Resonate

Fairfield Showground Redevelopment

Event Noise Management Plan

S180086RP2 Revision C

Monday, 18 October 2021

Resonate

Document Information

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Revision Table

Report revision	Date	Description	Author	Reviewer
0	25/06/2019	First issue	Julia Knight	Keith Hewett
A	27/06/2019	Second issue	Julia Knight	Keith Hewett
B	26/08/2021	Third issue	Marc Schlussel	Raymond Sim
C	18/10/2021	Final issue	Marc Schlussel	Raymond Sim

Glossary

A-weighting	A spectrum adaption that is applied to measured noise levels to approximate human hearing at lower noise levels. A-weighted levels are used as human hearing does not respond equally at all frequencies.
C-weighting	A spectrum adaption that is applied to measured noise levels to approximate human hearing at high noise levels. C-weighted levels are used as human hearing does not respond equally at all frequencies.
dB	Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale. We typically perceived a 10 dB increase in sound as a doubling of that sound level.
dB(A)	'A' Weighted sound level in dB.
dB(C)	'C' Weighted sound level in dB.
dB(Lin)	Linear (un-weighted) sound level in dB. A measure of the absolute pressure fluctuation in the air.
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_{eq}	Equivalent noise level—Energy averaged noise level over the measurement period.

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Table of Contents

1 Introduction

This document is designed to be a practical working plan for managing noise from concerts and events associated with the Fairfield Showground site. It should be kept on site and referred to prior to and during events that have the potential to cause noise impacts on nearby sensitive receivers.

This document includes:

- General details of the site,
- Categorisation and discussion of event types,
- Noise criteria for each event type, and,
- Mitigation measures.

It is noted, that the Fairfield Showground in its current operational format hosts approximately 35 events per year with a range of 1,000 to 20,000 visitors. Fairfield City Council stated that these events are generally accepted by the community and complaints in relation to noise are rare enough as to be of negligible consequence overall. Fairfield City Council proposes to continue the existing style of events with the redeveloped showground.

This document is applicable to the following events:

- Music concerts
- Music festivals
- Sporting events
- Cultural festivals such as but not limited to, Easter Show, Chinese new year, Illuminate etc.

This management plan does not apply to markets.

1.1 Council Development Approval Conditions

Council provided Development Approval Condition (14) following the approval of Stage 1 and Condition (48) following the approval of Stages 2 and 3. Both conditions relate to the provision of a noise management plan and are presented as follows:

(14) Noise Management Plan
A Noise Management Plan shall be prepared and submitted to Council including, but not limited to, the following:

- The number of Category 1, 2 and 3 events to be held per year;
- Assessment of noise impacts on sensitive receivers with reference to case studies contained in the EPA Noise Guide for Local Government (NGLG);
- Operational times for these events;
- Neighbour notification; and;
- Complaints handling procedures.

(48) Event Noise Management Plan
The Event Noise Management Plan that was established during Stage 1 of the development of the Showground shall be updated throughout the stages of the development of the whole site and include potential noise impacts from Stages 2 and 3, in order to provide a site-wide management plan.

1.2 Site Layout

The Fairfield Showground redevelopment contains several new areas and buildings. The main noise contribution will be generated from the following:

- Live music from the amenities building stage / Mobile stage located at the south end of the AFL/Festival field oriented in NNW direction

- Live music from the awning stage located at either north east or north west under the new awning oriented in SW or SE direction.
- Spectator noise from the grandstand located at the southwest corner of the showground.
- Live music from within the Regional and Multicultural Sports Centre.
- Carpark activities noise during events.

The layout of the amenities building stage, the awning stage and the grandstand with the stage directions is shown in Figure 1. The regional and multicultural sports centre and the new carpark are also shown in Figure 1.

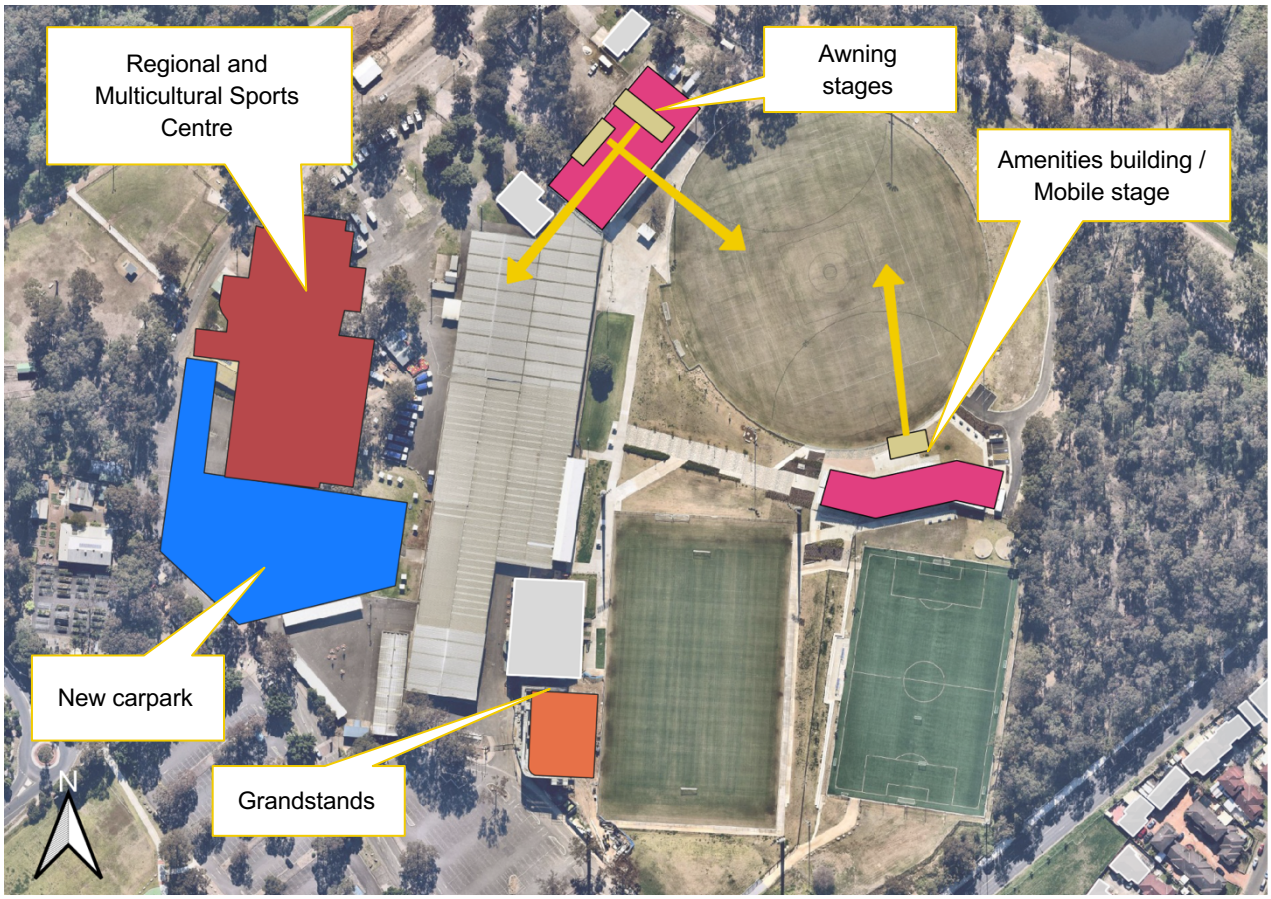

Figure 1 Fairfield Showground redevelopment site layout and stage directions

1.3 Responsible Persons

Access to a completed version of Table 1 should be easily accessible to event stakeholders prior to, and during the event.

Table 1 Responsible Persons

Title/Role	Contact Name	Contact Details
Events Manager/Promoter	e.g. Jane Smith	Email: j.smith@mail.com Phone: 0400 000 000
Fairfield Council Representative		Email: Phone:
Audio Engineer		Email: Phone:
Acoustic Consultant		Email: Phone:
Community Consultant		Email: Phone:
Other		Email: Phone:

2 Noise Criteria

This section presents the noise level limits that apply to the following noise sources at the Fairfield Showground:

- Concerts and sporting events with the use of sound amplification equipment.
- Spectator/crowd noise at the showground.
- Carpark activities noise.

Fairfield City Council is the appropriate regulatory authority to define noise limits and targets. Information in regards to outdoor events can be found in the publication *Local Guide for Government.*

2.1 Concert noise criteria

Table 2 below details a summary of the noise level limits at nearby residential receivers. These limits are different depending on the time of day and the category of the concert. More detail on the categorisation of the concerts is in Section 2.1.1.

Table 2 Noise criteria at sensitive receivers by concert category

Concert Category (Section 2.1.2)	Time Period	Noise Level dB $L_{Aeq,\ 15\ minutes}$ at Sensitive Receivers
1	(10 am – 10 pm)	$L_{eq,15min}$ 50 dB(A)
2	(10 am – 10 pm)	$L_{eq,15min}$ 60 dB(A)
3	(10 am – 10 pm)	$L_{eq,15min}$ 70 dB(A)

2.1.1 Concert events

The concert events are sorted into three categories in order to manage the yearly noise exposure of nearby residents. Concerts in higher noise categories (category 3) can occur fewer times per year than lower noise category concerts (category 2 and 1 events). The categories apply for the mobile stage and the awning stage. The assessment considers that only one stage is in operation at any one time for noise intensive music concerts. Other events, such as presentations or cultural festivals with lower noise emissions may be held on both stages at the same time.

The limits set for the amplified music from the stages are measured at the front-of-house (FOH) mixing desk which is assumed at a distance of 30 m from the stages.

The L_{Aeq} measurement parameter with the 15-minute time interval is an appropriate measurement parameter to assess the likely annoyance of live music events for the following reasons:

- The equivalent continuous level (approximate average) L_{eq} measurement parameter has been found to correlate well with annoyance reactions from community noise.
- The L_{Aeq} is preferred to the often applied L_{Amax} noise parameter as there could be frequent exceedances due to unrelated noise in the area (e.g. horn, dog barking, birds), where the music noise is not clearly dominant. The L_{max} might be suitable for major events with constant noise monitoring at the sensitive receiver locations and where the live music is the dominating noise contributor. However, the instantaneous maximum noise level does not correlate as well with the likelihood of annoyance reactions from the community.
- In addition, depending on the performer or music being played a certain dynamic range between the highs and lows of a piece of music occur. The maximum noise levels may not be a good indicator of the overall level of the music and not represent likely annoyance.

To assure the event sound levels are within the defined criteria, it is recommended that there is constant dB(C) sound pressure level (SPL) monitoring during live events at the front-of-house (FOH) mixing desk. This simplifies the monitoring process for live concerts with repeatable conditions at the mixing desk.
It is preferred to set these limits to the dB(C) noise parameter as this parameter was specifically developed to assess loud low frequency noise, that is typical of rock or dance live-music events, as there is little low-frequency weighting applied. The low frequency octave bands, particularly in 63Hz and 125Hz often cause disturbance for nearby sensitive receivers and those further away, when the mid and high frequency component has dissipated.

By constant FOH mixing desk sound level monitoring, additional monitoring at the sensitive receiver locations may not be required unless upon request by Fairfield City Council.

2.1.2 Concert event category

Three event categories are described below:

Category 1

- Typical types of events that fit into this category may include, outdoor cinema, small events with up to 300 patrons. However, high level music noise events may trigger higher category event status even if a small number of attendees are present.
- Sound levels at the FOH mixing desk are 80 dB(C) SPL or less when the mixing desk is 30m from the stage. As this category is for smaller events, the FOH mixing desk might be closer to the stage e.g. 15 m, which would result in a FOH mixing desk level of 85 dB(C) SPL. See Table 3 for distance correction factors.
- Events of this type have minor noise impact, therefore there are no restrictions in number of events.
- Music is to end at 10 pm.
- Noise levels due to live music at sensitive receivers are below $L_{eq,15min}$ 50 dB(A).

Category 2

- Typical attendance of >300 – 2000 patrons, e.g. Community concerts or mini-festivals.
- Sound levels at the FOH mixing desk are 90 dB(C) SPL or less when the mixing desk is 30m from the stage.
- No more than 12 music events per year to control the cumulative noise exposure at sensitive receivers.
- Time restrictions (10 am – 10 pm).
- Music ends at 10 pm.
- Noise levels at sensitive receivers are below $L_{eq,15min}$ 60 dB(A) during daytime and $L_{eq,15min}$ 55 dB(A) after 10 pm.

Category 3

- Large concerts over 2000 patrons.
- Events with FOH mixing desk levels of 100 dB(C) SPL at 30m. See Table 3 for distance correction factors. The operator of the mixing desk is responsible for the noise monitoring.
- No more than 4 music events per year due to the noise impact at sensitive receivers.
- Time restrictions (10 am – 10 pm).
- Noise levels at sensitive receivers $L_{eq,15min}$ 70 dB(A)
- Consultation with sensitive receivers is needed. In particular, the Braeside and Fairfield hospital need to be informed.
- Attended measurements by an acoustic engineer or nominated Fairfield Showground representative at nearby sensitive receiver and FOH mixing desk to confirm compliance with the criteria.

Since noise levels of large live music will likely be above the background levels at the nearby sensitive receivers, mitigation procedures should be in place to reduce the likelihood of disturbance to residents around the Showground. These mitigation procedures should comprise equipment selection, event management, noise monitoring and complaints response practices.

2.1.3 FOH mixing desk noise levels

Noise emissions from any operational stage will be set to a maximum level measured at relevant distances from the FOH mixing desk shown in Table 3.

In the case where the FOH mixing desk is closer to or further away from the stage the noise limit should be adjusted accordingly and as presented for different distances in Table 3.

Table 3 Adjustment for FOH mixing desk sound level

Distance (m)	Adjustment (dB)	Mixing Desk Level (dB(C))		
		Category 1	Category 2	Category 3
15	+ 5	85	95	105
20	+ 2	82	92	102
25	+ 1	81	91	101
30	**-**	**80**	**90**	**100**
35	- 1	79	89	99
40	- 2	78	88	98

2.2 Sporting event noise criteria

During sporting events the main contribution of noise will be crowds and amplified loudspeaker announcements. Sporting events will not commence before 8 am or finish after 10 pm.

A-weighted sound pressure level (L_{A10}) must not exceed 5 dB(A) above the ambient background level (L_{A90}) at the sensitive receiver locations. There is no night-time criterion specified, as sporting events will finish before 10pm.

L_{A10} event noise < L_{A90} background noise in absence of the event + 5dB

Table 4 shows an example of determining noise level criteria per location for sporting events. It will require determining the existing relative background level (L_{A90}) per day, and evening period for each sensitive receiver then adding 5 to calculate the allowable average maximum level (L_{A10}).

Table 4 Measured noise levels 5 Hook Place

Description	Noise level (dB re 20 µPa) during period		
	Daytime	Evening	Night-time
Rating Background Level (RBL), L_{A90}	50	51	-
Criteria at receiver location, L_{A10}	55	56	-

2.3 Carpark and mechanical services noise criteria

Carpark activities and mechanical services noise from the Fairfield Showground should comply with the noise criteria presented in Table 5. This set of noise criteria has been established during the DA phase and in accordance with the NSW EPA's *Noise Policy for Industry* (NPI).

Table 5 NPI carpark and mechanical services noise criteria at residential land uses

NPI Noise Level (dB re 20 µPa) during Period		
Daytime 07:00 – 18:00	**Evening 18:00 – 22:00**	**Night-time 22:00 – 07:00**
47	43	38

3 Noise Management

3.1 General principles

It will be important for Fairfield City Council to undertake all reasonable and feasible measures to reduce noise levels and potential impacts by scheduling events and any associated activities to minimise duration and to continue to liaise with affected local communities.

In accordance with and adopting guidance in the NPI and Noise Guide for Local Government, a series of control measures and management practices designed to mitigate and reduce noise levels detailed in this Plan will be implemented.

In general, management of potential operational noise impacts requires attention to the following:

- training and awareness
- communication
- incident and emergency response
- non-conformance management, preventative and corrective action.

The following noise management measures are provided to minimise noise impacts at nearby noise sensitive receivers.

3.2 Events hours of operation

The Fairfield Showground – Local Approvals Policy (Policy NO 0-126, Date effective 12 May 2020) includes the following exempt hours of operation:

Table 6 Hours of operation

Activity	Exempt hours of operation
Events	**Friday and Saturday:** • 9:00 am to 11:30 pm (all amplified noise must cease at 10:00 pm) **Sunday:** • 9:00 am to 10:00 pm (all amplified noise must cease at 10:00 pm)
Sporting events	**Monday to Sunday:** • 9:00 am to 10:00 pm

- At the end of each day of the activity, all customers have 1 hr to locate off site.
- Cleaning activities must be completed within 1 hr once customers have located off site.
- Dismantling of any structures or amusement devices must be completed and removed off site by 12:00am midnight.

3.3 Operation inductions and Best Practice Training

The following induction and training will be provided to all personnel working at the Showground:

- Site awareness training/environmental inductions to include a section on noise management measures. Ensure that employees are aware of the location of sensitive receivers.
- Signage will be posted on site to ensure employees are aware of not undertaking noisy activities. Educate employees to undertake noisy activities away from sensitive receivers.

- Training will be provided via induction training for responsible operation of all noise intensive equipment with respect to minimising potential operational/event noise.

3.4 Equipment selection

At all stages of event planning the organisers should take all reasonable and practicable measures to reduce noise. This includes the selection of appropriate equipment; an example of this being where specialised audio equipment is used for its ability to direct sound onto the audience area and reduce spill to surrounding residences. Examples of specialised equipment to minimise noise spill may include:

- Controlled dispersion line array loudspeaker arrangements.
- Use of cardioid subwoofer loudspeakers.
- Use of delay towers, or simply using more and smaller loudspeakers located closer to the listeners.

3.5 Event management

The details of the noise level and operating limits will be provided to all promoters providing their own FOH mixing desk and Engineers. It will be advised to all artist engineers that excessive onstage volumes may result in a reduction of FOH volume. A Checklist (provided in Appendix A) will be sent to the event organiser/promoter prior to the event to assess the potential noise impact. This list would include the type of loudspeaker system and setup, proposed sound levels, soundcheck/event times, expected audience numbers and further details to allow for Council to undertake a pre-event impact assessment and define event category type and potential impact.

The above details will also be provided to the audio supplier, and these will be reiterated at a briefing on the morning of the event. Signs will be provided at the mixing desk which remind engineers of the noise limits.

The following procedures will be followed during the event with noise monitoring by an acoustic engineer:

- Sound checks and system tests will be carried out during daytime hours, either immediately before the event or during a less noise-sensitive time on a day preceding the event.
- Music noise from the event will not commence prior to 10 am and will finish promptly at 10 pm.
- Mixing desk operators will be informed of the noise limits as detailed above and that the acoustic engineer on site will be undertaking noise monitoring. The mixing desk operators will comply with the instructions of the acoustic engineer. If the mixing desk operator fails to follow the instructions of the acoustic engineer, the event or production manager will be contacted via radio, and they will instruct the FOH operators to adjust the volume.

3.6 Noise monitoring

Noise monitoring will be undertaken by an appropriately qualified or trained person when required, with the level of monitoring that is undertaken at the discretion of the Fairfield City Council. As a guide the following is likely to be suitable:

- During soundchecks for Category 2 and 3 events—no attendance by acoustic engineer likely to be required.
- Small live music event (Category 1)—no attendance by acoustic engineer likely to be required.
- Large live music event (Categories 2 and 3) —monitoring of sound levels at the FHO mixing desk – After commission of the showground redevelopment one acoustic engineer likely to be sufficient to monitor one large live music event, rotating between mixing desk and residential areas.
- Carpark activities and external mechanical plant – noise monitoring by an acoustic engineer in the event of a genuine noise complaint.

For large live music events (Categories 2 and 3), at a minimum, the monitoring will include the following:

- Continuous noise logging at the main stage FOH mixing desks to check ongoing compliance with the noise limit.
- Regular attended checks of the noise level at the FOH mixing desk by the acoustic engineer or trained council staff to ensure proactive management of noise levels.

- Noise measurements at the nearest sensitive receiver areas shown in Figure 2
- Noise measurements in response to any complaints, where this is an appropriate response.
- A written report on the measurements after the conclusion of the event to be provided to the Fairfield City Council.

Figure 2 presents the recommended attended noise monitoring locations during an event. If any complaints are received during the event in other areas, then these locations will be added to the attended monitoring locations where practical.

3.7 Noise sensitive receivers

The locations / areas are:

1. Braeside Hospital, Fairfield
2. 10 to 21 Christie St, Prairiewood
3. 3 to 15 Moonlight Rd, Prairiewood
4. 2 to 6 Beavors St, Prairiewood
5. 19 to 33 Mallacoota St, Wakeley
6. 3 Bunya Pl, Wakeley

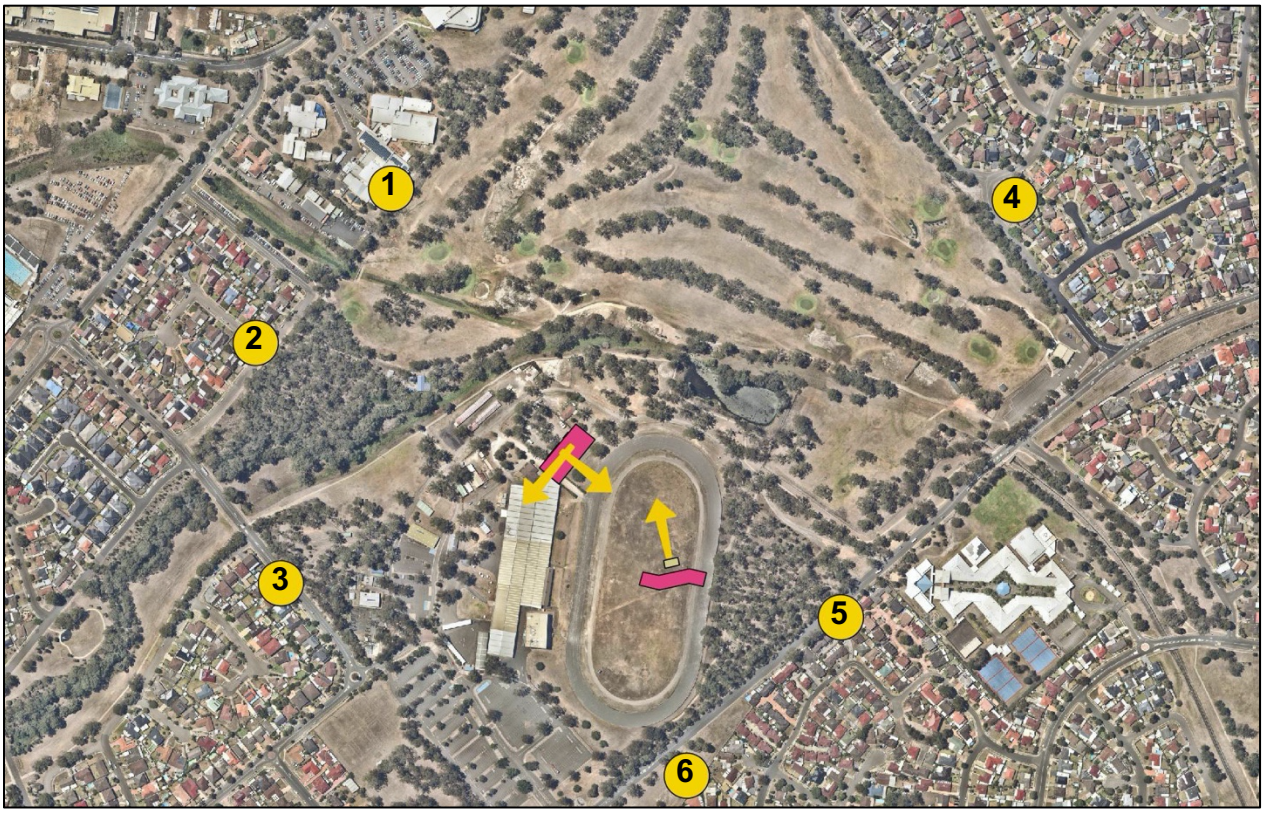

Figure 2 Recommended attended noise monitoring locations

3.8 Event Hotline

An Event Hotline will be established in cooperation with the venue during all hours of site occupation and operation for an event including the soundcheck. This will enable the local community to have a direct line of contact to the event organisers through which to voice any complaints or concerns.

An Event Hotline Log will record the details of all phone calls made to the Event Hotline. The Event Hotline Log will be made available to Council after the event.

3.9 Sporting event mitigation measures

The following mitigation measures should be adopted for a typical loudspeaker system:

- Mount the loudspeakers as low as possible whilst allowing them to point down by at least 45 degrees towards the intended listeners. This will result in less noise spill to areas where it is not intended.
- Only nominated personnel are permitted to use the PA system.
- The system is not to be used for continuous commentary.
- A noise level limiter should be considered to avoid exceedances due to the commentator's voice.
- When using the grandstands social room for events with amplified music, its external doors should be closed at all times after 10 pm.

3.10 Noise complaint response procedure

It is suggested that the Fairfield City Council apply the following noise complaint response procedures:

- Obtain contact details and address of complainant, if complainant is willing to provide these details.
- Contact acoustic engineer or council staff to arrange for measurement at complaint location.
- Acoustic engineer or trained council staff to assess noise levels at nominated FOH distances (See Table 3). If exceeding limits, noise levels will be adjusted to comply with the limit as soon as practical.
- If not, the acoustic engineer or trained council staff will undertake a measurement at the complaint location and compare noise levels to the residential noise targets. If noise levels comply with the targets, then no action is taken but monitoring of noise levels at stage will continue throughout the event.
- If noise levels exceed the residential targets, then noise levels will be compared with the predicted noise levels in this NMP. If the measured noise levels are noticeably higher than the predicted noise levels, then consideration should be given to reducing noise levels at the stage by 5 dB.
- Inform the complainant of any actions taken.
- Record the following details in a complaint register:
  - contact details of complainant (if consent obtained)
  - the time and date of the complaint
  - a description of the complaint
  - any advice from the acoustic engineer following the monitoring
  - any action taken as a result of the complaint

3.11 Community Notification

For category 3 events a notification letter will be distributed to surrounding potentially noise-affected premises used for residential or business purposes. At a minimum this letter will include:

- A description of the planned event.
- The time the event starts and finishes.
- Times for any soundcheck or system tests.
- Advice that noise from the event will be monitored by qualified or trained personnel.
- A description of the proposed measures that will be implemented to minimise noise from the event.
- Details of the Event Hotline.

4 Statutory Compliance

All activities carried out on site must comply with the provisions of relevant legal and other requirements including:

- Fairfield City Council's *Notice of Determination of Development Application No. 435.1/2019*
- NSW EPA *Noise Policy for Industry*
- NSW EPA *Noise Guide for Local Government*
- Protection of the Environment Operations Act 1997 (POEO Act)

Appendix A – Event Management/Promoter Noise Management Checklist

The Fairfield Showground operates under noise control limits detailed in the showgrounds Event Noise Management Plan (NMP). This checklist outlines the elements that an event organiser or promoter must consider and plan for in preparation for hosting an event at the Showground, which involves amplified sound.

The detailed NMP has been prepared to allow the Fairfield Showground to comply with their environmental obligations, minimise the potential for noise disturbance in the community, and allow for the ongoing operation in a sustainable manner.

Noise and Time Limits

Prior to the event, the NMP is to be used to determine the category of the proposed event (tick ✓ which event category is appropriate)

- ☐ Category 1
- ☐ Category 2
- ☐ Category 3

A summary of noise criteria and time limits is provided in Table A1.

Table A1 Noise criteria at sensitive receivers, and time limits for event categories

Concert Category (Section 2.1.2)	Time Period	Noise Level dB $L_{Aeq,\ 15\ minutes}$ at Sensitive Receivers
1	(10 am – 10 pm)	$L_{eq,15min}$ 50 dB(A)
2	(10 am – 10 pm)	$L_{eq,15min}$ 60 dB(A)
3	(10 am – 10 pm)	$L_{eq,15min}$ 70 dB(A)

Prior to the event, the promoter and/or sound manager will provide the proposed event layout including the stages utilised as well as the distance of the FOH mixing desk to the stage/s. Table A2 is to be used to determine the allowable levels as measured from the FOH mixing desks. The levels determined are to be displayed clearly at each FOH mixing desk for easy reference during the event.

Table A2 FOH mixing desk levels by concert category and distance factor

Distance (m)	Adjustment (dB)	Mixing Desk Level (dB(C))		
		Category 1	Category 2	Category 3
15	+ 5	85	95	105
20	+ 2	82	92	102
25	+ 1	81	91	101
30	**-**	**80**	**90**	**100**
35	- 1	79	89	99
40	- 2	78	88	98

Information Required

Please address each of the points below.

Name:	.....
Company/Organisation:	.....
Role/position/responsibility:	.....
Contact Details:	
Email:	.....
Telephone Landline/Mobile:	.....
Confirmation of reading and understanding of the NMP (Yes/No)	.....
Date:	.....
Signed:	.....

- Provide evidence of sound system design and other methods with intent to minimise noise spill to the environment, for example by using highly directional sound systems designed to provide coverage of the required audience area only, use of cardioid sub woofers, delay towers, noise limiters on mixing desk etc.

- Please describe measures/actions taken or proposed to minimise noise spill (Please continue of a separate sheet if more space required):

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- Provide the Fairfield Showground and independent acoustic consultant with direct contact details for the event manager, sound manager and mixing desk operators.

Contact details Prior/during/post event if different from above:

Name:	.....
Role/position/responsibility:	.....

Other Requirements

The promoter, act and sound system provider must:

- Read and understand the detailed Noise Management Plan for the Fairfield showground.
- Liaise with the Fairfield Showgrounds nominated acoustic consultant or trained Council Staff Member.

- Comply with directions from the Fairfield Showground and/or noise consultant to reduce noise levels, where measured noise levels exceed the criteria and a reduction is necessary to come into compliance with the legislative requirements.

Acknowledgement

By signing this checklist questionnaire agreement, the Event organiser/Promoter acknowledges that they have read and understood the Noise Management Plan, and take responsibility for the Performing entities/Act and sound system provider to comply with the noise and time limits.