Noise Feasibility Study & Management Plan

Garage Nation Streatham Common

Saturday 11\textsuperscript{th} July and Sunday 12\textsuperscript{th} July 2015

On behalf of

Rob Dudley, Big Cat Group

March 2015

V.1.2 (Draft for comment)

Joynes Nash
Acoustics · Environmental · Public Health

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An Introduction to Joynes Nash

Joynes Nash is a leading consultancy for the live events industry. It has extensive experience of music festivals and a proven track record of working with event organisers to enhance the audience’s experience, whilst preserving the image of events and venues for future years.

Our consultants experience has ranged from relatively small scale events to major events staged both in urban and residential environments, providing for tens of thousands of people. Projects and clients have included Secret Cinema, Donington Park Racing Circuit, BATHFest, Luton International Carnival and Olympic Torch Relay Festival, Saracens Rugby Club, Zoo Project Festival, Henley Royal Regatta and the Holi One Festival Tour.

We consider despite the many technical challenges that events bring, that relationships between all interested parties are of paramount importance and that each and every one of these understands situations clearly. We therefore approach each event not in isolation, but carefully consider the public image of events, the venues and the thoughts of the wider community to make events successful and to secure venues for future years.
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Quality Assurance

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<th>Issue / Revision</th>
<th>Date</th>
<th>Author</th>
<th>Signature</th>
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<tr>
<td>V1.2</td>
<td>25th March 2015</td>
<td>Simon Joynes</td>
<td></td>
</tr>
<tr>
<td>Draft for Comment</td>
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1. Introduction

Joynes Nash has been appointed by Big Cat Group to consider the management and control of noise from the Garage Nation Outdoor Festival, on the 11th & 12th July 2015 at Streatham Common, Lambeth, London.

2. About the Noise Management Plan

Those responsible for the event have committed to manage noise. Joynes Nash (hereafter referred to as the Consultant’s) is therefore tasked with preparing this Noise Feasibility study and Management Plan to ensure that noise from the event is managed, accords with relevant Premises Licences, does not cause a Public Nuisance and to ensure that complaints are managed appropriately.

This NMP is considered to be a “live document” which will evolve as final preparations are made for the event, the operational requirements become clearer and the relevant technical considerations become known. Indeed in its very infancy it will outline the considerations and provide an overview of monitoring and mitigation options which may be available to minimise impact. Any revisions to the plan will be subsequently issued to the relevant parties for approval.

3. Event Outline

It is proposed to hold Garage Nation on the 11th and 12th July 2015 on Streatham Common between midday and 21.30 (Sat) and 20.30hrs (Sun). The event will cater for various artists over 3 sound sites, provided for by a main stage of typical configuration, and two further tented structures.

An indicative layout of the site is provided in Appendix 1.

4. Site Context & History

The event site is located centrally on Streatham Common, Lambeth, London. The approximate grid reference for the site is 530375 170906. The site is due east of Streatham High Street and the common itself is surrounded by residential premises which are considered to be sensitive.

It is understood that similar music events have taken place at the venue in the past, some of which have resulted in a number of complaints. Lambeth Council have published a guide to noise control from events and this is understood to be applicable to this event.
5. Premises Licences

The event organisers have applied for a time limited specific Premises Licence for the Festival from London Borough of Lambeth and it is expected that any licence granted will contain conditions pertaining to noise. We have been advised that the following condition will be imposed:

*The Premises Licence Holder shall employ a minimum of 2 noise consultants to control all amplified music, speech and vocals within the event. The consultants must contact the Noise Department prior to the event to agree an acceptable level for the duration of the event.*

6. Noise Guidelines

In addition to this condition Lambeth Borough Council provide specific guidance for noise from concerts at Streatham Common (2008). This specifies the levels detailed in the table below which are understood to be applicable to the festival:

<table>
<thead>
<tr>
<th>Location 1 (32 Streatham Common South Side)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The LAeq Music Noise Level (MNL) measured for any 15 minute period of the event at one metre from facade of No.32 Streatham Common South Side shall not exceed 61dB</td>
</tr>
<tr>
<td>The Leq Bass Music Noise Level (BMNL) measured for any 15 minute period of the event in any of the 1/3 octave frequency bands from 32 Hz to 125 Hz. At one metre from any facade of No.32 Streatham Common South Side, shall not exceed 80dB(LIN)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location 2 (24 Streatham Common North Side)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The LAeq Music Noise Level (MNL) measured for any 15 minute period of the event at one metre from facade of No.32 Streatham Common South Side shall not exceed 72dB</td>
</tr>
<tr>
<td>The Leq Bass Music Noise Level (BMNL) measured for any 15 minute period of the event in any of the 1/3 octave frequency bands from 32 Hz to 125 Hz. At one metre from any facade of No.32 Streatham Common South Side, shall not exceed 80dB(LIN)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location 3 (90 Heybridge Avenue)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The LAeq Music Noise Level (MNL) measured for any 15 minute period of the event at one metre from facade of No.32 Streatham Common South Side shall not exceed 60dB</td>
</tr>
<tr>
<td>The Leq Bass Music Noise Level (BMNL) measured for any 15 minute period of the event in any of the 1/3 octave frequency bands from 32 Hz to 125 Hz. At one metre from any facade of No.32 Streatham Common South Side, shall not exceed 80dB(LIN)</td>
</tr>
</tbody>
</table>

Table 1: Noise Monitoring Locations and Maximum Noise Limits for Streatham Common

No further conditions or restrictions are known to Joynes Nash at this time.

7. Establishment and Feasibility of Noise Limits and Parameters.

In order to evaluate the feasibility of the site, noise predictions have been carried out at the most sensitive receptor positions as identified above. A plan showing the proposed stage locations and the receptor positions is included at Appendix A. At this stage the calculations have been made on assumptions about the layout and orientation of the sound sites, they will subsequently be re-
evaluated as planning for the event progresses and verified during the sound check immediately prior to the event.

The following assumptions have been made in predicting noise levels.

- Noise predictions have been made based on the intended coverage of the sound system to achieve a maximum level of music noise level of 98db(A) in the audience areas. The predictions provide for a worst case scenario with all stages operational at the same time.

- An orientation correction of between 0db and 10dB is assumed for noise sensitive properties depending on the location relative to the stage location.

- Distance attenuation is based on progressive attenuation under neutral meteorological conditions

- Where appropriate attenuation has been considered for the effect of barriers between the noise sources and noise sensitive premises. BS5228 Code of Practice for noise and vibration control of construction and open sites (2009) gives a working approximation of the effect of a barrier or other topographical features, between the source and receiving position. An attenuation of 10dB is assumed when the noise screen completely hides the source from the receiver.

**Predicted Receiver Level**

The predicted receiver levels have been determined using a distance attenuation correction of \( L2 = L1 - 20 \log \left( \frac{r2}{r1} \right) \).

**Main Stage Source Level 118dB**

<table>
<thead>
<tr>
<th>Location</th>
<th>Distance (m)</th>
<th>Predicted Levels after distance Attenuation dB</th>
<th>Barrier Attenuation dB</th>
<th>Orientation Correction dB</th>
<th>Free Field Receiver Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 Streatham Common (S)</td>
<td>465</td>
<td>65</td>
<td>0</td>
<td>6</td>
<td>59</td>
</tr>
<tr>
<td>24 Streatham Common (N)</td>
<td>287</td>
<td>69</td>
<td>0</td>
<td>6</td>
<td>63</td>
</tr>
<tr>
<td>90 Heybridge Avenue</td>
<td>566</td>
<td>63</td>
<td>10</td>
<td>6</td>
<td>47</td>
</tr>
</tbody>
</table>
### Arena 2 Source Level 115dB

<table>
<thead>
<tr>
<th>Location</th>
<th>Distance (m)</th>
<th>Predicted Levels after Attenuation (dB)</th>
<th>Barrier Attenuation (dB)</th>
<th>Orientation Correction (dB)</th>
<th>Free Field Receiver Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 Streatham Common (S)</td>
<td>350</td>
<td>60</td>
<td>0</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>24 Streatham Common (N)</td>
<td>145</td>
<td>72</td>
<td>0</td>
<td>10</td>
<td>62</td>
</tr>
<tr>
<td>90 Heybridge Avenue</td>
<td>481</td>
<td>61</td>
<td>10</td>
<td>10</td>
<td>41</td>
</tr>
</tbody>
</table>

### Arena 3 Source Level 115dB

<table>
<thead>
<tr>
<th>Location</th>
<th>Distance (m)</th>
<th>Predicted Levels after Attenuation (dB)</th>
<th>Barrier Attenuation (dB)</th>
<th>Orientation Correction (dB)</th>
<th>Free Field Receiver Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 Streatham Common (S)</td>
<td>420</td>
<td>63</td>
<td>0</td>
<td>10</td>
<td>53</td>
</tr>
<tr>
<td>24 Streatham Common (N)</td>
<td>275</td>
<td>66</td>
<td>0</td>
<td>0</td>
<td>66</td>
</tr>
<tr>
<td>90 Heybridge Avenue</td>
<td>486</td>
<td>61</td>
<td>10</td>
<td>10</td>
<td>41</td>
</tr>
</tbody>
</table>

### Arena 4 Source Level 110dB

<table>
<thead>
<tr>
<th>Location</th>
<th>Distance (m)</th>
<th>Predicted Levels after Attenuation (dB)</th>
<th>Barrier Attenuation (dB)</th>
<th>Orientation Correction (dB)</th>
<th>Free Field Receiver Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 Streatham Common (S)</td>
<td>340</td>
<td>59</td>
<td>0</td>
<td>10</td>
<td>49</td>
</tr>
<tr>
<td>24 Streatham Common (N)</td>
<td>130</td>
<td>68</td>
<td>0</td>
<td>0</td>
<td>68</td>
</tr>
<tr>
<td>90 Heybridge Avenue</td>
<td>490</td>
<td>56</td>
<td>0</td>
<td>10</td>
<td>46</td>
</tr>
</tbody>
</table>

### Predictions for total levels at receptor positions.

<table>
<thead>
<tr>
<th>Location</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Limit</th>
<th>Free Field Receiver Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 Streatham Common (S)</td>
<td>59</td>
<td>50</td>
<td>53</td>
<td>49</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>24 Streatham Common (N)</td>
<td>63</td>
<td>62</td>
<td>66</td>
<td>68</td>
<td>72</td>
<td>71</td>
</tr>
<tr>
<td>90 Heybridge Avenue</td>
<td>47</td>
<td>41</td>
<td>41</td>
<td>46</td>
<td>60</td>
<td>51</td>
</tr>
</tbody>
</table>
The calculations are considered to be conservative, in that they do not take into account any attenuation such as provided for by crowds, ground attenuation, the presence of portable structures on site which may act as barriers, contours in the land etc. The total also assumes that all stages are running at the maximum level at all times, which in reality is unlikely.

**Sound System Recommendations**

The sound system will be set up in such a way as to minimise noise impact at noise sensitive properties. Sound systems should be flown rather than ground stacked in order to focus the speakers downwards into the audience area. The sound system should be designed and configured to have a narrow horizontal dispersion as possible to reduce overspill from the intended coverage areas. There will also be a requirement for Cardioid sub arrays to be integrated into all sound sites to limit rear projection of low frequency sound to the rear of the stages.

**Conclusions to Feasibility Calculations**

The predicted levels at all receptors are unlikely to exceed the councils stated levels based on a worst case scenario where all stage positions are operating simultaneously.

8. **Sound Checks and Rehearsals**

It is expected that sound checks will be conducted in advance of the event, either during the preceding evening or immediately before the event.

These will be used to calibrate levels both internally within the event site and externally at receiver positions. Such levels will then be used as a guide throughout the event and will be established using music of a similar type.

9. **Noise Control Monitoring**

Throughout the event Joynes Nash will remain responsible for proactively monitoring noise. This will be done through conducting measurements at predetermined locations both internally and externally of the arena. Such positions will be dependent on final site layout, weather conditions etc.

These checks will be conducted throughout the duration of the event by suitably qualified consultants, who will take measurements, make professional observations and react accordingly to issues of public nuisance.

Typically we expect measurements to be conducted over a 15 minute period, albeit shorter measurement periods may be undertaken to determine compliance in line with the code of
practice (i.e. it is typical that 5 minute measurements give a good indication of compliance over 15 minutes). All measurements will be recorded and be available for inspection at any time by the local Authority during the course of the event.

No fixed monitoring positions are considered necessary at this stage.

10. Procedure for Responding to and Dealing with Complaints

The Licensee will ensure that an appropriate form of communication will be made with local residents, Parish Council’s etc such as by letter or newspaper advertisement prior to the event; informing them of the details of the event and including start and finish times of both the event and any sound checks. The form of communication should also include a dedicated number for noise complaints.

The telephone complaints line will be available for the duration of the event. Should any noise complaints be received, a consultant will investigate the complaint and if noise levels are deemed unacceptable, immediate action will be taken to reduce the levels of the noise source. This will be through formal requests by consultants to the sound engineers in the first two instances and thereafter to the Licensee or person appointed by them, asking them to intervene or offer further assistance.

A complaints log will be maintained throughout the event, detailing addresses of complaints, times and actions. Such will also be available to the Local Authority on request along with details of actions, etc.

A flow chart detailing responsibilities and communication is included at Appendix B.

11. Details of Noise Mitigation

For an event of this scale extensive measures are not proposed, but due consideration has or will be given to the following measures which have or will be adopted.

- We will utilise more modern systems using advanced speaker technology where appropriate, which will improve the efficiency of sound reinforcement and allow it to be focused and controlled to a much higher degree.

- Sound sites or systems have been positioned or orientated into the event site. This offers an element of self-control and naturally controls levels as clashes between the sound sites will not be warranted.

- The low frequency octave bands will be closely monitored and regulated during the event.

- Unregulated sound systems within trading areas and fairs will not be permitted and monitoring will take place during the event.

Following completion of the event, a compliance report shall be made available to the Local Authority within 4 weeks of the event. Any recommendations arising from this will be incorporated into a revised noise management plan, which shall also be submitted for approval in advance of any future events should they take place.

13. Setting Up and Dismantling of Venues

During the event set up and dismantling, all works which are audible at residential properties will be conducted between the hours of 0800 and 22.00hrs. Within these times and so far as reasonably practicable, all measures to minimise noise shall be undertaken to ensure that no undue noise disturbance is caused to occupiers of residential premises.

14. Conclusion

The noise feasibility and management plan presented above concludes that it is indeed possible to hold the event at Streatham Common in accordance with relevant guidelines, providing that the venue is designed appropriately and managed accordingly as proposed.

The relevant controls are identified in the NMP and Joynes Nash will continue to review and update this plan as the event continues to develop and evolve and a final version will be provided to the local authority prior to the event.

During the event Joynes Nash will be onsite for its duration to conduct monitoring, respond to complaints of both the Local Authority and residents and advise accordingly.
Appendix A – Proposed Event Site Layout
Appendix B – Indicative Noise Control Flow Chart

Joynes Nash proactively monitors noise levels in accordance with NMP or in response to complaints to determine compliance with Licence or determine whether Public Nuisance exists.

- Noise Levels Satisfactory
  - LA / Residents / Sound Engineers informed as appropriate
  - Sound level reduction not affected
    - A further attempt is made by Joynes Nash to reduce sound
      - Sound level reduction not affected
        - The consultants advise premises licence holders via radio or mobile phone and await further instructions
- Noise levels unsatisfactory or potential breach in licence
  - Noise source identified
    - Consultant informs sound engineer, stage manager by radio or phone
      - Sound level reduction affected
        - Premises licence holder takes one of following options:
          1. Allow situation to continue
          2. Issue sound engineers, site managers further instructions
          3. Close sound site
Appendix B - Contact Numbers and Responsibilities

Event Hotline Number

(to be confirmed)

Licence Holders

Premises:
Licence Number:
Licence Holder:
Telephone No:

Venue Management

Big Cat Group

Noise Consultants

Simon Joynes  Tel: 07870 508492
Peter Nash    Tel: 07769 202073
Appendix D - Noise Units

1. Noise is defined as unwanted sound. The range of audible sound is from 0 dB to 140 dB. The frequency response of the ear is usually taken to be about 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dB(A) weighting. This is an internationally accepted standard for noise measurements.

2. For variable noise sources such as traffic, a difference of 3 dB(A) is just distinguishable. In addition, a doubling of a noise source would increase the overall noise by 3 dB(A). For example, if one item of machinery results in noise levels of 30 dB(A) at 10 m, then two identical items of machinery adjacent to one another would result in noise levels of 33 dB(A) at 10 m. The ‘loudness’ of a noise is a purely subjective parameter but it is generally accepted that an increase/decrease of 10 dB(A) corresponds to a doubling/halving in perceived loudness.

3. External noise levels are rarely steady but rise and fall according to activities within an area. In an attempt to produce a figure that relates this variable noise level to subjective response, a number of noise metrics have been developed. These include:

   LA$_{eq}$ noise level - This is the ‘equivalent continuous A-weighted sound pressure level, in decibels’ and is defined in BS 7445 [1] as the ‘value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time’. It is a unit commonly used to describe community response plus, construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

   LA$_{90}$ noise level - This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during quieter periods. It is often referred to as the background noise level and issued in the assessment of disturbance from industrial noise.

   LA$_{10}$ noise level - This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.