

**Before Independent Commissioners Appointed by
the Canterbury Regional Council and Selwyn
District Council**

IN THE MATTER OF The Resource Management
Act 1991

AND

IN THE MATTER OF Applications CRC192408,
CRC192409, CRC192410,
CRC192411, CRC192412,
CRC192413 and CRC192414
by Fulton Hogan Limited for a
suite of resource consents to
establish a quarry operation

**SUPPLEMENTARY STATEMENT
WRITTEN REPLY TO QUESTIONS**

**SECTION 42A REPORTING OFFICER
CANTERBURY REGIONAL COUNCIL
AIR QUALITY – DEBORAH RYAN**

DATED: 19 DECEMBER 2019

1. INTRODUCTION

- 1.1 My name is Deborah Ryan. I am a Technical Director for Air Quality with Pattle Delamore Partners. An explanation of my qualifications and experience is provided in my section 42A Report.
- 1.2 While this is a Council Hearing, I acknowledge that I have read the Environment Court's Code of Conduct for Expert Witnesses as contained in section 7 of the Environment Court Practice Note 2014 and have complied with it in the preparation of this evidence.

2. SCOPE OF STATEMENT

- 2.1 The purpose of this supplementary statement is to provide a written response to questions from the commissioners that arose during the presentation of my section 42A Report during the hearing.
- 2.2 In preparing this statement, I have referred to the written submission from Mr Tewnion, which he presented to the hearing on 9th of December 2019.
- 2.3 The question from the commissioners related to PM₁₀ and RCS monitoring results that were referred to in Mr Tewnion's submission as follows:

- (a) What is Ms Ryan's opinion on the validity of the studies and results of the studies quoted on pages 2 to 6, and what significance should be given to them?

2.4 I address the matters relating to Mr Tewnion's submission below, but I would also like to take the opportunity to answer a question put to me by Commissioner McGarry more fully. That question, or series of questions, related to the National Pollutant Inventory emission factor/s used by the experts in developing the PM₁₀ mass emission calculations for the 2nd JWS.

3. MR TEWNION'S SUBMISSION

- 3.1 Page 2 of Mr Tewnion's submission refers to an ambient air quality monitoring study undertaken by Environment Canterbury staff dated 30th June 2016¹. I understand that this 2016 study was the first study that sought to investigate issues relating to dust in the vicinity of the Yaldhurst quarries. Environment Canterbury staff² have advised that the study was a pilot project, to get an initial idea of dust levels, but due to some calibration issues there was some uncertainty around the final measurements. The more recent 2018 Yaldhurst study was commissioned jointly with the Canterbury District Health Board, using an independent provider Mote Ltd, which essentially supersedes the 2016 study.
- 3.2 Mr Tewnion specifically refers to measured exceedences of the 1-hour average PM₁₀ trigger of 150 µg/m³ for managing dust nuisance, and a measured exceedance of the NESAQ for PM₁₀ of 50 µg/m³ as a 24-hour average.
- 3.3 In my view, neither of these findings provide better or more informative data to use as a basis for considering the potential effects of the Royden Quarry proposal. Both the dust nuisance and NESAQ compliance matters have been adequately covered in evidence by the experts using more recent data, and this data has been related to the proposed design and operation of the Royden Quarry.
- 3.4 Mr Tewnion's comments in paragraphs 1 and 2 on page 3 are, in my view, not relevant to the assessment of the potential effects on air quality of the Royden Quarry.

¹ Environment Canterbury Air Quality Investigation: Yaldhurst Quarries, Report No. R16/30, 30 June 2016.

² E-mail correspondence, Tim Mallet, Team Leader Air Quality Investigations, 17 December 2019.

- 3.5 On page 3, Mr Tewnion goes on to discuss monitoring of dust samples that were analysed with results presented in a report by K2 Environmental Ltd (November 2016). Mr Tewnion then presents information from that report on the particle size range data of a dust sample at a residence compared with a sample from the quarry, and in the following table shows the mass of quartz in the PM₄ fraction. The inference is that the RCS as a percentage of the dust sample from the dwelling and quarry are similar, and thereby concludes that the dust came from the quarry. If this is so, then it indicates dust nuisance from deposition of quarry dust at the neighbour's house. The finding of dust nuisance was confirmed as an outcome of the 2018 Mote Yaldhurst study, and in my view, is not directly relevant to the assessment of the given design and operation of the proposed Royden Quarry. In addition, Environment Canterbury has since taken actions to improve performance at quarries across Canterbury³.
- 3.6 The data from the K2 Environmental report does not help regarding the level of exposure to RCS compared to the long and short-term assessment criteria for ambient air exposures, which is the basis for assessing the potential health impacts. The assessment of RCS exposure based on monitored concentrations in air is addressed in Section 8 of my summary statement, and in my view that data provides a reasonable basis for considering the potential effects of RCS.
- 3.7 Pages 5, 6 and subsequent pages of Mr Tewnion's submission relate to the personal exposure in-home monitoring of particulate matter, including RCS. As I stated at the hearing, I am advised that data from this study was internationally peer reviewed and the results were found to be inconclusive⁴. I understand that Environment Canterbury staff are able to provide further comment on the study limitations if the commissioners consider that they need further detail in relation to the personal monitoring.
- 3.8 In summary, the data presented in Mr Tewnion's submission does not, in my view, provide any additional detail that provides a credible basis for decision making relating to the assessment of effects on air quality for the Royden Quarry proposal.

³ <https://www.ecan.govt.nz/get-involved/news-and-events/2017/working-together-to-resolve-quarry-dust-issues/>

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4. NPI EMISSION FACTORS

- 4.1 During the hearing a question was asked by Commissioner McGarry about the 84% reduction emission factor and the 70% for watering factor that had been applied in the calculations for PM₁₀ emissions for the 2nd JWS.
- 4.2 I wish to clarify that the 84% reduction factor from the National Pollutant Inventory (Table 6) was developed for applying gravel to stabilise open areas for emissions from wind erosion⁵. This factor was also used for estimating the emissions for the p-metal roads, in the absence of anything else more suitable, by Mr Cudmore, Mr Kirkby and me. I considered that p-metal would perform significantly better than an ordinary unpaved road, although this is contingent on a very high level of maintenance.
- 4.3 Commissioner McGarry also asked me about the basis of emission factors being from monitoring data. I agreed that such factors were generally based on monitored emissions, however, in this case the data would relate to wind erosion rather than truck movements.
- 4.4 The 70% factor for reduction for watering is from the USEPA AP-42 emission factors, although the value is variable depending on the level of moisture retained. The 70% value was agreed by all the experts participating in the 2nd JWS conferencing. For emissions from the roadway, Mr Cudmore advised me that a value of 70% was contingent on frequent watering during dry periods.

⁵ <http://www.npi.gov.au/system/files/resources/2a5c096f-533d-f7e4-b99d-faaf9b1bbb3c/files/ffugitive.pdf>