

## Technical Note

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Project: **NRS Lea Castle Appeal**

WBM Ref: **5342**

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Subject: **Sound Power Levels for Site Noise Calculations**

### Tracked Excavators

Following my presentation as an expert witness (noise) at the inquiry on Friday 08 November 2024, the Inspector asked about the sound power levels used in the calculations, specifically about the excavator used to dig up the material, and if it was tracked.

The site noise calculations used by WBM assumed a sound power level of 104 dB  $L_{WA}$  for the excavator used to extract material from the ground. This does assume that this is a tracked excavator.

WBM has a plant noise database, which includes many noise measurements of plant operating on minerals and related sites that we have obtained since the 1990s. From review of the calculated sound power levels ( $L_{WA}$ ) from more recent noise measurements due to tracked excavators in use at comparable sites and operations, these range from 97-109 dB  $L_{WA}$  with average and median values of 103 dB  $L_{WA}$ .

An example of an excavator in use where WBM measured the noise output is shown below:



Some examples of tracked excavators where the manufacturer's quoted sound power levels are at or below 104 dB  $L_{WA}$  include the Komatsu HB365LC/NLC-3, Hitachi ZAXIS 210 and SANY SY500H.

The majority of noise measurements undertaken by WBM are when the excavator has been static and digging/moving material. Some of the measurements samples would have included times when the excavator moved using its tracks, but these are not clearly identified in our database.

From experience, the noise output generated when the excavator is static and in use digging/moving material is greater than when the excavator moves using its tracks.

## **Conveyors**

The Inspector had previously asked about how the noise from conveyors as line sources were included in our calculations, and a response to this was included in my previous written submission dated 06 November 2024.

WBM also has some measurements of noise from conveyors in use at mineral sites – although these measurements are less numerous than other plant items as often it is difficult when at a processing plant site (where the majority of conveyors tend to be located) to isolate the noise from the conveyor from other plant.

The site noise calculations used by WBM assumed a sound power level of 74 dB  $L_{WA}$  per meter for the field conveyor. We have examples of noise measurements of conveyors in use, including when laden with sand and gravel, where the calculated sound power level from the measured levels on site are at or below 74 dB  $L_{WA}$ .

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Director

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