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THE ROLE OF THE ENVIRONMENTAL HEALTH OFFICER IN PREVENTING NOISE ANNOYANCE

J. D. CLEGG

BOLTON METROPOLITAN BOROUGH COUNCIL

Introduction

The Environmental Health Officer (EHO) is the local government official who has been concerned traditionally with the abatement of various types of nuisance, the first national power to deal with noise nuisance being the Noise Abatement Act 1960. Almost four years ago, based on Noise Advisory Council report (Ref.1), Part III of the Control of Pollution Act 1974 was brought into force to strengthen local authorities' power to control environmental noise. The Department of the Environment (DOE) Circular (Ref.2) introducing the Act states that, "The emphasis of the Act is on prevention rather than cure, although the latter is not neglected". The preventive approach of the Act includes powers to deal with noise nuisance which is likely to occur; to issue conditional consent (or serve notice) in connection with the minimisation of noise from construction works; and to designate noise abatement zones for the purpose of preventing deterioration in environmental noise levels.

A quite different area of legislation which enables a preventive approach to noise control is the development control function of a Local Planning Authority, who are urged (Ref.3) to consult the Local Health Authority on planning applications for development with the aim that noise annoyance from industrial, commercial and transportation sources might be avoided.

It is suggested that the use of planning powers can be extremely effective in noise pollution control and this paper concentrates on the guidance used in Bolton (population 261,000) to prevent noise annoyance where new housing is to be constructed near sources of noise or, vice versa, new sources of noise are introduced adjacent to residential areas.

Planning and Noise

DOE circular 10/73 (Ref.3) lays down principles and specific criteria by which the Secretary of State will be guided in taking planning decisions and on which local authorities are urged to base their own policies. The circular states that planning authorities should seek to avoid the creation of situations in which new industry might inflict noise annoyance on existing housing (ie. as far as possible avoiding increases in ambient noise levels affecting housing), or in which new residential development might be subject to noise annoyance from existing industry or roads; inferring that authorities should use site standards "substantially lower" than Corrected Noise Levels (CNL) of 75dB(A) by day or 65dB(A) by night for industrial noise and 70dB(A) on the L_{10}(18h) scale for road traffic noise.

Thus it is left for local authorities to decide on the "desirable" noise standard for their area, provided that any conditions of planning permission for new development are necessary, relevant to planning, relevant to the proposed development, enforceable, precise and reasonable (Ref.4).

Environmental Noise Guidance

The decision as to whether or not a noise is a nuisance is usually based on a subjective opinion and related sound levels. Through his experience in dealing with noise nuisances, the EHO has acquired a knowledge of the sound levels of various sources which give rise to annoyance and complaints in his area. This "environmental intuition" will have a considerable influence on the noise level guidance for new roads, industry, or housing. Furthermore, if a noise problem arises as a result of the granting of planning permission for new development it is the Environmental Health Department not the Local Planning Authority which will have the responsibility for dealing with it under the Control of Pollution Act, thus, the EHO has a vested interest in ensuring that his comments on planning matters are both valid and realistic.

It is recognised that the setting of standards would be much easier if the results of social surveys of reaction to noise indicated that below a particular sound level there was no annoyance. However, as subjective reactions to noise vary widely, the results of such surveys usually lead to the difficult question of selecting, as a standard, the sound level which causes annoyance in not more than a chosen percentage of the population.

Bolton is an urban area where historically industry, transportation routes and housing have co-existed in close proximity. The land designated for housing purposes over the next 10 - 15 years is only half of that needed to cater for an expected increase in population, thus many locations will be used which, in terms of environment, are not entirely satisfactory.

Guidance to be taken into account when planning new housing and industry has been prepared and incorporated in the Bolton Metropolitan Borough Plan with the objective of reducing noise levels throughout the Borough to acceptable standards hopefully achieving better human health and a reduction in social stress.

Guidance for New Housing

In respect of new housing affected by industrial noise the desirable site standard is CNL 55dB(A) by day and CNL 45dB(A) by night. It is recognised that in some cases the standard cannot be achieved but a site standard of CNL 55dB(A) by day or night must not be exceeded and by housing orientation and site design levels inside bedrooms must not exceed 35dB(A) at night. A subjective assessment of the site by an experienced EHO is essential.

For new housing sites affected by road traffic noise the undeveloped site standard (no reflecting facades) is 62dB(A) L_{10} (18h) as measured; predicted levels may be 5dB(A) above this figure if sound reflection and future increases in traffic flow are taken into account. The design standard for inside sound levels with windows closed is 40dB(A) L_{10} (18h).

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The guidance for railway noise is that new housing is not to be constructed:-

(i) within 30 metres of a railway line.
(ii) where the daily equivalent sound level, Leq (24h) on the site exceeds 60dB(A).
(iii) where the average peak sound level of train passages exceeds 80dB(A).

It is recognised that in addition to a 30 metre buffer zone often screening will be required to achieve the standard of (ii) and (iii) above. Also as rooms at first floor level may not benefit from the screening attenuation it will be necessary to provide double glazing to windows if sound levels in bedrooms will exceed either Leq(24h) of 40dB(A) or a peak level of 60dB(A) with windows closed. A subjective assessment of the site by an experienced EHO is essential.

Guidance on Industrial Noise

The principle followed is that outlined in DOE Circular 10/73 to assess the impact of industrial noise on existing housing as follows:-

(i) Obtain from applicant (or estimate) predicted CNL at boundary of application site.
(ii) Calculate CNL at nearby existing housing.
(iii) Measure background level at nearby existing housing and calculate notional background level (see B.S.4142 - Ref 5).
(iv) Using lowest level of (iii) above predict rating of proposed development in terms of its liability to produce complaints.

The basic guidance is that the pre-existing ambient noise level at houses should not be unduly increased, i.e:-

(a) Noise emitted having a tonal or impulsive character - maximum level to be at least 5dB(A) below pre-existing background level.
(b) Noise emitted without tonal or impulsive characteristics - maximum level not to exceed pre-existing background level.

Significance of the Guidance

The planning constraints for new housing have been designed to meet the particular needs of the Bolton Metropolitan Borough and are based on subjective impressions of the acceptability or otherwise of the various sources of noise, experiences of complaint situations and published information on noise annoyance.

Sound level data on complaints of noise nuisance in Bolton (1974-79) from industrial and commercial sources has been examined giving an indication that 90% of daytime complaints occurred at CNL's above 53dB(A) and 90% of night time complaints occurred at CNL's above 47dB(A) which suggests that the criteria for housing site design is necessary and relevant.

Guidance on new house building near roads in an urban area has been strongly influenced by the Noise Insulation Regulations 1975 standard for compensatory double glazing taking into account the practical difficulties of achieving effective design measures against traffic noise.

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As there is no official guidance on railway noise the design criteria results from local sound level surveys and experiences of one particular new housing site. Compared to published information (Ref.6) the site guidance of 60dB(A) Leq(24h) is in the criterion range which is said to be tolerable to the majority of the population. The preliminary results of a British railway noise survey (Ref.7) indicate that for an Leq of 60dB(A), 10-20% of a population are severely disturbed by the railway noise; and a score of 3 is given on a 7 point scale where 1 is definitely satisfactory and 7 definitely unsatisfactory.

Conclusion

The use of planning powers is probably the most important method of preventing noise annoyance to residents of an area and use of this approach is of particular relevance at a time of policies for the revitalisation of inner urban areas.

In an ideal world the application of a policy to minimise noise problems resulting from new development would involve the selecting, in each individual case, the noise standard representing the optimum level of control indicated by a cost benefit analysis. The practical alternative is a system based on guidance standards appropriate to local circumstances and this approach is used in Bolton.

Preventing noise annoyance is seen as a role of the EHO which will occupy an increasing proportion of his time and it is suggested that this in turn will lead to pressure on a number of activities, e.g:-

(i) increased need for architects to process acoustical requirements of projects.
(ii) increased activity for noise consultants.
(iii) increased need for building contractors to construct to the high standard required if sound insulation targets are to be achieved.
(iv) increased need for industry to consider its potential noise emissions.
(v) pressure on machine manufacturers to supply information on sound level emissions.

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