NOISE COMPLIANCE ASSESSMENT

FAIRVALE HIGH SCHOOL,
THORNEY RD
FAIRFIELD WEST NSW 2165

PREPARED FOR

Nicholas Gannon

Icon Construction
Level 2
179 New South Head Road
Edgecliff, NSW 2027

MONITORED ON:

20th – 28th June 2022

CONTRACT NO C22 8752
REPORT NO EMS22 9727

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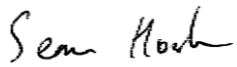
CHECKED BY:		Sean Hook MArchSci (Audio and Acoustics) Acoustic Consultant MAAS	Date: 08.08.2022
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Revision No	Date Issued	Reason/ Comments
0	08.08.2022	Version 1

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1 INTRODUCTION

1.1 Project Description

Environmental Monitoring Services Pty Ltd (EMS) was commissioned by Icon Construction to conduct a noise compliance test/assessment for the new mechanical plant and conduct short term noise monitoring to assess noise from the usage of the playing fields/COLA and school hall of Fairvale High School, 1 Thorney Road, Fairfield West NSW (the site) to satisfy the SSD conditions for the redevelopment of the school.

This assessment consists of measuring the noise emissions from the mechanical plant equipment whilst operational and the use of the school hall, new COLA and the sports field to determine the contribution at the nearest sensitive receivers and compare the results against the established noise criteria provided in the report "Acoustic Report for DA Submission" which was prepared by Cundall in December 2017 (ref 1015558 – Fairvale High School).

The mechanical plant equipment services the newly built multi-purpose hall (Block J) and Block K on the south-western side of the school. The plant equipment is separated into two plant room areas, with both areas located between Block J and K to the north and south of the walkway between the two buildings. The southern plant room contains of a total of 7 outdoor heat recovery units and the northern plant room contains of a total of 10 outdoor heat recovery units. There is no mechanical plant associated with the playing fields and the COLA.

All findings during the assessment will be outlined in the report.

1.2 Site Location

Fairvale High School is located to the north of Thorney Road, Fairfield West and the adjoining areas are suburban in nature. Adjacent to the north and east are residential properties (Mellick St and Maud St properties respectively) and to the south across Thorney Road. To the west of the school is Avery Park and the Cumberland Highway to the west of the park.

The redevelopment of the school includes:

- The replacement of the existing COLA's with a new multi-purpose hall which has learning areas in the floor(s) above, in the south west of the school (Block J),
- The replacement of the existing Block C with a new three storey building (Block K),
- The replacement of playing fields with new COLA's, located at the north of the school.

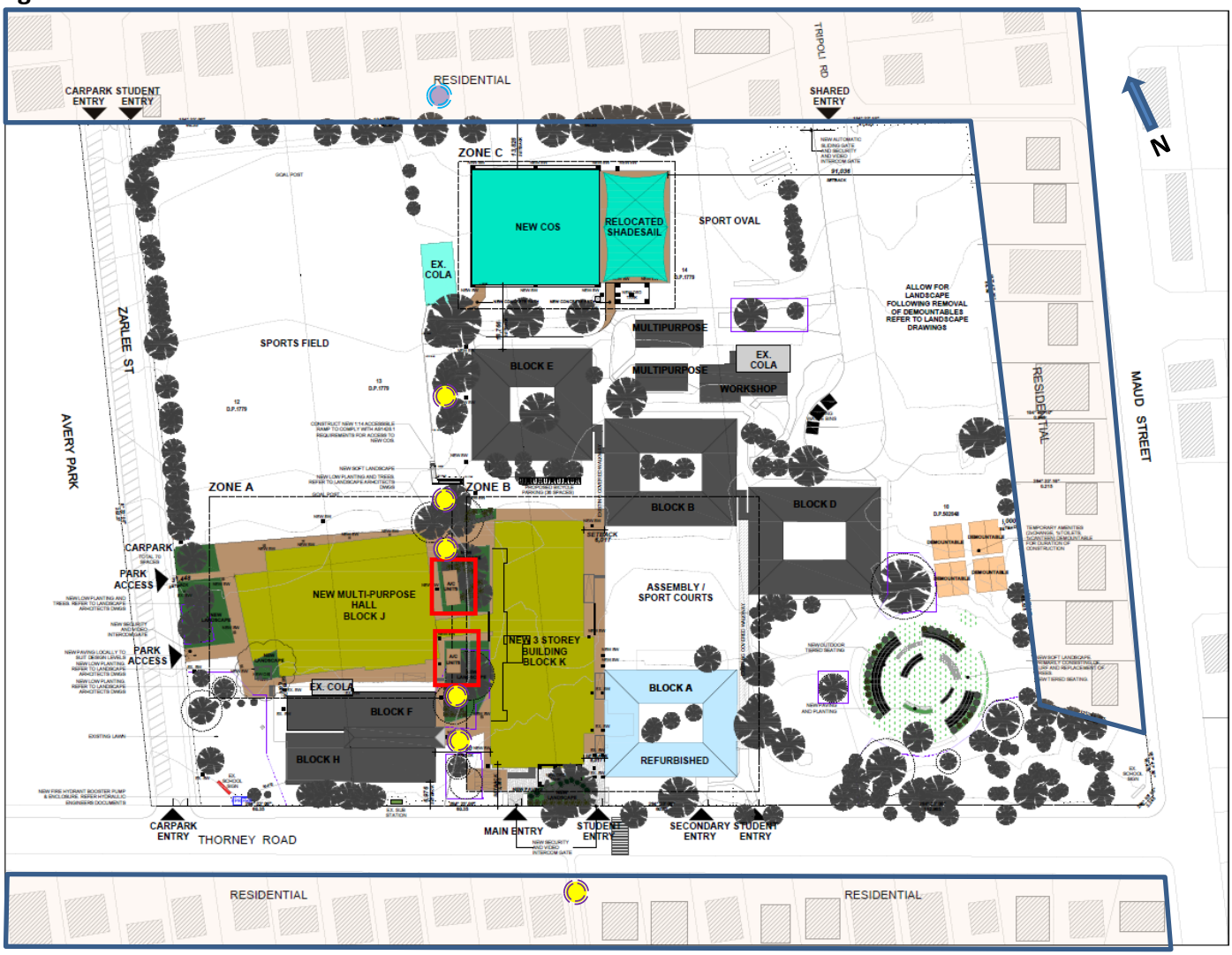
The marked-up plan shown below in Figure 1.1 outlines the locations of the new COLA, playing fields, Blocks J & K and the plant rooms servicing them. The residential receivers around the school and the locations used for both attended and unattended monitoring are also shown on the Figure.

The mechanical plant associated with the multi-purpose hall and Block K has the potential to adversely affect residential receivers to the north and south of the school.

Activity from the school hall is not expected to affect residences to the south of the hall due to the closed southern façade and the Block F/H building to the south. The hall has openings on the northern façade which may emit noise towards the northern residential receivers.

Activity from the sports field and new COLA may impact residential receivers located to the north of the school.

Figure 1.1



Legends

Outdoor Plant Rooms

Residential Receivers

Attended Noise Monitoring Locations

Unattended Noise Monitoring Location

Site Address:

Fairvale High School,
1 Thorney Road
Fairfield West NSW 2165

Contract No.: C22 8752

Report No.: EMS22 9727

Shown below in Figure 1.2 is the existing (pre works) site plan, which shows the areas that have been demolished as part of the redevelopment.

Figure 1.2

2 NOISE MONITORING AND ASSESSMENT

The Sound Level Meters were set to record the 'A' weighted statistical sound pressure level using a 'fast response.' Field calibration checks were carried out on the units prior to and after the noise measurements and no significant drift was found.

The sound level meter collects the L_{Aeq}, this represents the equivalent continuous noise level – the level of noise equivalent to the energy average of noise levels occurring over the measurement period. This measurement will be used to assess the noise emission. The L_{A10} and L_{A90} were also obtained which are the Sound Pressure Levels (SPL) that are exceeded for 10% and 90% of the measurement period respectively.

2.1 Attended Plant Measurements

The noise assessment was conducted on the 20th of June 2022 using the Svan 977C Sound Level Meter to measure noise emitted from the outdoor air conditioning plant equipment servicing Blocks J & K.

As the testing was conducted outdoors, all efforts were made to conduct measurements whilst background disturbance was at its most minimal. No rainfall fell whilst the handheld noise measurements were carried out and windspeeds were below 5 m/s.

The measurements were conducted after school hours to allow for the items of plant under test to be operated and measured at maximum capacity without impacting the operation of the school and to allow for the measurement of the plant without being affected by other items of plant and students within the school.

For the measurement of the items of plant servicing Blocks J & K, all items were set to operate at maximum capacity and measurements were conducted at known distances from the plant rooms. The distances used were 7 and 20 metres to the south of the southern plant room and 7, 20 and 50 metres to the north of the northern plant room.

Measurements of plant were not conducted at the residential receivers, as the received SPL would have been well below the ambient levels present at the receivers and therefore not measurable. The nearfield measurements will be used to determine the sound power level of the plant rooms and validate the acoustic model that will be used to calculate the SPL of the items of plant at the residential receivers.

A background noise measurement was taken between 6:13 and 6:28pm whilst all items of plant were off. The measurement was conducted on the pedestrian pathway between 22 and 24 Thorney Road at the approximate midway of the adjacent residence's front yards. The short-term background noise level measurement conducted was 46 dB $L_{A90\ 15min}$.

2.2 Unattended Monitoring

Unattended logging was conducted in the rear yard area of 10 Mellick Street over the period from Tuesday 21st of June to Monday 27th of June, 2022 with a Svan 977A SLM. The microphone of the SLM was set at 1.5 metres above the ground and approximately 4 metres from the rear fence of the residence, which is representative of noise levels received from the school within the rear yard of adjacent residential receivers to the north of the school.

Rain and wind data taken from the Bureau of Meteorology (BOM) – Horsley Park Equestrian Centre Automatic Weather Station (AWS) ID: 067119, located approximately 7 km from the site, were used to filter out periods affected by adverse weather from the assessment, in accordance with the NPfI. The wind speed at the microphone height was calculated from the method described in the paper titled *Converting Bureau of Meteorology wind speed data to local wind speeds at 1.5m above ground level* (Gowen, Karantonis & Rofail, 2004).

2.2.1 Audio Recording

The Svan-977A unattended SLM was configured to record audio for the potential identification of the noise emissions from the school and other external noise sources via a rising trigger and stop level of 46 dB(A) $L_{Aeq,\ 1sec}$ during the daytime period. A 2 second pre and post recording time was enabled on the SLM.

2.2.2 Post Processing

Review of the logged data and audio recordings showed that noise from the school was intermittently continuous at varying levels throughout a large portion of the school day, however, significant contributions to the overall 15-minute noise levels were attributable to external noise sources from the school such as aircraft, birds, residential noises (dogs barking, talking, radio/tv, construction related noise).

The SLM manufacturers software was used for the viewing of the 1 second logged noise levels and audio playback recorded audio. For external noise sources of significant noise level in comparison to the surrounding school levels, markers were placed in the software and subsequently used for filtering out the extraneous noise from the 15-minute levels.

As a conservative assessment, all logged data that was not attributable/marked as an external noise source is considered to be school noise (i.e. times with neither school noise or extraneous noise are considered to be school noise). The filtered $L_{Aeq,\ 15\ min}$ level has been calculated as the logarithmic average of the SPL over the unmarked time, rather than averaging over the complete 15-minute period.

3 NOISE CRITERIA

The Operational Noise Limits and Management conditions from the SSD conditions (E3 – E6) are shown below.

Operational Noise Limits and Management

E3. The Applicant must ensure that noise generated by operation of the development does not exceed the noise limits in *Acoustic Report for DA submission 1015558 – Fairvale High School Revision E* prepared by Cundall Johnston & Partners Pty Ltd dated 20 December 2017. All recommendations of the report with regard to the use of the school hall must be adhered to at all times.

E4. The Applicant must carry out a short-term noise monitoring program for the use of the school hall and playing fields/COLA. The noise monitoring must be carried out by an appropriately qualified person and a monitoring report must be submitted to the Planning Secretary within six months of commencement of operations to verify that operational noise levels do not exceed the recommended noise levels identified in the *Acoustic Report for DA submission 1015558 – Fairvale High School Revision E* prepared by Cundall Johnston & Partners Pty Ltd dated 20 December 2017.

E5. Should the noise monitoring, required under Condition E4, identify any exceedance of the recommended noise levels, the Applicant must implement appropriate on-site noise attenuation measures to ensure operational noise levels do not exceed the recommended noise levels and/or provide noise attenuation measures at the affected noise sensitive receivers.

E6. The implementation of noise attenuation measures, on-site and at the affected receiver(s), if required, must be provided within three months of the completion of the short-term noise monitoring required under Condition E6 or other appropriate period as agreed by the Planning Secretary.

3.1 "Acoustic Report for DA Submission 101558" - Recommended Noise Levels/Limits

The noise assessment criteria that will be used in this report is based upon the recommended noise levels/limits determined in the previous acoustic report prepared by Cundall for the DA submission (ref: *Acoustic Report for DA Submission 1015558 – Fairvale High School*, revision E, dated 20 December 2017), as detailed below.

3.1.3 External Plant Noise Emissions

Section 6 of the Cundall report determines the noise criteria for noise emissions from industrial noise sources such as mechanical plant at adjacent residential receivers under the guidance of the NSW EPA Industrial Noise Policy (INP) 2000.

The applicable project specific noise levels for industrial noise sources are detailed in Table 10 of the Cundall report, which is shown below.

Location	Class	Time period	Intrusiveness Criterion	Amenity Criterion	Project-specific Criterion dB $L_{Aeq,15min}$
Nearest residential properties (south-west)	Suburban	Day	53	50	**50**
		Evening	53	50	**50**
		Night	45	45	**45**
Nearest residential properties (north)	Suburban	Day	47	53	**47**
		Evening	44	40	**40**
		Night	40	35	**35**
Nearest residential properties (east)	Suburban	Day	47	49	**47**
		Evening	45	44	**44**
		Night	41	37	**37**

Table 10 – Project-specific noise levels

3.1.4 Consideration of activity noise

Section 7 of the Cundall report considers the potential noise impacts of activity noise from the school. The report states that "There are no specific State criteria for student activity noise from schools and the local DCP does not reference educational facilities other than childcare centres" and "The school is an existing and established school, covering a large site, and therefore adjacent noise-sensitive dwellings will already be acclimatised to the sounds of general school activity".

School Hall

The Cundall report considers the impact of activities in the school hall upon residences to the south and north in Sections 7.4 and 7.5 respectively. Shown below are excerpts from these sections of the Cundall report which are relevant to this assessment.

> **7.4 Impact of new Hall on dwellings to the south**
>
> Provision of a new multi-use Hall, slightly further to the north from the existing music facilities, should not significantly affect the noise impact on properties to the south. The existing teaching blocks (F & H) will provide a good degree of barrier attenuation against any potential activity noise breakout, and it is noted that the proposed Hall has been designed such that the only significant open areas of façade face northwards.
>
> **7.5 Impact of new Hall on dwelling to the north**
>
> It is noted that the NSW Department of Education DG11 Acoustics Section 11.04 Noise Emission (To The Environment) states "*Noise associated with school activity (such as music or sport within a hall) is not a stationary noise source and is not subject to the Industrial Noise Policy (EPA 2000) requirements*".
>
> It is recognised that external doors on the northern façade of the new Hall could potentially be opened during periods of high activity noise (e.g. during a sports event, concert, or other performance). The impact of noise emissions from within the Hall, travelling via these openings and across the sports pitches to dwellings to the north will therefore be considered.
>
> 7.5.1 Assessment criteria
>
> As noted above, there are no specific State criteria for the assessment of activity noise from schools, and the local council development plan does not refer to any desirable targets. However, development approval commonly requires noise generating developments to:
>
> - Be sited and designed so that noise is kept to a minimum and does not create offensive noise as defined by the Protection of the Environment Operations Act 1997;
> - Be accompanied by an acoustic report that demonstrates the development is sited and designed to:
>   - minimise the effect of noise and vibration on surrounding sensitive land uses, and
>   - comply with relevant State Government and Council guidelines.
>
> 'Offensive noise' is specifically defined in the NSW 'Protection of the Environment Operations Act' however relates this to noise that is "harmful" or "interferes unreasonably with the comfort or repose of a person outside the premises from which it is emitted". This may be due to the "level, nature, character or quality" of the noise, or "the time at which it is made".
>
> It is noted that activity noise from schools is vastly different, in terms of both character and duration, from typical industrial activities or commercial plant items. Typically, school activity noise is also limited to the daytime period and is unusual at weekends or public holidays.

Guidance from the Association of Australia Acoustical Consultants [AAAC] in relation to outdoor play areas in childcare centres suggests that impacts should be based on an emergence above the prevailing background noise level as follows:

- Up to 2 hours (total) per day
  The $L_{Aeq,15min}$ noise level emitted from the outdoor play area shall not exceed the background noise level by more than 10 dB at the assessment location;
- More than 2 hours per day
  The $L_{Aeq,15min}$ noise level emitted from the outdoor play area shall not exceed the background noise level by more than 5 dB at the assessment location.

The '10 dB on background' noise goal has been accepted in the NSW Land and Environment Court on a number of occasions[11] and has been used as the basis for realistic noise goals from other childcare centres.

On this basis, it is considered reasonable to adopt the 10 dB above background level as the assessment criteria for the impact of activity noise associated with the proposed redevelopment.

With reference to the determined Rating Background Level during the daytime and evening periods of 42/39 dB L_{A90} (refer to Table 9), this would mean that activity noise levels should be no greater than 52/49 dB L_{Aeq} when assessed at dwellings to the north.

New / relocated COLA

Section 7.6 of the Cundall report discusses the COLA, and is reproduced below:

7.6 New / relocated COLA

The relocated COLA will be situated to the north of the site.

It is noted that the EFSG[12] states "*Noise associated with school activity (such as music or sport within a hall) are not a stationary noise source and is not subject to the Industrial Noise Policy (EPA 2000) requirements*".

Noise from playgrounds and associated with general school activities including music, sport or outdoor teaching has therefore not been assessed, as it is not a specific requirement of the Secretary's Environmental Assessment Requirements.

[12] Ref: NSW Department of Education DG11 – Acoustics, Section 11.04 Noise Emission (To The Environment).

School bell / announcement system

Section 7.7 of the Cundall report discusses the school bell / announcement system, and is reproduced below:

7.7 School bell / announcement system

As noted above, adjacent noise-sensitive dwellings will already be acclimatised to the existing sounds of general school activities, including the school bell. It is noted that the proposed new buildings will be located no nearer to residential properties than at present.

To minimise the potential noise impact of the school bell, it is recommended that sounders be located such that there is no direct line of sight to adjacent residential façades, where this is practicable. The use of bells/loudspeakers with a reduced sound level may also be considered where there is close proximity to residential properties.

4 RESULTS

4.1 External Plant Noise Emissions

Items of plant located within the southern and northern outdoor plant rooms, located between and servicing Blocks J & K are detailed below in Table 4.1. All items of plant were noted to be made by Daikin. The table also shows the effective Sound Power Level of the plant rooms, as derived from the near field measurements conducted at 7m from the plant rooms. There are no items of mechanical plant associated with the playing fields/COLA.

Table 4.1 – Items of Plant and Sound Power Level of Plant Rooms

Plant Room	ID	Model	Total Plant Room Effective/Modelled SWL
South	CU-K-1.3A	REYQ12TAY1	80.3
	CU-K-1.3B	REYQ12TAY1	
	CU-K-1.4	REYQ16TAY1	
	CU-K-2.4	REYQ18TAY1	
	CU-K-2.3A	REYQ12TAY1	
	CU-K-2.3B	REYQ10TAY1	
	CU-COMMS-K.1	RZAV71CV1	
North	CU-K-1.1	REYQ18TAY1	84.5
	CU-K-1.2	REYQ20TAY1	
	CU-K-2.1A	REYQ12TAY1	
	CU-K-2.1B	REYQ10TAY1	
	CU-K-2.2	REYQ20TAY1	
	CU-K-J.1	REYQ12TAY1	
	CU-K-G.1	REYQ16TAY1	
	CU-COMMS-K.2	RZAV71CV1	
	CU-COMMS-K.3	RZAV71CV1	
	CU-COMMS-J.1	FTKM71QVMA	

Due to the Sound Pressure Levels of the plant not able to be measured at the affected receivers, noise predictions based on nearfield plant measurements were carried out in the acoustic modelling software SoundPLAN (version 8.2). The ground absorption surrounding all residential receiver locations and playing fields was assumed to be absorptive (0.9) whilst roads and the paved/concrete areas were modelled as reflective (0.1). No barriers/fences were modelled at the residential boundaries. The school buildings that may affect the noise propagation of the plant rooms were included within the model.

The measured L_{A90} levels have been used within the modelling due to the measurements containing extraneous noise as the plant noise emissions are at a steady state and the use of the L_{A90} is deemed an appropriate substitution. There is also a negligible difference between the L_{Aeq} and L_{A90} level at the 7m measurement locations. The spectral octave data from the attended measurements was also used within the model.

The assessment locations were at a height of 1.5 metres above ground at the most affected boundaries of the residential receivers that are most affected by the plant noise emissions, being the rear boundary of 10/12 Mellick Street to the north and the front boundary of 24/26 Thorney Rd to the south.

Industrial noise emissions were modelled using the ISO 9613-2:1996 Acoustics – *Attenuation of sound during propagation outdoors – Part 2: General method of calculation*. The acoustic model takes into account

screening effects from barriers, ground reflections, ground topology from Google Earth elevation points, atmospheric absorption and geometric spreading. The temperature was modelled at 10 degrees Celsius and 70% relative humidity with no temperature inversions and no wind gradients.

Shown below in Table 4.2 are the measured Sound Pressure Levels at known distances from the plant rooms whilst running at maximum capacity and the calculated Sound Pressure Levels at the measurement locations and boundaries of the most affected receivers from the modelling.

Table 4.2 – Measured and Modelled SPL of Plant

Location	Distance from closest plant (m)	Measured SPL			Modelled SPL	INP Criteria
		L_{Aeq}	L_{A10}	L_{A90}		D / E / N
7m to South	7	53.0	53.8	52.4	52.4	-
20m to South	20	48.8	50.2	47.9	47.8	-
South - 24/26 Thorney Rd (Front Boundary)	**59**				**25.8**	**50 / 50 / 45**
7m to North	7	56.4	56.7	55.8	55.9	-
20m to North*	20	52.7	52.5	51.0	50.6	-
50m to North*	50	46.3	47.9	44.8	41.8	-
North - 10/12 Mellick St (Rear Boundary)	**133**				**31.9**	**47 / 40 / 35**

* Traffic noise from the Cumberland Highway was noted during these measurements, with the 50m north measurement having approximately equal traffic noise and plant noise contributions.

The table above shows that there is a high level of correlation between the measured and modelled results at the 7m and 20m distances, both to the north and the south of the plant. There is a 3 dB difference between the measured and modelled results at the 50m location which is attributed to the similar level of traffic noise from the Cumberland Highway, during the noise measurement.

Based on the aforementioned correlation with the modelling data, the calculated plant noise from the school at the most affected boundaries of residences, to the south and north of 26 dB(A) and 32 dB(A) respectively, show that the items of plant associated with the redevelopment are within the project specific noise levels from the INP given in the Cundall report for operation at all times of day, evening and night.

4.2 Activity Noise

The review of audio events and post analysis was conducted on the noise data obtained from unattended logging in the rear yard of 10 Mellick St over the period from the 21st to the 27th of June, 2022 in order to determine the noise contribution from the new COLA, sports field and multi-function hall of the school. The post analysis consisted of listening to recorded audio recordings, marking and filtering out the 1 second noise data that was significantly affected by extraneous noise from sources such as residential noise, birds and aircraft.

At the time of the logger installation, a pool pump was noted to be located in the rear yard and upon discussion with the resident, the timer was adjusted to not operate during the daytime assessment period, however, was continually running between 6:30pm and 5:30am which is clearly shown in the noise graphs and rendered all data over this period unusable.

The filtered L_{Aeq} levels are considered to be conservative as they consider background noise (i.e. no school noise or extraneous noise) as noise from the school and not all extraneous noise was filtered from the data.

The results of the 15-minute noise levels are presented in graphical format in Appendix A and in table format in Appendix B.

The graphs in Appendix A show the raw 15-minute L_{Aeq}, L_{A10} and L_{A90} levels from the logging and the filtered L_{Aeq} levels from the post processing.

The Table in Appendix B shows the raw 15-minute L_{Aeq}, L_{A10} and L_{A90} levels from the logging, and the L_{Aeq} levels and allocated time per 15 minutes of the filtered (school) data and extraneous sources. The table also shows the 15-minute partial L_{Aeq} contributions (source L_{Aeq} averaged over the full 15-minute period) which illustrates the proportion of the school to extraneous noise within the 15-minute periods, and the types of extraneous noise present.

4.3 Typical Daily Noise from The School

No noise emissions from the school were heard after 3:30 pm on any day and minimal noise from the COLA was heard prior to 8am in the mornings.

4.3.1 COLA and Playing Fields

The use of the COLA and playing fields was heard throughout substantial portions of the school day at varying levels.

Noise heard from the COLA/Playing fields generally consisted of vocal emissions from students playing or taking part in sporting activities. Basketballs being bounced were heard particularly during the break periods.

Periods of significance were:

- 8:00 - 8:40am: noise levels would increase over this period as students arrived at school and played prior to classes starting. L_{Aeq} levels were typically between below 52 dB(A)
- 10:15 – 10:30am and 11:45am –12:00pm: 15 minute breaks
- 1:15 – 1:45pm: 30 minute break

Noise during the 15-minute breaks was continuous and was consistently 55-58 dB $L_{Aeq,\ 15\ min}$ throughout the week, with the ½ hour breaks showing a slightly higher level of 60 dB(A).

Between the breaks, sports activities were frequently heard as indicated by vocal noise, whistles and coaching. $L_{Aeq,\ 15\ min}$ levels during this activity typically ranged between 48-53 dB(A).

4.3.2 School Bell and Announcements

The school bell and announcements were intermittently audible from the PA system throughout the monitoring.

The school bell was noted to have an L_{Aeq} of approximately 55 dB(A) and typically rang for 4 seconds.

Announcements through the PA system were noted to have an L_{Aeq} of approximately 55-60 dB(A) and were generally short announcements ranging between 5 to 15 seconds in duration. Longer announcements were noted to take place at 2pm on most days, with the longest of these lasting for less than 3 minutes.

4.3.3 Multi-purpose Hall

No noise attributed activities conducted within the multi-purpose hall were heard at any time throughout the week of monitoring. EMS was advised by Icon Constructions that the use of the multi-purpose hall over this monitoring period would have been minimal, primarily being used for the canteen, noise from which would occur at the same time as lunch/recess breaks.

5 DISCUSSION

As per the SSD conditions E3 and E4, the noise criteria that the noise from the redevelopment is to be assessed against are the established noise criteria provided in the report "Acoustic Report for DA Submission" which was prepared by Cundall in December 2017 (ref 1015558 – Fairvale High School) which are reproduced in Section 3. The Cundall report was based upon long-term noise level measurements obtained in 2017 and prepared under the guidance of the Industrial Noise Policy (2000), which was replaced by the Noise Policy for Industry in 2017.

Fairvale High School was established in 1969 (over 50 years ago) and the adjacent residents to the school would be well acclimatised to the sounds of general school activity. There have been no changes to the playing field located at the north west of the school and the new COLA is replacing a sporting field.

5.1 External Plant Noise

As detailed in Section 4.1, the noise emitted from the new items of plant servicing Blocks J & K were measured on the afternoon of the 20th of June. The Sound Pressure Level of the plant was measured at several locations with known distances from the plant to obtain the Sound Power Level of the outdoor plant rooms, in the absence of other items of plant and general school noise.

The SPL of the items of plant was unable to be measured at the most affected residential receivers to the north and south of the school due to the low SPL of the plant compared to the ambient noise at the time of measurement. A noise model to calculate the SPL of the items of plant at the receivers was created using SoundPLAN 8.2, including the location/size of plant, buildings for barrier affect and reflections, ground topography and absorption. The model used the near field measurements to determine the effective total SWL of the plant rooms and was validated by comparison of the measured and modelled levels at other known locations.

The modelled SPL of the items of plant at the most affected residential receivers to the north and south are within the noise criteria for continuous operation at all times of the day, evening and night, as shown in Table 4.2.

5.2 Activity Noise

As detailed in Section 4.2 above, unattended logging was conducted in the rear yard of 10 Mellick St, which is located to the north of the school between the COLA and playing fields, with a clear line of sight to the new multi-purpose hall.

The logging was considerably affected by extraneous noise sources such as aircraft, birds and noise from residents (human and dog) of 10 Mellick St and adjacent properties. Aircraft overflights were highly variable in both noise level and frequency throughout the monitoring and commonly well above the noise level of the school and more than 5 overflights within a single 15-minute period were not uncommon. Bird calls were frequently heard throughout the day for short periods, but at high SPL. Residential noise consisted of dogs barking and noise from the home-schooled teenager living at 10 Mellick St. The extraneous noise was filtered from the 15-minute data to the noise emission level from the school.

After review, post processing (to remove extraneous noise) and evaluation of the logged data, the following comments are made:

- No noise attributed to activity within the multi-function hall was heard at any time throughout the monitoring period between the hours of 7am and 6pm, as discussed in Section 4.3.3 above.

- The noise from the school bell and PA system was audible with L_{Aeq} levels ranging between 55 and 60 dB(A) for brief periods only. This noise when assessed over a 15-minute period is negligible and would have existed prior to the redevelopment, as discussed in Section 4.3.2 above.

- Noise from the usage of the COLA and sports fields was heard throughout much of the school day with:
    - $L_{Aeq,\ 15\ min}$ Levels generally between 50 and 55 dB(A) throughout the day,
    - $L_{Aeq,\ 15\ min}$ Levels of approximately 58 dB(A) during each of the two 15-minute breaks, and
    - $L_{Aeq,\ 15\ min}$ Levels of approximately 60 dB(A) during the half hour break.

As discussed in Section 7.6 of the Cundall report, noise from playgrounds and associated with general school activities including music, sport or outdoor teaching learning has not been assessed, as it is not a specific requirement of the Secretary's Environmental Assessment Requirements and therefore has no criteria to be met.

Review of the unattended logging data conducted in December 2017 for the north monitoring location presented in the Cundall report (pages 47-55) shows similar trends in noise levels throughout the day and in particular shows distinct spikes in both the L_{Aeq} and L_{A90} levels at similar times and levels to the spikes seen in Appendix A, coinciding with the break times of the school.

Although noise from the COLA and playing fields is not specifically required to be assessed under the requirements of the Cundall report, it is shown that the noise from these areas is pre-existing and has not significantly changed following the redevelopment of the school.

6 CONCLUSIONS

Environmental Monitoring Services Pty Ltd (EMS) was commissioned by Icon Construction to conduct a noise compliance test/assessment for the new mechanical plant associated with Block J & K and conduct short term noise monitoring to assess noise from the usage of the playing fields/COLA and multi-purpose hall of Fairvale High School, 1 Thorney Road, Fairfield West NSW to satisfy the SSD conditions for the redevelopment of the school.

This assessment consists of measuring the noise emissions from the mechanical plant equipment whilst operational and the use of the multi-purpose hall, new COLA and the sports field to determine the contribution at the nearest sensitive receivers and compare the results against the established noise criteria provided in the report "Acoustic Report for DA Submission" which was prepared by Cundall in December 2017 (ref 1015558 – Fairvale High School) which are shown in Section 3 of this report.

Attended surveys of the plant were conducted on the 20th of June 2022 and unattended logging (with audio recording) was conducted from the 21st to the 27th of June in the rear yard of 10 Mellick Street, immediately north of the COLA and playing fields of the school.

As shown in Table 4.2, the noise emissions at the most affected residences to the north and south of the plant area, from the plant equipment whilst at maximum capacity, complies with the INP criteria determined in the Cundall report.

The results of the unattended monitoring of activity noise from the school are shown in Section 4.3, Appendix A and Appendix B and discussed in Section 5.2.

The assessment has shown that the noise emissions from the redevelopment of the school satisfy Conditions E3 and E4 of the SSD 8677 Development Consent.

7 REFERENCES

SSD 8677 Development Consent: NSW Department of Education, 31st January 2019

EPA's Publication – *Industrial Noise Policy 2000*

EPA's Publication – *Noise Policy for Industry 2017*

Acoustic Report for DA Submission – Cundall, December 2017 (ref 1015558 Revision E – Fairvale High School)

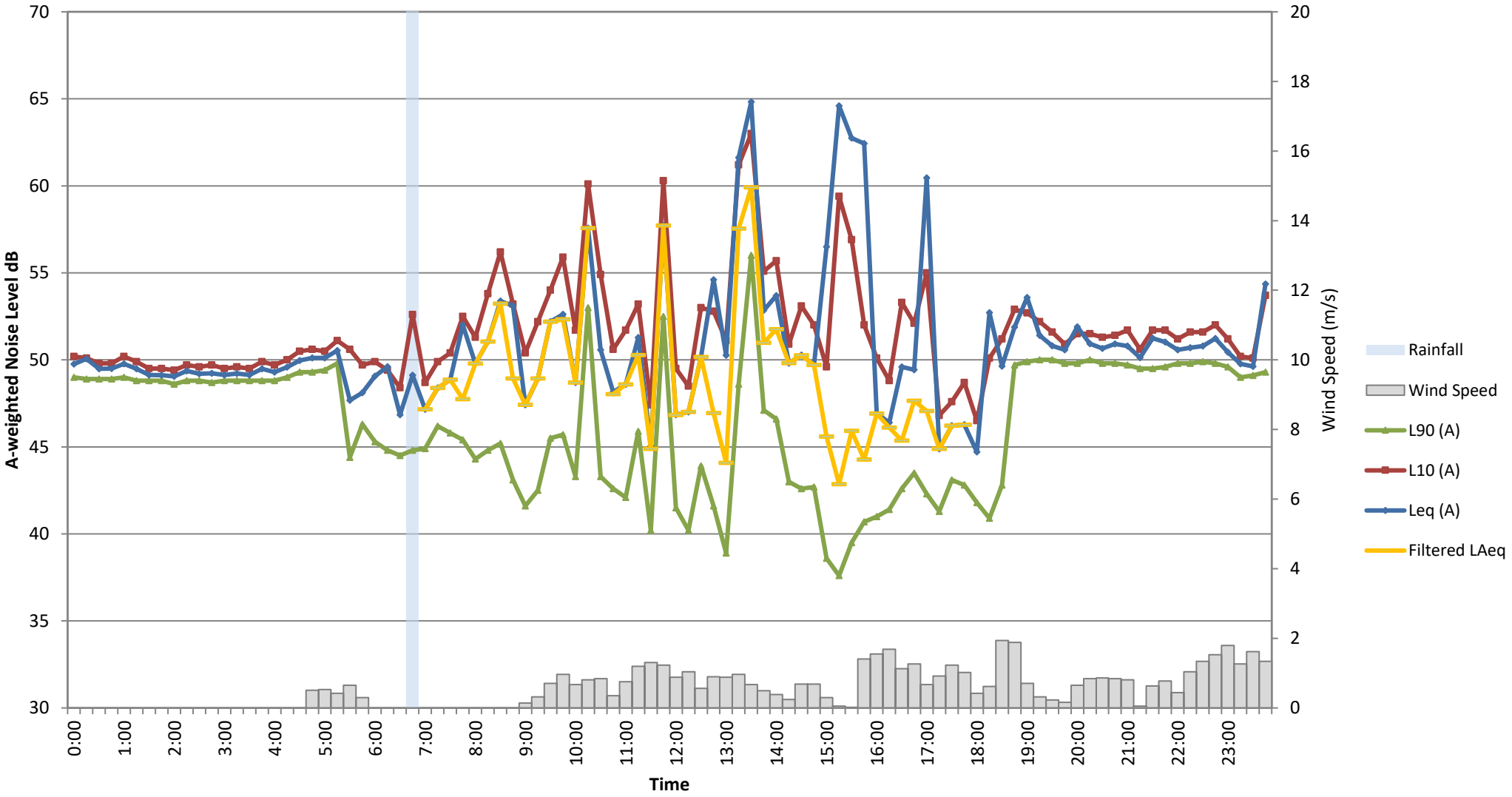
NSW Department of Education *EFSG: DG11 Acoustics, Section 11.04*

Plans – Collard Maxwell Architects – Fairvale High School, Project No:3212, dated October 30, 2020

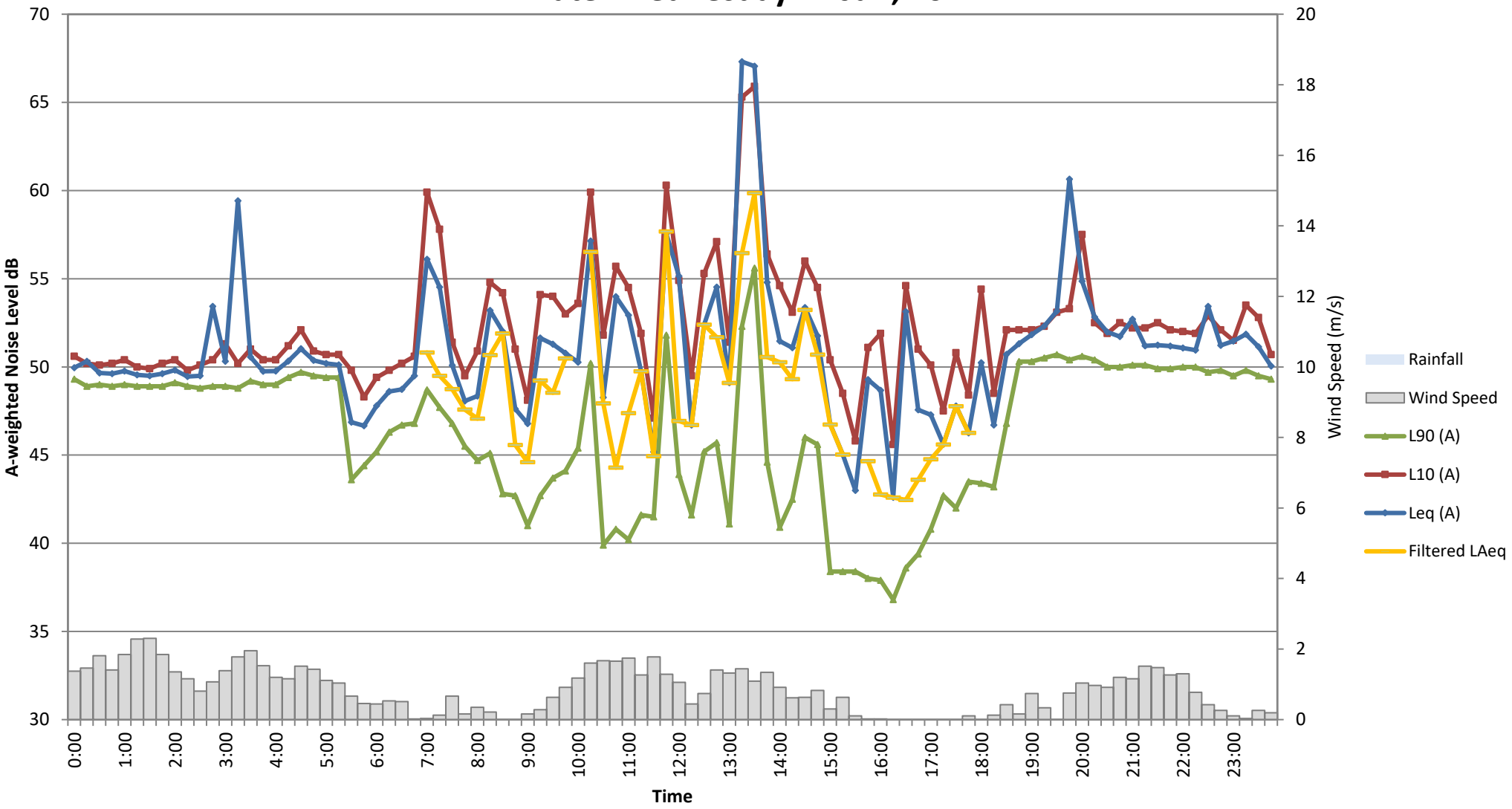
8 APPENDIX A

- Unattended Noise Monitoring – Charts

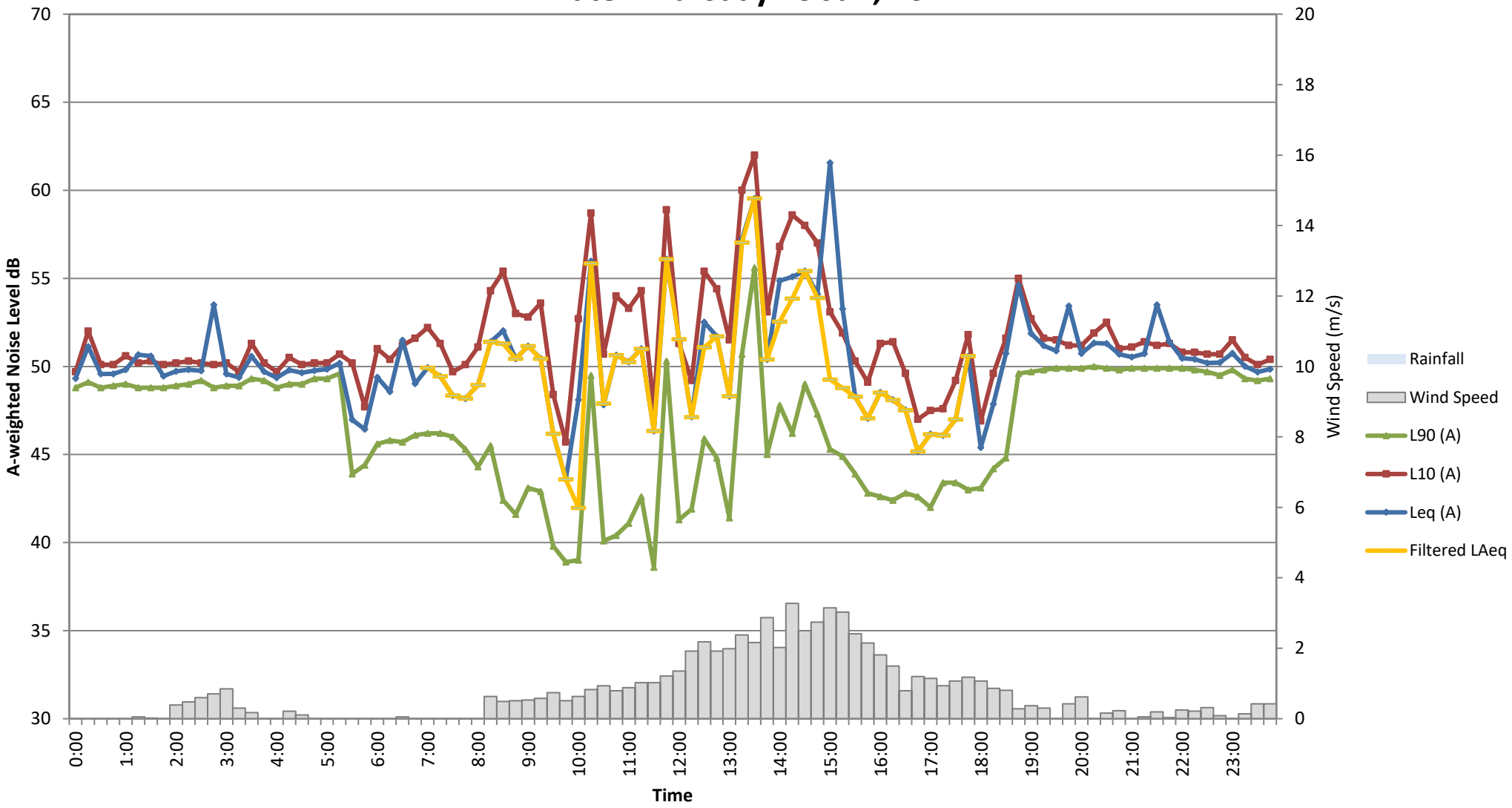
Noise Level Measurements
Monitor Location: 10 Mellick St, Fairfield West - Rear Yard
Date: Tuesday 21 Jun, 2022



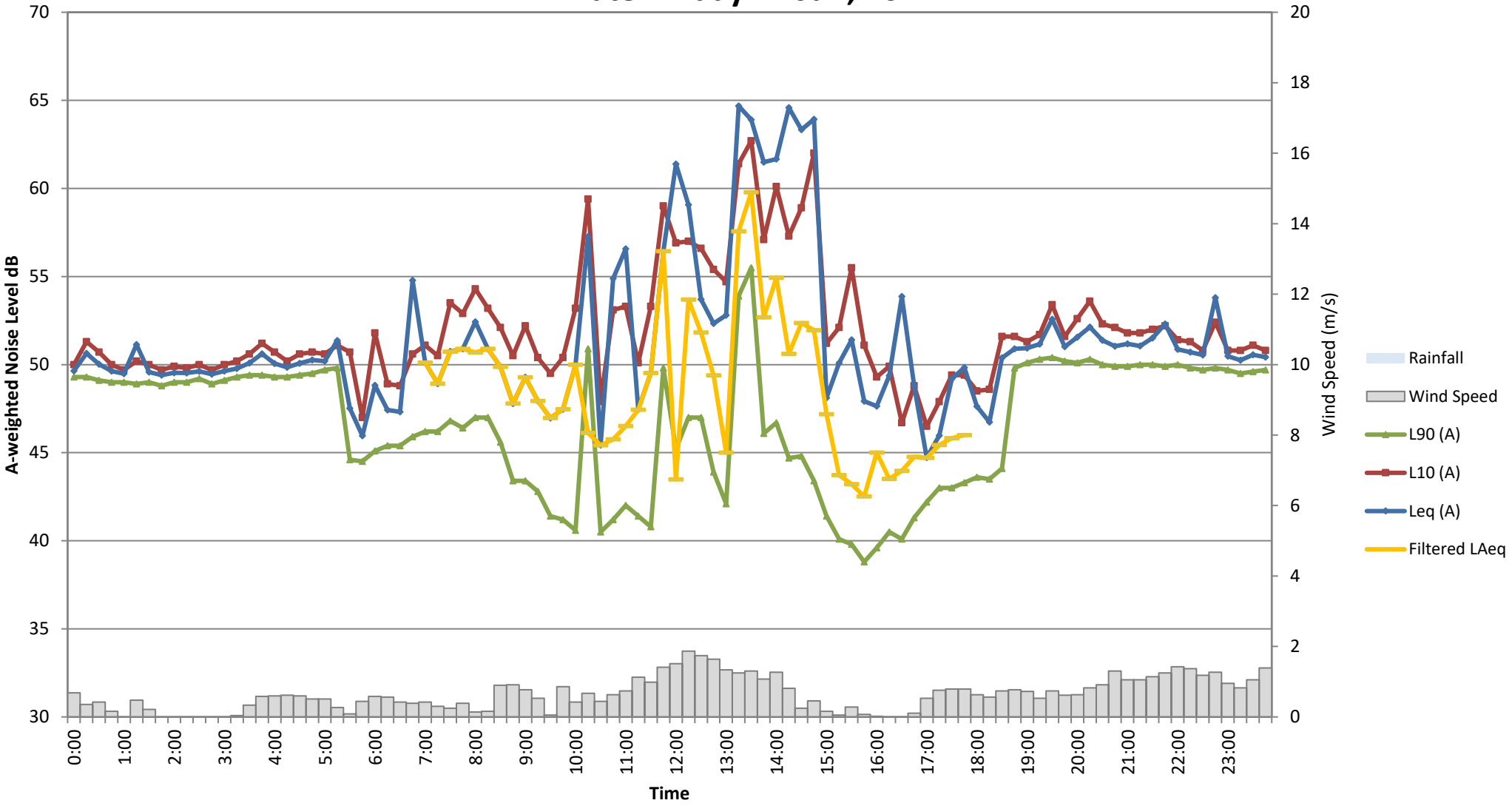
Noise Level Measurements
Monitor Location: 10 Mellick St, Fairfield West - Rear Yard
Date: Wednesday 22 Jun, 2022



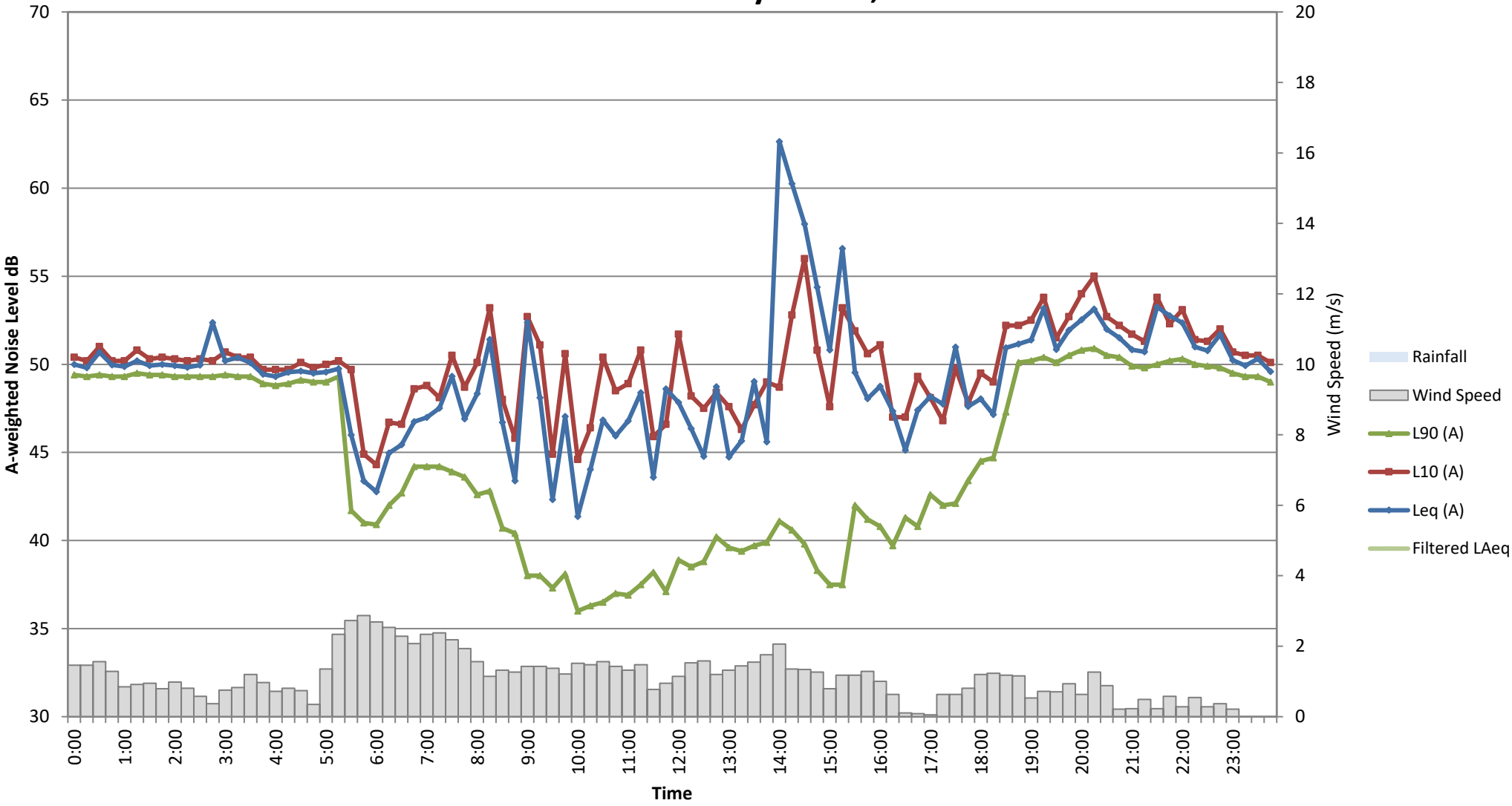
Noise Level Measurements
Monitor Location: 10 Mellick St, Fairfield West - Rear Yard
Date: Thursday 23 Jun, 2022



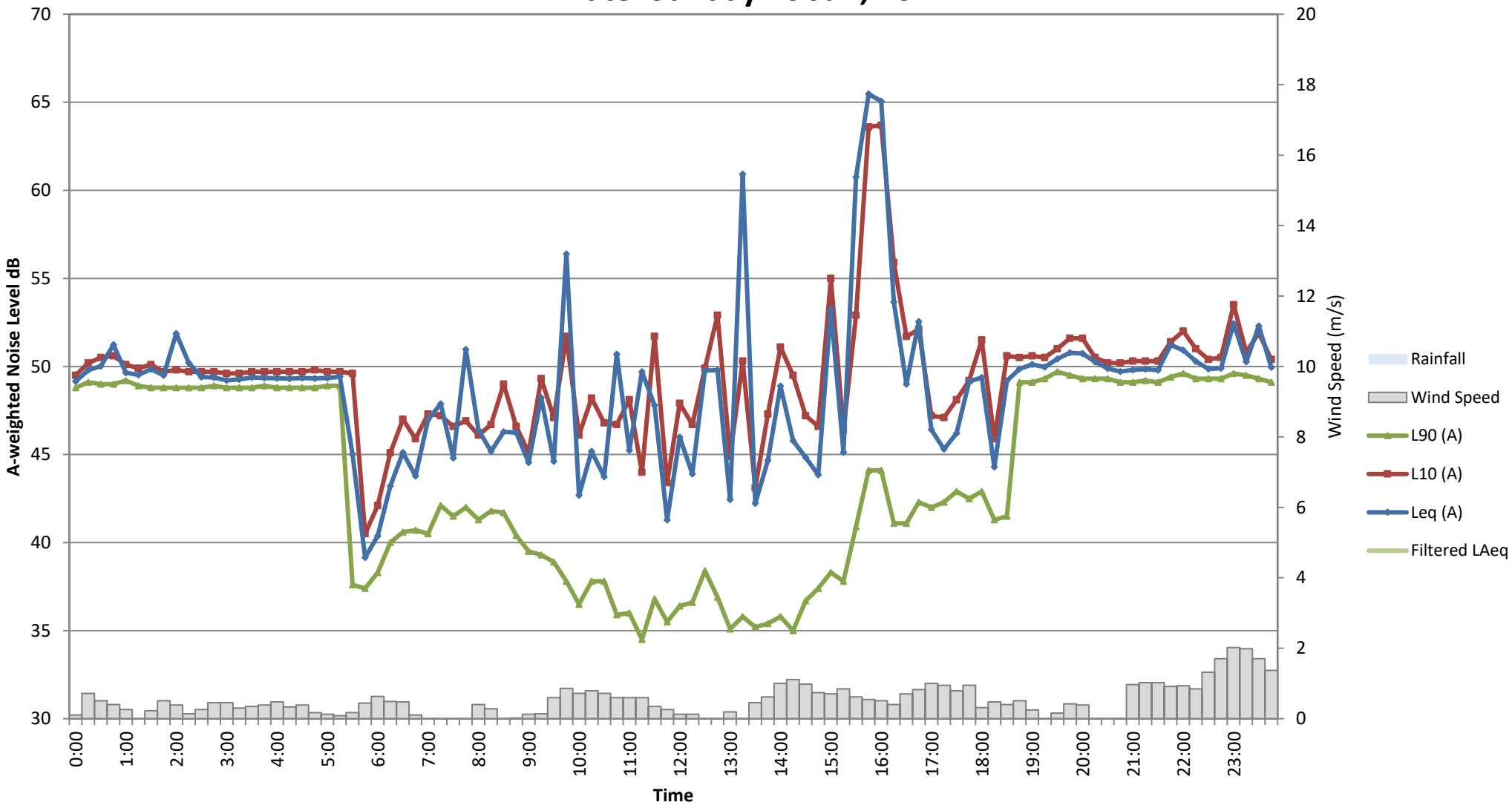
Noise Level Measurements
Monitor Location: 10 Mellick St, Fairfield West - Rear Yard
Date: Friday 24 Jun, 2022



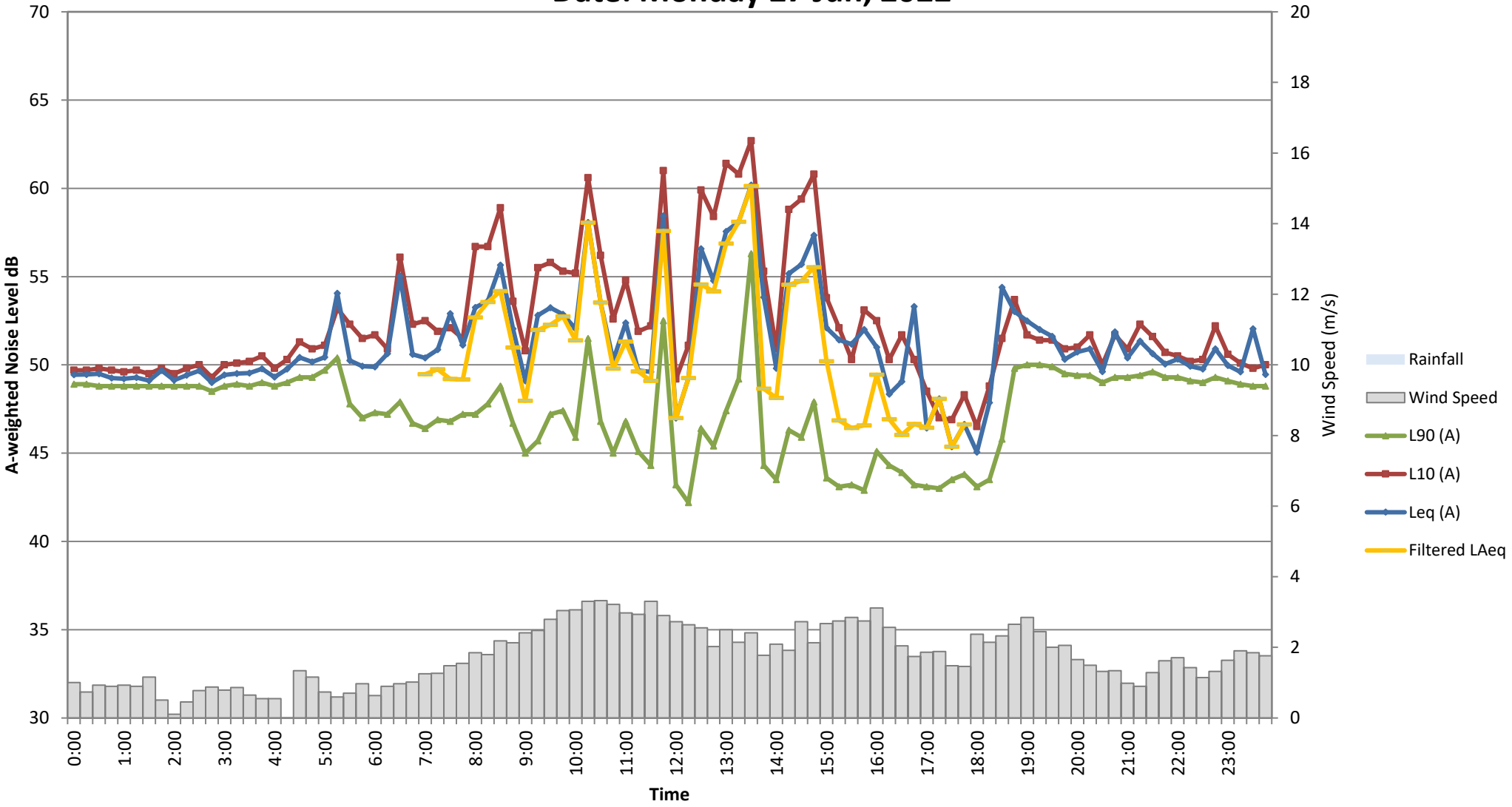
Noise Level Measurements
Monitor Location: 10 Mellick St, Fairfield West - Rear Yard
Date: Saturday 25 Jun, 2022



Noise Level Measurements
Monitor Location: 10 Mellick St, Fairfield West - Rear Yard
Date: Sunday 26 Jun, 2022



Noise Level Measurements
Monitor Location: 10 Mellick St, Fairfield West - Rear Yard
Date: Monday 27 Jun, 2022



9 APPENDIX B

– Unattended Noise Monitoring – Tables

Period Start	Logged $L_{Aeq,\ 15\ min}$	Source L_{Aeq} (L_{Aeq}, mm:ss)		Partial $L_{Aeq,\ 15\ min}$ Contribution		marked exclusions
		School/ filtered	Excluded	School/ filtered	Excluded	
21/06/2022 7:00	47.2	47.2 (LAeq, 15:00)		47.2		
21/06/2022 7:15	48.4	48.4 (LAeq, 15:00)		48.4		
21/06/2022 7:30	48.9	48.9 (LAeq, 15:00)		48.9		
21/06/2022 7:45	52.0	47.7 (LAeq, 11:37)	57 (LAeq, 3:23)	46.6	50.5	Birds,
21/06/2022 8:00	49.8	49.8 (LAeq, 15:00)		49.8		
21/06/2022 8:15	51.1	51 (LAeq, 15:00)		51.0		
21/06/2022 8:30	53.4	53.2 (LAeq, 14:18)	55.6 (LAeq, 0:42)	53.0	42.3	Birds,
21/06/2022 8:45	53.1	48.9 (LAeq, 6:23)	54.7 (LAeq, 8:37)	45.2	52.3	Birds,
21/06/2022 9:00	47.4	47.4 (LAeq, 15:00)		47.4		
21/06/2022 9:15	48.9	48.9 (LAeq, 15:00)		48.9		
21/06/2022 9:30	52.2	52.2 (LAeq, 15:00)		52.2		
21/06/2022 9:45	52.6	52.3 (LAeq, 14:16)	56.2 (LAeq, 0:44)	52.1	43.1	Aircraft,
21/06/2022 10:00	48.7	48.7 (LAeq, 15:00)		48.7		
21/06/2022 10:15	57.6	57.6 (LAeq, 15:00)		55.0		
21/06/2022 10:45	48.2	48 (LAeq, 14:37)	51.4 (LAeq, 0:23)	47.9	35.4	Birds, Aircraft,
21/06/2022 11:00	48.6	48.6 (LAeq, 15:00)		48.6		
21/06/2022 11:15	51.3	50.3 (LAeq, 13:31)	55.9 (LAeq, 1:29)	49.8	45.8	Birds, Aircraft, Residential,
21/06/2022 11:30	45.0	44.9 (LAeq, 14:51)	51.4 (LAeq, 0:09)	44.8	31.4	Residential,
21/06/2022 11:45	57.7	57.7 (LAeq, 15:00)		57.7		
21/06/2022 0:00	46.8	46.8 (LAeq, 15:00)		46.8		
21/06/2022 0:15	47.0	47 (LAeq, 15:00)		47.0		
21/06/2022 0:30	50.2	50.2 (LAeq, 15:00)		50.2		
21/06/2022 0:45	54.6	46.9 (LAeq, 10:36)	59.4 (LAeq, 4:24)	45.4	54.0	Birds,
21/06/2022 1:00	50.3	44.1 (LAeq, 10:21)	54.6 (LAeq, 4:39)	42.5	49.5	Birds, Aircraft,
21/06/2022 1:15	61.6	57.5 (LAeq, 13:18)	69.2 (LAeq, 1:42)	57.0	59.8	Residential,
21/06/2022 1:30	64.8	59.9 (LAeq, 13:12)	72.6 (LAeq, 1:48)	59.4	63.4	Residential,
21/06/2022 1:45	52.9	51 (LAeq, 7:28)	54.1 (LAeq, 7:32)	48.0	51.2	Aircraft,
21/06/2022 2:00	53.7	51.8 (LAeq, 12:45)	58.5 (LAeq, 2:15)	51.1	50.3	Aircraft, Residential,
21/06/2022 2:15	49.8	49.8 (LAeq, 15:00)		49.8		
21/06/2022 2:30	50.3	50.3 (LAeq, 15:00)		50.3		
21/06/2022 2:45	49.7	49.7 (LAeq, 15:00)		49.7		
21/06/2022 3:00	56.5	45.6 (LAeq, 13:54)	67.5 (LAeq, 1:06)	45.3	56.2	Residential,
21/06/2022 3:15	64.6	42.9 (LAeq, 9:29)	68.9 (LAeq, 5:31)	40.9	64.6	Birds, Residential,
21/06/2022 3:30	62.8	45.9 (LAeq, 8:47)	66.5 (LAeq, 6:13)	43.6	62.7	Aircraft, Residential,
21/06/2022 3:45	62.4	44.3 (LAeq, 11:39)	68.9 (LAeq, 3:21)	43.2	62.4	Aircraft, Residential,
21/06/2022 4:00	46.9	46.9 (LAeq, 15:00)		46.9		
21/06/2022 4:15	46.4	46.1 (LAeq, 14:51)	55.1 (LAeq, 0:09)	46.1	35.1	Residential,
21/06/2022 4:30	49.6	45.4 (LAeq, 8:26)	52.1 (LAeq, 6:34)	42.9	48.6	Residential,
21/06/2022 4:45	49.4	47.6 (LAeq, 13:24)	55.3 (LAeq, 1:36)	47.2	45.5	Residential,
21/06/2022 5:00	60.5	47.1 (LAeq, 9:11)	64.4 (LAeq, 5:49)	44.9	60.3	Residential,
21/06/2022 5:15	44.9	44.9 (LAeq, 15:00)		44.9		
21/06/2022 5:30	46.2	46.2 (LAeq, 15:00)		46.2		
21/06/2022 5:45	46.3	46.3 (LAeq, 15:00)		46.3		
22/06/2022 7:00	56.1	50.8 (LAeq, 3:55)	57.1 (LAeq, 11:05)	45.0	55.7	Birds,
22/06/2022 7:15	54.5	49.5 (LAeq, 4:47)	55.7 (LAeq, 10:13)	44.5	54.1	Birds,
22/06/2022 7:30	50.1	48.7 (LAeq, 13:26)	55.2 (LAeq, 1:34)	48.3	45.4	Birds, Aircraft,
22/06/2022 7:45	48.1	47.6 (LAeq, 13:50)	51.6 (LAeq, 1:10)	47.2	40.5	Birds, Aircraft,
22/06/2022 8:00	48.4	47.1 (LAeq, 12:21)	51.8 (LAeq, 2:39)	46.2	44.2	Birds, Aircraft,
22/06/2022 8:15	53.2	50.7 (LAeq, 12:30)	58.3 (LAeq, 2:30)	49.9	50.5	Birds, Aircraft,
22/06/2022 8:30	52.0	51.9 (LAeq, 14:46)	56.2 (LAeq, 0:14)	51.8	38.1	Birds,
22/06/2022 8:45	47.6	45.6 (LAeq, 12:02)	51.6 (LAeq, 2:58)	44.6	44.6	Aircraft,
22/06/2022 9:00	46.8	44.6 (LAeq, 14:04)	55.2 (LAeq, 0:56)	44.3	43.2	Aircraft,
22/06/2022 9:15	51.6	49.2 (LAeq, 13:04)	57.5 (LAeq, 1:56)	48.6	48.6	Aircraft,
22/06/2022 9:30	51.3	48.5 (LAeq, 12:53)	57.2 (LAeq, 2:07)	47.9	48.6	Birds, Aircraft,
22/06/2022 9:45	50.8	50.5 (LAeq, 14:23)	54.8 (LAeq, 0:37)	50.3	40.9	Birds, Residential,
22/06/2022 10:15	57.1	56.5 (LAeq, 11:52)	58.9 (LAeq, 3:08)	55.5	52.1	Birds, Aircraft,
22/06/2022 10:30	48.3	47.9 (LAeq, 14:36)	54 (LAeq, 0:24)	47.8	38.2	Aircraft,
22/06/2022 10:45	54.0	44.3 (LAeq, 7:38)	56.8 (LAeq, 7:22)	41.4	53.7	Aircraft,
22/06/2022 11:00	52.9	47.4 (LAeq, 10:36)	57.3 (LAeq, 4:24)	45.9	52.0	Birds, Aircraft,
22/06/2022 11:15	49.8	49.8 (LAeq, 15:00)		49.8		

Period Start	Logged $L_{Aeq,\ 15\ min}$	Source L_{Aeq} (L_{Aeq}, mm:ss)		Partial $L_{Aeq,\ 15\ min}$ Contribution		marked exclusions
		School/ filtered	Excluded	School/ filtered	Excluded	
22/06/2022 11:30	45.2	44.9 (LAeq, 14:51)	53.2 (LAeq, 0:09)	44.9	33.2	Birds,
22/06/2022 11:45	57.6	57.7 (LAeq, 14:05)	55 (LAeq, 0:55)	57.4	42.9	Birds,
22/06/2022 0:00	55.2	46.9 (LAeq, 9:48)	59.3 (LAeq, 5:12)	45.1	54.7	Aircraft, Residential,
22/06/2022 0:15	46.7	46.7 (LAeq, 15:00)		46.7		
22/06/2022 0:30	52.4	52.4 (LAeq, 15:00)		52.4		
22/06/2022 0:45	54.5	51.7 (LAeq, 11:52)	59 (LAeq, 3:08)	50.7	52.2	Aircraft,
22/06/2022 1:00	49.1	49.1 (LAeq, 15:00)		49.1		
22/06/2022 1:15	67.3	56.5 (LAeq, 8:41)	70.9 (LAeq, 6:19)	54.1	67.1	Aircraft, Residential,
22/06/2022 1:30	67.1	59.8 (LAeq, 9:48)	71.1 (LAeq, 5:12)	58.0	66.5	Residential,
22/06/2022 1:45	54.8	50.6 (LAeq, 11:38)	59.8 (LAeq, 3:22)	49.5	53.3	Aircraft,
22/06/2022 2:00	51.5	50.3 (LAeq, 13:42)	56.9 (LAeq, 1:18)	49.9	46.3	Birds, Aircraft,
22/06/2022 2:15	51.1	49.3 (LAeq, 14:24)	60.7 (LAeq, 0:36)	49.1	46.7	Aircraft,
22/06/2022 2:30	53.4	53.2 (LAeq, 14:18)	55.5 (LAeq, 0:42)	53.0	42.2	Aircraft,
22/06/2022 2:45	51.8	50.7 (LAeq, 13:39)	56.8 (LAeq, 1:21)	50.3	46.4	Aircraft,
22/06/2022 3:00	46.8	46.7 (LAeq, 15:00)		46.7		
22/06/2022 3:15	45.0	45 (LAeq, 15:00)		45.0		
22/06/2022 3:45	49.3	44.7 (LAeq, 12:10)	55.1 (LAeq, 2:50)	43.8	47.9	Aircraft,
22/06/2022 4:00	48.7	42.8 (LAeq, 10:52)	53.4 (LAeq, 4:08)	41.4	47.8	Aircraft,
22/06/2022 4:15	42.6	42.6 (LAeq, 14:47)	43.8 (LAeq, 0:13)	42.5	25.4	Aircraft,
22/06/2022 4:30	53.1	42.5 (LAeq, 8:21)	56.5 (LAeq, 6:39)	39.9	52.9	Birds, Aircraft,
22/06/2022 4:45	47.6	43.6 (LAeq, 10:33)	51.4 (LAeq, 4:27)	42.1	46.1	Birds, Aircraft,
22/06/2022 5:00	47.3	44.8 (LAeq, 12:54)	53 (LAeq, 2:06)	44.1	44.4	Aircraft,
22/06/2022 5:15	45.6	45.6 (LAeq, 15:00)		45.6		
22/06/2022 5:30	47.8	47.8 (LAeq, 15:00)		47.8		
22/06/2022 5:45	46.3	46.3 (LAeq, 15:00)		46.3		
23/06/2022 7:00	49.9	49.9 (LAeq, 15:00)		49.9		
23/06/2022 7:15	49.4	49.4 (LAeq, 15:00)		49.4		
23/06/2022 7:30	48.4	48.3 (LAeq, 15:00)		48.3		
23/06/2022 7:45	48.2	48.2 (LAeq, 15:00)		48.2		
23/06/2022 8:00	49.0	48.9 (LAeq, 15:00)		48.9		
23/06/2022 8:15	51.4	51.4 (LAeq, 15:00)		51.4		
23/06/2022 8:30	52.0	51.3 (LAeq, 14:15)	58 (LAeq, 0:45)	51.1	45.0	Aircraft,
23/06/2022 8:45	50.4	50.4 (LAeq, 15:00)		50.4		
23/06/2022 9:00	51.2	51.2 (LAeq, 15:00)		51.2		
23/06/2022 9:15	50.5	50.4 (LAeq, 15:00)		50.4		
23/06/2022 9:30	46.2	46.2 (LAeq, 15:00)		46.2		
23/06/2022 9:45	43.6	43.6 (LAeq, 15:00)		43.6		
23/06/2022 10:00	48.1	42 (LAeq, 8:48)	51.3 (LAeq, 6:12)	39.7	47.4	Aircraft,
23/06/2022 10:15	56.0	55.8 (LAeq, 12:49)	56.7 (LAeq, 2:11)	55.2	48.3	Aircraft,
23/06/2022 10:30	47.8	47.9 (LAeq, 14:37)	43.8 (LAeq, 0:23)	47.8	27.9	Aircraft,
23/06/2022 10:45	50.6	50.6 (LAeq, 15:00)		50.6		
23/06/2022 11:00	50.3	50.3 (LAeq, 15:00)		50.3		
23/06/2022 11:15	51.0	51 (LAeq, 15:00)		51.0		
23/06/2022 11:30	46.3	46.3 (LAeq, 15:00)		46.3		
23/06/2022 11:45	56.1	56.1 (LAeq, 15:00)		56.1		
23/06/2022 0:00	51.6	51.5 (LAeq, 15:00)		51.5		
23/06/2022 0:15	47.1	47.1 (LAeq, 15:00)		47.1		
23/06/2022 0:30	52.5	51.1 (LAeq, 11:03)	55 (LAeq, 3:57)	49.8	49.2	Birds, Aircraft,
23/06/2022 0:45	51.7	51.7 (LAeq, 15:00)		51.7		
23/06/2022 1:00	48.3	48.3 (LAeq, 15:00)		48.3		
23/06/2022 1:15	57.2	57 (LAeq, 13:43)	58.8 (LAeq, 1:17)	56.6	48.1	Birds, Aircraft,
23/06/2022 1:30	59.5	59.5 (LAeq, 15:00)		59.5		
23/06/2022 1:45	50.4	50.4 (LAeq, 15:00)		50.4		
23/06/2022 2:00	54.9	52.5 (LAeq, 12:14)	59.4 (LAeq, 2:46)	51.7	52.0	Aircraft, Residential, Traffic,
23/06/2022 2:15	55.1	53.9 (LAeq, 12:43)	58.8 (LAeq, 2:17)	53.1	50.7	Aircraft, Traffic,
23/06/2022 2:30	55.4	55.4 (LAeq, 15:00)		55.4		
23/06/2022 2:45	54.1	53.9 (LAeq, 14:36)	58.4 (LAeq, 0:24)	53.8	42.7	Aircraft,
23/06/2022 3:00	61.6	49.3 (LAeq, 13:07)	70.4 (LAeq, 1:53)	48.7	61.3	Residential,
23/06/2022 3:15	53.3	48.8 (LAeq, 13:59)	63.2 (LAeq, 1:01)	48.5	51.5	Aircraft,
23/06/2022 3:30	48.3	48.3 (LAeq, 15:00)		48.3		

Period Start	Logged $L_{Aeq, 15\ min}$	Source L_{Aeq} (L_{Aeq}, mm:ss)		Partial $L_{Aeq, 15\ min}$ Contribution		marked exclusions
		School/ filtered	Excluded	School/ filtered	Excluded	
23/06/2022 3:45	47.1	47.1 (LAeq, 15:00)		47.1		
23/06/2022 4:00	48.5	48.5 (LAeq, 15:00)		48.5		
23/06/2022 4:15	48.1	48.1 (LAeq, 15:00)		48.1		
23/06/2022 4:30	47.5	47.5 (LAeq, 15:00)		47.5		
23/06/2022 4:45	45.2	45.2 (LAeq, 15:00)		45.2		
23/06/2022 5:00	46.2	46.2 (LAeq, 15:00)		46.2		
23/06/2022 5:15	46.1	46.1 (LAeq, 15:00)		46.1		
23/06/2022 5:30	47.0	47 (LAeq, 15:00)		47.0		
23/06/2022 5:45	50.6	50.6 (LAeq, 15:00)		50.6		
24/06/2022 7:00	50.1	50.1 (LAeq, 15:00)		50.1		
24/06/2022 7:15	48.9	48.9 (LAeq, 15:00)		48.9		
24/06/2022 7:30	50.7	50.7 (LAeq, 15:00)		50.7		
24/06/2022 7:45	50.9	50.9 (LAeq, 15:00)		50.9		
24/06/2022 8:00	52.4	50.7 (LAeq, 13:18)	58 (LAeq, 1:42)	50.2	48.5	Birds, Aircraft,
24/06/2022 8:15	50.9	50.9 (LAeq, 15:00)		50.9		
24/06/2022 8:30	49.9	49.9 (LAeq, 15:00)		49.9		
24/06/2022 8:45	47.8	47.8 (LAeq, 15:00)		47.8		
24/06/2022 9:00	49.3	49.3 (LAeq, 15:00)		49.3		
24/06/2022 9:15	47.9	47.9 (LAeq, 15:00)		47.9		
24/06/2022 9:30	47.0	47 (LAeq, 15:00)		47.0		
24/06/2022 9:45	47.5	47.5 (LAeq, 15:00)		47.5		
24/06/2022 10:00	50.0	50 (LAeq, 15:00)		50.0		
24/06/2022 10:15	57.3	46.1 (LAeq, 0:01)	57.3 (LAeq, 14:59)	16.6	57.3	Residential,
24/06/2022 10:30	45.4	45.4 (LAeq, 15:00)		45.4		
24/06/2022 10:45	54.9	45.8 (LAeq, 11:13)	60.5 (LAeq, 3:47)	44.5	54.5	Birds, Aircraft, Residential,
24/06/2022 11:00	56.6	46.5 (LAeq, 11:42)	62.8 (LAeq, 3:18)	45.4	56.2	Aircraft,
24/06/2022 11:15	47.5	47.4 (LAeq, 15:00)		47.4		
24/06/2022 11:30	49.5	49.5 (LAeq, 15:00)		49.5		
24/06/2022 11:45	56.4	56.4 (LAeq, 15:00)		56.4		
24/06/2022 0:00	61.4	43.5 (LAeq, 0:11)	61.4 (LAeq, 14:49)	24.4	61.4	Residential,
24/06/2022 0:15	59.1	53.7 (LAeq, 9:58)	62.9 (LAeq, 5:02)	51.9	58.1	Residential,
24/06/2022 0:30	53.7	51.8 (LAeq, 9:37)	55.8 (LAeq, 5:23)	49.9	51.4	Aircraft, Residential,
24/06/2022 0:45	52.3	49.4 (LAeq, 12:04)	57.1 (LAeq, 2:56)	48.4	50.0	Aircraft,
24/06/2022 1:00	52.8	45 (LAeq, 2:14)	53.4 (LAeq, 12:46)	36.7	52.7	Aircraft, Residential,
24/06/2022 1:15	64.7	57.6 (LAeq, 12:08)	71.1 (LAeq, 2:52)	56.6	63.9	Aircraft, Residential,
24/06/2022 1:30	63.9	59.8 (LAeq, 12:49)	70.5 (LAeq, 2:11)	59.1	62.1	Residential,
24/06/2022 1:45	61.5	52.7 (LAeq, 11:22)	67.2 (LAeq, 3:38)	51.5	61.0	Aircraft, Residential,
24/06/2022 2:00	61.7	54.9 (LAeq, 12:29)	68.6 (LAeq, 2:31)	54.1	60.8	Aircraft, Residential,
24/06/2022 2:15	64.6	50.6 (LAeq, 11:20)	70.6 (LAeq, 3:40)	49.4	64.5	Aircraft, Residential,
24/06/2022 2:30	63.3	52.4 (LAeq, 11:14)	69.1 (LAeq, 3:46)	51.1	63.1	Aircraft, Residential,
24/06/2022 2:45	63.9	52 (LAeq, 11:33)	70.1 (LAeq, 3:27)	50.8	63.7	Residential,
24/06/2022 3:00	48.1	47.2 (LAeq, 13:12)	51.9 (LAeq, 1:48)	46.6	42.7	Aircraft, Residential,
24/06/2022 3:15	50.1	43.7 (LAeq, 10:07)	54.2 (LAeq, 4:53)	42.0	49.4	Aircraft, Residential,
24/06/2022 3:30	51.4	43.2 (LAeq, 8:48)	54.8 (LAeq, 6:12)	40.9	51.0	Aircraft, Residential,
24/06/2022 3:45	47.9	42.5 (LAeq, 7:32)	50.3 (LAeq, 7:28)	39.5	47.2	Aircraft, Residential,
24/06/2022 4:00	47.6	45 (LAeq, 12:21)	52.6 (LAeq, 2:39)	44.2	45.0	Aircraft, Residential,
24/06/2022 4:15	49.4	43.5 (LAeq, 11:10)	54.4 (LAeq, 3:50)	42.2	48.4	Aircraft, Residential,
24/06/2022 4:30	53.9	44 (LAeq, 14:19)	66.8 (LAeq, 0:41)	43.8	53.4	Aircraft,
24/06/2022 4:45	48.8	44.8 (LAeq, 13:15)	56.3 (LAeq, 1:45)	44.2	46.9	Birds, Aircraft,
24/06/2022 5:00	44.7	44.7 (LAeq, 15:00)		44.7		
24/06/2022 5:15	46.0	45.4 (LAeq, 14:05)	50.4 (LAeq, 0:55)	45.2	38.3	Aircraft,
24/06/2022 5:30	49.2	45.8 (LAeq, 13:23)	56.6 (LAeq, 1:37)	45.3	46.9	Aircraft,
24/06/2022 5:45	49.8	46 (LAeq, 13:55)	59.1 (LAeq, 1:05)	45.7	47.7	Aircraft,
27/06/2022 7:00	50.4	49.5 (LAeq, 14:01)	56.1 (LAeq, 0:59)	49.2	44.2	Aircraft,
27/06/2022 7:15	50.9	49.8 (LAeq, 13:45)	56.2 (LAeq, 1:15)	49.4	45.4	Birds,
27/06/2022 7:30	52.9	49.2 (LAeq, 13:20)	60.4 (LAeq, 1:40)	48.7	50.8	Birds, Aircraft,
27/06/2022 7:45	51.1	49.2 (LAeq, 12:53)	56.2 (LAeq, 2:07)	48.5	47.7	Birds, Aircraft,
27/06/2022 8:00	53.2	52.7 (LAeq, 13:36)	56.6 (LAeq, 1:24)	52.3	46.3	Aircraft,
27/06/2022 8:15	53.7	53.6 (LAeq, 14:48)	56.8 (LAeq, 0:12)	53.5	38.1	Birds,
27/06/2022 8:30	55.6	54.2 (LAeq, 12:28)	59.5 (LAeq, 2:32)	53.4	51.7	Aircraft, Residential,

Period Start	Logged $L_{Aeq,\ 15\ min}$	Source L_{Aeq} (L_{Aeq}, mm:ss)		Partial $L_{Aeq,\ 15\ min}$ Contribution		marked exclusions
		School/ filtered	Excluded	School/ filtered	Excluded	
27/06/2022 8:45	52.0	51 (LAeq, 13:50)	57.6 (LAeq, 1:10)	50.6	46.5	Residential,
27/06/2022 9:00	49.1	48 (LAeq, 13:28)	53.9 (LAeq, 1:32)	47.5	44.0	Aircraft, Residential,
27/06/2022 9:15	52.8	52 (LAeq, 12:53)	55.9 (LAeq, 2:07)	51.3	47.4	Aircraft,
27/06/2022 9:30	53.2	52.3 (LAeq, 13:43)	58.2 (LAeq, 1:17)	51.9	47.5	Aircraft, Traffic,
27/06/2022 9:45	52.9	52.7 (LAeq, 14:41)	56.5 (LAeq, 0:19)	52.6	39.7	Traffic,
27/06/2022 10:00	52.1	51.4 (LAeq, 13:52)	56.4 (LAeq, 1:08)	51.0	45.2	Birds,
27/06/2022 10:15	58.1	58.1 (LAeq, 15:00)		58.1		
27/06/2022 10:30	53.5	53.5 (LAeq, 15:00)		53.5		
27/06/2022 10:45	50.3	49.8 (LAeq, 13:01)	52.5 (LAeq, 1:59)	49.2	43.7	Aircraft, Traffic,
27/06/2022 11:00	52.4	51.3 (LAeq, 14:11)	59.1 (LAeq, 0:49)	51.1	46.5	Aircraft,
27/06/2022 11:15	49.7	49.6 (LAeq, 14:21)	50.7 (LAeq, 0:39)	49.4	37.1	Aircraft,
27/06/2022 11:30	49.6	49.1 (LAeq, 13:35)	52.7 (LAeq, 1:25)	48.7	42.5	Aircraft, Traffic,
27/06/2022 11:45	58.4	57.6 (LAeq, 13:52)	63.5 (LAeq, 1:08)	57.2	52.3	Birds, Aircraft,
27/06/2022 0:00	47.0	47 (LAeq, 15:00)		47.0		
27/06/2022 0:15	49.3	49.3 (LAeq, 15:00)		49.3		
27/06/2022 0:30	56.6	54.6 (LAeq, 13:14)	62.4 (LAeq, 1:46)	54.0	53.1	Aircraft,
27/06/2022 0:45	54.8	54.2 (LAeq, 13:43)	58.5 (LAeq, 1:17)	53.8	47.8	Aircraft,
27/06/2022 1:00	57.6	56.9 (LAeq, 13:38)	61.5 (LAeq, 1:22)	56.5	51.1	Aircraft,
27/06/2022 1:15	58.1	58.1 (LAeq, 15:00)		58.1		
27/06/2022 1:30	60.2	60.1 (LAeq, 13:55)	60.7 (LAeq, 1:05)	59.8	49.3	Aircraft,
27/06/2022 1:45	53.8	48.7 (LAeq, 12:49)	60.9 (LAeq, 2:11)	48.0	52.5	Aircraft,
27/06/2022 2:00	49.8	48.1 (LAeq, 14:16)	58.4 (LAeq, 0:44)	47.9	45.3	Aircraft,
27/06/2022 2:15	55.2	54.5 (LAeq, 13:59)	59.7 (LAeq, 1:01)	54.2	48.0	Aircraft,
27/06/2022 2:30	55.7	54.8 (LAeq, 14:07)	61.8 (LAeq, 0:53)	54.5	49.5	Aircraft,
27/06/2022 2:45	57.3	55.5 (LAeq, 12:18)	61.4 (LAeq, 2:42)	54.7	54.0	Aircraft,
27/06/2022 3:00	52.1	50.2 (LAeq, 14:21)	61.5 (LAeq, 0:39)	50.0	47.9	Aircraft,
27/06/2022 3:15	51.4	46.9 (LAeq, 12:27)	57.6 (LAeq, 2:33)	46.0	49.9	Birds, Aircraft,
27/06/2022 3:30	51.2	46.4 (LAeq, 12:45)	57.9 (LAeq, 2:15)	45.7	49.7	Birds, Aircraft,
27/06/2022 3:45	52.0	46.6 (LAeq, 11:48)	57.6 (LAeq, 3:12)	45.5	50.9	Birds, Aircraft,
27/06/2022 4:00	51.0	49.4 (LAeq, 14:22)	59.9 (LAeq, 0:38)	49.3	46.2	Birds, Aircraft,
27/06/2022 4:15	48.3	46.9 (LAeq, 13:26)	53.6 (LAeq, 1:34)	46.4	43.8	Aircraft,
27/06/2022 4:30	49.1	46 (LAeq, 10:45)	52.6 (LAeq, 4:15)	44.6	47.1	Birds, Aircraft,
27/06/2022 4:45	53.3	46.7 (LAeq, 14:02)	64.2 (LAeq, 0:58)	46.4	52.3	Birds, Aircraft,
27/06/2022 5:00	46.4	46.4 (LAeq, 15:00)		46.4		
27/06/2022 5:15	48.1	48.1 (LAeq, 15:00)		48.1		
27/06/2022 5:30	45.4	45.4 (LAeq, 15:00)		45.4		
27/06/2022 5:45	46.6	46.6 (LAeq, 15:00)		46.6		