

IN THE MATTER OF

of the Resource Management Act 1991

AND

IN THE MATTER OF

applications by Central Plains Water Trust to:

Selwyn District Council for resource consents to construct and operate the Central Plains Water Enhancement Scheme

AND

IN THE MATTER OF

Notices of requirement by Central Plains Water Limited to:

Selwyn District Council for the designation of land for works associated with the construction and operation of the Central Plains Water Enhancement Scheme

SUPPLEMENTARY REPORT OF JEREMY WILLIAM TREVATHAN

DATED 4 AUGUST 2008

1.0 INTRODUCTION

- 1.1 My name is Jeremy Trevathan. I prepared the Report A4307 - F1 (dated 6 December) which forms Appendix C (Noise) of the section 42a report of Council Officer Mr Nick Boyes. My qualifications and experience were set out in that report.
- 1.2 I have since reviewed the *Brief of Evidence of Stephen Gordon Chiles*, the *Response to S42A Officer's Report of Stephen Gordon Chiles* and attended the hearing while Dr Chiles presented the same and responded to questioning from the Panel of Commissioners on the 13th of March 2008. I have also reviewed the *Supplementary Evidence of Stephen Gordon Chiles in Response to Directions of the Commissioners (Number 2)* (undated); I was not present at the hearing on the 21st of April 2008 when Dr Chiles presented that evidence.
- 1.3 Generally, I consider that the evidence of Stephen Chiles satisfactorily addresses the majority of the concerns raised in my original report. Therefore, I will confine my comments to a summary of key points of that report and the manner in which these have been addressed by Dr Chiles.

2.0 CONSTRUCTION NOISE

Acoustical criteria

- 2.1 My original report requested additional information relating to the proposed construction noise limits, and why these had been deemed adequate to ensure noise effects would not be unreasonable.
- 2.2 Dr Chiles has stated that the limits are adequate in that they provide a "reasonable level of residential amenity during the day", and result in night time noise levels which would generally

be expected to avoid sleep disturbance. I agree.

- 2.3 Dr Chiles has also stated that consideration should be given to the fact that noise at the permitted levels would not be received at any given location for prolonged periods - “for example, at Coalgate it is anticipated that noise levels would be significantly below the proposed limits for a substantial proportion of the overall construction period”. I agree, but would note that the large variation in noise levels observed during the construction of a typical building (for example) may not be as evident with large earthworks projects - for example noise from scrapers working in a continuous loop may essentially be continuous during daytime for an extended period. Nevertheless, acceptance of the NZ 6803:1999 noise limits implies that one is satisfied that compliance with these limits will prevent unreasonable noise, even if noise was sustained at these levels for the maximum durations permissible under the Standard.
- 2.4 Therefore, with regard to appropriate construction noise limits, it appears to me that the only major matter of contention remaining relates to the relevance of the existing sound environment.
- 2.5 My original report stated that such information would “typically be presented to provide an insight into the level of acoustic amenity currently experienced by residents, and to provide context to considerations of any intruding noise” [para 3.1]. Dr Chiles considers that this overstates “the importance of this information”. Dr Chiles notes that a quote in my report from NZS 6803:1999 which supports my position is from a *commentary* in the Standard which does not form part of the substantive text, and states that quoting this excerpt misrepresents the status of the commentary. I note that section 8.4 of the substantive text of the Standard states: “Site factors. Whether or not sound from construction work is likely to constitute a problem depends upon a number of factors such as: (a) The existing background sound level (L₉₀)...” I therefore consider the context in which I used the

commentary quote to be appropriate. Dr Chiles quotes from the *Forward* of the same standard in his evidence, which is also not part of the substantive text.

2.6 I note that Dr Chiles has now supplied some subjective information relating to existing noise levels stating “in all locations I observed a rural environment with no particular acoustic features setting it apart from other rural environments”. This is consistent with my own site observations.

2.7 My position regarding the correct interpretation of NZS 6803:1999 remains as follows:

- It is acknowledged that construction noise is often unable to comply with what would normally be considered reasonable noise levels (for example, the guidance given in NZS 6802:1999).
- The construction noise limits given in NZS 6803:1999 have therefore been formulated to ensure construction can proceed in most situations during daytime hours whilst some protection of amenity is provided during daytime, and sleep disturbance is prevented during night time.
- Construction noise at levels which comply with the limits given in NZS 6803:1999 are considered reasonable, but only when a very global view is taken of all relevant factors, including the fact that prevention of construction on the grounds of noise would impact the “progress of society”. Such matters are normally outside of the field of expertise of the acoustic engineer; yet NZS 6803:1999 appears to provide an exception for the acoustic engineer to consider such matters in this situation.
- Having ascertained that compliance with the limits outlined in NZS 6803:1999 will prevent unreasonable noise (all factors being considered), a secondary matter is how a given individual or

community may react to construction noise at such levels. The Standard acknowledges that such noise may be “undesirable”, and may still “constitute a problem”. It is such matters which I hoped the applicant would explore more fully in their evidence, as even if the noise is not considered unreasonable, there may be varying levels of community reaction to it.

- 2.8 In this particular situation, I believe that there are a number of mitigating factors which would be expected to reduce community reaction to the construction noise. Dr Chiles has noted that in reality the construction noise received at most dwellings will rarely approach the limits outlined in NZS 6803:1999. It is also stated that continuous construction noise will not be experienced at any occupied dwelling for a “prolonged period”.
- 2.9 Aggravating factors include possible low existing background noise levels at some locations, the long overall duration of activities in the vicinity of Coalgate, the fact that the noise may be dissimilar in character to the existing noise, and the fact that residents perceive no direct benefit from the scheme under construction.
- 2.10 Therefore, while I am satisfied that compliance with the proposed construction noise limits will ensure noise is not unreasonable, I note that there still remains a question as to the likely community reaction to this noise. The noise limits outlined in NZS 6803:1999 could just as readily be applied in a situation with high existing background noise levels similar in character to construction noise, and where residents also perceived a direct benefit from the project under construction. It seems obvious that such noise may be more readily accepted. I am aware the community reactions to the scheme (including noise) are further considered in the report prepared by Ms Di Buchan.

Compliance with the proposed construction noise limits

- 2.11 My original report requested that the applicant illustrate in general terms that the proposed rules could be complied with. Dr Chiles has provided further information to address this concern.
- 2.12 Based on the evidence of Dr Chiles, it is my understanding that the following general mitigation options will typically be available to contractors:
- (i) Use of physical separation between source and receiver
 - (ii) Use of ad hoc noise barriers
 - (iii) Use of alternative machinery or construction methods
 - (iv) Use of specially-erected noise barriers
 - (v) Modification of machinery
 - (vi) Ceasing work during night time
- 2.13 With regard to “how the mitigation will work”: My understanding of the situation described by Dr Chiles is that for any given construction scenario, an acoustic engineer will review the situation and advise how far down the above list the contractor will have to go to ensure compliance. In situations where the acoustic engineer’s calculations indicated that compliance may be marginal, work trials would be undertaken on site under the supervision of an acoustic engineer, and the level of mitigation adjusted as necessary. Once the work-proper had commenced, regular review of the noise monitoring station results would then ensure any unexpected changes are identified and addressed.

- 2.14 Therefore, my interpretation of Dr Chiles evidence (particularly in response to questioning by the panel) is that compliance with the night time limits can be guaranteed (except for short-duration unexpected exceedences during any trials stage) as the applicant is ultimately committed to go so far as to cease work in some locations during night time (if this is the only way which compliance can be achieved). I believe that this point may have become confused in the evidence of Dr Chiles, as when asked “can you be sure that night time construction will comply” although the answer may be “no”, in such a situation night time construction would not be undertaken, so a response of “no” to such a question does not imply that construction will be undertaken in knowing exceedence of the night time noise limits.
- 2.15 Therefore, I consider that the project will generally be able to be constructed in compliance with the proposed construction noise limits, albeit only during daytime in some locations.

Construction Noise and Vibration Management Plan

- 2.16 With regard to the “Construction Noise Management Plan” annexed to Mr Lewthwaite’s evidence, I note that this document is referred to as an “outline” by Dr Chiles, but in other references it is not always completely clear that this is not the final *Construction Noise Management Plan*. Clearly Mr Lewthwaite’s document is far from what is ultimately required in terms of detail and analysis.

3.0 OPERATIONAL NOISE

Acoustical criteria

- 3.1 My original report sought confirmation that operational noise would be required to comply with the District Plan noise rules. Dr Chiles has confirmed that this will be the case, and a condition to

this effect is included in his proposed conditions.

Compliance with the proposed acoustical criteria

3.2 My original report requested a general illustration that it was realistic to expect operational noise to comply with the District Plan noise limits. Dr Chiles has provided calculation and assessment relating to the most significant noise sources expected to be associated with the operation of the scheme. I agree with his assessment that it is realistic to expect all such systems to be designed to ensure compliance with the District Plan noise rules.

4.0 CONDITIONS

4.1 Previous to the finalisation of Dr Chiles' evidence we discussed and revised the proposed conditions. I consider that compliance with these conditions will ensure that noise from the proposal is not unreasonable.

Jeremy William Trevathan

04 August 2008