

Sunday, 28 November 2021

## Colebrook Lakes 2022 - Draft Noise Management Plan

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This management plan is a live document that will be updated as the overall event plan develops. Updates will be version tracked and circulated by e-mail.

Comments or questions relating to this document should be referred to the author.

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke at the bottom.

Chris Beale



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## 1. Overview

1.1. Events at Colebrook Lakes is scheduled to take place on selected weekends in 2022. This NMP relates specifically to CAT3 events that are unlimited in number and therefore have stringent environmental noise controls. The events will be managed by an experienced team that has extensive knowledge of event production. SPLtrack is an environmental management company that has been responsible for noise management at many UK events since 2007.

## 2. Stakeholders

- 2.1. The event managers are Assess All Areas Ltd. (AAA) under the direction of Nick Love.
- 2.2. The sound management consultants are SPLtrack Limited (SPL) of Mallory Park Circuit, Kirkby Mallory, Leicestershire LE9 7QE.
- 2.3. The Licensing Authority is Tunbridge Wells Borough Council (TWBC).
- 2.4. The sound management consultants will liaise with Environmental Health Officers of TWBC under direction from AAA management.

## 3. Arena layout and stage orientation

3.1. The proposed site plan for the event appears below<sup>1</sup>. This plan will be updated if further information becomes available.

## 4. Build and break

4.1. Build and break activities will start at 08:00hrs and cease at 18:00hrs. During this period there will be no significant noise sources. All site vehicles will be properly silenced and site BPM will be used. No receptor monitoring will be employed during build and break.

## 5. Propagation modelling

5.1. The arena plan will be designed to minimise noise propagation. The propagation model appears below<sup>2</sup> and illustrates the likely impact of the event upon nominated receptors.

5.2. The model assumes standard meteorological conditions.

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<sup>1</sup> Will be submitted as Appendix 2

<sup>2</sup> Will be submitted as Appendix 3

## 6.Noise management team

- 6.1.The main noise monitoring team will comprise one engineer.
- 6.2.Site security personnel will be briefed to identify and report noise related issues in conjunction with their other duties. This includes portable sound systems that have not been authorised for use on the site.
- 6.3.A briefing, review and management policy document will be created for those involved during the event.

## 7.Scheduling of stages

- 7.1.AAA will schedule the stage(s) in accordance with the licensing conditions and leave sufficient headroom to ensure that the last performances to end prior to curfew.

## 8.Venue opening hours

- 8.1.TBC<sup>3</sup>

## 9.Licensing conditions

- 9.1.AAA undertake to comply with the conditions relating to noise levels set out by the licensing authority prior to the event.
- 9.2.A copy of the noise conditions will be appended to the noise management plan and will be displayed in the sound control office and in abbreviated form at the sound stages.

## 10.Determination of MNL (Music Noise Level) limits

- 10.1.The MNL limits at noise sensitive receptors will be set by TWBC prior to the event.
- 10.2.SPL will configure the SPLtrack noise management system to monitor all audio sources and representative offsite locations and will provide real-time information to enable TWBC to verify compliance with licence limits.

## 11.Sound system capacity

- 11.1.AAA operate a policy that sound systems must be designed to ensure that the lowest amount of acoustic power is used to achieve satisfactory entertainment sound levels.

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<sup>3</sup> Appendix 4

## 12. System Design

12.1. The design of each loudspeaker system will be undertaken by a competent person with an understanding of environmental noise issues.

12.2. The system will be designed with consideration to the directivity and scope of coverage of the loudspeaker systems.

12.3. System design shall be conducted with reference to any special characteristics of the topography or geography of the site.

12.4. The sound systems will be equipped with a suitable limiting device. Access to the limiting device shall be permitted to authorised persons only.

## 13. Installation of loudspeaker systems

13.1. Only qualified personnel shall undertake the installation of loudspeaker systems.

13.2. After installation SPL will verify that the sound systems comply with the design criteria and a completion certificate will be signed.

## 14. Sound system assessment and audit

14.1. All sound systems will be checked on installation. Equipment components that exceed the agreed specification will be removed from the site.

14.2. At a time agreed by the parties SPL will conduct a propagation test. During this test, offsite noise measurements will be viewed via the SPLtrack monitoring system, streamed audio from the offsite locations will be available and further measurements will be made using portable equipment if necessary.

14.3. The propagation test will consist of typical program music for each sound source, transmitted from each system in turn for a period of 1 minute at a level equivalent to the level set out in the event license and measured at the reference location for that system.

14.4. A further test will be conducted with all systems operating concurrently.

14.5. Offsite measurements will be taken at the monitoring locations established under <Identification of monitoring locations> above.

14.6. The offsite measurements will be related to the sound levels set at the control positions during the test and an attenuation figure will be calculated. From this figure a maximum level for the control position will be set for the duration of the event.

14.7. The MNL (Music Noise Level) limit set at the console shall in any case not exceed 98dBLAeq(15 min) and the maximum sound pressure level at any point in the audience

shall not exceed 137dB. Low frequency impact is recorded at receptors and will be assessed using a range of metrics in conjunction with TWBC officers.

## **15. Briefing of sound personnel**

15.1. All sound operators will be briefed prior to the event by SPL and event managers.

15.2. Sound operators will be briefed to follow the instructions of SPL without delay and without verification from any other party.

## **16. Sound control positions**

16.1. SPL will identify the locations at which the sound levels are directly controlled and adjusted and ensure that all parties are familiar with the means of access to these positions.

## **17. Communication with Sound Operators**

17.1. The methods of contact to the Sound Operators are as follows:

17.1.1. On-screen messaging is provided at each of the onsite meter locations enabling direct communication with sound control engineers. This is a head-up illuminated display in eye-line of the engineers which provides the primary method of communication.

17.1.2. Person to Person or by infrastructure telephone to the Sound Operator.

17.1.3. By radio contact with the stage manager. All stage managers will have walkie-talkies with earphones for use in high noise environments. The appropriate channel will be identified at the briefing.

17.1.4. By mobile telephone. All mobile numbers will be collated on an information sheet prior to the event and distributed at the briefing.

17.1.5. At key times and when necessary sound control staff will be present at the sound mix positions.

## **18. Event Sound Control Office**

18.1. AAA will establish suitably located heated, well-lit, secure office facilities for the management of environmental noise.



## 19. Onsite monitoring locations

19.1. A reference location will be identified for each sound system being the point at which sample sound level measurements will be taken. This will normally be the front of house sound mix position.

19.2. If there is no mix position, a point on the centre line of the audience area 40m from the downstage edge (or two thirds of the distance from the downstage edge to the rear of the audience) will be used.

## 20. Offsite monitoring locations

20.1. A maximum of ten offsite monitoring locations will be deployed for the event. These will be located in agreement with TWBC.

## 21. Noise monitoring system

21.1. The noise monitoring system that will be used is called SPLtrack, a network of onsite and offsite meters that are viewed in real time at event control and at any location with Internet access including mobile devices.

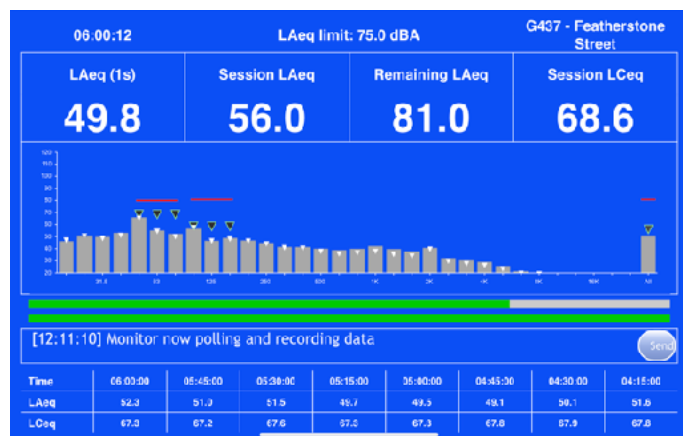
21.2. Noise monitoring stations are placed at the mix position of each of the principle noise sources together with a live screen to inform the sound engineer in each case.

21.3. SPLtrack produces a live dynamic sound propagation map and performs sound source matching to link sources with

receptors. Live screens change colour to indicate the current sound levels relative to pre-set limits. A number of limits can be set with time ranges so that the limits automatically change at specific times.

21.4. The system permits real-time display of levels at all locations and will guide the mix engineers if sound levels approach the control limits proscribed under the license.

21.5. The noise monitoring stations connect to the central control point by either the site network, the Internet via broadband or by 3g and deliver real-time data and audio that enables the nature of the sound at the monitoring location to be determined.



21.6. Class 1 networked monitoring stations will be installed at each of the appointed offsite monitoring stations

21.7. Class 2 devices may be used at the mix positions of the sound stages.

## **22. Self-monitoring**

22.1. Sound operators will be provided with displays showing in real time data from network noise meters.

22.2. Monitoring by sound operators will take place continually throughout the event.

Sound operators will not be required to log their own measurements.

22.3. Sound contractors will be required to obscure their own sound meters from the sight of visiting engineers and will be obliged to rely only upon SPLtrack meter information.

## **23. Other Monitoring**

23.1. Portable monitoring by SPL and/or TWBC may take place at intervals on or around the site. For this purpose a Class 1 sound level meter will be used.

## **24. Maintenance of Records and Reporting**

24.1. Records will be kept in perpetuity.

24.2. Reports will be available on demand via the SPLtrack web portal..

24.3. Reports will be supplied in graph and data table format. They will include the following metrics:

24.3.1. LAeq(t)

24.3.2. LAFmax

24.3.3. LZeq(t, 63Hz)

24.3.4. LZeq(t, 125Hz)

24.3.5. L10

24.3.6. L90

24.3.7. LZeq(t, 1/1 Octave)

24.3.8. dBCb

## **25. Receipt of complaints**

25.1. A public complaints line will be manned from one hour before gates open to 1 hour after the audience has left the arena.

25.2. The Public Complaints Line number is \_\_\_\_\_ -

25.3.AAA, TWBC or the Police may receive complaints from the community.

25.4.SPL will maintain a log of all complaints referred and will document responses and actions. This is managed via the ADA portal which logs complaints, responses and other matters. The log is available online in real time to stakeholders.

25.5.SPL will respect and will act upon the decision of TWBC if remedial action is necessary (with reference to AAA).

## **26.Procedure for dealing with excessive noise levels**

26.1.It may be necessary for the sound configuration of a particular stage to be adjusted to comply with information received from off site measurements. In this case the procedure set out in Appendix 1 below will apply.

## **27.Following the event:**

27.1.A review of the sound levels and procedures will be undertaken by SPL within 14 days of the end of the event.

27.2.A report will be written by SPL and delivered to AAA within 30 days of the event.

27.3.SPL senior staff will attend debriefing meetings as required.

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## Appendix 1 - Sound Management Process

(displayed in each venue office)

SPLtrack Ltd is the appointed sound consultant. Sound levels across the site are being monitored in real-time, 24 hours a day. The event has strict noise license conditions. The SPLtrack team will be working to keep the event operating within noise limits. Breach of these limits is a serious matter.

The guidance of the SPLtrack team must be respected at all times. When action is necessary, the following strategy will apply:

↓ Stage 1 - Request to turn down ↓

Assistance will be provided by the noise team. If the sound operator in question fails to comply:

↓ Stage 2 - Warning ↓

Person responsible for non-cooperation identified and the event manager informed.

↓ Stage 3 - Intervention ↓

1. Physical intervention. This may include independent attenuation of the system by other staff or physical disconnection of sound system elements.
2. Disciplinary action.
3. Ultimately if there are no other options the performance will be terminated.

Venues such as cafes that have permission to operate background music after hours must ensure that noise cannot be heard more than 10m from the venue in any direction. This is a check that will be performed regularly.

A competent person must be on duty at all times at each venue during operating hours.

Be aware of venue operating times and post a copy of the venue closure schedule in a prominent position.

## Appendix 2 - Site Plan

TBA

## Appendix 3 - Noise propagation model

TBA

## Appendix 5 - Venue applied hours

TBA

## Appendix 6 - Licensing Conditions (Noise)

The following conditions are suggested by SPLtrack and have been offered as a possible solution to the difficult matter of measuring music noise at very low levels. This suggestion has already been submitted to TWBC environmental health officers. Further discussion is welcome.

*Between the hours of 09:00 and 23:00 the music noise level specific to any CAT3 event shall not exceed 45dBLAeq(15) 1m from the façade of any noise sensitive property. The sound specific to the event at any such location shall not include significant bass beats. Bass beats specific to the event shall cause no more than 10dBCb increase over the underlying level and/or subjective assessment by an officer of the Council.*

*Between the hours of 23:00 and 09:00 the music noise level specific to any CAT3 event shall not exceed 40dBLAeq(15) or 10dB above the L90 background level (whichever is the lower) 1m from the façade of any noise sensitive property. The sound specific to the event at any such location shall not include distinct bass beats. Bass beats specific to the event shall cause no more than 5dBCb increase over the underlying level and/or subjective assessment by an officer of the Council.*

*Other methods of low frequency monitoring will be explored in conjunction with TWBC officers.*



## Appendix 7 - Glossary of Terms

Ambient Noise	The total encompassing sound in a given situation at a given time, usually composed of sound from many sources far and near
A-weighted sound pressure, $p_A$	Value of overall sound pressure, measured in pascals (Pa), after the electrical signal derived from a microphone has been passed through an A-
A-weighted sound pressure level, $L_{pA}$	Quantity of A-weighted sound pressure, given by the following formula in
Background Noise Level, $L_{A90,T}$	The A weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of a given time interval, T, measured using time weighting, F, and quoted to the nearest whole number of decibels
Daytime Decibel (dB)	The period 09:00-23:00 hours
Decibel (dB)	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure levels the reference quantity is 20 uPa. The threshold of normal hearing is in the region of 0 dB and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions
dB(A), $L_{Ax}$	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A)
Free-field level	Sound pressure level measured outside, far away from reflecting surfaces. Measurements are made 1.5 m above the ground and at least 3.5 m away from other reflecting surfaces are usually regarded as being free-field measurements. To minimize the effect of reflections the measuring position should be at least 3.5 m to the side of the reflecting surface (i.e. not 3.5 m from the reflecting surface in the direction of the source). Estimates of noise from aircraft overhead usually include a correction of 2 dB to allow for reflections from the ground.
Façade level	Sound pressure level measured 1 m in front of the façade of a property.
$L_{A10,T}$	The A weighted noise level exceeded for 10% of the measurement period, T.
$L_{A90,T}$	The A weighted noise level exceeded for 90% of the measurement period, T. This is defined in BS 4142 as the background noise level.
LAE	The sound exposure level – the level of a sound with a period of 1 second that has the same sound energy as the event considered.
$L_{Aeq,T}$	The equivalent continuous A-weighted sound pressure level is the value of the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound, that within a specified time interval, T, has the same mean squared sound pressure as the sound under consideration that varies with time.
$L_{Amax}$	The highest A weighted noise level recorded during a noise event. The time weighting (slow or fast) should be stated.
Night time	The period 23:00-09:00 hours.

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Octave band	Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit.
Third octave band	Band of frequencies in which the upper limit of the band is 2 times the frequency of the lower limit.
Residual noise	The ambient noise remaining at a given position in a given situation when the specific noise source is suppressed to a degree such that it does not contribute to the ambient noise.
Sound Power Level, $L_w$	An absolute parameter widely used for rating and comparing sound sources. Sound power is a physical property of the source alone, independent of any external or environmental factors.
Sound Pressure, $p$	Root-mean-square value of the variation in air pressure measured in pascals (Pa), above and below atmospheric pressure, caused by the sound.
Sound Pressure Level, $L_p$	Quantity of sound pressure, in decibels (dB).
Specific Noise Level, $L_{Aeq,Tr}$	The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval.
Specific Noise Source	The noise source under investigation.