

**BEFORE A COMMISSIONER APPOINTED BY THE OTAGO REGIONAL
COUNCIL AND THE CENTRAL OTAGO DISTRICT COUNCIL**

IN THE MATTER OF

the Resource Management Act 1991

AND

IN THE MATTER OF

applications by Cromwell Certified
Concrete Limited for resource
consents to expand Amisfield Quarry

JOINT WITNESS STATEMENT

(AIR QUALITY)

Dated: 13 December 2021

ATTENDEES:

Deborah Ryan (for Central Otago District Council)

Donovan Van Kekem (for the Otago Regional Council)

Peter Stacey (for Hayden Little Family Trust (HLFT), Nicola and Bryson
Clark, and Amisfield Orchard Limited (AOL))

Roger Cudmore (for Cromwell Certified Concrete Limited)

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INTRODUCTION

- 1 This expert joint witness statement (JWS) on air quality matters is made in response to the Commissioner's First Minute of 11th November 2021 stating that:

I understand that some discussions may be occurring between expert witnesses for the Councils and the Applicant. I request that, where possible, written statements be prepared that summarise areas of agreement and disagreement between the experts as a result of those discussions. Further expert conferencing that includes any experts acting for the submitters is encouraged. Written joint witness statements that result from such conferencing are to be tabled at the hearing.

- 2 A conferencing meeting was held with all four air quality experts attending via Teams on 10th December 2021.
- 3 The experts involved have read Appendix 3 of the Environment Court Practice Note and confirm compliance with it. In particular (and as set out in paragraphs 1(a) and (b) of Appendix 3) the witnesses understand:
 - 3.0 the role of a JWS is to clearly record the issues agreed and not agreed, between them. Succinct reasons are to be captured in the JWS. This will assist all parties and the decision-makers in focussing on the matters that remain in dispute and the significance of them;
 - 3.1 expert conferencing is not a forum in which compromise or a mediated outcome between the experts is anticipated. Unlike mediation, the "aim" is not resolution. Rather, the aim is clear identification of and narrowing of points of difference.
- 4 This JWS addresses key areas, where the experts are predominantly in agreement. The main point of disagreement is in the recommended separation distances for the quarry.

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- 5 The experts did not have sufficient time to discuss detailed conditions for the consent. It is intended that each expert will address any remaining areas of disagreement and provide comment on conditions at the Hearing.

AREAS OF AGREEMENT

Existing environment

- 6 The experts agree, while actual site data characterising meteorology would have been preferable, the modelled wind data prepared by Mr Cudmore is the best representation of data for use with the assessment at this time. The experts agree that the source of rainfall data used by Mr Cudmore (Cromwell AWS) is appropriate and representative of site conditions. Also, it is agreed the data shows significant annual variation.
- 7 The experts agree that the background levels for characterising air quality, assumed by Mr Cudmore, are indicative only. Other than Mr Cudmore, the experts considered that assumed background levels do not have a significant impact on the assessment's conclusions i.e. that a very high level of dust control is needed. The experts agree that "background" and/or the existing environment will be able to be characterised with analysis of the data from the proposed real-time monitoring for particulate matter.
- 8 Mr Cudmore considers that his assumptions of background PM₁₀, PM_{2.5}, and respirable crystalline silica (RCS) concentrations are relevant to the assessment and his conclusions.
- 9 The experts agree that Mr Cudmore's evidence identifies the sensitive receptors with the following amendments noted by Mr Stacey.
- i. R13 is a contractor's base not a seasonal workers camp.
 - ii. A seasonal workers camp to provide for the AOL orchard will be established approximately 70 m to the northeast of R6, within 25 m of the western boundary of the expansion area.

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- iii. HLFT also plans to establish a seasonal workers camp for their orchard, which is likely to be located approximately 100 m to the south of the encroachment area of the existing quarry.
 - iv. The building approximately 40 m to the south of the Clark residence is a large garage which includes a sleepout where Ms Clark's son resides.
 - v. A future Cherry orchard is intended to be established to the east of the Clark residence, which is likely to occupy an area of up to 4 Ha.
- 10 The experts agreed that the consent status of the HLFT and AOL accommodation (ii and iii. above) should be clarified and if not already consented, then this is not part of the existing environment.

Dust sources and character

- 11 The experts agree with Mr Cudmore's description of potential sources of dust and their character.
- 12 The experts agree that both mechanical and windblown dust sources can be substantive contributors and require mitigation, as per the draft DMP. The experts consider avoiding certain activities under strong wind conditions is critical.
- 13 Mr Cudmore reiterates his view that haul roads are often the most dominant source of dust discharge from quarry sites. He considers this is true where there is poor dust control. Good dust control means this source is effectively eliminated.
- 14 The experts agree that the haul roads will be a dominant source, but that there are other sources on-site that will also require a high level of mitigation and which need to be appropriately identified and mitigated in the DMP. Examples include overburden handling activities, handling sand/crusher dust products, exposed surfaces, stockpile erosion, etc. all require diligent control. Mr Cudmore considers these other dust sources and their appropriate mitigation have been identified in the draft DMP, which is attached to his evidence.

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Mitigation

- 15 The experts agree that the mitigation recommended in paragraph 11.3 of Mr Cudmore's evidence is appropriate. But Mr Stacey has concerns about the practicality of what is being proposed in reality and whether dust control measures can be vigilantly maintained to an appropriate standard that acute dust effects can be mitigated (i.e. effects on the cherry orchards). Mr Van Kekem considers that the use of water and dust suppression polymers should be used "in conjunction with" the surfacing of haul roads with clean aggregate not as a "backup contingency measure".
- 16 The experts note that in Mr Stacey's evidence, he sought further detail be provided on procedures such as after hours complaint response and the experts agree this is appropriate.
- 17 The experts agreed that a mix of measures can be applied to maintaining the road surfaces in a dust free manner with vehicle speed managed up to a 30 km/hour maximum. Control measures are a combination of vehicle speed, clean reject gravel, watering, sealing, cleaning and polymers. The experts noted that minimising and eliminating sources of dust should be prioritised with additional management controls forming a back-up.
- 18 The experts agree that there is sufficient water available for dust mitigation requirements at the quarry.
- 19 Ms Ryan recommended that a Best Practicable Option (BPO) evaluation of conveying of pit run material to the Central Processing Area (CPA) should be required as a condition because this reduces traffic and therefore dust risk from haul roads. Ms Ryan considers that reporting on the BPO assessment to council could be required six months prior to commencing operations in the expansion area. Subject to the wording, the other experts agree with this as a proposed condition. The experts agreed that the BPO assessment should be tied to a "council may review the condition" and would also be subject to a review by a suitably qualified and experienced practitioner (SQEP).

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- 20 The experts agree:
- 20.1 That the main product processing plant and mobile crusher should be restricted to a specific area around the current location. No crushing is to be undertaken in the expansion area. The experts recommend that a location map of the restricted area for crushing on the pit floor be developed and be appended to conditions.
 - 20.2 The peaks of all stockpiles need to be maintained below natural ground level and this should be included as a consent condition.
 - 20.3 The main haul road in the expansion area should be centrally located i.e. to be located "as far from the site boundaries as practicable" and this should be included as a consent condition.
- 21 While the experts considered that progressive stripping of the expansion area could have benefits for dust management, they understand that stripping of the expansion area in one season is proposed in order to obtain the material to form the bunds around the perimeter. The experts agreed that the effects of having a large open area could be mitigated by covering the unused open areas with washed reject material.
- 22 Mr Van Kekem, Ms Ryan and Mr Stacey consider that there should be a limit on the size of the active working area within the current quarry and within the expansion area. They also consider that there should be a requirement for all areas outside these active working zones to have dust suppression in place (i.e. washed gravel covering and polymers). These measures should be included in the draft consent conditions. Mr Stacey has concerns that the large area will still be a source of dust that will contribute to cumulative effects and that the bund construction should be undertaken progressively as extraction occurs.
- 23 The experts agree that the use of clean reject should be required as a condition to be undertaken progressively with the stripping. Mr Cudmore covers the related bund construction in his evidence at

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paragraph (5.2). The experts agree that this approach is appropriate and referred to proposed Condition 23. The experts agree to the conditions including:

- 23.1 construction only during winter;
 - 23.2 materials to be thoroughly wetted; and
 - 23.3 surfaces vegetated as soon as possible, with irrigation of bunds while vegetation is being established.
- 24 Ms Ryan, Mr Stacey and Mr Van Kekem consider that 23.1 to 23.3 should also be applied to handling and placement of soils for rehabilitation.
- 25 The experts agreed that bund surfaces (both sides) should have sufficient growth media such that healthy vegetative cover (i.e. ~90% cover) can be established and maintained; and that this should be addressed in the DMP. Mr Stacey, Ms Ryan and Mr Van Kekem consider that this requirement should also apply to the existing quarry bund, including the encroachment area, as it is currently poorly covered and therefore a source of fugitive dust.
- 26 The experts agreed (except Mr Cudmore) that the wind direction element of the DMP requirements for ceasing works, under specified wind conditions, should be removed because there is always a sensitive receptor downwind.
- 27 Mr Cudmore considers that given the prevalent northeast and southwest winds, that there will often be a large buffer between dust generating activities and off-site sensitive receptors. He considers the current requirements for ceasing work, as specified in the draft DMP and conditions (attached to his evidence) would be effective and are not unnecessarily onerous to the proposed quarry operation.
- 28 The experts agree that the DMP should include a requirement for the operator to complete an end-of-day dust mitigation checklist. This is to help ensure that all the required mitigation measures are in place prior to staff leaving site at the end of the day.

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Monitoring

- 29 Regarding monitoring the experts agree that:
- 29.1 an appropriate location for the weather station would be in the expansion area because it is less influenced by existing vegetation/topography.
 - 29.2 dust monitors would best be located on top of the bunds.
 - 29.3 A requirement to respond to trigger levels immediately, including afterhours, is appropriate and is reflected in the proposed conditions.
- 30 The experts discussed using video (or still image) monitoring on the boundary (web cam or security cam – live feed and either continuous recording, or recording triggered by monitoring data), as an addition to the PM₁₀ and visual monitoring. This will assist site management to:
- i. identify significant dusts sources;
 - ii. assess the requirement for and/or effectiveness of, dust mitigation measures;
 - iii. identify if monitoring trigger exceedances are from on-site activities (including during after-hours periods); and,
 - iv. provide increased certainty that the controls and dust triggers are working as designed.
 - v. The experts recommend video monitoring be considered by the applicant and a suitable condition tabled at the Hearing.
- 31 The experts agree that nephelometers (light-scattering devices) are appropriate instruments for quarry dust management. One fixed monitor and two lower-cost mobile monitors are the minimum recommended.
- 32 The experts consider that if on-site RCS monitoring for worker health and safety is undertaken, then the monitoring results should be made available to the community. Mr Cudmore considers that it would be more appropriate for worker exposure data (if available) to

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only be made available to the ORC for review. He also retains his view that RCS monitoring, at or beyond the quarry site boundary, is not justified.

- 33 Given the proposal to use light-scattering devices, Ms Ryan and Mr Cudmore consider that PM₁₀ is the most practical and reliable indicator for quarry dust management. Mr van Kekem and Mr Stacey are concerned that Total Suspended Particulate Matter (TSP) could result in impacts not picked up by PM₁₀ measurement. Mr Stacey considers that some correlations of TSP with PM₁₀ could be run to investigate/establish the relationship. Mr Cudmore notes that this relationship will vary greatly over distance so it is very difficult to establish a correlation across the site and with distance downwind. On balance, the experts consider that the SQEP review of the data and triggers can evaluate the probability that the triggers (set as PM₁₀ level) are not representative of adverse effects.

Dust management plan

- 34 Mr Stacey is concerned that the responsibilities within the plan need to be clearly assigned.
- 35 The experts agreed that the proposed monitoring trigger values are set at appropriate levels, including investigate and cease work levels. The experts agreed that data should be evaluated by a SQEP to review effectiveness of levels for managing the activities. All experts, (except for Mr Cudmore) consider that this review should occur within six months of monitoring commencing. Mr Cudmore recommends that this review of trigger values is completed following two early summer/late autumn seasons (1 October to end of May), or following one such season, where there has been verified dust effects/impacts.
- 35.1 Mr Van Kekem and Mr Stacey consider that there should be a short term trigger (10 min average) as a rolling one hour average value may take some time to exceed the trigger. With the lag in time it could take for the quarry to implement control measures, it is possible that acute effects could occur for some time before controls are put in place.

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AREAS OF DISAGREEMENT

- 36 The experts expressed a degree of disagreement on whether or not there should be an internal buffer distance and the extent of any separation distance requirement.
- 37 Mr Cudmore discussed the proposed separation distances for the expansion area. He has considered the prevailing winds as well as the proposed mitigation, including the trigger monitoring, when assessing the acceptability of buffer distances as are currently allowed for by the proposal.
- 38 Mr Cudmore notes that he does not usually recommend specific buffer distance values for dust mitigation, but instead considers whether a proposed/available separation is sufficient given a proposal's mitigating features and proposed mitigation, which includes a consideration of site wind patterns.
- 39 Mr Van Kekem, Ms Ryan and Mr Stacey considered the potential for acute effects of dust that could impact the cherry crop at a critical time, and cause losses. Mr Cudmore noted that the management practices and their control adequacy will be verified via the PM₁₀ monitoring particularly at the south-west boundary (beyond which there is an established cherry orchard, according to Mr Cudmore), which is directly downwind of the existing quarry during the most prevalent dry and strong windy conditions. He considers this orchard is the most potentially impacted sensitive receptor by both past dust emissions and those associated with the proposed quarry expansion.
- 40 Mr Van Kekem and Mr Stacey are also concerned about the small separation to the AOL building platforms, while Mr Cudmore considers this is low risk. Ms Ryan agrees with Mr Cudmore that due to the proposed controls, monitoring and prevailing winds health and nuisance impacts at the building platforms are low risk. Mr Stacey considers that sufficient buffers are necessary, given the dry windy environment, fine nature of the material being handled and to provide for possible failure of controls, particularly given that the



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existing quarry is currently unable to manage dust discharges appropriately using a range of good practice measures.

- 41 The experts noted that Condition 9 addresses activities that should be restricted or ceased when sensitive receptors are downwind of a 7 m/s wind (averaged over 10 minutes and measured at a height of 6 m) and within a 250 metre setback. The experts agreed (except for Mr Cudmore) that this is an appropriate measure without limitation on the wind direction due to the nature of sensitive receptors around the site. Mr Cudmore considers the wind direction consideration in this condition should be retained and that its removal is not justified for this proposal and when considering the receiving environment aspects.

CONSENT CONDITIONS

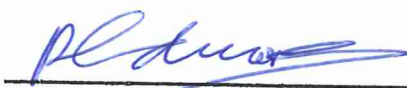
- 42 The experts did not have time to undertake a detailed discussion of the proposed conditions or to recommend specific wording. Based on the above discussion the experts agree that the proposed condition set is generally appropriate with the following key aspects and/or amendments:
- 42.1 A BPO assessment condition for installing conveyors to transport pit run material from the expansion area and that this be tied to a "council may review the condition."
- 42.2 The crusher and mobile crusher to be restricted to a specific area around the current location/s. A location map of the restricted area for crushing activities on the pit floor to be developed and be appended to conditions.
- 42.3 No crushing is to be undertaken in the expansion area.
- 42.4 Stockpiles to be maintained at a height below natural ground level.
- 42.5 The main haul road in the expansion area to be centrally located.
- 42.6 Clean reject material required to be placed progressively with the stripping activities.



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- 42.7 Wintertime construction, prewetting and vegetation requirements.
- 42.8 Existing quarry bund should be remediated so that it can support an appropriate vegetative cover to mitigate dust discharges. *Mr Cudmore is ^{not} clear about this RS*
- 42.9 End of day dust management checklist in the DMP.
- 42.10 Requirement to respond to trigger levels immediately, including afterhours.
- 42.11 Consideration of video and/or image monitoring.
- 42.12 SQEP review of the monitoring data and triggers to evaluate if the triggers (set as PM₁₀ level) are sufficiently protective of adverse effects.
- 43 Mr Van Kekem and Mr Stacey consider that dust monitoring data should be made available to adjacent neighbours.

Signed:

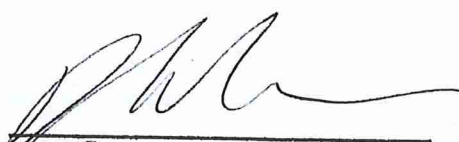


13/12/2021

Roger Cudmore



Deborah Ryan



Donovan Van Kekem
13/12/2021





Donovan Van Kekem

Peter Stacey

13/12/2021

Peter Stacey

13 DECEMBER 2021

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