

## Appendix 11

### Implementation of Nutrient Management Plans

Nutrient Management Plans (NMP) are proposed to control nutrients (nitrogen and phosphorus) entering water via surface run-off or subsurface leaching. There are three major strengths to the proposal: Firstly, for the first time in our region, a holistic farm assessment of nutrient loss is carried out which allows for individual farm solutions to be recommended. Secondly, with respect to nitrogen leaching, it is output based. It prescribes what is to be achieved, not what the farm inputs are to be and instead, allows for farmer choice. Thirdly, expansion of intensive of farming is possible whereby current environmentally efficient farmers are not penalised (can intensify) and farmers can convert from extensive farming to intensive farming.

The foundations of the NMP are:

1. It uses Overseer to estimate current nutrient loss from the farm. Overseer, its relevance and its accuracy for this purpose, has been well canvassed by council expert witnesses and submitters. The general view, in our opinion, is that it is fit for purpose with the exception of its use, currently, for commercial vegetable growing (this is addressed later in response to HortNZ's concerns).
2. It uses Land Use Capability (LUC) classification, in conjunction with nitrogen target values, to calculate the amount of nitrogen that may be leached from a farm. It is the council's recommended method for allocating N-loss and while it has attracted considerable comment from a number of submitters no alternative has been proposed. Most of the concern raised has been its relevance in certain situations: For example for commercial vegetable growing in Ohakune (this is addressed later in response to HortNZ's concerns), and dairying in the sand country (addressed in part below and by Dr Mackay).

Our experience with the proposed Rule 13.1, and consideration of submitters' views, gives us a high level of confidence that nutrient contamination of water can be halted and, in time, reduced by implementing NMPs.

A number of issues were raised by submitters in relation to perceived difficulties of implementing the proposed Rule 13.1 and these are addressed by the issue and referenced to the submitter.

## **Suitability for Horticulture**

Horticulture NZ considered the approach for controlling contaminant loss off land is not suitable for horticulture. (*Horticulture NZ, C. Keenan, para 86, Evidence In Chief (EIC)*)

We disagree. The method is output based, and therefore the means to achieve the management of nutrients are not prescriptive in the plan and can be adapted to any land-use. Horticulture NZ is not opposed to nutrient management plans as these are required under NZ GAP (*Horticulture NZ, Peter Ensor, para 20, evidence in chief*). The principal difference is our approach is output based with numerical targets whereas the Code of Practice for Nutrient Management as applying under NZ GAP has no numerical limits, targets, or even recommendations. A more specific concern raised, regarding the use of Overseer, is addressed below.

## **Term of Consent**

Horticulture NZ believed the intent of Rule 13.1 was for long term consent. (*Horticulture NZ, C. Keenan, para 86, EIC*).

This is true insofar as giving as much certainty to the consent holder as is reasonable. However, the term of consent is flexible and can be negotiated to suit each applicant.

Federated Farmers appear to be concerned about long term consents (twenty years), and how this may work given the inherent year to year variability of farming inputs. (*Federated Farmers, Power point presentation*).

It is true farming inputs can be variable this and has been acknowledged in council's evidence (Mr Taylor's EIC, para 120 xiii). On one hand, farmers want certainty and on the other hand flexibility to deal with the variability of their business. Certainty is provided in two ways in this instance: Firstly, provision of what is to be achieved and by when – and in respect of N-loss, measurable nitrogen target values. Secondly, once the individual farm's expectations are agreed as consent conditions a term of consent that secures those conditions. Flexibility is provided by giving farmers choices to account for year to year variation and by not adopting a prescriptive "one size fits all" approach (an input model). The term of consent would be negotiable and would need to conform to the common catchment expiry dates.

## **Rotational use of land**

Horticulture NZ said little recognition of rotational use of land and rotational cropping causes difficulty in applying the FARM Strategy (*Horticulture NZ, C. Keenan, para 86, EIC. P. Frew, and Ohakune Growers Association*).

Applying the method to lease land will cause extra effort if it means a frequent variation to the consent. It does not though mean the method is fundamentally flawed. The land to be cropped can be identified, mapped, and modeled for nutrient loss and as this changes, the consent can be updated. This is currently done under NZ GAP and can continue to be very simply done if the information required is available and accurate. A variation to consent would only cost a fraction of the amount Mr Frew states and has been estimated by LandVision (who prepared the fictitious FARM Strategy) to be about \$300 depending on how much land drops out and comes in.

### **Absence of Overseer Crop Models**

Horticulture NZ made the point that crop models (within Overseer) did not exist at time of Plan notification. (*Horticulture NZ, C. Keenan, para 86, EIC*).

To reiterate, Horizons developed, in conjunction with Plant and Food, the meta-model of SPASMO which satisfactorily modeled vegetable crops (A. Mackay et.al. 2008; Clothier, evidence in chief). It was Horticulture NZ's choice to ignore this at a time when valuable information could have been obtained to inform the One Plan process, and instead pursued crop models within Overseer. Crop models now exist (Overseer version 5.4.3; Ms Whiteman EIC, para 8). The Lake Horowhenua target catchment, where most of the cropping is sedentary, can use this model. The uncertainty is where the pasture module is combined with the crop module: Ms Whiteman states (*para 12, EIC*) these modules will be integrated in 2010. This will be prior to any nutrient management rule coming into force in this catchment and well before the Mangawhero/Makotuku target catchment where the Ohakune Growers operate.

It is interesting to note that nutrient budgets are required for NZ GAP Nutrient Management Plans and that Overseer is recommended by Horticulture NZ for the preparation of these.

### **Fictitious FARM Strategy, Ohakune**

Horticulture NZ stated the fictitious FARM Strategy document was irrelevant and inappropriate and of little use in solving issues for horticulture. (*Horticulture NZ, C. Keenan, para 89, EIC*).

It has not been "a less than sensible exercise" as been borne out by the fictitious FARM Strategy. The fictitious FARM Strategy was completed with the encouragement of the Ohakune Growers and HortNZ and information previously unknown about the potential impact of horticulture, in the Ohakune area at least, has been documented. Aspects of the FARM Strategy that are not relevant to commercial vegetable growing (most of the compliance checklist) do not invalidate the strategy. In fact, the nutrient information requirements contained within the FARM Strategy are very similar to the Nutrient Management Plan requirements of NZ GAP. Given that Overseer is recommended by Horticulture NZ to complete a nutrient budget this is not surprising.

## **Lack of Trained Consultants**

Two submitters raised the issue regarding a lack of trained consultants to prepare consent applications including the use of Overseer. (*Horticulture NZ, C. Keenan, para 92, EIC. Federated Farmers, Power point presentation*).

With the staggered introduction of the target catchments, consultants will have the opportunity to become familiar with preparing consent applications. A number of consultants have contacted the council expressing a desire to do the work – however, because there is uncertainty surrounding Rule 13.1, and because of the level of expertise required and the cost to get it, they are not yet willing to invest. Ultimately, demand will drive the capability.

As stated above in our comments related to Overseer, Horticulture NZ requires nutrient budgets to be prepared as part of the Nutrient Management Plan for NZ GAP accreditation. This shows there is current capability within the industry.

## **Mitigation Options**

Horticulture NZ believes that the mitigation options for N-loss are of little relevance to horticulture. (*Horticulture NZ, C. Keenan, para 155-156, EIC*) and Federated Farmers queried whether the mitigation options are cumulative (*Federated Farmers, Power point presentation*).

It is true the mitigations options presented by council's expert witnesses are based mostly on dairying reflecting the FARM Strategy test farms effort. Dr Andrew Manderson though (*Appendix 3, page 55, evidence in chief*) details mitigation options for cropping (arable and vegetable) and directs readers to other sources of information. One of the key mitigations, the application rates, and timing, of fertiliser applications, is as applicable to vegetable growers as it is to dairy farmers. Other mitigation options will eventuate if there is a need - for example, avoiding cropping land that has been in long term pasture. Fertiliser application though is likely the most important and most manageable. However, mitigation options are not needed if N-loss below the root zone is prevented. If the fertiliser programme has been developed to match crop requirements as the submitter claims (*Horticulture NZ, C. Keenan, para 156*), there should be no N-loss from this source and therefore no affect on productivity and profitability. This is borne out by a study in the Horowhenua on a market garden 4.5km south-west of Levin (*V. Snow et. al. 2004. Nitrate leaching from vegetable production: Monitoring results. Research report commissioned by Horizons Regional Council. HortResearch Client Report No.: 11282/2005*). This study monitored a two year (2001-2003) crop sequence of silverbeet – lettuce – spring onion – lettuce – spring onion – and an oat cover crop. It concluded: "*Growth of the silverbeet and spring onion crops was poor, probably as a result of a combination of water logging and disease. In contrast the lettuce and oat crop grew well.*" And that over the two year rotation of all crops:

*“...there has been about 560kg N/ha leaching.” And that: “An independent estimate of unaccounted N for the two crops [the two poor crops; silverbeet and spring onions] gives 660kg N/ha unaccounted for and probably leached. This amount of nitrate in the drainage water is exceedingly high and ultimately environmentally damaging. When appropriate amounts of fertiliser were applied to successful crops [lettuce and oat cover crop] there is some capacity for the crop take up (sic) more nitrogen than is applied in fertiliser and reduce the likelihood of leaching during the fallow period or subsequent crops.”*

Mineralisation rates and how Overseer deals with these has been raised as an issue: That is, the longer the pasture period the greater the levels of N mineralisation when that pasture is cultivated. *“Mitigations might therefore revolve around utilising short-term leys to reduce the initial mineralisation flush or adopting cultivation timings, cropping sequences and fertiliser policies that make best use of the mineralised N” (Dr. Mark Shepherd pers. comm.).*

Another possible mitigation option is to “cut and carry” the pasture, rather than graze it, to remove N rather than letting it accumulate.

Mr Hoggard raised the issue of mitigation options being cumulative.

Mitigation options are evaluated in a two step process. First, they are independently evaluated to assess their relative contribution to minimising N-loss. Secondly, starting with the most favourable option through to the least favourable option a stepwise process within the whole farm system is followed. Stepwise means a mitigation option is evaluated on its own, and if selected, is “saved” into the farming system, before the addition the next mitigation option and so on. Therefore the second option builds on the effect of the first option, the third on the first two and in that sense the mitigations are cumulative.

## **Land Use Capability Classification**

Horticulture NZ maintains Land Use Capability Classification should not be applied to horticulture. And that all land that is used for horticultural activities be classed for that purpose, with no distinction between classes. (*Horticulture NZ. C. Keenan, para 129, EIC*).

The proposed Rule 13.1 uses LUC classification and Table 13.2 to calculate permissible Nitrogen loss. **LUC Classification** is defined as “a systematic arrangement of different kinds of land according to those properties that determine its capacity for long term sustained production” (Land Use Capability Survey Handbook, 3<sup>rd</sup> Edition, 2009). **Capability** is defined “suitability for productive use or uses” (Land Use Capability Survey Handbook, 3<sup>rd</sup> Edition, 2009).

The calculation of permissible N-loss is valid irrespective of land-use and the nitrogen lost beneath the root zone of a horticultural crop on LUC 2 land is the same as the nitrogen lost beneath the root zone of dairy pasture on LUC 2 land.

It is accepted that an LUC limitation (as described for Ohakune) can benefit some types of commercial vegetable growing. The answer is not a “one class fits all”, but to evaluate the possible exception(s), and if justified, provide for it. This approach would be consistent to the proposal to adjust the LUC for land under permanent irrigation. The Ohakune area is the only example given by the submitter and therefore does not justify the request that it apply to all horticulture everywhere in the region.

Fonterra believed the allocation of LUC classes to land is subjective in that “...different people can reach different conclusions.” and queried how this subjectivity will be addressed in administering the final rules particularly regarding consents and compliance. (*Fonterra, S. Newland, para 111.1, EIC*).

First, if farm scale LUC mapping is required, only qualified persons will be accepted.

Second, workshops and field days will be held to achieve consistent application.

Third, consent conditions are framed around the mitigation options chosen by the farmer, not around an N-loss number (for example, the number of cows allowed on the property during winter rather than a reduction of 3kg N/ha/yr).

Two submitters queried the consistency of LUC mapping. Mr Smeaton for Fonterra questioned the consistency in results of LUC mapping. Dr Mackay notes “*An attraction of the approach is that the extended legend of the LRI is already established as the basis for land development and evaluation, and the information in the extended legend is available throughout the New Zealand.*” Consistency in applying the 1:50,000 scale maps will not be an issue given these are defined and mapped.

Mr Day, submitter, said an semi-independent panel to resolve challenges to LUC classifications should be formed. (*A. Day, p6*)

As outlined in the evidence of Dr Douglas the methodology and procedures for completing LUC mapping are well documented in the Land Use capability handbook third edition (Lynn et al. 2009). A methodology to resolve differences on opinion based on application of the method could easily be established. This type of resolution would be no different to other consent processes where technical experts provide alternate views on technical matters. Ensuring consistency would be a key part of implementing the proposed Rule (as is discussed in the implementation section below).

Therefore the suggestion of Mr Day's is a good one and would best be achieved by providing for this within the operating protocols (appended).

Fonterra further believed the use of LUC class to allocate N-loss across WMZs is also potentially inefficient in the absence of a trading regime. (*Fonterra. S. Newland, para 111.3, EIC*).

A trading regime has been allowed for to address this issue where a support block, if within the same target catchment, can be incorporated to spread N-loss. Also, if a dairy farmer wanted to enter into an arrangement with drystock farmer that traded on the drystock low N-loss, this is possible provided the latter meets all intensive farm rule requirements. Another option is not a trade as such, but the dairy farmer may negotiate the spreading of his farm dairy effluent to a drystock farm.

Federated Farmers stated the limitations of Overseer and LUC mean Table 13.2 should be a guide rather than "absolute standards which must be met". (*Federated Farmers, T Mills, para 35*). LUC is not used to predict N-loss as claimed, Overseer is. LUC is used, in conjunction with Table 13.2 to calculate a farms permissible N-loss. As commented in response to Fonterra (*Newland, EIC*), Overseer is not used to monitor compliance with N-loss targets. It is the agreed actions of the farmer, detailed as consent conditions that compliance is monitored against.

Mr Barber, submitter on behalf of Federated Farmers, believed that sand country that had been drained to overcome its wetness limitation and was subsequently under permanent irrigation warranted reclassification(*para 10*). He also contended sand country that had been re-contoured should be reclassified (*para 11*). LandVision provided Horizons Regional Council with a discussion document on the reclassification of sand country under permanent irrigation. LandVision's report was presented as Appendix two in the supplementary evidence of Peter Taylor and it concluded for Class Illw4 land "*The biggest limitation of this unit is poor drainage and irrigation will not reduce the moderate physical limitations to arable use. Hence any re-classification under irrigation cannot be justified.*"

With respect to dune re-contouring LandVision concluded: "*In the short to medium term any re-contoured dunes would have too greater limitation for arable use. Consequently they could not be reclassified as anything better than class V land.*" LandVision is of the opinion that any reclassification could be done on a case by case basis by assessing depth of topsoil and erosion risk.

Related to this issue is the point raised by a submitter regarding anthropomorphic soils whereby the underlying characteristics of a soil change via management. Dr MacKay provides a response to this in his attached end of hearing evidence. He notes that "*It is very difficult to change the inherent properties of the soil, but land use and farm practices have major influences on the*

*manageable attributes*". Dr Mackay provides two examples that "*highlight that despite 50+ years of irrigation, fertiliser inputs, grazing and nutrient cycling the inherent properties of the soils have not been altered in a measurable way*". Dr Mackay concludes land development to date has largely been limited to developing technologies for removing limitations to production gains (eg. Irrigation, drainage). Little thought has been given to developing technologies that change the inherent properties of a soil and in doing so add to the soils natural capital and ecosystems services.

## **New Use of Land**

Horticulture NZ raised the issue of "wholly new use" of land (*Horticulture NZ. C. Keenan, para 101, EIC*) and whether it "...will apply to the whole property or part of the property where the growing activity is to be undertaken."

The land that is leased by the applicant is the land subject to Rule 13.1. Land the applicant has no control over cannot be included within the application. If the applicant owns a farm, of which a part is farmed intensively, it is the applicant's choice as to whether the balance of the farm is included within the application.

It is accepted though that a "new" use of land requires clarification.

A new definition which addresses the issues raised is proposed for the glossary.

## **Definition of Commercial Vegetable Growing**

Horticulture NZ recommended a new definition of commercial vegetable growing. (*Horticulture NZ. C. Keenan, para 119, EIC*).

The new definition proposed by Horticulture NZ is accepted with the substitution of:

"Commercial vegetable growing" for "commercial vegetable production" and,

"human consumption" for "human production".

The definition would therefore read:

*"Commercial vegetable growing means vegetables grown on an annual basis for human consumption on an area of land greater than 4 hectares. Fruit crops and vegetables that are perennial are not included."*

"Commercial vegetable growing" is consistent with the POP and Mr. Keenan's proposed new rule.

"Human production" is assumed to be a misnomer.



## **Compliance using Overseer**

Fonterra raised the concern of Overseer being used to monitor compliance activities. (*Fonterra. S. Newland, para 115 and 116, EIC*)

Overseer will not be used to establish non-compliance. Non-compliance will be assessed against conditions that are, in essence, the agreed actions of the farmer to achieve a reduction in N-loss as estimated by the difference between what is allowed (LUC and Table 13.2) and what is current (Overseer). An example of consent conditions, as they relates to N-loss mitigation options, is appended.

## **Achievement of Year 20 Targets**

Fonterra stated existing N-loss from dairy farms in the Horizons region appears to be 26 to 27 kg N/ha/yr (*Fonterra. D. Smeaton, para 27, EIC*) and drew some conclusions based on their interpretation of these data and data given in evidence by Horizons Regional Council (*Peter H Taylor, EIC, para 90, Table 6*).

This “average” is based on 204 farms based on data supplied by Ravensdown Overseer files. These files would be based on effective farm area and not total farm area and the estimate will therefore be higher.

The histogram presented as Figure 1, misrepresents Taylor's data. It shows no data from Taylor in the 10-20 band, (should be 30%), about 27% in the 20-30 band (should be 35%); about 38% in the 30-40 band (should be 35%); and about 38% in the 40-50 band (should be 0%).

“Given the similarity of the two distribution histograms in Figure 1...that on average, the 204 Ravensdown dairy farmers are going to miss the Year 20 N leaching limit by 10kg N/ha/yr (37%) compared to present leaching levels.” (*Fonterra. D. Smeaton, para 51, EIC*).

This statement is false. In addition to the comments immediately above, the Horizons test farms FARM Strategy data is from a biased sample, not a representative sample of dairy farms as the Ravensdown data are. The data sets, and therefore their distribution, are not, and cannot, be claimed to be similar and thus the conclusion is wrong.

## **Nitrogen Trading**

Federated Farmers raised the concern over how N trading will work in practice. (*Federated Farmers, T Mills, para 39, EIC*).

Trading is achieved by incorporating land with a lower existing N-loss with the higher existing N-loss of the principal farm reducing the overall amount leached making the permissible limit more achievable. The land with the lower limit must comply with all consent requirements. If that land is sold or a lease expires, that is a significant change to the consent, and variation will be required.

### **Varying a FARM Strategy**

Federated Farmers and Mr. Hoggard had concerns with the possibility of a large number of variations required for a FARM Strategy consent. And therefore querying both the cost and the capability to deal with these (*Federated Farmers, Power point presentation. A. Hoggard, personal submission*).

- The frequency and nature of any variation will depend on the frequency and nature of change to a farming operation. For example, a change that will affect N-loss (say an increase in cow numbers) where mitigation strategies need to be evaluated will be more complex than a change to a water take.
- Because the consent conditions are specific to each farm activity, a change to one activity does not invalidate the conditions governing other activities. The consent is structured such that only the condition(s) affected by the activity that is the subject of the change needs to be varied. Farmers will not have to complete a new application unless the magnitude of change means it is better to start from scratch. The cost of a variation is minimal.
- Some of Mr Hoggard's reasons given for variation would be dealt with in the preparation of the application by choosing to have an average N-loss target as presented in Mr Taylor's EIC, para 120 xiii. Other reasons given may require variation if pursued. They would not be pursued however if they exceeded the farms permissible N-loss. If the change kept the farm under its permissible N-loss limit, no variation is required as there is no condition to vary. If the farmer wished to swap N-loss mitigation strategies, then yes, variation would be required to the relevant condition.

There is staff capability to deal with applications. As stated above, consultant expertise will grow with demand. Competency and consistency is a management issue addressed through the operating protocols.

### **Costs**

Mr. Hoggard, submitter, said the proposed approach will result in additional monitoring costs. (*A.Hoggard, personal submission*).

It is possible there will be additional cost in monitoring the implementation. It is not a net increase as the monitoring of farm dairy effluent consents and irrigation consents currently happens. The added complexity will be N-loss mitigations as detailed in consent conditions. The potential for

extra costs will be contingent, to a large extent, on the quality of farm record keeping. Very good farm records will result in very little extra cost. The records required will be specified as consent conditions.

## **Research Farms**

AgResearch and Livestock Improvement is very concerned about the potential restriction imposed by Rule 13.1 on agricultural research farms through the application of maximum nitrogen leaching values. (*G. Mathieson, AgResearch and Livestock Improvement, EIC, 4.2*).

It is accepted that research farms should be exempt from Rule 13.1. The recommended definition of a research farm is:

*“A research farm is a farm or area of land where the primary purpose of that farm, or that area of land, is for the carrying out of agricultural research. Monitor farms are not agricultural research farms.”*

## **Waterways Definition**

Believes the FARM Strategy applies the same definition to waterways as the Dairy and Clean Streams Accord (DCSA). (*C. Jordan, Fish and Game, Supp, para 9.9*)

The definition in the revised FARM Strategy Reference Guide (Appendix 3, Fig 3 (*sic*), p52, S42A Report, Andrew Manderson), is not the same as the DCSA. It includes permanently or intermittently flowing waterways with a defined bed width of 1m or greater.

## **Conclusion**

There are, in essence, two phases to Nutrient Management Plans: Firstly, establishing the plans foundations which in this instance are farm mapping, Overseer, LUC, and prescribed farm management information. Secondly, establishing operational protocols to consistently and fairly implement plan requirements, while accommodating individual farm differences.

Various concerns have been raised regarding, in particular, the use of Overseer and LUC and these have been addressed either in council's evidence or in response to matters raised by submitters. We do not believe there are any matters outstanding with respect to the foundations of sound nutrient management plans.

Operational protocols have been prepared in light of council's experience of preparing 21 FARM Strategy's and listening to farmer and submitter comments. Nutrient management plan information requirements have also been devised both from our FARM Strategy experience and

the Lake Taupo Variation 5 Environment Court decision. We believe these will provide consistency and fairness in the development and implementation of the plans.

## **Attachment 1**

### **Mock Nutrient Management Plan Consent**

#### **And subject to the following conditions:**

1. The farming operation shall be undertaken in accordance with the information provided in the Nutrient Management Plan. Specifically the operation will adhere to the following:
  - i. A maximum of 368 Freisian cows will be milked on the farm
  - ii. Farm dairy effluent will be evenly irrigated to a minimum area of xxx hectares
  - iii. An effluent storage facility with a minimum volume of xxx m<sup>3</sup> shall be available at all times.
2. From 1 July 2010 and for the duration of this consent, no less than two applications of nitrification inhibitor will be applied annually and at the manufacturer's specification. Records shall be kept, to be produced to the Council upon request, to show proof of purchase.
3. For the duration of this consent, total nitrogen loading for the farm will not exceed 100 kg/N/ha/yr. Records shall be kept, to be produced to the Council upon request, to show proof of purchase from all sources.
4. From 2015 onwards, no nitrogen shall be applied to the land covered by this consent during the period 1 May to 31 July each year. Records shall be kept, to be produced to the Council upon request, to show where, when, at what rate all nitrogen (refer to Advice Note 2) has been applied to the farm.
5. By 2015 and at all times thereafter, the consent holder shall fence off all waterways shown in attached Map 1.
6. By 2020 and at all times thereafter, all farm dairy effluent shall be discharged to land by way of a low rate (4-6mm per hour) irrigation system.
7. From 2030, a maximum of 332 cows will be permitted to graze on the farm between the 1 May and 31 August each year.

8. The consent holder shall ensure that the rate, frequency and method of the discharge of farm dairy effluent into and onto land does not result in excessive ponding of effluent on the soil surface.

**Advice Note 1:** At the time of granting this consent, the Manawatu-Wanganui Regional Council definition of ponding is a depth of effluent greater than 25 mm (covering a continuous area exceeding 10m<sup>2</sup> or a combined area greater than 20 m<sup>2</sup>) at the time of irrigation, or any effluent on the soil surface five hours after irrigation has occurred.

**Advice Note 2:** All nitrogen means nitrogen applied to the land in all of its types or products.

9. The consent holder shall ensure that there is no overflow from the effluent storage facility, stone traps or sumps to land and / or any watercourse or internal drain that flows intermittently or continuously.
10. The consent holder shall ensure that no leachate from silage storage enters any watercourse or internal drain that flows intermittently or continuously.

**Advice Note:** The consent holder needs to ensure that all silage storage is located and managed in such a way that:

- prevents any runoff of leachate into waterways;
  - runoff from the surrounding catchment does not pass through the silage storage area; and
  - any stacks larger than 500 m<sup>2</sup> (50 m x 10 m or equivalent measurements) are housed on a sealing layer with a permeability of less than 1 x 10<sup>-9</sup> m/s.
11. As a result of the activities authorised by this resource consent there shall be no discharge of odour or spray drift to the extent that it causes an objectionable effect at or beyond the property boundary of the site.

**Advice Note:** An odour will only be considered objectionable, after a Manawatu-Wanganui Regional Council officer has considered the Frequency, Intensity Duration, Offensive and Location of the odour (ie. the FIDOL Factors).

12. No farm dairy effluent, after disposal onto or into land, shall be permitted to encroach closer than:

- a. 20 metres from residences, marae, schools, public buildings, and public recreation areas; and 20 metres from bores, surface waterbodies (including drains) whether flowing continuously or intermittently, public roads, and the coastal marine area;

**Advice Note:** This distance is measured from the where the effluent, sludge and washdown water is discharged onto land and not the position of the irrigator. The discharge shall cease or the volume of the discharge must be reduced when necessary to meet any of the conditions above.

13. All facilities that are used for the storage of farm dairy effluent, feedpad scrapings, stone trap/sump sludge shall have a sealed base with a permeability of the sealing layer not exceeding  $1 \times 10^{-9}$  m/s.
14. The consent holder shall ensure that their nutrient budget is reviewed and updated on an annual basis. The review shall be completed by 1 July of each year during the lifetime of the resource consent. This budget shall be made available to the Manawatu-Wanganui Regional Council upon request.

# **NUTRIENT MANAGEMENT PLAN OPERATIONAL PROTOCOLS**





## **General**

- Total farm area to be used (as opposed to effective farm area).
- If more than 50% of the farm is in a priority WMZ, then a FARM Strategy is required.
- Where an intensive farm straddles two priority WMZ's, where the FARM Strategy implementation years are different, the priority WMZ implementation year that contains more 50% of the farm will apply.
- Support blocks may be included within a FARM Strategy at the discretion of the applicant only if the support block is within the same priority WMZ.

## **Horizons Regional Council**

- Supply rainfall data.
- Offer regional scale Property map and Land Use Class map service.
- Establish and administer a FARM Strategy Accredited Person system. An accredited person will:
  - Have passed Massey University's Advanced Level Course in Sustainable Nutrient Management or any equivalent.
  - Have passed three peer reviews of a FARM Strategy undertaken.
  - Accept peer review of any FARM strategy submitted on behalf of a client for resource consent.
  - Be able to demonstrate a working knowledge of farm systems.
  - Attend regular Horizons Regional Council FARM Strategy training workshops.

## **FARM Strategy Consent applicants**

- A FARM Strategy consent application will be completed as per the prescribed FARM Strategy Consent application and Reference Guide.
- Use of Horizons Regional Council accredited persons will enable applications to be fast-tracked.
- Application submitted by non-accredited persons will be reviewed by an accredited person.
- Applicants retain discretion over scale of LUC used to determine N-loss limits.
- Where there is dispute over Land Use Capability Classifications of a property, these will be referred to an expert panel.
- A FARM Strategy may encompass more than one activity that requires consent (eg. farm dairy effluent discharge, water take, stock feed area). In such cases, the activity will be specified and described.

## **Use of OVERSEER**

- Use of an accredited person recommended. Where a non-accredited person used, the application will be forwarded to an accredited person for review the costs of which, will added to the consent processing fee.
- Farm area is an important variable in Overseer's estimation of N-loss. This must be shown to have been completed by a person competent in farm mapping and the accurate measurement of farm area (refer to Farm mapping below).
- An *Information Check* is to be appended to the FARM Strategy (see example in Attachment 1). This check is to record all Overseer inputs, assumptions, and justification for any change to default settings. The *Information Check* is to be signed by the applicant and the person completing the application as a true and correct record.
- A complete set of Overseer output tables must be appended to the FARM Strategy application and an electronic copy of the Overseer file sent to Horizons Regional Council.
- Nutrient blocks are to be differentiated according to soil type, fertiliser management, farm management (eg. effluent, irrigation, fodder crops), and contour.
- Mitigation options are to be evaluated in a two step process. First, they are to be independently evaluated to assess their relative contribution to minimising N-loss. Secondly, starting with the most favourable (or preferred) option through to the least favourable (or least preferred) option a stepwise process of options is built into the whole farm system. A stepwise building of mitigation options is essential. Stepwise means a mitigation option is evaluated on its own, and if selected, is "saved" into the farming system, before the addition of the next mitigation option. A second option builds on the effect of the first option and so on.

## **Farm mapping**

- Farm scale mapping will need to be completed by a qualified person. "Qualified" will mean demonstrating competency by any combination of soil mapping experience, relevant tertiary education, and relevant industry training/accreditation.
- Regular workshops will be held with qualified persons to ensure consistency of application.

## **Land Use Capability Classification disputes**

- An independent group of three qualified people will be appointed by Horizons Regional Council to adjudicate on disagreements over Land Use Capability Classification.

# **NUTRIENT MANAGEMENT PLAN INFORMATION REQUIREMENTS**



**April 2010**

# **NUTRIENT MANAGEMENT INFORMATION REQUIREMENTS**

## **1. Applicant information**

### **1.1 Who will be the consent holder?**

The consent holder is also known as **the ‘applicant’**. The consent holder can be a single person, a group of people, or a company. Trusts, Estates and any other entity that is not legally enforceable, cannot apply for a resource consent.

Groups and companies must nominate a ‘contact person’. This is the person that the Council will communicate with as a representative of the group or company.

### **1.2 Who will be making the consent application?**

This refers to a consultant or agent engaged to undertake the consent application process for the applicant. Leave blank if the no consultant or agent is used.

## **2. Property details**

### **2.1 Physical address**

This is the address of the farm, including the rural number, road name, and rural location (eg. Kimbolton, Eketahuna).

### **2.2 Legal description**

A unique number reference to a parcel of land, based upon government surveys, which is recognised by law (eg. Rates Valuation Number(s) and/or LOT and DP number(s)). A farm can have one or many legal descriptions (depending on how many land parcels have been surveyed). The Council will need to know them all for a consent application. Legal descriptions will appear on your annual Horizons Regional Council Rates Invoice.

### **2.3 Farming type**

State one or more options to indicate the farm’s designated land uses.

Intensive farming relates to: Dairy, cropping, commercial vegetable growing, irrigated sheep/beef or a new conversion to any of the above.

Include dairy supply number (dairy farmers only).

## **2.4 Total Farm Area**

This is defined as the total legal area of the property, PLUS all other areas of farmed land. This may be leased land, gazetted land, or redundant unsurveyed land (eg. new land made available by river bed changes). While this land is not owned, it should be included in the Total Farm Area if it is used regularly for farming purposes.

## **3. Farm maps**

Farm maps are to include the following information.

### **3.1 Land Use Capability (LUC) map**

LUC is a classification of land according to its agricultural capability. Eight classes are recognised, whereby Class 1 land has the highest capability suitable for the most intensive uses, through to Class 8 that has the least agricultural productive value (eg. gorges, waste land).

#### **3.1.1 Option 1: Farm map from regional LUC**

All of the Manawatu-Wanganui Region has LUC classified at the regional scale (1:50,000). A farm map based on regional LUC can be obtained from known service providers listed in Appendix 1. Note that this is a low or nil cost option, but the quality of information will be generalised (detailed farm LUC classes will be omitted).

#### **3.1.2 Option 2: Farm map from special LUC survey**

Any LUC map with a better resolution than the regional scale needs to be mapped by a qualified person. A list of qualified LUC surveyors known to the Council is provided in Appendix 1. Using a more detailed LUC map may increase or decrease farm permissible N-loss amounts depending on the type of landscape.

The map must include a scale bar, north arrow, and a table showing the hectare area of each LUC Class.

### **3.2 Property map**

This is a true-to-scale map of the farm that shows features of interest to the requirements and conditions of the resource consent (features of interest are listed below 3.2.1 to 3.2.14 below). It must be accurate so Council can check separation distances. Map size should be sufficient to clearly depict the location of features of interest. The map must include a scale bar and north arrow.

#### **3.2.1 Farm boundary:**

The outermost boundary of the farm. This may be defined by the legal property boundary, the fenced farm boundary, natural boundaries such as rivers, or a combination of all three.

#### **3.2.2 Feeding-out areas:**

Feed pad type areas where stock are contained at densities  $\geq 0.8$  su/1 m<sup>2</sup> (~9 m<sup>2</sup> per dairy cow) for > 30 min/day, and receive supplementary feed. This may include wintering pads, wintering barns, feed pads, stand-off pads, loafing pads, laneway areas, or sacrifice paddock areas.

#### **3.2.3 Feed storage areas:**

Includes stacks, pits, bunkers, silos or sheds used to store appreciable quantities (>500m<sup>2</sup>) of supplementary feed such as silage, concentrates, and hay.

#### **3.2.4 Effluent block:**

The area of land that receives irrigated effluent. This is usually depicted as a number of paddocks. However, it is recommended that the effective effluent area based on irrigator spread be used (for improved nutrient budgeting and calculation of separation distances).

#### **3.2.5 Effluent pond or sump:**

Effluent storage or treatment areas.

#### **3.2.6 Farm dumps:**

Sites where refuse and waste is stored or dumped. Only active or potential farm dumps to be identified (ie. those that are currently in use, or will be used in the future).

### **3.2.7 Public roads:**

Any road or street open to the general public, that is under the jurisdiction of, and is maintained by, a local authority

### **3.2.8 Residential plots:**

A section of land with a residence and curtilage (the enclosed land around a house or building).

### **3.2.9 Public areas:**

An area of land that is used by public groups or the general public. Rule 13-1 specifically recognises marae, schools, public buildings and public recreation areas (eg. parks and sports fields). Native bush areas and reserves are not specified (however, see ecological areas below).

### **3.2.10 Ecological areas:**

Rare and threatened habitats and at risk habitats which generally refers to areas of indigenous vegetation, riparian areas and wetlands that have been rated as having important natural or ecological values.

### **3.2.11 Archaeological sites:**

Places of significant historical or cultural value (archaeological sites, waahi tapu and koiwi remains that are identified by: 1) District councils in their district plans; 2) The NZ Archaeological Association in their Site Recording Scheme; and the Historic Places Trust in their Register of Historic Places, Historic Areas, Wahi Tapu and Wahi Tapu Areas.

### **3.2.12 Waterways:**

Includes both permanently and intermittently flowing waterways, within a defined bed (as defined in the Resource Management Act 1991) more than one metre wide, on average, through the property. A waterway may be a water course, stream, creek, brook, or a river, and it may be natural or artificially modified (ie. includes realigned or modified channels).

### **3.2.13 Waterbodies:**

Any body of fresh water surrounded by land, such as a dam, reservoir, pond or lake. Includes natural waterbodies larger than 1000m<sup>2</sup> and artificial waterbodies larger than 5000m<sup>2</sup>. Excludes effluent ponds.

### **3.2.14 Unbridged or un-culverted water crossings:**

Any ford or stock crossing of a waterway.

## **4. OVERSEER® Data**

### **4.1 Climate**

Rainfall data (to be obtained from Horizons Regional Council).

### **4.2 Soils**

Soil types and soil analysis.

### **4.3 Stock numbers**

Annual stocking rate (numbers, types and classes) including a breakdown by stock class for each month.

Milking data: Peak milking herd size, number of milkings per day, average milking time, start/finish dates.

### **4.4 Farm management practices**

A description of the farm management practices used on each block including (where applicable):

- a. ground cover – pasture, crops, non-grazed areas (including forestry, riparian and tree areas).
- b. stock management – lambing/calving dates and percentages, any purchases and sales and associated dates, types and age of stock (when relevant).
- c. fertiliser management practices – types, quantities, rates of application and details of varying procedures for different blocks.



- d. winter management of cattle grazed off – including the use of feed pads, grazing off or standoff pads.
- e. crop management practices – area cultivated, method of cultivation, crop types, rotations, timing of sowing and harvesting, resulting use of crop, where and when it is fed out on farm or when it is exported and where to.
- f. supplementary feed brought onto the farm – feed type, annual tonnage, dry matter content, feed quality, nitrogen content.
- g. use of nitrification inhibitors and any other verifiable nitrogen leaching inhibitors.

**Advisory Note:** Where any of the matters (a) to (g) have not been implemented on a particular block then that should be stated.

#### **4.5 Annual account copies**

Copies of any available annual accounts to verify the above information.

Copies of any available invoices or receipts for purchases of stock, fertiliser, supplements imported or exported.

#### **4.6 Farm effluent management**

Farm animal effluent, pig farm effluent, feed pad and stand-off pad effluent management including;

- a. area of land used for irrigation.
- b. annual nitrogen loading rate and nitrogen load rate per application.
- c. instantaneous application rate.

#### **4.7 Irrigation**

Clean water irrigation in terms of areas, rates and systems.

#### **4.8 Milking shed water consumption:**

Estimate the volume of water used in the milking shed during peak season.

#### **4.9 Feed pads:**

- a. estimate the number of days that the pad is used each month. For example, a pad might be used everyday during the milking season for regular feeding, but only a couple of days a month during the off season to spell wet pastures.
- b. estimate the daily average number of cows using the pad for any given month.
- c. estimate how many hours per day the stock are using the pad.

### **5. Stormwater catchment areas and diversion**

#### **5.1 Surface area:**

Calculate the area of various stormwater collection surfaces. Only include surfaces that contribute to effluent production (ie. surfaces that flow to sumps or ponds).

#### **5.2 Stormwater diversion installed:**

State if an adjustable stormwater system is installed (eg. Y valves, diversion gates, etc.).

#### **5.3 Months when stormwater diversion is active:**

If a stormwater diversion system is installed, state the months for which it is being used (ie. when stormwater is being diverted away from effluent storage).

### **6. Effluent application details**

#### **6.1 Irrigator type:**

If possible list the manufacturer name and model. If not, then record the general type of irrigator (eg. gun, travelling irrigator, etc.).

#### **6.2 Application depths by month:**

Application depth is the height of liquid effluent applied to any part of the paddock during irrigation.

#### **6.3 Average volume of effluent applied per day:**

Indicate the average daily volume of effluent applied for each month.