Resonate

Heffron Park RFT

Development Application Report

S200015RP2 Revision A

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Resonate

Document Information

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0	24 August 2020	First Issue	Julia Knight	Raymond Sim
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Glossary

A-weighting	A spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies.
Characteristic	Associated with a noise source, means a tonal, impulsive, low frequency or modulating characteristic of the noise that is determined in accordance with the Guidelines for the use of the Environment Protection (Noise) Policy (Noise EPP) to be fundamental to the nature and impact of the noise.
Continuous noise level	A-weighted noise level of a continuous steady sound that, for the period over which the measurement is taken using fast time weighting, has the same mean square sound pressure as the noise level which varies over time when measured in relation to a noise source and noise-affected premises in accordance with the Noise EPP
Day	Between 7 am and 10 pm as defined in the Noise EPP
dB	Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale which means a sound that is 3 dB higher has twice as much energy. We typically perceive a 10 dB increase in sound as a doubling of loudness.
dB(A)	Units of the A-weighted sound level.
Frequency (Hz)	The number of times a vibrating object oscillates (moves back and forth) in one second. Fast movements produce high frequency sound (high pitch/tone), but slow movements mean the frequency (pitch/tone) is low. 1 Hz is equal to 1 cycle per second.
L_{AE}	The A weighted sound exposure level.
L_{10}	Noise level exceeded for 10 % of the measurement time. The L_{10} level represents the typical upper noise level and is often used to represent traffic or music noise.
L_{90}	Noise level exceeded for 90 % of the measurement time. The L_{90} level is commonly referred to as the background noise level.
L_{eq}	Equivalent Noise Level—Energy averaged noise level over the measurement time.
L_{max}	The maximum instantaneous noise level.
Night	Between 10.00 p.m. on one day and 7.00 a.m. on the following day as defined in the Noise EPP
Noise source	Premises or a place at which an activity is undertaken, or a machine or device is operated, resulting in the emission of noise
R_W	Weighted Sound Reduction Index—A laboratory measured value of the acoustic separation provided by a single building element (such as a partition). The higher the R_W the better the noise isolation provided by a building element.

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1 Executive summary

Resonate Consultants has been commissioned as a sub-contractor to Integral Group Sydney to provide acoustic design advice to for the development of the Heffron Centre at Heffron Park, 417-439 Bunnerong Road, Maroubra.

An important component of the larger project is to assess the potential noise impacts from the facility to the surrounding community including commercial and residential noise sensitive receivers.

Resonate conducted unattended noise logging in three locations to establish existing background noise levels in the surrounding areas. The results from the noise logging informs the derivation of noise emission criteria as per the EPA's *Noise Policy for Industry* (NPI).

The following noise sources are assessed:

- Noise emissions from mechanical plant items and any other noise generating plant on the roof of the facility,
- Noise emissions due to the car park activities, and
- Potential noise break out of activities within the building.

The predicted noise levels from the sources listed above are compared with the noise criteria and, if required, mitigation measures are recommended to achieve the criteria.

2 Introduction

Resonate Consultants has been commissioned as a sub-consultant to Integral to provide acoustic design advice for the proposed Heffron Centre in Maroubra. This report outlines the acoustic assessment of the proposed operational noise impacts of the facility.

2.1 Project description

The Heffron Centre is a new Indoor Multi-Purpose Facility which consists of a Gymnastics Facility, Community & High-Performance Centre (CHPC), and a Showcase Field, which forms a major part of the ongoing upgrade works in Heffron Park. Maroubra Council is the Client, with the South Sydney Rabbitohs and Office of Sport being funding partners and major stakeholders.

3 Site Description

The Heffron Park site is adjacent to Bunnerong Road, facing commercial and residential properties to the West and residential properties to the South. In Figure 1 below, the proposed building works are shown in green, the car park in blue and some selected sensitive residential receivers highlighted in red.

Figure 1 Site plan

Two zones of residential receivers have been identified to be the nearest and potentially most affected receivers to the project and will be assessed as part of this DA assessment. These residential receivers are as follows:

- Residents on Bunnerong Road. These residents are the closest to the proposed site but also have higher existing background noise levels due to their proximity to Bunnerong Road.
- Residents on Jersey Road. These receivers are approximately 180m from the proposed site, however have line of sight to the new building and have a lower background noise level as they are further away from the main road.

4 Existing ambient acoustic environment

4.1 Noise monitoring

Noise monitoring was conducted during the period 24th June 2020 to 6th July 2020. Unattended and attended noise measurements were undertaken to determine the existing noise levels at locations representative of the nearest noise sensitive receivers.

4.1.1 Instrumentation

Noise logging was conducted using two Rion NL-42 noise loggers bearing the serial numbers 00946977 and 00946978, and a Rion NL-31 noise logger with serial number 00451254. Field calibration was conducted at the commencement and conclusion of the logging period and no significant calibration drift was observed.

The noise loggers were configured to record all relevant noise indices, including background noise level (L_{A90}) and equivalent continuous noise levels (L_{Aeq}). Samples were accumulated at 15-minute intervals. The time response of the logger was set to 'fast'.

Attended measurements were conducted using a B&K sound level meter bearing the serial number 2506777. Field calibration was conducted before and after the measurements and no significant calibration drift was observed. Each measurement was for a period of 15 minutes with the meter response set to 'fast'.

Noise measurements were taken in general accordance with AS1055.1.

4.1.2 Weather conditions

It is a requirement that noise data is captured during periods of favourable weather conditions avoiding adverse impacts of wind and rain on background noise levels. In order to assess weather conditions for the measurement period, half-hourly weather data was obtained from the Bureau of Meteorology (BOM) weather observation station ID 60800 at Sydney Airport.

Noise data has been excluded from the processed results if:

- Rain was observed during a measurement period, and/or
- Wind speed exceeded 5 m/s (18 km/h) at the measurement height of 1.5 m above ground. Wind data obtained from the BOM is presented as the value at 10 m above ground.

The BOM wind speed data obtained for this report was measured at a height of 10 m above ground level. It is therefore necessary to apply a correction factor in order to estimate the wind speed at the height of the logger (1.5 m).

The methodology to formulate a correction factor has been derived[1]. The correction multiplier for the measured wind speed at 10 m is derived by the following formula:

$$W_{1.5}=W_{10}\times\left(\frac{M_{1.5,cat}}{M_{10,cat}}\right)$$

where:

$W_{1.5}$ = Wind speed at height of 1.5 m
W_{10} = Wind speed at height of 10 m
$M_{1.5,cat}$ = AS 1170 multiplier for receiver height of 1.5 m and terrain category
$W_{10,cat}$ = AS 1170 multiplier for receiver height of 10 m and terrain category

Noise logging data that has been excluded due to adverse weather conditions is identified in the overall summary and daily noise logging graphs presented in Appendix A.

4.1.3 Noise monitoring locations

Unattended noise logging was conducted in three locations, labelled U1, U2 and U3 in Figure 2. While on site to deploy the noise loggers, attended measurements were also taken, in the same locations and order as the loggers.

[1] Gowen, T., Karantonis, P. & Rofail, T. (2004), *Converting Bureau of Meteorology wind speed data to local wind speeds at 1.5m above ground level*, Proceedings of ACOUSTICS 2004

Figure 2 Noise measurement and logging locations

4.1.4 Unattended noise monitoring

Unattended noise monitoring was conducted to establish the existing ambient noise environment for the purpose of this noise assessment report at locations representative of the nearest sensitive receivers. The resultant noise levels are summarised in Table 1.

Table 1 Unattended noise monitoring results

Noise logger location label	Rating Background Level, dB(A) L_{90}[1]			Ambient noise level, dB(A) L_{eq}		
	Day 7 am—6 pm	Evening 6 pm—10 pm	Night 10 pm—7 am	Day 7 am—6 pm	Evening 6 pm—10 pm	Night 10 pm—7 am
U1	55	51	43	67	65	60
U2	52	46	42	59	58	54
U3	50	48	43	60	57	54

(1) The Rating Background Level is a measure of the typical minimum steady background noise level for each time of day.

4.1.5 Attended noise measurements

Short-term operator-attended noise measurements were conducted at the conclusion of the unattended noise logging survey period. Table 2 below provides a summary of the attended noise measurement results.

Table 2 Operator-attended short-term noise measurement results summary

Attended measurement location label	Length (min:sec)	L_{eq} dB(A)	L_{Fmax} dB(A)	L_{AF90} dB(A)
A1	15:00	64	75	55
A2	15:00	56	88	50
A3	15:00	58	83	48

5 Operational Noise Criteria

Noise emissions from the project when operational should comply with the requirements of the NSW Noise Policy for Industry (NPI). Criteria apply to noise emissions from rooftop plant and the like at the development.

5.1 Noise Policy for Industry (NPI)

The NPI sets two separate noise criteria to meet desirable environmental outcomes:

- Intrusiveness – steady-state noise from the site should be controlled to no more than 5 dB(A) above the background noise level in the area. In this case, the steady-state L_{eq} noise level should not exceed the RBL measured for different time periods in the environment. The intrusiveness criteria is measured over a 15 minute period.
- Amenity – amenity criteria are set based on the land use of an area. It requires noise levels from new industrial noise sources to consider the existing industrial noise level such that the cumulative effect of multiple sources does not produce noise levels that would significantly exceed the amenity criteria. As the amenity criteria is provided in the NPI document as a period level i.e. between 7am and 6pm for day time activities, 3 dB is added to the amenity noise level to approximately represent a 15 minute period for direct comparison to the intrusiveness criterion.

Internal and external noise criteria are also set by the NPI for non-residential land uses such as hospital wards, educational facilities and active recreation areas.

Both intrusiveness and amenity criteria are derived from the ambient noise survey and the NPI. They are then compared with each other and the lowest and most stringent noise level is adopted to represent the project specific noise criterion for the relevant time period, day, evening and night time.

Normal operation

Table 3 presents the NPI noise emission criteria for residential land uses for the Day, Evening and Night periods.

Table 3 NPI noise emission criteria for residential land uses

Location	NPI Noise Level (dB re 20 µPa) during Period		
Residential receivers	**Daytime 07:00 – 18:00**	**Evening 18:00 – 22:00**	**Night-time 22:00 – 07:00**
Unattended logging location 1 (U1)			
Rating Background Level (RBL)	55	51	43
Intrusive criterion (RBL + 5 dB)	60	56	48
Amenity Criterion (NPI amenity level – 5 dB + 3 dB) (Urban[1])	58	48	43
Resulting NPI project specific criteria for residential land uses[2]	**58**	**48**	**43**
Unattended logging location 2 (U2)			
Rating Background Level (RBL)	52	46	42
Intrusive criterion (RBL + 5 dB)	57	51	47
Amenity Criterion (NPI amenity level – 5 dB + 3 dB) (Urban[1])	58	48	43
Resulting NPI project specific criteria for residential land uses[2]	**57**	**48**	**43**
Unattended logging location 3 (U3)			
Rating Background Level (RBL)	50	48	43
Intrusive criterion (RBL + 5 dB)	55	53	48
Amenity Criterion (NPI amenity level – 5 dB + 3 dB) (Urban[1])	58	48	43
Resulting NPI project specific criteria for residential land uses[2]	**55**	**48**	**43**

(1) An urban classification has been adopted for the site, described as an area with an acoustical environment that is dominated by 'urban hum', having mostly traffic and/or industrial related sound sources.

(2) The project-specific criteria are the lowest of the Intrusive criterion and the Amenity criterion for new sources for each time period.

5.2 Discussion of criteria

The criteria derived for U1 and U2 are very similar. As such, U2 will be used to be indicative for the residents on Bunnerong Road. Therefore, the more stringent of the two criteria have been adopted as the criteria for assessing the project's operational noise impact on the residential receivers on Bunnerong Road.

The criteria for location U3 (on Jersey Road) is 3 dB more stringent in the day time than the criteria for U2 (Bunnerong Road). This is due to the fact that U3 is distanced from the traffic noise on Bunnerong Road. All three locations resulted in the same criteria for the evening and night time periods.

Table 4 Summary of criteria for residential receivers

Criteria Summary	NPI Noise Level (dB re 20 µPa) during Period, dB(A) $L_{eq, 15mins}$		
	Daytime 07:00 – 18:00	Evening 18:00 – 22:00	Night-time 22:00 – 07:00
Residents on Bunnerong Road	**57**	**48**	**43**
Residents on Jersey Road	**55**	**48**	**43**

6 Noise Assessment

6.1 Mechanical plant noise assessment

Noise from externally located plant has the potential to cause an adverse impact to residential receivers close to the site. In the absence of plant selections and associated noise levels at this early stage of the design, the plant noise assessment for this report relies on setting maximum allowable plant noise levels, cumulative of all plant in each assessment location. External plant that has been assessed is located in the following areas:

- Northern rooftop plant deck
- Southern rooftop plant deck

These locations are indicated in Figure 3.

6.1.1 Residents on Bunnerong Road

The following assumptions have been made for the assessment of mechanical plant noise emissions to the residents at Bunnerong Road.

- The distance from the closest resident to the northern plant deck is approximately 110 m and approximately 100 m from the southern plant deck.
- The mechanical plant will not operate after 10pm or before 7am.
- Above a certain height level, the apartments across Bunnerong road will have line of sight to the mechanical plant, therefore no shielding has been taken into account in this assessment.

Table 5 Maximum allowable sound power level (L_w) for cumulative plant noise from both plant decks

Sensitive Receiver	Day		Evening		Night	
	Criteria at residential boundary dB $L_{Aeq,15min}$	Max sound power levels from plant L_w dB(A)	Criteria at residential boundary dB $L_{Aeq,15min}$	Max sound power levels from plant L_w dB(A)	Criteria at residential boundary dB $L_{Aeq,15min}$	Max sound power levels from plant L_w dB(A)
Bunnerong Road Residents	57	100 – Northern plant deck 99 – Southern plant deck	48	91 – Northern plant deck 90 – Southern plant deck	43	86 – Northern plant deck 85 – Southern plant deck
Jersey Road Residents	As the Jersey Road residents are further away, and also benefit from shielding provided by the architecture of the building, the Bunnerong Road residents will be the controlling factor for determining mechanical plant levels.					

6.1.2 Discussion

If these maximum sound power levels presented in Table 5 aren't able to be met with unit selection, some other noise mitigation measures may be required such as:

- Providing barriers to block line of site to the residents. This will need to be tall enough to block line of sight to the top floors of the apartment block directly across the road. Blocking line of sight typically achieves a minimum noise reduction of 5 dB.
- The use of acoustic attenuators on outlets of equipment
- Enclosing the plant space.
- Management plan to reduce the operating in the evening and night time periods to lower capacity or less units running during sensitive periods.

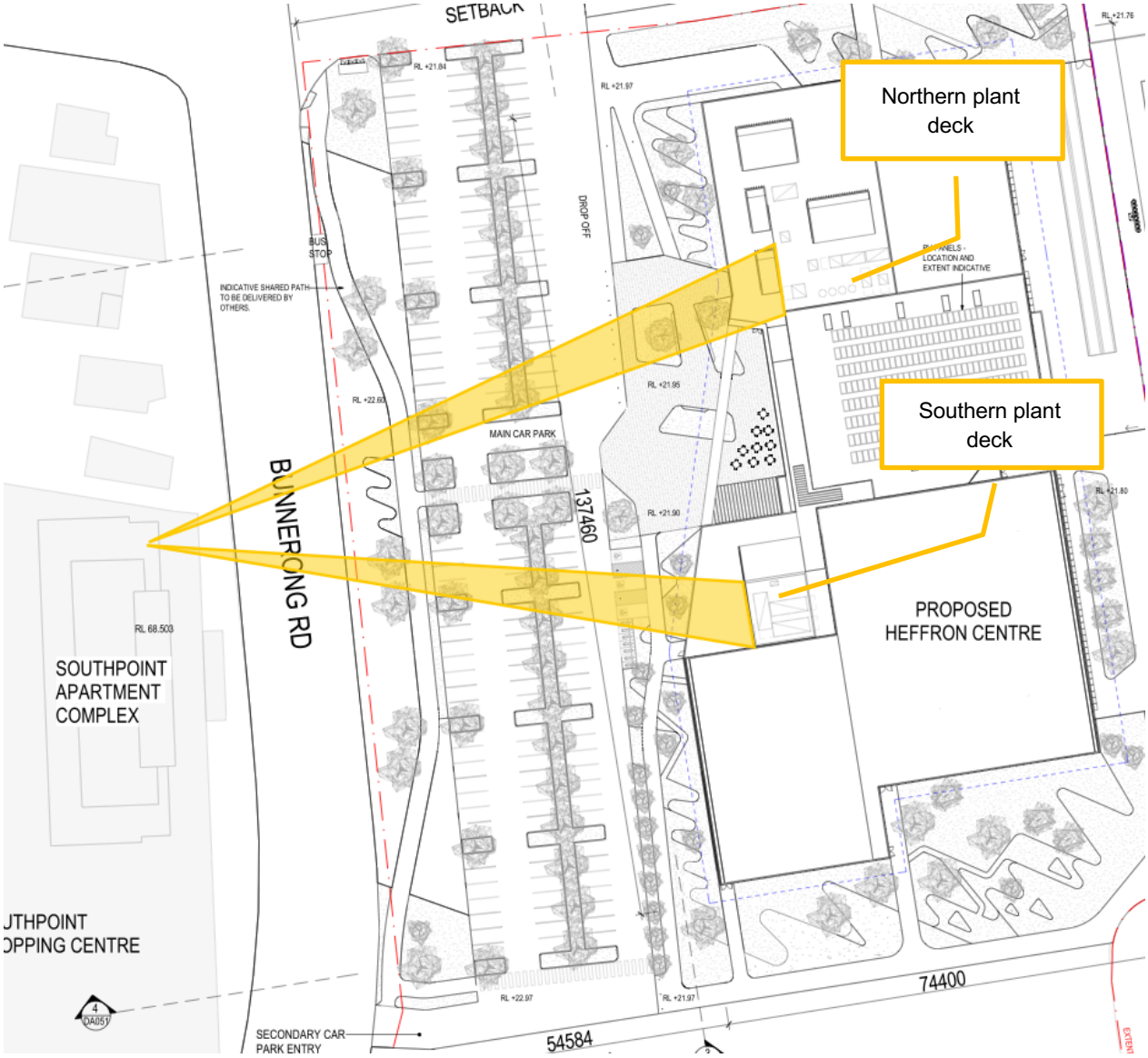


Figure 3 Locations of plant deck and assessment scenario

6.2 Car park activity noise assessment

An assessment of on-site activities associated with the car park was conducted to determine potential impacts at the nearest residential receivers.
Figure 4 shows the proposed car park area. The car park is close to the residents on Bunnerong road, and far from the residents on Jersey Road and as such the assessment will focus on the Bunnerong Road residents only.

Table 6 provides an overview of typical noise sources associated with the operation of the car park, which have been used to assess noise impact on the community. Table 7 provides noise source levels and the estimated number of noise events in the 15-minute assessment period.

Table 6 Typical noise sources associated with the car park

Parking area	Nearest receiver	Distance to receiver	Number of car spaces	Noise sources during parking process ✗/✓		
				Car door closure	Car engine start	Car pass-by
Main carpark	Bunnerong Road Residents	30 m	140	✓	✓	✓

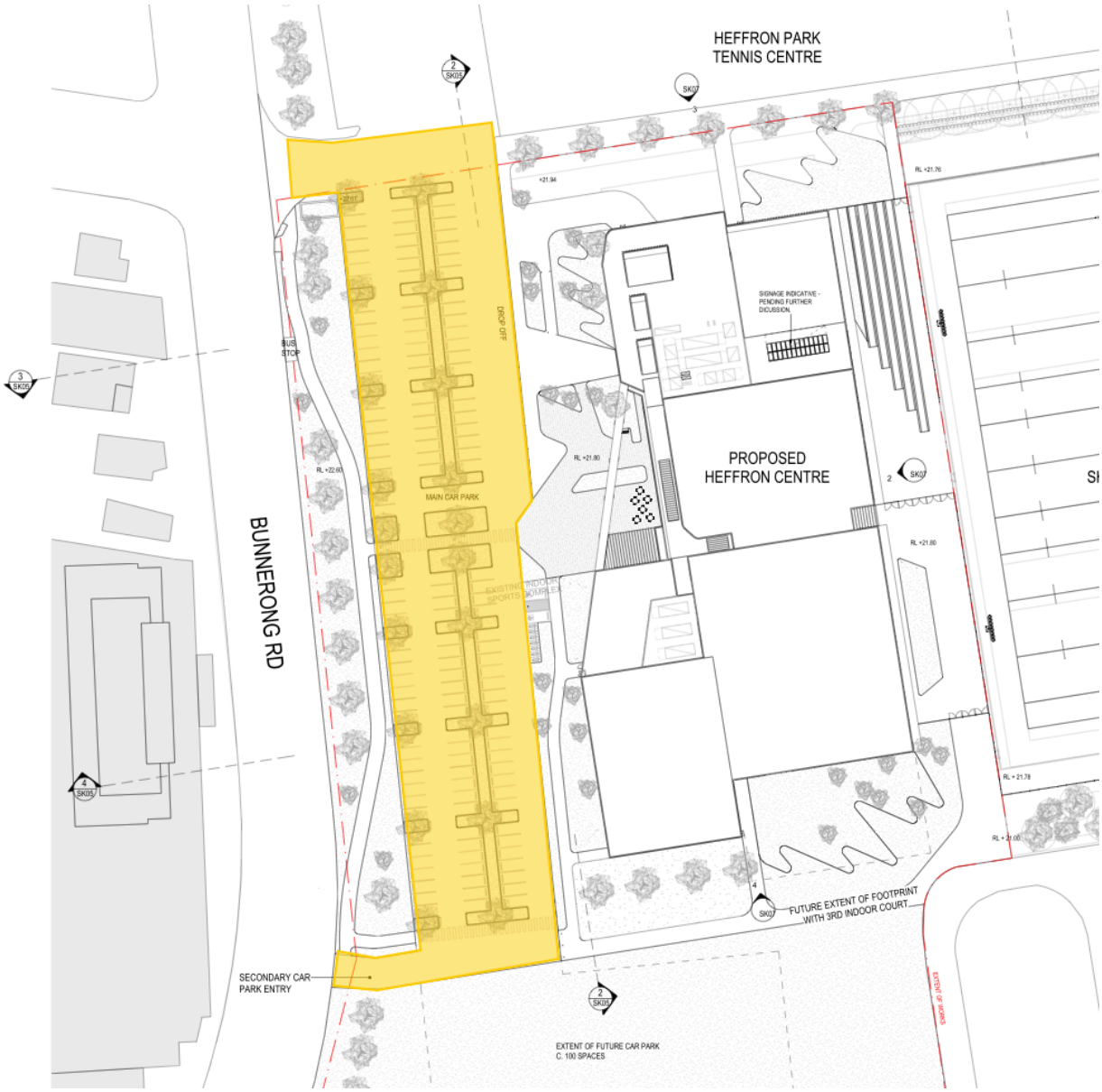


Figure 4 Site plan showing the car park area

6.2.1 Noise source levels

Table 7 presents the noise source levels and the number of events estimated for a 'peak' 15-minute time period providing a worst-case scenario. The previously measured typical noise source levels, corrected for tonality and impulsiveness as per AS1055[2] have been converted to a sound exposure level (L_{AE}), which represents the sound energy condensed into one second. The L_{AE} is then used to calculate the 15 minute L_{Aeq}, which in turn is used to compare against the relevant day and evening criteria.

Table 7 Typical car park noise sources measured at 1m

Noise Source	Distance to source (m)	Duration (seconds)	$L_{eq,T}$ dB (A)	Assumed maximum events per 15 minutes
				New Carpark
Car door closure	1	1	75	90
Car engine start	1	2	72	60
Car pass-by	1	10	76	60

6.2.2 Noise prediction calculation assumptions

The following assumptions have been made for noise calculations:

- There will be a total of approximately 140 permanent car parking spaces
- Assumptions of noise events for all car parks are based on a reasonable expectation of noise events that may take place over a 15-minute period during large sporting event in relation to the total number of car parking spaces available.
- All noise sources including car door closures, engine starts and car pass-bys have been treated as if they all occur at a location within the carpark that is nearest to the residential receivers. The method of predicting vehicle noise from the nearest single location is conservative as the car door closures and ignition noise sources would be spread out across the car park at varying distances from the receiver.
- As there are currently no intervening structures or barriers between the car park and the receivers, only distance loss has been applied to the source noise level.
- It is assumed that peak traffic will occur before and after a major sporting event as spectators arrive and depart the venue at approximately the same time.
- It is assumed that approaching the start of a game, 60 cars would arrive within a 15 minute period.
- It is assumed that each car would on average have two people, and would slam two car doors on entering/exiting the car.

The predicted noise levels from car park activities compared against the criteria are provided in Table 8.

[2] Australian Standard AS1055.1 - Description and measurement of environmental noise – General procedures

Table 8 New Carpark predicted noise levels compared with the criteria

Receiver	Noise Source	Source Level dB L_{AE}(1)	Adjusted Source level(2) to $L_{Aeq,15mins}$	Distance attenuation dB(A)	Predicted External Noise Level L_{Aeq} dB(A)	Compliance with daytime criterion	Compliance with evening criterion	Compliance with night-time criterion
						57 dB $L_{Aeq,15mins}$	48 dB $L_{Aeq,15mins}$	43 dB $L_{Aeq,15min}$
Bunnerong Road Receivers	Car door closure	75	66	29	37	✓	✓	×
	Car engine start	72	63	29	34	✓	✓	×
	Car pass-by	76	74	29	45	✓	✓	×
Total Combined predicted noise level					46	✓	✓	×

(1) L_{AE} Equivalent sound energy level of a sound event compressed into the time period of 1 second.

(2) Adjusted from L_{AE} source level based on number of events.

6.2.3 Discussion

Table 8 shows that the expected car park noise generation from car door closures, car ignition and car pass-by meets the daytime and evening assessment criteria of the NPI. Compliance with the criteria is not achieved for the night-time period. In order to operate in a compliant manner, it is recommended that large games or events should finish prior to 9.30pm so that patrons may leave the car park before 10pm.

6.3 Operational noise from indoor courts

Operational noise emissions from the proposed indoor sports courts and gymnastics spaces were predicted to the nearest residential receivers on Bunnerong Road and Jersey Road. Operational noise emissions were predicted using Resonate proprietary acoustic calculation software Ping.Calculation, which implements acoustic principles and formulas. The results of the predictions are presented in Table 9 below.

The prediction includes the following assumptions:

- Reverberant internal noise levels of the sports centre were calculated using published sound power levels and Resonate's previous measurements in similar spaces. The internal reverberant noise level used was 77 dB(A) $L_{eq\ 15\ min}$.
- There is a distance of approximately 80 m between the facade of the gymnastics area to the closest residential receivers across Bunnerong Road.
- There is a distance of approximately 180 meters between the facade of the indoor sports courts to the closest residents on Jersey Road.
- The roof consists of Kingspan 150 mm panels (KS1000) which have an acoustic performance of Rw 24.
- The walls primarily consist of Kingspan 150 mm panels (KS1000) which have an acoustic performance of Rw 24.
- The predictions assume that during a worst-case scenario both spaces would be used simultaneously.
- Table C1 of the NPI states that a penalty should be added for annoying characteristics of noise. There is the potential for noise emission from buzzers and whistles to be audible which may be considered intermittent. A 5 dB penalty has been added to the predicted noise level during the night time only.

A number of scenarios have been assessed and the results are presented in Table 9.

Table 9 Sports halls operational noise assessment

Receiver Location	Period	Noise Criteria – dB(A)	Predicted Noise Level $L_{eq(15\ minute)}$ – dB(A)	Compliance
Scenario 1 – No open windows or louvres				
Residents on Bunnerong Road	Daytime 07:00 – 18:00	57	38	✓
	Evening 18:00 – 22:00	48	38	✓
	Night-time 22:00 – 07:00	43	43 (38 + 5 penalty)	✓
Residents on Jersey Road	Daytime 07:00 – 18:00	55	31	✓
	Evening 18:00 – 22:00	48	31	✓
	Night-time 22:00 – 07:00	43	36 (31 + 5 penalty)	✓
Scenario 2 – 10m^2 of open windows or louvres in each space				
Residents on Bunnerong Road	Daytime 07:00 – 18:00	57	43	✓
	Evening 18:00 – 22:00	48	43	✓
	Night-time 22:00 – 07:00	43	48 (43 + 5 penalty)	×
Residents on Jersey Road	Daytime 07:00 – 18:00	55	36	✓
	Evening 18:00 – 22:00	48	36	✓
	Night-time 22:00 – 07:00	43	41 (36 + 5 penalty)	✓

6.3.1 Discussion

If the halls are operating simultaneously and have closed windows and doors, the criteria is met at the nearest residentials receivers for the day, evening and night time periods. If there are louvres or open windows for ventilation, assuming 10 m^2 of open area for each space, the criteria will be met during the daytime and evening periods. For scenario 2, with windows or louvres open, compliance is not achieved in the night time period.

If further mitigation measures are required as the design progresses, there are the following options:

- Install acoustic weather proof louvres for ventilation
- Adopt an operational management plan that
  - limits open doors or windows in the evening and night time period.
  - limits the use of whistles or buzzers for sporting games.

6.4 Construction noise and vibration

Prior to the construction certificate phase, a construction noise and vibration assessment of the Project should be conducted. The assessment would address potential noise and vibration impacts associated with the construction of the Project, and where necessary, recommend feasible and reasonable noise and vibration reducing mitigation, management and safeguard measures. These recommendations would be developed to ensure that construction activities associated with the Project are carried out within the noise and vibration management levels derived for the project based on the NSW EPA's *Interim Construction Noise Guideline*. Construction related road traffic noise would also be assessed as part of the construction noise and vibration assessment and would be assessed against the EPA's *Road Noise Policy*.

7 Conclusion

This report outlined the acoustic assessment of the proposed operational noise impacts of the facility. The findings are summarised below.

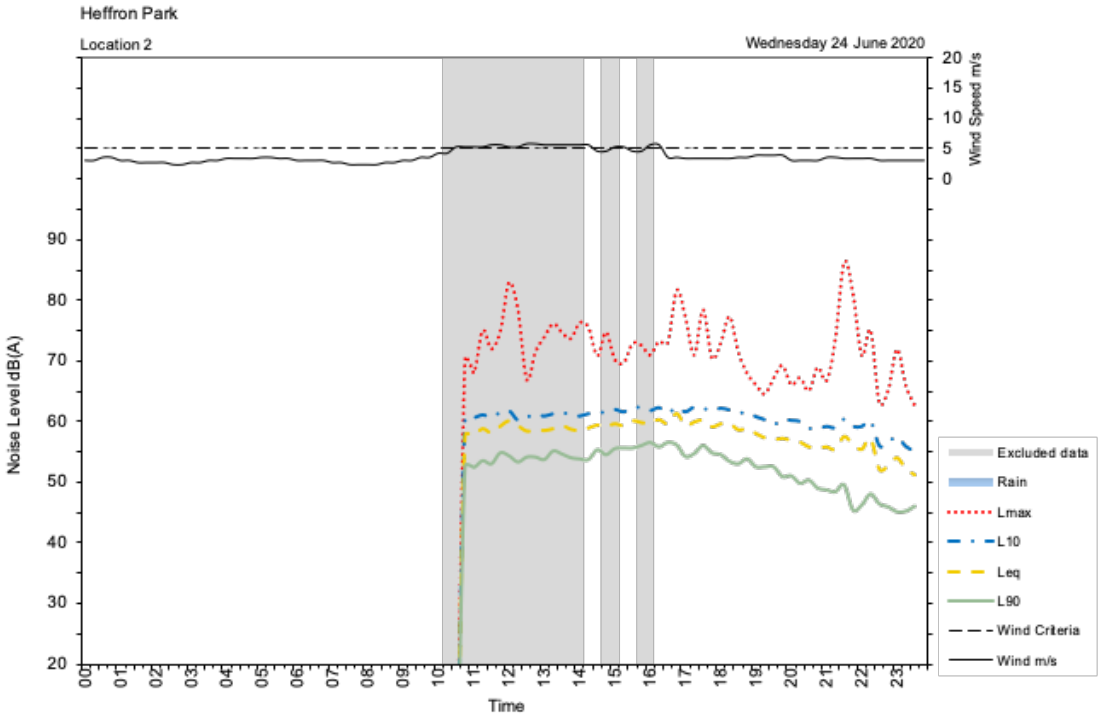
Mechanical plant noise emissions
Maximum sound power levels were determined for each of the two plant locations on the roof. In the case that these sound levels aren't able to be met with unit selection, other alternative noise mitigation measures are suggested.

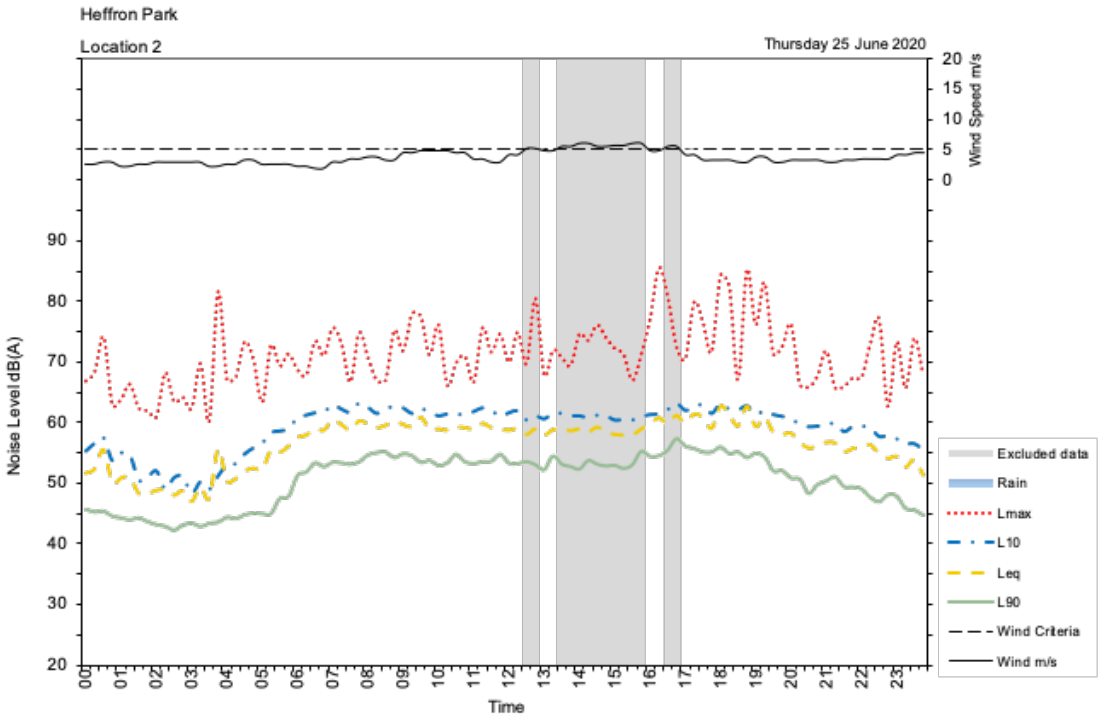
Car park noise emissions
The expected car park noise generation from car door closures, car ignition and car pass-by meets the daytime and evening assessment criteria of the NPI. Compliance with the criteria is not achieved for the night-time period. In order to operate in a compliant manner, it is recommended that large games or events should finish prior to 9.30pm so that patrons may leave the car park before 10pm.

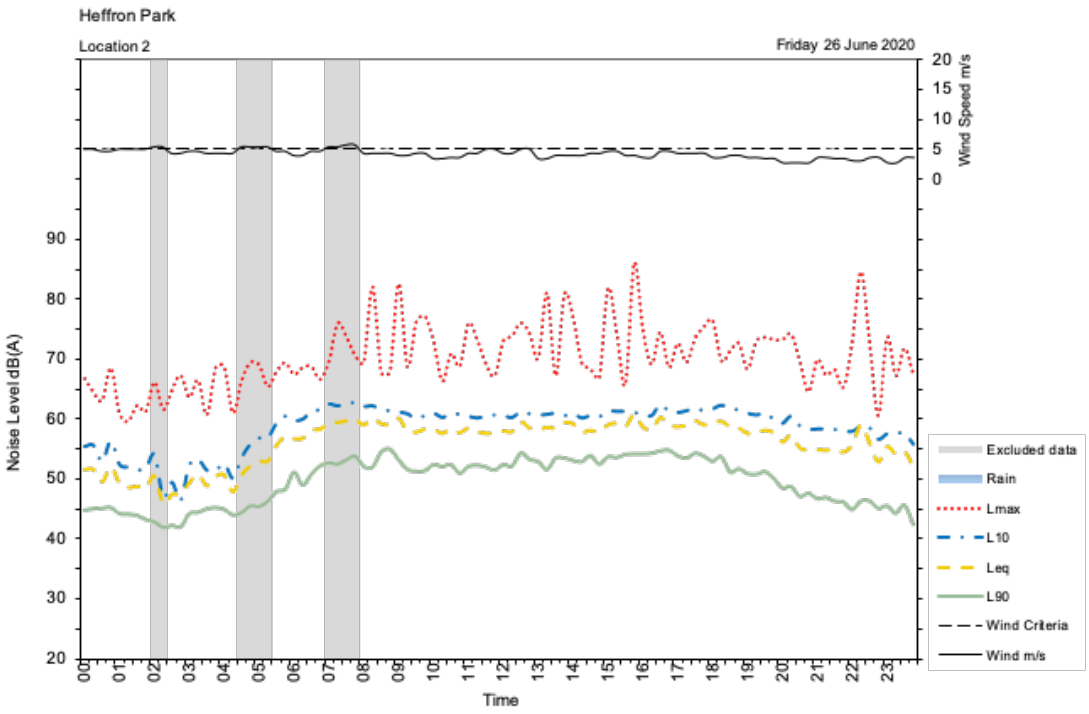
Indoor courts noise emissions
If the halls are operating simultaneously and have closed windows and doors, the criteria is met at the nearest residentials receivers for the day, evening and night time periods. If there are louvres or open windows for ventilation, assuming 10 m^2 of open area for each space, the criteria will be met during the daytime and evening periods but not for the night-time period. If further mitigation measures are required as the design progresses, there is the possibility of installing acoustic louvers or managing noise with an operational management plan.

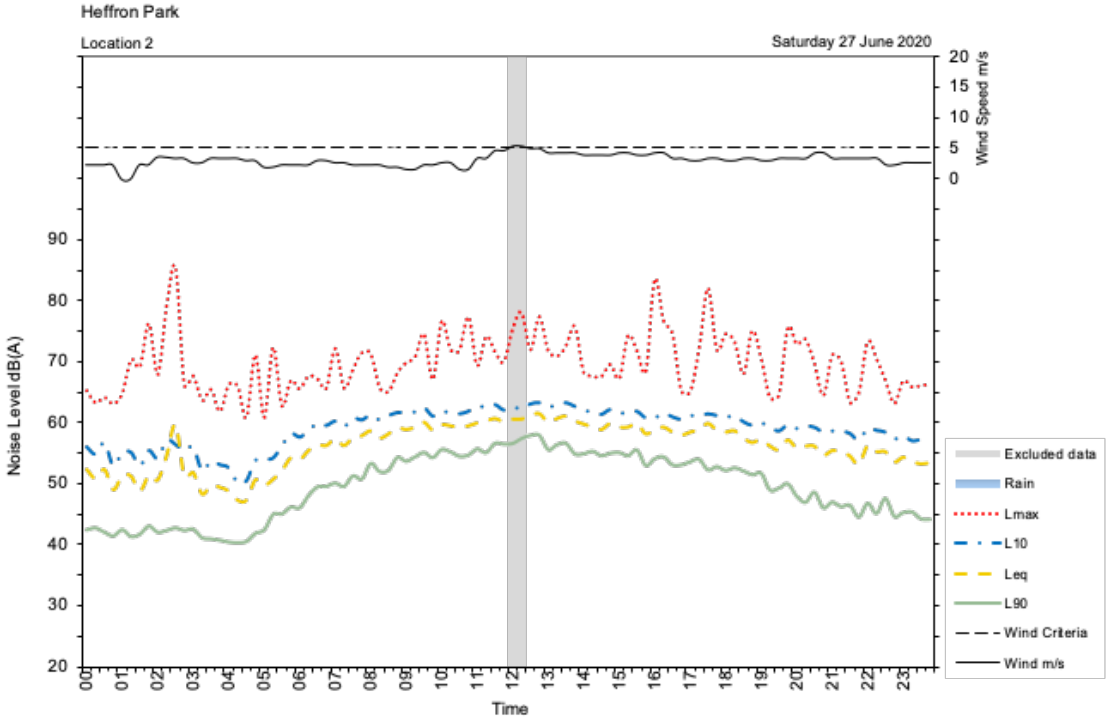
Construction noise and vibration
Construction noise and vibration assessment should be conducted prior to the construction certificate phase of the Project. The Project's construction activities and road traffic would be assessed in accordance with the NSW EPA's *Interim Construction Noise Guideline* and the *Road Noise Policy* respectively. From the assessment, feasible and reasonable noise and vibration reducing mitigation, management and safeguard measures would be develop to ensure that construction activities are carried out within the Project's noise and vibration management levels.

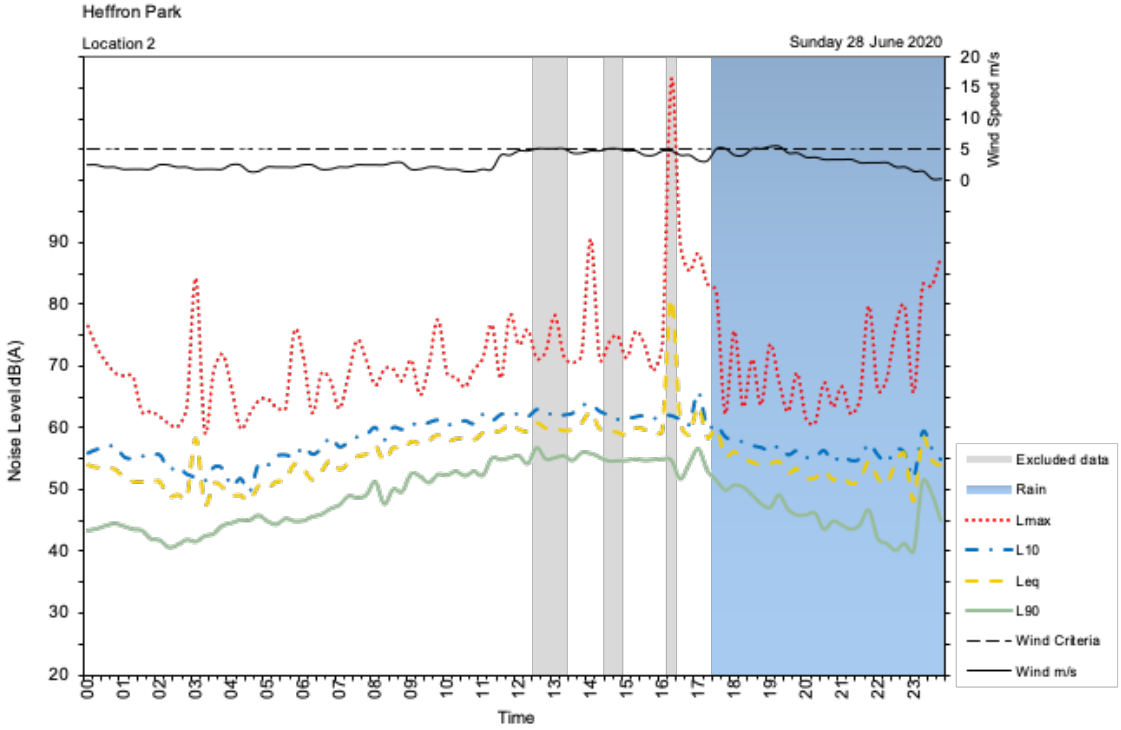
Appendix A – Logging graphs

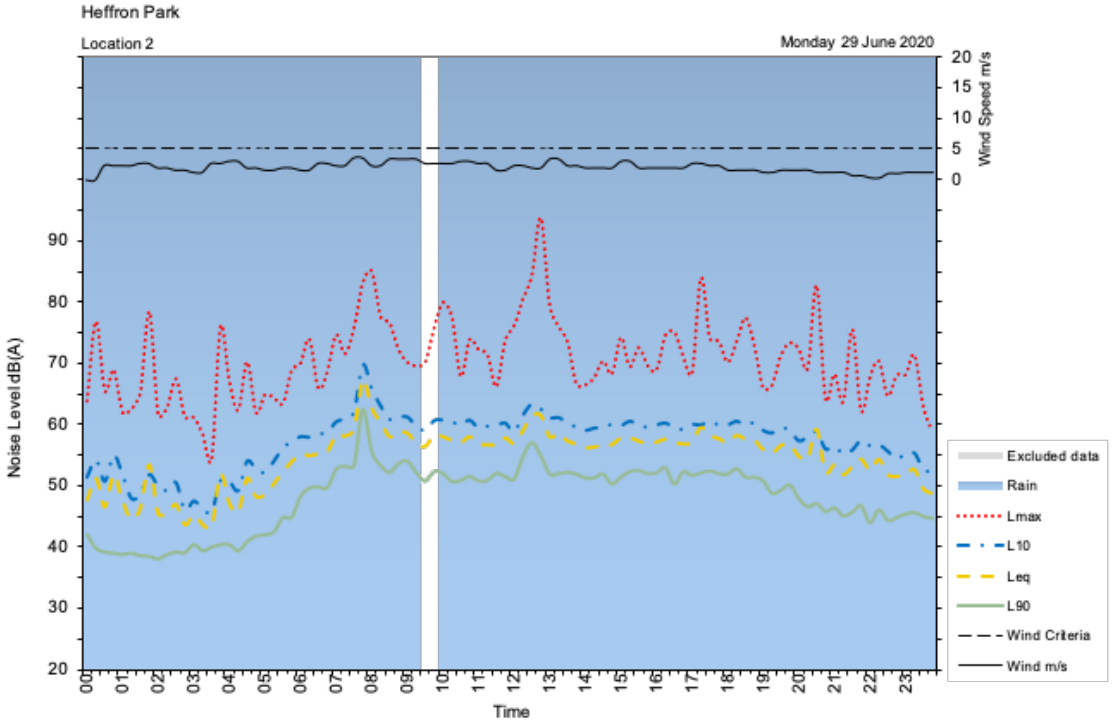


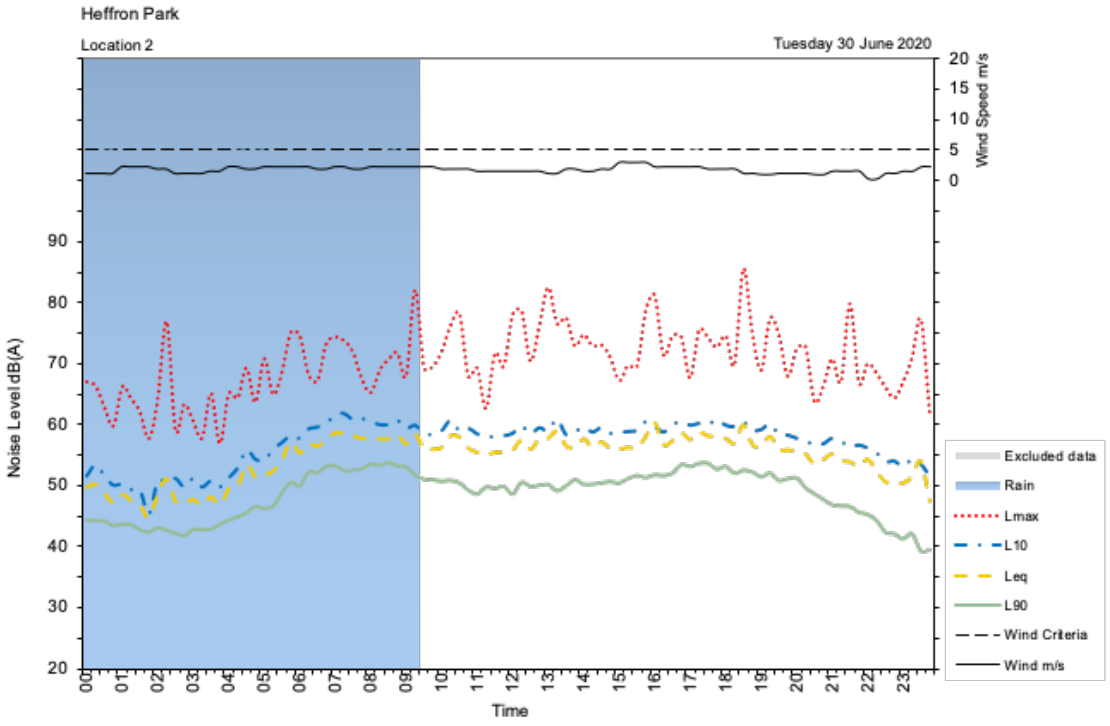

Heffron Park
Location 2
Thursday 25 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

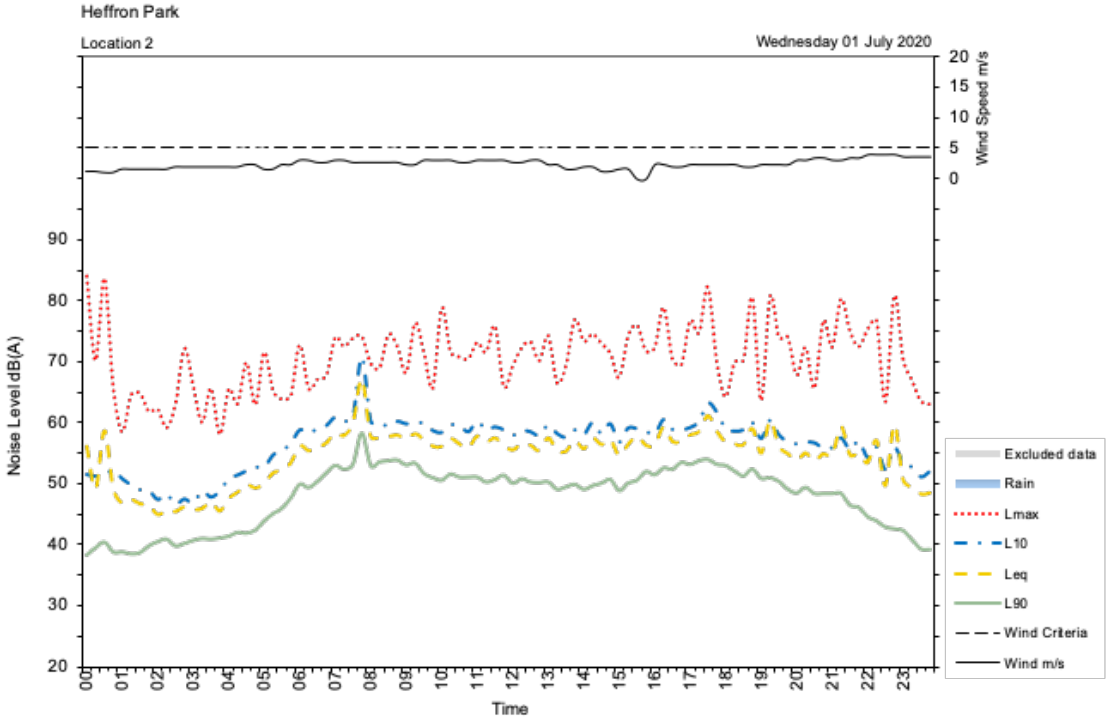

Heffron Park
Location 2
Friday 26 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

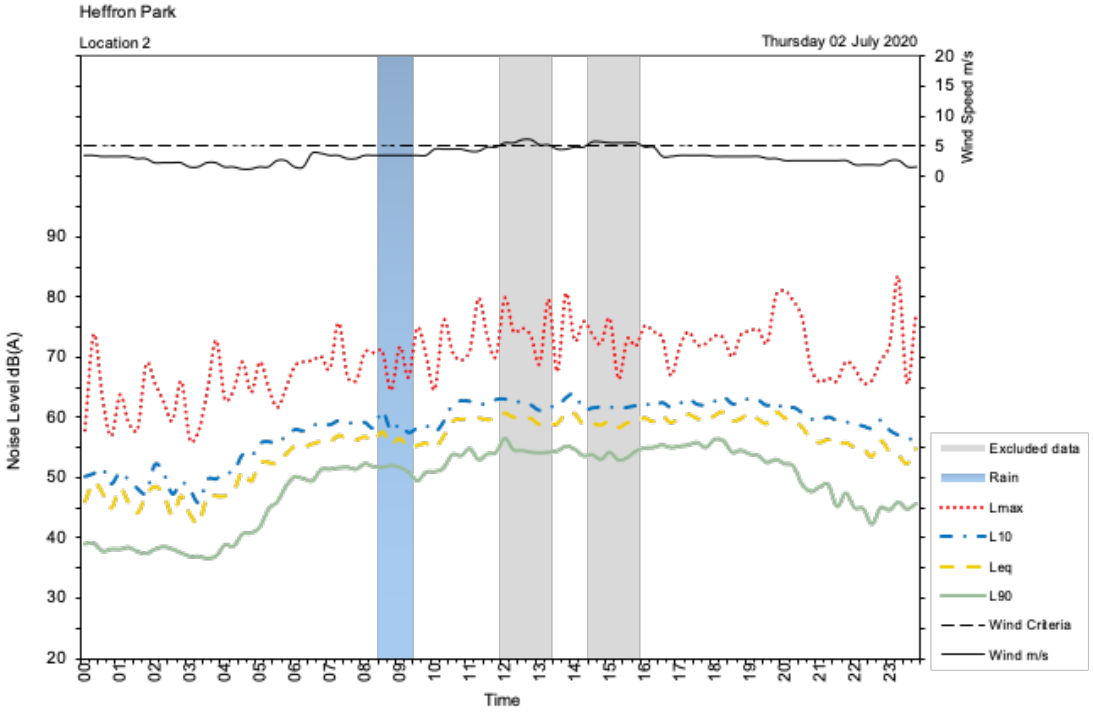

Heffron Park
Location 2
Saturday 27 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

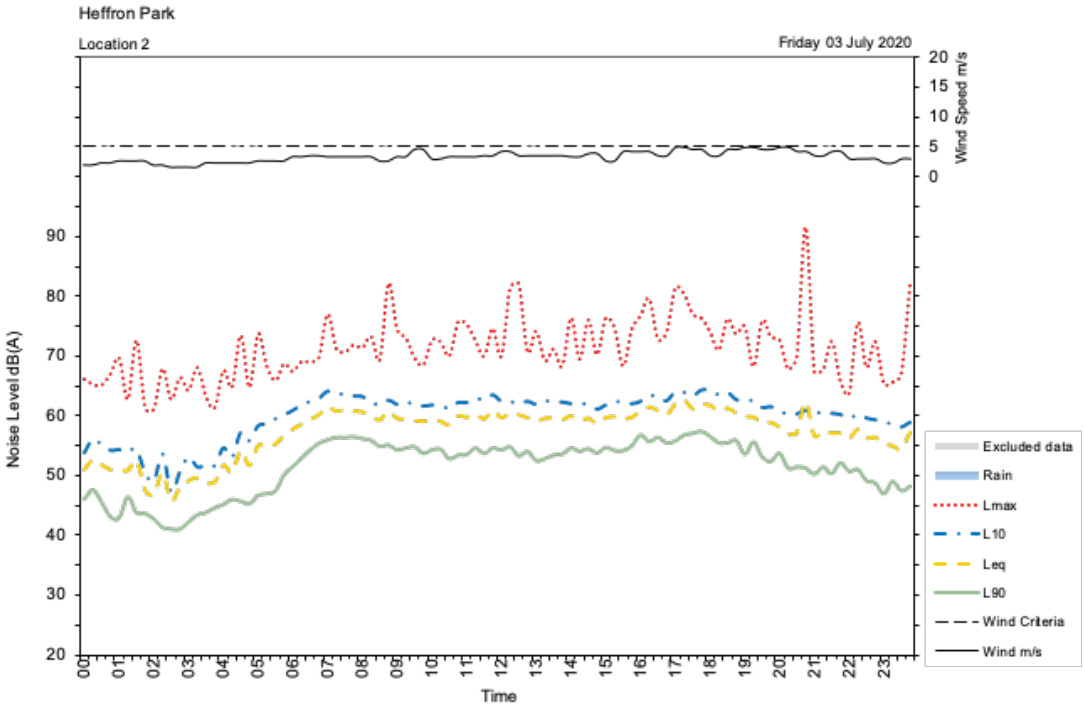

Heffron Park
Location 2
Sunday 28 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

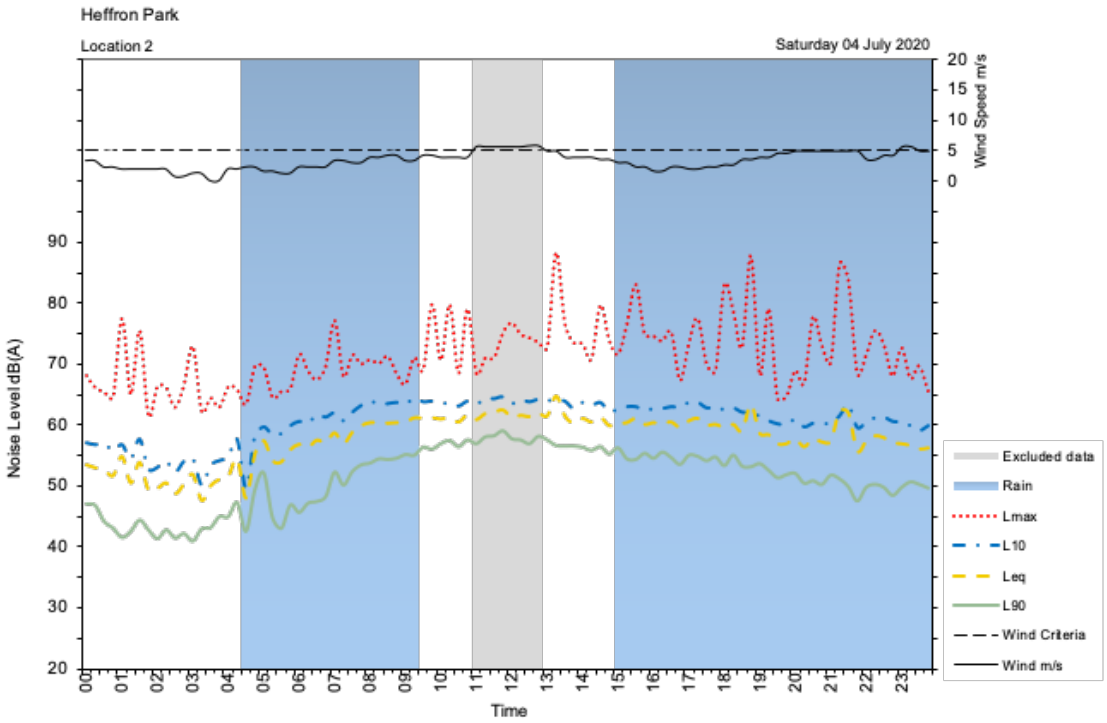

Heffron Park
Location 2
Monday 29 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

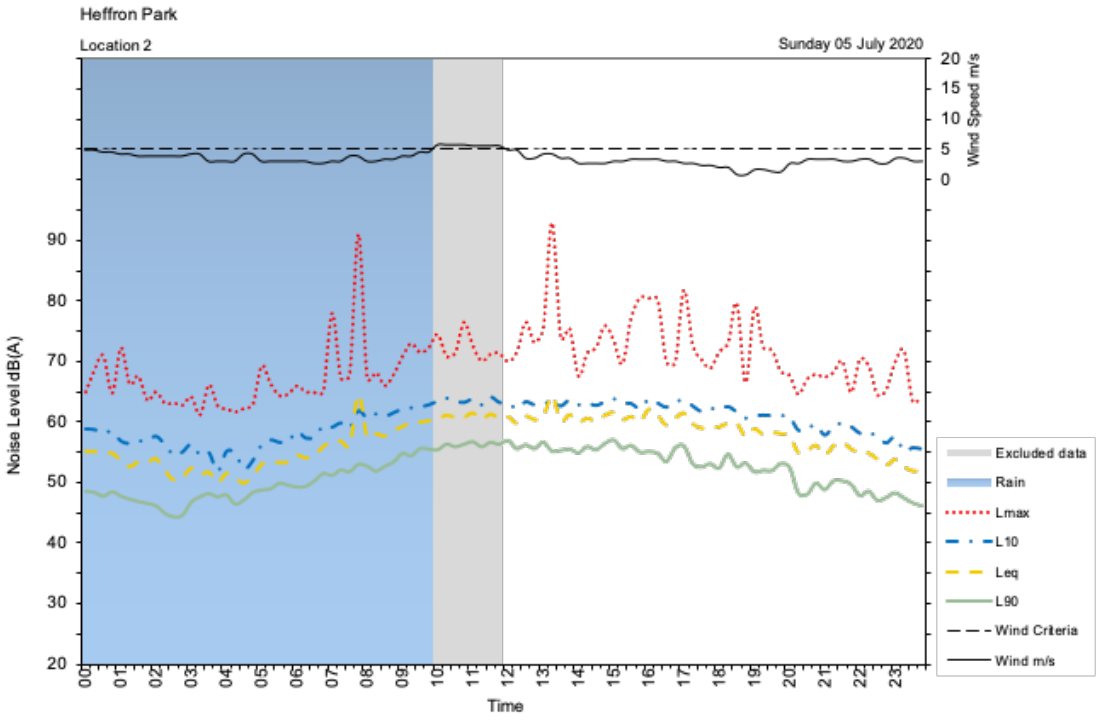

Heffron Park
Location 2
Tuesday 30 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

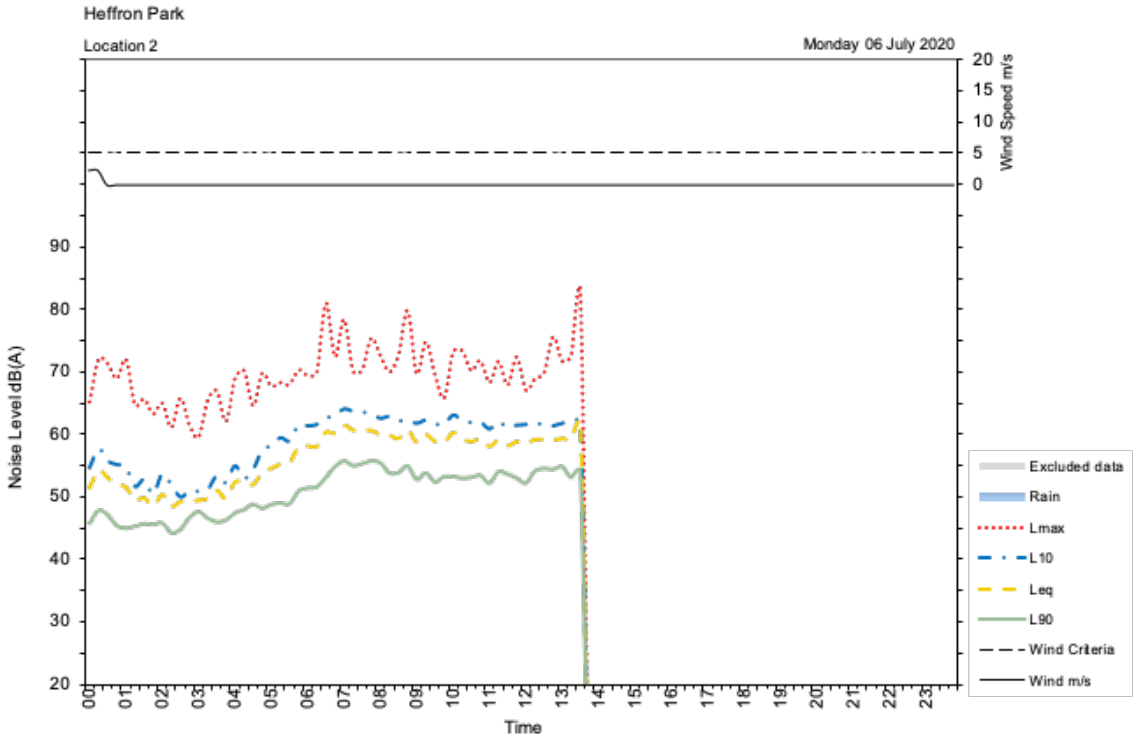

Heffron Park
Location 2
Wednesday 01 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s


Heffron Park
Location 2
Thursday 02 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

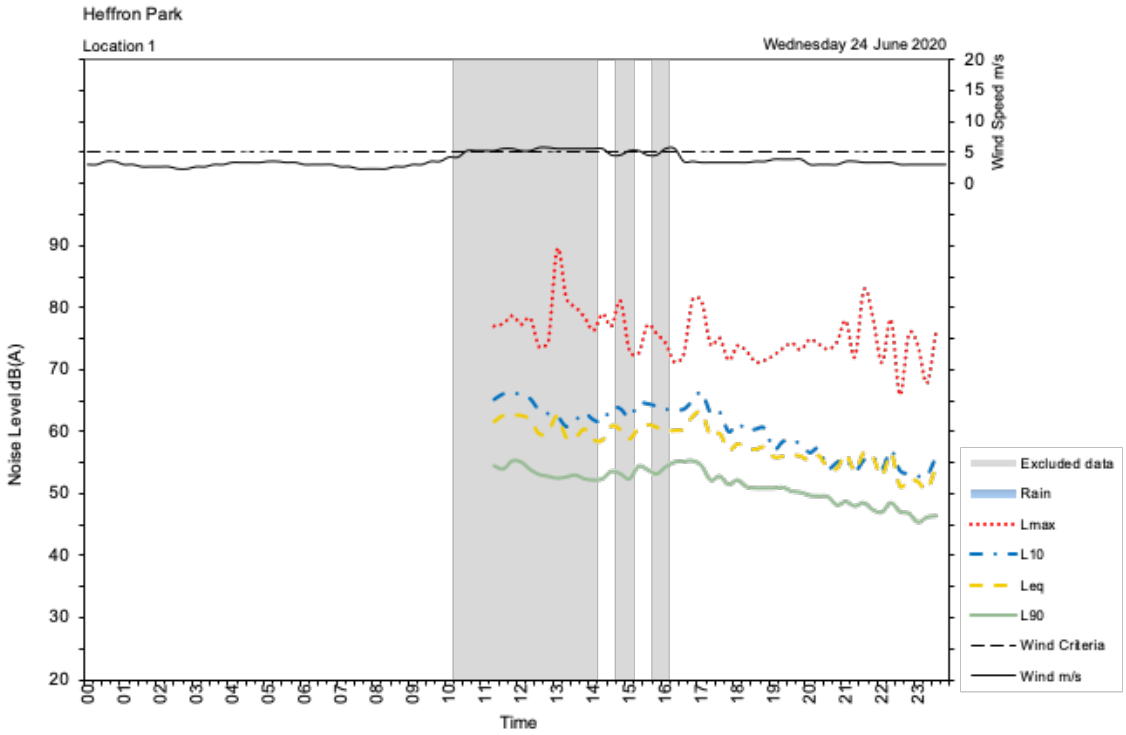

Heffron Park
Location 2
Friday 03 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

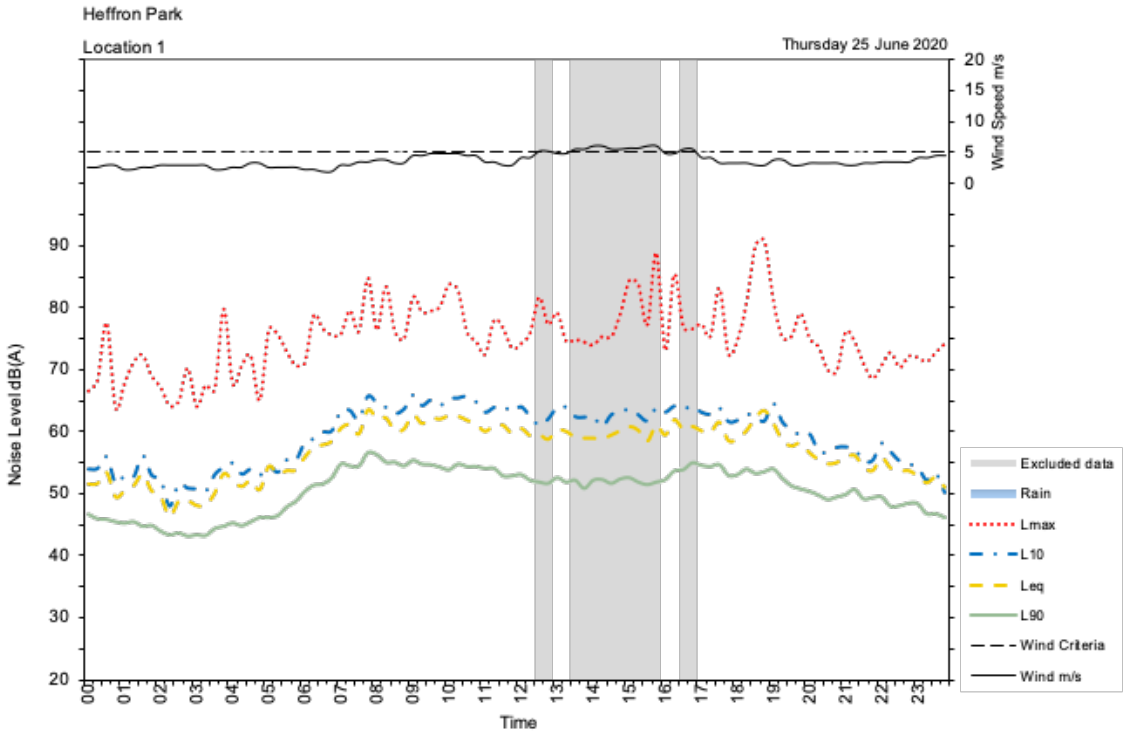

Heffron Park
Location 2
Saturday 04 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

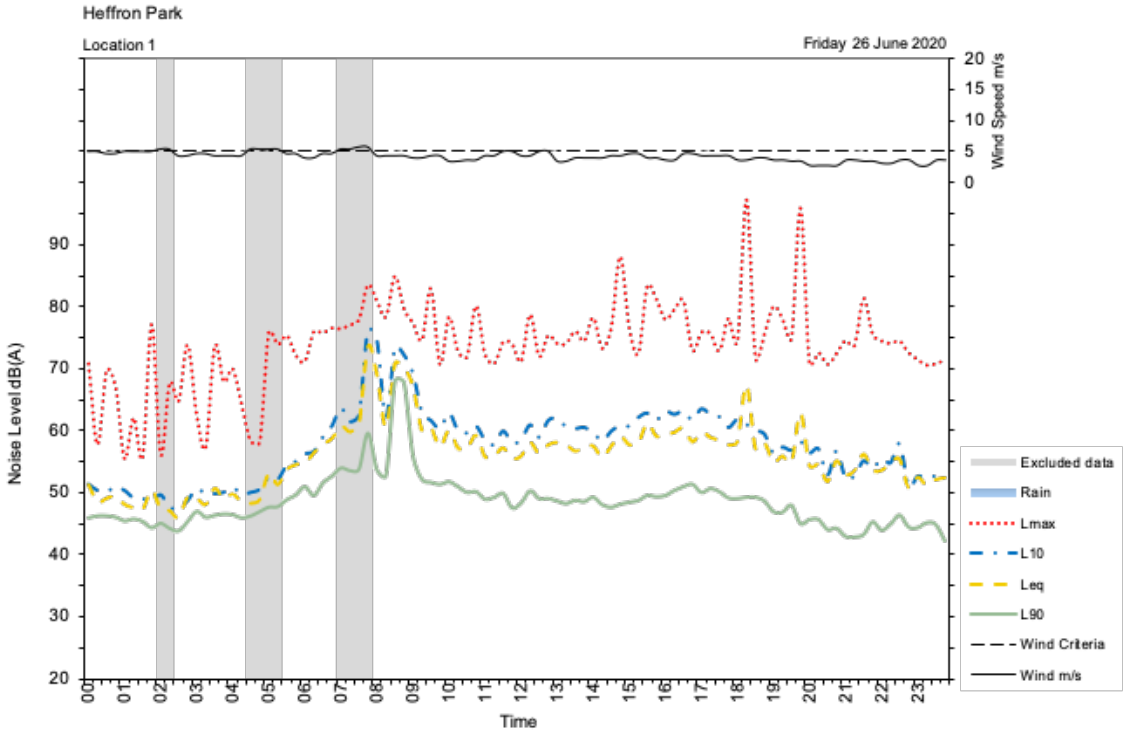

Heffron Park
Location 2
Sunday 05 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s


Heffron Park
Location 2
Monday 06 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

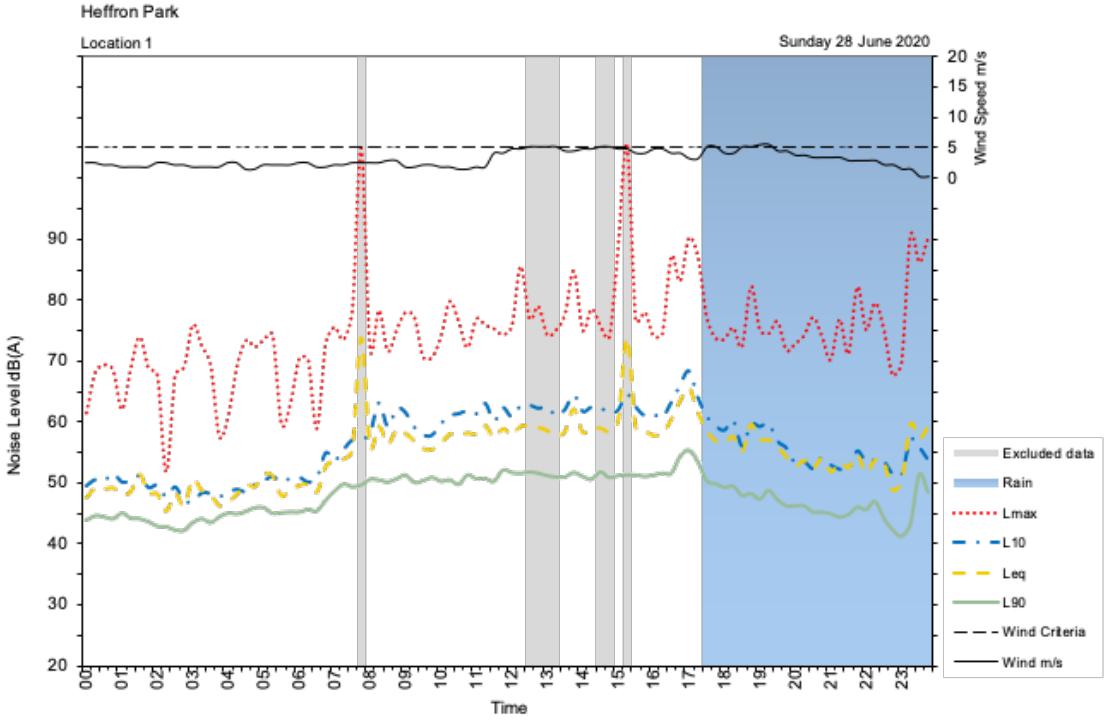
Location 3

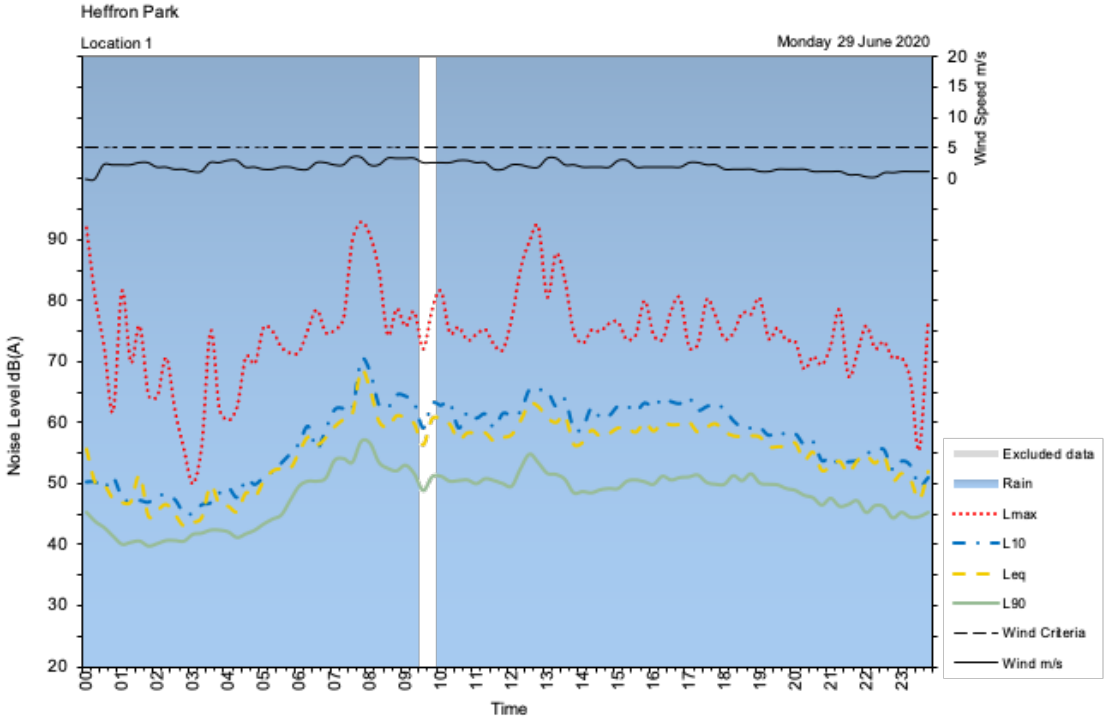

Heffron Park
Location 1
Wednesday 24 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

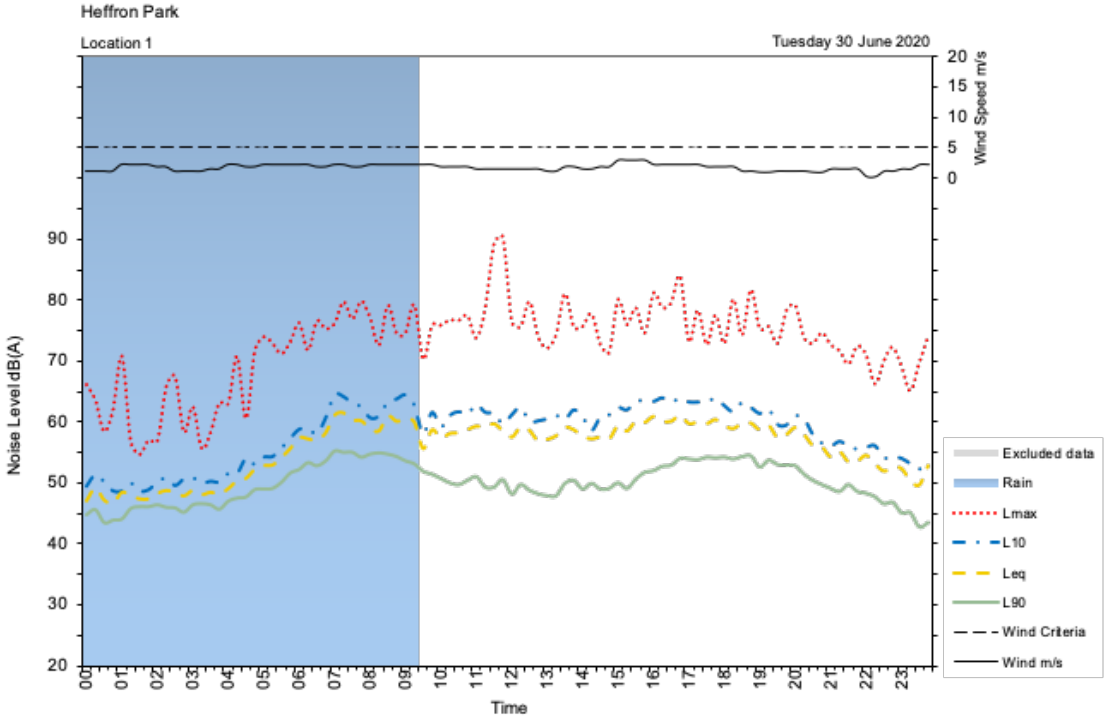

Heffron Park
Location 1
Thursday 25 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

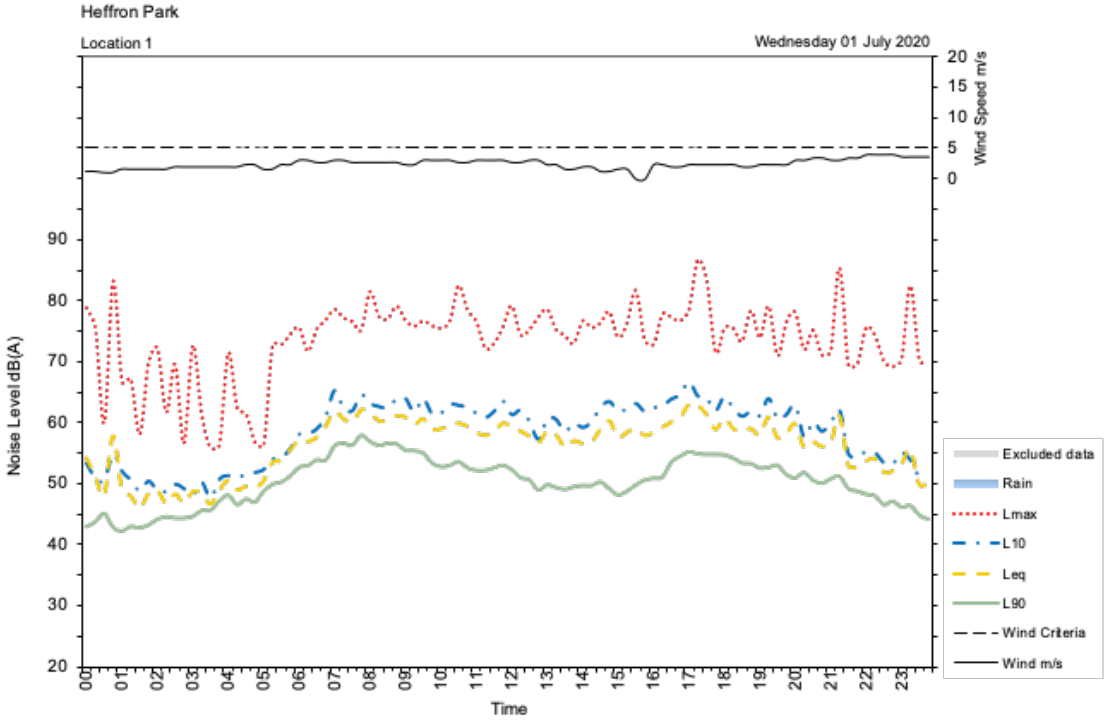

Heffron Park
Location 1
Friday 26 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

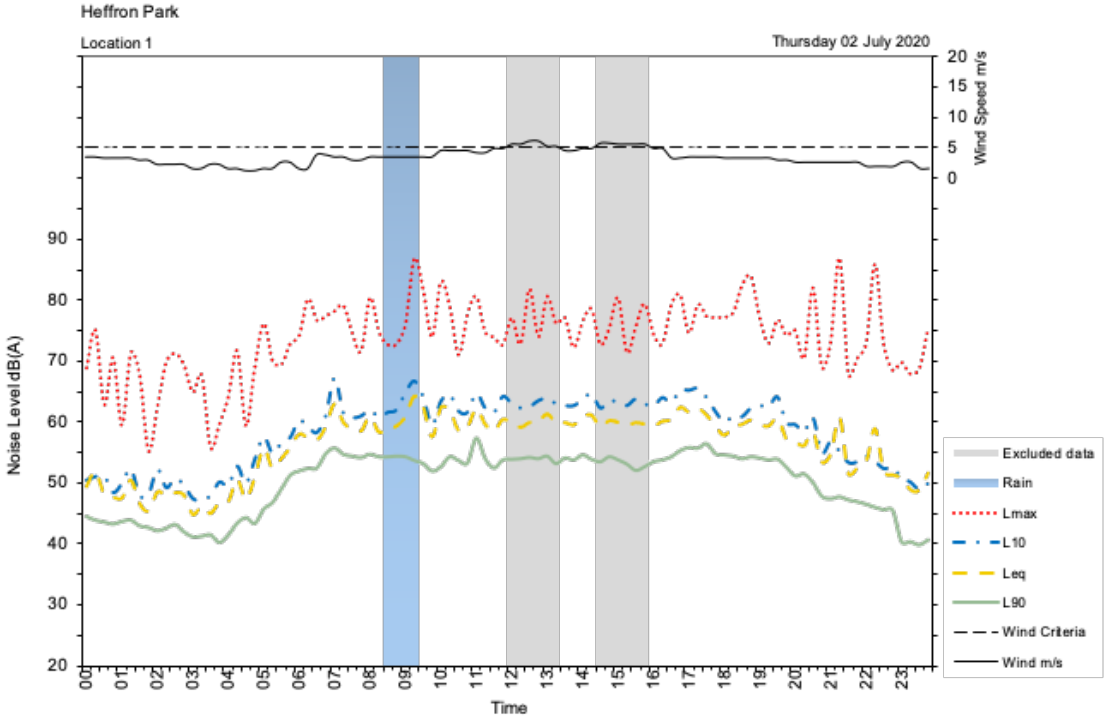

Heffron Park
Location 1
Saturday 27 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

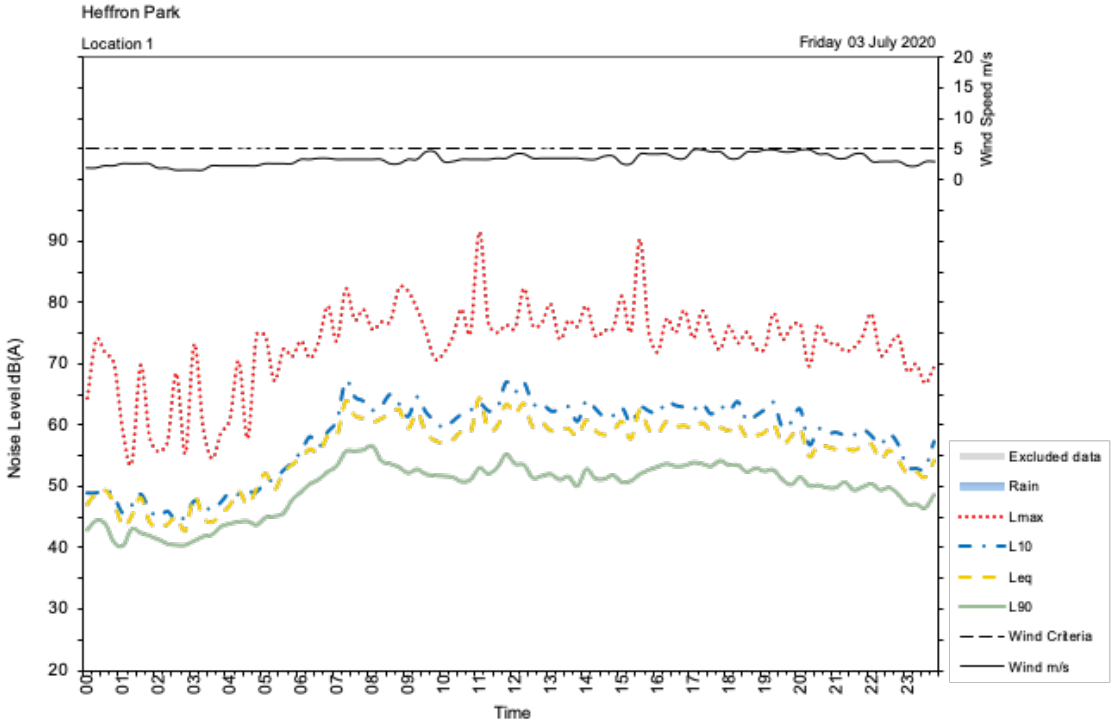

Heffron Park
Location 1
Sunday 28 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

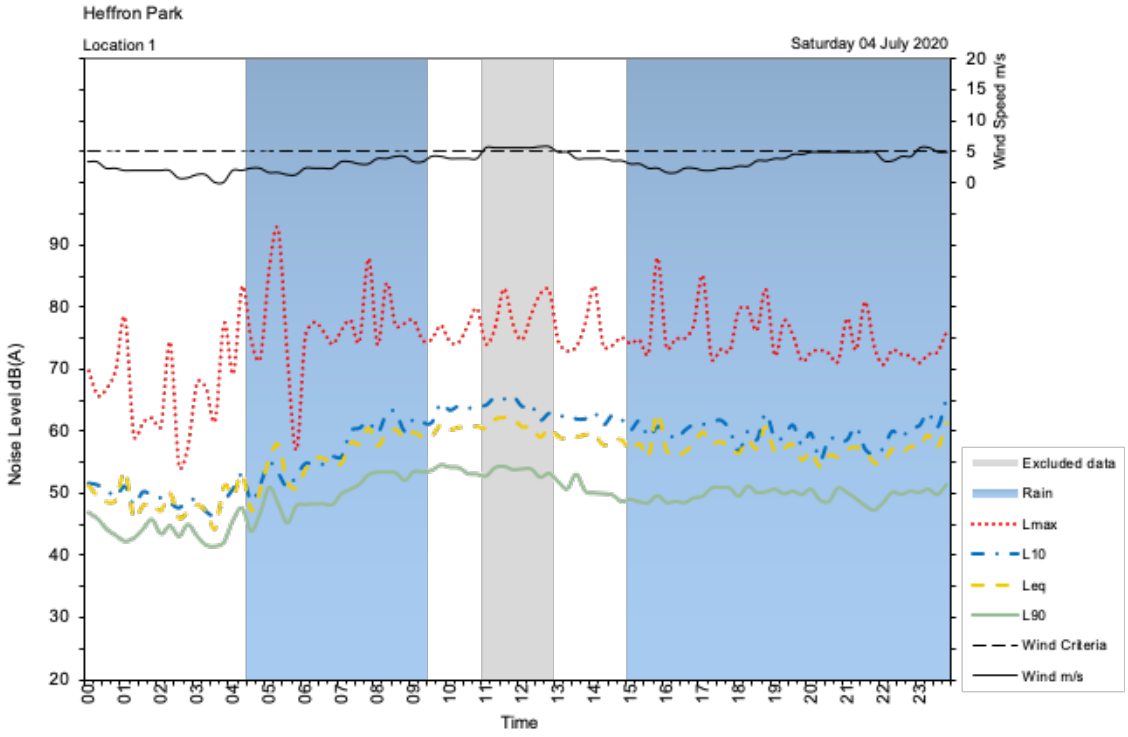

Heffron Park
Location 1
Monday 29 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

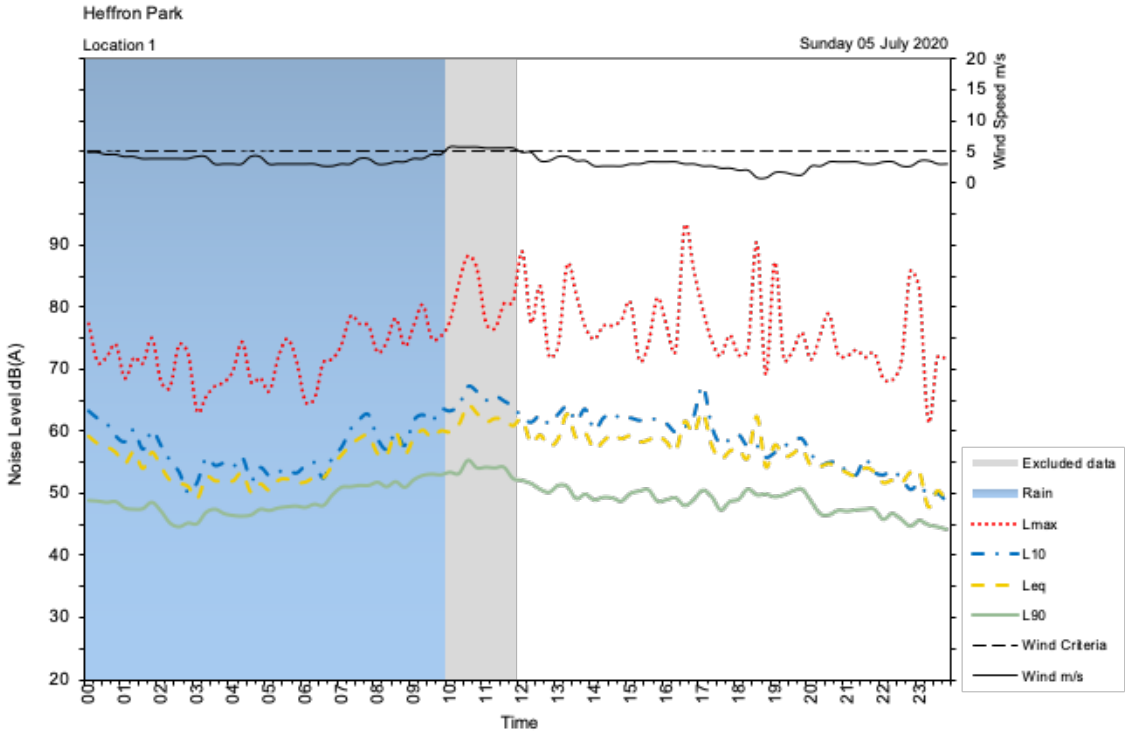

Heffron Park
Location 1
Tuesday 30 June 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s

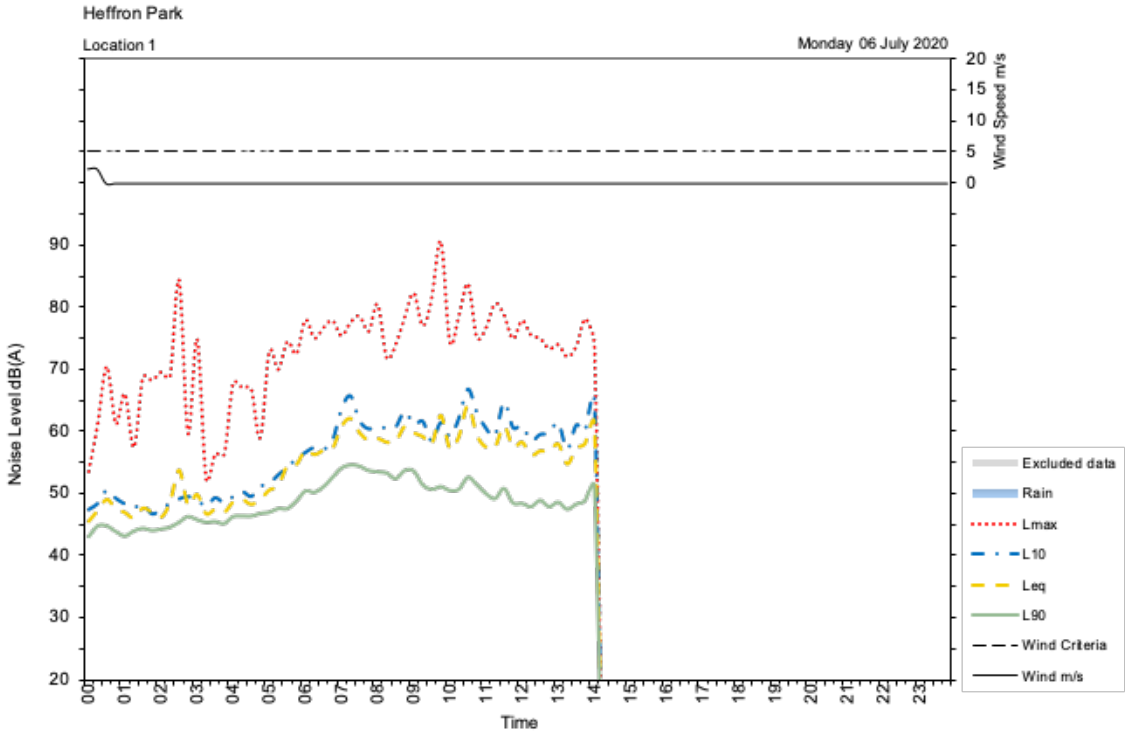

Heffron Park
Location 1
Wednesday 01 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s


Heffron Park
Location 1
Thursday 02 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s


Heffron Park
Location 1
Friday 03 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s


Heffron Park
Location 1
Saturday 04 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s


Heffron Park
Location 1
Sunday 05 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s


Heffron Park
Location 1
Monday 06 July 2020
Noise Level dB(A)
Wind Speed m/s
Time
Excluded data
Rain
Lmax
L10
Leq
L90
Wind Criteria
Wind m/s