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NEW HOUSES NEAR OLD RAILWAYS/NEW RAILWAYS NEAR OLD HOUSES

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INTRODUCTION

In acoustics and other sciences there is a well established principle of reciprocity, relating to transmission in either direction between two points. It has been common practice to impose planning conditions on new housing developments near existing railways, perhaps leading to refusal of planning permission. We are now entering an era of new high speed railways, commencing with the Channel Tunnel Rail Link (CTRL), which will pass near existing housing. Should the standard of protection of occupants in this case be the same as that for new houses near old railways, thus applying a "reciprocity" principle to this aspect of subjective acoustics?

NEW HOUSES NEAR OLD RAILWAYS.

The combined wisdom and experience of local authority planners in the UK, accumulated over 15-20 years, has led to criteria, partly stemming from Circular 10/73, which are applied to planning decisions. There is some non-uniformity, but trends can be established which focus on certain conditions. The factors which have to be addressed include:-

- Noise level limit
- Averaging of noise level e.g. Leq
- Period over which noise level applies
- Peak noise level
- Requirement for noise control
- Conditions for refusing permission.

An example of a comprehensive approach, adopted by a number of local authorities, is as follows, addressing the factors listed above.

1. 07.00 to 23.00 less than 55db(A)
   23.00 - 07.00 less than 50 dB(A) Leq:
   disturbance unlikely and no special
   precautions needed.

2. 07.00 - 23.00 greater than 55 dB(A) Leq
   23.00 - 07.00 greater than 50 dB(A) Leq;
   noise control e.g. by a barrier; should be employed to reduce levels to meet condition 1.

3. Where it is not possible to meet condition 1, and providing the limit in 5, below, is not exceeded measures should be employed to achieve the best possible standard (e.g. by building design, barriers, orientation with respect to noise source, etc.).

4. 07.00 - 23.00 greater than 65 dB(A) Leq
   23.00 - 07.00 greater than 60 dB(A) Leq;
   then no new noise sensitive development permitted.

5. 23.00 - 07.00 average peak noise level greater than 80 dB(A), no new noise sensitive development permitted.

6. Where vibration is likely to be a problem e.g. perceptible ground vibration, permission should be rejected irrespective of the noise levels.

These conditions aim to protect residents of new houses near existing railways. Residents who, presumably, 'chose' to live near the railway.

NEW RAILWAYS NEAR OLD HOUSES

It is many years since significant new high speed railways were built in the U.K., although other countries have developed new systems and are expanding these, e.g. France, Germany, Japan. As a consequence of our lack of experience, the proposed CTRL from London to the Channel Tunnel has thrown up new problems for planners. To increase their difficulties, the way in which the CTRL will be promoted, by a Private Bill in Parliament, removes final control from local authority planners. They can negotiate with BR, give evidence to or petition the Select Committee considering the Bill (probably commencing in June 1990), but the final word is with Parliament which will balance the requirements of British Rail and local authorities.

The criterion adopted by British Rail is that an offer of purchase will be made if a property is within 120m either side of the centre of the CTRL track. The offer is available only until the link opens. If owners do not wish to sell, noise insulation will be provided for a level exceeding 70 dB(A) 24 hour Leq. Of course, BR expects to sell off any houses purchased, but hopefully insulation will also be included. BR does not propose a vibration criterion and excludes tunnelled sections from compensation. In general, BR's criterion is at least 5 dB(A)

less favourable to the occupants than typical local authority requirements, and has no differentiation between levels for day and night. Householders might, not unreasonably, expect more favourable treatment since the railway is coming to them. Whilst this is, at present a problem for London and Kent, the rail link will gradually spread to the Midlands and North. Decisions which are being made now will affect railway noise criteria for many years to come.

OTHER COUNTRIES

A comparison with other countries can point to deficiencies in the U.K. European comparisons are particularly important since a network of high speed European rail links is beginning to develop and the same trains will, one day, run across Europe to major U.K. centres.

- FRANCE :
  The train noise is related to the existing background level.

Existing background dB(A)	Train Noise dB(A) Leq,12hr (08.00-20.00)
< 65	< 65
65 - 70	< 70
> 70	< 70

- DENMARK :
  24 hour Leq at new houses < 60 dB(A).

- NETHERLANDS :
  'A' weighted Leq is used over a three period 24 hour span. The day is 07.00 - 19.00; evening 19.00 - 23.00; and night 23.00 - 07.00.

The maximum permitted Leq (A) is:

Day	60 dB(A)	(07.00 - 19.00)
Evening	55 dB(A)	(19.00 - 23.00)
Night	50 dB(A)	(23.00 - 07.00)

Furthermore, the permitted levels are to be reduced by 3dB(A) from 1 January 2000. The forward-looking Netherlands criteria give a lead to the rest of Europe. They recognise that protection is required in the evening for relaxation and children's sleep and that greater protection is required at night.

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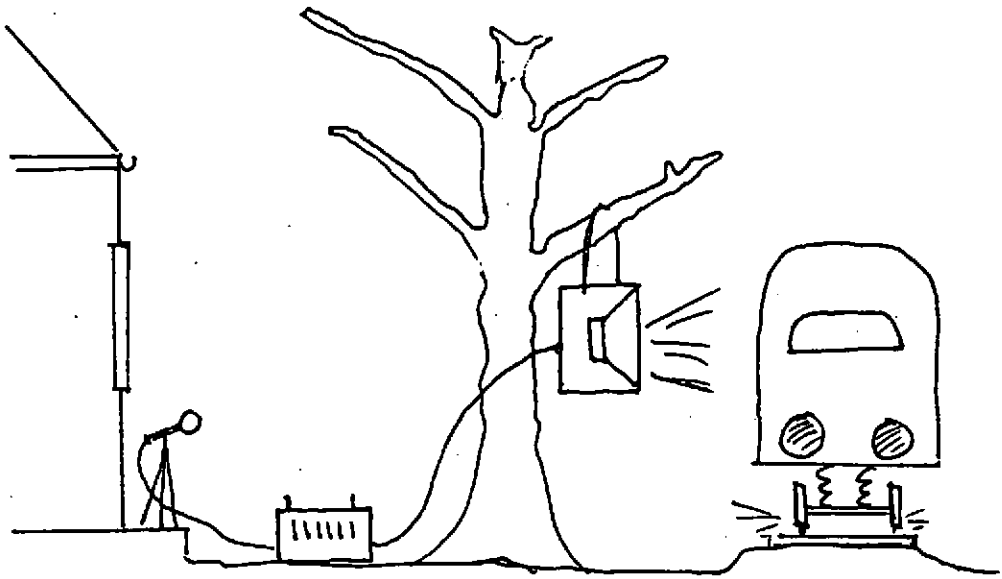
CONCLUSIONS

The proposals by British Rail for protection from noise lag behind those resulting from the combined wisdom and experience of local authorities, which are themselves inferior to the best European legislation. Criteria which are being developed for the U.K. at the present time will influence the living conditions of many residents near to the expanding high speed rail network which, paralleling Continental developments, will spread through the U.K. during the next 25 years.



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