TRANSPORT AND INDUSTRIAL/COMMERCIAL NOISE IN BIRMINGHAM

J Hinton

Environmental Services Department, Birmingham City Council

1. INTRODUCTION

Birmingham is the second largest city in the United Kingdom. It is at the centre of the national motorway system and has direct rail links with London and many other major cities. On its outskirts is arguably the fastest growing airport in Europe, where the so called "Eurohub" terminal has recently been commissioned. Very shortly, extensive construction work will commence on the first phase of a light rail passenger transport system which will be centred on Birmingham and has been designed to serve the whole of the West Midlands area. The City, of course, has its origins in the industrial revolution and still retains an economy which is largely based on industry and in particular, car production. However, many so-called "hi-tec" industries are now being attracted to the City, and the City Centre is rapidly becoming a major focus for commerce and entertainment. This has been highlighted by the recent opening of the International Convention Centre and the National Indoor Arena. With all this change and resulting activity, those who live and work in the City are faced with more than their fair share of existing and potential noise problems particularly from transport, industry and commerce. However, the City Council takes its responsibilities for controlling and mitigating the effects of noise from all sources extremely seriously and at the very least rigorously enforces all legislation, national standards and recognised guidelines on these issues. Where no standards or acceptable guidelines exist, the council has developed its own policies and at present is in the process of formulating an overall environmental strategy which encompasses noise. The remainder of this paper examines very briefly the current situation on the control of transport and industrial/commercial noise, and outlines Birmingham Environmental Services Departments (BESD) views and existing policies on these subjects. Finally, the broad concepts of the Council's environmental strategy which relate to transport and industrial/commercial noise are introduced.

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2. NATIONAL POLICIES ON NOISE FROM TRANSPORT INDUSTRY AND COMMERCE

a) Noise from Existing Source

Aircraft
In the UK, aircraft in flight are exempt from noise nuisance legislation provided the rules of the Air and Air Traffic Control Regulations and normal aviation practice are observed. However, all the major commercial airports in the UK operate noise insulation schemes, although not required to do so by the force of law. Most of these schemes are now based on the 66dB LAeq 16hour noise contour which is calculated from a knowledge of the number and type of aircraft movements at a particular airport. All residential properties within the area covered by this contour are normally eligible for a grant for noise insulation purposes. In recent years, BESD has developed an extremely good working relationship with Birmingham International Airport plc. This has resulted in several significant environmental improvements not the least of which has been the adoption of a "defensible boundary" concept for the outer limits of the current noise insulation scheme. This effectively means that the scheme is extended beyond the area covered by the 66 contour so that "sensible" cut-off points are employed.

Road Traffic
Noise from vehicles on UK highways is also exempt from nuisance legislation. However, national regulations concerning the insulation of residential property affected by increased levels of road traffic noise, have been in force on the UK mainland since 1973 (Ref 1). These regulations require highway authorities (normally local authorities) to offer noise insulation to the occupier of a dwelling if the facade noise level arising from the use of a new or significantly altered road reaches or exceeds 68dB LA10(18 hours). BESD supports recent suggestions that further research work is necessary to ascertain whether the current standard of 68dB(A) is still appropriate having regard to changes in social attitudes to traffic noise which may have occured since 1973. It also supports the proposal that any change to the existing regulations should include some provisions for the insulation of properties which are affected by significant increases in traffic flow, resulting from permanent traffic management schemes and the opening of new roads or motorways in the immediate vicinity.

Railway Noise
At present, there are no regulations which provide for the insulation of sensitive buildings against noise from new railway

lines. This difference in the treatment of those affected by rail noise compared with those affected by road noise, has not been a contentious issue in recent years as few new railway lines have been opened in the UK. However, the construction of the channel tunnel will dramatically change this situation. Furthermore, a number of UK cities have recently introduced light rail public transport systems into urban areas and many additional systems of this nature are in an advanced stage of planning across the country. As a result of these developments, it appears that central government will introduce a noise insulation standard for new railways in the form of regulations during 1992. The indications are that any residential property subjected to facade levels of 68dB LAeq 18hour (0600 hours to midnight), or 63dB LAeq 6hour (midnight to 0600 hours), will be eligible for a grant for noise insulation. These proposals are to be welcomed. However, there is a strong body of opinion supported by BESD, which believes that the regulations should be extended to include dwellings affected by a significant intensification in the use of existing railway lines, which could not reasonably have been foreseen. This form of intensification is almost certain to occur on several existing railway lines as a result of the opening of the Channel Tunnel. Of particular concern in Birmingham, is the impending development of the light rail system known as Midland Metro. However, the Council and Midland Metro have worked closely together for a number of years on ways of reducing the environmental impact of the system. This has resulted in the development of a model which can be used to predict the noise levels produced by the proposed system under all foreseeable operating conditions. The model is based on actual noise measurements taken on light rail systems currently operating on the continent (Ref 2).

Noise from Industrial and Commercial Premises

The control of noise from existing industrial and commercial premises in the UK is achieved almost exclusively by the use of "nuisance" legislation, now contained in the Environmental Protection Act 1990 (Ref 3). The concept of "nuisance" is a subjective criterion and many hours can be spent debating whether a particular noise amounts to a nuisance in law. However, most industrial cases are eventually resolved by reference to the British Standard on industrial noise, although the document was not originally drawn up for this purpose (Ref 4). BESD believes that current legislation and standards on the control of industrial noise and noise of an industrial nature from commercial premises, generally work extremely well. Exceptions include the control of low frequency industrial noise and noise

disturbance associated with so-called 'just in time' deliveries at both industrial and commercial premises, which are becoming increasingly commonplace and often occur or continue throughout the night.

Entertainment Noise

The main source of entertainment noise problems in most UK towns and cities is amplified music from discos and live bands. Responsiblity for controlling venues which are used for these and similar forms of entertainment is vested in local authorities through a licensing system. The limitation of environmental noise from public entertainment may, if the local authority sees fit, be one of the conditions of such a licence. There is a wide variation in the standards applied to the control of entertainment noise across the country. For example, what is acceptable to the community in a major tourist resort may not be acceptable in a mainly residential area with no tourist-based economy. Guidelines for the control of environmental noise from amplified music in Birmingham were first introduced in 1980. These were last reviewed in 1989 and are reproduced below.

1. Overriding Limit
   No amplified music from any event should be audible within a dwelling (windows open), between 2300 hours and 1400 hours.

2. Events on Consecutive Days or on Three or More Occasions per Week
   No amplified music audible in a dwelling (windows open), between 2000 hours and 2300 hours. Between 1400 and 2000 hours the ambient LAeq level should not be increased in any fifteen minute period. The LAeq level to be measured one metre outside any facade of the most affected dwelling.

3. Fortnightly, Weekly and Twice Weekly (not on Consecutive Days) Events
   No amplified music from any event should be audible within a dwelling (windows closed), between 2000 hours and 2300 hours. Between 1400 hours and 2000 hours the ambient LAeq level should not be increased by more than 3dB(A) in any fifteen minute period. The LAeq level to be measured one metre outside any facade of the most affected dwelling.

4. Events Less than Once a Fortnight but More than Six a Year
   Between 2000 and 2300 hours the ambient LAeq should not be increased by more than 3dB(A) in any fifteen minute period. Between 1400 and 2000 hours the ambient LAeq should not be

increased by more than 6dB(A) in any fifteen minute period. The LAeq levels to be measured one metre outside any facade of the most affected dwelling.

5. Up to and Including Six Events a Year
Between 2000 and 2300 hours the ambient LAeq should not be increased by more than 6dB(A) in any fifteen minute period. Between 1400 and 2000 hours the ambient LAeq should not be increased by more than 10dB(A) in any fifteen minute period. The LAeq levels to be measured one metre outside any facade of the most affected dwelling.

6. Up to and Including Three Events a Year at an OUTDOOR VENUE (Each Day of a Particular Event Counts as a Separate Event)
The requirements of 5) will be waived up to and including three events a year, provided the following criteria is met. The requirements of 1) will still apply.
   a) Best practical means shall be taken to reduce noise disturbance outside the venue
   b) Local residents should be made aware of the dates, times, duration and nature of the events. It is the responsibility of the owner of THE VENUE to ensure that this is done by whatever means they see fit.
   c) The events should only take place during local school and academic (college and university), holidays other than on a Friday evening up until 2300 hours, on a Saturday between 1400 and 2300 hours and on a Sunday between 1400 and 2000 hours.

b) Planning and Noise

In the United Kingdom, noise has formally been a matter of concern in town and country planning for nearly twenty years. If a proposed development could cause or be subjected to unacceptably high levels of noise, local authorities can refuse the planning application or impose noise control/reduction conditions to the planning approval. There is also a procedure whereby the Secretary of State for the Environment can 'call in' an application for a major, or particularly contentious, development so that an appointed inspector determines the application after considering the views of interested parties. This usually involves the presentation of evidence to a so-called 'public enquiry'. However, the vast majority of planning applications are determined by local authorities at local level. Current advice to these local authorities on noise matters is given in a circular which was published in 1973 (Ref 5). For some time it has been widely recognised that the circular needs to be reviewed and updated and, as a result, a draft revised

document was recently circulated for public comment (Ref 6). Briefly, this document proposes four noise exposure categories for new noise sensitive development near a noise source, as follows.

Category A For proposals in this category, noise need not be considered as a determining factor in granting planning permission.
Category B For proposals in this category, some noise control measures are required.
Category C For proposals in this category, there should be a strong presumption against granting planning permission. If permission is given, planning conditions should be imposed to ensure an adequate level of sound insulation against external noise.
Category D For proposals in this category, planning permission should normally be refused.

Certain aspects of the document have been widely criticised. However, Birmingham's official response was that it supported the general thrust of the draft, in further highlighting the importance of noise as a material consideration in making development control decisions. In particular, the approach outlined of allowing local authorities to determine for themselves levels for the noise exposure categories was welcomed. However, it was noted, with some disappointment, that this implied flexibility was, in practice, somewhat removed by the inclusion of recommended levels for each category in Appendix 1 of the document (see figure 1).

BESD believes that flexibility is essential in planning matters and has recommended amalgamating categories B and C, as shown in figure 1, to allow local authorities to operate their own locally-developed noise control policies in a single broader, middle band. This amendment would make a clear distinction between those cases where planning permission should normally be refused on noise grounds, and instances where permission might be granted but made subject to appropriate conditions to mitigate the effects of noise. BESD's existing policies on the control of transportation, industrial and commercial noise at the planning stage, have evolved over nearly two decades and are summarised below.

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FIGURE 1

CONSULTATION DRAFT - PLANNING POLICY GUIDANCE, PLANNING AND NOISE
NOISE EXPOSURE CATEGORIES FOR DWELLINGS - LAeq,T dB

Noise Source	Noise Exposure Category A	B	C	D
Road traffic (0700-2300)	<55	55-63	63-72	>72
Air traffic (0700-2300)	<57	57-66	66-72	>72
Rail traffic (0700-2300)	<55	55-65	65-74	>74
Mixed sources (0700-2300)	<55	55-63	63-72	>72
All sources (2300-0700)	<42	42-57	57-66	>66

NB Noise from industrial activities is not included in the new draft circular, but this subject is specifically dealt with in a recently amended British Standard (Ref 4).

Aircraft Noise

Case 1. No 'major' residential developments within the LAeq (16hour) 60 contour of Birmingham International Airport.
Case 2. 'In fill' residential development within 66 contour - building envelope to provide at least 35dB attenuation (average over frequency range 100 to 3150Hz).
Case 3. 'In fill' residential development within 63 contour - building envelope to provide at least 35dB attenuation for all habitable rooms, and at least 25dB attenuation for non-habitable rooms.
Case 4. 'In fill' residential development within 60 contour - building envelope to provide at least 25dB(A) attenuation.

The provision of appropriate sound-insulated mechanical ventilation units is obligatory for all habitable rooms within the 60 contour.

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Road Traffic

Case 1. Generally, no developments where the L10 (18hour) noise levels will be 74dB(A) or more, one metre outside glazed areas to habitable rooms. However, where it is impossible to redesign the site layout, or the internal layout of buildings to achieve this goal, the application may be approved providing the following minimum specification for windows is adopted. Thermal double-glazed sealed units, backed by Noise Insulation Regulations specification secondary glazing.
Case 2. Where the L10 (18hour) noise levels will be 68dB(A) or more, but less than 74dB(A) one metre outside glazed areas to habitable rooms. These areas require secondary glazing to the Noise Insulation Regulations 1975 specification, or to be fitted with 8/10/6 sealed glazed units.

Wherever noise insulation is installed, the provision of sound-insulated mechanical ventilation is obligatory.

Railways

At the time of preparing this paper, the eagerly-awaited regulations on noise from new railway lines have not been published. It is likely that the following policy will be amended when they are eventually issued. At present, the policy is similar to that for road traffic but with the following amendments.

Case 1. Substitute LAeq (24hour) 70dB(A) for LA10 (18hour) 74dB(A).
Case 2. Substitute LAeq (24hour) 65dB(A) for LA10 (18hour) 68dB(A) and LAeq (24hour) 70dB(A) for LA10 (18hour) 74dB(A).

Industrial/Commercial

The policy on noise from new industrial/commercial sources is generally that a new noise source should not increase the existing background levels. However, it is appreciated that this is not always possible and, therefore, every application is judged on its individual merits. The policy on new residential developments close to existing industrial/commercial sources allows for the provision of acoustic double glazing, and appropriate ventilation units where this is the last resort and is judged to be necessary for a development to proceed.

3. BIRMINGHAM CITY COUNCIL'S ENVIRONMENTAL STRATEGY

Through its environmental strategy, the council is committing itself to protect and enhance the environment within Birmingham and ensure it is a healthy and attractive place for people to live and work. In respect of noise, this means protecting the hearing of all those who live, work and spend their leisure time in the City and providing an acceptable "acoustic comfort level" for all residents. The process of formulating a strategy of this nature has a relatively long time scale to allow for adequate consulation with all interested parties, and a full evaluation of the implications of adopting any new policies. At the time of preparing this paper a "Directory Of Option's" for action has been compliled as a result of the deliberations of several working groups. This directory does not represent a definitive or complete list of possible actions. Furthermore, all of the actions suggested need further evaluation and some may well be inappropriate in the Birmingham context. The purpose of the directory is merely to provide a starting point for the development of departmental action programmes within the Council. Some of the possible actions which relate to, or have implications for, transport and industrial/commercial noise are listed below:-

1. Investigate all complaints of noise and enforce the statutory legislation to prevent continuation of noise nuisances and prevent nuisances arising. Where enforcement action is not possible, all parties concerned should be advised as to suitable methods to remedy the situation.
2. A public information campaign to inform members of the public and industrialists of the problems caused by excessive noise and vibration and the means by which these can be reduced.
3. Support and promote measures through organisations such as the Association of Metropolitan Authorities for changes in legislation where considered necessary, in order to improve the noise environment.
4. Press for the introduction of an absolute offence, not requiring the service of an Abatement Notice, where the owner or occupier of premises knowingly causes or permits a noise nuisance.
5. Continue to press for the introduction of regulations for insulating properties which are adversely affected by aircraft noise.
6. Continue to press for a review of the Noise Insulation Regulations 1975 to take account of increased noise caused by long term traffic management schemes.

7. Review critically any regulations which may be produced for the insulation of properties adversely affected by noise from railways and light rapid transit systems, and ensure that these include provisions for noise due to intensification of the use of existing lines.
8. Continue to press for the introduction of a lower permitted noise level for heavy goods vehicles and motorcycles based on the best available techniques.
9. More vigorous enforcement by the police of existing legislation covering noise from road vehicles (including motorcycles) should be encouraged. The noise monitoring facilities of the Environmental Services Department should be made available to support this action.
10. Continue to introduce traffic management schemes where these provide an overall environmental benefit.
11. Ensure that the development of new highways is carried out in such a manner that has the least effect on noise levels both during and after construction.
12. Improved liaison between industry and local communities by establishing community liaison groups.
13. Develop a proactive approach to noise or vibration monitoring with an annual survey to establish a baseline and identify trends.
14. The results of the annual survey (13) could be integrated into the planning process with a view to ensuring that development or changes in use of premises throughout the City causes little or no increase in existing background noise levels.
15. Continue to adopt, produce and review planning policy guidelines for development which may be adversely affected by noise, or is liable to produce adverse noise levels.
16. Subject to the formal procedure being simplified, extend noise abatement zones with a target of 100% coverage in mixed industrial/residential areas.
17. Continue to apply guidelines relating to entertainment noise through the relevant statutory legislation, including the licensing provisions.
18. Training courses should be provided to ensure staff who deal with the public face to face are aware of noise issues and noise control methods including recourse to law or reconciliation.

4. CONCLUSIONS

The purpose of this paper has been twofold. Firstly, to emphasise that in the UK noise control and mitigation is very much a local matter and should remain so in the future. Secondly, to show that local authorities like Birmingham develop

and adopt sensible and realistic policies on noise, which are designed to suit local circumstances and the needs of the local community. This is achieved without undue or unnecessary direction from other bodies in the form of rigid standards or guidelines. The author believes that it is essential to continue to allow local authorities to operate a flexible approach to noise control in the future. However, in return, all local authorities should formally adopt detailed and defensible policies on all aspects of environmental noise control and mitigation.

Any veiws or opinions expressed in this paper are those of the author and not necessarily those of Birmingham Environmental Services Department or the City Council.

5. REFERENCES

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2. West Midlands Rapid Transit Paper by J Hinton and K Scobell. PTRC Summer Conference Bath 1987.

3. Environmental Protection Act: 1990 HMSO.

4. British Standard BS4142: 1990. Method for rating industrial noise affecting mixed residential and industrial areas.

5. Planning and Noise Department of the Environment circular 10/73. HMSO.

6. Department of the Environment Consultation Paper - Draft Planning Policy Guidance Note On Planning And Noise 31/12/91.