HIGH TIDE 2022

NOISE MANAGEMENT PLAN

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VANGUARDIA

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VANGUARDIA LIMITED

HEAD OFFICE
21 Station Road West, Oxted
Surrey RH8 9EE

Tel +44 (0) 1883 718690
Fax +44 (0) 8700 516196

office@vanguardia.co.uk
vanguardia.co.uk

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1. INTRODUCTION

1.1. This sound management plan has been prepared by Vanguardia Ltd. appointed acoustic consultants (AAC), as part of the noise management procedures for the High Tide event in Bournemouth, 1st and 2nd July 2022.

1.2. The purpose of this document is to describe the sound management scheme that will be put in place to manage the music noise levels at residential properties in line with the objectives of the Premises Licence. Conditions set by the local authority are reproduced in Section 2 and the concert noise management procedures are described in section 3. In addition to this the details of the report include:

- monitoring, assessment and management protocol;
- communications procedures;
- contact details.

1.3. The technical acoustic terms used in this document are set out in Appendix A.

1.4. The sound management scheme described in this report fundamentally follows the procedures that have been successfully adopted for many previous concerts and festivals in the UK.

CONSULTANT'S EXPERIENCE

1.5. Vanguardia is a specialist company dealing in the field of sound, noise and acoustics in the entertainment industry. The company has been involved with noise management issues for thousands of concert and festival events in the UK and overseas.

1.6. One of the company directors sat on the UK Noise Council Working Party which prepared the Code of Practice on Environmental Noise Control at Concerts (1995) and the company is again represented on the workgroup which is reviewing the Code of Practice.

1.7. Vanguardia has also managed Government research projects related to sound and noise aspects of the entertainment business.

2. NOISE CONDITIONS

2.1. The recommended noise limits contained within Code of Practice on Environmental Noise Control at concerts held between the hours of 09:00 and 23:00 hours are summarised in Table 1 below.

Table 1 Entertainment Noise Criteria

Concert Days per Calendar Year	Venue Category	Guideline
1 to 3	Urban Stadia or Arenas	The MNL should not exceed 75 dB(A) over a 15-minute period
1 to 3	Other Urban and Rural Venues	The MNL should not exceed 65 dB(A) over a 15-minute period
4 to 12	All Venues	The MNL should not exceed the background noise level by more than 15 dB(A) over a 15-minute period

2.2. Code of Practice on Environmental Noise Control also includes the following conditions for control of low frequency noise.

3.4 Assessment of noise in terms of dB(A) is very convenient but it can underestimate the intrusiveness of low frequency noise. Furthermore, low frequency noise can be very noticeable indoors. Thus, even if the dB(A) guideline is being met, unreasonable disturbance may be occurring because of the low frequency noise. With certain types of events, therefore, it may be necessary to set an additional criterion in terms of low frequency noise, or apply additional control conditions.

Notes to Guideline 3.4

1. It has been found that it is the frequency imbalance which causes disturbance. Consequently there is less of a problem from the low frequency content of the music noise near to an open air venue than further away.

2. Although no precise guidance is available the following may be found helpful (Ref.8): A level up to 70 dB in either of the 63 Hz or 125 Hz octave frequency band is satisfactory; a level of 80 dB or more in either of those octave frequency bands causes significant disturbance.

2.3. The licence application for the High Tide festival is currently underway. Therefore, only the initial conditions provided by the local authority are as follows.

2.3.1. The control limits set at the mixer position shall be adequate to ensure that the Music Noise Level (MNL) shall not, at 1 metre outside any noise sensitive premises, exceed 75 dB(A).

2.3.2. The levels shall not exceed 70 dB in either of the 63Hz or 125Hz octave band frequencies) over a 15-minute period between the hours of 10:00 hours and 23:00 hours.

2.3.3. A record of all monitoring at the mixing desk positions and measurements demonstrating compliance with the condition above shall be retained and submitted to Environmental Health within 7 days after the event has ended

2.4. It should be noted that, alternative noise management solutions have been presented to the local authority on conditions 2.2.2 and 2.2.3. For condition 2.2.2, it is recommended that this limit is applied for residences further away (e.g. 2km) as per the Code of Practice. For condition 2.2.3, it is recommended that the noise records are provided to the local authority within a month.

AUDIENCE EXPOSURE LIMITS

2.5. In accordance with the HSE guide for the health and welfare of people attending concerts, the audience noise exposure limit (event L_{Aeq} of 107 dB) will be adopted for this concert.

3. NOISE BREAKOUT PREDICTIONS

COMPUTER MODELLING

3.1. Predictions were made using a two-phased system which employs two types of acoustic 3D modelling software.

3.2. In the first phase, the sound system design (provided by the PA suppliers) was modelled in EASE 4.4. This software was used specifically for accurate modelling of the directivity of the proposed sound system.

3.3. A 3D model of the following items was produced:

- the event site and its surrounding area,
- the sound system directivity and positioning obtained from EASE.

3.4. Sound system design details for the main stage:

- 2No. L-Acoustics line-arrays consisting of 12No. K2 and 3No. KARA boxes at 8.8m height
- 4No. L-Acoustics front fills consisting of 2No. KARA boxes at 2m height.
- 4No. L-Acoustics line-arrays consisting of 9No. KARA boxes at 5.1-6.7m height as delays.
- 8No. Cardioid Sub-woofer arrays consisting of 16No. KS28 (4x4No.) at 3.4m centres
- 4No. Cardioid Sub-woofer arrays consisting of 2No. KS28 with delays

3.5. Sound system design details for the second stage:

- 2No. L-Acoustics line-arrays consisting of 6No. KARA boxes at 4.2m height
- 2No. Cardioid Sub-woofer arrays consisting of 4No. KS28

3.6. In phase two of the modelling procedure, the above model was imported into IMMI 2021, a 3D noise propagation modelling software package, in which noise breakout predictions were carried out in accordance with the methodology specified in ISO 9613 parts 1 and 2.

3.7. It should be noted that the IMMI 2021 assumes worst case (downwind) propagation from the source to each of the receivers and does not account for foliage, local noise sources, weather variations and any barriers.

3.8. In accordance with the guidance contained within Noise Council's Code of Practice on Environmental Noise Control at Concerts (1995), entertainment noise breakout from festival site was assessed using 15-minute L_{Aeq} levels and the front of house levels for both stages were set as 100.6dB(A) at 50m.

3.9. The noise breakout from the festival to the nearest noise sensitive receiver points at 1.5 m above ground level and based on a typical alt/rock music sound spectrum was predicted (shown in Table 2). Figure 1 below shows the noise sensitive receiver points for the noise modelling with the stages represented in blue.

PREDICTIONS

Figure 1 Figure 1 Plan view of High Tide Festival stages and proposed noise sensitive receiver locations (Image taken from Google)

3.10. IMMI noise breakout predictions are presented in Table 2 below:

Table 2 IMMI noise breakout predictions for High Tide Festival

Receiver Location	Predicted Music Noise Level (MNL) (dB $L_{Aeq,15\ min}$)
Main Stage FOH @50m	**100.6**
Second Stage FOH @50m	**100.6**
NSR 1	**71.6**
NSR 2	**70.6**
NSR 3	**68.0**
NSR 4	**73.4**
NSR 5	**68.3**

4. NOISE MANAGEMENT PLAN

CONTROL MONITORING LOCATIONS

4.1. Proposed Noise Monitoring Locations during the event are shown in Figure 2 and listed in Table 3 below:

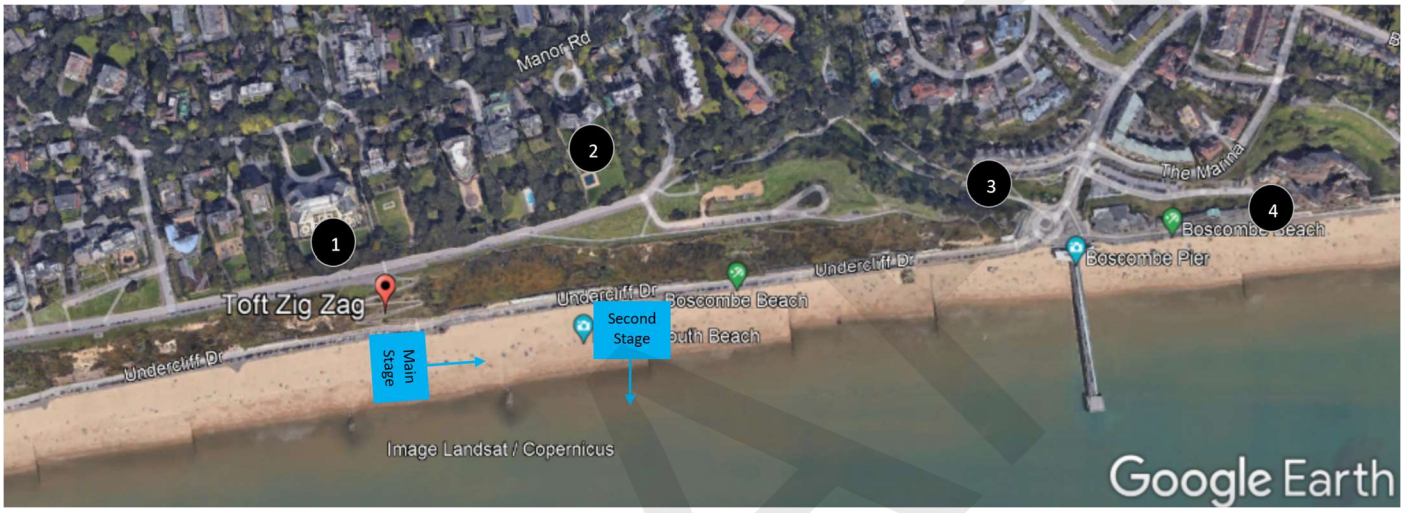


Figure 2 Proposed Noise Monitoring Locations (Image taken from Google)

Table 3 Table of proposed noise monitoring locations

Ref	Noise Monitoring Location
NSR 1	Albany Apartments
NSR 2	Crag Head Residential Apartments
NSR 3	Chine House
NSR 4	Honeycombe Beach

4.2. The MNL limits at the offsite locations are provided in Table 4.

Table 4 Offsite MNL limits

Location	$L_{Aeq,\ 15min}$ MNL Limit
Albany Apartments	75
Crag Head Residential Apartments	75
Chine House	75
Honeycombe Beach	75

PRE-EVENT PLANNING

4.3. ***Pre-event information to community*** – The Event Management will provide at least 14 days' prior written notification of an event, including sound tests and rehearsals, to residents and other sensitive receivers in the proposed notification boundary. The notification will include:

- the name and date of the events;
- commencement and finishing times of the events including likely sound checks and rehearsals if a noise impact is anticipated;
- the telephone number of an information and complaints line operated by the Event Management during event, rehearsals and sound checks for the purpose of providing information about the concert and receiving any complaints from members of the public in relation to those activities; and
- the operating hours of the telephone line.

4.4. ***Rehearsals/ Sound Checks*** – Any rehearsals or sound checks will be carried out between the hours of 10.00am and 11.00pm. The duration of the tests and rehearsals will be kept to a minimum as far as reasonably practical, and acts will be encouraged wherever possible to use the on-stage monitor systems rather than the main PA.

4.5. The AAC will monitor the sound levels at the mixer desk to ensure that the off-site noise levels are minimised. If, following an assessment outside, there is still a likelihood disturbance, the L_{Aeq} at the mixer position will be reduced as required to minimise any potential disturbance. All music sources will be muted at 2300 hours.

SOUND MANAGEMENT

4.6. ***Sound Propagation Tests*** – A noise propagation test will be undertaken prior to the start of any event (on production day or event day) to set appropriate guideline control levels at the sound mixer position. The sound system will be configured and operated in a similar manner as intended for the event. The noise source used for the test will be similar in character to the music likely to be produced during the event. Officers from the Pollution Control Section will be given prior notification of the test and provided access to the results.

4.7. The control levels set at the mixer position will be adequate to ensure that the Music Noise Level (MNL) are not likely to exceed the Table 4 limits over a 15-minute period at the agreed measurement locations. The noise levels at the agreed measurement locations will be monitored to check that the noise limits are being met.

4.8. ***Sound Management at the Venue*** – The music sound levels at the mixing desk position will be continuously monitored in terms of 15-minute and 1-minute L_{Aeq} values. The noise limit is set in 15-minute intervals, but the 1-minute values provide the AAC with immediate information to manage potential exceedances. Where music measured over a 1-minute L_{Aeq} approaches 3 dB above the relevant limit, an instruction for a reduction in level will be communicated to the sound engineer/s to maintain compliance with the noise management plan. There will be radio contact between the mixing desk and the AAC monitoring music noise levels at nearby residential properties. For clarity, communications with the Sound Engineer will be from the AAC only.

4.9. The promoter will ensure that the sound system supplier and all individual sound engineers are informed of the sound control limits and that any instructions from the noise consultant will be implemented immediately.

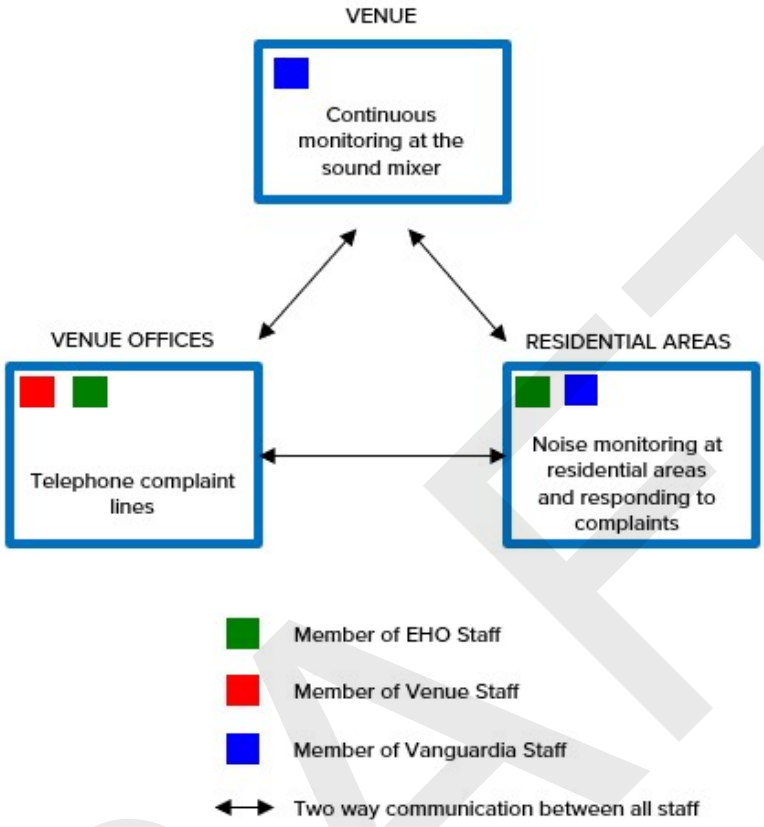
4.10. Officers from Pollution Control Environmental Services will have access to the sound mixer position throughout the event and access to results of the noise monitoring on request.

4.11. ***Sound Monitoring in the Community*** – Short term noise measurements at residential properties will be carried out at regular intervals throughout the event by a consultant who will be in radio contact with the mixing desk inside the venue. The measures in the NMP will be implemented so that the noise limits are met, and immediate instructions issued to the sound engineer to resolve any potential problems.

4.12. ***Complaints Telephone Number*** – Information from the attended complaint telephone number will be immediately given to the noise consultant to allow assessment of whether any adjustment is required to the music noise level.

4.13. A standard template (example provided in Appendix B) will be used to log all complaints and will include the name, address and contact details of the complainant, date and time of the complaint, location of the complaint (general indicative street location), event to which the complaint relates, nature of the complaint, name of the person who receives the complaint and response given.

4.14. A schematic of the control communication protocol is provided below:


VENUE
Continuous monitoring at the sound mixer
VENUE OFFICES
RESIDENTIAL AREAS
Telephone complaint lines
Noise monitoring at residential areas and responding to complaints
Member of EHO Staff
Member of Venue Staff
Member of Vanguardia Staff
Two way communication between all staff

APPENDIX A- ACOUSTIC GLOSSARY

A-WEIGHTING

The human ear is not equally sensitive to all frequencies of sound. It is relatively much less sensitive to very low frequencies such as 'mains hum', and to very high frequencies such as the call of a bat, than to the 'mid-frequencies' important for human voice communication. In order to make sound level meters, which would otherwise be indiscriminate in registering sound pressures, respond in a way which reflects human perception of sound, they usually are fitted with a set of filters to progressively filter out the high and low frequency energy. The filters are made to an internationally standardised specification and the filtered noise level is said to be 'A-weighted'. Sometimes A-weighted decibel levels are denoted 'dB(A)', but the correct, internationally standardised format for reporting requires the 'A' to be appended to the noise descriptor, e.g., $L_{Aeq,T}$, L_{Amax}, etc.

AMBIENT NOISE

This is the totally encompassing sound at the measurement position over a specified time interval and usually comprises sound from many different sources both near and far.

ATTENUATION

A general term used to indicate the reduction of noise, or the amount (in decibels) by which it is reduced.

AVERAGING

In the absence of a dominant steady source, the sound level at a point, indoors or outdoors, varies continuously. For example, the variation may be over a few dB about an average value in a quiet room, or over 10 dB or more in a noisy outdoor environment. In order to define a level to represent the relative level of noise in the space it is necessary to define that average value. The most common averaging methods are energy averaging (L_{Aeq}) and statistical averaging (L_{AN} where N is a percentage between 1 and 100). The $L_{A10,T}$, the noise level exceeded for 10% of the measurement time interval T, is commonly used in the UK for the assessment of road traffic noise.

BACKGROUND NOISE LEVEL, LA90,T

Background noise level is a term used to describe that level to which the noise falls during quiet spells, when there is lull in passing traffic for example. It is quantified by the $L_{A90,T}$ which is the noise level that is exceeded for 90% of the measurement time interval, T.

DECIBELS

Noise conventionally is measured in decibels (dB). The decibel is a logarithmic unit and decibel levels do not add and subtract arithmetically. An increase or decrease of 3 dB in the level of a steady noise is about the smallest that is noticeable. It represents a doubling or halving of noise energy. An increase or decrease of 10 dB represents a ten-fold change in noise energy, and is perceived as a doubling or halving of loudness. The threshold of hearing for a typical young, healthy adult is 0 dB A-weighted sound pressure level. A noise level of 140 dB(A) can cause physical pain. Most people listen to their televisions at about 60 to 65 dB(A). Alongside a busy main road the ambient noise level may be in the 70 to 80 dB(A) range; on a quiet day in the country it might be as low as 30 dB, in town 40 to 50 dB(A).

DECIBEL ADDITION

If two similar noise sources operate together their combined noise level at an observer's position some distance away is 3 dB higher than the noise level generated by just one of them. If two further machines are switched on the noise level generated by all four at the observer's position is 3 dB higher than the level generated by the two. If the number of machines is again doubled, to eight, the noise level increases by another 3 dB, and so on.

EQUIVALENT CONTINUOUS A-WEIGHTED SOUND PRESSURE LEVEL, $L_{Aeq,T}$

The 'equivalent continuous A-weighted sound pressure level' is an average of the fluctuating sound energy in a space. It is the value of the A-weighted sound pressure level of a continuous, steady sound that, over the specified time period, T seconds, has the same root mean square sound pressure as the varying sound. It can be likened to the mean petrol consumption of a car over a specific journey during which the instantaneous consumption peaked during periods of acceleration and fell during periods of coasting or braking.

FAÇADE SOUND LEVELS

Road and railway traffic noise levels often are specified in terms of the sound level at a position 1 m in front of the most exposed façade of potentially noise sensitive premises. Such levels are assumed to be 3 dB(A) higher than sound levels measured at an equivalent position away from the noise reflected off the building façade and any other surfaces (excluding the ground).

MUSIC NOISE LEVELS (MNL)

The LAeq of the music noise measured at a particular location without interference from extraneous ambient noise.

APPENDIX B – EXAMPLE COMPLAINT FORM

If event control receives a telephone call of complaint regarding noise during a concert / event, the following form could be completed:

Date	
Event	
Time complaint received	
Name of complainant	
Address of complainant	
Telephone number of complainant	
Location of noise disturbance (address)	
Time disturbance noted	
Nature of complaint	**Vocals / bass / general**
	Inside / outside
Any additional comment	

The complainant should be advised that the complaint is logged and will be passed on to the AAC for investigation.

Registered in England 05666276

VANGUARDIA LIMITED

LONDON OFFICE
The Ministry
79-81 Borough Road
London SE1 1DN

HEAD OFFICE
21 Station Road West, Oxted
Surrey RH8 9EE

Tel +44 (0) 1883 718690

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