

**IN THE MATTER** of the Resource Management Act 1991 (the Act)

**AND**

**IN THE MATTER** of a submission to Horizons Regional Council on its Proposed One Plan by Onsite Wastewater User Group.

## **EVIDENCE OF DAVE MILLER**

### **INTRODUCTION**

1. I am actively involved in the design of domestic on-site wastewater systems this being the focus of my practise. I have 35 years experience in engineering design, manufacture and installation of wastewater systems.
2. Since 2004 I have been researching the performance of domestic on-site wastewater systems, the treatment processes used and their effectiveness in treating domestic wastewater and have presented two papers at national conferences on this topic.

### **QUALIFICATIONS AND EXPERIENCE**

3. I am a Registered Designer (Design Association of NZ - DANZ) and holder of an annual practising certificate. I hold a New Zealand Certificate of Engineering (Int – Civil). I have presented papers at NZ Water and Waste Association conferences (2), Land Treatment Collective conferences (2) and Building Officials Institute of NZ conference on wastewater matters and related issues.
4. I have read and agree to comply with the current Code of Conduct for Expert Witnesses as contained in the Environment Court's "Practice Note on Alternative Dispute Resolution, Expert Witnesses and Amendment to Practice Note on Case Management."

### **SCOPE OF THIS EVIDENCE**

5. Issues that will be addressed in this evidence are:

- Size of land areas and sewage systems allowed for each land area
- Soil type to be considered in determining loading rates
- Nitrogen limits to be reintroduced for secondary sewage treatment systems
- Approval process recommended for secondary sewage treatment systems.
- Rule 13-10 (e)(ii): Definition of, and set-off distances, from open drains from disposal areas

### **CONSULTATION PROCESS**

6. In my view there does not appear to have been widespread or meaningful consultation with Councils and interested parties in the formation and revision of the One Plan. Conversation with local Territorial Authorities shows that some of them use the guideline manual and sometimes refer to One Plan. The version they appear to be using is the version dated April 2007. They comment that although Horizons staff have indicated that consultation meetings will be called, no meetings have eventuated. Local discussions on the One Plan have been largely driven by the personal efforts of local practitioners in the industry organising the local Manawatu User Group at their own expense.
7. I have not received information from Horizons since the roadshow to launch the One Plan. This is contrary to the claims of Mr Barnett in his evidence presented to you that suggests at paragraph 86 “An updated version of the Manual for Onsite Wastewater System Design and Management and the Proposed Regional Rules has been prepared. It will incorporate the changes suggested in submissions where we believe the integrity of the strategy is not compromised. Prior to the hearing, this manual will be released and discussed with the Region’s TAs, wastewater system suppliers, system designers and submitters to narrow any points of contention. I am hopeful that this process will eliminate most of the issues raised by submitters in relation to onsite wastewater management in the Region”.

### **VIEW ON THE INITIALLY PROPOSED ONE PLAN RULES**

8. In my view the initially proposed rules were a large step in the right direction, however they fell short on practicality and accuracy.

## **VIEW ON REVISED RULES**

9. The new rules are a significant improvement and, in my opinion, their effectiveness could be further improved with consideration of the following points.

### **Land Areas: [Rule 13-11 (c) (d) (da) (db)]**

10. The revised rules currently consider land areas of over 10 ha, 4 – 10 ha, 1-4 ha and less than 1 ha and allows certain levels of treatment and rates of discharge in each category.

11. It would appear that the category 4-10 could be removed with primary (septic tanks) and secondary treatment allowable for any section over 4 ha. Effluent discharge from a primary treatment system must be by pressure distribution, either by pump or siphon when sufficient fall is available, to Low Pressure Effluent Dosing (LEPD) trenches. Effluent discharge from a secondary sewage treatment system can be either by pressure compensating dripline or LPED trenches depending on soil type and area available.

12. It appears to me the apparent assumption in the rules that secondary treatment systems will always be discharged to dripline is restrictive. For instance the Standard allows effluent discharge of secondary treated effluent into LPED trenches in category 1 and 2 soils (sand and gravels) at up to 50 litres per square metre per day but only allows 5 litres per square metre per day for discharge from dripline. On smaller coastal sections the dripline could take up a considerable area on the section.

### **Soil type consideration for effluent disposal**

13. There appears to be NO consideration of the type of soil into which the effluent is to be discharged and from a design perspective it is the soil and the even rate of distribution into that soil (at a balanced rate the soil can absorb and treat,) that determines the success or otherwise of the wastewater system.

14. ASNZS 1547:2000 (Tables 4.2A1 – 4) divides the receiving soil environment into 6 categories from rapidly draining to very poorly drained and prescribes a rate or range of rates of application or primary and secondary treated effluent.

15. It would appear to me that the revised Rule 13-11 (c-db) dealing with rates of effluent discharge should be expanded and linked to the Standard or Council manual in regards to rates of discharge in varying soil types.

#### **Nitrogen levels for secondary sewage treatment**

16. It appears the nitrogen limits were originally included in the treatment quality required but subsequently any reference to nitrogen has been removed. I do not know if any consultation has taken place in regard this decision and I would like to see the limit of nitrogen of 60 g/m<sup>3</sup> stated for properties of more than 1 ha, and 30 g/m<sup>3</sup> for properties of less than 1 ha as previously proposed.

#### **Approval process for secondary sewage treatment systems**

17. The Hawkes Bay Regional Council (HBRC) has been conducting a compliance monitoring programme since 2001 on domestic sewage systems installed in the 'hot spot' areas, namely the coastal settlements and over the unconfined Heretaunga Plains aquifer.

18. Data collected in this programme revealed that from 2001 – 2006 only 45% of systems tested actually produced secondary treated effluent (as defined in AS/NZS 1547:2000 as BOD<sub>5</sub>:TSS 20:30 g/m<sup>3</sup>) and that the average effluent quality of the remaining 55% of systems was BOD<sub>5</sub> 100 g/ m<sup>3</sup> and no better than effluent from a filtered septic tank. Council staff are familiar with these results.

19. While Horizons have a lot of suppliers, it appears that little action may have been taken to ensure systems meet an acceptable effluent quality. This is based on an observation that some of the manufacturers whose systems continually failed to produce secondary treated effluent in the HBRC monitoring programme are listed in the Horizons list of approved manufacturers of secondary sewage treatment systems. I question the process used by Horizons to generate a list of systems which may or may not meet minimum effluent standards.

20. The HBRC monitoring programme is continuing and, while there has been a partial improvement in performance of some systems it appears to me that some systems are simply not able to produce secondary treated effluent in typical domestic situations. These systems (and manufacturers) should not be listed as Horizons approved suppliers of secondary sewage treatment systems.

21. To demonstrate the scale of failing, I have included a summary below of some of the HBRC monitoring data:

- **2001:** - 25 systems, 44% failed BOD<sub>5</sub> 20, average BOD<sub>5</sub> was 123
- **2002:** - 38 systems, 50% failed BOD<sub>5</sub> 20, average BOD<sub>5</sub> was 122
- **2003:** - 69 systems, 86% failed BOD<sub>5</sub> 20, average BOD<sub>5</sub> was 94
- **2004:** - 31 systems, 52% failed BOD<sub>5</sub> 20, average BOD<sub>5</sub> was 87
- **2005:** - 49 systems, 51% failed BOD<sub>5</sub> 20, average BOD<sub>5</sub> was 86
- **2006:** - 67 systems, 48% failed BOD<sub>5</sub> 20, average BOD<sub>5</sub> was 109
- **2007:** - 51 systems, 29% failed BOD<sub>5</sub> 20, average BOD<sub>5</sub> was 72

It should be noted that the BOD<sub>5</sub> 20 limited above is the same as the limited in Rule 13-11.

22. I would also like to suggest that Horizons adopt a monitoring programme, similar to the HBRC compliance monitoring programme for sewage systems installed in 'hot spot' areas, say, built up coastal and other rural communities and other sensitive areas near waterways and/or unconfined aquifers.

#### **Set-Off Distance for effluent discharge [13-10 (e)(ii)]**

23. States there shall no discharge within 20 metres from any river, lake, natural wetland or artificial watercourse. Does the term 'artificial watercourse' include roadside drains, farm drains, Novaflow drains and mole plough drains or similar?

24. It is common and desirable practise to provide a stormwater cut-off drain around a Land Application Area (LAA) to prevent the flow or seepage of stormwater onto and through the LAA. Is it the intention of this rule that these drains be considered 'artificial watercourses' and if so, this should be stated, and if not, the description of what is and what is not an artificial watercourse needs to be better defined.

25. In my view 20 metres separation from artificial drainage may be excessive.

### **VIEW ON THE MANUAL**

26. The manual is a duplication of TP58 and 1547, but offers an advantage of being able to be streamlined for this region. It would be enhanced by the specifying of “hot spots” which require site specific design.

### **WHAT IS NEEDED**

27. Communication. Regular communication is and has been very poor. I feel myself and others could have contributed further and provided feedback earlier if communication was better. Some of the rules in the latest version need refining along the lines of my suggestion and others here today.

### **SUMMARY**

28. I would like to see an approval process for systems, designers and installers.

29. The Council should instigate a maintenance regime requiring all sewage systems to be maintained according to the manufacturers requirements and that maintenance inspection forms be submitted to Horizons or Territorial Authorities, where they are reviewed, on a regular basis. Where systems (ie primary pumped LPED systems) are not covered by a specific manufacturers maintenance schedule, a best code practice should be adopted by Horizons.

Dave Millar

25 February 2010