Proceedings of The Institute of Acoustics

THE ASSESSMENT OF DISCOTHEQUE NOISE FOR A PLANNING APPLICATION

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INTRODUCTION

One of the most effective ways in which a Local Authority can prevent noise nuisance is by the use of the Town and Country Planning Legislation.

Department of the Environment Circular 10/73[1] lays down principles and specifies criteria to guide Local Authorities in their plan making and development control activities. It also gives examples of model conditions which may be attached to planning consents in respect of noise.

An essential companion document is Circular 1/85[2] of the Department of the Environment which deals with the use of conditions in granting planning permission and also gives examples of model conditions.

It is important to note however that neither Circular deals specifically with the noise annoyance from discotheques or amplified music.

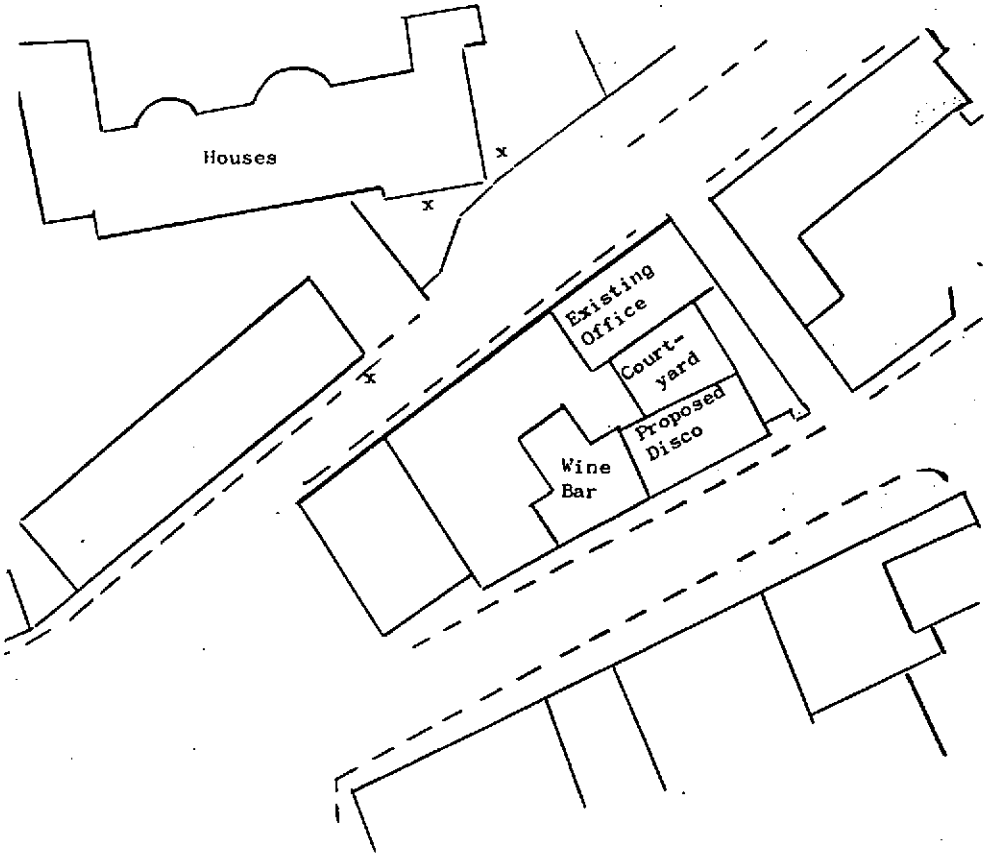
Thus within the District Council organisation it is normal pactice for the Planning Department to liaise with the Environmental Health Department for general and specific advice on noise in respect of applications for planning permission. This, of course, may be where noise is moving to people or people are being brought to noise.

THE APPLICATION

In this particular case a planning application was received from the owner of a wine bar to convert an adjoining building, or a room over the wine bar, into a function room. The Planning Department requested the Environmental Health Department's views.

The initial application was to convert the office shown as 'existing office' in Figure 1 for the use. A visit and discussion with the applicant identified the nearest residential property and established the likely use of the room. The applicant wished to have as much freedom as posible in his use of the room. This meant that the amplified music produced could be very loud and would include modern music with the infamous heavy bass component.

THE ASSESSMENT OF DISCOTHEQUE NOISE FOR A PLANNING APPLICATION



x - Noise Sensitive Areas

Figure 1. Area Plan; showing
first floor proposed disco, ground floor wine bar and other buildings.

The nearest house was approximately 12 metres from the long elevation of the 'existing office' and it was occupied by people who had already lodged a formal objection to the application.

This elevation had an access door to the outside and windows facing the house. It was single storey with what appeared to be a 9" solid brick wall and a traditional slate on timber pitched roof.

In the initial discussion the applicant stated that he was considering submitting an alternative application in respect of the room above the wine bar.

THE ASSESSMENT OF DISCOTHEQUE NOISE FOR A PLANNING APPLICATION

When the shortcomings of the 'existing office' in terms of sound attenuation were described to him, he asked for the first floor room to be considered. It was clear that noise from this room would be inherently less of a problem at the nearest houses and taking into account other advantages he decided to withdraw his initial application and submit a fresh one for the first floor room.

Having established this, a second aspect, that of noise arising from people arriving, leaving and congregating outside with the consequent use of cars would have to be be considered - but this falls outside the scope of this paper.

The recommendation from the Environmental Health Department to the Planning Department could be of three types - refusal, permission with conditions, and unconditional permission.

The initial assessment had clearly shown that there was a potential for nuisance so the question was could the potential noise problem be adequately dealt with by a condition or conditions. The basic planning premis is that permission should be granted unless there are sound and clear cut reasons for not doing so. A Local Authority in general should only impose conditions where the application would have to be refused if the requirements of that condition were not imposed. It this is not the case then the condition needs special and precise justification.

THE INVESTIGATION

The investigation essentially was to establish the existing noise climate and predict the potential for noise annoyance or interference with the amenity of the area.

The existing noise climate was relatively easy to establish by measuring the the normal background level (L_{90}) at the appropriate time of the day.

To establish the predicted sound levels a sound source was used which was positioned at one end of the hall.

The source was produced by a McGregor 125 Watt amplifier, loudspeaker and an ordinary cassette tape recorder. At the opposite end of the hall was a calibrated CEL 393 precision sound level meter mounted on a tripod and connected to a digital printer. A schematic of the system is shown in Figure 2.

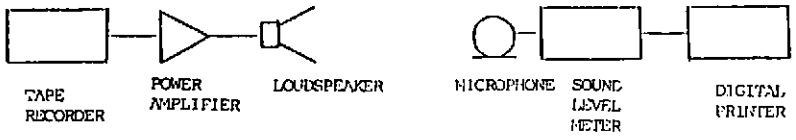


Figure 2. Schematic of the sound system and the measurement set up.

THE ASSESSMENT OF DISCOTHEQUE NOISE FOR A PLANNING APPLICATION

The sound system was used to generate typical discotheque type music. The averaged octave band spectrum is shown in figure 3 and it is similar in shape to previous measured spectra inside discotheques. [3][4].

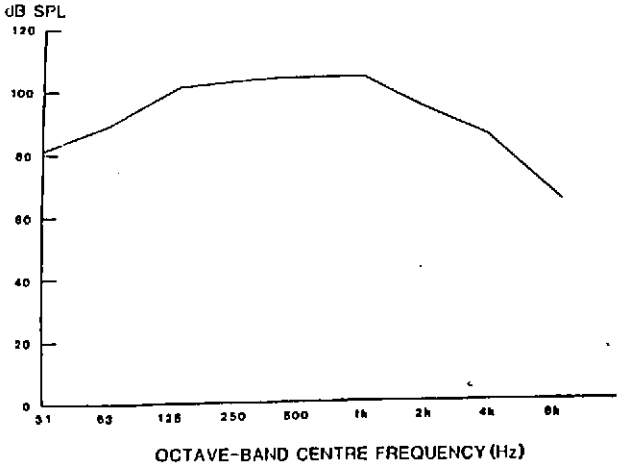


Figure 3. The averaged octave band spectrum of the sound source (at the highest level).

The sound system was capable of generating an 'A' weighted equivalent continuous sound pressure level (L_{Aeq}) of up to 110dB in the reverberent sound field of the hall.

Objective measurements and subjective assessments were made at the noise sensitive areas around the hall with the sound system generating a L_{Aeq} inside the hall of between 105dB and 95dB in steps of 5dB.

The objective measurements consisted of the noise exceeded for 90% of the measurement time (L_{90}) using a second CEL 393 precision sound level meter, calibrated with the meter inside the hall.

As well as with the 'A' weighting the L_{90} was measured using the linear network and at 63Hz and 125Hz octave band centre frequencies. These measurements were made to ensure that the usual annoyance of the low frequency 'thumping noise' [5] was not missed by the 'A' weighting frequency filter in the sound level meter.

The subjective assessments consisted of listening to the sound with the occupier of the house and analysing our reactions.

THE ASSESSMENT OF DISCOTHEQUE NOISE FOR A PLANNING APPLICATION

RESULTS

The results obtained are shown at table I.

	Level outside (L_{90}) dB			
Level inside the hall (L_{Aeq}) dB	'A' weighting	Linear	63Hz	125Hz
1st Position Background	40	59	47	47
105	44	60	52	50
100	43	60	51	48
95	41	59	47	46
2nd Position Background	40	61	46	49
105	45	62	47	51
100	44	62	47	50
95	41	61	46	48

Table I. A summary of the results.

We, noted that, in this case the usual low frequency 'thumping' noise was not a major problem at the nearest residence. This was probably due to the court yard and existing office as shown in figure 1.

The linear L_{90} measurement was affected by wind noise (even with the use of a windshield) and hence no great significance was placed on this.

CHOICE OF DESCRIPTOR

Slow time-weighting sound pressure level was not used due to the large fluctuations. The equivalent contunuous level (Leq) was subject to unrelated transient noises such as aircraft and motor vehicles. Therefore, the most useful descriptor was found to be the L_{90}.

Previous studies have shown [6] that the L_{90} is a suitable descriptor for the measurement of repetitive impulsive noise, typically associated with discotheque music.

PLANNING CONSIDERATIONS

The Town and Country Planning Act 1971 [7] is the principal piece of legislation dealing with planning control.

For our purposes the relevant sections are:-

THE ASSESSMENT OF DISCOTHEQUE NOISE FOR A PLANNING APPLICATION

Section 23(1) This provides that planning permission is required for the carrying out of any development of land.

Section 22(1) This defines 'development of land' as "the carrying out of building, engineering mining or other operations, in, on, over or under land or the making of any material change in the use of any buildings or other land."

In our case a material change of use was proposed and therefore planning permission was required.

Section 29(1) Provides that a Local Planning Authority may impose conditions when granting permission.

Section 87 Provides that an Authority may serve an enforcement notice on the owner or occupier of land requiring steps to be taken to remedy breaches of a condition attached to a planning permission.

Circular 10/73 deals with the application of the legislation in the case of noise although not specifically with entertainment noise and Circular 1/85 deals with the use of conditions in respect of planning approval generally.

Thus Authorities are guided to 'as far as possible operate their development control powers in such a way as to avoid increases in ambient noise levels affecting residential and other noise sensitive development' ..... When a Planning Authority are disposed to give permission for a noisy development they will need to ensure:

(a) that the permission does not allow other noisier processes than those immediately proposed by the developer and assumed in the noise predictions if this would mean either an undesirable increase in the ambient noise level or excessive noise from the development itself;

(b) that the development, as built incoporates all the physical features of the submitted plans (e.g. type of construction, special sound-insulation features etc.) without which the level of noise emission from it would be higher, than the predictions on which the authority's decision has been based.

If planning permsion is granted and a conditions is to be attached then there are 6 tests which must be satisfied. They are that the condition is:-

(a) necessary;
(b) relevant to planning;
(c) relevant to the development to be permited;
(d) enforceable;
(e) precise and
(f) reasonable in all other respects.

THE ASSESSMENT OF DISCOTHEQUE NOISE FOR A PLANNING APPLICATION

CONCLUSION AND DISCUSSION

It was clear that a potential nuisance existed from the planning change of use. However, the relatively low levels of sound measured at the houses in relation to the sound generated in the room indicated that planning conditions rather than refusal were appropriate.

The need was to ensure that the applicant could play music at a level reasonably consistant with his patrons or hirers expectations but without disturbing the nearby residents in the enjoyment of their homes.

From the subjective assessment we concluded that if the noise in the hall was reduced to give a level at the noise sensitive area of not higher than ambient then the sound was just audible but acceptable.

We also judged that anything detectably above ambient felt intrusive.

The applicant therefore was advised at this stage to employ his own noise consultant with a view to the preparation of a scheme for sound insulation or other steps which would enable the requirements of suitable planning conditions to be met.

In respect of noise from music there was a need for two conditions, one setting the maximum noise level emitted from the building and one dealing with the physical modification of the building.

The model conditions in the circulars give guidance but the following two conditions seemed to be appropriate is this case.

(1) Amplified music or other entertainment noise from within the premises shall not increase the background level of 40dB 'A' weighted, 46dB at $63H_3$ and 47dB at $125H_3$ centre band frequencies by more than 1dB measured at any position external to any occupied premises.

(2) Before the premises are brought into use as a function room the scheme to be adopted for sound proofing or to otherwise ensure that the condition (1) will be met shall be submitted to and approved in writing by the local planning authority.

We felt and the Planning Officer was happy to accept, that these two conditions applied to an approval of the application would ensure that nuisance would not be created and that there would be no significant loss to the amenity of the area by noise.

THE ASSESSMENT OF DISCOTHEQUE NOISE FOR A PLANNING APPLICATION

REFERENCES

[1] Department of the Environment Circular 10/73, 1973.

[2] Department of the Environment Circular 1/85, 1985.

[3] An objective method of assessing noise annoyance from discotheques - Scannell, Proc. IOA Vol.8 part 4. September 1986.

[4] The silent Disco'. Sound Research Laboratories NEWSRL 17 volume 1. November 1986.

[5] Discotheque noise - Dr. H.G. Leventhall, Noise Control and Vibration Reduction. May 1974.

[6] Descriptors for the measurement of repetitive impulsive noise - Scannell, Unpublished dissertation 1988.

[7] Town and Country Planning Act, 1971.