OVERSEER application to nutrient benchmarking

Land TAG

8 Oct 2014

ROTORUA TE ARAWA LAKES PROGRAMME

Proud Partners

DESTINATION ROTORUA
ROTORUA DISTRICT COUNCIL

TE ARAWA LAKES TRUST

Bay of Plenty REGIONAL COUNCIL

- ‘Rule 11’ – grand parented capping rule similar to Taupō variation 5
- Applies to 5 lakes
- Requires properties to be ‘benchmarked’ for N and P over 01-04 period
- Benchmarking completed in Ōkaro, Rotoehu, Ōkāreka and Rotoiti
- Rotorua – about 30500 ha benchmarked out of 37000 affected by rule 11.

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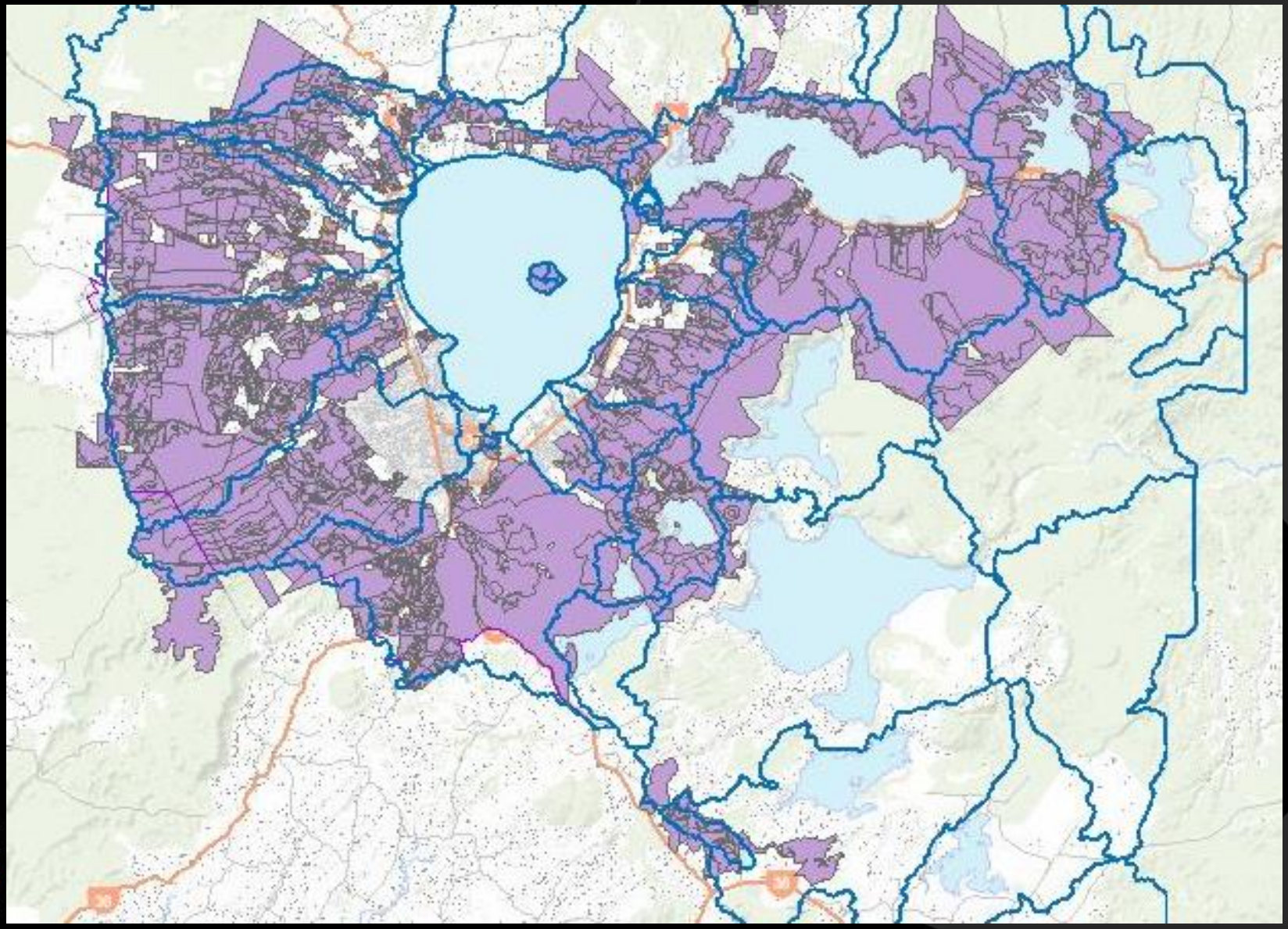
Benchmarked area



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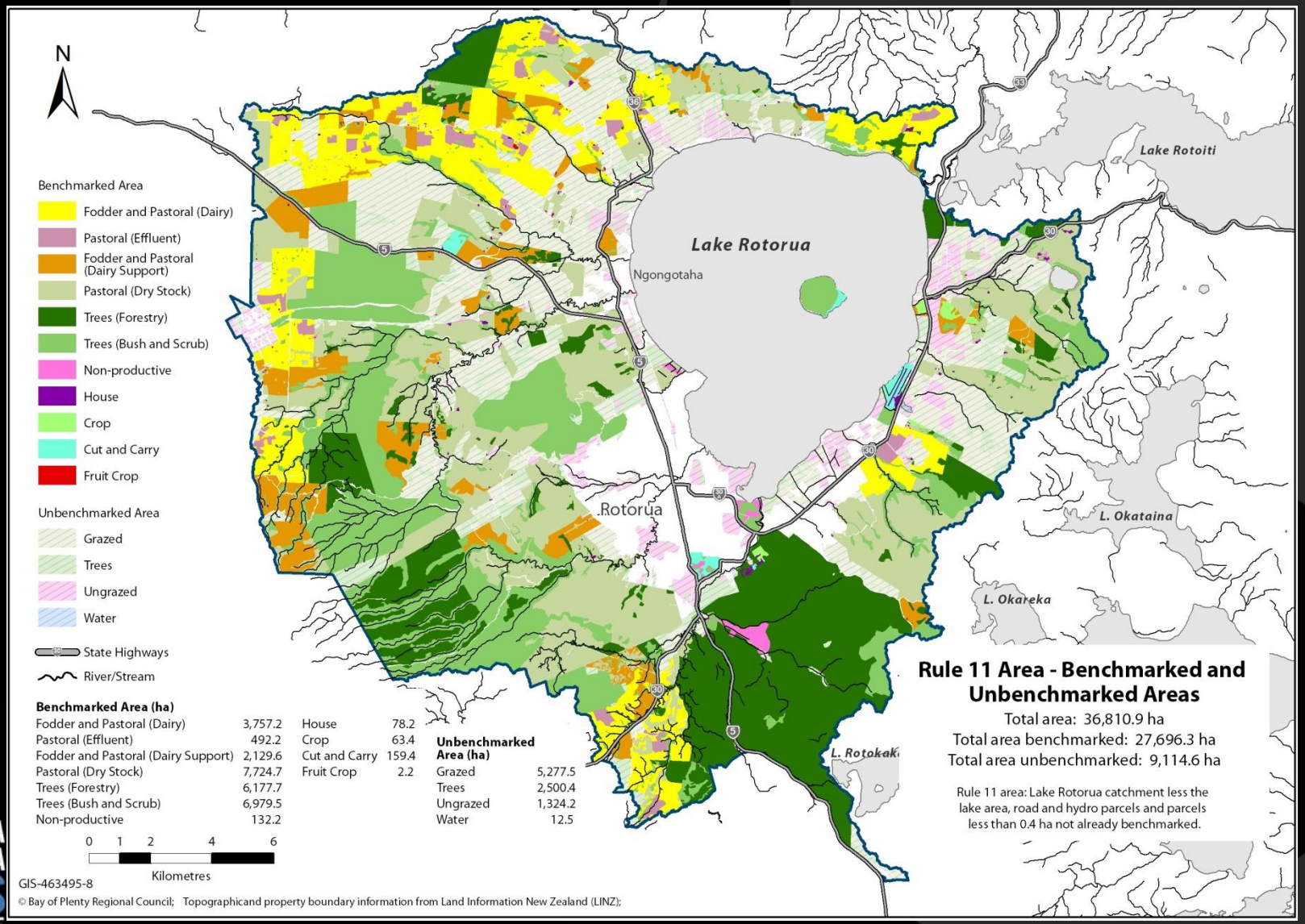
OVERSEER blocks are mapped in GIS and categorised by block type



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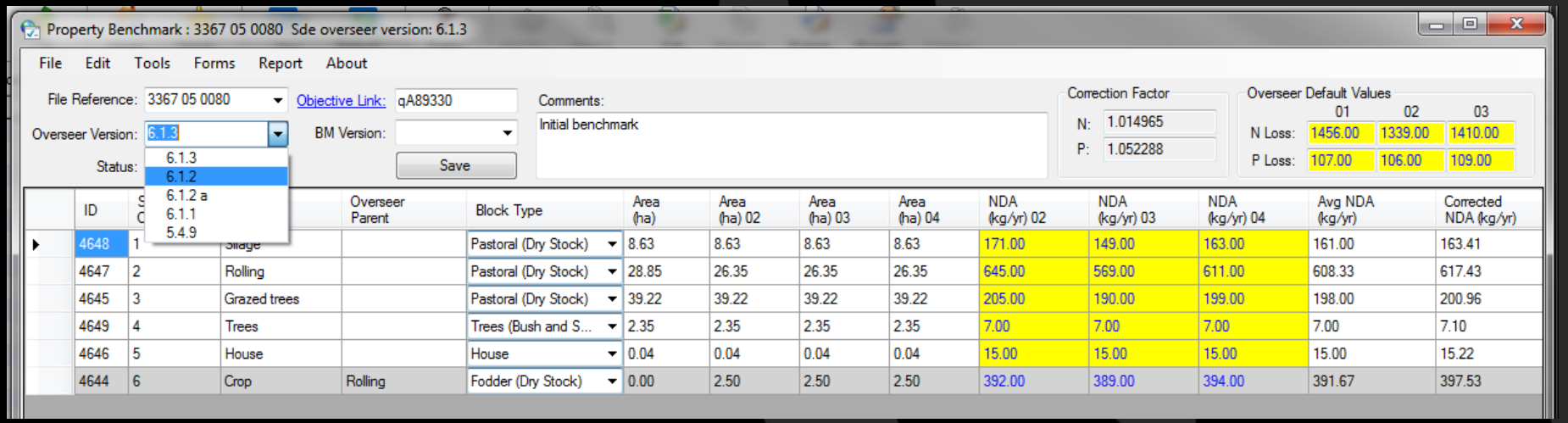
GIS system linked to a database and multiple versions of property OVERSEER files stored



ID	Overseer Parent	Block Type	Area (ha)	Area (ha) 02	Area (ha) 03	Area (ha) 04	NDA (kg/yr) 02	NDA (kg/yr) 03	NDA (kg/yr) 04	Avg NDA (kg/yr)	Corrected NDA (kg/yr)
4648		Pastoral (Dry Stock)	8.63	8.63	8.63	8.63	171.00	149.00	163.00	161.00	163.41
4647		Pastoral (Dry Stock)	28.85	26.35	26.35	26.35	645.00	569.00	611.00	608.33	617.43
4645		Pastoral (Dry Stock)	39.22	39.22	39.22	39.22	205.00	190.00	199.00	198.00	200.96
4649		Trees (Bush and S...	2.35	2.35	2.35	2.35	7.00	7.00	7.00	7.00	7.10
4646		House	0.04	0.04	0.04	0.04	15.00	15.00	15.00	15.00	15.22
4644	Rolling	Fodder (Dry Stock)	0.00	2.50	2.50	2.50	392.00	389.00	394.00	391.67	397.53

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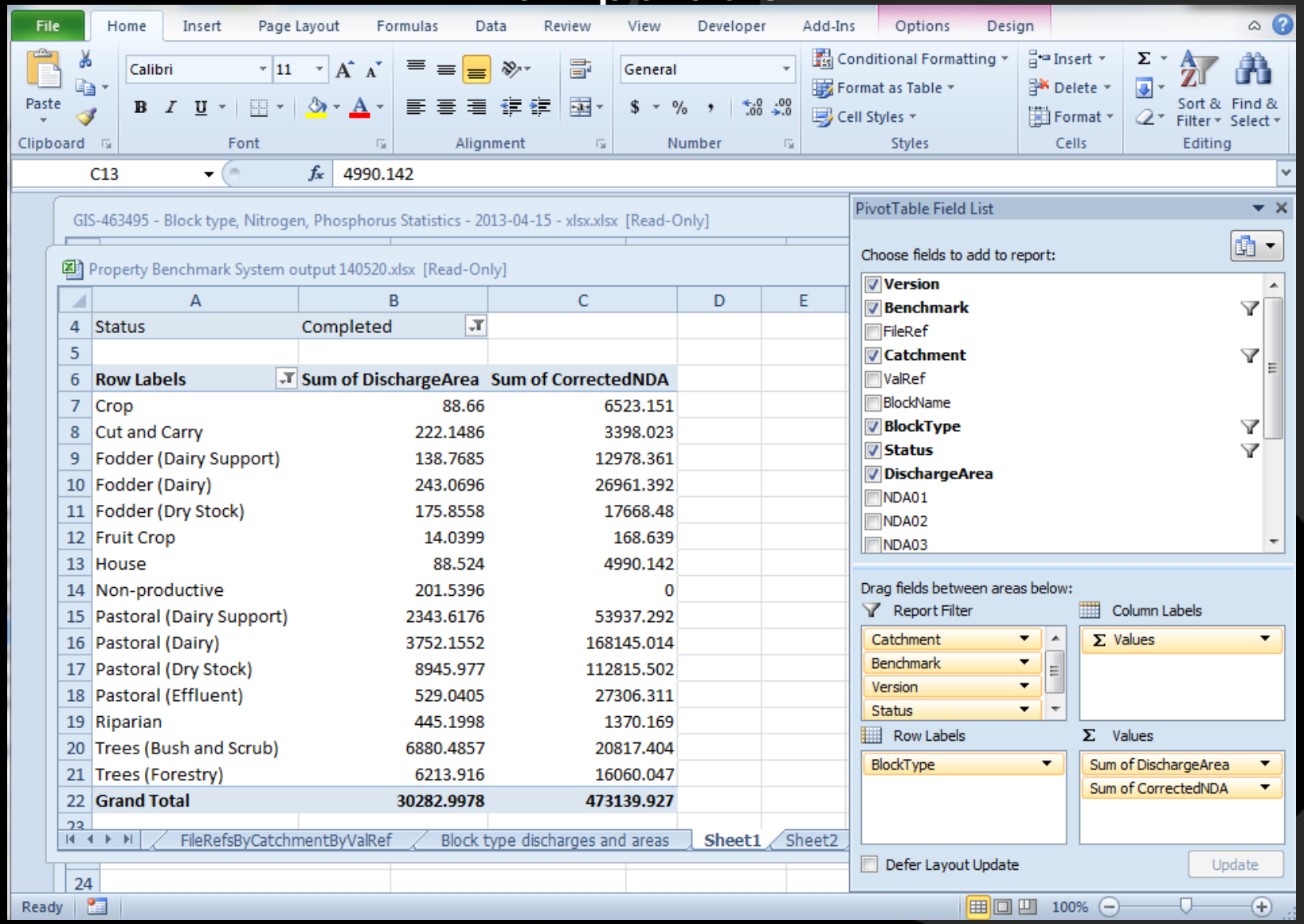
All database data outputted to excel to allow manipulation



GIS-463495 - Block type, Nitrogen, Phosphorus Statistics - 2013-04-15 - xlsx.xlsx [Read-Only]

Property Benchmark System output 140520.xlsx [Read-Only]

	A	B	C	D	E
4	Status	Completed			
5					
6	**Row Labels**	**Sum of DischargeArea**	**Sum of CorrectedNDA**		
7	Crop	88.66	6523.151		
8	Cut and Carry	222.1486	3398.023		
9	Fodder (Dairy Support)	138.7685	12978.361		
10	Fodder (Dairy)	243.0696	26961.392		
11	Fodder (Dry Stock)	175.8558	17668.48		
12	Fruit Crop	14.0399	168.639		
13	House	88.524	4990.142		
14	Non-productive	201.5396	0		
15	Pastoral (Dairy Support)	2343.6176	53937.292		
16	Pastoral (Dairy)	3752.1552	168145.014		
17	Pastoral (Dry Stock)	8945.977	112815.502		
18	Pastoral (Effluent)	529.0405	27306.311		
19	Riparian	445.1998	1370.169		
20	Trees (Bush and Scrub)	6880.4857	20817.404		
21	Trees (Forestry)	6213.916	16060.047		
22	**Grand Total**	**30282.9978**	**473139.927**		

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Analysis of data through OVERSEER versions highlights OVERSEER calibration issues

Block Type	Benchmark all - O5 and O6		Benchmark - O5 only		Benchmark updated O6.1.2		Change O5 to O6.1.2
	Area (ha)	N discharge (kg N/ha/yr)	Area (ha)	N discharge (kg N/ha/yr)	Area (ha)	N discharge (kg N/ha/yr)	% increase from BM O5 to 6.1.2
Dairy	4524	49.2	4523	49.2	882	73	48%
Drystock	9122	14.3	8067	14.0	8792	23	67%
Dairy support	2482	27.0	1997	24.4	1974	37	53%
Dairy support plus drystock	11604	17.0	10065	16.0	10766	26	61%
Trees	13540	2.8	12556	2.8	12919	2.8	-1%

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What happens to catchment loads with changing OVERSEER outputs?

Source of nitrogen	Area in use (ha)	Total tN/yr (in 2010)	Area(from BM data)	Total tN/yr (from BM data)	Total tN/yr (from 130% BM data)	Total tN/yr (from 150% BM data)
Dairy	5050	273	5088	252	327.6	378
Drystock[1]	15072	236	17658	300	390	450
Forest	21182	75.4	19838	56	56	56
Urban[2]	3961	93.4	3883	93.4	93.4	93.4
Lifestyle	1053	16.7				
Geothermal	59	30.3		30.3	30.3	30.3
Rain	n/a	30		30	30	30
TOTAL	**46377**	**755**	**46467**	**762**	**927**	**1038**

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What does this mean to farmers?

- Lake sustainable load is not related to OVERSEER - (Kit Rutherford)
- If the sustainable load is fixed and predictions of catchment loads vary, the difference is assumed to be attenuation
- Further investigation required!!

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