



Acoustics 2019

Sound Decisions: Moving forward with Acoustics

Noise in Planning and Environmental Impact Assessment in Australia

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ABSTRACT

Planning and environmental impact assessment is essentially the consideration of change; whether directed and facilitated, in planning, or received as in the case of impact assessment of proposals and strategies. Change nearly always involves the consideration of those who are there, and those who may come. The generation of sound and the regulation of noise in policy and legislation is in theory a relatively simple undertaking. Standards or other criteria are set to protect human health from noise; measurements are made of the existing environment and predictions of the change in environment made; and assessed against the agreed standards to determine if there will be unacceptable noise. Predicted exceedances of standards can be mitigated or projects redesigned to meet the relevant standard. Why then is noise, whatever the source, whether windfarms, traffic, industrial, music or any other, often a hotly contested issue in planning and project impact assessment? This paper explores the broader socio-economic and socio-political environment around the social license to emit sound and generate noise. Using examples of projects primarily from Victoria it explores our current approach to noise in planning and impact assessment and discusses key challenges to evidence-based decision making.

1 INTRODUCTION

The measurement, prediction and assessment of noise is a highly specialised, well developed technical area of study. Through international organisations such as the World Health Organisation, standards and criteria have been established to protect human health by ensuring appropriate thresholds are established, particularly for preventing sleep disturbance.

The consideration of proposals through planning and environmental assessment triggers noise as a relevant factor to be assessed and if necessary mitigated. This is true for any noise generating proposal whether it be industrial, transport, recreational, energy generation, mining or indeed residential development.

As for noise measurement and predictions, the consideration of noise in planning and assessment has developed over a long period of time to become a specialised area in its own right. The broader question is whether such assessment is meeting both concerns around health and social impact and community expectations.

2 PLANNING PANELS VICTORIA

Planning Panels Victoria (PPV) is a business unit of the Department of Environment, Land, Water and Planning. PPV administers the pool of full time and sessional members who are appointed by the Victorian Minister for Planning to consider a range of matters.

Appointments are made under the *Planning and Environment Act 1987* for Panels to consider planning scheme amendments and as Advisory Committees to the Minister. Members on the PPV full time and sessional list are also appointed under the *Environment Effects Act 1978* to conduct public inquiries into environment effects of projects via an Environmental Effects Statement (EES). Lastly members are appointed to inquiries under the *Major Transport Projects Facilitation Act 2009*; of which only one has been held, being the East-West Link (Eastern Section) project in 2014.

There are seven full time members and up to 70 sessional members in the pool. Panels are appointed on the basis that they are subject matter experts and the pool contains members with expertise in planning, economics,

law, heritage, architecture and urban design, civil engineering, traffic engineering, hydrology, geotechnical engineering, soil contamination, ecology, air quality, geomorphology and of course acoustics.

Panels are appointed by the Minister for Planning, but are independent in the sense that they independently review submissions and objections to a project in the light of policy and legislation. They conduct public hearings, which are often contested and often involve the presentation of a range of technical expert evidence, including acoustics evidence.

Panels provide recommendations to the Minister for Planning (or planning authority in the case of planning scheme amendments). They do not make decisions like a court or tribunal such as the Victorian Civil and Administrative Tribunal (VCAT) in Victoria or the New South Wales Land and Environment Court (NSWLEC).

Panels and Inquiries are reviewable to VCAT on procedural grounds; they must accord procedural fairness and natural justice to participants.

Almost all Panels and Inquiries involve a public hearing. For large environment effects hearings these can run for many weeks. For example the recently completed North East Link hearings ran for approximately seven weeks.

Projects considered by Panels and EES Inquiries in recent times with an acoustic element include:

- In excess of 30 major wind farm assessments over the past 15 years; the last one in September 2018
- Major road and rail projects in metropolitan and regional Melbourne including the East-West Link (Eastern Section), West Gate Tunnel, Melbourne Metro Rail Tunnel and North East Link
- Significant urban development (greenfield, brownfield and greyfield) where noise from roads, rail, industry and other sources may be an issue
- Significant industrial developments
- Quarries and mining projects
- Other projects such as large scale landfill expansion.

3 THE PLANNING BASIS FOR DECISION (RECOMMENDATION) MAKING

In the planning and environment assessment process in Victoria, noise is one of the key issues where the land use planning framework and the regulatory environment managed primarily by the Environment Protection Authority (EPA Victoria) interact. Land use planning is controlled by planning schemes that cover all of Victoria and have a standard set of policies at State level (in the Victoria Planning Provisions, or VPP) with some capacity for regional and local variation. Noise is regulated by the EPA primarily under the *Environment Protection Act 1970*, and statutory and non-satutory guidance issued by the EPA.

3.1 Relevant planning provisions (Victoria)

Relevant policies addressing noise include:

- Clause 13.05-1S Noise Abatement which contains:
 - An objective to protect sensitive land use.
 - A strategy to ensure development is not prejudiced and amenity is protected using various techniques.
 - Reference to policy/regulatory documents including State Environment Protection Policy (SEPP) N-1 (Control of Noise from Commerce, Industry and Trade), SEPP N-2 (Control of Music Noise from Public Premises), EPA Guidelines for Control of Industrial Noise in Country Victoria, and a VicRoads Guide to the Reduction of Traffic Noise.
- Other relevant State policies reference noise for Resource extraction (14.03-1.S), Ports (18.03-1S), Airports (18.04-1S and R), Open Space (19.02-6S)
- Many of the statutory zone controls require noise assessment as part of a development application, to protect amenity. For example the General Residential Zone requires applications to consider amenity impact on neighbouring land (including noise) at Clause 32.08-11. Other zones including Industrial zones have their own considerations for noise.
- Planning scheme overlays are more targeted, and include specific noise considerations for example, Clause 45.02 (Airport Environs Overlay)

- Many particular provisions for specific uses or issues also address noise, for example Clause 52.06 (Car parking), Clause 52.09 (Stone extraction) and Clause 52.32 (Wind energy facilities), the latter calling up New Zealand Standard NZS 6808:2010 Acoustics – Wind Farm Noise.

This is a small sample of the policies and statutory controls that affect how noise is addressed in planning in Victoria; other jurisdictions have a similar suite of controls.

Critically, planning decisions have to be balanced in the interests of net community benefit and sustainable development (Clause 71.02-3 in the VPP). The consideration of noise by decision makers must always be placed in the context of a suite of land use concerns and economic, social and environmental imperatives.

3.2 Regulatory environment (Victoria)

The *Environment Protection Act 1970* has gone through a once in a generation review with the new Act (*Environment Protection Act 2017*) to come into force in 2020 establishing a 'general environmental duty' (EPA, 2019); a duty placed on those undertaking an activity to reduce risk to human health and the environment 'so far as reasonably practicable'.

Under the existing regime, apart from extensive pollution control provisions, there are numerous instruments dealing with noise that are used in planning and environmental assessment including:

- Legislative provisions such as for Works Approvals and Licensing.
- Subsidiary legislation (see the State Environment Protection Policies above for example).
- Best Practice Guidelines (eg Best Practice Environmental Management Guidelines for Siting, Design, Operation and Rehabilitation of Landfills).

3.3 Other policies

Outside the established planning and regulatory framework, other policies exist such as the *VicRoads Traffic Noise Reduction Policy (2005)*, which has no statutory status but is used by convention as a guide to managing noise when planning major roads. For new passenger rail services or development encroaching on passenger rail, the Department of Transport *Passenger Rail Infrastructure Noise Policy (2013)* exists to provide investigation thresholds for noise.

4 NOISE IN THE PLANNING PROCESS

The previous section establishes that there is a comprehensive, generally sound framework for addressing noise in planning and environmental assessment in Victoria. A similar framework exists in other Australian jurisdictions. Why then can noise be so contentious in contested planning proposals and assessments?

4.1 The Right Criteria

Noise criteria exist for most if not all planning proposals. They can include set limits, and/or trigger values above which further investigation or mitigation may be required. Depending on the circumstances criteria might be for certain periods of the day or night, and specify the measurement and assessment methodology in terms of the applicable noise metric, eg L_{eq} , L_{A90} etc.

Which criteria or guideline to use is sometimes contentious in planning proposals. For example participants in major road assessments in Victoria (submitters and sometimes experts) often submit that the Vicroads Noise Policy is outdated and inadequate relative to other jurisdictions; and request, for example, the New South Wales Road Noise Policy be applied.

It is worth noting that recent Inquiries have supported reviewing the VicRoads noise policy, and this has been reflected in the Minister for Planning's assessment of both the West Gate Tunnel Project (DELWP, 2017) and Mordialloc Bypass (DELWP, 2019a), where the assessment stated:

Lack of a contemporary traffic noise policy in Victoria hinders the assessment of major road construction projects. I have concluded that completing the review of the existing TNRP should be a priority.

Legally it is clear that the VicRoads policy is established practice in Victoria, even without any statutory basis. However it does not stop the issue being raised again and again in Hearings.

Other criteria from other jurisdictions applied here are also often questioned; the use of the New Zealand Windfarm Noise standard being an example. Even though this is embedded in the Victorian system in a statutory sense, its application has been controversial at times. For example, parties in wind farm hearings sometimes argue that the South Australian wind farm noise standard is more appropriate to the Victorian context than the New Zealand Standard.

4.2 Noise modelling and prediction

Noise is an incredibly complex area, and one of the main challenges is often for the community and objectors to understand how the noise is measured, predicted, assessed and mitigated/monitored. In the absence of this understanding, community members often mistrust the expert material put forward, particularly if it is prepared for a Proponent for an unpopular project.

The methodology for noise modelling and prediction is well established. Disputes around noise are often related to whether assessments of background noise levels were sufficient or conducted under the right conditions, modelling inputs and assumptions, data extent or quality, choice of receptors, weather inputs, equipment sound power output, absorption factors, barrier modelling, topography and the like.

Differences in modelling software choice may also lead to marginally different results.

Pre – hearing expert meetings (also known as “Conclaves”) often narrow the differences between experts, and the Panel or Court can be comforted that the issues in dispute are around the margins and the particular project can proceed (or not as the case may be) with suitable mitigation and monitoring.

4.3 Mitigation

Noise measurements and modelling often result in noise mitigation being required to meet the acceptable criteria. This might be at-source via equipment choice, baffling of machinery, or remote broader physical barriers such as sound sheds or noise walls.

Less commonly, at-dwelling or sensitive receptor mitigation might be warranted although this often has other impacts on amenity, such as the need to keep windows permanently closed.

It is rare in decision making for noise impacts alone to result in planning permission being refused. Even if noise limits are mandatory, there is generally a way of mitigating the noise to achieve the criteria. If noise is such an issue that it might warrant refusal then this is likely to be picked up in the project planning and design phase before an application is even made.

4.4 Monitoring

Project implementation may include noise monitoring to ensure that predictions are as expected, and mitigation measures are operating effectively. Given the highly technical nature of such monitoring, it is important to ensure results are clearly communicated to third parties who may be affected by noise emissions.

Where remedial action is required, it should be clearly demonstrated to have been undertaken, and further monitoring undertaken to confirm compliance.

5 CHALLENGES AND PRESSURE POINTS

The consideration of noise in planning and environmental assessment is often straightforward. Standards are known, assessments undertaken, mitigation proposed and implemented where necessary through design or via development approval conditions; followed by monitoring to ensure compliance. In practice, however, there are a number of challenges and pressure points.

5.1 Wind Farm Noise Issues

Many major wind farm proposals have been considered by Councils, Panels and VCAT in Victoria over the past 15 years. Any of the recent Panel reports provide a good overview of the assessment of proposals. For example the Dundonnell Wind Farm (AustLII, *Dundonnell Wind Farm (EES)* [2016] PPV 4 (11 January 2016)) provides a clear outline of the process and results for wind farm noise consideration. There are more recent reports such as for the Golden Plains Wind Farm but as the project approval is subject to litigation in the Victorian Supreme Court at the time of writing it won't be mentioned further.

More recently, VCAT refused a planning permit for a wind farm (AustLII, *Naroghid Wind Farm Pty Ltd v Minister for Planning* [2019] VCAT 800). The permit was primarily not refused on noise grounds but discussed a number of interesting noise issues relating to:

- The 'High Amenity' consideration in the NZ standard and how it might apply (considering the leading *Cherry Tree* VCAT case and issues raised in the Golden Plains Panel Report).
- Whether the wind farm would force light aircraft using the Cobden Airfield to use a circuit over the town, increasing the aircraft noise impact.

The methodology, as put forward in the NZ Standard for wind farm acoustics, is well established. But this does not stop wind farm noise continuing to be raised as a significant issues by submitters for:

- Alleged health effects suggested to occur due to infrasound/low frequency noise, amplitude modulation and other issues.
- Disagreement with the methodology and criteria in the NZ standard.
- Arguments around whether the more stringent 'High Amenity' noise limits apply.
- Suggested problems with monitoring and compliance/enforcement.
- Inadequate consideration of low background noise levels in quiet rural environments.

While the National Health and Medical Research Council's (NHMRC) position is that there is no consistent evidence of adverse human health effects from wind farms (NHMRC, 2015), there is continuing research into some of these issues (note the Flinders University Research Wind Farm Noise Study looking at sleep disturbance and low frequency noise for example). It should be noted that until such research flows into new standards or criteria (if necessary) then planning and environmental assessment processes are unlikely to lead and establish new standards in the absence of evidence or new government policy.

In Victoria, EPA Victoria has traditionally not had a significant role in wind farm noise, but this is changing with EPA now taking a greater interest in this area (EPA, 2018).

5.2 Cumulative noise impact

Cumulative impact of noise from different projects can be problematic in planning assessment. Experience with wind farm proposals (but the issue is not specific to wind farms) has thrown up challenges in the past. For example where a sensitive receptor (non stakeholder farmhouse) is located between two proposed facilities; how should the modelling and compliance monitoring be undertaken? In reality the noise impact, if any, will depend on wind direction at the time of any complaint, but predictive modelling and compliance enforcement can potentially be more complex.

Cumulative impact from industry also continues to be raised in planning decisions; particularly where ambient noise levels already exceed standards and a new industrial facility wishes to establish (see for example AustLII, *Norman v Environment Protection Authority* [2018] VCAT 1147).

A similar issue was addressed for a landfill in *Grosvenor Lodge Pty Ltd v Mornington Peninsula SC* [2018] VCAT 1475 (AustLII) (at paragraph 225). In this case the experts demonstrated that existing ambient noise levels at a sensitive receptor in the absence of landfill activity noise already exceeded the relevant criteria; but that the landfill noise would meet the required standard.

5.3 Social impacts of noise

Noise standards and criteria have traditionally been established to protect human health and amenity, although they can also be established for ecological reasons to protect wildlife. But generally human health is the driver and particularly sleep disturbance.

The broadening of noise considerations into the realm of social impact also continues to develop in planning and environmental assessment. There are a number of examples from the NSWLEC. For example, Preston J in *Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Limited* [2013] NSWLEC 48 (AustLII) stated, at paragraph 16:

...the noise impacts of the Project on the residents of Bulga will be intrusive and adversely affect the reasonable use, enjoyment and amenity of the residents of the village of Bulga and the surrounding countryside; the noise mitigation strategies are unlikely to reduce noise impacts to levels that would be acceptable; and that undertaking greater noise mitigation strategies may result in greater social impacts...

Preston J continued in a similar theme in his decision in *Gloucester Resources Limited v Minister for Planning* [2019] NSWLEC 7 (AustLII) at paragraph 263, where he concluded that whilst the modelling showed that the predicted noise emissions from the coal mine would meet the applicable criteria (and that a permit could therefore not be refused on the basis of noise emissions), noise contributed to the social impacts that were a reason for refusal.

The same principle applies in some circumstances to road projects, where substantial noise walls may be needed to mitigate noise to an acceptable level, thus creating secondary impacts from overshadowing or potentially poor urban design with sheer high walls on property boundaries.

At-property mitigation can have impacts such as the need to keep windows closed to meet standard; thus requiring artificial ventilation to be used frequently, with consequent social, amenity and lifestyle impacts.

5.4 Reverse amenity

Reverse amenity (where a noise emitter within standards is subject to sensitive use encroachment) is also considered in a limited number of VPP provisions, for example through Clause 53.06 which protects live music venues in some circumstances from encroaching residential development.

EPA Victoria's *Industrial Residual Air Emission* (EPA, 2013) guidelines also consider reverse amenity in terms of dust and odour and the 'agent of change' principle. Residential and sensitive use encroachment on, for example, industrial areas has long been a discussion point in planning, although there is limited clear policy guidance at the strategic level in relation to this issue in the Victorian land use planning framework.

At the permit application stage, the situation is clearer, with Section 60(1)(e) of the *Planning and Environment Act 1987* requiring responsible authorities to consider the impacts of use and development on the environment and impacts of the environment on use and development. However at the permit stage the larger strategic land use patterns have already been set; limiting capacity to effectively deal with emissions.

5.5 Case by case consideration

Planning approvals sometimes throw up specific issues. In *Ombersley Quarry Appeal (P2981/2015) Call-in (ACI)* [2017] PPV 13, the noise from quarrying was not the main noise consideration, but rather the presence of a single non-stakeholder farmhouse within metres of the edge of the main haul road. In that case the Panel concluded on the evidence that a combination of barriers and at-property mitigation could reduce noise to an acceptable level; but the impact on one property rightly occupied a significant amount of time in the Panel's consideration of the issues.

5.6 Conditions on planning approvals

Noise conditions on planning approvals are common. These may replicate or modify established standards or set operating hours for premises to moderate noise. For windfarms in Victoria an example set of permit conditions is provided in the *Policy and Planning Guidelines – Development of Wind Energy Facilities* (DELWP, 2019b) which requires a comprehensive pre- and post- construction noise assessment including sign-off by an EPA accredited auditor.

Problems generated by noise conditions are also common. The resources and skills to ensure effective compliance and enforcement of these types of conditions are limited.

This also shines a spotlight on the broader issue of community expectations. No standards or development approval require inaudibility for noise; however the expectation for neighbours hearing noise is often audibility = impact, and the noise is therefore unacceptable.

6 THE ROLE OF EVIDENCE IN PLANNING DECISIONS

The preparation of expert evidence and its presentation and defence in a hearing, whether in a court, tribunal or Panel is no doubt one of the more harrowing experiences in life for the uninitiated.

From a Panel's perspective a qualified, experienced, skilled, articulate expert witness in acoustics is an invaluable contributor and the weight of their evidence, after being challenged in cross examination, is usually considered highly by the decision maker.

The basics of giving evidence can be summarised as:

- If you are not an acknowledged expert in acoustics with the required skills and experience then just don't.
- Preparation, preparation, preparation. Be the person in the room who knows most about the particular issues before the Panel or Court and work with your instructors.
- If the background work done by others is not up to speed, eg poor modelling, then recommend they do more, well before the hearing.
- Remember your paramount duty is to the Panel or Court, not the client. If in response to cross examination you concede something that may be damaging to your client, so be it. Your honest, independent expert opinion must come forward.
- Stick to the evidence. Don't be drawn in to an ideological discussion about models or methodology.

7 CONCLUSIONS

The impact of noise can be significant from a public health and amenity perspective. Well established standards and criteria are applied through planning approvals and environmental assessment to minimise noise impacts to acceptable levels.

This requires a significant input from acoustics experts in what is a highly specialised and technical field. Ensuring that the best information is brought forward and explained to decision makers and the community is a responsibility that rests with practitioners.

Ensuring that community expectations for noise management are understood and addressed where possible is also critical.

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