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CONTROL OF MUSIC SOUND LEVELS FROM PUBLIC HOUSES

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1 INTRODUCTION

In recent years there has been an increase in the number of public houses providing music entertainment and the trend is increasing, with major breweries introducing refurbishment and new property acquisition programmes to cater for this sector of the leisure market. The emphasis in many of these venues is to provide music played at a high level of amplification and generally to aim for higher occupancy levels than would be expected in a normal public house.

This growth of venues providing high levels of amplified music, some of which are located in or near areas which include residential accommodation, has led to increasing concern by Local Authorities and the general public to the potentially adverse impact the noise generated by such premises can have on the environment.

This paper examines the noise implications of such premises and the criteria appropriate to control noise levels from the viewpoint of the Consultant and is based on a series of recent projects undertaken in this field.

2 NOISE SOURCES

The noise sources which need to be considered in the context of pubs and clubs comprises not just the music itself, but also noise from the patrons, which can include:

- singing with the music
- foot stamping in time to the music
- singing in the street after leaving the premises
- vehicle noise associated with patrons.

Other noise implications, which are primarily associated with the change of use of premises can include deliveries and the disposal of refuse and plant noise from any mechanical services. Where the premises are adjoining other premises, or have independent occupancy on other floors, it is necessary to consider structureborne noise as well as the airborne transmission of sound.

It is, therefore, essential to consider a variety of sources and transmission paths, both within and external to the premises in order to develop a strategy which is both practicable and cost-effective.

The first step in this process is to determine suitable criteria, from which the appropriate level of mitigation can then be derived.

3 CRITERIA

At present there are no established criteria for entertainment noise in pubs and clubs in England and Wales, although a draft Code of Practice is currently being developed. In Scotland, however, the licensing laws are used to control noise levels from music (but not other sources) such that it is "inaudible" within the nearest residential premises. The interpretation of inaudible varies from Authority to Authority - in some cases the windows to the dwelling are assumed to be closed, whilst in other areas the requirement is for inaudibility with windows open for ventilation, which has a significant effect on the noise control strategy.

Whilst BS 4142: 1990 can be used to establish limits for building services noise, it is not directly applicable to entertainment noise and the noise associated with customers and traffic generated by the premises, although the basic principle of relating intrusive noise to the background noise level can be considered appropriate.

The Environmental Protection Act, 1990 can be invoked, but this does not, in itself, provide guidance on suitable criteria against which the likelihood of causing a Statutory Nuisance can be determined. The noise control strategy needs to ensure that a complaint of nuisance resulting from the venue is most unlikely to occur, rather than introducing retrospective mitigation following a complaint of disturbance.

The advantage of not having established criteria is that it does enable a flexible approach appropriate to the location of the venue, to be adopted. The disadvantage is that it can cause uncertainty in determining suitable limits and an inconsistency in approach by the licensees, the Local Authority Planning/Environmental Health Departments and the licensing authorities.

4 CASE STUDIES

The current series of studies of venues to be used for public houses featuring high levels of amplified music has included a wide variety of premises. Many of these have been in town or city centre locations with only retail and/or commercial premises nearby. In such cases limited noise control only is generally necessary and would be based on the Local Authority's policy on noise in the street. In some cases inaudibility at a given distance is required, while other Authorities simply require sound insulation proposals to be submitted to and agreed by the Planning Authority prior to commencement of the development, or do not impose noise conditions at all.

In one area, the Local Planning Authority has determined for one proposal that noise in the street is not a planning issue and is relying on implementation of the EPA if necessary to control noise, whilst at another location in its jurisdiction a stringent interpretation of its Unitary Development Plan (UDP) has been imposed such that the ambient noise levels in the street should not increase as a result of the proposed development and stated that the planning criterion should be more stringent than an Environmental Health Officer's criterion for nuisance - clearly an inconsistent approach.

Where there are nearby, rather than adjoining, residential properties, the general approach has been to provide lobbied or indirect doors and high performance acoustic glazing elements to control break-out through the potentially weakest building elements. Roofing is also often acoustically weak in single storey premises and in many cases additional roofing elements have been specified to provide an appropriate level of sound insulation. In some cases this can be an additional plasterboard lining or suspended ceiling, while in others, where noise sensitive properties are closer, woodwool cement slabs, which combine effective sound insulation with relatively low mass, may be used in addition to external lightweight cladding.

In a few cases, where the proposed venues have adjoining residential properties, a much more comprehensive noise control strategy has been developed to avoid the likelihood of disturbance to adjacent residential properties.

Two recent proposals for conversion of non-licensed premises to licensed use are described in more detail in the following paragraphs to illustrate the approach adopted, which can be summarised as:

• site appraisal	-	assess relationship of site to noise sensitive properties
	-	assess noise character of area
	-	measure ambient noise levels (L_{A90}, L_{A1}, L_{Aeq}, etc)
• set criteria	-	review Local Authority Planning and Environmental Health Department guidance
	-	set design criteria for building envelope sound insulation and plant noise
• develop noise control strategy	-	sound insulation of building elements
	-	limitation of music levels
	-	plant noise control
	-	review of cost effectiveness and practicability
	-	liaison with Architect/Structural Engineer to incorporate noise control in the scheme and detail design
	-	site inspection during construction and commissioning.

4.1 Case Study 1

A single storey warehouse, with basement, situated close to a city centre and overlooked by flats, was to be converted to a bar. The building comprised a conventional single 9-inch brick structure, with a lightweight asbestos roof and single glazed windows. Although the roof was to be replaced, the supporting structure was to be retained, limiting the mass of any replacement roofing system.

A noise survey was undertaken during the late evening to determine the ambient noise levels and character of the area during the most sensitive period of operation. Continuous noise levels were dominated by plant at nearby restaurants and distant traffic, whilst the front and side facades were also subject to intermittent traffic noise from passing cars. Background noise levels were found to be in the range 46dB - 49dB L_{A90} during the survey.

The Local Authority had agreed in principle to the planning application for change of use and had not imposed any specific planning conditions relating to noise. The Environmental Health Department did, however, have a policy that any new source of noise should not result in a change in the background noise level, to avoid an imperceptible but gradual deterioration in the environment. The Department was also aware of the limitations of the A-weighting scale when applied to music with a significant low frequency rhythmic content.

From this it was concluded that inaudibility at the nearest facade would not be necessary, but that, whilst a level of 5dB(A) below the background level would not be likely to lead to a significant increase in the ambient noise, it would be prudent to adopt a target limit of 10dB(A) below the existing background noise level to allow for character.

The strategy to achieve this took account of the internal layout of the space, which provided a buffer zone (the kitchen) to the facade overlooking the car park behind the flats. Where there was no buffer zone to critical facades, an internal masonry wall was constructed with a 100mm cavity and resilient wall ties. There were no windows overlooking the flats, but those in the front and remaining side facade incorporated thermal double glazing with an internal secondary glazing element. The main entrance doors and emergency exits were lobbied or via indirect routes from the bar.

The primary building element for break-out then became the roof. Weight restrictions prevented the use of mass to provide significant attenuation and the only solution capable of meeting the requirement was a complex lightweight metal cladding system comprising a liner tray, mineral fibre batts with a loose laid metal sheet over, second layer of metal decking, mineral fibre thermal insulation and an external polyester/glass fibre reinforced polymer external membrane.

Although of relatively low mass, this system provides a relatively high level of low frequency sound insulation. Additional attenuation was achieved by a suspended plasterboard ceiling, forming the services void.

Mechanical services plant were designed with supply/extract ducts terminating either to the car park behind the flats or to the front facade. External plant were selected to ensure that no significant increase in the background noise (dominated at the time by a kitchen extract system from a restaurant) was likely to occur and ducts fitted with attenuators to minimise break-out of music, as well as control of plant noise.

The venue has now been in operation for 7 months, with no complaints of disturbance.

4.2 Case Study 2

This building posed more of an acoustical challenge, comprising a redundant ground floor bank premises with residential accommodation on the first, second and third floors, above the bar and storage areas. The adjacent site was vacant and to be used for a single storey extension for the bar, kitchen and ancillary facilities. Although situated in a busy urban street (a main route from central London), with generally high ambient noise levels, concern was expressed by local residents and the Local Authority, primarily on grounds of noise. Whilst the most obvious effect would be the airborne and structureborne transmission of amplified music from the bar to the residential properties above, other sources, including noise from patrons leaving the premises at night (speech, car door slams, car engines, etc affecting residential areas), plant noise and delivery noise were also cited.

External and internal ambient noise levels were measured, to determine a baseline, and criteria for limiting music levels internally and in the street related to this. The Local Authority UDP specified that any new development should not result in an increase in environmental noise levels and this would normally require new noise sources to be at least 10dB(A) below the existing ambient noise levels. The design target for the residential accommodation above the bar was set at 10dB(A) below the existing background noise in the flats and was to be achieved by a combination of sound insulation and control of the music level in the bar.

The existing separation between the flat and ground floor space was a 300mm slab of reinforced concrete. Whilst this would be adequate for normal domestic sound levels, it was clear that it would not provide adequate insulation for the foreground music proposed. It was decided to limit airborne and flanking transmission by providing a box-in-box construction comprising additional internal blockwork walls supporting an independent woodwool cement slab ceiling with a second suspended plasterboard ceiling below this. Flanking transmission was to be limited by ensuring that resilient ties only would be used between the existing structure and new internal walls, structural columns would be clad with blockwork over a 50mm void and the floor screed separated from the ground slab with a resilient layer. It is estimated that, with the sound insulation installed, a level of 90dB L_{Aeq} in the bar would result in less than 23dB L_{Aeq} in the first floor accommodation. This can be compared with existing background noise levels in the residential accommodation of between 26dB L_{A90} and 34dB L_{A90}. Whilst this may not be 10dB(A) below the existing background noise at all times, the music level could then be controlled to avoid disturbance, as necessary.

External noise levels would be controlled by the use of lobbied doors and windows comprising thermal double glazing with additional secondary glazing elements, while the roof to the single story extension would be a double skin of woodwool cement slabs below a troughed woodwool cement slab external cladding

Deliveries to the premises would need to be limited to normal daytime working hours to avoid disturbance. It was also considered appropriate to provide a floating cellar floor and resilient wall buffers to limit structureborne noise from the handling of kegs.

This development represents an extreme case and the proposed sound insulation specification has added significantly to the cost of the proposed conversion. Planning permission for change of use from A2 to A3 has been refused, partly on grounds of adverse noise effects and the development is currently the subject of an Appeal. This type of site is extremely difficult to deal with acoustically and such a development, with independent residential accommodation in the same building, would not normally be recommended.

5 CONCLUSIONS

The noise implications of public houses where high levels of amplified music is played are clearly significant, particularly in residential areas. Whilst suitable acoustic criteria can be developed and noise control strategies incorporated in the design, this can have substantial cost and planning implications and the principal noise control strategy should be selection of appropriate sites to minimise the likelihood of disturbance to noise sensitive properties in the first instance.