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**ATTENTION: Andrew Henderson**

**Re: Wheatsheaf Quarry - Sullivan Block acoustic peer review**

Dear Andrew,

Powell Fenwick Consultants (PFC) has been engaged by Selwyn District Council (SDC) to provide a peer review of the acoustic assessment prepared by Marshall Day Acoustics (MDA) dated 2 Jul 2024 with regards to the expansion of the existing Wheatsheaf Quarry operations into a new section of land, named Sullivan Block.

**In summary:**

I agree with the noise limits identified and expect that the modelled scenarios will accurately reflect the worst case operation, and the typical equipment, expected in the proposed quarry expansion. This is provided that the noise related conditions currently relating to the operation of the quarry continue to be adopted for the expansion.

The report concludes that noise from the quarry will be consistent with current operations albeit with increased compliant noise levels at the closest properties to the Sullivan Block, and therefore will be acceptable. Total predicted noise levels and the noise contribution from the new activities are provided by MDA. When considering the total cumulative noise levels predicted, the contribution from activities undertaken in the Sullivan Block is typically minor compared to the overall noise level. Highest time-average noise levels presented are also a minimum of 5 dB within the existing consent limits and the relevant District Plan noise limits. Based off this I agree that the activity would be largely consistent with existing operations and consider the average noise level would be acceptable.

Maximum noise levels ( $L_{AFmax}$ ) were stated to be 23 dB above the average noise level during an attended noise survey. This was reported to be the result of one event with other short spikes in noise level approximately 7 - 17 dB above the average noise level. Using this as an indication I expect that the  $L_{AFmax}$  levels would be likely to be less than 70 dB  $L_{Amax}$  at the closest properties when they do occur, which I consider acceptable.

Due to the scale of the quarry and presence of surrounding houses I would expect that the quarry maintains a register of complaints as matter of best practice. This would help with identifying repeating impulsive events which may result in higher maximum noise levels and may be avoidable.

Noise during the night-time period is not assessed but I understand operations to consist of limited loading and trucking of material within the quarry pit only. If this is true, and levels are not worse as a result of the expansion, then I do not consider it to require further assessment.

**Our full review is as follows:**

*Limits*

Surrounding area is zoned GRUZ (General Rural Zone) in the Partially Operative Selwyn District Plan (POSDP). The noise limits in this zone are 55 dB  $L_{Aeq(15min)}$  for noise between 7 am and 10 pm, and 45  $L_{Aeq(15min)}$  / 70  $L_{AFmax}$  outside of these hours. As identified by MDA, these align with the existing Resource Consent limits for prior phases of the quarry with the exception of a daytime  $L_{AFmax}$  level of 85 dB which is no longer included in the District Plan.

Therefore the existing Consent limits, which are also proposed for the extension, are equivalent or more restrictive than the POSDP rural zone limits.

#### *Quarrying operation*

Quarrying activities in the new Sullivan Block are separated into four activities. Initial overburden removal, extraction in cleared area while overburden removal continues, final extraction, and backfilling with cleanfill. These phases and the proposed equipment and sound power levels aligns with what I would expect.

The report states that all processing and significant works will remain in the main quarry site. This is consistent with an existing quarry consent condition restricting the location of processing plant. This is understood to limit the consented activities in the Sullivan Block to those in the paragraph above.

The modelled noise contours show one set of plant locations for each phase of activities within the Sullivan Block, with which would approximate the highest noise level at the closest property to the new Sullivan Block (668 Robinsons Rd). The scenarios presented do not show the highest noise levels at all receivers from the quarry expansion. However, I am confident the contours represent approximately the worst likely scenario at the closest property, and noise levels included in report Table 8 show no other receivers are likely to be exposed to a higher level of noise than is shown at 668 Robinsons Rd. Given the noise-compliant status at 668 Robinsons Rd no further detail is required.

#### *Maximum noise levels*

I agree that maximum noise levels ( $L_{AFmax}$ ) are governed by short duration activities. The report states that in their experience these are typically 15 – 20 dB above the average noise level ( $L_{Aeq}$ ) during extraction and loading. The highest noise level during their attended survey was 23 dB above the average noise level. A larger difference between the average and maximum levels was reported in their unattended survey however this was attributed to traffic movements, which I consider likely. The difference between the consented  $L_{Aeq}$  limit and  $L_{AFmax}$  limit is 30 dB. Therefore, given the quarry is expected to comply with the  $L_{Aeq}$  daytime limits I expect it will also operate within the  $L_{AFmax}$  limit. Notwithstanding this, often high  $L_{AFmax}$  level occur due to equipment operators not following best practice. This is particularly the case for tip trucks dumping cleanfill. Best practice management would see the quarry maintain a register of complaints to help identify any repeated operation which is resulting in unexpected high noise levels.

#### *Special audible characteristics*

The report includes no mention of special audible characteristics (SAC), a 5 dB penalty applied in accordance with NZS 6802 for sound which has a distinctive character which may affect its subjective acceptability. I do not consider this penalty to be routinely applied to a quarry, due to the generally broadband noise output of large plant and the loss of identifiable high frequency sound over the typically large distances to receivers. An SAC penalty may be applicable if plant is poorly maintained, especially in the case of tracked excavators and bulldozers where loud squeaking in poorly maintained equipment is common. Tonal reversing alarms would typically warrant an SAC penalty but are noted to not be used on site. Were a SAC penalty considered to be applicable (which I do not recommend) the assessment still indicates the quarry operation would be compliant with the existing resource consent condition limits, albeit marginally at 668 Robinsons Rd.

#### *Bund construction*

Building the earth bunds around the Sullivan block to enable works is treated as a construction activity and assessed against NZS 6803:1999 Construction Noise rather than against the limits for regular quarry operation within the resource consent or District Plan. I consider this reasonable given building the bunds is a necessary activity of a set duration which is required to construct the quarry, and is not related to the standard operation of the materials extraction or processing. There is a risk of nearby residents not identifying the difference between construction of the bund and regular operation and therefore if construction were to significantly exceed the operational noise limits at certain properties, notification of the planned activities by flyer drop or door knocking would be good management of potential effects from the unexpected increase in noise.

Yours faithfully,

**Powell Fenwick**

A handwritten signature in black ink, appearing to read 'A Healy', with a stylized flourish at the end.

Aaron Healy