

## The Dummies Guide to deciBels at Lakeside

Firstly, some of the emails that have been sent to the MBRC on this issue contain too much passion - so tame it down a bit please. It is NOT helping.

Next, thank you to the Lakeside supporters that have forwarded me an "Information" sheet being circulated by some Councillors asking what the stuff on it really means.

Let's start out by being accurate - what Lakeside makes is sound NOT noise!

Noise is a sound we don't like; and what is music to me may well be noise to you. Anything that talks about "noise" has already proven its bias and will interpret things in a negative way - in other words don't trust it unless you do the research to find out if it's right - or send it to me as others have.

There are several items on the sheet that are misleading but, at this stage, I want to deal with the very negative comparison of Phillip Island's sound limit of 95dB(A) Vs Lakeside's 103dB(A). Sounds bad (pardon the pun)? Well, it isn't. If you'll stick with the explanation, you'll see just how hard it is to meet Lakeside's restrictions and how quiet it has to be to operate; and how tough the MBRC is.

What we're dealing with is the INTENSITY of sound and that is the number of watts per square metre - that's why we measure our loudspeakers in watts. Watts is joules/second but you don't have to worry about that. The term deciBels ( $1/10^{\text{th}}$  of a Bel) is used to denote the amount of energy - in watts - applied to a square metre. What's that got to do with Phillip Island Vs Lakeside?

Well for a given amount of watts, if you double the area you halve the number of watts per square metre - so you have just halved the INTENSITY of the sound. When there are no obstructions the energy travels as a growing sphere until it is all gone due to attenuation. So the question is, "How fast do the square metres on the surface of a sphere grow as it gets bigger?" The simple answer is very fast - in fact it grows exponentially, and it doesn't get much faster than that.

Stick with it, I'm almost there. The radius of the sphere from source to the measuring point at Lakeside is ~4 metres and to the measuring point at Phillip Island ~30 metres - let's say it is 7 times further away. Exponentially; 7 times 7 is ~49, let's just round it to 50. So, the sound sphere at Phillip Island is about 50 times bigger than the sound sphere at Lakeside? Yes, so basic arithmetic says the INTENSITY of sound at 4 metres is 50 times greater than it is at 30 metres. 103dB(A) at 4 metres against 95dB(A) at 30 metres doesn't sound that bad after all.

Next deception; 3dB doubles the INTENSITY or amount of sound (NOT NOISE) - notice the lack of the letter "A". There are different types of deciBels based on different parameters. If you measure in dB(A), it is 6dB and if you measure it in watts (remember them?) it's 10dB ; that takes no account of attenuation over distance. So the 103dB(A) at Lakeside calculates out to 85dB(A) at 30 metres Vs 95dB(A) at Phillip Island. How bad does that 103dB(A) number look now?

Another deception, Lakeside is NOT allowed to make 103dB - that is the INTENSITY of sound that has been calculated to deliver less than 70dB(A) to the reference house in almost all weather conditions. AND that is the cause of the argument; MBRC is not measuring the 70dB at the agreed reference house but at a meter which is much closer to the track edge over water with no obstructions. Well not until we put the old bridge sections there last week - and they look horrible.

Lakeside is the quietest racetrack for cars and motorbikes in Australia - FACT.

BTW: Attenuation is simply the amount of energy that becomes heat from the air rubbing against itself when it moves. Be thankful for attenuation otherwise noisy whinges would last forever.

If you're a bit of a techie but don't remember much from school, and want to do the math, start here:

<https://www.khanacademy.org/science/physics/mechanical-waves-and-sound/sound-topic/v/decibel-scale>

To have put that misinformation out there means somebody is giving the Councillors biased advice and they are the enemy here - NOT the Councillors. Let's hope whoever it is gets fired - and soon.

If you got to here - thanks for not doing a TL!DR,

Motorsport for everybody and everybody for motorsport! John Tetley CEO, Qld Raceways