

# 30-PLUS YEARS OF COMMUNITY NOISE STANDARDS AND REGULATIONS IN AUSTRALIA

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This is basically a personal reminiscence, chiefly recalling the early development of community noise standards and regulations in Australia, and particularly in New South Wales.

One of the world's first major studies of community noise resulted in the publication of the "Wilson Report" in England in 1963. It was a grid-based study of the noise environment in central London and it found that at 80% of the locations, road traffic was the predominant noise source.

I quoted this report in a paper presented to the Third Australian Building Research Congress in 1967, and suggested that the noise emitted by individual vehicles should be controlled by the State registration authorities; aircraft noise should be the responsibility of the Federal government; other external noise should be dealt with by town-planning land-use zoning and that control of noise within buildings should be by means of a National Code of Practice. To some extent this is the way in which community noise controls have developed.

Standards Association of Australia formed an Acoustics Standards Committee in 1968. It had the task of overseeing the constitution and programmes of the various acoustic standards technical committees. I thought that it served a very useful purpose, but it has been disbanded and now the technical committees report to the Environment, Materials and Consumer Standards Board, which has oversight of all standards except those dealing with electrical and building matters. My concern is not just the lack of specific acoustic expertise of most of the members of this board, which may need to adjudicate on technical matters, but that there may be some areas of acoustical standardisation which are not being addressed.

At its 1968 meeting reports were presented by Committee AK/1 *Terms, Units and Symbols* which had a draft standard nearly ready for public review; AK/2 *Instrumentation and Techniques for Measurement* was at a preliminary stage and Committee AK/3 *Bioacoustics and Psychoacoustics* was divided into two subcommittees, AK/3.1 *Hearing Conservation* and AK/3.2 *Community Noise*.

I was asked to chair AK/3.2 and the first meeting was held in May 1969 at the University of New South Wales. The Secretary (as they were then called) was R.D. Mearns, who proved to be an excellent "networker". Work commenced on the drafting of a standard on "Noise Assessment with respect to Annoyance in Residential Areas". By the third meeting in March 1970 AK/5 became a fully fledged technical committee. At this meeting it considered a draft standard

prepared by a working group on the measurement of noise from motor vehicles. This included a simplified roadside stationary test and more comprehensive moving vehicle tests.

In 1973 the first edition of AS1055 *Noise Assessment in Residential Areas* was published. The method of assessment was to compare the (adjusted) measured noise level with the "acceptable" noise level of 40 dB(A), adjusted for time of day and type of district. If the ambient (background) noise level was lower than the calculated acceptable level, the ambient noise level became the criterion. The measurements were made with a sound level meter set on Fast response and A-weighting. The expected public reaction to an exceedance of 0.5 dB(A) was "marginal".

Although it is now easy to criticise the somewhat simplistic approach of early drafts and standards, it should be remembered that in 1967 the International and British standards for sound level meters had only recently been published. Acousticians in Australia were gradually becoming organised and NSW and Victoria had formed unincorporated divisions of the Australian Acoustical Society by 1964; it was not until 1971 that incorporation of the AAS was achieved.

In 1971 the NSW State Pollution Control Commission (SPCC) was established and the State government formed a Noise Advisory Committee (of which I was a member) to assist the Commission in drafting the Noise Control Act. The Act was promulgated in 1975.

AS 1055 was revised and published in 1978. It was a little more sophisticated, but still relied on sound level meter measurements. It also provided a table of "calculated background sound levels for different areas containing residences" to be used in cases where the existing background sound levels were inappropriate as criteria.

In the meantime, the International Standards Organisation was drafting ISO 1996 *Acoustics—Description, Assessment and Measurement of Environmental Noise*. I was a member of the drafting committee and AK/5 decided to use the ISO drafts for its next revision of AS 1055. The document was divided into three parts—*General, Application to Specific Situations, and Data Pertinent to Land Use*. The 1984 revision of AS 1055 maintained the same basic assessment methods, but tightened up some previous "loose ends". However, by this time the various State environmental control departments had been formed, each with their own legislation and methods of noise assessment.

The State departments joined to form the Australian Environment Council and in 1983 the Council was concerned that the proposed 1984 version of AS 1055 was too "academic" and that it would not be adopted unless it was revised to serve "practical uses". If this revision did not occur they would draft their own document.

This opinion added to the already somewhat strained relations between Standards and State government bureaucrats because some of them objected to the table of "Acceptable sound levels". They said that Standards should not be including such material as it was the prerogative of governments to set levels. This was an unfortunate outcome, in my view, as not only does the adoption of an Australian Standard ensure uniformity across the country, but the technical committee members (usually) consist of the country's best experts in a given area. The NSW Noise Advisory Committee was itself disbanded in 1986, thus ending what many thought had been a fruitful contribution by outside experts to a government department.

AS 1055 was revised and published again in 1989 (this version included the use of the equivalent continuous A-weighted sound level and more sophisticated instrumentation, including data loggers. The latest version, published in 1997 tries to placate the regulators. It states "The object of this revision is to reflect the rapid technological advances in acoustical measurement techniques...This Standard is not a regulatory document and users should ascertain, from the relevant regulatory authority, details of specific requirements laid down in each State or Territory... This Standard aims at providing authorities with materials for the description of noise in community environments. Based on the principles described in this Standard, acceptable limits of noise can be specified and compliance with these limits can be controlled."

As mentioned earlier, road traffic noise was first highlighted as a problem by the 1963 Wilson Report and the Greater London Council developed a programme for improving the sound insulation of local government flats. (This programme had originally been designed to reduce the effect of aircraft noise, but it was found that the residents were usually more concerned about road traffic.) In 1977 I spent part of a university sabbatical in the GLC's noise section, which I found very useful. (A second part of that sabbatical I spent with the US EPA in Washington, DC and I was most disappointed to find that most of the people in the office of noise control were solicitors. One or two in the office had some acoustical training, but most of the technical work was done, at great expense, by outside consultants.)

Road traffic was also recognised in Australia as an important source of community noise. In 1979 the NSW SPCC formed a traffic noise subcommittee to advise the Noise Advisory Committee on the preparation of strategies for reducing the impact of traffic noise and the formulation of guidelines and regulatory controls under various acts. By 1984 AS 2702 *Methods for the Measurement of Road Traffic Noise* had been published and three years later AS 3671 *Road Traffic Noise Intrusion—Building Siting and Construction* was available. This was a unique Australian standard, giving guidance as to sites where traffic noise was likely to be

unacceptable to the occupants of various types of building. It then provided a method for selecting suitable building construction, so that at least inside the levels should not be considered excessive.

As far as controlling the noise emitted by individual vehicles is concerned, the responsibility for new vehicles lies with the Commonwealth government. Its Advisory Committee on Safety in Vehicle Design was augmented with a few acousticians (myself included) and a new Australian Design Rule dealing with vehicle noise levels was published. It has gradually reduced permissible noise levels, but it did not require too much effort on the part of manufacturers for compliance. Meanwhile the NSW SPCC had promulgated maximum noise levels for in-service vehicles and had completed a dedicated motor vehicle noise testing facility. Officers also had the power to undertake roadside testing, but from my experience they do not have nearly enough resources to "catch" the worst offenders.

Aircraft noise assumed great prominence with the introduction of jet aircraft (particularly the earliest, straight-through jets). It was recognised that a small market such as Australia's could not hope to have much influence internationally, but at least the Federal government became involved with ICAO (the International Civil Aviation Organisation). Standards Australia's Committee AK/6 *Aircraft Noise* had a watching brief on developments, but it realised that it could not really do anything about individual aircraft noise levels. Instead, a subcommittee of AK/4 *Architectural Acoustics* published AS 2021 *Acoustics—Aircraft Noise Intrusion, Building Siting and Construction*. (This predated the similar standard dealing with road traffic noise.) This standard, which has been revised several times, uses the Australian Noise Exposure Forecast (ANEF) system to assess whether or not a site (or building) is subjected to a sufficient number of noisy aircraft to need special construction so that interior acceptable sound levels can be achieved. If the site is within ANEF 25 then its location with respect to the airport's runways is determined and the actual maximum expected flyover noise levels from specific aircraft are found from tables derived from the Sydney Airport noise monitoring system. Recommended interior levels for different types of occupancy are also given, as is a method for selecting suitable building construction.

At present, with the political comings and goings around Sydney Airport, either trying to concentrate or to "share" aircraft noise, ANEF information is unreliable to say the least. However, there is a programme to provide improved insulation to the worst affected buildings.

In conclusion, community noise standards and legislation have progressed considerably over the last 30 years. We have better instrumentation and more professionally trained acousticians. Australian Standards have been updated and cover many areas of community noise; there is noise control legislation in all of the States. However, there are so many political and economic aspects that affect planning and enforcement, that it would be difficult to conclude that Australia is a quieter place, in spite of all our efforts!