Bay of Plenty Regional Council

Methodology for and output from further revision of NDA reference files

December 2016

PERRIN AG CONSULTANTS

REPORT PREPARED BY

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The information presented in this report is based on conservative current prices and returns to the best of the author's knowledge. No guarantees are given for the final result, which may be affected by factors outside the author's control.

1. Statement of qualifications and experience

1.1 My name is Lee Matheson. I am a Director and Shareholder of Perrin Ag Consultants Limited, an advisory and consultancy business providing a range of services to the pastoral agricultural sector, and have been an employee of the company since August 2006, becoming a director in April 2008.

1.2 I hold the degree of Bachelor of Applied Science (Rural Valuation and Management) with First Class Honours (Plant Science) and an Advanced Certificate in Sustainable Nutrient Management in New Zealand Agriculture from Massey University. I am a Registered Member of the New Zealand Institute of Primary Industry Management. I also hold a Diploma in Financial Services from the Australian Financial Markets Association and have completed the OneFarm Governance Advisory Training Programme.

1.3 My area of expertise is financial analysis and modelling, profitable nutrient management and farm business management. In addition to the provision of project-based agribusiness advisory, I also hold direct executive management authority for a number of dry stock and dairy farming operations (4,747ha) in the greater Rotorua region.

1.4 I have am actively engaged in the provision of professional advisory services to both regional government and land owners as it relates to sustainable nutrient management in both the Rotorua lakes and Upper Waikato catchments. This includes the primary authorship of Farmer Solutions Project (2012), NDA Impact Analysis Phase 1 (2014), Upper Waikato Drystock Nutrient Study (2013) and the Upper Waikato Dairy Support Project (2014).

1.5 Our firm is also one of the approved Land Use Advisory service providers for the Bay of Plenty Regional Council.

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Managing director, Perrin Ag Consultants Ltd

2. Background and terms of reference

2.1 A draft OVERSEER version management method was developed as part of the new rules structure for the Lake Rotorua catchment and subsequently notified in Plan Change 10. This method relied on:

(i) Calculating property NDAs using the dual range allocation method[1]

(ii) Establishing one dairy reference file and one dry stock reference file that approximately represent the average per ha discharge of the range in N losses associated with each sector as determined by the dual range allocation method.

(iii) Expressing each property's NDA as a percentage of the relevant reference files

(iv) Re-running the reference files when new versions of OVERSEER are released and calculating the percentage shift from the previous reference file N loss

(v) Apply the reference file percentage shifts to each block on a property and then summing those blocks to give the whole property NDA.

2.2 These reference files were developed by Perrin Ag for the Bay of Plenty Regional Council in August 2015, with the associated methodology and outputs summarised in the report "Methodology for creation of NDA reference files and stocking rate table" (Perrin Ag, 2015).

2.3 The reference files were revised in February 2016 to address the impact that an anomaly in a subsequent release of OVERSEER Version 6.2.1 had when the files were migrated into this version of OVERSEER. This process and subsequent outputs was summarised in the report "Methodology for and output from revision of NDA reference files and stocking rate table" (Perrin Ag, 2016).

2.4 After reviewing initial submissions on the use of reference files as notified in Plan Change 10 and meeting with some of the relevant submitters in September 2016, the Bay of Plenty Regional Council engaged Perrin Ag to develop alternative reference files for the dairy and drystock sectors.

2.5 These alternative files were to be representative of the "average" benchmarked dairy and dry stock farming systems as they would have been during the Rule 11 benchmarking period (2001-2004), both in terms of farm system and average per hectare N discharge.

2.6 The primary objective was to create reference files that tracked the average benchmarked sector losses through OVERSEER versions as closely as possible.

[1] It is sufficient to know for the purposes of this methodology that NDAs (to be met by 2032) will be determined based on 2001-04 land use and N loss rates. NDAs will be allocated over a range or band of N loss rates per hectare.

3. Methodology

3.1 Both the original and subsequently revised reference files were developed in a stand-alone version of OVERSEER Version 6.2.0 made available by AgResearch.

3.2 For this post-notification revision, the immediate previous versions of reference files were migrated to OVERSEER Version 6.2.3 by BOPRC staff and the block setup (designed to be representative of the geo-physical make-up of the Lake Rotorua catchment) modified by BOPRC to account for a bug identified in OVERSEER Version 6.2.2 regarding the treatment of dairy effluent when applied to less than 100% of an OVERSEER block and a requirement to include cropping activity in the new reference files.

3.3 BOPRC staff then supplied Perrin Ag with sector average farm input data extracted from all the 2001-2004 benchmark files held on file by the BOPRC. Where available, all of the averages supplied represented data from all of the benchmarked properties in the catchment. Where more detailed data were required (i.e. monthly distribution of fertiliser, crop type, effluent management), a subset of the benchmarking data was used to identify catchment trends.

3.4 For the dairy sector this related to all of the dairy OVERSEER® files they had on record (21 farms representing 89 % of the dairy area). For the drystock sector the data was extracted from 12 large drystock properties geographically spread throughout the Lake Rotorua Catchment (12 farms representing 41 % of the drystock area).

3.5 Feasible Farmax models were then created for each of the dairy and dry stock sector reference files, utilising, as a starting point, the same weighted average pasture growth curves used to create the original reference files and the specific farm input data supplied by the BOPRC. However, the modelled systems were ultimately to be designed to:

- (i) reflect the farm system components and performance levels of the average dairy and dry stock farm during the Rule 11 benchmarking period;
- (ii) be structured in the same way as the typical benchmarking file i.e. utilise the same data input fields as used for benchmarking;
- (iii) generate N losses that were in line with the average farm area discharges from the benchmarking period as expressed in OVERSEER 6.2.3. These were 95.86kg N/ha/year for the dairy sector and 34.67kg N/ha/year for the dry stock sector.

3.6 The “average” farm system inputs, as with the geo-physical characteristics assigned to the OVERSEER blocks, represented an average of a series of individual farms, rather than a specific farm system that had the average or median sector N loss. As a consequence, the farm systems modelled wouldn’t necessarily provide good examples of how an individual farm system would actually be configured. However, in the event such a farm system existed, this would be how it would [have been] operate[d] to be physically feasible.

3.7 Economic feasibility was not assessed, as the required farm system inputs were pre-determined on the basis of historic averages, not commercial combinations of livestock, imported feed and fertiliser inputs.

3.8 The stocking rate and production data generated by the BOPRC from the benchmarking data for the dairy sector seemed to be slightly anomalous, with milk production too low (614kg MS/ha) relative to the average stocking rate and the inputs coming into the farm systems and was problematic to model. This apparent anomaly likely occurs due to a combination of the impact that the inclusion of a few properties that significantly underperformed relative to district norms had in a small sample size (21 farms) and potentially how farm areas have been defined during the benchmarking process (i.e. run-off on self-contained farms defined as dairy platform). As a result, the dairy reference file was created to more or less reflect the farm system components and performance levels supplied by the BOPRC (i.e. higher stocking rates, lower per cow performance), rather than exactly replicate them.

3.9 In the cases of both the dairy and dry stock files, the farm systems defined or informed by the supplied input data still didn't generate sufficient pasture demand to fit the validated pasture growth curves utilised and deliver appropriate average pasture cover levels. As a result modelled stocking rate was increased whilst maintaining all other inputs as defined to get a fit with the pasture growth profiles.

3.10 These feasible files were then replicated in OVERSEER 6.2.3 in order to generate nitrogen losses. In line with 3.5(ii) above, age and mature weight parameters were used to model livestock performance, rather than opening and closing live weights.

3.11 Unsurprisingly, all of the initial files generated N losses in excess of the sector average N losses supplied by the BOPRC when modelled in OVERSEER. This is due to the greater levels of pasture consumption, stocking rate and therefore urine deposition than the average benchmark data implied occurred on farm between 2001-2004. On this basis it was determined that the potential pasture growth rates used, which had been interpolated from recent actual performance of farm systems within the catchment, were not representative [too high] of pasture growth potential in 2001-2004.

3.12 A number of iterations of proportional reductions in stock classes were subsequently undertaken in Farmax and OVERSEER to reverse the previous stocking rate increase in order to generate farm systems that came close to their desired sector average N losses. Pasture growth potential in Farmax was then proportionally lowered (using the "Adjust Pasture Growth" functionality) to establish the lowest level of pasture growth required to ensure forecast average pasture cover remained within the bounds of normality and observed practice.

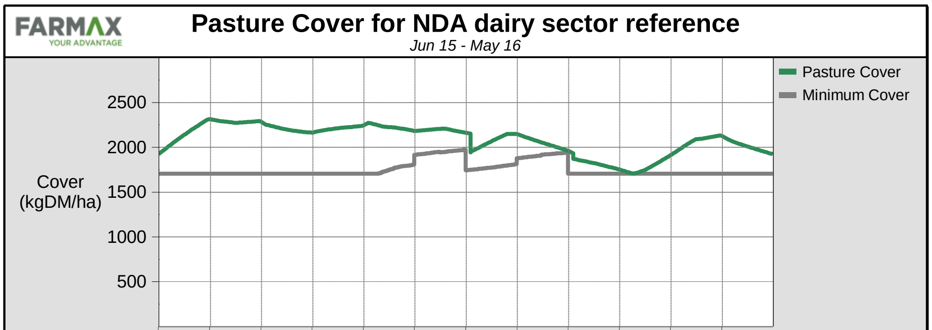
4. The benchmark average reference files

4.1 Dairy

4.1.1 The dairy benchmark average reference file farm system was again based around a 100ha milking platform, but this time with annual pasture growth rate potential of 12t DM/ha, versus the 13t DM assumed in the original reference files. Net growth was subsequently assessed in Farmax at 12.6t DM/ha including the effect of N fertiliser – higher than in the original reference files due to greater use of N fertiliser and a higher stocking rate.

4.1.2 Total milk production of 82,196kg MS is produced from a herd of 282 crossbred dairy cows, of which 141 (50%) were wintered off the milking platform for all of June and July. Imported feed consists of 49t DM of maize silage and 16t DM of grass silage. Surplus pasture of 96t DM is harvested and fed out from March to August each year. A total of 183kg N/ha of fertiliser nitrogen is used. Summer (2.6ha turnips, 8.1t DM/ha) and winter forage cropping (2.2ha swedes, 11t DM/ha) is also carried out. All heifer replacements are grazed off from weaning, returning as in-calf heifers at 22 months of age.

4.1.3 In comparison to the previous reference file, the cows were all modelled with a later calving date, lower genetic merit and a more spread out calving pattern -all of which, in our view, reflect typical farm practice/achievement in the 2001-2004 period. These are the primary factors that lead to the lower per cow production and lower overall milk production in the recreated reference file farm system, despite significantly higher feed and nitrogen inputs.



	Start	J	J	A	S	O	N	D	J	F	M	A	M
Pasture Cover	1,919	2,310	2,281	2,158	2,235	2,176	2,156	2,144	1,957	1,748	1,906	2,124	1,918
Minimum	600	569	741	832	1,261	1,805	1,969	1,806	1,935	1,638	1,427	1,056	1,120

Figure 1: Forecast average pasture cover for the dairy sector benchmark average reference file Farmax model

4.1.4 From an Overseer perspective, only 13.3% of the property is deemed to receive liquid dairy effluent, while all silage harvested is cut from the flat (<7° slope) areas of the farm, but fed out evenly across the property.

4.1.5 Annual nitrogen leaching was estimated in Overseer 6.2.3 at 9,545kg N, versus the "target" of 9,586kg N - a variance of +0.4%.

Nutrient Budget | Nitrogen | Phosphorus | Comments | Summary | Nitrogen overview | Phospl
Effluent | Pasture production | Other values | Full parameter report

(kg/ha/yr)	N	P	K	S	Ca	Mg	Na
Nutrients added							
Fertiliser, lime & other	193	48	107	54	111	0	0
Rain/clover N fixation	80	0	3	5	5	10	39
Irrigation	0	0	0	0	0	0	0
Supplements	8	1	7	1	2	1	1
Nutrients removed							
As products	57	10	14	3	13	1	4
Exported effluent	0	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0
To atmosphere	52	0	0	0	0	0	0
To water	95	3.3	37	65	88	20	87
Change in farm pools							
Plant Material	-6	-1	-5	0	0	0	0
Organic pool	71	29	3	-8	1	0	0
Inorganic mineral	0	5	-4	0	-1	-1	-4
Inorganic soil pool	11	2	72	0	17	-9	-48

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Figure 2: Dairy sector benchmark average reference file Nutrient Budget (7 December 2016)

Nutrient Budget | Nitrogen | Phosphorus | Comments | Summary | Nitrogen overview | Phosphorus overview

Block name	Total N lost kg N/yr	N lost to water kg N/ha/yr	N in drainage * ppm	N surplus kg N/ha/yr	Added N ** kg N/ha/yr
Hapa_1a.1	30	50	6.7	192	202
Hapa_2a.1	475	53	7.0	193	202
Kopu_2a.1	208	47	8.5	176	202
Mku_11a.1	548	98	7.0	226	202
Mka_1a.1	811	80	6.1	162	202
Mku_4a.1	903	83	5.2	169	202
Mku_5a.1	749	104	7.5	230	202
Ngong14a.1	7	67	8.4	199	202
Opot_6a.1	16	55	N/A	168	83
Oraka_1a.1	352	82	7.2	206	202
Oropi_2a.1	901	81	6.5	203	202
Paeng_2a.1	500	70	6.3	181	202
Taup_1a.1	45	56	7.5	182	202
Taup_92a.1	44	63	8.1	186	202
Turan_10a.1	384	91	7.4	208	202
Turan_1a.1	360	63	4.9	131	202
Hapa_2a.1 Effluent	155	77	10.1	312	342
Horo_2a.1 Effluent	72	72	**12.4**	311	342
Mku_11a.1 Effluent	132	132	8.8	350	342
Mku_1a.1 Effluent	317	127	9.6	347	342
Mku_4a.1 Effluent	142	129	8.0	348	342
Mku_5a.1 Effluent	227	134	9.4	351	342
Oropi_2a.1 Effluent	167	111	8.6	326	342
Turan_10a.1 Effluent	48	120	9.4	330	342
Turan_1a.1 Effluent	238	114	8.7	327	342
Winter_Swedes	876	398	**29.4**	81	133
Summer_Turnips	578	222	**16.4**	147	136
Other sources	260				
Whole farm	9,545	95			
Less N removed in wetland	0				
Farm output	9,545	95			

* N concentration due to leaching in drainage water at the bottom of the root zone. Maximum recommended level for drinking water is 11.3 ppm (note that this is not an e

** Fertiliser, organic and effluent inputs.

N/A: N in drainage not calculate for easy and steep pastoral blocks, or for tree and shrubs, riparian, wetland or house blocks.

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Figure 3: Dairy sector benchmark average reference file Nitrogen Report (7 December 2016)

4.2 *Dry stock*

4.2.1 The revised dry stock reference file was again based around a 100ha property. This time annual pasture growth rate potential was only 8.7t DM/ha compared with the original assumption of 10.3t DM/ha. Net growth was subsequently assessed at 7.4t DM/ha – a 14% decline from that in the previous reference file.

4.2.2 The recreated modelled farm includes a diverse stock policy to reflect the make-up of dry stock land in the Lake Rotorua catchment in the 2001-2004 period. The catchment-wide stock type ratio was 54% cattle: 35% sheep: 10% deer: 1% horses. With horses unable to be modelled in Farmax, their feed demand was replaced by lifting the modelled sheep ratio for the farm system to 36%.

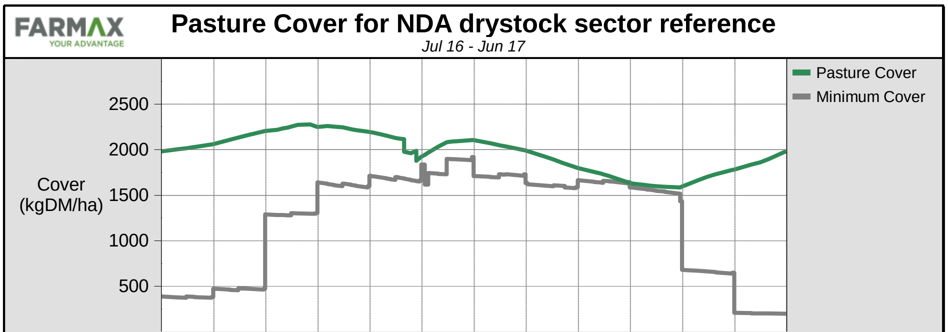
4.2.3 Sheep as modelled comprised a breeding ewe flock of 304 mixed-aged ewes, with 90 ewe hogget replacements. The farm lambs at 127% (lambs weaned/ewes mated). Ewe hoggets are not lambed. All the non-replacement lambs are finished, with an average carcass weight of 17.2kg. This stocking rate includes the feed demand equivalent of a small hack broodmare and foal and a pony.

4.2.4 The cattle policy still comprises a dairy support operation and a steer trading system. The dairy grazing operation consists of grazing 93 crossbred dairy heifer calves from mid-December (90kg live weight) though until the heifers are 22 months of age, in-calf and weighing 419kg. The steer policy comprises purchasing 26 white-face steers (100kg) in December, taking them through one winter and progressively selling them to local trade slaughter as they reach c. 490kg live weight. No cattle are taken through a second winter.

4.2.5 In an addition to the original reference files, a deer policy has been added. A herd of 40 red breeding hinds with 10 hind replacements kept each year. All male and non-replacement females are taken through one winter, with the hinds sold at 50kg carcass weight and stags at 59kg carcass weight average.

4.2.6 51% of the farm area received an average of 50kg N/ha/year as soluble N fertiliser. A total of 118t DM of pasture silage is still harvested in spring and fed out from May through to September. Summer (0.8ha pasja, 6.5t DM/ha) and winter forage cropping (2.4ha swedes, 11.8t DM/ha) is also undertaken out.

4.2.7 The average pasture cover profile is more or less in line with that of the previous file model.



	Start	J	A	S	O	N	D	J	F	M	A	M	J
Pasture Cover	1,976	2,054	2,199	2,243	2,190	1,918	2,100	1,987	1,795	1,630	1,590	1,778	1,977
Minimum	384	378	470	1,300	1,595	1,660	1,915	1,724	1,583	1,638	1,431	645	197

Figure 4: Forecast average pasture cover for the dry stock sector benchmark average reference file Farmax model

4.2.8 From an Overseer perspective all silage harvested is cut from the flat (<7° slope) and rolling (7°-16° slope) areas of the farm, but fed out evenly across the property.

4.2.9 Annual nitrogen leaching for this recreated file is estimated in Overseer 6.2.3 at 3,424kg N, versus the "target" of 3,467kg N - a variance of 43kg N or-1.2%.

Nutrient Budget | Nitrogen | Phosphorus | Comments | Summary | Nitrogen overview | Phospho

(kg/ha/yr)	N	P	K	S	Ca	Mg	Na
Nutrients added							
Fertiliser, lime & other	28	25	0	43	61	0	0
Rain/clover N fixation	79	0	3	5	4	8	34
Irrigation	0	0	0	0	0	0	0
Nutrients removed							
As products	18	4	1	2	7	0	1
Exported effluent	0	0	0	0	0	0	0
As supplements and crop residues	0	0	0	0	0	0	0
To atmosphere	30	0	0	0	0	0	0
To water	34	1.9	18	51	36	18	75
Change in farm pools							
Plant Material	-6	-1	-4	0	0	0	0
Organic pool	25	17	2	-5	1	0	0
Inorganic mineral	0	2	-12	0	-2	-3	-5
Inorganic soil pool	7	1	-3	0	23	-7	-36

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Figure 5: Dry stock sector benchmark average reference file Nutrient Budget (7 December 2016)

Nutrient Budget | Nitrogen | Phosphorus | Comments | Summary | Nitrogen overview | Phosphorus overv

Block name	Total N lost kg N/yr	N lost to water kg N/ha/yr	N in drainage * ppm	N surplus kg N/ha/yr	Added N ** kg N/ha/yr
Hapa_1a.1	8	14	N/A	55	0
Hapa_2a.1 + N fert	33	19	2.0	81	50
Horo_2a.1 + N fert	11	14	2.2	74	50
Kopu_2a.1 + N fert	61	17	2.2	69	50
Kopu_8a.1	62	14	N/A	47	0
Matat_2a.1 + N fert	3	17	2.3	93	50
Mku_11a.1	58	34	2.4	94	0
Mku_1a.1 + N fert	368	34	2.5	109	50
Mku_2a.1	49	21	N/A	66	0
Mku_4a.1 + N fert	98	34	2.2	117	50
Mku_5a.1 + N fert	30	38	2.5	126	50
Ngak_15a.1 + N fert	186	19	1.9	80	50
Ngak_24a.1	75	19	1.7	56	0
Ngong_14a.1	152	19	N/A	65	0
Opot_6a.1	10	25	1.8	71	0
Oraka_1a.1	173	29	2.3	83	0
Oropi_2a.1 + N fert	127	33	2.2	110	50
Paeng_2a.1 + N fert	35	32	2.2	106	50
Taup_90a.2	22	20	N/A	60	0
Teran_9a.1	90	14	N/A	47	0
Turan_10a.1 + N fert	78	34	2.7	108	50
Turan_16a.1	53	17	N/A	59	0
Turan_1a.1	123	29	2.4	84	0
Turan_3a.1	130	23	2.5	82	0
Wind_10a.1 + N fert	5	16	2.0	92	50
Wyma_2a.1 + N fert	309	29	2.7	106	50
Winter_Swedes	853	356	**30.4**	96	109
Summer_Turnips	164	205	**17.4**	127	87
Other sources	57				
Whole farm	3,424	34			
Less N removed in wetland	0				
Farm output	3,424	34			

* N concentration due to leaching in drainage water at the bottom of the root zone. Maximum recommended level for drinking water is 11.3 ppm (note that this

** Fertiliser, organic and effluent inputs.

N/A: N in drainage not calculate for easy and steep pastoral blocks, or for tree and shrubs, riparian, wetland or house blocks.

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Figure 6: Dry stock sector benchmark average reference file Nitrogen Report (7 December 2016)

5. Evaluation of the alternative reference file

5.1 The concept of utilising reference files to provide for OVERSEER version management as regards the allocation of nitrogen discharge allowances under the now notified Plan Change 10 was discussed in our original report on the methodology for the creation of reference files in August 2015.

5.2 The original proposal was based around the reference files, while being hypothetical, representing credible good practice farm systems that were considered to be indicative of how a farm system in 2032 might operate. They were also intended to be simple files that didn't rely on the less well understood and complex functionality within OVERSEER. This was primarily to avoid the expected volatility from the more complex and potentially less robust elements of the OVERSEER model that were considered more likely to be affected by improving science and subsequently OVERSEER version changes.

5.3 However, beta testing by the BOPRC highlighted that the relative change in nominal N losses calculated for the reference file as OVERSEER version change occurred wasn't matching the average benchmark losses as well as desired. Investigation of this issue identified a number of contributing factors, including differences in both the structural configuration and the combination of input parameters (i.e. farm system) between the reference files and the benchmark files. These differences in the file structure were being accentuated by the presence of bugs in the OVERSEER model affecting the reference files but not the benchmarking files.

5.4 After accounting for [known] differences in file structure, it was still apparent that variation between the [future] farm systems modelled for the reference file and the historic farm systems represented in the benchmark data was resulting in variation in how N losses from the respective files tracked each other through version change.

5.5 With benchmark data anchoring the sector range allocation framework, the impact of not addressing this residual "error" in the relativity between reference and benchmark N losses could, depending on the nature of a given science change or modelling bug, potentially result in either the temporary erosion of N reduction targets or the temporary erosion of a farmer's NDA. Neither outcome is likely to be desirable in the interests of water quality, equity and certainty for farmers.

5.6 In both the original[2] and this alternative reference file concept, the models represent "average" Rotorua dairy and dry stock farms in a geophysical sense. The alternative reference file construction outlined in this report takes that concept a step further and attempts to represent "average" benchmarked Rotorua farms in farm system sense as well.

5.7 This refinement should improve the relativity of N losses calculated from the reference files to those of farmer's initial allocation as OVERSEER continues to be updated. This will need to be evaluated by the BOPRC.

5.8 In our initial report (August 2015) on the reference file design process, we highlighted the risk of trying to incorporate or utilise all possible farm system components and stock types in a reference file on the basis that this would create a nonsensical and unfeasible system. Doing so, in our opinion, would also start to erode the basic premise that OVERSEER (and indeed

[2] Including the revision in February 2016 for the timing of supplement feeding

most models) needs to adhere to being the use of "actual and reasonable inputs". We continue to subscribe to this view.

5.9 The alternative reference files, as created, could be considered a step towards this catch-all model and a progression away from a realistic farm system. However, we are still comfortable with the changes to the reference file approach documented in this report for the following reasons:

(i) The farm system input parameter data used to develop the underlying Farmax models is derived from real data, albeit at a catchment scale rather than an individual farm level. This also mirrors the use of catchment level geophysical input parameters in the modelling.

(ii) The recreated Farmax files for the each of the sector models still forecast appropriate average pasture covers over the year and the associated supplementary feed and nitrogen fertiliser usage is sensible and reflects local practice as regards timing and quantum.

(iii) All of the individual livestock policies modelled are realistic and reflective of average district practice. While the exact stock policy combinations are unlikely to be reflected in practice on individual farms due to logistics, commercial imperative or farm resource availability, were they to be, then the modelled farm system would be physically viable.

5.10 It would have been preferable to have been able to utilise validated pasture growth curves interpolated from actual individual farm data from the 2001-2004 period as the basis for the Farmax modelling rather than modifying the current pasture growth data. However, given actual stocking rate data was provided, it is clear that pasture consumption was, on average, lower than we might expect from current pasture growth data.

5.11 There are two likely explanations. The first is thatpasture growth potential has increased within the catchment in the preceding 15 years. This apparent increase in potential pasture growth rates could be attributed to a number of factors, including improved pasture genetics, increased rates of pasture renewal and changes in farm management practices that have improved observed [net] pasture growth rates (less pugging, greater focus on grazing residuals, increased use of rotational grazing).

5.12 The second is that the sample of farms used to derive the pasture growth parameters are not fully representative of the wider benchmark sample as regards the factors that have greatest impact on pasture growth - soil fertility, subdivision and extent of pasture improvement.

5.13 The reality is probably a combination of the two.

6. Conclusion

6.1 In the absence of data from the BOPRC demonstrating an improvement in how N losses calculated for the respective sector reference files track those from the equivalent sector benchmarks as OVERSEER is updated over time, it isn't possible to determine whether original reference file approach or the alternative one addressed in this report is better.

6.2 However it has been possible to develop feasible farm models more or less representative of catchment-wide sector benchmark average farm systems that generate N losses in OVERSEER 6.2.3 closely in-line with actual sector average N losses from the benchmarking period.

6.3 In the event that these new reference files deliver improved relativity with benchmarked N losses through OVERSEER version change, then they will provide a better option for use in the sector range allocation framework than those originally developed in August 2015.