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| <b>Project:</b>   | Roydon Quarry                                     | <b>Document No.:</b>    | Ca 004 R01          |                     |    |
| <b>To:</b>        | Fulton Hogan                                      | <b>Date:</b>            | 28 February 2019    |                     |    |
| <b>Attention:</b> | Don Chittock                                      | <b>Cross Reference:</b> | Rp 001 R03 20170506 |                     |    |
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| <b>From:</b>      | Gary Walton                                       | <b>No. Pages:</b>       | 5                   | <b>Attachments:</b> | No |
| <b>CC:</b>        | Kevin Bligh, Geoffrey England (Golder Associates) |                         |                     |                     |    |
| <b>Subject:</b>   | Response to Further Information Request           |                         |                     |                     |    |

We have reviewed the Request for Further Information (RFI) received from Selwyn District Council, dated 21 December 2018. Responses are provided below to the items relating to noise (from Section 16), with the original comment reproduced in blue text followed by our response.

- We understand from the Application that the quarried site will not be backfilled to original ground level, although it is “anticipated that the final finished site level will be higher than the base of pit excavations across most of the pit”. The Marshall Day Acoustics (MDA) modelling in figures 16 and 17 of their assessment shows a rehabilitation area in the noise modelling. Assumed activities in this area appear to be heavy vehicle movements and “cleanfill plant”. Can MDA provide further detail about the plant expected in this area and what height above the pit floor it has been assumed this will operate (i.e. what level will the site be refilled to). If a bulldozer will be required to spread fill can MDA provide comment on whether this will affect the predicted levels, particularly near the end of the rehabilitation when this will be at a higher level? A bulldozer is not currently included in table 15.*

Cleanfill activity has been modelled in the rehabilitation areas identified in Figures 16 and 17 at an assumed height of 5 metres below existing ground. While we understand from Fulton Hogan that the fill is unlikely to reach this height, this was used in our modelling as a conservative assumption. We note that, as part of site rehabilitation, final batter slopes may involve filling to higher levels than this, however this will be a short term activity and subject to construction noise standards.

Use of an excavator and trucks has been assumed in this area, which we understand is consistent with Fulton Hogan’s current rehabilitation activity at their Miners Road quarry. Owing to the nature of the proposed quarry, being free-draining gravels, and cleanfill not being overly wet material, it is not proposed to use bulldozers on the site and therefore these have not been assumed in our modelling.

- MDA have assessed heavy vehicle noise at night based on 40 heavy vehicle movements in an hour which they state is likely to be “reasonably conservative” and a “worst-case” assessment. The Integrated Traffic Assessment and the Application do not appear to provide specific detail which supports this assumption. Can MDA or a traffic expert provide further information to support this assumption, as it is key to the noise analysis and assessment?*

As suggested in the report, in lieu of any specific detail we opted to assess a vehicle rate that was beyond what is anticipated. We understand from Fulton Hogan that 40 heavy vehicle movements in an hour is beyond what is necessary and are therefore confident that our assessment has been undertaken on a worst-case basis.

- In section 10.3.1 of their assessment, MDA have assumed a 10 dB reduction from the boundary fence at 4 Dawsons Road when assessing traffic noise. Can MDA provide further detail about the construction of this fence and basis for this assumption?*

The allowance for a noise reduction of 10 dB is commonly adopted as a notional value for fences. In this case, the specific reduction afforded by the barrier is not critical, as the noise levels in this section are provided only to demonstrate the relative change, i.e. the effect of the



additional quarry traffic. This relative change would be the same regardless of the actual barrier attenuation achieved (even with no fence at all).

Incidentally, we noted during our surveys that the fence appeared to be modern and in good condition.

4. *Could MDA please provide a figure similar to E2 in Appendix E which shows the daily LAeq and LAFmax levels. It is difficult to read this information from figure E1 provided.*

Please find the requested figures appended to this document as Figure A (L<sub>eq</sub>) and Figure B (L<sub>max</sub>).

5. *In section 7.2.2 of the MDA report, the potential for reverse sensitivity effects associated with possible future dwellings in the Christchurch City District is discussed. For the Rural Urban Fringe Zone in which future dwellings would be located the Christchurch District Plan has notional boundary limits of 50 dB LAeq during the daytime and 40 dB LAeq during the night time - which may not be met if a new dwelling is constructed. For other dwellings in the Selwyn District, MDA have concluded that the proposed 'project noise criteria' limits at the boundary of the Applicant's site will be appropriate to ensure noise effects are acceptable. Could MDA elaborate on why they do not expect this to also be the case for possible new dwellings in the Rural Urban Fringe Zone. If it remains their view that the proposed 'project noise criteria' limits at the boundary of the Applicant site are not adequate to prevent possible reverse sensitivity effects associated with new dwellings in the Rural Urban Fringe Zone, can MDA provide a further discussion as to how the measures they described in the last paragraph of section 7.2.2 could be captured in conditions?*

Figures 17 and 19 of our report show that, for a small area of CCC land within the RuUF Zone, noise levels from the proposed quarry will be marginally higher than 50 dB L<sub>Aeq</sub> during the day and 40 dB L<sub>Aeq</sub> at night.

Christchurch District Plan Rule 17.5.2.5 requires that, if the quarry is consented, any new residential unit will need to be located at least 250 metres away from the boundary unless a resource consent is obtained for a restricted discretionary activity (with the matters for discretion including noise and enabling the continued operation of the quarrying activity in accordance with 17.11.1.5). This will address any reverse sensitivity issues that may arise once the quarry is established.

However, should any development occur prior to quarry's establishment, then we consider the potential for adverse noise effects to be low for the following reasons:

- Residential development is only allowed in the RuUF area to a minimum density of one unit per 4 ha site, with subdivision to 4 ha lots being a controlled activity, which prevents intense high-density residential development occurring close to the quarry;
- We understand that the CCC land is contained in only two certificates of title so, at present, only two dwellings could be constructed as a permitted activity on this land;
- Any residential development would be subject to a minimum 30 metre setback from Dawson's Road because this is classified as a Minor Arterial road (Rule 17.5.2.3);
- The RuUF land is entirely within the 50 dB L<sub>dn</sub> air noise contour for CIAL, and mostly within the 55 dB L<sub>dn</sub> contour, which means that the area is not of especially high amenity and that minimum sound insulation requirements apply for new dwellings under Rule 6.1.7.2.2;
- The minimum sound insulation requirements will ensure a reasonable level of reduction for noise received indoors, including that from the quarry, beyond a basic standard construction; and
- We note that the predicted noise levels are only 2-3 dB over the CCC noise standard, which is a marginal difference that is unlikely to be perceptible.

It is difficult to consider potential effects on residential development until any such plans are known, even in an outline form. The mitigation measures noted in Section 7.2.2 of our report simply offer assurance that, in the worst-case scenario of a development so sensitive that noise levels 2-3 dB higher than CCC's standards could not be tolerated, then noise levels could be further controlled if necessary.

In light of the context provided in this s92 response above around development on this land, particularly the requirements under Rule 17.5.2.5 of the CDP, specific consent conditions are not considered necessary to address this situation. However, we understand that Fulton Hogan would be happy to discuss this matter further with both CCC and SDC if required.

Furthermore, we understand from Fulton Hogan that their discussions to date with CCC indicated that this land is being held for a future strategic purpose – potential uses of this land include a future cemetery development and a possible regional parks facility – and that this was noted in the minutes of the Halswell-Hornby-Riccarton Community Board from 10 July 2018 (Resolution CNCL/2018/00158).

6. *Can MDA confirm that the predicted traffic noise levels in section 10 are at the façade of dwellings?*

All of the predicted noise levels in Section 10 are calculated at the façade position and are equivalent free-field levels as described in New Zealand Standard NZS 6806:2010 “Acoustics - Road-traffic noise - New and altered roads”.

Figure A: Daily average noise level profile

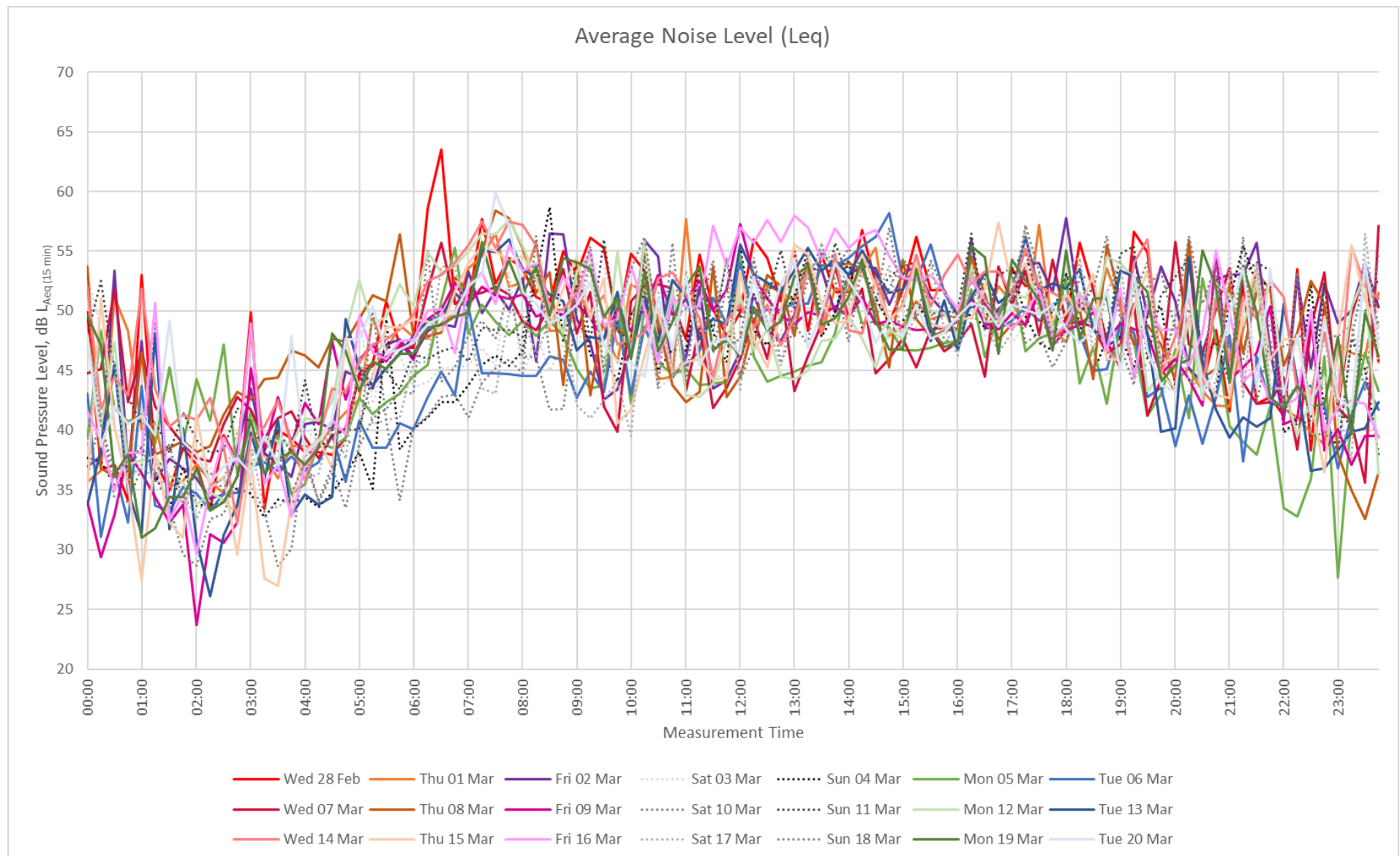


Figure B: Daily maximum noise level profile

