

**BEFORE THE HEARINGS PANEL**

**IN THE MATTER** of hearings on submissions  
concerning the Proposed  
One Plan notified by the  
Manawatu-Wanganui  
Regional Council

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**SUPPLEMENTARY EVIDENCE OF MR PETER HAROLD TAYLOR  
FOR THE WATER HEARING  
ON BEHALF OF HORIZONS REGIONAL COUNCIL**

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## **1. PART ONE: INTRODUCTION AND EXECUTIVE SUMMARY**

1. I have prepared this report as supplementary evidence to my Section 42A report. It has been compiled in response to results from additional investigations of four of the Farmer Applied Resource Management (FARM) Strategy test farms reported in my evidence, and includes a replacement Table 11, correcting mistakes in that table as it appeared in my original evidence.
2. This evidence is in three parts:  
Part One: This Introduction and Executive Summary.  
Part Two: Results of the additional investigations, including conclusions.  
Part Three: Replacement Table 11.

## **2. EXECUTIVE SUMMARY OF SUPPLEMENTARY EVIDENCE AND CONCLUSIONS**

3. Four of the 21 Farmer Applied Resource Management (FARM) Strategy farms that I reported on in my evidence were revisited to follow up on suggestions made by either the farmers concerned or the consultants who prepared the FARM Strategies.
4. The suggestions related to potential mitigation of nitrogen loss off these farms involving reduced nitrogen fertiliser use, increased cow numbers, addition of a support block, regional versus farm scale mapping, and an adjustment to Land Use Capability classes for land under permanent irrigation.
5. The conclusions reached are:
  - (i) Seasonal variation in farming operations, particularly with respect to fertiliser use, can change N-loss significantly; and
  - (ii) Adjustment to Land Use Capability (LUC) classes in sand country under permanent irrigation can be justified.

## **3. PART TWO: ADDITIONAL INFORMATION TO ORIGINAL S42A REPORT**

6. Subsequent to the completion of the FARM Strategies, comments by farmers and consultants led to further work on four farms. These were: Stoney Creek Partnership, Waka Dairies, Muskit Enterprises, and Johnston farm. Table 1 below outlines the reasons for the extra work.
7. In each case the work focused on mitigating N-loss from these properties.

**Table 1.** Farms where additional work was done and the reasons for it.

Farm	Reasons
Stoney Creek Partnership	i. Projected decrease in N fertiliser use ii. Projected decrease in imported supplement iii. Increased cow numbers (96) iv. Planned improvement to effluent system
Waka Dairies	i. Existence of a 56 ha support block, previously not incorporated ii. Decreased cow numbers from 800 to 720
Muskit Enterprises	Potential benefit from farm scale LUC mapping
Johnston	Explore reasons for, and implications of, LUC adjustment for certain LUC classes under permanent irrigation

#### 4. RESULTS

**Table 2.** Differences in N-loss on four farms re-visited.

Farm	Previous permissible N-loss at year 1 (kg N/ha/yr)	Previous N-loss (kg N/ha/yr)	Revised permissible N-loss at year 1 (kg N/ha/yr)	Revised current N-loss (kg N/ha/yr)	Difference (kg N/ha/yr)	
					Then	Now
Stoney Creek Partnership	19	34	19	25	-15	-6
Waka Dairies	25	35	25.5	23	-10	+2.5
Muskit Enterprises	17	34	16.5	33	-17	-16.5
Johnston	16.5	25	17.2	25	-8.5	-7.8

8. For Stoney Creek Partnership, the reduced application of urea, reduced imported supplement, and about half the herd being milked once a day, made a significant difference to the N-loss, despite an increase of 96 cows.
9. Including the support block into the Waka Dairies estimates of N-loss made a difference, but not as much as the reduction in cow numbers.
10. Muskit Enterprises did not benefit from farm scale mapping.
11. Using the Johnston farm as an example, adjustment to LUC classes for land under permanent irrigation was assessed by LandVision on Horizons Regional Council's behalf (Appendix 1). Johnston farm does benefit from an adjustment to its LUC classes of certain subclasses under permanent irrigation.

## 5. CONCLUSIONS

12. Seasonal variation in farming operations can make a big difference to the amount of nitrogen being leached off a farm. This variability confirms a view, expressed in my evidence (Paragraph 120 xiii), to allow farmers the choice of an N-loss averaging option.
13. I accept the basis for reclassifying land under permanent irrigation as documented by LandVision, and Horizons would adopt this method as part of the protocols for completing a FARM Strategy.

## 6. PART THREE: CORRECTIONS TO ORIGINAL S42A REPORT

14. The correction I wish to make is to Table 11 of my S42A report, which contains data on the percentages of Land Use Capability Classes greater than Class 3 on dairy properties. The corrected Table 11 is to **replace** the existing Table 11 and is presented below.

**Table 11.** The FARM Strategy test dairy farms showing the comparisons with rainfall, percentages of LUC classes 4-7 and 6-7, and their respective amounts of N-loss to be reduced to meet, or which is surplus to, Year 1 targets.

Farm Name	Rainfall (mm)	Stocking rate over effective farm area	%Total LUC classes 4-7	%Total LUC classes 6-7	Reduction kg N/ha/yr needed to meet Year 1 target	Surplus kg N/ha/yr at Year 1
Barrow	1,200	2.7	9.4	6.4	1	
Glenbrook	1,865	2.2	46.0	12.0	6	
Flockhouse	900	3.2	30.4	14.6		6
Tutu Totara	1,141	2.6	24.4	16.4		9
Stoney Creek Partnership	1,300	2.2	54.6	24.6	13	
Jala Enterprises	2,300	2.5	40.3	40.3	11	
Windwood farm	1,500	2.0	43.3	18.7	4	
Muskit Enterprises	1,300	3.0	46.3	45.5	18	
Waka Dairies	1,200	3.3	0.0	0.0	11	
Janssen	1,718	2.6	55.1	28.2	9	
Johnston	837	3.3	53.3	32.3	9	
Byreburn	883	3.4	0	0	3	
Hokio Farm	1,040	2.5	28.5	0		0
Whirokino Farm Ltd	890	2.4	53.2	53.2	2	
Moutoa M Farm	1,000	3.4	0	0	3	
Martyn	890	2.4	0	0		13
Ivo Farms	970	1.7	16.2	14.3		9
Koot	875	2.6	31	4.0		7

## **7. REFERENCES**

Rogers R., Sheppard Agriculture. September 2009. FARMS Report Update. Reporting the effect of changes to the farm operating system on N targets and N-loss for case study dairy farms involved in the initial FARM Strategy.

Three farm reports: C and A Boyden, Stoney Creek Partnership; P Kelly, Muskit Enterprises; and R and K Phillips, Waka Dairies.

Peter Taylor

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**8. APPENDIX ONE**

N-loss limits for the Johnston FARM Strategy following the reclassification of irrigated sand country.