BEFORE THE ENVIRONMENT COURT

In the matter of	appeals under clause 14 of the First Schedule to the Resource Management Act 1991 concerning proposed One Plan for the Manawatu-Wanganui region.
between	**FEDERATED FARMERS OF NEW ZEALAND** **ENV-2010-WLG-000148**
and	**MINISTER OF CONSERVATION** **ENV-2010-WLG-000150**
and	**HORTICULTURE NEW ZEALAND** **ENV-2010-WLG-000155**
and	**WELLINGTON FISH & GAME COUNCIL** **ENV-2010-WLG-000157**
and	**DAY, MR ANDREW** **ENV-2010-WLG-000158** *Appellants*
and	**MANAWATU-WANGANUI REGIONAL COUNCIL** *Respondent*

STATEMENT OF EVIDENCE BY ANDREW EDWARD DAY ON THE TOPIC OF WATER QUALITY AND NUTRIENT MANAGEMENT

Dated: 14 March 2012

1 INTRODUCTION

1. My full name is Andrew Edward Day.

2. I am a sheep, beef and dairy grazing farmer from Pahiatua. My family own 733 ha and lease a further 354ha for a total farmed area of approximately 1087ha. The home farm has been in the family since 1929. The farm is located mostly within the Mangahao catchment and straddles the Mana_9e, Mana_9d and Mana_10 water management zones.

3. I have a Bachelor of Agricultural Science Honours degree from Massey University (1992). After graduating I spent eighteen months working for Apple Fields Orchards around Christchurch, three months working on apple orchards in Washington State followed by 18 months travelling around the world before returning to the home farm. I have been active in farm extension activities including; discussion groups, monitor farm programs and have regularly hosted Massey University students over the years. In addition I've completed a Soils Underpinning Business Success program (SUBS) which involved a group of farmers mapping the soils of their own farms and the assessing the farm management implications of this knowledge. Last year I was asked to join the executive of the Bush and Southern Hawkes Bay Districts Veterinary Club.

4. I have been involved with Tararua Federated Farmers for many years. From 2002-2006 I was the Meat and Fibre Section chair and then from 2006-2010 I was provincial president of Tararua Federated Farmers and I am still on the executive (an elected position).

5. Our farm was one of the original test farms for the 'FARM Strategy' (refer to Rule 13-1 of the Notified Version (NV) of the Proposed One Plan (POP) which evaluated both our existing mix of enterprises at that time and a possible dairy conversion on part of the farm. This gave me first hand exposure to what the POP would mean for farmers when comparing their farming intensity (Nitrogen loss) to the quality of land they are farming on.

6. Recreationally, I have a strong interest in the rivers of our region and am a member of the Ruahine White Water Canoe Club. As a keen multisport kayaker. I'm on the river at least once a week throughout the year, which gives me a different perspective on farmer behaviour. My normal training ground is on the confluence of the Manawatu, Mangatainoka and Tiraumea rivers (two nutrient rich rivers and a sediment rich one). I have first hand experience of significant algal blooms within this area.

7. I'm involved in the POP appeal process for two main reasons;

   a. I don't believe the limited regulation proposed in the Decisions Version of the POP (DV) will address our water quality problems; and

   b. There are a group of landowners (non dairy) who in time would bear significant cost if the DV were adopted, who are oblivious to this. I spent many years representing a broad range of farmers across a variety of fields when I was President of Tararua Federated Farmers and I don't consider that a large portion of the current membership are at all well represented in the allocation of nutrient loss (N loss) across this region. The equitable allocation of N loss is important for all landowners of the region because all land does contribute to the difficult problem we're trying to address at this time.

2 MY PREVIOUS EVIDENCE IN RELATION TO THE PROPOSED ONE PLAN

8. I made submissions on the POP because I was concerned about the potential for distortions within the proposed regime to deal with water quality issues. I believed that there had been insufficient thought and research into the effects of the POP on the district as a whole. The key points in my original submission were that more work was necessary on LUC categories to ensure a more gradual transfer of N allocation across various land units and that more categories of land use should be included in the POP. The economic and environmental impacts needed to be

considered carefully to create a workable solution. I expanded on these key themes when I presented my oral submission to the hearings committee.

3 ENVIRONMENT COURT CODE OF PRACTICE FOR EXPERT WITNESSES

9. I am an appellant but I also have significant expertise in relation to farm management and farming practices, as outlined above. As one of the seven test farms involved in the early investigation of the POP I can comment from first-hand experience on the on-farm implications of the objectives, policies and rules proposed to address water quality matters. I run a profitable farm and want this to continue.

10. I have read the Environment Court Code of Practice for Expert Witnesses. I can abide by that code but as an appellant I cannot submit this statement of evidence as a completely independent expert in accordance with that code. However I have prepared this evidence on the basis that I have technical expertise and practical experience that does entitle me, I believe, to state opinions relying on my qualifications and experience set out above so to assist the Court.

4 EXECUTIVE SUMMARY

11. We have a problem of elevated Nitrogen levels in some catchments; in many of these more than 99% of this nutrient (nitrogen) originates from diffuse sources, principally farmland. To address this, farmers need to be accountable for their own impacts and considerate of other landowners in the catchment.

12. The water quality issues of the Manawatu Wanganui Region, based on my experience, require active management of the land uses contributing to the problem. An environmental outcome is unlikely to result from volunteer-

ship where there is no incentive or obligation for landowners to improve their practices.

13. The DV regulatory framework doesn't meet what I consider to be the requirements of an allocation framework, in particular it does not allocate N leaching rights equitably (it does not allocate any rights to some).

14. The DV results in some perverse implications for landowners, including incentivising intensification of particular land uses and potentially transferring wealth from unregulated (and therefore unallocated) landowners to regulated landowners.

15. I do not consider that the regulatory framework of the DV will result in the water quality objectives being achieved because there are many land uses that are not considered by the framework.

16. There shouldn't be any great separation between environmental impact and liability for that impact

17. All landowners need to be considered in an allocation framework

18. All landowners should be clear about their obligations in managing water quality

19. I consider that the LUC allocation framework of the NV is an equitable method for distribution of the available N leaching rights to landowners

20. Based on my own experiences, well-constructed regulation can positively influence the behaviour of unregulated landowners.

21. In my view, a management framework more closely aligned with the NV is more likely to achieve the environmental objectives than the DV.

22. Inclusion of trading will support allocation limits being achieved at least cost and provides for flexibility of land use.

23. The following flowchart encapsulates what, in my opinion, represents an improved framework for managing water quality in the Region in a holistic manner.

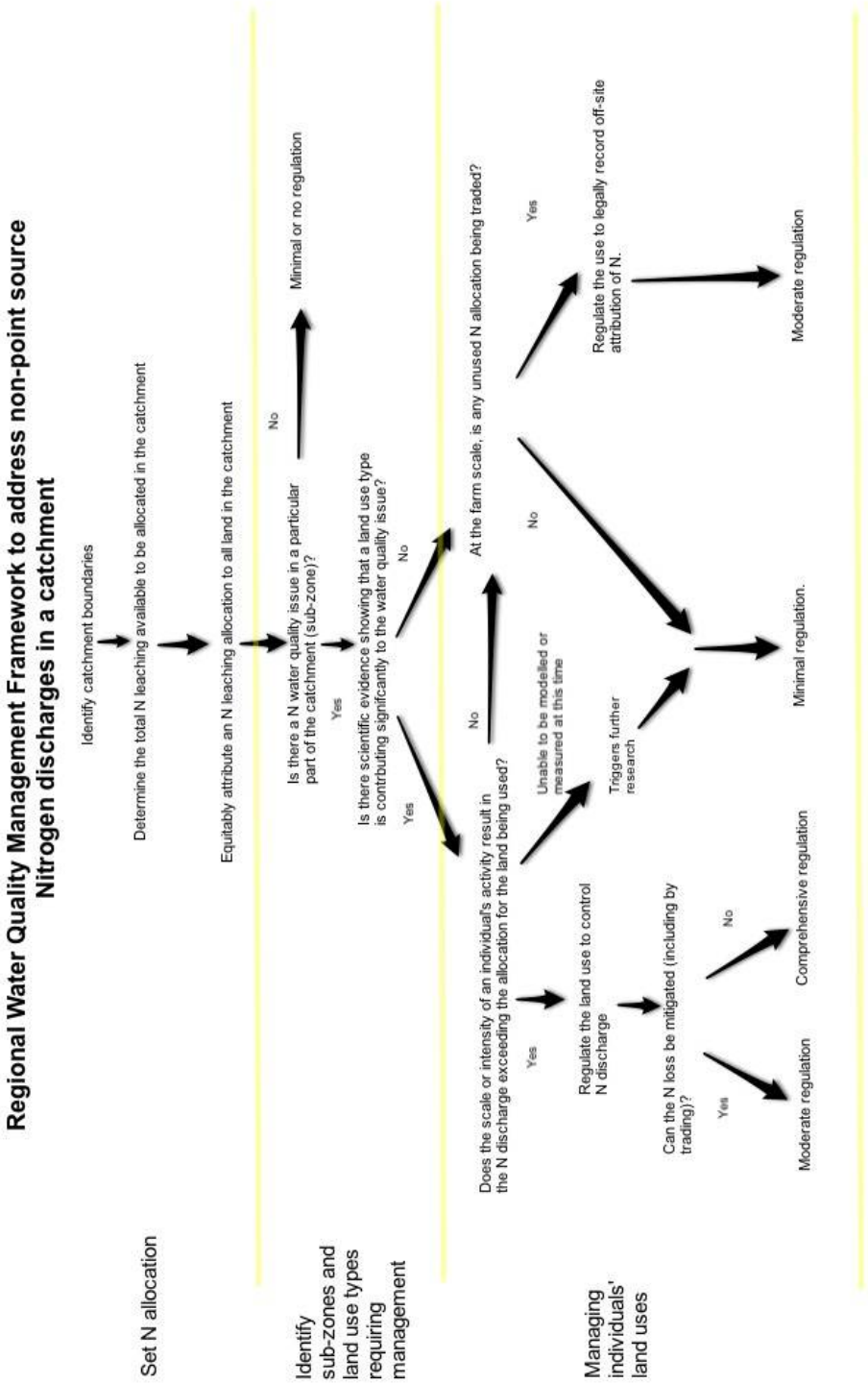


Diagram 1: Water management framework which would integrate management of issues identified in my evidence and represents an equitable and transparent approach to allocating and managing Nitrogen leaching.

5 OVERVIEW

24. The following section sets out the key statements that underpin my evidence. I discuss these points in more detail within the body of my evidence.

    a. In my view the water quality of the Region's water bodies is a common resource and it can't be managed without clear linkages between environmental impact and liability. Any approach to managing land use to influence water quality must maintain a degree of equitability for all landowners.

    b. The reason we're debating how to manage our shared resource is that we know that a totally free market won't protect a common resource. The current state of water quality in the Region's water bodies is evidence of this. To my mind the central role of the Resource Management Act (RMA) is to influence the free market to manage our shared resources in a more sustainable manner.

    c. Our standard of living in New Zealand is dependent on producing high quality, high priced food products for the most affluent consumers in the world. We wouldn't have the standard of living we currently enjoy were our goal to provide staple foods for the world market. Producing high-volume staple foods simply won't pay enough and we don't have any natural advantage in their production (large land area, low cost labour force and so on). Our advantage is in pastoral production, which is largely climate related

    d. Some commentators feel it is New Zealand's role to feed the world. If a sensible goal for New Zealand is to feed more people regardless of our income then it can be done and with less environmental impact. I suspect New Zealand farming is more concerned with income generation than a perceived ideal of feeding the world. Farming is like many other businesses that succeed by identifying a market where they can sell their

products and trying to maximise the return from those sales. The price that we're able to extract from the world market is dependent on being able to trade with the most affluent consumers in the world with something they are willing to pay the highest world price for.

e. The price consumers are prepared to pay for our products is influenced by the quality of those products but increasingly consumers are considering other factors when they place a value on goods, including whether those goods have been sustainably produced. For example supermarkets in the United Kingdom are now starting to document the water footprint of their products.

f. Control of the environmental effects of farming can only be achieved with the realisation that we are dealing with a scarce resource in water quality. As farmers, we collectively need to acknowledge that we are 'using' freshwater to produce an economic outcome and, importantly, that the resource available is limited. We will not suddenly hit the resource limit in the way that a car suddenly stops working when it runs out of petrol – rather every discharge from farming and other activities uses up some of the available resource in an incremental fashion.

g. Farmers need to recognise that water quality and the ability for fresh water to assimilate contaminants is not there for farmers' exclusive use. Others have a right to use the freshwater resource.

h. To date New Zealand farmers have, in my experience, largely paid lip service to the use of nutrient budgets as a measure of environmental responsibility. The real value of nutrient budgets only comes about when we are able to assess outputs versus a catchment-based allocation of the available resource.

i. Part of the dilemma is where the agreed level of environmental degradation might be. To manage the resource we need to understand what share of that available resource should be allocated to farming,

business, and urban discharge along with what residual water quality needs to be left in stream for other values.

j. The deficiency of farmers' voluntary selection of a suitable intensity of operation based on their perceived environmental impact, is that it doesn't address the tragedy of the commons. It is, after all, largely as a result of multiple operators choosing their preferred level of intensity to maximise their own economic benefit with little regard to others or the aggregate of this decision making process that our water quality problems exist today. As an individual increases production off an area of land with no personal consequence to the loss of nutrient there is little incentive to minimise pollution.

k. When truly tackling degradation of our water ways, the question farmers must address is "what's my share of the common resource and what does it mean for water quality when all other land owners with similar quality land are able to operate at the same intensity?" In other words, individual farmers need to understand how much of the water quality resource they have allocated to them.

l. One of the goals of any allocation regime must be the promotion of moderate, certain development. The farming community need to know what resource they currently have available at their disposal and how this might change over time.

m. Farmers need to know that the resource they have allocated to them won't be taken off them to enable others to continue to operate unsustainable practices that could otherwise be easily improved with modified management.

n. For the community at large to endorse further intensification of land use by farmers, where feasible, farmers must be able to convince the public that they have learnt from the effects of uncontrolled development and are capable of addressing problems where they exist.

o. In my view we can generate more economic return from the same or less pollution and feed more people. But we can't do this equitably without aligning environmental impact and liability.

6 ANALYSIS OF THE DECISION

25. In this section of my evidence I analyse the implications of the Decisions Version of the POP (DV) and how it affects farming practice and environmental outcomes.

26. In my view, the DV has created a regulatory regime that won't achieve the environmental objectives put forward, which broadly seek to maintain or enhance water quality.

27. The DV includes Rule 13-1, which provides for existing dairy farming in specified catchments as a controlled activity on the basis that 'reasonably practicable farm management practices' are implemented to minimise nutrient leaching. This rule does not set any specific nutrient loss amounts that must be complied with. The target catchments are those where there is an identified water quality problem (these are identified in Table 13.1 of the DV).

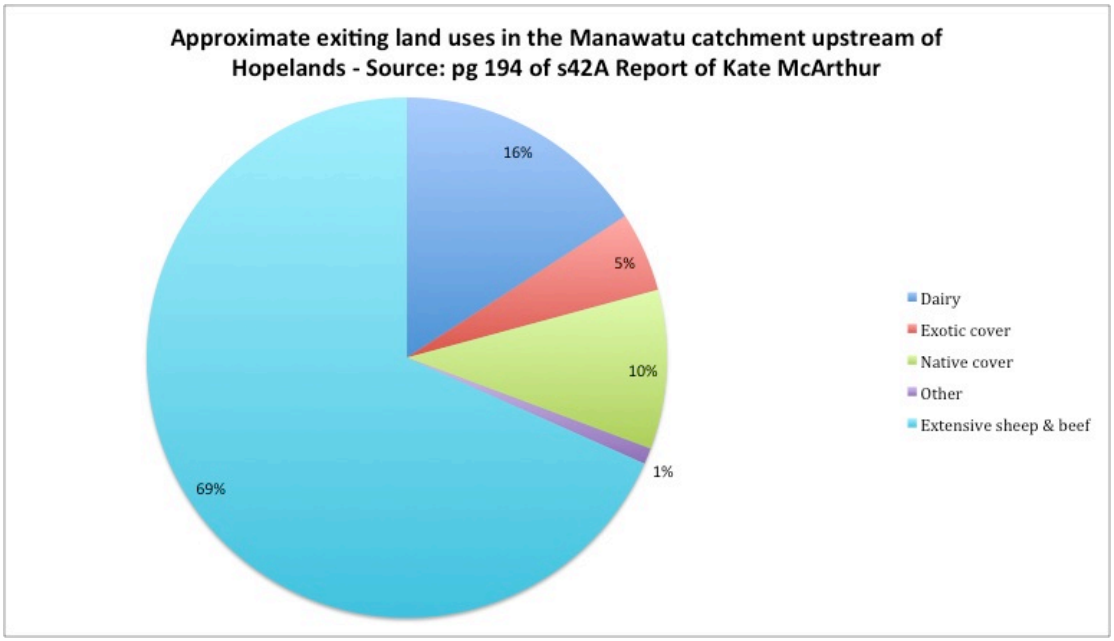
28. The effect of Rule 13-1 is that existing dairy farmers have been granted a formal right to increase their intensity in the target catchments ("super grand parenting"[1]) and the decision is silent on how other land uses (such as extensive and intensive sheep and beef, horticulture and cropping) are to be accommodated within the target catchments. The DV provides for the legitimisation and allocation of discharge rights to existing dairy farms through resource consents, however no such legitimisation of discharge rights are created for non-dairy land uses (because there is no requirement for discharges from those activities to be secured by resource consent). So existing dairy farms can increase their intensity and their nutrient

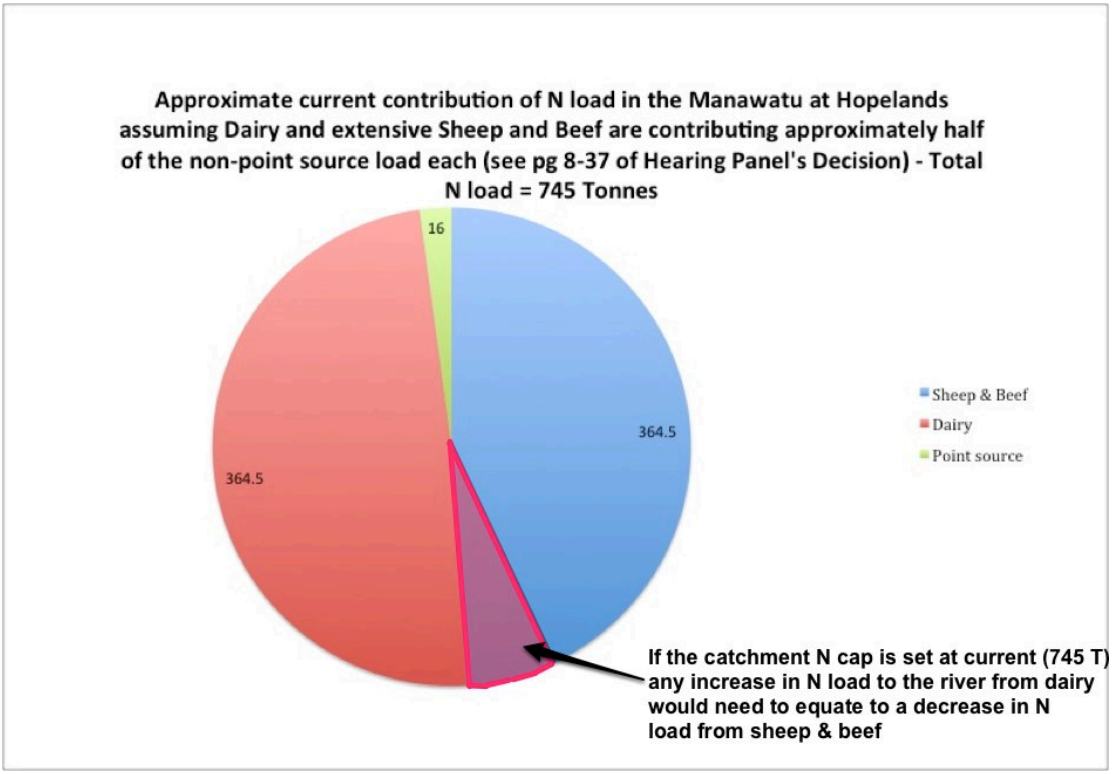
[1] The concept of existing nutrient leaching being accepted but also the ability to further increase nutrient leaching beyond current levels. Please see discussion later in Section 13 of my evidence in relation to the limitations of Reasonably Practicable Management Practices.

discharges provided they use reasonably practicable farm management practices to minimise leaching, and this right to discharge is secured by resource consent.

29. This has the effect of transferring the liability of dairy farming's current intensity and future intensification to other landowners. If existing dairy farmers have the legitimised ability to increase their pollution and this right is 'locked in' by resource consents, any future adjustments required within the catchment to address water quality degradation must be made by land uses other than existing dairying. There is no certainty that society will accept the current degraded state of our water bodies in the future. This of course is on the basis that the water bodies have a limit to how much nutrient inputs they can sustain. If there is only a limited amount of nutrient assimilation available in the catchment and a large amount of that is already allocated to one set of landowners, it leaves only a small amount to be divided among the remaining landowners. This problem is amplified where there needs to be a reduction in the catchment limit.

30. The following pie charts indicate the relationship between land use make-up and nutrient contribution. Where there is no catchment cap, the environment must accept the addition nitrogen discharge (the total load in the river increases). Where there is a catchment cap (a limit to the size of the pie or water quality target), the additional nitrogen discharged from one land use type (e.g. dairy) must be offset by a reduction in nitrogen discharge from another source (e.g sheep and beef) to maintain water quality. In other words, if a land use has the opportunity to increase its proportion of the pie, that additional allocation will need to come from a reduction in current nutrient loss from other land uses.





31. One alternative to the DV's unintended transfer of liability from existing dairy to other land uses is to allow other landowners to also further intensify using reasonably practicable management practices (maintaining equitability with existing dairy farmers) and admit that there is no water quality target or objective. I am strongly opposed to such an outcome.

32. One of the more obvious responses to the DV by non-dairy farmers facing the potential environmental liability of the existing dairy industry might be to convert to dairy where possible (where their land, climate and other factors are suitable). Under the DV the conversion farms wouldn't have the same potential intensity[2] (N loss) as the unrestrained N loss of existing dairy farms. But it would mean these farms would gain resource certainty. For those that can't respond by converting to dairy, this process has the potential to further concentrate the wealth transfer of the DV in that a large proportion of the available resource in the catchment is secured by dairy farmers (new and existing), leaving other landowners without any secured allocation and dwindling resource availability.

33. The resource allocation in the DV can perhaps be best highlighted with the analogy of allocating of irrigation water in a dry catchment - all farmers would want to be given the opportunity to share in the resource but in practice this is particularly difficult once people have been formally granted a use right (via resource consents). Without a fair method of allocating the available water to all farmers, a few farmers will have access to all of the resource, which leaves some farmers with none.

34. When it comes to the DV, for the most part neither those receiving (dairy farmers) or providing (non-dairy farmers) this level of resource use security are aware of the 'transfer' or requested it.

35. The Hearing Panel in its decision states that it has taken a 'fairly light-handed'[3] approach to regulation of farming activities (with reference to Rule 13-1). However my contention is that, while the Hearing Panel's intentions around the regulatory burden on farmers may have been realised, the DV takes a heavy-handed approach to allocation of the water quality resource, which has considerable future economic cost implications that I do not think the Hearing Panel appreciated.

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[2] Rule 13-1B of the DV provides for new dairying as a controlled activity provided numerical nitrogen leaching standards are achieved.
[3] See Decisions on Submissions to the Proposed One Plan, Volume 1 – Reasons for the decisions pg 8-49.

36. The DV places considerable importance on reasonably practicable management practices (RPMP) to minimise nutrient loss. However the DV fails to recognise that you can introduce RPMPs to minimise nutrient loss and still increase actual nutrient loss (para 9.35 Ledgard 2007)(para 76 McKay section 42A report). For example you could have a dairy farmer running 2 cows/ha employing RPMP with a resulting leaching output of 20kgN/ha. Under the DV that farmer is free to intensify to 4 cows/ha with the use of RPMP's to minimise N leaching and yet they could increase leaching levels to 30 kgN/ha. RPMPs only require management practices to be implemented where they are reasonably practicable – there is no requirement for a particular outcome to be achieved. RPMPs can be readily dismissed as not being practicable if a farmer considers, for example, that the capital outlay required is too costly in the short term or impractical in their particular situation.

37. In my view, RPMPs allow for intensification and increased nutrient discharges.

38. This technical deficiency that underpins the DV leaves the Region with a regulatory framework which can't reasonably be expected to deliver its stated objectives – of all the land uses contributing to the non-point source discharge problem, only new dairying must meet a numeric leaching standard. All other land uses either have a legitimised right to intensify and secure medium to long term leaching rights (existing dairy) or are unrestricted in their current practice in the short term (non-dairy).

39. In addition to not truly addressing the allocation of nutrient leaching rights to existing dairy farmers, the DV has established a set of Land Use Capability (LUC) leaching numbers for new dairy farms which weren't supported by the technical evidence in this area[4]. The DV includes a set of Nitrogen leaching numbers based on LUC in Table 13.2. New dairy farming

[4] Table 3, pg 40 of Dr Alec MacKay's s42A Report demonstrates that the raw LUC leaching numbers had to be scaled by 75% to approximate the current Soluble Inorganic Nitrogen load of the upper Manawatu River. The DV applied the raw un-scaled numbers to new dairy conversions (Table 13.2).

activities require resource consent under Rule 13-1B and must, as a condition of that rule, achieve the Nitrogen leaching numbers set out in Table 13.2.

40. The DV adopts the raw LUC leaching numbers set out in the s42A Report of Alec McKay, which were derived from a clover-based pasture system operating under optimal conditions across a range of landscapes before the application of additional technology. These raw LUC numbers were then scaled by 0.75 to arrive at the Year 20 numbers in Table 13.2 in the NV, which approximates that current Soluble Inorganic Nitrogen load in the Upper Manawatu.

41. Table 13.2 in the NV also included nitrogen leaching numbers, again based on LUC, which incrementally reduced over several time intervals. While some of the NV reductions in LUC allocation over time might, at first inspection, seem arbitrary, it was very clear to me, after I had read the evidence supporting the POP, that the year 20 numbers are where the goal is. The numbers for the intervening time periods were only intended to be interim achievable targets (ibid) which, as a farmer, I saw as an important concept to provide for a period of transition.

42. If existing non dairy farmers are to apply the logic of the DV then they are free to intensify in any manner they see fit in the short term albeit their intensification doesn't have the resource security of existing dairy farmer's intensification (they do not have the opportunity to lock in their future nutrient loss through resource consent). With nothing to limit non-dairy farmers, there is no regulatory or moral barrier to them increasing their nitrogen leaching beyond the resource limits if they choose to (or if the economic climate encourages them to).

43. In my experience, farmers are generally of the view that if they have to go through the hassle of complying with environmental regulation then they ought to be assured that their efforts aren't in vain. I believe most farmers would like to see environmental regulation result in at least maintaining water quality in our most polluted catchments. The effect of the DV, as

discussed above, is that new dairy farmers will be required by regulation to achieve specified nutrient leaching standards, existing dairy farmers will be able to increase their nutrient leaching legitimately, and non-dairy farmers will be able to increase their nutrient leaching without any regulatory interference in the short term. The overall management regime will likely have little influence on water quality because the majority of lightly regulated and unregulated land uses will continue contributing to water quality decline if economic.

44. When assessing where the diffuse Nitrogen load comes from, the Hearing Panel stated:

45. "In other words, half of the nitrogen loading problem is derived from non-intensive sheep and beef farms. These non-intensive sheep and beef farms are excluded from Rule 13-1 as notified. We do not find that to be appropriate. Unfortunately, there is no scope within submissions to include non-intensive sheep and beef farms within Rule 13-1. Even if submissions had sought that as an outcome, given the number of farms that would be potentially affected, that would be a matter more appropriately considered under a Plan variation or change. "[5]

46. What the Hearing Panel apparently didn't appreciate is that the leaching numbers within Table 13.2 of the NV were derived from a consideration of nitrogen leaching from *all* land in the Upper Manawatu catchment. This implicitly allocated a share of the nitrogen leaching pie to non-intensive land uses as well as to the regulated land uses (intensive farming). While non-intensive sheep and beef farming wasn't regulated in the NV, that land use was still allocated a share of the resource – put another way, the regulated land uses were allocated an equitable share of the resource and were required to comply with that allocation. Unfortunately, under the framework established by the DV, it isn't possible to bring other land uses into the N allocation regime without considerable upheaval of the policy

[5] See pg 8-37 of the Decisions on Submissions to the Proposed One Plan Volume 1 – Reasons for the Decisions August 2010).

and regulatory structure. This is because the DV has already 'locked in' an over-allocation to the existing dairy industry by way of a consent-based 'super grand parented' right for N allocation.

47. Because the DV moved away from a whole of catchment approach by only selectively incorporating LUC leaching numbers for land that might increase intensity for a particular land use in the future (dairy conversion), it is very difficult to see a catchment level improvement in water quality.

48. All farmers are aware that land use has changed over time and will continue to do so (currently there is a strong swing to dairy but this won't necessarily be the trend in the future). What land use has the greatest economic return in the short term is actually what the market is really good at deciding. In my view, it is not within the power of any individual to categorically prescribe what the future economic return of an enterprise will be. N leaching trends will therefore follow those economic fluctuations unless there is market intervention, through regulation, to set a bottom line. Unfortunately the DV takes a short-term and rather static view in the approach to allocation of nutrient discharge rights such that the resulting water quality is indeterminate and will continue to be heavily influenced by economic incentives.

7 COMPARISON WITH REGIONAL PLAN VARIATION 5 OF THE WAIKATO REGIONAL PLAN

49. I have read the Environment Court's decision (Decision No [2011] NZEnvC 163) on Variation 5 to the Waikato Regional Plan, which relates to managing Nitrogen discharges from land in the Lake Taupo catchment. In the Taupo catchment decision the Environment Court has accepted a grand parented approach to nutrient loss allocation (farmers' initial allocation of Nitrogen discharge is set at the rate at which they were leaching at a particular point in time).

50. In my view grand parenting doesn't reflect the capital value of individuals' holding in land and disproportionately loads the costs associated with change on the least intensive farmers. In other words, farmers who have high nutrient loss at the time the initial allocation is set (because of poor practice, economic drivers supporting intensive land use at that point in time, manipulation of records, etc) are allocated more of the resource at the expense of other farmers who may not have been operating intensively for whatever reason or more efficiently.

51. In my view, grand parenting does not consider whether the land is being used efficiently.

52. I don't accept the argument put forward by some farmers that they aren't aware of their environmental impact therefore are not responsible for it. While they might not be aware of the intricacy of Overseer or the like; all farmers are aware of the old farming adage that "what goes in one end comes out the other". Excess nutrient loading of waterways isn't a new problem; I can recall studying the weed problems in Lake Rotorua in 4th Form Social Studies back in 1984.

53. Following the Variation 5 decision, my understanding is that the land wealth of farmers in the Taupo catchment is now principally based on how much nitrogen the farmers have managed to persuade the regulators they were leaching for the purposes of calculating their Nitrogen Discharge Allowance (NDA).

54. The choice of "best year" as the adjective in the Environment Court's decision to describe a farmer's highest level of pollution in the benchmarking period for the Taupo catchment is, in my view, the antithesis to the message the regulation intends to send to dischargers. This is because it may be the best year from a farm production perspective but is actually one of the worst years in terms of nitrogen loss and therefore environmental impact. To my way of thinking, where a community has built up sufficient detail of a catchment to contemplate regulation, the

message we send within the catchment and to other catchments is really important.

55. My view is that we need to be upfront about the problem we are trying to address and to be honest about how we describe it – the Taupo example could more accurately be rephrased as 'the year with the highest Nitrogen loss'. If we carefully construct environmental regulation and think through the messages sent then I think it will go a long way towards reducing the need for environmental regulation and reinforce the goal of catchment water quality, equitability and economic development.

8 THE IMPLICATIONS OF NUTRIENT ALLOCATION METHODS ON PROPERTY VALUES

56. Broadly speaking the current land valuation market takes into account LUC as, supported by the evidence of Peter Loveridge[6]. If two parcels of land that are the same in everyway except their productive potential (LUC) are considered, the land with the higher productive potential (and therefore greater potential for profit) has the higher land value. As I will discuss below, to add an external influence that distorts valuations so that they are based on the pollution right allocated to land rather than on the inherent productive potential of the land consequently has major wealth impacts for individuals.

57. Under a grand parenting regime (Taupo) or 'super grand parenting' regime (DV) there is significant adjustment to land values reflecting the degree of recognised pollution entitlement. Indeed in the Taupo catchment, "*the value of land is closely linked to the nitrogen allowance assigned, those lands assigned a below average allowance compared to lands with similar characteristics experience a greater decline in the value of their land*" attributed to Mark Grinlinton, when explaining the Council valuation

[6] See paragraph 5.1, pg 3 of the Evidence of Peter Loveridge

method used in the Taupo catchment (Nitrogen Trading in Taupo, Duhon, Young and Kerr 2011).

58. In the Taupo catchment this value adjustment within the same class of land equates to approximately $400/kg NDA (ibid). This means on one side of the fence you can have land leaching 40 kgN/ha valued at $16 000 per Ha and the other side of the fence identical land leaching 20 kgN/ha valued at $8 000 per Ha, whereas the only difference in pre regulatory value would be the state of development, water supply etc. Perversely the land most closely linked to the problem trying to be addressed (elevated N levels in the lake) has the greatest retention of value once regulated. This creates an economic benefit (higher land value) to the farmer causing the greatest pollution. The valuation of land in that catchment is therefore not driven predominantly by its natural capital but by RMA regulation.

59. Based on my assessment of the regulatory regime, and having spoken with farmers within the Taupo catchment, I am of the opinion that there is significant existing wealth transferred with the introduction of a grand parenting regime.

60. In the Horizons Region we, at present under the DV, have existing dairy farmers assigned a Nitrogen discharge allowance of their choosing (super grand parenting), potential dairy conversions an expanded LUC allocation (DV Table 13.2 LUC numbers) and all other land owners no formal recognition. Based on the Taupo example I discussed above, this suggests to me that there has been a significant shift in land values (now, but especially in the future) driven by the particular RMA regulation chosen in the DV.

61. I question whether our community would have anticipated or commented on “super grand parenting” of existing dairy farmers in our most polluted catchments given what they were asked to submit on within the NV. Based on my own experience, a reasonable inference for a non-intensive farmer looking at the POP as notified would be to say their land under a LUC allocation frame work was allocated the same as those regulated land uses

(a hectare of LUC Class I land was allocated the same amount of Nitrogen regardless of whether it was used for dairying or extensive sheep and beef farming). If farmers had read the Council's evidence in support of the notified framework, this assumption would have been confirmed.

62. Based on my reading of the submissions and the evidence presented at the Council hearing, I do not consider that the Hearing Panel had sufficient support for the significant adjustment to the Nitrogen allocation framework that resulted from the DV. I suspect that the Hearing Panel may not have been aware of the implications of this change in terms of the consequential wealth transfer, as I can find no discussion of this in the Decision Report.

63. When comparing the Taupo and DV nutrient allocation approaches to an LUC type nutrient allocation approach, I consider that an LUC allocation approach applied across all land would generally mirror existing land values without significant wealth transfer to the highest polluter. That is, there would be proportionality of the impact of regulation for all landowners relative to their pre regulatory land value without pollution per se being rewarded.

64. In my view, farmers want to be treated as equally as possible and I think the initial allocation based on LUC of all land within a catchment, as contemplated in the NV will go a long way towards achieving this, including minimising any consequential implications for wealth transfer.

65. Land ownership is a very competitive process often taking generations to acquire and the saleability of any regime is dependent on people feeling like they are being treated in an even handed manner (interestingly one of dairy farmers main gripes about fencing water ways is not that they are required to do it under the Clean Stream Accord but that their own cattle can go onto their neighbours sheep and beef farm and freely access waterways). Unfortunately the POP didn't sufficiently highlight that all land of equal quality in a catchment was allocated the same level of resource, but that was one of the great strength of the proposal. It was only really

when more consideration was given to the derivation of table 13.2 in the POP that this was apparent to me. Without recognising all land in a catchment it is difficult to see how a catchment outcome can be achieved.

66. The LUC numbers within table 13.2 of the NV were both an allocation to all land within a catchment, a regulatory trigger for specific land uses and a signal of future behavioural change required to address target catchments' degraded water. To this day there are farmers and industry groups who don't realise that the POP applied a resource allocation to all land in the target catchments. The focus fell on the few regulated land uses which lead to a feeling of being picked on; when in actual fact the POP is a wake up call to all land owners throughout the region.

9 LAND USE CAPABILITY

67. Land Use Capability (LUC) is a long-standing systematic way of describing the soils that we have in New Zealand. Some have commented on the fact that LUC system was applied to the landscape back in the 50/60's and is dated. It is worth remembering that our soils have developed over much longer time frames than this!

68. To me the fact that the landscape has already been attributed a figure is actually a strength, not withstanding that there are issues with scale of mapping in some instances. Because entire catchments have already been attributed a LUC number it allows some degree of certainty of environmental outcome from an allocation of Nitrogen loss (N loss) to the landscape when coupled with knowledge of point source discharges. The difficulty of modelling N loss from some current land uses, let alone potential future land uses, actually supports N allocation to landscape. Without allocation to landscape a landowner could be incentivised to adopt systems that aren't modelled in order to avoid constraint at any time.

69. I support the LUC allocation framework proposed in the POP as it recognises land quality and its inherent variation. Opponents of a LUC type

allocation system mostly seem to not recognise that the quantity of nutrient loss that the ecosystem can handle and still achieve other values is limited. While an individual may well have introduced technologies that take their land use intensity well beyond their land's LUC allocation, the ecosystem doesn't have an equivalent ability to bring in such technologies to respond to the increased outputs from the land use. There is a finite amount of nutrient that our waterways can naturally accommodate while still providing for other values aside from shifting contaminants downhill.

10 PROVISION OF A PERIOD OF ADJUSTMENT

70. I support the long lead-in time of the NV (20 years) as this allows businesses to alter their practices or make alternative arrangements to allow their business to continue while living within their portion of the available resource. If it were only a matter of technology adoption with no other consequence then we could go to the year 20 numbers tomorrow. That is, we can immediately eliminate the excess N from our waterways but the upheaval involved is probably too great.

71. In my view, actually requiring farmers to live within a set resource allocation, regardless of how generous it is, is a major change for New Zealand farmers. The NV's long lead-in with achievable early targets (for most) also provides the opportunity for us to better understand how differing catchments might respond to farmers' changed management (through monitoring). I think it is possible that catchments can move from being regulated to unregulated based on water quality outcomes resulting from the management regime (if water quality has improved and sustainable land use practice improvements become the norm). This is more likely one actual environmental responsibility is imbedded in society as a result of the introduction of the new regulatory framework.

72. Management of our waterways isn't an exact predictive science and we do need the chance to modify the rate of reduction in nutrient loss as time goes by and we develop a better understanding of the systems involved.

73. To date New Zealand farmers have operated in a largely unconstrained environment (in terms of resource management regulation) and have intensified according to world market prices with little tangible restraint.

74. The notion that society at large might not value a farmer's additional revenue because of its linkage to the removal of the public use of the common resource has come as a shock to some. Indeed some farmers have reacted with indignation that they should be constrained in any way to protect their community's values. A lot of farmers have built up businesses on the presumption that there aren't environmental constraints so the required transition to acknowledgement of real constraint is significant and to my mind supports the 20 year lead-in included in the NV.

75. The LUC allocation framework gets all farmers to ask the question "so what's my land ownership entitled to?" To me this is a fundamental requirement of regulation of diffuse pollution from agriculture where we have many participants within a catchment (agriculture in its widest possible sense, including horticulture and forestry). LUC provides a more tamper-proof system of allocation; it isn't subject to manipulation to the extent that other systems are.

76. Importantly for farmers, LUC is a tangible system. Although farmers don't use LUC formally day to day, they all are acutely aware of the differences in soil and landscape and already price it accordingly. LUC allocation also has a role to play in informing enterprise selection and intensity in un-regulated catchments.

11 ABILITY TO INTENSIFY

77. I disagree with Antony Roberts evidence to the Hearing Panel where he states "31 The overall objective of using OVERSEER should be to establish a benchmark N loss figure for a property and over time with management changes demonstrate a long term reduction in N loss." In my view an increase in a property's N loss figure is entirely appropriate depending on its starting value, its share of the resource, and alternate mitigations employed. For example, consider the situation where a property under LUC allocation has an average allowance of say 20 kgN/ha. If it had a starting value (actual N-loss) of 10 kgN/ha then I am quite comfortable with it increasing to 20 kgN/h (its allocation limit), or even moving up to 40 kgN/ha provided it has traded the balance between that and its allocation limit (20 kgN/ha). Trading to allow intensification beyond the allocation limit does not actually cause a N loss issue for the catchment because some other land user has to operate below their allocation (see the Section 15 on trading later in my evidence).

78. I don't believe that an individual should have their ability to responsibly intensify removed by another's poor performance (which would be the result of benchmarking).

12 FARMER ACCOUNTABILITY

79. In my view, it is not appropriate to separate individual farmer decision-making from degradation in our waterways. Massey University run several courses on the use of Overseer, which is all about farmers' actions and consequence. Whether looking at Overseer from the industry perspective of minimising economic cost of fertiliser use or from the perspective of environmental impact, the bottom line (measured as catchment water quality) is largely a result of farmer decision-making. Clearly not all the nutrients in our waterways are sourced from farming but we know that a large portion are (particularly Nitrogen, and to lesser extent, Phosphate),

and I support a management framework that requires landowners to use tools like Overseer that allow then to understand what their contribution to water quality is.

80. The courses run by Massey University also highlight the fact that we have a well-educated service industry in New Zealand along with a competent farming sector. It will take time for farmers to come to grips with how any new system works, but based on my knowledge and experience of the rural sector I am confident that there is the capability is there.

13 MORAL HAZARD OF LUC

81. In some respects there has been too much attention paid to the dairy industry and I think this is in part because they run relatively simple production systems that are easy to model and are very visible. Other less obvious land uses have flown under the radar for the most part; for example it would be interesting to establish what sort of leaching rate a free-range chicken operation might be having.

82. Allocating N loss using LUC sets a base entitlement for all land ownership regardless of whether the tools are currently available to actually measure/model N loss from individual land use activities.

83. One of the key strengths of LUC allocation is that it brings to land ownership the concept of moral hazard. “Moral Hazard occurs when a party insulated from risk behaves differently than it would behave if it were fully exposed to the risk.” (Wikipedia). A landowner doesn’t necessarily need to know their actual leaching rates at any point in time but they need to know that, in time, they will be held to account for their intensity of operation relative to their share of the catchment allocation. Without bringing moral hazard into land use we simply end up with the situation where each individual looks after their own business and passes the liability of their environmental impact onto others in society generally, and other landowners in a catchment in particular.

84. Armed with the knowledge that a land owner will, in the fullness of time, be accountable for their own leaching relative to their own landholding, this should prompt landowners either to exercise moderation, take steps to address their intensity through other means, or carry the risk that an intensity reduction may be imposed on them using regulation.

14 THE ROLE OF VOLUNTEER-SHIP/REASONABLY PRACTICABLE MANAGEMENT PRACTICES (RPMP)

85. I don't believe volunteer-ship can overcome the problem we are trying to address. Voluntary environmental regulation favours those with less conscience of restraint. As individual farmers we aren't good at leaving money on the table, it will only be left there if we're confident that others won't pick it up and run off with it. I won't reduce my intensity of farming without being convinced that other farmers are being asked for a proportionate response and I most definitely won't reduce my intensity to allow others to increase their intensity above mine because they have a different land use as the DV implies.

86. As it stands with the Hearing Panel's decision, **my advice to individual landowners would be to maximise your environmental impact if you want to protect your financial position**. Until we get to the point where environmental impact and accountability for that impact are aligned, in my view it doesn't make sense for an individual farmer to minimise their environmental impact if the capital value of their land is going to be reduced because of that action. Clearly my advice to this region and the country in general is not to accept the separation of environmental impact and liability.

87. I agree with the evidence of Stuart Ledgard to the Environment Court in relation to Waikato's Regional Plan Variation 5 where he stated "*the widespread voluntary use of N management practices to reduce N leaching is unlikely."* (paragraph 2.10) He then went on to say at paragraph 9.35 that "*the use of management practices to control N discharges from pastoral land*

is not likely to be successful because reductions in N leaching will be countered by increased losses from greater use of inputs such as N fertiliser and the general intensification that is ongoing on farms throughout New Zealand."(Ledgard 2007).

88. Certainly, volunteer-ship has a role to play but, in my experience, it should work in parallel with sound regulation to be most effective. A comparison could be to consider whether people would voluntarily pay more tax than they are required to even though they know the government is running large deficits.

15 APPROPRIATE ACTIVITY STATUS

89. I have no problem with farmers who aren't exceeding their entitlement of nutrient loss to have a lower regulatory hurdle to jump to prove compliance. To me it makes sense to have a range of hurdles or activity status dependent on the nature and intensity of land use, because in my experience activity status assists in sending a message to landowners around the degree of concern the community has with the activity they propose. The exception I would make is where a low intensity farm (i.e. a farm that is operating below their allocation limit) is entering into a tradeable regime (in other words being part of an intensive operation) through the sale of nutrient entitlement. Such an arrangement needs to be comprehensively recorded and there needs to be certainty that both trading parties are applying the same level of scrutiny to their operations.

90. There will be farms that are unable to meet their LUC allocation targets and these will need to be handled carefully by Council and may need a separate activity status. As I have previously stated, it is my experience that some farmers' realisation that they don't have unlimited resource availability comes as a shock to them and this leads me to the conclusion that some will have intensified with little notion of restraint. Those farmers may well require greater levels of response to achieve an equitable allocation target.

16 N LOSS TRADING

91. I don't presume that the LUC allocations recommended in the NV are perfect but, in my view, they are a good starting point for all landowners. Trading of nutrient loss or pollution to me is an important component of an allocation framework.

92. N loss trading will mean the economic costs of the policy can be minimised without losing environmental outcomes and help to make the overall allocation system less prescriptive, more flexible and more workable for farmers. This is supported by the expert evidence of Dan Marsh for Wellington Fish and Game where he states that adding the ability to trade to a nutrient management regime can significantly reduce the cost of compliance: *Under the uniform cap all farms have to meet the cap irrespective of the cost, whereas with trading abatement is carried out by those farms who can do so at lowest cost.*[7]

93. To me, the ability to trade within a catchment where the amount of nutrient loss allocated is an approximation of an environmental bottom line doesn't pose any great threat (this proposition is supported by Dan Marsh in his evidence at paragraph 143 on pg 53). Based on the technical evidence I have read, it appears that for an environmental outcome to occur, the year 20 numbers of the NV (which establish the environmental bottom line) should be required to be met by sellers of nutrient otherwise trading could lead to a further decline in water quality[8]. In my view, it would also be prudent for trades of N loss to expire at common catchment expiry dates so future alterations in the regime can be considered without adding too much to the complexity of the regime.

[7] See paragraph 50, pg 14 of the Evidence of Dan Marsh for Wellington Fish and Game
[8] See Table 19 in Section 9 of the evidence of Olivier Ausseil which demonstrates that under a range of land use intensification scenarios at the LUC numbers specified in the DV result in water quality decline, and that only where Year 20 NV LUC number are used under those scenarios do water quality improvements occur.

94. As a farmer I see trading as an obvious way for intensive operations to continue in existence, even in polluted catchments, at least cost. It allows nutrient loss to be both concentrated and reduced at the same time (redistributed) because they form equal parts of a trade within a catchment, in response to economic signals. The net result of a trade is that the two sides of the trade cancel each other out in terms of nutrient loss but the most efficient economic outcome is achieved.

95. The LUC allocation framework will ensure that the greatest concentration of nutrient loss in a catchment is occurring on the best land where the most production and hence economic output is achievable at the least environmental cost to the community (fig 6 McKay Section 42A Undated – see below). The subtlety of this diagram is that the soil with the highest natural capital produces more per unit of emission so needs to be fully utilised to maximise the community's income from a an agreed level of emission (Nitrogen loss). In other words, the LUC allocation framework coupled with trading would allow the best land to be used to its greatest potential without access to N loss rights creating an unnecessary intensification limitation.

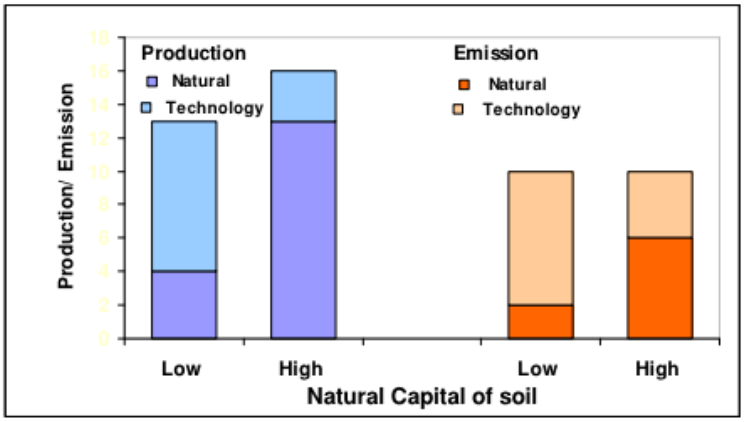


Figure 6. Production and emissions from a well managed legume pasture top dressed with P and sulphur fertiliser, before the introduction of production technologies (eg. irrigation) on soils of low and high natural capital (Ballantine & Mackay, 2008).

96. I note that Horizons asked for trading to be included in its own submission on the NV and this was supported by further submissions from Fonterra, MAF and in part by Horticulture New Zealand (pg 339 Appendix to Planning Evidence and Recommendations Report – Proposed One Plan July 2009).

97. It's also worth noting that unrestricted trading between lands under common control was envisaged in the FARM strategies completed. For instance, at the time our farm was evaluated we had four separate legal entities owning the land that was farmed by another entity as one unit (FARMS test farms project, Manderson & McKay 2008). The evaluation of our farms intensity versus LUC allocation was done by aggregating the allocation of all the individual properties comprising the farm and comparing this with the nutrient loss of the entire farm system (10 versus an allowance of 11 kgN/Ha). This trading or transfer of N loss allocation was particularly obvious when a dairy conversion on 264 ha of the farm was analysed. The conversion area was expected to leach at 30 kgN/Ha while the overall farm leaching would increase from 10 to 15 kgN/Ha. For the dairy conversion to go ahead under the POP "*the farm would need to reduce N-loss by 4 kg N/ha/yr for the conversion proposal to be compliant with One Plan targets*"(ibid). The Hearing Panel's decision report also acknowledges the ability to trade nutrients within a total farm at pg 8-51 (third paragraph):

98. "*To achieve that outcome, we have included a definition of the term 'cumulative nitrogen leaching maximum' in the Glossary. This definition applies to the total area of a farm, including any areas not used for grazing. Using he total farm area will enable landowners to include low leaching land use activities (such as retired land, forestry or sheep and beef grazing) as part of their overall farm package, thereby enabling a form of off-set against the leaching that will occur from the part of the farm used for dairy cow*

grazing. We consider that to be an efficient and effective approach for new farms."

99. I think all landowners should have the ability to utilise trading if they choose that as a cheaper form of mitigation to reach their individual allocation target. I broadly support the trading regime put forward by Fonterra through the hearing process. There may be some additional benefits to a trading regime if an ability to trade N loss through time is also included; either to ones self or other parties. This might help address the vagaries of nature that farmers are all too aware of and make the final version that farmers have to live with more palatable without loosing our environmental goal.

100. In my opinion, the transparent sale of N loss clearly articulates the wealth transfer involved in the process and importantly gets both buyer and seller to recognise this. Put simply, in allocated catchments, land without an N loss allocation doesn't have the same value when compared to an equivalent quality piece of land that does. Within such catchments, it is the ability of land to be used for activities creating an N loss that establishes wealth rather than the land itself i.e. if you can't use land for productive use then it doesn't have farming value.

101. The benefit of trading that I see as a farmer is that N loss trading allows farmers to continue to intensify provided they can find someone else in the catchment who will forgo their intensity to allow the trade to occur and obviously extract a market price for doing so.

102. Based on my own experience, and on the technical evidence of Alison Dewes for Wellington Fish and Game, the staged reduction of nutrient leaching in the NV will allow most farmers to reach their early entitlement figures on their own through management changes[9]. Trading will probably have a role in minimising costs to farmers as time goes by as the leaching reductions will become more challenging. For some farmers the ability to

[9] See the evidence of Alison Dewes for Wellington Fish and Game

trade will be a key mitigation method from the outset. However it is unlikely that there will ever be full uptake of trading entitlement as it would require landowners to demonstrate compliance to their community, which they may be uncomfortable with regardless of the economic incentive. There will also be farmers who would prefer that their unutilised allocation isn't used so a greater environmental outcome is achieved.

103. Like any new innovation in farming there will be those that are early adopters and those that will have to up skill in time to understand what opportunities are available e.g. I personally haven't traded carbon credits, I'm certainly aware there is a system in play and know that I will have to up skill at some point to become a participant in that market. With trading being catchment based there will end up being a range of prices for N loss for various catchments which will reflect amongst other things the scarcity of the available N loss and indeed the water quality problem a particular catchment faces.

104. In the fullness of time I think it will be possible to build a water quality market rather than an N loss market. In "Trading Efficiency in Water Quality Trading Markets: An Assessment of Trade-Offs" McDonald and Kerr cite the example from the USA where in the Rahr Malting Company trading programme, phosphorus, nitrogen and sediment are able to be traded for one another according to trading ratios.

105. Trading allows for the possible intensification of existing farming practises but is also an easy method to accommodate new farming industries/practises not foreseen at present. It transparently allows for the most economically viable, and therefore community wealth creating activity to be accommodated within the catchment for what the community is willing to accept for water quality.

106. McDonald and Kerr in their assessment of trading efficiency close with the following conclusion "If regulators and the public can be convinced to accept some degree of uncertainty partly matched by a more ambitious

goal, then a trading scheme will be able to achieve environmental goals at lower cost."

17 FLUCTUATIONS IN INTENSITY OF LAND USE

107. Based on my experience as a farmer of multiple enterprises, all agricultural land uses are subject to fluctuating levels of profitability and intensity. That is, there are differences in intensity within a land use (different management), between land uses and over time. The elevated levels of nutrient we find in our waterways are absolutely not a result of dairying alone[10]. Evidence states that all land use results in nutrient loss to waterways; even native bush cover contributes in the order of 0.66 to 1.79 kg SIN/ha/yr (Roygard & Clark 24th February 2012).

108. The fluctuating fortunes of an agricultural land use are nicely summed up in the following Diagram 2, sourced from the weekly promotional email of Ravensdown of which I am a shareholder (Ravensdown 19/9/2011). On the face of it the current price of $345 per ton of superphosphate is expensive but in my time farming this is the cheapest it has ever been when converted to lambs. This type of chart wouldn't look so favourable for say pip fruit or venison at present.

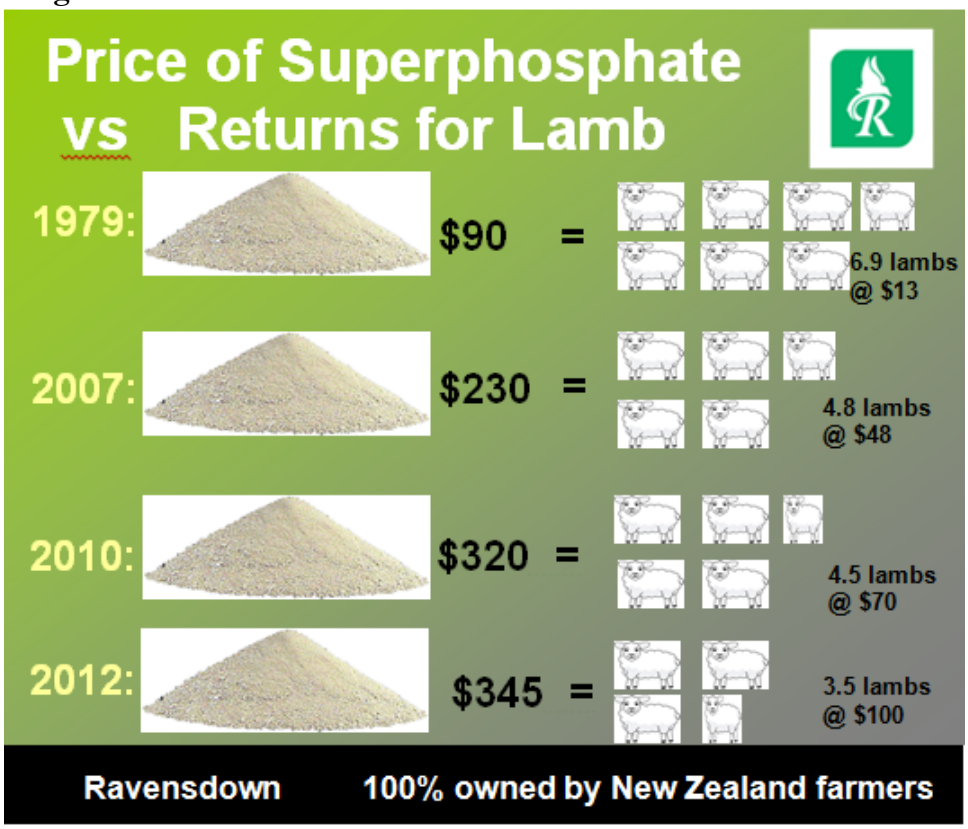
109. Faced with this current reduced cost of input versus output a logical response for a sheep farmer is to increase their intensity of operation through using more inputs. The current increase in fertiliser use, which I have observed, is particularly important for the sheep and beef sector given the recent under investment because of poor returns and poor climatic conditions for most over recent years.

110. What Diagram 2 particularly highlights is the level of fluctuating fortune of an enterprise over a longer period of time, grand parenting of resource allocation (e.g. Taupo the choice of over 4 years) fails to recognise this and carries forward the resource allocation of one point in time as though it is

[10] See evidence of Roygard & Clark 24th February 2012

correct for all time. A system of resource allocation such as LUC, which recognises the quality of the land being allocated the resource, has far greater credibility in the longer term in my view.

Diagram 2



111. The following table demonstrates how price and intensity of farming have changed for me over the past 12 years. It also highlights that it actually takes considerable input of fertiliser ($) to meet the LUC allocation numbers for a pastoral system principally based on Ravensdown superphosphate fertiliser feeding a clover based system (in 2007 the leaching was calculated at 10 kg/N/ha/yr versus an allocation of 11 (FARMS test farms project 2008). I.e. In 2007 it took the proceeds of 1431 of my average lambs or $ 75840 to maintain our farm system which leached 1 kg/ha less than the POP allowance under the LUC allocation framework.

Day Farming Partnership Annual Account Analysis

Year Ending 30th June	Fertiliser Expense	Total Farm Working Expense	Fert Exp/ Tot Wk Exp	Average Lamb	Number of lambs to buy fert
	$	$	%	$	
2000	60931	158934	38	50	1219
2001	70760	195331	36	61	1160
2002	98305	230399	43	68	1446
2003	105183	240646	44	61	1724
2004	93878	227043	41	65	1444
2005	134456	293061	46	64	2101
2006	100401	289977	35	57	1761
2007	75840	205698	37	53	1431
2008	94757	214090	44	52	1822
2009	86890	196059	44	80	1086
2010	101003	288581	35	79	1279
2011	102255	242657	42	105	974
Average	93722	231873	40	66	1454

112. Farmers operating mixed farm systems can and do readily change proportions and intensity of different enterprises. For example on our farm we operate sheep breeding, lamb finishing, beef breeding, steer finishing, bull beef, dairy heifer grazing and dairy heifer trading systems at present. For farmers with higher quality land than I have (lower LUC) there will be a greater variety of possible enterprises that can be run and less constraint on what systems can be run where.

113. The final allocation system adopted, be it LUC or some other system that has the positive attributes of LUC (although no such alternative has been put forward to date), needs to be flexible enough to cater for the fluctuating fortunes of all land uses and not lock the future wealth of the region to a particular regulated land use at a particular point in time as the DV does.

18 CONCLUSION

114. Based on my consideration of the various issues relating to the management of non-point source discharges from land use activities, it is my view that any management regime must incorporate the following aspects:

a. Any management framework must achieve the water quality objectives.

b. All landowners should be clear about their obligations in managing water quality

c. All landowners need to be considered in an allocation framework

d. There must be either incentives or obligations (regulation) in order to ensure change in land use practice.

e. Where rights to discharge nutrients are to be given to landowners, the allocation mechanism does not need to be perfect, but it must be equitable. I consider that the LUC allocation framework of the NV is an equitable method for distribution of the available N leaching rights to landowners

f. Any allocation of rights to discharge nutrients must not have the effect of transferring wealth from one group of landowners to another unless that transfer is made with the explicit agreement of the parties.

g. There shouldn't be any great separation between environmental impact and liability for that impact

h. Based on my own experiences, well-constructed regulation can positively influence the behaviour of unregulated landowners.

i. In my view, a management framework more closely aligned with the NV is more likely to achieve the environmental objectives than the DV.

j. Inclusion of trading will support allocation limits being achieved at least cost and provides flexibility of land use.

Andrew Day

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