THE IMPORTANCE OF NOISE CONTROL AT VENUES AND HOW THE GOVERNING BODIES APPROACH THE ISSUE.

Andy Watson Acoustic Consultancy Services, Glasgow, Scotland UK.

1 INTRODUCTION

This paper is an introduction to the issues to be discussed during the meeting. I think it is important to look at the current situation for noise control within the sport and the role of the main Governing bodies (MSAUK and the ACU).

One of the most important aspects of operating a motor sport venue is to maximise the use, but this is often at odds with noise disturbance in the community. For many venues in the UK this means restrictions in the number of days that they can operate and also may mean restrictions on the type of events that they are allowed to run.

2 NOISE TESTING.

In this country the UK Motor Sports Association (MSAUK) imposes noise controls on most 4 wheeled vehicle classes and the Auto Cycle Union (ACU) controls 2 wheeled events, but there are still some international classes that are unsilenced. F1 for example. This means that there are differences in the noise produced by various types of vehicle. There are also differences due to the varied number of vehicles taking part in an event. These differences make it difficult to control the overall community noise by controlling individual vehicle noise levels. It is important to have control over individual vehicle noise levels but this by itself cannot guarantee control of community noise.

Both the MSA and ACU regulations rely on static noise testing on individual vehicles before being allowed to compete on the track. This type of testing has been compulsory for over 20 years and was designed to control the overall noise levels of vehicles and to prevent noisy vehicles from accessing the track. The test is simple and repeatable which is important for a technical regulation which can result in a vehicle being banned from the event. Although not perfect, the static test has been successful in bringing down overall vehicle noise levels throughout the years that it has been in use.

It is normal for community noise to be assessed using LAeq levels as this is the most popular criteria for controlling the total noise affecting people. Outdoor leisure noise may produce different levels throughout a day and may only occur on certain days. Because of this it cannot be treated like more steady and continuous noise from industrial sources. Some motor sport venues in the UK have now adopted controls based on permitted period LAeq levels on a specified number of days per annum.

It is important to recognise the difference between the noise controls in the regulations and those introduced by individual venues. The controls in the governing body regulations apply to all permitted events run under licence from the MSA or the ACU. Venues are free to implement their own controls for other activities. They may continue to use the static test to provide a screening process for noisy vehicles, but can carry out other controls such as trackside testing to comply with local noise restrictions. At some venues the noise conditions are part of the contract of use of the venue and vehicles must comply in order to use the track.

The only use of track testing in the MSA regulations is in Kart racing and it has proved difficult to identify individual vehicles during track practice and events due to interference from other vehicles on the track, The testing is observed by a trained Environmental scrutineer who must make a judgement on whether the test has been accurate in assessing the noise from a specific vehicle. This can cause problems as it is impossible to repeat the test.

Trackside testing is possible for some events where vehicles run singly, such as Hill climbs and sprint meetings, there is no problem in identifying the vehicle, but there is still the problem of repeatability and the fact that the noise has already occurred before action can be taken.

3 FUTURE DEVELOPMENTS.

Within motorsport there is a strong movement to improve all environmental issues. The international governing body, the FIA, has set up specialised committees to investigate all green issues including noise control.

Within the MSA we have started a discussion with all stakeholders in the sport on future noise controls with a view to produce a new action plan by the end of 2010. When we have gathered the views from within the sport, the plan will be discussed with Local Authorities and other interested parties and this will result in new noise regulations and an update of the “Guidelines for Noise Control” first produced in 1996.

Due to new development in instrumentation and systems, which you will hear about today, it may be possible to resolve some of the problems with trackside testing and use this method on more events in the future.

4 MEASURING NOISE IN THE COMMUNITY.

Many venues now have to comply with noise conditions which limit the levels of noise produced at the site and this usually means period LAeq levels in the community.

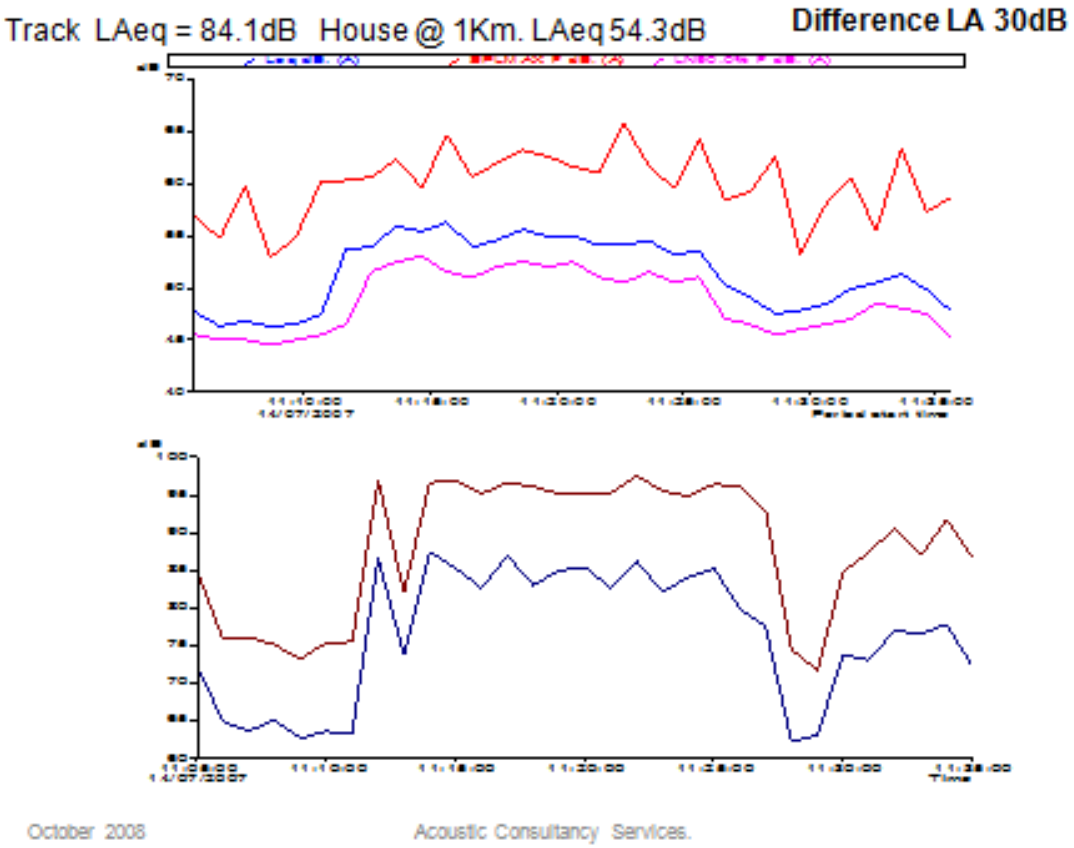
This is a fair and reasonable system, but it is not possible to operate effectively by trying to monitor the noise levels in the community. The nearest noise sensitive property may be at a considerable distance from the venue and monitoring noise levels which can often be between LAeq 35dB and 50dB will include the noise from other sources as well as the motor sport noise. It is almost impossible to produce results that will accurately measure the contribution from the venue.

One example of many that I have measured over the years shows how this method can be unreliable.

The following print outs show simultaneous track side and community levels measured over two days at the same circuit during a practice day and the event day.

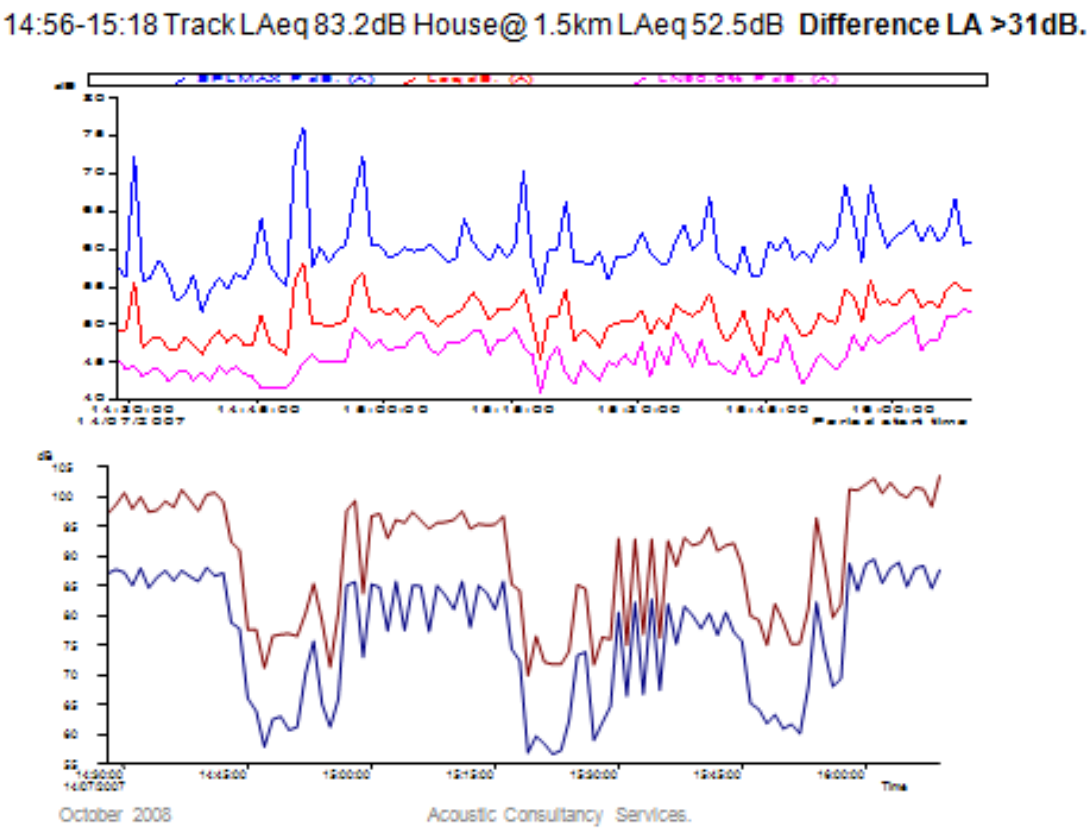
Community levels	Top Line =LAmax levels, Middle =LAeq Bottom =LA90.
Trackside	Top Line =LAmax.levels Bottom = LAeq.

Fig 1. House at 1 Kilometer from track Light wind. Track clearly audible.



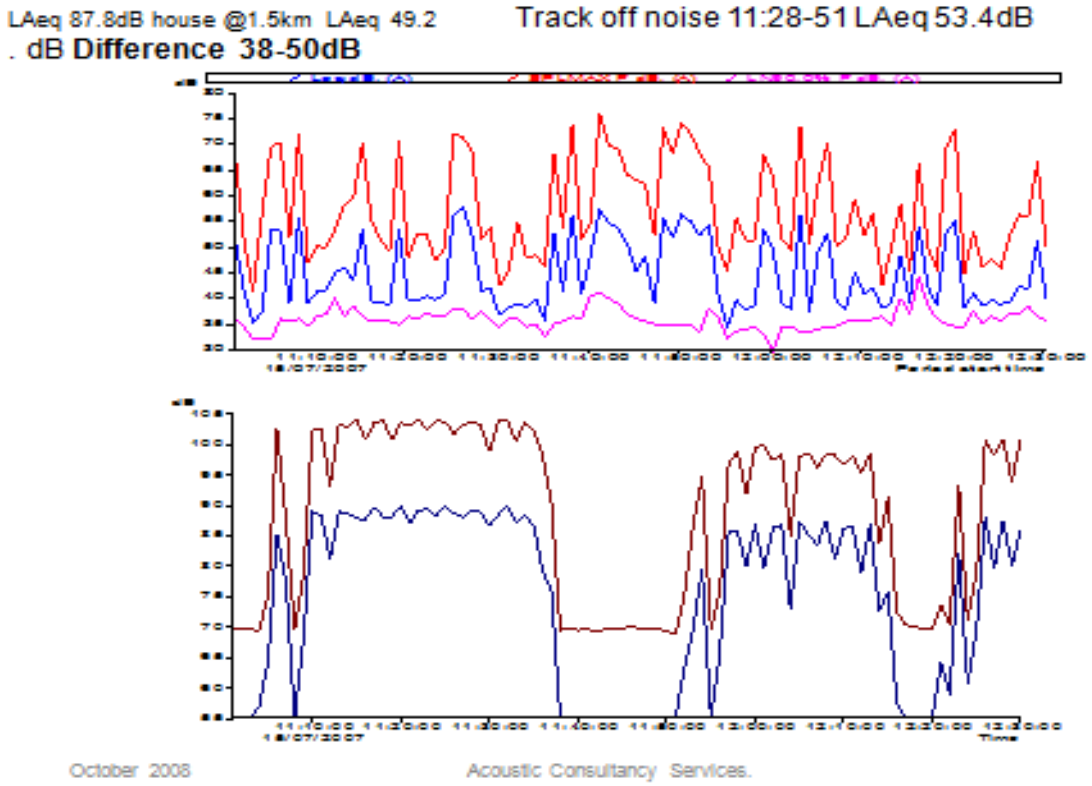
Fairly clear correlation between track and house levels. Overall period LAeg trackside = 84dB and period house level =54dB. During a track event the difference in LAeq level between the track and the house is also around LA 30dB Reasonable to assume that there is a 30dB difference.

Fig 2 House at 1.5km from track. Same day light wind. Track clearly audible.



At 1.5Km from the track, there is still some correlation but the overall LAeq at the house is affected by other local events. Overall period trackside LAeq = 83dB and house period LAeq =53dB. However taking the LAeq level when the track is running shows that the difference is over 30dB. All that can be assumed is the difference is at least 30dB.

Fig 3 Same house at 1.5Km Next day with a medium cross wind. Track noise just audible.



At the same location as Fig 2 the next day with the same vehicles on track there is no direct correlation. The change in wind direction has increased the levels from other local noise sources and reduced the effect of the track noise. The difference between the levels can be between 38 and 50dB with local noise reaching 53dB with no track activity.

For this reason it is necessary to monitor the noise levels close to the source and relate these levels to the community noise limits. So while the noise conditions may be set in terms of community noise, the method for checking compliance with the conditions should be by trackside noise measurements under the control of the venue. Any community noise monitoring should be carried out with simultaneous trackside monitoring to reduce the possibility of errors.

Some regulatory authorities wish to use LAMax levels as well, but as we can see from the above figures, Maximum levels in the community are often caused by local events which are not related to the source noise Maxima are not suitable for a variable outdoor leisure noise source.
A period LAeq level will also control the maximum levels possible during the period.

5 CONCLUSIONS.

I hope that this brief introduction to the control of Motorsport noise will help you to benefit from the rest of the day's proceedings.