BEFORE INDEPENDENT HEARING COMMISIONERS

IN THE MATTER	**OF**	the Resource Management Act 1991
AND		
IN THE MATTER	**OF**	Proposed Waikato Regional Plan Change 1: Waikato and Waipa River Catchment

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STATEMENT OF PRIMARY EVIDENCE OF DR DEBBIE CARE
FOR NEW ZEALAND THROUGHBRED BREEDERS ASSOCIATION
DATE 23 APRIL
SUBMITTERS 72503, 73067, 73095, 82030, 81968, 81978, 81976

New Zealand Thoroughbred Breeders' Association
9 Anzac Street
Cambridge 3434
New Zealand

Introduction

1. My name is Debbie Anne Care an Independent Environment Consultant.

2. I hold a New Zealand Certificate of Science, from Waikato Institute of Technology, Bachelors Degree in Earth Science from Waikato University, Hamilton, a Master of Science Degree (1st Class Honours) in Plant Science from Waikato University, Hamilton and a PhD in Botany from Auckland University, Auckland.

3. I also hold Post graduate qualifications in Nutrient Management (Intermediate and Advanced), in Effluent System Design from Massey University. I have also completed an Farm Dairy Effluent Hydraulic Design Course.

4. I am a certified assessor, and was involved in the development and research of, the Farm Dairy Effluent Warrant of Fitness programme.

5. I have been the chair of the Farm Dairy Effluent System Design Accreditation committee. This committee audits system designs and confers accreditation to effluent design companies.

6. I wrote and delivered the Effluent Farm Management Programme for Primary ITO. This is a 2 day course for farm managers that manage effluent on farm.

7. I was employed as a scientist at AgResearch for 25 years and was also employed at DairyNZ for 5 years.

8. I am currently an independent environment consultant in the primary industries, own my own business, and I have been doing this role for 10 years.

Scope of Evidence

9. I have been asked by Sally Linton, consultant to New Zealand Thoroughbred Breeders Association and Others, to provide expert evidence on;

   a) Whether the results obtained on the project using Overseer make it an appropriate tool in its current form to estimate nitrogen leaching from equine properties.

Expert witness code of conduct

10. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014. This evidence has been prepared in accordance with it and I agree to comply with it. I confirm that the opinions I have expressed represent my true and complete professional opinions. The matters addressed by my evidence are within my field of professional expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

Expert Evidence

11. I worked with Sally Linton on a project funded by Waikato Regional Council where we were using Overseer Nutrient Budget Software (V. 6.3) to assess nitrogen leaching

in several different equine scenarios. (The Report see Appendix 3 of S Linton's statement)

12. My principal conclusions are as follows:

    a) The basic soils, weather and other background information in Overseer is sound.

    b) Several iterations of different equine operations gave variable results.

    c) If a nitrogen leaching figure was given, further inspection of the data shows extremely high pasture production.

    d) "Pasture" type had to be clover ryegrass which given pasture management on equine properties to minimise clover content due to animal health reasons means that overseer over estimates nitrogen fixation by clover.

    e) Overseer in the sheep and cow models relies on outputs of meat, milk and wool to balance the feed inputs. This does not exist in most equine operations and means there is serious errors in input balancing.

    f) Feed inputs are very high energy and there is no way to account for a horse expending energy as an output so it cannot be accounted for. Also, horse feed value parameters are given as MJ/kg and Overseer units are ME.

    g) Overseer will not allow housing (stabling) of horses, only cows. A work around could be to convert horses to cows to allow for this. However, it still requires effluent storage and liquid effluent to be run through the model. The effluent can be exported off the property, but still means that cow values are used, and this causes any conclusions to be invalid.

    h) The use of the sheep algorithms for horses does not seem to be the best model to use. Sheep have frequent small urinations whereas horses tend to have fewer larger urinations.

Conclusion

13. All of the above points mean that using Overseer (in its current form using the sheep model) to establish an Nitrogen Reference Point is inappropriate and inaccurate. If a value can actually be gained it has no trust and validity as the supporting figures are unrealistic.