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## NOISE CONTROL AT GLASTONBURY FESTIVAL 1992

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### 1. INTRODUCTION

Since 1970 a festival has been held most years at Worthy Farm in Pilton, Somerset. From an attendance of a few thousand the event has grown in size to attract 75,000 people in 1992 to a site of some 600 acres for 3 days of art, cabaret, cinema and music, making it reputedly the largest event of its type in Europe.

Mendip District Council licences the festival and has the responsibility of ensuring the health and welfare of those attending as well as limiting the impact that it has on the immediate locality. The size of the event and the "green field" nature of the site involves Mendip in a microcosm of environmental health issues including sanitation, control of food outlets, provision of a water supply and health and safety. This paper concentrates on the noise control measures employed at the festival to minimise disturbance to nearby residents in the villages of Pilton to the north of the site and Pylle to the East.

### 2. LICENCE CONDITIONS

Under adoptive powers of the Local Government (Miscellaneous Provisions) Act 1982 the District Council can impose conditions in granting a Public Entertainment Licence to control noise. Historically 2 fundamental means of noise control had been applied by the licence primarily directed at the most significant sound source, the main "Pyramid" stage.

(a) restricting amplified music from between 10.00 to 00.30 hours daily (to midnight on Sunday)  
and

b) specifying a maximum noise level of 60 dBLAeq (15 minute) adjacent to the northern site boundary, at Benleigh House, some 800 metres distant from the main stage. This level has proved to be a reasonably protective one for the residents of Pilton although the basis on which it was originally determined is unclear.

Prior to the 1989 festival there had been no other limits set which would allow the organiser to actively control the levels being generated and so comply with the licence conditions. In 1989 a condition was imposed whereby

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a level could be set at the mixing position of the main stage. In this way engineers could monitor for compliance with the licence conditions and allow Mendip flexibility to vary the limits at the mixing position to take account of changes in the prevailing weather.

On the day prior to the event sound checks are carried out. Radio contact is provided for officers at the off-site monitoring and mixing positions and a level is determined for the mixing position that corresponds with compliance off site. From work done by Griffiths et al (1) it was decided to use values of one minute LAeq which is then required to be monitored by the sound engineers using an appropriate sound level meter.

Licence conditions for 1992 also brought into effect some of the recommendations resulting from experience of the previous festival. In particular the organiser was required to properly control other noise sources on site (traders etc), an aspect found to previously cause complaint.

### 3. SECOND MAIN STAGE

The event this year included a second main stage (Stage 2 or the NME Stage). Potentially equivalent or greater in noise output than its independently run competitor, the Pyramid Stage, Stage 2 provided an alternative line-up of less traditional bands who would appear to rely on high amplification to secure audience pleasure. This was the first time such a second main stage had been established and it proved impossible to predict, at the planning stage, how overall noise propagation, and hence complaints, would be influenced, if at all, by its operation, often simultaneously with the Pyramid Stage.

### 4. NOISE MONITORING STRATEGY

Over the 3 days four environmental health staff were involved in noise monitoring. Amongst their objectives were:

(a) Maintain flexibility and responsiveness in order to be able to deal with unexpected events, results, problems and complaints as they occurred, especially in view of Stage 2 as an unknown quantity.

(b) Divide into two pairs: one to be site based overseeing the two main stages, the other to work primarily off-site at noise sensitive locations (plus other licence monitoring duties).

(c) Maintain close liaison by radio contact, between each other and with sound engineers at the main stages. Therefore, if noise off-site was found

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to be excessive, sound engineers could be notified and remedial action at the mixing positions overseen by the attending member of the noise team.

(d) Since Stage 2 was to be faced towards the East, and as during the set up of the 1992 festival many entertainments were being nucleated in the south-eastern part of the site, a greater emphasis would be placed on noise monitoring at and beyond the eastern site boundary. Therefore, a continuously recording noise analyser was to be stationed near the eastern boundary (Cockmill Farm)

(e) Given that most complaints about previous festivals arose because of out-of-hours noise from sources apart from the main stage, greater importance was to be attached to more out-of-hours patrols on-site to gauge the size of the problem this year and the extent to which the organiser was asserting proper control. This year, in fact, the organiser offered to make available, for enforcement purposes, a small contingent of security personnel. In practice, however, this did not prove to be the complete answer.

2 Metrosonics dB604 Noise Analysers were used at the off-site monitoring points at Benleigh House and Cockmill Farm with Bruel and Kjaer 2231's being provided for mixing position measurements and other off-site work.

### 5. SOUND TESTS

Both main stages were sound tested independently and then in unison. Maximum guide levels of 97 dB(A) LAeq (1 min) were set at both mixer positions. These gave a guide to the sound engineers of the loudness of music which, primarily, should not (subject to a change in weather conditions) give rise to exceedance of both the official licence level at Benleigh House or, secondarily, the unofficial reference level (nominally assigned as 60 dB(LAeq) (15 min) at Cockmill Farm). With constant monitoring at the northern and eastern boundaries supplemented by off-site work elsewhere, it was considered that a more holistic regime of monitoring could be implemented.

### 6. NOISE MONITORING

a) Fixed noise analysers. Data recorded throughout the festival were extracted from both noise analysers and printed. Computer software enabled the levels to be plotted graphically, which gave a striking visual indication of noise variation with time.

b) Mixer positions. Noise was actively monitored at both stages by the sound engineers. As a cross-check, but selectively when bands were expected

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to be 'louder' or off-site levels were of concern, Mandip's noise team also monitored LAeqs (1 min) at the mixer positions.

c) Off-site monitoring. Noise was monitored from seven sites. In each case, corresponding background levels were also recorded when the festival was not running, for comparative purposes.

### 7. DISCUSSION OF RESULTS

(a) The licence level of 60dB(A)LAeq (15 min), as measurable at Benleigh House, appeared to have been exceeded due to entertainment noise only on Saturday 27th June late afternoon and evening, intermittently between the hours of 16.30 and 22.30. Helicopter movements and some other extraneous noise sources, also accounted for occasional unrelated peaks.

Interestingly, the LAeq (1 min) values recorded at the Pyramid Stage during some of the periods of exceedance were within, or well within, the relevant 97 dB(A) guide level at the mixer.

Consequently, given these circumstances and overall compliance with mixer guide levels, the apparent run of "high" noise readings on 27th June did not constitute a reliable basis for prosecution for a breach of licence conditions.

There were no periods of exceedance attributable to entertainment noise either on Friday 26th June or Sunday 28th June.

(b) The unofficial reference level of 60 dB(A)LAeq (15 min), as measurable at Cockmill Farm, was exceeded during the afternoon, evening and night of Friday 26th June; the night of Saturday 27th June; and the night of Sunday 28th June. These exceedances were frequently above 64 dB(A) and less frequently above 70 dB(A). During these times the Leq (1 min) values recorded at Stage 2 did not exceed the relevant 97 dB(A) guide level at the mixer.

NB This "reference level" was not enforceable since it had no legal standing in respect of the 1992 licence.

(c) It should be noted that the guide levels set at the mixers are measures of sound received at those points, and therefore did not take account of the backwardly directed speaker-banks to the rear. The usefulness of the mixer levels as controls at any future events will consequently be dependant upon the existence, or otherwise, of delay towers.

(d) Four notices were served upon the organiser in respect of a total of 12 separate noise sources / events that each led to the contravention of

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licence condition G1 (hours permitted). Additionally, 5 of the sources specified (there were countless others on site at the time) went on beyond midnight, Sunday 28th June and therefore outside the licenced period.

Enforcement action reflected upon what, in noise terms, proved to be the major problem this year; out of hours raves and amplified music from traders. Countless sources of amplification from traders contribute to an elevated general background but, rising very clearly above this, was noise from unauthorised rave parties. These largely uncontrollable and always unpredictable raves were the cause of the majority of complaints to the Council, since they often continued into and beyond the small hours of the morning. The late shifts of the Council's noise team could only aim to pinpoint and notify to the organiser the occurrence of the more dominant of these events. The organiser was understandably reluctant to take action once the raves had reached a certain size and momentum since intervention by security staff, would have led to conflict and the risk of gross public order problems.

(e) This year, noise from the main stages did not prove to be the principal cause for concern. Generally, it was well controlled by the sound engineers with both Britannia Row at The Pyramid Stage and Skan P A Hire, at Stage 2 being co-operative and diligent in their supervision of sound levels at the respective mixer desks. Additionally, Stage 2 had inbuilt to their system an electronic noise limiting device which was set up to limit noise generation so as to equate with the guide figure of 97 dBLAeq (1 min).

The simultaneous running of both stages appeared to have no adverse affects on the quality of either's musical output, nor were there any perceptible combined elevated noise levels outside of the site as a result. Generally, around the perimeter of the site only one of the main stages could be heard as the dominant source for a given location. For example, to the north the Pyramid Stage dominated, and generally Stage 2 was indiscernible, while to the east the situation was reversed.

(f) The perceived and measured noise levels off-site varied considerably with location. In part, this was due to a significant change in weather conditions when the wind changed direction from north westerly on Friday 26th June to southerly on Saturday 27th June.

To the west and the south west, at the given monitoring locations, music from the licenced entertainments was only faintly audible at most times.

To the north, at the three monitoring sites in Pilton music from the licenced entertainments was clearly audible. At times, but especially on Saturday and Sunday evenings, when the wind was in a distinct southerly direction, the noise was intrusive leading to an increase above background of around 10 dBLAeq (15 min). More problematic was noise out of hours from

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unauthorised raves which was the subject of complaints from several Pilton residents.

To the east, noise intrusion was considerable on Friday night in particular when this area was downwind. Properties in the front-line such as Windinglake Farm and Cockmill Farm would have suffered drastically elevated noise levels throughout the course of the festival and during unlicensed hours because of unauthorised raves. Additionally, at these locations other sources, such as the Jazz Stage or the "Firefield" contributed to the noise impact. At Cockmill Farm, the "normal" background level was exceeded by 30 dB(A) on many occasions.

Further to the east, at Pylle, the music was very clear and intrusive on the Friday night, one resident complained. The normal background was then exceeded by as much as 20 dB(A).

On Saturday and Sunday nights, levels measured were considerably lower due to a change in wind direction.

(g) It is significant to note that only one complaint about noise prior to the festival was received this year, when compared to 14 arising for the same reason from the previous festival. This reflects upon both the absence of the hippy convoy and better publicised sound tests this year.

### 8. NOISE COMPLAINTS.

A total of 6 complaints about noise were received compared to 21 arising from the previous festival. Four of these concerned noise outside licenced hours including unauthorised raves. The remaining two referred to noise generally from the festival.

### 9. CONCLUSIONS

Most noise problems arose from unauthorised raves and traders' activities outside of licensed hours. Prior to any future festivals, this is an issue that the organiser should carefully consider. The aim should be to take steps that will prevent the raves from getting underway in the first place. Such measures should include the much more restrictive control of amplification equipment being brought on site. Except for authorised entertainments, high-powered PA systems must be excluded from the site. This should extend to traders as well, since many were generating noise from music during and outside of licenced hours well in excess of what could be regarded as reasonable for their own trading purposes as well as "smuggling" equipment in to stage their own event.

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This year, many sources of entertainment were compacted within, or directed towards (including Stage 2) the south eastern quadrant of the site. This area is remote from the official monitoring point at Benleigh House which, in isolation, would not have proved a reliable indicator of noise generated from this part of the site. Thus, if it were not for the second fixed monitoring point (at Cockmill Farm) and other off-site monitoring, the noise effects beyond the eastern perimeter would have been left unquantified.

Whilst acknowledging that the intensification of activity in the south eastern part of the site will have caused less public disturbance than if it had been in the north of the site, an official mechanism to "protect" the eastern off-site area will be introduced for the next festival. Measurements indicate that a 15 min Leq comparable to that at Benleigh House could be set at Cockmill Farm, and this would have the effect of limiting not only the second stage but also alternative events that might be planned or spontaneously occur in this part of the site.

1992 was the first year that a delay system was provided to the Pyramid Stage. In previous years the sound engineers had attempted to maximise levels in the audience area by flying the speaker system and angling downwards. There had been occasions however where the levels they had to work within were clearly not adequate from the audience point of view (music levels well below 95dB LAeq 1 minute at the mixing position). With encouragement from Mendip delay systems were installed which had the effect of enlarging the audience satisfaction area and also reduced audience pressure to crush towards the stage, without raising off-site levels.

A delay system was also similarly employed at Stage 2. It had been hoped that the licence conditions could be altered for future festivals to a limit at the mixer position alone and dispense with the requirement for off-site levels. The introduction of delay systems behind the mixing positions however has meant that off-site levels will have to be retained.

Given the progressive intensification of the use of the site, a possible aim may be to install a perimeter maximum noise level in respect of which the organiser could appropriately plan and locate the various entertainments. Future noise monitoring should gather data to help define a level that is both realistic, as far as the organiser is concerned but also protective of all neighbouring residents. The nature of the event means that each of the main stages has to accommodate around 12 different bands a day and consequently 12 different band engineers. It has not proved possible to rely on their goodwill and co-operation in all cases and in the past breaches of licence conditions have been beyond the control of the sound system engineers. The employment of an electronic limiting device built into the system therefore is now considered virtually essential and consideration will be given to framing a licence requirement for future events. It may also be worthwhile running a comparison of 1 minute Leq's at

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main stage mixing positions in terms of a weighed and unweighted levels to evaluate whether or not there may be better advantages in using a linear noise criteria.

### 10. REFERENCES

- (1) J E T Griffiths, S W Turner and A D Wallis.  
A noise control procedure for open-air pop concerts. Proceedings of the IOA 1986 Vol 8: Part 4.