

Before Independent Hearings Commissioners Appointed by Canterbury Regional Council and Selwyn District Council

In the Matter of the Resource Management Act 1991

And

In the Matter of Applications by Fulton Hogan Limited for all resource consents necessary to establish, operate, maintain and close an aggregate quarry (Roydon Quarry) between Curraghs, Dawsons, Maddisons and Jones Roads, Templeton

**Supplementary Statement of Charles Alexander Kirkby
on behalf of Templeton Residents' Association Incorporated**

PM₁₀ Offsetting

Dated: 20 February 2020

1. I have been engaged by the Templeton Residents' Association ('TRA') to provide advice and evidence, within my field of expertise, in relation to the TRA's submission on the proposed Roydon Quarry ('the Proposal').
2. I have previously provided evidence relating to the air quality effects of the Proposal, namely:
 - 2.1. Evidence in chief date 14 October 2019
 - 2.2. Updated summary of evidence dated 03 December 2019.
3. This supplementary statement has been prepared at the request of the Commissioners (Minute 14 dated 10 February 2020), in response to calculations for PM₁₀ offsets prepared for the Applicant by Mr Roger Cudmore (Supplementary Statement dated: 5 February 2020).
4. I have reviewed Mr Cudmore's calculations. While I agree with his approach to the problem as the most appropriate in the circumstances, there is insufficient information for me to be able to confirm whether or not I agree with his conclusions, particularly in relation to the availability of emissions from other sites to be used for offsetting.
5. Therefore, I am unable to determine whether either proposed offset would comply with the requirements of Regulation 17(3).

How much PM₁₀ needs to be offset?

6. Mr Cudmore acknowledges the different estimates for total annual PM₁₀ emissions from the site, as set out in the 2nd air quality Joint Working Statement (JWS) dated 9 December 2019. I agree with his comment that emissions directly associated with the central processing plant (and the mobile plant) will occur more than 500m from the boundary of the airshed.
7. While I understand the logic behind discounting emissions that occur more than a certain distance from the airshed, I am also aware that, once airborne, PM₁₀ particles can travel considerable distances. Therefore, to completely exclude those emissions is not a conservative approach.
8. Mr Cudmore also appears to consider that a proportion of emissions, in addition to those from the processing plant, occur more than 500m from the airshed, but has not explained how these were quantified.
9. My understanding of the proposed staging of the quarry is that, after the construction of the bund and establishment of the central processing area, extraction would occur in the eastern section of the quarry for a period of up to 10-15 years. I.e. for most of the first 10-15 years of operation, all activities other than gravel processing would take place within 500m of the airshed. Therefore, there is no justification for discounting any portion of PM₁₀ emissions other than (possibly) those from the processing plant.
10. However, any dispute over the magnitude of emissions to be discounted because of distance is of limited relevance, since Mr Cudmore's final calculations are based on whole of quarry emissions, rather than only those occurring close to the boundary.

11. In order to estimate how much of the PM₁₀ that is emitted could enter the airshed, Mr Cudmore states that he has undertaken a 'more refined' analysis (than that of Ms Wickham) of the wind distribution at the site. However, he has not provided any details of that analysis, other than to state that it took account of the changing location of dust generating activities within the site.
12. I have undertaken my own analysis of the same meteorological data as used by Ms Wickham, and estimate that winds between southerly (180°) and northwesterly (315°) – i.e. towards the airshed – occur approximately 38% of the time. This is the same value as derived by Mr Cudmore for the whole site, but without accounting for any changes to the location of dust generating activities. My analysis also indicates that there is little difference in this value between the distribution over all hours, and one restricted to likely operating hours of the quarry.
13. Mr Cudmore's final estimate of emissions that enter the airshed and would need to be offset appears to be based on whole of site emissions, pro-rated by the 38% of hours that winds may carry emissions towards the airshed. I agree with this approach, since it yields a more conservative estimate than one based only of emissions occurring within 500m of the boundary, and concur with the resultant estimates of PM₁₀ emissions to be offset.

Offset options

14. Mr Cudmore has provided some emission estimates for the Roberts Road and Pound Road quarries as options for offsetting emissions from the Proposal.
15. I agree with Mr Cudmore that all the emissions from the Robert Road quarry are discharged into the airshed, and could be used to offset emissions from the Proposal.
16. The Pound Road quarry is on the edge of the airshed, so winds from southeasterly directions could take emissions from that site outside the airshed (so they should be excluded from any estimate of emissions available for offsetting). At the same time, winds from southeasterly directions are relatively infrequent, occurring less than 8% of the time. Therefore, it can be concluded that almost all PM₁₀ emitted from the processing plant at the Pound Road site would remain within the airshed and could be used for offsetting.
17. However, Mr Cudmore has not provided any input data to support his estimates of PM₁₀ emissions from either Roberts Road or Pound Road quarries. Some estimates were provided in his rebuttal evidence dated 6 November 2019; however, the emission estimates appear to differ between the two documents. Mr Cudmore's estimates of emissions set out in the two documents are summarised below.

	RC Rebuttal Evidence 06/11/19	RC Supplementary Statement 05/02/2020
Roberts Road		
Topsoil stripping	0.044 tonnes/yr	0.1 tonnes/yr
Gravel loading	0.044 tonnes/yr	0.1 tonnes/yr
Truck movements	Not stated	3.3 tonnes/yr

	RC Rebuttal Evidence 06/11/19	RC Supplementary Statement 05/02/2020
Pound Road		
Gravel unloading	0.044 tonnes/yr	0.2 tonnes/yr
Gravel processing	0.189 tonnes/yr	0.1 tonnes/yr
Truck movements (to site)	Not stated	0.7 tonnes/yr
Truck movements (sales)	Not stated	0.6 tonnes/yr

18. Without data to support the emissions estimates set out in Mr Cudmore's supplementary statement, it is not possible to understand the differences between the values set out in the two documents, or to state whether or not I agree with those estimates. Therefore, it is not possible to determine whether or not either option would satisfy the requirements of Regulation 17(3).

Date 20 February 2020

Charles Kirkby
Director and Air Quality Specialist, The Air We Breathe Limited