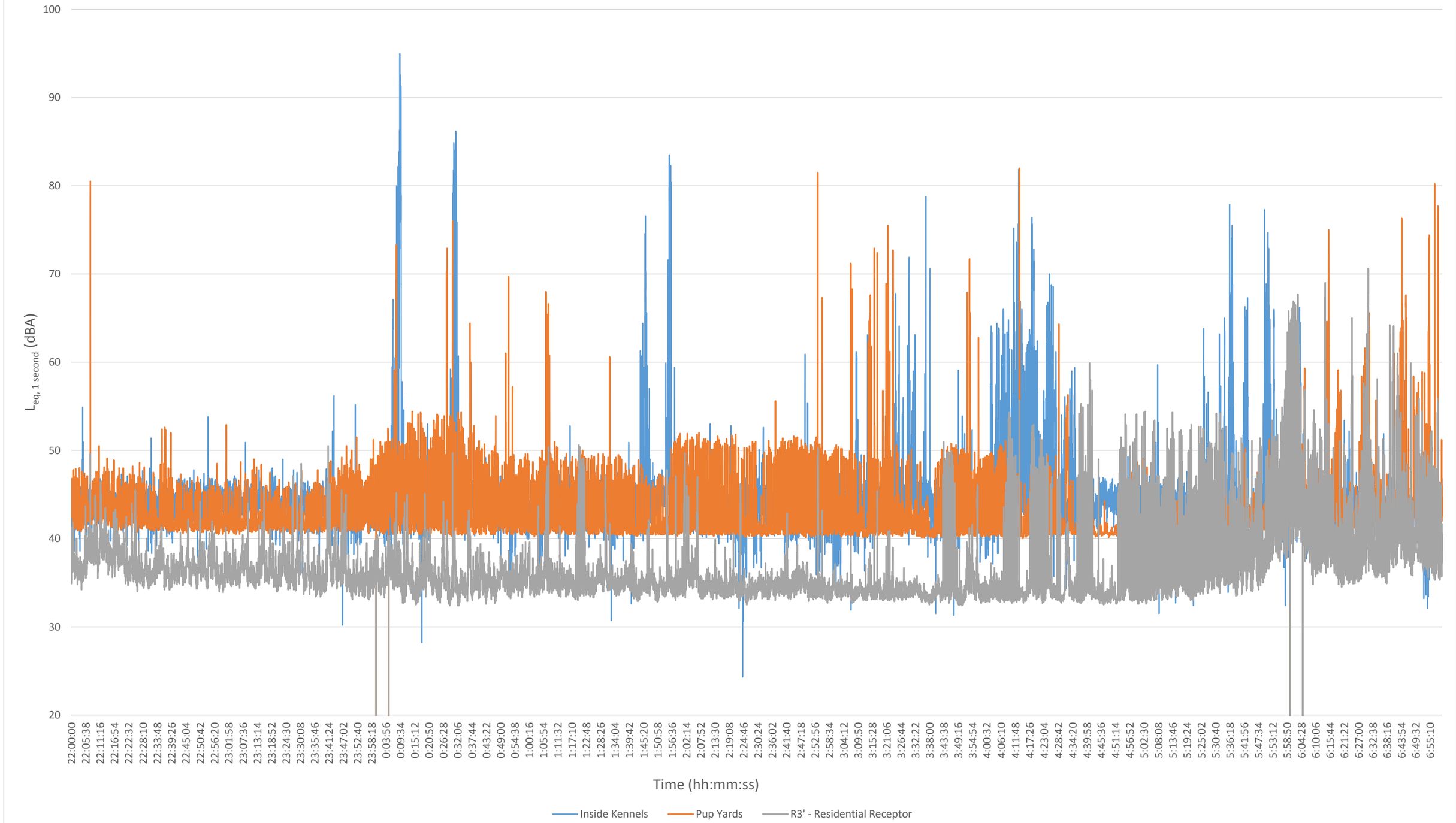
Comparison of $L_{eq,\ 1\ second}$ Noise Levels – Night 4, 10 pm – 7 am, 24/08/2017 – 25/08/2017

6308-1
Appendix F



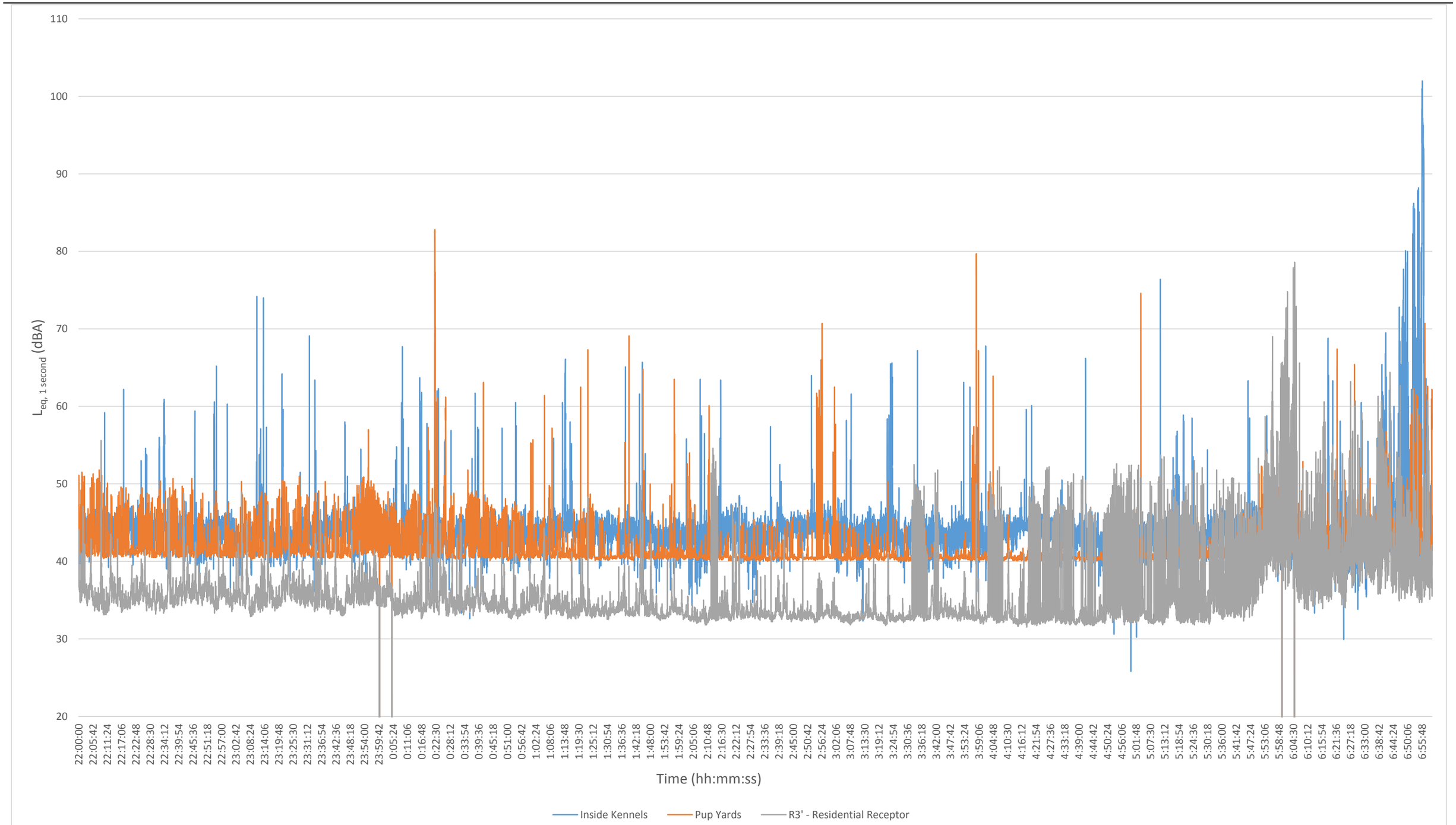
Comparison of $L_{eq,\ 1\ second}$ Noise Levels – Night 5, 10 pm – 7 am, 25/08/2017 – 26/08/2017

6308-1
Appendix G



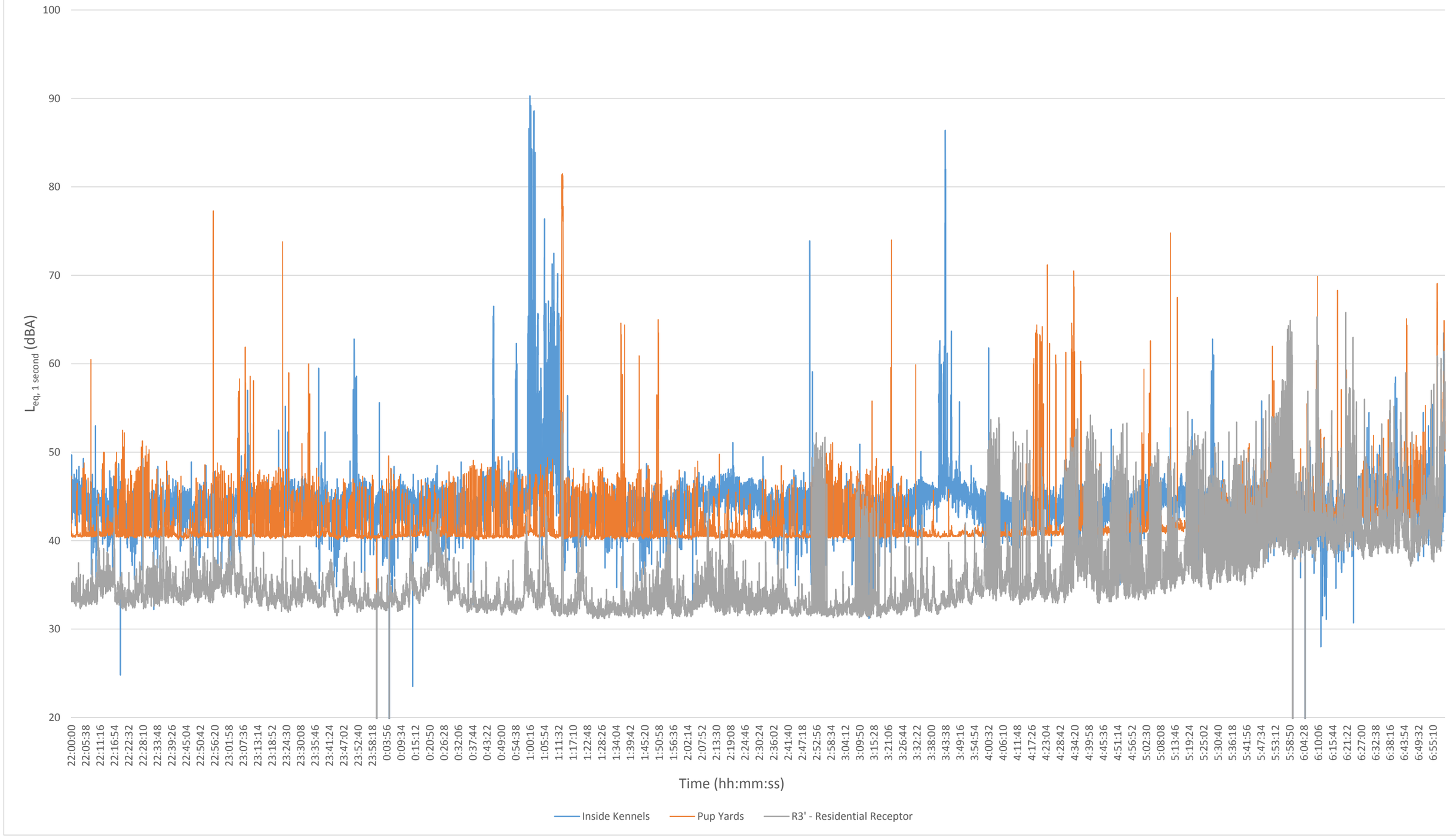
Comparison of $L_{eq,\ 1\ second}$ Noise Levels – Night 6, 10 pm – 7 am, 26/08/2017 – 27/08/2017

6308-1
Appendix H



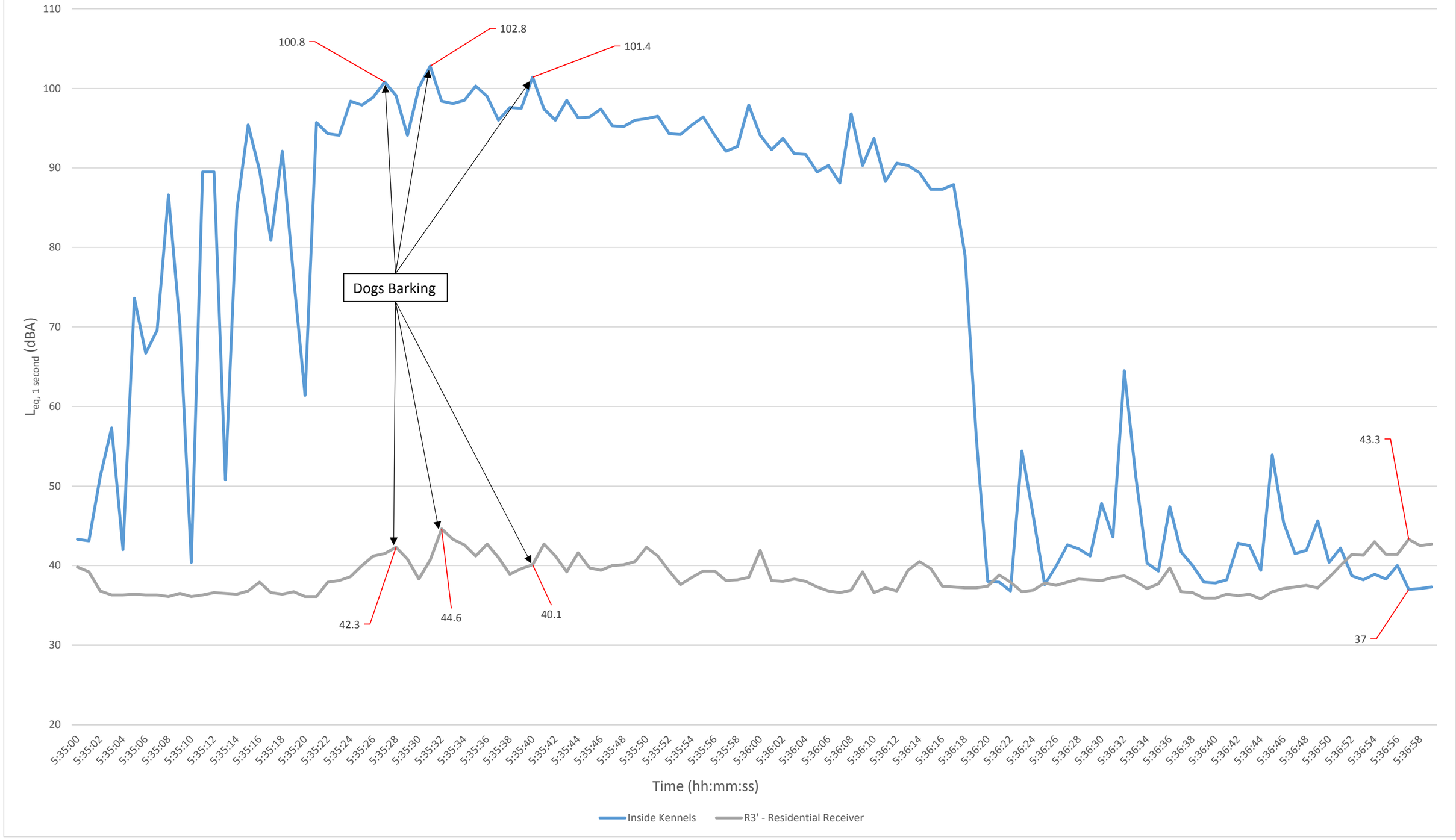
Comparison of $L_{eq,\ 1\ second}$ Noise Levels – Night 7, 10 pm – 7 am, 27/08/2017 – 28/08/2017

6308-1
Appendix I



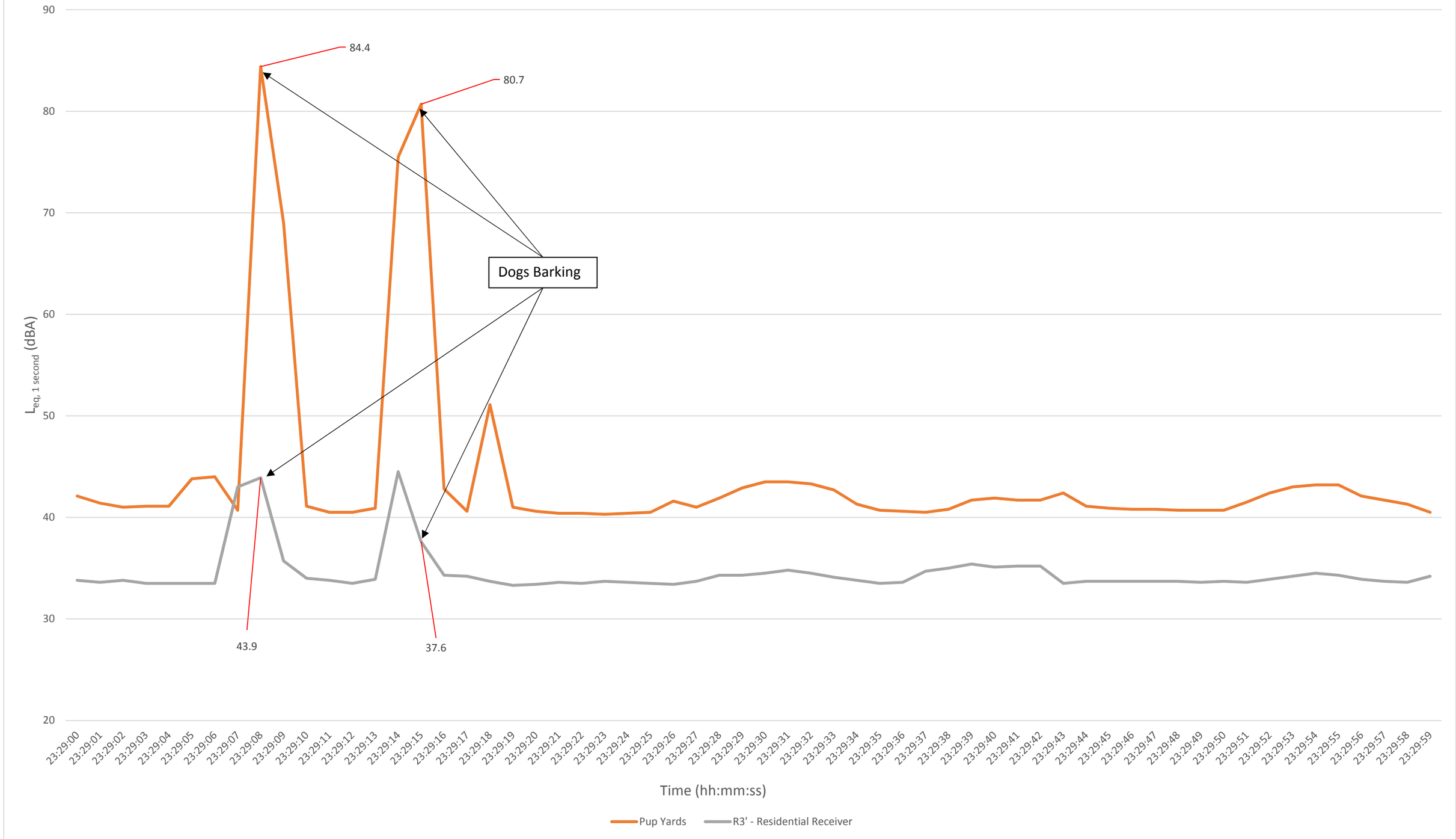
Comparison of $L_{eq,\ 1\ second}$ Noise Levels from the Inside Kennels to the Residential Receiver - Night 2, 05.35 am – 05.37 am, 22/08/2017

6308-1
Appendix J



Comparison of $L_{eq,\ 1\ second}$ Noise Levels from the Pup Yards to the Residential Receiver - Night 2, 11.29 pm – 11.30 pm, 22/08/2017

6308-1
Appendix K



DAY DESIGN PTY LTD
CONSULTING ACOUSTICAL ENGINEERS

SUITE 17, 808 FOREST ROAD, PEAKHURST 2210 ABN 73 107 291 494
P. 02 9046 3800 ACOUSTICS@DAYDESIGN.COM.AU WWW.DAYDESIGN.COM.AU

Mr Mathew Pryce
1 Diamantina Avenue
Windsor Downs NSW 2756

8 August, 2018
Refer: R \ 6308-2.1L

Attention: Mr Mathew Pryce
Telephone: 0404 713 356

Dear Mr Pryce,

38 – 44 KEECH ROAD, CASTLEREAGH

GREYHOUND FACILITY - OPERATING SCENARIO ASSESSMENT

We are pleased to advise that we have carried out a noise assessment of the proposed operating scenarios at the greyhound facility at 38-44 Keech Road, Castlereagh, NSW, to determine compliance at the most affected receiver.

Penrith City Council has requested further information be provided to demonstrate that the site is suitable for the ongoing use as a greyhound facility.

A Development Application (DA12/1295.01) was approved on 12 September 2014 for the use of the site at 38-44 Keech Road, Castlereagh as a Greyhound Facility, which has since lapsed. Noise and Sound Services (NSS) previously prepared an Acoustical Assessment Report No. nss 21895 – Final, dated February 2013 as part of the Development Application. In the report NSS established acceptable noise level criteria in accordance with the NSW Environment Protection Authority's (EPA) *Noise Guide for Local Government* intrusiveness criteria for noise emissions associated with the use of the greyhound facility.

The acceptable noise criteria established in NSS' previous report for noise emissions associated with the dog boarding facility is as follows:

- **38 dBA** $L_{eq,\ 15\ minute}$ during the day, evening and night; and
- **50 dBA** $L_{A1,\ 1\ minute}$ in the night for sleep disturbance.

The NSS report concluded that provided the recommended noise control were included in the final design, construction and operational management, the greyhound facility would comply with the relevant noise criteria.

The following noise controls have been incorporated into the final building construction and site construction:

Site:

- A 1.8 metre high lapped and capped timber fence has been constructed along approximately 200 metres of the southern boundary of the site;
- A 2.4 metre high lapped and capped timber fence exists on a section of the northern boundary of the site.

Exercise Yards:

- The adult dog exercise yards are bounded by 1.8 metre high timber sound barriers.

Kennel Area:

- The internal northern, eastern and western walls of the shed are lined internally with 100 mm thick cool room panels;
- The southern wall (approximately 3 metres) is constructed with an internal layer of plasterboard and an external layer of fibre cement on a 90 mm timber stud with the cavity lined with 75 mm thick glasswool insulation;
- The pedestrian access doors located at the southern end of the kennel are of solid core construction;
- Kennels are separated by a solid divider.

Subsequent to DA12/1295.01 lapsing, Day Design Pty Ltd prepared an Environmental Noise Impact Assessment, Report Number 6308-1.1R, dated 1 September 2017, to assess the greyhound facility during operation. Measurements and calculations showed that the level of noise emitted by the greyhound facility met the EPA's noise level requirements, as detailed in the NSS Report.

Mr Pryce has requested Day Design assess three operating scenarios for his barn where the greyhounds are kept overnight to determine which will best achieve the required noise criteria. The scenarios are as follows:

- Scenario 1 – All windows and roller door open;
- Scenario 2 – All windows open and roller door half open, Gyprock barrier to be installed to half of opening; and
- Scenario 3 – All windows and back door open, roller door closed with Gyprock barrier installed behind.

The calculated noise levels at the most affected receptor location, 46 Keech Road as per the NSS Report, are as follows:

- Scenario 1 – 34[1] dBA $L_{eq,\ 15\ minute}$ and 48 dBA $L_{A1,\ 1\ minute}$;

[1] *It is noted the calculated $L_{eq,\ 15\ minute}$ noise level is 1 dB less than the actual noise level measured at 46 Keech Road during the Day Design assessment.*

- Scenario 2 – 31 dBA $L_{eq,\ 15\ minute}$ and 45 dBA $L_{A1,\ 1\ minute}$; and
- Scenario 3 – 30 dBA $L_{eq,\ 15\ minute}$ and 43 dBA $L_{A1,\ 1\ minute}$.

The calculated $L_{eq,\ 15minute}$ and $L_{A1,\ 1\ minute}$ noise levels of dogs barking within the barn of the greyhound facility at the nearest residential receptor are within the acceptable noise criteria.

Noise level calculations show that the level of noise from the greyhound facility at 38-44 Keech Road, Castlereagh, NSW, during all of the proposed operating scenarios, will comply with the EPA's noise criteria, and be considered acceptable, therefore, all windows and the roller door may be kept open as required.

Adam Shearer, BCT (Audio), MDesSc (Audio and Acoustics), MAAS

Senior Acoustical Consultant

for and on behalf of Day Design Pty Ltd

AAAC MEMBERSHIP

Day Design Pty Ltd is a member company of the Association of Australasian Acoustical Consultants, and the work herein reported has been performed in accordance with the terms of membership.

The undersigned hereby certifies that this Report has been checked and approved in accordance with our Quality Management System.

Date: 8/8/18