



Environmental noise impact on persons with autistic disability and responsibility of Council under Public Health and Wellbeing Act 2008 (Victoria), Environment Protection Act 2017 (Victoria) and General Environmental Duty under the Act

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ABSTRACT

The assessment had been conducted at the residential property situated in rural living area of country Victoria in relation to a recreational use of cross motorbikes on a private land adjacent to the assessment site.

The aim of the assessment was to determine maximum L_{Amax} dB noise levels inside of the affected residential property with open window during motorbikes activities. I argue that *VIC EPA Publication 1826.4 Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premisses and entertainment venues* or *VIC EPA Publication 1973: Noise guideline assessing noise from residential equipment* cannot be used for determination of noise limits of the recreational activities on a private land but rather as an illustration of prescribed noise limits for Rural Living Zone of the *Part I – Rural area method* for determination of noise limits. The results were compared with the *AS2107:2016 Acoustic – Recommended design sound levels and reverberation times for building interiors* as the best guideline. Also, *VIC EPA Environment Protection Regulations 2017* and its *General Environmental Duty* which applies to all Victorians and all businesses located in Victoria. In addition, *Public Health and Wellbeing Act 2008, Victoria (2021)* had been used to assess the local government obligations as the regulator of the use of motorbikes for recreational purposes on private land in its municipality.

In the review of the local law most residents supported use of recreational motorbikes in rural living area. Following the review the local government issued general permits for use of motorbikes for recreational use not considering residents on individual circumstances. I consider that Council, as the local governing body, has responsibility to minimise as far as practically possible risk of harm to human health, including persons with disabilities diagnosed with autism, thus considering issuing permits on individual basis. My argument is that an autistic person affected by noise must be treated as any other person under Public Health and Wellbeing Act 2008 (Victoria 2021) to protect his/her/they/them wellbeing right given by the law. The local governing body must act upon and change its law accordingly to reflect individual circumstances.

1 INTRODUCTION

The aim of the assessment of motorbikes' noises was to determine maximum noise levels, L_{Amax} , dB inside of the living room of the nearest noise receiver when motorbikes are active rather than L_{Aeq} dB.

The *VIC EPA Publication 1826.4 – Noise limits and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* could not be used for determination of noise limits of the recreational activities on a private land, but rather as an illustration of prescribed noise limits for Rural Living Zone of the *Part I – Rural area method* for determination of noise limit.

Effective noise levels were assessed against the recommended design sound pressure levels as per *Australian Standard AS2107 2016 Acoustics – Recommended design sound levels and reverberation times for building interiors*, as well as *Environment Protection Regulations 2021* (Victoria) as well as the *Public Health and Wellbeing Act 2008, Victoria (2021)* as the best guideline in relation to noise and aggravated noise in this circumstance.

2 LOCAL LAW, VIC EPA PUBLICATIONS, REGULATIONS and POLICIES

The motorbikes and motorised recreational activity is not commercially driven but rather the activity is under local law.

The Local Law 1 – General Public Amenity 2021 – clause 13(2), Motorbikes and motorised recreational vehicles, states the following:

“13(2) A person must not, without a permit, use or allow the use of:

- a) A Motorised Recreational Vehicle on land within General Residential Zone;*
- b) More than two Motorised Recreational Vehicles for more than one hour per day on land located in Low Density Residential Zone or Township Zone;*
- c) More than two Motorised Recreational Vehicles for more two hours per day on land in Rural Zone;*
- d) More than four Motorised Recreational Vehicles for more two hours per day on land in Farming Zone.”*

The local law does not state what noise levels would be allowed during the motorbikes' activities beyond compliance with Australian Design Rules.

“13(3) Whether or not a permit is required under clause 13(2), to use Motorised Recreational Vehicle on land in the Shire:

- a) A Motorised Recreational Vehicle must be fitted with an effective muffler and spark arrestor in compliance with the appropriate Australian Design Rules; and*
- b) A Motorised Recreational Vehicle must only be used within the hours of 10.00am to 6.00pm on any day.”*

The Noise Protocol, VIC EPA Publication 1826.4 states in Table 1, Part I – Rural area method what is the zoning level for the receiving zone from the noise generating zone.

“The recommended zoning levels received at Rural Living Zone, which is the same zone as the generating one, are: Day – 45 dB(A), Evening – 38 dB(A), Night – 33 dB(A).”

The zoning level limits can become the noise limit in special circumstances.

There are no other noise sources in the area, and, therefore, the noise limits, if the assessment is for a commercial premise, will be the zoning levels.

This shows that the Regulator expects that the noise levels should be, at any time of the day, equal to an L_{Aeq} 45dB at the noise sensitive receiver in Rural Living Zone, measured outside of a premise.

Expectations of living in the Rural Living Zone are outlined in the *Victoria Planning Provisions 35.03*.

“To provide residential use in a rural environment”

And in the same provision, the permit is required for the following:

“Leisure and recreation (other than informal outdoor recreation and Motor racing track).”

The Australian Standard AS2107- 2016 Acoustics: Recommended design sound levels and reverberation times for building interiors is a suitable guide for the recommended noise level inside of a living room for a day period and bedroom for night time. The Standard prescribes designed limits for different areas of occupancy in a building. It recommends the criteria for conditions affecting the acoustic environment within building interiors to ensure a healthy, comfortable, and productive environment for the occupants and the users.

It also states that the levels are not necessarily appropriate in quiet environments or where expectations of quality are high such as rural living zone. For example, lower designed sound levels may be preferred for rural environment and low density residential zones. The standard recommends designed sound level, $L_{Aeq,t}$ 25 to 30 dB(A) for rural area bedrooms at night. Living and work areas are not specified for rural areas, but the following is for areas near minor roads are specified at 35 - 40dB(A).

A limitation of the Standard is that it is usually used for intrusive noise that is nominally continuous, such as traffic or HVAC noise. The Standard does not deal well with impulsive, aggravated, or short-term noise. However, it can be used as a guide of the measured noise level inside of a bedroom of motorbikes' activity compared with the Standard recommended noise levels.

Another useful document, to describe noise received from motorbike activities, is the Environment Protection Act 2017, clause 3(1) of the Act as unreasonable noise:

"Unreasonable noise means noise that (a) is unreasonable having regard to the following (i) its volume, intensity or duration; (ii) its character; (iii) the time, place, and other circumstances in which it is emitted; (iv) how often is emitted; (v) any prescribed factors; or (b) is prescribed to be unreasonable noise;"

In *Division 2 – Unreasonable and aggravated noise*, of the Act defines a habitable room:

"(2) a habitable room means a room other than a kitchen, storage area, bathroom, laundry, toilet or pantry."

In addition, the *General Environmental Duty* of the Act should apply to Council as the issuer of permits under the circumstances outlined in the Local Law, cited above.

From the Act:

"General environmental duty: (1) A person (*in these circumstances the Council representative, comment by the Author*) who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, or far as reasonably practicable."

and further in the Section 6 of the Act:

"(1) A duty imposed on a person under this Act to minimise, so far as reasonably practicable, risk of harm to human health and the environment requires the person – (a) to eliminate risks of harm to human health... (2) To determine what is (or was at a particular time) reasonably practicable in relation to minimisation of risks of harm to human health ... regard must be had to the following matters – (a) the likelihood of those risk eventuating; (b) the degree of harm that would result if those risks eventuated; (c) what the person concerned knows, or reasonably to know, about the harm or risks of harm and any ways of eliminating or reducing those risks; (d) the availability and suitability of ways to eliminate or reduce those risks."

Moreover, the noise of motorbikes becomes aggravated when the rider tries to overcome obstacles on the track. The Act outlines responsibility and defines what the aggravated is:"

"A person must not emit or permit to be emitted noise that is prescribed to be aggravated noise.

"For the purposes of the section 168 of the Act noise ...is prescribed to be aggravated noise if the noise – (b) results, or likely to result, in harm to human health..."

Council, as the permits' issuer which are based on its Local Law, has the responsibility to minimise risks of harm to human health thus considering individual circumstances.

Under the *Public Health and Wellbeing Act 2008 (Victoria)* action can be taken to reduce or abate the noise pollution. This Act makes it an offence to cause a nuisance from noise. To be a nuisance the noise must be dangerous to health or offensive or be liable to be dangerous to health or offensive. I am not aware that the Act makes any allowance for neuro diverse persons but is specific in sections quoted below.

"Part 6 – Regulatory provisions administered by Councils – (3) For the purpose of determining whether a nuisance arising from or constituted by any matter or thing referred to in subsection (2) is, or is liable to be, dangerous to health or offensive (a) regard must no be had to the number of persons affected or that may be

affected, and (b) regard may be had to the degree of offensiveness. (4) In this section offensive means noxious or injurious to personal comfort;”

Also, the *Public Health and Wellbeing Act 2008* emphasises Duty of Council:

“A Council has a duty to remedy as far as is reasonably possible all nuisances existing in its municipal district”

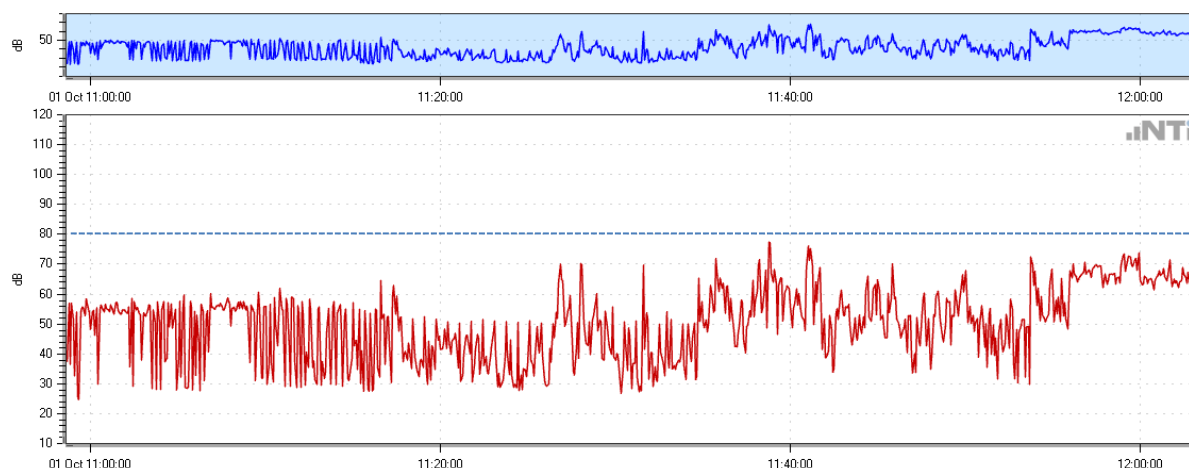
The following sections refer to the noise assessment, results, discussion and conclusions.

3 NOISE ASSESSMENT and RESULTS

The assessment was undertaken with a noise logger, Type 1, on Saturday, 1st October until Monday, 3rd October 2022. The logger was placed in a living bedroom at approximately 1.5 m from any wall to capture noises without a reflection from hard surfaces, facing an open window and the recreational cross motorbike track at neighbouring property some 30m from the measuring point. The room was not used while assessment was in progress. The weather was sunny with no rain for the duration of assessment.

The following diagram is a presentation of the sound level meter records. The sound level received inside of the bedroom is expressed in L_{Amax} , dB during motorbikes’ activity.

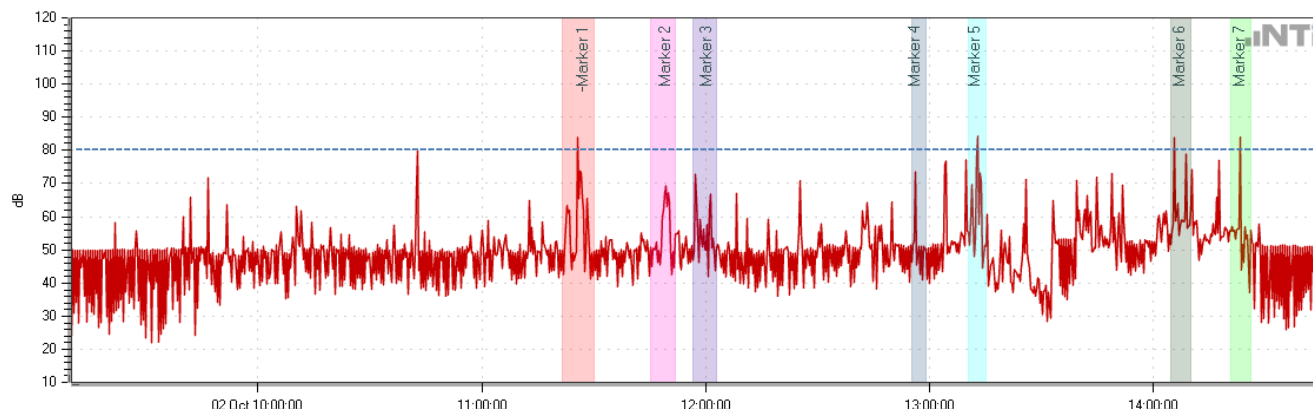
Figure 1: Motorbikes’ activity on 1st October 2022 between 11:00 am to midday.



The maximum measured sound pressure level was L_{Amax} , 77dB at 11:38 on 1st October along with many exceedances above 50dB(A).

The measurement on the 2nd October is presented in Figure 2, below, with markers when revving occurred.

Figure 1: Motorbikes’ revving noise, L_{Amax} , dB is marked across the recording chart on 2nd October 2022



The aggravated noise frequently occurred during the measurement period on both days. In addition, to emphasise the noise impact to the occupants, results are compared in Table 1 with the AS2107 Standard’s recommended sound design level for Rural Area:

Table 1: AS2107 designed sound level vs measured data in dB(A)

Type of occupancy	Designed sound level, $L_{Aeq,t}$, dB	Measured data, $L_{Aeq,t}$ dB	Maximum, L_{Amax} , dB, aggravated noise
Rural Area	25 – 35	44 – 63	74 - 84

The above shows a very significant numerical difference between designed levels and received noise levels at the residential premise. All measurements were undertaken with the Type 1 sound level meter. The measuring instrument was field calibrated before and after its use on site by a NATA certified acoustic calibrator.

4 DISCUSSION

Setting benchmarks for unreasonable and aggravated noise is not as straightforward as most situations assessed by the acoustics industry. So, the assessment of the noise received at the residential premise from the motorbikes recreational activities has been looked at from different perspectives. Noise assessment can be subjectively assessed by a person listening to the noise and considering its character and circumstances in which is emitted, or through objective measurement using sound level meter, Type 1, that measures the intensity of the noise on the decibel (dB) scale. However, it is clear on one aspect: it requires an extraneous noise to be inaudible in a habitable room during the day period.

The way the noise is perceived is complex and is affected by the type of noise and psychological and physiological factors which affect how people respond to the noise they hear which is recognised in the *Environment Protection Act 2017*, *Environment Protection Regulations 2021* and the *Public and Health Welbeing Act 2008*. The objective assessment needs to be complex and technical to adequately reflect such factors.

In this example the motorbikes’ noises, particularly when noise is sudden and aggravated, is a serious health problem to the occupant who is nonverbal autistic person. Although the motorbikes’ rides are only permitted once per day by the local law, with a maximum of 2 riders for two hours, it causes the serious noise nuisance which has a significant harm and health impact, not just to the autistic person but to his/her/they/them carers too due violent and uncontrolled reaction to the noise

My view is that Council is implicated by the GED and would be in breach to ensure that the received noise levels are below or at the designed noise levels at the nearest noise sensitive receiver for the Rural Living Area in its municipality.

5 CONCLUSION

The noise assessment at the residential premise in relation to motorbikes’ noise has shown that there is aggravated noise which cause harm to human health. The noise is well above from the noise limit expressed in dB(A), for Rural Living Area.

The sound pressure level of motorbikes’ revving noise can be up to 84 dB, L_{Amax} , measured inside the bedroom of the adjacent residential premise, which profoundly affects the nonverbal autistic person as well as carers. The noise assessment, analysis and consideration of psychological and physiological effects and consideration of *Public Health and Wellbeing Act 2008 (Victoria)*, and additional publications and protocols, have shown that Council has the obligation to protect an individual from the nuisance noise in its municipality through the local law, regardless of individual desire or community expectations.

ACKNOWLEDGEMENT

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REFERENCES

Public Health and Wellbeing Act 2008 (2021) – Government of Victoria

VIC EPA Publication 1826.4 – *Noise limits and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues*

Environment Protection Act 2017 – Government of Victoria

EPA Publication 1969: Regulating residential noise, local government tool kit – VIC EPA May 2021

VIC EPA Publication 1973 -*Noise guideline, assessing noise from residential equipment* – May 2021

AS2107 – 2016 Acoustics: *Recommended design sound levels and reverberation times for building interiors*

The Local Law 1 – General Public Amenity 2021 – clause 13(2), *Motorbikes and motorised recreational vehicles* – (source obscured)

Field assessment – noise measurements 1st – 2nd October 2022