

IN THE MATTER

of the Resource Management Act 1991

AND

AFFCO New Zealand Limited

IN THE MATTER

of Resource Consent Applications by
AFFCO New Zealand Limited in
relation to applications to discharge
treated meatworks effluent onto land,
into groundwater and into the Oroua
River

SUPPLEMENTARY STATEMENT OF EVIDENCE BY Neil Thomas

A. QUALIFICATIONS AND EXPERIENCE

1. My full name is Neil Malcolm Thomas.
2. My evidence is given on behalf of the Horizons Regional Council in relation to applications for resource consents to discharge wastewater resulting from meat processing to land, into groundwater and into the Oroua River.
3. Details of my qualifications and experience are provided in my evidence in chief.
4. I confirm that I have read and agree to comply with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise.

B. SCOPE OF SUPPLEMENTARY EVIDENCE

5. My supplementary evidence clarifies some areas where the Applicant has queried my interpretation of the data regarding the effects of the proposed consents on groundwater. Specifically, those areas include assessments of the volume of potential seepage through the base of the storage ponds, and assessments of the effects of the existing, and proposed land discharges.

C. POTENTIAL VOLUME OF POND SEEPAGE

6. In his evidence, Mr Hamish Lowe suggests that pond seepage is not expected to be more than 50 m³/day and that the estimates provided in my evidence in chief of seepage estimates of up to 200 m³/day are unrealistic. Mr Lowe suggests that a pond seepage rate of 200 m³/day is unrealistic because that magnitude of loss would be noticed in the flow figures.
7. No measured flow figures have been provided with the application, and the only estimates are based on the number of animals that are processed. I do not agree that an estimate of 200 m³/day is unrealistic, given the uncertainties in the calculations provided by the Applicant. In addition, the groundwater quality data suggests that the groundwater is degraded in the immediate area around the ponds and therefore some level of seepage is likely to be causing that effect.
8. The groundwater level data provided by the Applicant indicates that at the time it was measured, groundwater flow was subparallel to the Oroua River. However, that represents only a single snapshot of groundwater flow from winter and groundwater flow directions may be different at other times of the year, particularly at times of lower water levels. No groundwater monitoring has occurred to determined groundwater quality between the river and the AFFCO site. As a result, that monitoring, as recommended in my evidence in chief, should be a condition of consent.

D. EFFECTS ON GROUNDWATER QUALITY FROM LAND DISCHARGE

9. Mr Lowe indicates that whilst the application means that more wastewater can be applied over a larger area, the contaminant load to groundwater will reduce compared to the existing regime. No information was provided in the original application to define the existing contaminant load across the areas that are proposed to be irrigated and therefore I have not seen any information to demonstrate whether the proposed land discharge regime will

reduce contaminant loads. However I understand from Dr David Horne that the existing land use across the areas that are proposed to be used for land discharge is dairying, and that the proposed loading is unlikely to be greater than contaminant loading that may occur as a result of that landuse. Therefore, Mr Lowe's statement may be correct, although there is limited data to demonstrate that is the case.

10. Figure 1, attached to my evidence shows the location of the two areas which are identified in the application as having historically received MWE from the AFFCO New Zealand Feilding site (Land Management Units 1 and 2). On the same figure I have also marked the location of groundwater monitoring bores, where the size of the bore symbol corresponds to the maximum nitrate nitrogen concentration observed in groundwater samples from that bore.
11. Mr Lowe indicates that he believes that the elevated concentrations of nitrate nitrogen and other parameters including chloride in bores 325413 and 325416B are not related to land use activities across the areas where MWE is irrigated. Those two bores are located adjacent to the Oroua River.
12. Bore 325413 is located directly adjacent to Land Management Unit 2 (LMU2) and shows very high nitrate nitrogen concentrations, greater than the drinking water standard. Whilst the direction of groundwater flow is uncertain, there is no evidence that groundwater flows away from the Oroua River, based on the contours shown in Figure 2. Therefore, based on the evidence presented in the consent application, it is likely that the very high concentrations observed in that bore are related to activities across the area defined as LMU2 in the application documents. It also follows that some groundwater discharge to the river occurs from time to time.
13. Information from the Horizons Compliance Team (attached to my evidence at Appendix A) also indicates that irrigation of MWE has occurred across the Land Management Unit 2 area in the 2014 /2015 irrigation season. However, I note from that data that the effluent application was within the consented limits for those areas.
14. Very high nitrate nitrogen concentrations have also been observed in groundwater samples from bore 325416B. Whilst that bore is located a few hundred metres from the Land Management Units, I do not believe that the groundwater flow directions are sufficiently well constrained to rule out any

effect from the existing effluent discharges. Information from the Horizons Regional Council consent compliance team also indicates that irrigation has occurred across the whole of the Land Management Unit 1 area, although again, the effluent application has occurred within the consent limits.

15. The Applicant indicates that discharges to land will be operated in a way that minimises any drainage to groundwater and also minimises the contaminant load that may reach groundwater. However, on the basis of the very high nitrate concentrations observed in bores close to the existing discharge areas, it would be prudent to monitor groundwater around the proposed areas on a monthly basis at least for the first five years of a the consent, if granted to ensure that the effluent discharge to land is operating as intended.
16. It will also be important that any existing monitoring bores and new monitoring bores are correctly installed and sampled by sufficiently trained personnel to ensure that groundwater samples are representative. Any monitoring should also be located away from surface water bodies, and stock access to those bores should be prevented.

E. CONCLUSION

17. In my opinion both potential seepage from the storage ponds and the potential effect from existing disposal of MWE across the irrigation areas may have some effect on the local environment. In both cases there is uncertainty because of limited monitoring data and varying information regarding current and past irrigation practices. Therefore additional monitoring as proposed in my evidence in chief should be imposed to ensure that the intended improvement in groundwater quality is achieved, or if adverse effects occur they can be appropriately quantified and managed.

Neil Thomas
9th November 2016

Appendix A: Compliance data from Horizons Regional Council
(Irrigation summary data for each paddock and a map showing the location of each numbered paddock)