Before the Board of Inquiry appointed under s149J of the resource management act 1991

IN THE MATTER OF The Resource Management Act 1991

AND

IN THE MATTER OF applications for notices of requirement and resource consents made by the New Zealand Transport Agency in relation to the Christchurch southern motorway proposal

Memorandum to the Board
27 June 2013

Report of Matthew Blair Smith (Officer of Canterbury Regional Council)

Qualifications and Experience

My full name is Matthew Blair Smith and I am employed by the Canterbury Regional Council (Environment Canterbury) as a Principal Consents Advisor where my role includes providing technical groundwater and planning support to the consent section. I have held this position since January 2012. I hold the qualification of M.Sc (Engineering Geology) from the University of Canterbury and I am a member of the New Zealand Hydrological Society and the International Association of Hydrogeologists. Previous to my employment with the consents section, I was employed as a Groundwater Hydrologist with Environment Canterbury's groundwater section (2005) and previous to this was employed with GPF (an environmental consulting and engineering firm). I have worked in groundwater hydrology since 2001.

Introduction and scope

1. The Canterbury Regional Council has been asked to provide a statement setting out its position regarding matters raised in the statement of agreed position and intent, dated 24 June 2013. I have been asked to provide comment on the council’s behalf.
2. I have been involved with discussions between Mr Mark Utting (BECA) and Mr Tony Reynolds (Tonkin and Taylor) regarding Christchurch Southern Motorway Stage 2, and in particular the proposed dewatering of the area around the Robinsons Road Overpass.

3. I have read the statement of Mr Utting and Mr Reynolds date 24 June 2013 which outlines some of our discussions. In this memorandum I will comment on the:

   • summary of agreement and
   • matters outstanding

4. Drawing on my own experience as well as from the perspective of the Canterbury Regional Council (CRC). Such comments are within the ambit of my expertise.

**Summary of agreement**

5. I agree with the conclusions reached by Mr Reynold's and Mr Utting in their statement of agreement (para 24) that if groundwater levels are higher than Mr Utting's predictions that:

   • This will result in a greater amount of dewatering
   • The results of increased abstraction will not reduce the reliability of existing well yields and
   • That the water abstracted is non-consumptive as it will be discharged back to the same allocation zone as it was taken.

**Matters outstanding**

6. With respect to the matters outstanding I have been asked to comment on the consequences of these unresolved matters.

7. I agree with Mr Reynolds observation that water levels show a stronger correlation with rainfall than they do with allocation. This is likely to be due to the fact the rainfall is the biggest year to year variable in the water level record.

8. I also agree that the groundwater resource is highly allocated in this area, and that groundwater levels control base-flow in the springs and spring-fed streams at the bottom of the catchment as well as the Selwyn River. CRC’s groundwater allocation limits are in place to protect those base-flows.

9. From my reading of the statement the points of disagreement are the predicted maximum water levels and the timing of effects through the groundwater system.
10. Should the additional water entering the groundwater system from the Central Plains Water (CPW) project result in water levels not reaching Mr Utting’s predicted levels, then less dewatering will occur on fewer occasions, for shorter durations, and/or at reduced abstraction rates. Conversely, if water levels are higher than those predicted then more dewatering, more frequently and at higher rates will be required.

11. The dewatering will only occur when water levels are high. CRC’s concerns regarding the streams are low flows that can result in adverse ecological effects.

12. As I understand the proposal, the water abstracted will in some cases be discharged into a nearby stockwater race and discharge some distance down-gradient. The down-gradient discharge points are closer to the head of the springs and streams and as a consequence the abstracted water will reach the streams more quickly than if it had flowed through the aquifer. The result will be increased flows in those streams, and some reduction in the groundwater storage due to the increased outflows.

13. I acknowledge that the transport of groundwater via the stockwater race will dramatically reduce travel times. Average groundwater throughflow in this area is likely to be in the order of 1-2 m/day, however, the pressure response is much more rapid and the actual impacts will be dissipated through the system relatively quickly and the effect of the dewatering is unlikely to adversely impact groundwater storage at times of low flow.

14. If there is no significant delay in the movement of effects throughout the groundwater system then the proposed activity cannot impact on the minimum flow regimes that occur today, as it is my understanding that based on the predicated water levels significant dewatering is very unlikely to occur under present conditions (i.e. no CPW in inputs). Therefore dewatering will only occur when aquifer storage and consequently groundwater levels are higher than they are today.

Concluding comments

15. I regard the proposed abstraction of water as being non-consumptive.

16. In my opinion the proposed discharge to the stockwater race and subsequent transport of water down-gradient will alter the timings of flows in the springs and spring fed streams, however, this will not adversely affect present low flows.

17. The proposed rate of dewatering is significantly lower than natural discharge from this zone, and as dewatering will only occur during times of high aquifer storage I do not anticipate any adverse impacts on low flows.

Matt Smith
Principal Consents Advisor