IT’S EVERYBODY’S BUSINESS: WHOLE FARM PLANS – a vehicle for implementing policy

A report for Horizons Regional Council

AgResearch

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Executive Summary

This report is the outcome of research conducted by AgResearch to explore the impact of Whole Farm Plans (WFPs), specifically, the Sustainable Land Use Initiative (SLUI) and Dairy Environmental (Nutrient) Plans as implemented by Horizons Regional Council, as part of the One Plan. It examines farmers’ views on the contribution of these plans to the environmental, economic and social sustainability of their farm businesses, and to their local community. It explores why some farmers resisted signing-on to SLUI. It also explores the perspective on Farm Nutrient Plans and regulatory controls held by dairy farmers who are not yet required to have such plans.

Research for this work involved extensive, in-depth interviews with 70 farmers in the region. Forty farmers in the Lower Rangitikei and Tiraumea Districts were interviewed. Twenty of these were signatories to SLUI, and included farmers who had signed-on over the period 2006 to 2014. The remaining twenty farmers had to date chosen not to sign-up. Twenty dairy farmers in the Mangatainoka who have Dairy Environmental (Nutrient) Plans were interviewed as to their experience with these Plans. Ten dairy farmers in the Lower Manawatu, who were not required to have Nutrient Plans, were interviewed. Finally, a survey of 13 Horizons Field Officers (knowledge-brokers) and a group discussion with these Field Officers were conducted because of the importance of their role and experience in the implementation of WFPs. All survey work was completed over the period May-July, 2016.

The farm surveys provided the core information source for this report. The interview schedules themselves were designed using information and insights from the published and unpublished literature and from additional interviews with individuals who had particular expertise or insight on Whole Farm Plans.

The findings include support for the view that WFPs provide a useful vehicle for policy implementation. They also support the view that such plans can be used as a framework to increase farm productivity and growth, but this is conditional on farmers being willing and able to use their plans as a framework for strategic land management, often in conjunction with shifts in land use, increased diversification and shifts in livestock policies. Any contribution of WFPs to on-farm economic growth and profitability is hard to untangle from other concurrent changes in farm management and, in particular, the time frame within which the implications of the plans and other management changes are assessed. On-farm investment, including through SLUI works, has a significant flow-on to the regional economy.

With respect to SLUI in particular, there is a strong perception by farmers (both adopters and non-adopters) that it has made a major impact on environmental and economic sustainability. In these respects, farmers broadly agree that they and their community are now much more resilient to any recurrence of the storm which hit the region in 2004, or to any similar event. There is more qualified approval for the support provided by SLUI for social resilience in local communities, recognising that SLUI has a limited (if any) impact on thwarting the closure of schools, banks, police and social services that are integral to such resilience.

SLUI farmers, and those farmers who have chosen not to join SLUI, share many similar characteristics and values. Most SLUI farmers see their environmental work as a continuation of their work as stewards of the land prior to the introduction of SLUI. Equally, most of those farmers who have not signed up have long-established policies to extend environmental work on their land. Measuring the areal extent and time frames associated with such work were outside the scope of this study and,
from a regulatory or policy perspective, the absence of such material leaves a significant gap in understanding. Both SLUI farmers and those hill country farmers who have chosen not to sign-up to SLUI identify funding and time as the primary barriers to any speeding-up or extension of their environmental efforts.

Farmers with regulatory, Dairy Environmental (Nutrient) Plans were at least initially vehemently resistant to the plans. This they explained as particularly due to the lack of appropriate analysis of the economic and social implications of the plans on their farm businesses. Three or four years later they broadly accept the plans but their experience to date covers a period of very low milk prices. The implications of the plans are yet to be tested under a high price scenario. These farmers also stressed the importance of appropriate Council (or other) funding to cover the cost of their individual farm plans and their implementation.

The introduction and implementation of the Nutrient Plans raises issues concerning science communication where the “facts” are complex and the environmental concern is not plainly visible nor a priority to those farmers involved. It further highlights the key role of Field Officers, consultants and others in promoting understanding of the plans and facilitating farmers’ progress along a “learning curve”.

Dairy farmers who are not required to have Environmental Plans remain largely uninformed of what these plans involve. Their primary concern is that such plans might seriously impinge on their profits. Again, how such plans are communicated emerged as a primary concern and farmers almost unanimously identified the need for clarity, consistency, and honesty in this process; they also strongly argued the need for such plans to be framed with explicit consideration of their implications for the survival (and growth) of their farm business. Funding to cover all costs associated with the development and implementation of plans was viewed by farmers as a necessary requirement.

Throughout all the interviews (of both hill and dairy farmers) the importance of Field Officers, or knowledge-brokers, was repeatedly highlighted as playing a vital role in relationship building and engagement with farmers. Such relationships, based on trust, are recognised by farmers, as crucial both in introducing plans to farmers and in the implementation of these plans. This suggests a central role for Field Officers working with farmers to realise the long-term potential of Environmental Plans as vehicles to implement policy, and generate regional growth.
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Introduction

BACKGROUND

Farm plans – and environmental farm plans - have a long established role in New Zealand’s land management, dating back at least to the conservation and erosion control work carried out under the auspices of the Department of Scientific and Industrial Research and the Department of Agriculture in the 1930s (Roche, 1994 and McCaskill, 1973, cited in Review of New Zealand Farm Plans, Ministry for the Environment, 2003). As that Review pointed out, from their original basis on soil classification and erosion control, most recent Whole Farm Plans (WFPs) address wider aspects of sustainability, combining strategies to maximise production within environmental constraints.

This current report, undertaken by Horizons Regional Council (Horizons) supported by funding from the Fresh Water Economic Capability Fund of the Ministry for the Environment, explores the promotion and implementation of two different WFPs – the voluntary (non-regulatory) Sustainable Land Use Initiative (SLUI) introduced in 2005, and the required (regulatory) Dairy Environmental (Nutrient) Plans introduced in 2012. The report focusses on farmers’ understanding and perspectives on how WFPs contribute to sustainability (economic, social, environmental and institutional), and explores any possible improvements that could be made to streamline the delivery of plans and increase their contribution to the implementation of policy. Twelve years after the floods of 2004 and the establishment of SLUI and other farm plans in the Horizons Region, it is appropriate to pause, take stock, and consider the best way forward.

BRIEF

The specific requirements of this report were:

1. Develop an understanding of the drivers and incentives that affect the up-take and attitudes of adopters and non-adopters of Whole Farm Plans
2. Address both regulatory and non-regulatory plans
3. Explore social attitudes, perceptions, awareness and other influences that affect work advanced on farms by means of farm plans
4. Identify lessons and findings after 10 years of SLUI – how to maximise its up-take and potential to deliver existing and emerging policies and promote community wellbeing
5. Build capability within Horizons’ (This component is also addressed by a Field Officer in reflections and insights on the process followed in developing this report and attached as Appendix II)

METHODOLOGY

A mixed methods approach was adopted in line with the accepted procedures used in qualitative research (see, for example, Hay, 2000; Kohlbacher, 2006; Srivastav and Hopwood, 2009). A core data set was developed through a series of in-depth, semi-structured interviews involving the four key land-user groups highlighted in this study: hill country farmers who have signed-up as members of the Sustainable Land Use Initiative (SLUI); hill farmers who have not signed-up to SLUI; signatories to Dairy Environmental (Nutrient) Plans; and farmers who are not required to have a Dairy Environmental Plan. In addition, all Field Officers employed by Horizons Regional Council were asked to complete a questionnaire and subsequently met as a
group to discuss their views with the authors.

Consultation with Horizons determined an initial focus on four case study areas within the Region (Figure 1). With respect to SLUI, the areas selected were two priority areas - the Lower Rangitikei and Tiraumea. Selecting these two areas, rather than attempting to sample across the whole Horizons Region, minimised the travel distances involved and allowed some control factors to be considered. In particular, it limited the number of Field Officers directly concerned to three, so minimising one potential variable (the Lower Rangitikei has one officer, and the Tiraumea is split between two). With respect to dairying, the Mangatainoka is an area where all dairy farmers are required to have an Environmental (Nutrient) Plan; the Lower Manawatu, another significant dairy area, is one where such plans are not required.

Potential interviewees among the four land-user groups were identified in a two-step process. Horizons generated a random list of farmers in each of the four areas. The names on these lists were then systematically worked through by the authors to identify the agreed number of farm households who were available and willing to be interviewed. This sub-set was made up of 20 SLUI signatories, 20 farmers who have chosen not to sign-up, 20 Dairy Environmental Plan farmers and 10 non-Dairy Plan farmers. The key themes explored in each questionnaire are attached as Appendix I. The questionnaires were field tested, in each instance with two separate, individual farmers. Where necessary the questionnaires were then revised. All interviews were conducted, face-to-face, over the period May-July, 2016. The questionnaire used with the Field Officers was self-administered (a total of 12 completed questionnaires were returned).

The findings were the basis of a 90 minute group meeting with the Field Officers, held in Palmerston North on June 23rd 2016.

While the questionnaire interviews provide the core material for this report, additional information was obtained and used both to develop the context within which farmers’ opinions were set, and to “triangulate” or test the strength of views expressed and confirm or question the findings obtained. The report also involved a review and synthesis of published and unpublished literature associated with WFPs, and farmers’ perceptions and response to environmental policies. Three, independent, private sector extension experts, and three individuals involved in the implementation of the Dairy Plans, including members of the Tararua Economic Impact Society, organised in response to Horizons’ commitment to implement compulsory plans, were also interviewed. Officials and field staff in Horizons Regional Council provided substantial additional factual input. Appendix II is a report developed by a Horizons’ staff member who observed the development of the questionnaires, interviews and subsequent analysis of the information collected. This component is designed to support long-term capability building within Horizons.
Figure 1: Survey Areas

Surveyed Catchments: 1 - Lower Rangitikei; 2 - Lower Manawatu; 3 - Mangatainoka; 4 - Tiraumea
INTERNATIONAL EXPERIENCE

Research on innovation diffusion, now more commonly expressed as practice change, initially focused on farmers’ adoption of innovations designed to increase productivity and increase profits. Such innovations commonly offered a quick financial benefit to adopters. For the most part the financial benefits were assumed to encourage adoption and much effort was put into understanding communication flows and the impact of distance (see, for example, Hagerstrand, 1967; and Rogers, 2007). In the 1950s and 1960s the emphasis shifted in favour of attempts to explain the particular characteristics of farmers and farm households that might better explain the speed of adoption. Such work continues in new contexts (see, for example, Brotherton, 1990; Condliffe 2000; and Wynn et al., 2001). Recent decades, however, have seen a new emphasis that includes a greater attempt to understand and explain farmers’ response to environmental policies and initiatives, where the need is not necessarily accepted by farmers, and the beneficial impact and any financial return is likely to be long-term, and with a perception of largely public benefits. This shift is largely explained by growing public concern about the impact of farming on the environment, backed by new scientific understanding and a heightened political response. The same time, however, science is now widely recognised as having lost its earlier privileged role in the public eye (see, for example, Irwin, 1995; House of Lords, 2000; Sligo and Massey, 2007; Douglas, 2009; and Gluckman, 2015). This further challenges practice change.

As noted above, in New Zealand farm plans have long been used to support environmental management and in particular, erosion control (Ministry for the Environment, 2013). Post-Brundtland (World Commission, 1987) Whole Farm Plans or Environmental Farm Plans have gained much more widespread global use as a vehicle for policy implementation and to address environmental concerns. Farm plans are identified by Robinson (2006) and Burton and Paragahawewa (2011) among others as widely adopted policy instruments in the EU, in other European but non-EU countries, in Canada, in 39 states in the USA, and Australia. Most of these farm plans are voluntary and involve relatively small amounts of financial assistance to the farmers involved, at least to other forms of support for production (Robinson, 2006).

These plans vary substantially in their composition, although all are designed to address the negative environmental impacts of agriculture and to promote “environmentally friendly” farming (Robinson, 2006). In Australia such initiatives have been used to promote the adoption of soil, water and biodiversity actions on farms (Greiner and Gregg, 2011). In Canada, the Ontario Farm Plan, initiated in 1995, was voluntary and farmers were encouraged and supported to develop their own farm plan, guided through a six-step process by two provincial farm organisations. It was the farmers themselves who identified the issues and actions to be addressed under their plan, and scheduled their own sequence of actions. Such plans once established were subject to annual review. Ten years after its initiation, less than 25% of eligible farmers, accounting for 20% of farmland had proceeded to implementation, although this was largely explained by the distribution of farm types. Livestock producers have proven more willing to participate than crop and fruit and vegetable producers so participation rates are as high as 50% of farmers in some parts of Ontario, but they remain as low as 20% in other areas.

The bottom-up approach highlighted in Ontario has similarities to the EU’s LEADER scheme which also has a strong grass-roots component. Most farm plan schemes in the EU have taken a more top-down approach, however, with plans primarily designed to shift the policy agenda away from increased farm output to wider concerns associated with regional development, agricultural multi-
functionality and environmental needs. As a result, where farming in an environmentally friendly manner imposes costs on the farmer, compensation is paid, and payment may also be included for the delivery of a public good (Robinson, 2006). In Australia, Greiner and Gregg (2011) have documented the relative failure of localised schemes and wider regional, catchment-scale schemes, to deliver the intended regional scale environmental objectives. Such examples illustrate the experimental nature of research on farm plans for policy implementation.

Lowe et al., (1999) and Valentine et al. (2007) expected the adoption and implementation of farm plans to promote long-term, lasting shifts in environmental learning with discernible changes in farmers’ environmental attitudes and sustainable practices, particularly in a New Zealand context. However, at least in Western Europe, the UK and Australia, such shifts have not been observed (Burton and Paragahawewa, 2011).

Efforts to explain why farmers do or do not participate in voluntary environmental schemes have generally demonstrated that participation is more likely when (in approximate order of decreasing importance)

- Availability of solid evidence and visible, real-life examples (Cary, Webb and Barr, 2001)
- Farmers gain financially from implementing changes driven by the scheme
- The scheme aligns with farm households’ goals and motivations
- The risk of participating in the scheme is low
- The scheme is compatible with existing farm management plans
- Farmers receive good quality information on the schemes
- There is a farm successor
- There is peer pressure
- Participating voluntary will help avoid the imposition of regulatory controls

(Greiner and Gregg, 2011).

If research on farm plans for policy implementation is at an experimental stage, it is easy to argue that explanations for farmers’ response to environmental initiatives and the consequences of their response remain in flux. Problem definition, engagement, communications and the goals and values of farm households all varyingly contribute to the context within which WFPs are announced and implemented. Cary, Webb and Barr (2001) provided one of the most wide-ranging and comprehensive analysis. They identify the role of solid evidence and visible, real-life examples as the sweet-spot. This is what every extension worker knows and used to preach. Demonstrable evidence works. Other individual characteristics and values may influence the speed of response, but these are influenced and shaped in turn by contextual factors. The importance of these different influences is uncertain or clearly varies from case to case in ways not yet fully understood.
**Sustainable Land Use Initiative (SLUI)**

**THE LOCAL CONTEXT**

The importance of context in influencing the policy discourse is fundamental to understanding the processes that lead to changes in public policy and human behaviour. This was the major conclusion of a wide-ranging exploration of human response to flooding and associated policy changes (Johnson, Tunstall and Pennington-Rowsell, 2004). It is particularly pertinent to an understanding of the origins of SLUI.

The massive wind and rain storm that hit New Zealand in February 2004 had the greatest impact on the Manawatu-Whanganui region. The floods constituted the largest emergency management event in New Zealand for 20 years. Central government estimated the total cost of damage to the lower North Island at approximately $355 million. Damage to agriculture alone was estimated at up to $180 million, including stock losses, interruptions to milking, loss of pasture from erosion, damage to fences, plant and equipment, silting, and loss of feed and production. In the hill country, 62,000 individual landslides were recorded, covering 18,000 hectares. In total, some 29,000 hectares were severely eroded (Horizons, 2004). Up to 2,500 people were displaced by flooding and a month after the floods at least 500 homes remained uninhabitable (New Zealand Press Association, 2004).

The impact of the 2004 floods hit homes, families and land well beyond the hill country.
In addition to the direct impacts of the flood as described above, Horizons identified the loss of soil and productive capacity as having reduced Regional GDP by $141 million for the 2004-2005 June year. Estimated long-term losses included the cost of monies diverted to farm repairs rather than improvements and innovations that could have improved productive capacity; losses from slip damage that (it was believed) could take 30 years just to regain 50 per cent of pre-erosion productive levels; and an estimated 200,000,000 tonnes of soil lost from the Region. In addition, large quantities of soil were deposited downstream reducing the protection of infrastructure, and farm land provided by existing stopbanks. The erosion that occurred had further, significant, negative impacts on water quality (Horizons, 2007).

The 2004 floods devastated wide swaths of the hill country

SLUI was designed to:

- Reduce erosion rates closer to natural levels
- Build resilience in the rural sector and in the regional economy
- Protect lowland communities from the effects of upstream hill country erosion
- Improve water quality in the region’s rivers

(Horizons, 2007)

Useful background and insights on SLUI were included in a number of research studies (Manderson, Mackay and Palmer, 2007; Manderson, Mackay, Lambie and Roygard, 2013; Reid, 2013; and Turner, et al., 2015). Horizons (2007b) provided substantial detail on the research basis for the Initiative and the process followed, including priority areas, advice and education, publicity, incentives, and monitoring. Today a total of 649 Farm Plans are in place across the Horizons Region, of

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1 This was defined in a report commissioned by Horizons from Landcare Research (Dymond and Shepherd, 2006).
which 152 are in the study areas examined in this report. Funding to farmers to help cover the costs of annual on-farm work associated with the implementation of SLUI combine a contribution from all rate-payers in the Horizons Region and central government. A portion of costs is also provided by individual farmers themselves. Manderson, Mackay, Lambie and Roygard (2013) reported that after seven years of operation, the area managed under the Initiative was at 295,818 ha. In excess of the original target of 267,300 ha. The main results identified were:

• Erosion rates reduced closer to natural levels
• A rural sector or regional economy which is more resilient to future major storms
• Lowland communities protected from the effects of upstream hill country erosion
• Improved water quality in the region’s rivers

(Ibid, p. 4)

Since the 2005-6 financial year, 634 SLUI Farm Plans have been signed across the Horizons Region. Over the same period, 152 Plans have been signed in the study areas.

An internal audit report on SLUI (Todd, 2015) drew further positive conclusions, confirming that afforestation work on farms was on track, that tree survival rates were good to very good, and that 78% of works were on priority land (higher than anticipated). In addition to 1,234 ha. of work funded by SLUI grants an additional 393 ha. non-grant work was recorded as completed by SLUI farmers, mainly the managed retirement of riparian margins, gullies and bush remnants. (p. 23).
The most common factor identified by respondents to explain their willingness to sign-up to SLUI was the financial support it provided to develop farm plans and contribute to the cost of environmental work (11/20)\(^2\). The importance of funding for plans and environmental works was in line with respondents’ identification of farm accountants as encouraging them to sign-up to SLUI. It also supported the view of at least some private extension consultants and Horizons Field Officers (as expressed in the Field Officer survey and in interviews with extension consultants) that SLUI was accepted by many farmers as simply “good business” practice. This also provided support for the view of at least some Field Officers that many SLUI signatories are more business (or profit) oriented than other farmers, and recognise a clear cash advantage in their involvement in SLUI. Other leading reasons given by farmers to explain their support for SLUI included the need to respond to the impact of the 2004 floods, trust in the Field Officer or some other Council official (or Council member) and the quality of the information provided. As with SLUI, trust has emerged as a central and fundamental component in effective science communication, whether in direct engagement with the public, or through public policy (see, for example, House of Lords, 2000; Gluckman, 2015).

Reasons farmers put forward to explain their support for SLUI (in rank order)

1. Dollars backed by quality advice
2. Common sense – had to address consequences of floods
3. Opportunity to continue and extend work of Conservation Boards
4. Need to reduce on-farm vulnerabilities/risk
5. Advice of Field Officer or friend
6. Belief in soil conservation
7. Pride in being a leader

\(^2\) Source: Field data – the number of farmers who noted each value or priority as shown in each case out of the number interviewed
Of course, post hoc rationalisation is a human trait. Field Officers and extension workers also noted that some farmers had signed-up on very pragmatic criteria – such as to obviate what they saw as a potential threat of compulsory environmental controls, or to benefit from presenting a positive image of their farm prior to its planned sale. When asked what barriers they faced in doing more conservation or other environmental work on their property (or doing that work more quickly) all SLUI respondents identified cost and time as the two dominant constraints. Farmers who have not signed-up to SLUI equally identified time and money as the primary constraints on their conservation efforts. Interestingly, these two same constraints were identified in 1999, in a study of North Island Hill Country farmers’ environmental management practices (Smith, Montgomery and Rhodes, 2007). With respect to SLUI farmers, Field Officers also identified these constraints and noted that age and health were additional (often related) contributing factors. These factors were raised in interviews with SLUI farmers, usually in terms of the time/cost barriers to further environmental work, but some noted that, getting older and wanting to reduce their work load was an incentive to engage with SLUI, as it provided a vehicle to reduce their effective farm area, and their work.

### Values and priorities SLUI farmers attach to their farm

<table>
<thead>
<tr>
<th>Priority</th>
<th>Number of farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing productivity</td>
<td>12</td>
</tr>
<tr>
<td>Debt reduction</td>
<td>10</td>
</tr>
<tr>
<td>Secure succession</td>
<td>18</td>
</tr>
<tr>
<td>Sustaining their local community</td>
<td>16</td>
</tr>
<tr>
<td>Ensuring the ecological sustainability of production</td>
<td>14</td>
</tr>
<tr>
<td>Enhancing the natural environment</td>
<td>18</td>
</tr>
<tr>
<td>Consistent economic profits</td>
<td>18</td>
</tr>
</tbody>
</table>

Number of farmers
All SLUI farmers interviewed also agreed that SLUI aligns well with the values they attach to their farm. These values topped by maintaining consistent economic profits and enhancing the natural environment of their property closely followed by maintaining the ecological sustainability of production. Supporting their community, increasing productivity and debt reduction all trailed behind. In terms of SLUI’s contribution to resilience, the respondents believed that SLUI has a positive environmental impact (13/20), that it has potential, long-term economic benefits for their farm (13/20), and broad, regional social benefits (9/20). Specifically questioned as to the contribution of SLUI towards the overall sustainability or resilience of their farm (vis a vis conditions in 2004) respondents overwhelmingly agreed that the environmental and economic sustainability of their farm has increased. They explained that investment through SLUI had helped proof their land against future hazards, provided them with a useful framework for wider improvements in land management, and a platform for growth. The individual farm plans allowed them to more easily identify appropriate management strategies (and land uses) for different areas of their farms. They were less confident of SLUI’s contribution to social sustainability at a community level.

The views summarised above, need to be unpackaged. Most SLUI farmers, not unexpectedly, identified erosion as their primary environmental management issue (18/20). Addition problems highlighted included weeds (5/20), flooding (2/20) and one identified pugging. Although the SLUI respondents had a shared identity through their involvement with SLUI, they were diverse in many other respects. In terms of the goals and objectives they have for their farms, age emerged as a significant, distinguishing characteristic. The majority of respondents were over 50 years old (12/20) and therefore broadly representative of the long-term aging trend in the farm population (Fairweather and Mulet-Marquis, 2009). These famers most often identified succession planning as key driver in their farm management (8/12). Succession planning was much less frequently identified among the younger farmers (2/8). Age, and identification of a potential successor, have long been associated with innovation behaviour, particularly when the benefits of the innovation may only be evident in the longer-term and enjoyed mainly by the next generation (see, for example, Emery and Oser, 1958). Of course, for the older farmers (over 50 years) interviewed, succession planning was not their sole consideration. For those under 50 years old, increasing the productivity of their farm, and increasing their profitability, were their top priorities (6/8). Taken together, the priorities of both younger and older farmers are incorporated and addressed within SLUI.

In the short to medium-term farmers (10/20) pointed-out that they themselves make a significant financial contribution to SLUI-related environmental works on their farm and some (12/20) identified the additional costs of spraying associated with increased weed/scrub problems. International research findings over the past 40-50 years, however, have demonstrated that sustainable development involves the interdependence of environmental, economic, social, and institutional factors and that it is the strengthening of these linkages that reduce vulnerability, and increase resilience (see, for example, UNDP, 2013). Building resilience is not, however, necessarily directly translatable into annual economic returns, nor is it easily identified in the potential market value of individual farms. Further, the multi-dimensional nature of resilience was not necessarily recognised by land holders who, at least in the short-term, viewed SLUI as an environmental policy, directly linked back to erosion control and water management as evidenced in the 2004 floods, and disconnected to business growth or wider social needs. Looking forward, this suggests a potential expansion of the work agenda of Field Officers to include a stronger perspective on SLUI as a
component in regional growth and development.

Farmers noted the difficulty of separating the impact on their profitability of the conservation work they have completed under SLUI from other management and land use changes they have made and noted that any increase in profitability would most probably only appear in the longer-term. Indeed, all saw and valued their SLUI Farm Plan as a framework for management/land use change, including more targeted investment in selected areas and reduced investment in others. All respondents have over the same period, also introduced new animal breeding programmes, new mixtures in stock types and other changes to their input and management regimes. Interestingly, some farmers (6/20) noted that in their minds SLUI was really just an extension of the work done by the Catchment Boards in earlier years and an extension of environmental work they themselves had maintained and extended. Of the 20 SLUI farmers surveyed, 19 identified a range of environmental protection work completed on their farm prior to SLUI and the 2004 floods. This invariably centred on planting for erosion control, but also include protective planting along waterways, shelter-belts and conservation including for 5 farmers, the establishment of QE II Trusts. Two farmers had only moved onto their farms after the floods of 2004. As several farmers pointed out, however, other floods and droughts had impacted severely (for some more severely than the February floods of 2004) and shaped their thinking. Just over a third of those interviewed already had a formal plan that had been drawn-up in Catchment Board years, prior to SLUI, or as they put it, had a “plan in their head”. To them, SLUI had greatly assisted in speeding-up and extending such work but had not necessarily changed their own pre-existing intentions.

No farmer identified SLUI as having had a negative impact on their profitability and some believed it has had a positive impact (5/20). Most saw SLUI as having had no measurable impact on their profitability - either positively or negatively – at least in the short to medium term. Certainly, detailed production data obtained from six SLUI farmers illustrate lower stocking rates (i.e. fewer ewes and beef cows) but higher ewe live weights, more lambs finished than stored, and more trading cattle, all contributing to more productivity per hectare - – features in line with the industry as a whole in recent years.
Given the productivity increases achieved and inflow of investment funds channelled through SLUI, farmers’ uncertainty as to any increase in the sustainability of their local communities might seem hard to explain. Certainly respondents saw erosion control and flood prevention initiatives as increasing environmental sustainability well beyond their individual farms. They also accept that, as the vast bulk of funding from SLUI was channelled back into their local community, some community members at least have benefited through their jobs and incomes. Jobs and income are commonly accepted as key elements in the health and vitality of rural communities (see, for example, Eaqub, 2014). Studies of the 2004 floods plainly demonstrated that for farmers and their communities their view of sustainability or resilience went well beyond conventional statistical measures. At that time, farm households described the positive of the floods as a “coming together”, demonstrated in the mutual aid and support they received. At the same time, the floods highlighted to many farmers the vulnerability of their communities as a consequence of the loss of public facilities and services – including schools, health, police and other social services (Smith, Davis-Colley, Mackay and Bankoff, 2011). This “hollowing-out” has continued since the floods. Thus while the inflow of investment associated with SLUI is undoubtedly a positive contribution to community resilience, and may have slowed decline, it was not likely on its own to address a much wider concern and need. The recent Manawatū-Whanganui Growth Strategy (Ministry of Business, Innovation and Employment, 2015) which highlights economic development, particularly through productivity increases on-farm, also includes the implicit assumption that community resilience is the inevitable corollary.

The total cost of SLUI to date compared to the cost of the 2004 floods represents a ratio of 1:7
Given the opportunity, SLUI farmers identified features of SLUI they’d like to see improved. Half of those SLUI farmers interviewed (10/20) saw SLUI as too bureaucratic, involving too much paperwork, too time-consuming, and that the plans generated were too complex. It is difficult to imagine many at any level in modern western societies and who have contact with government (and non-government) authorities who would not express similar views. This is particularly the case where they believe substantial amounts of public funding are involved. Some respondents interviewed after the floods in 2004 complained of the bureaucracy and four pages of paperwork involved to access, in some cases, hundreds of thousands of dollars of relief from MAF (now MPI). Yet farmers concerns should be noted, and where possibly addressed.

Key Findings

- Funding to farmers provided through SLUI was a major factor in overcoming the time and cost constraints to them completing more on-farm environmental work than they would otherwise have done themselves
- There was no evidence that the on-farm implementation of SLUI reduced the productivity or profitability of farming
- There was evidence WFPs could provide useful framework for improved farm management and growth
- Most farmers believe that since its inception, SLUI has increased the resilience of their farm and local environment and in some cases has had a positive (or at worst neutral) impact of their resilience both on-farm and at a wider local level
- There was some qualified support as to the extent social resilience is perceived to have increased since 2004
- Field Officers were identified as playing a fundamental role in engaging with farmers and in the adoption and implementation of SLUI
That some of us resist, or at least drag our feet, in response to any innovation has not been a major focus of research attention, other than as the counter-point to research on adopters. Anecdotally resistance to change is explained in terms of conservatism, lack of capability (or lack of common sense) or by some other, usually pejorative, descriptor. Lack of research on the reasons for non-adoption is particularly marked with respect to farmers and innovations (including policies) focused on environmental objectives. Work by Yapa and Mayfield (1978); Parnell (1999); and Greiner and Gregg (2011) are three interesting exceptions. This paucity of published material contrasts sharply with the extensive literature dating back into the 1940s designed to understand and explain the characteristics associated with rapid adoption (see, Rogers, 2003).

That the research on the non-adoption of innovations is thin may be variously explained. Such research can be more difficult, if only because access to appropriate data may be constrained – few people like to discuss what in some eyes may be deemed as “failure” and few agencies want to publicise negative results (although there are exceptions, see, for example, Bovens and ‘T Hart, 1998). Non-adopters, once categorised as “laggards”, were assumed simply to lack the positive characteristics commonly associated with adopters. A reappraisal of non-adopters is part of a re-evaluation of the place of science in public policy. Formerly science and human progress were seen as inherently linked, but recent decades have seen this view as seriously flawed (see, for example, Beck, 1992; Irwin, 1995; House of Lords, 2000; Crow, 2007).

Feasibility work for this current study, carried-out by AgResearch in 2014, did raise the issue of why some farmers had not adopted SLUI. At that time, farmers who had adopted SLUI, when questioned, variously described non-adopters as “less capable” or having a political perspective that rejected any government or wider public involvement in how they manage the land. These respondents stated that they rarely discussed SLUI with their neighbours, or had no evidence that any neighbour observed or was influenced by their own example. For the most part, however, most SLUI adopters acknowledged that they had no clear idea why more farmers had not signed-up. In similar fashion, farm advisers interviewed at that time stated that SLUI was not a major or frequent issue of discussion with farmers, and not a core component in farmers’ management decisions, nor a core part of the business of farm consultants.

In practice, farmers interviewed as part of the research for this current report, but who are not SLUI farmers, were not easily distinguishable from SLUI signatories. The vast majority of non-adopters were happy to talk, aware of the environmental challenges faced on their property and the risks these environmental issues pose. Most were actively pursuing environmental work on their farms (18/20), although quantifying the specific environmental works on each farm was beyond the limits of this study. These farmers acknowledged the increased environmental resilience generated by SLUI (11/20). They acknowledged its contribution to economic resilience (14/18) and agreed that it contributed to social resilience (10/18) although this was less evident to them than its economic or environmental benefits. Some of those interviewed were indeed currently considering signing on to SLUI at the time. What is surprising is the extent to which these perceptions of the contribution of SLUI to resilience were closely in line with those of farmers who were implementing SLUI on their own properties.

Explanations of farmers’ response to innovations based solely on rational economic decision making have long been criticised as failing to recognise the diversity and complexity of the factors that underlie any response, although such analyses persist (see, for example,
Analyses based on models of rational economic decision making helped generate a large body of work that places considerable emphasis on attitudes and values as determining factors (see, for example, Rogers 2003; Gasson, 1973; Fairweather and Keating, 1994). This focus on attitudes and values remains a dominant theme in much current research on the adoption of environmental practices, although increasingly packaged in wider contextual relations and more nuanced understandings (see, for example, Cary, Webb and Barr, 2001). The values of farmers were also highlighted by Field Officers as central to the relationship they necessarily build to promote both the adoption and implementation of SLUI. The Field Officers specifically identified a negative attitude to Horizons as a barrier to the acceptance of SLUI by some farmers.

Of those farmers who had not signed-up to SLUI, seventy-five percent (15/20) believe that it did not align with the beliefs or values they have for their farm. Many believed SLUI would damage their economic returns or were uncertain as to its economic impact. The values and priorities these farmers held for their properties are shown in. These values vary little from those presented earlier with respect to SLUI adopters, particularly in terms of the high priority all the farmers attach to economic performance. The biggest difference was in terms of debt reduction and the lower emphasis non-SLUI farmers put on environmental sustainability. This might appear to contradict the perception of Field Officers that SLUI farmers are more business or profit oriented (and willing to capitalise on the fact that someone is subsidising something that is potentially inevitable). However, discussion with both SLUI signatories and non-signatories suggested that in both cases their values appeared more related to maintaining or improving their bottom line and their perception of the extent to which environmental concerns threaten their economic viability. This relates to farmers’ perception of environmental risks and to the time frame within which they viewed profitability (and risk). SLUI farmers arguably, as a group, took a longer-term perspective. They viewed resilience (and SLUI) as closely associated with good farming practices (including environmental management) rather than seeing SLUI as narrowly focused on environmental management and as such, as an optional tag-on.
The apparent lower priority attached to environmental work by those farmers who have chosen not to sign SLUI was at least to some extent contradicted by other evidence. Of all those farmers interviewed who have chosen not to sign-on to SLUI, 18 out of 20 identified environmental protection work that they had implemented on their farms since before 2004. For the most part this included tree planting on vulnerable slopes and along waterways (13/18) but was frequently combined with improved management of water courses (including drainage), fencing, the retirement of selected areas, and conservation. What was also clear was that the 2004 floods usually had acted as a prompt for greater efforts and an expansion of soil conservation efforts.

Environmental work identified by non-SLUI farmers as on-going on their farms

- Pole/tree planting on vulnerable slopes 13/18
- Control of weeds and noxious pests 4/18
- Flood control structures (maintenance/construction) and land drainage 11/18
- Conservation planting 5/18
- Establishment of windbreaks/realignment of tracks and fencing 8/18

Non-SLUI farmers typically describe having a "map in their heads" and schedule environmental management activities as part of their annual land management.
In discussion of their specific concerns regarding SLUI, those farmers who had not chosen to sign-on perceived SLUI as overly bureaucratic, costly to taxpayers (and poor value for money), and unduly complex. As noted previously, SLUI farmers also identified (what they saw as) the bureaucratic nature of SLUI and its complexity as unfortunate characteristics. SLUI was perceived as unnecessarily bureaucratic. But bureaucratic and bureaucracy are also part of a lexicon that is rarely clearly defined. Some farmers associate environmental policies, such as SLUI, with the “bureaucrats” in their Regional Council. Field Officers as the face of that Council may be targeted in this light. However when questioned in more detail, farmers’ bureaucratic perceptions were more strongly focused on “excessive” paperwork and documentation, and was part of a blanket distrust of all officials, scientists, and other outside “experts”. This provided evidence of a widespread scepticism (or cynicism) about expertise and science. But these interpretations and explanations also tied-back to deeper attitudes, values and self-images of these farmers.

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As one farm family who had not applied for flood aid after the 2004 floods, nor wanted any involvement with SLUI explained, “It’s our farm and our responsibility. We’re independently minded” (June, 2016). Other intervening factors identified included for one farmer, a “fear of being seen to be Green” (June, 2016), and for another, religious beliefs that include the view that all erosion is natural (or God’s will) and that only arrogance would support any human intervention for erosion control.

To persuade farmers to sign-up for SLUI, some farmers believe that changes could be made. Persuaders: Changes (in rank order) that could be made to SLUI that farmers who have not yet signed-up believed might persuade them to do so:

1. More information and understanding—particularly re cost/benefits
2. More evidence a true partnership that respects farmer’s goals and understanding of farm
3. Evidence private property rights would be respected
4. Less paperwork and assurance regarding flexibility of Plan

Seventy-five percent of these farmers were open to persuasion but, for the remainder, opposition to SLUI is rooted in a strong antipathy to any government involvement in how they manage their farm, and, as they saw it, trampling on private property rights.

Farmers who have not signed-up to SLUI explain their decisions and rank their key concerns

1. Overly bureaucratic
2. Cost does not justify outcomes
3. Too complex
4. Too much time involved
5. Does not align with their own values

These concerns underlie a deeper uncertainty about government involvement in their farms and, at least to some extent, an information gap.
A major exploration of farmers’ adoption of environmental policies in Australia (Cary, Webb, and Barr, 2001) pointed out that the relationship between an individual’s stated values and their behaviour is at best uncertain. Many, people who espouse such beliefs (for example, those who profess to being Green), do not consistently behave in like fashion. Rather, what the work by Cary, Webb and Barr highlights is the extent to which farmers’ response to any environmental initiative is practical, based on demonstrable evidence of its value and success. This possibly reinforces the traditional view that non-adoptions of innovations is largely explained by some “information deficit” (see, for example, Rogers, 2003) although on its own, this factor provides a weak straw on which to cling. As discussed above, many of those farmers who remain resistant towards SLUI fear that their adoption of SLUI might compromise the financial viability of their farm, or even put them out of business, in contradiction to the financial/productivity data of SLUI adopters, which does suggest an important information gap. Importantly too, when questioned as to whether any changes could persuade them to sign-up to SLUI, 15/20 farmers suggested the need for more information, particularly with respect to the flexibility and control they could retain over the management and use of their farm, and information that would address their existing concerns about SLUI’s financial implications for their farm business.

In line with the experience of Cary, Webb and Barr, (and contrary to evidence from the feasibility work behind this report) potential or actual SLUI adopters did observe and learn from their neighbour’s example, even if this may not always have been fully acknowledged. In one particular case it was the potential value of poplar planting (for erosion control) that “sold” SLUI to a neighbour as a useful means to build resilience. When drought hit, these poplars were a visible and effective source of what was then desperately needed stock feed. They were visible evidence too, of the potential value of SLUI to help meet a broad agenda for sustainable development.

Originally driven by the need for erosion control and improved water quality, SLUI now contributes to the resilience of the farm economy in many different dimensions, including a supply of fodder in conditions of drought.
KEY FINDINGS

- Farmers who had not chosen to sign-up to SLUI identified farm profitability as their top priority. (This is no different from SLUI farmers)
- Farmers who had not adopted SLUI commonly feared that it would constrain their profitability. (This is in sharp contrast to SLUI farmers)
- Involvement in on-farm environmental management activities was commonly associated with those farmers who have not signed-up to SLUI as well as those who had signed up, although the scale of such work is not known
- Time and money were identified by farmers who do not have SLUI plans as the primary constraints on their environmental work
- Farmers who had not signed-up for SLUI plans held similar views to SLUI farmers as to the weaknesses of SLUI, but these were interpreted through a values lens that broadly rejected the inclusion of a broader public good component in how farm land is managed

Farmers with Dairy Environmental (Nutrient) Plans

THE CONTEXT

Environmental (Nutrient) Farm Plans were introduced in the Mangatainoka River catchment in 2012. The project was funded under the Manawatu River Leaders Accord and the Fresh Start for Fresh Water Clean-up Fund. Monies were contributed by the Ministry for the Environment, Horizons Regional Council and Dairy NZ with in-kind contributions from Ravensdown and Balance Agri-nutrients fertiliser companies.

The Mangatainoka River had concentrations of soluble inorganic nutrients regularly recorded at above target levels. The Plans identified opportunities to reduce nutrient losses from dairy farms to waterways in the catchment. A number of management practices were identified that could reduce N leaching and so benefit catchment water quality, but would change the existing farm systems.

Those practices were:

- Significantly reduce or eliminate fodder cropping, particularly winter cropping
- Reduce stocking rates on farms with rates >2.5 cows/ha
- Reduce the amount of imported supplements unless these supplements were high energy and nil or low protein supplements
- Investigate practice of applying fertiliser N in the catchment to understand whether, in the first instance, direct losses were occurring and could be prevented
- All farms practice deferred or deficit irrigation of effluent by constructing adequately sized and lined effluent storage ponds
- Reducing N surplus via a range of farm practices

Implementation of the Environmental (Nutrient) Plans was, in the eyes of at least some commentators, fraught from the first by the use of public meetings with farmers, encouraging a “them” and “us” environment that one-one, face-to-face

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3 This contextual material is drawn from an unpublished report released by Horizons (undated) and authored by Taylor, Ryan, Chakraborty, Clark, Brown and Roygard.
engagement might have reduced. There was, at least from some farmers’ perspectives, a lack of adequate economic evaluation or social analysis of what any new requirements might have on individual farms. Subsequently, a revision of Overseer, the model on which farm nitrogen leaching losses were determined, resulted in changes to nitrogen limits, benefiting some farmers but disadvantaging others. Public support was generated against the proposed limits and Federated Farmers became involved (see, for example, NZFarmer, “Quality of river raises passions”, 21.8.14; Manawatu Standard, “Tararua farmers in despair”, 12.6.13).

The Tararua Economic Impact Society was established by community members who were concerned about the economic impacts of the nutrient management plans. Reports were exchanged (see, for example, Nimmo-Bell, 2013) and data traded. At its heart the argument centred on the potential impact of the new regulatory environment on the economic viability of individual dairy farms and the potential flow-on effects for the wider regional economy. All this generated considerable public interest. Combined with evolving science underpinning the nitrogen leaching model, this meant that some changes to the way the One Plan was implemented were necessary.

The Dairy Farm Environmental (Nutrient) Plans were in place before the slump in dairy prices in the latter months of 2014 and saw a halving in milk prices that lasted until September 2016. Stability in prices is still to be achieved and recovery remains incomplete. But over the period of the survey of farmers for this Report (May-July, 2016) the financial plight of dairy farmers and the threat to the economic survival of many farmers remained real.

Interest in plans was widespread.
DAIRY ENVIRONMENTAL (NUTRIENT) PLAN RESPONDENTS

In the context described above, it was not surprising that 15 of the 20 dairy farmers interviewed were negative and fearful about Dairy Environmental Plans prior to their announcement. Specific concerns were commonly underpinned by fears for the economic viability of their farm. Similar concerns were evident in the initial impressions farmers had once further details of the plans were released.

What was much more surprising was farmers’ views as to how the plans have worked out in practice, and the complete reversal of views that occurred. Of the 20 farmers interviewed, 15 now describe the plans as “no problem” (8/20) or acceptable. Only one farmer vehemently disagreed.

So how has having a Dairy Farm Nutrient Plan worked-out?

- No problem 8
- Reasonable 2
- Tolerable/not as bad as expected 1
- Complicated 1
- Stupid – poor result 1
- Other - 7

The dramatic shift in opinions from the pre-Plan situation reflected many different factors, but was explained in part by the support farmers acknowledge was provided by consultants and Field Officers and the mutual support gained from neighbours and friends.
There was little reason to doubt that the changes to the nitrogen limits set under the plans have made compliance easier and less burdensome to farmers, and so easier for them to accept and implement. This was certainly the view of many of the scientists and policy makers involved. At the same time, farmers have also been on a learning curve. One respondent (initially an enthusiastic supporter of the protests against the introduction of the plans) explained, “I went with my wife on a trip to China and Vietnam and was horrified at environmental conditions. We don’t want that here. I came back converted” (June, 2016). Of the 20 respondents, 13 identified specific aspects of the plans’ introduction and implementation that had left them more aware and positively informed.

Dairy farmers are of course much more accustomed than hill farmers to both adverse publicity as to their environmental impact (e.g. dirty dairying), to environmental requirements set by sectoral groups, and to regulations associated with planning consents. Perhaps inevitably some dairy farmers have an acceptance, or even fatalism, that regulation (and increased regulation) is a fact of doing business. Environmental Plans are now, at least for some, seen as part of this context (a point reinforced in the interviews with non-holders of Dairy Environmental Plans in the Lower Manawatu).

Farmers’ experience of plan implementation on their individual farm were variously described and several farmers appeared to have difficulty untangling their reflections on being required to have a plan from the process of implementation. Overall, farmers found the Horizons staff supportive and understanding and felt they worked in partnership with them rather than in any bureaucratic fashion. The backing and information role of DairyNZ was also noted and appreciated. For some farmers, consultants were highlighted as valuable in helping them move through the plan process. Most farmers remained most conscious of the constraints the plan requirements placed on their future farm practices. At the same time, balanced against the potential financial costs to their business, there was also an appreciation by some that the plans had an up-side. Some even view their plans as a step forward towards a more modern style of farming. As one younger farmer described the process, “Beneficial because it gets dad out of 1956”. Others stated that they had not used a consultant since getting a plan, and that the process had “not been too hard”, even “interesting” and the data generated on their property was “valuable”.

Learnings identified by Dairy Nutrient Plan farmers as a result of planning process

- Can use fertiliser more effectively than before
- Made me think about nutrients
- Has resulted in better pasture quality
- Reinforced need to look after the land
- Improved feed for cows

Overall farmers often described the experience as “a learning curve” although they were not completely happy even when they had reached the top of that curve.
However there were also plenty of gripes. To some minds, changes in limits that emerged during the process confirmed their view that Overseer was unreliable and arbitrary. Of 16 of those interviewed, who mentioned stocking rates, stocking changes implemented as a consequence of the plan included none (6/16), dropping stocking rates (5/16), increasing stocking rates (2/16) or some other modification. Broader land management changes centred largely on increased effluent storage (11/20) and changes in fertilizer plans, but bridge building over waterways, changes in cropping, fencing drains and swamps, and fluvial strip planting were all identified.

Compared to SLUI, the implementation of a Dairy Environmental (Nutrient) Plan faced a major hurdle. Whereas SLUI followed on the occurrence of a major flood event with extensive visible damage (and widespread national and global media coverage) for many dairy farmers the problems they were challenged to accept were largely invisible and thus much harder to grasp. Farmers (as non-scientists) found the nature of the information and data presented and the concept of Overseer as a model, hard to comprehend. This held true despite the fact that since 2003, farmers have had to manage nutrient inputs and outputs as part of the Dairying and Clean Streams Accord. In 2013 The Sustainable Dairying: Water Accord replaced the Dairying and Clean Streams Accord and included an expectation that farmers will manage nitrogen and phosphorus loss from dairy farming systems. The Accord acknowledges the need to manage nutrients within limits and pursue continuous improvement in nutrient use efficiency. Some familiarity with nutrient management budgets and the implications to the farm system might have been assumed, but were misplaced.

### Negative factors highlighted by Dairy Nutrient Plan farmers associated with the planning process

- No credit for farmers' pre-existing environmental efforts - 4
- Too much work - 3
- Costly - 3
- Difficult to follow rules and regulations - 2
- Maps produced not very useful - 1
- Other - 8

*Despite farmers' evident continued disquiet at the planning process, it proved difficult to tease-out many specifics - perhaps it is best simply described as frustrated acceptance*
Referring back to evidence of Hill Country farmers’ response to issues of sustainability reported previously (Smith, Montgomery, Rhodes, 2007) water management was the one environmental issue accepted by farmers as most seriously neglected. As one farmer then expressed it, “we must be having an impact, but we can’t see it” so, it was more easily ignored. This undoubtedly put even greater pressure (and demands) on scientists and knowledge brokers to communicate effectively and in a style or format farmers understood (for a useful discussion of this point, see, Duncan, 2016). This was certainly no easy task, but the need for better communication was the dominant underlying theme identified by farmers (15/20) in any future extension of Farm Nutrient Plans in other areas. It remains a problem highlighted in the international literature with respect to the use of science in environmental policy (see, for example, Parliamentary Commissioner for the Environment, 2004; and Science Communication Unit, 2014) and in addressing other current policy issues and public concerns (see, for example, House of Lords, 2000; and Gluckman, 2015). It ties back too, in this instance, to farmers’ comments with respect to the complexity of their Environmental Farm Plans, and the volume of data and other information required.

The importance of context in the implementation of farm plans has been noted previously in this report. The Dairy Environmental (Nutrient) Plans were established prior to the major, recent downturn in milk prices. The interviews for this report were completed when many dairy farmers had received sub-breakeven revenue for two years in a row. It is difficult to meaningfully project just how the implementation of the plans would have fared if it had taken place when milk prices were not at an historic high, or how farmers would have responded during their interviews if milk prices had been much higher than they were in June, 2016.

Fear that the plans would cut profits might have been even harder to bear. Had circumstances been different they undoubtedly would have reconfigured the context, while farmers’ acceptance of the plans they put in place might have been even more contested if they had viewed any constraints on production as significantly barring them from large market profits. As and when milk prices increase (as is now occurring) the constraints farmers face under the Farm Nutrient Plans could be severely tested.

A theme that runs through the above discussion on Dairy Environmental Farm Plans is the framing within which WFPs were perceived. All farmers necessarily want and need to manage their farm in ways that ensure profitability and productivity. Putting such plans into a strong farm business framework and recognising and promoting the broader social good was fundamental to building support. In contrast farmers’ perception that the plan was solely a vehicle for environmental policies – and rules - designed to address concerns farmers themselves may not have accepted - or prioritised – hinted at a reduction in flexibility and led to a lack of support.
Key findings

- Engagement with Field Officers, consultants and others, improved farmers’ understanding and supported many farmers along a steep “learning curve”

- The need to obtain a Dairy Environmental Plan raised fears among farmers that they could face substantial losses in income or even be put out of business

- There is now some broad acceptance among farmers of the need and value of Environmental Plans, although resentment remains

- The impact of the plans remains to be tested in the context of higher milk prices, and the pressure for dairy farms to generate increasing financial returns to remain viable and competitive

- Farmers concerns as to how the plans were implemented centred on their belief that the constraints were established without proper consideration of economic and the social factors

- Other key concerns included the complexity of the Plans and the robustness of the scientific information (and model) involved
NON-PLAN FARMERS’ PERSPECTIVES

Given the widespread public concern generated by the initial announcement of Environmental (Nutrient) Farm Plans in the Mangatainoka and the extensive media coverage that ensued, what stood out from the interviews with dairy farmers in Lower Manawatu was the lack of awareness and understanding of what such plans involved. Eight out of the 10 respondents described their know-how as nil or basic, and what knowledge they had, they explained as coming from TV and the popular print media.

When the substance of the plans was explained to these farmers, only one farmer could see no potential benefits. The others (9/10) identified environmental and more specifically, the water quality improvements such plans could bring. Pragmatically three farmers linked such improvements to “better fishing”, one to “better pasture quality”, and one to an improved market image. Overall, however, these farmers saw a link between the quality of their water/environment and the well-being of their families, particularly their children. These farmers were not largely or even mainly anti-environment. This was evidenced in one case, by a farmer struggling to pay his mortgage, who intended, immediately after his interview, to buy a load of trees to plant along his waterways, an exercise he did each year, incrementally protecting his stream margins.

Of the farmers interviewed, all (10/10) identified their priority for their farm as profitability. This was directly linked, in most cases, to debt reduction, but lifestyle was also acknowledged. To this extent at least these dairy farmers’ goals were much more narrowly focused that the hill country farmers. But as many of these same dairy farmers spent time discussing their angst, fear and concern at the low dairy prices they faced, and several expressed the view that they “might not be able to hang on”, the goal of cash income was clearly at the top of their minds.

The farmers were asked to explain what information and the nature of advice they would expect should they be required to implement a Farm Environmental Plan. The answers were consistent: workable plans premised on the long-term sustainability of their farm business; good quality information; consistency; clarity, and above all honesty. Again a key factor that emerged was the need to frame the plans and the science in a social and business context.

Honesty, Clarity, Consistency and Solid information are key preconditions dairy farmers expect if Farm Nutrient Plans are to be extended more widely.

Any Plans, they also believed should be supported by tax payers (government agencies) and should take due consideration of business and social factors.
Fears expressed at the prospect of any Environmental Plan again centred on implementation costs (7/10) and the view that support for such costs would be required. The potential complexity of such plans (and consequently the demands on existing management skills) and the impact on the long-term profitability of their farms was also identified by several farmers. A fatalism was evident. Most of the farmers saw a degree of inevitability that regulation controls will increase, but they saw this as a product of bureaucratic self-interest rather than changing public and market concerns and new scientific understanding. This was expressed at its extreme by two farmers who explained the Dairy Nutrient Plans as “just a means to increase the number of bureaucrats”.

KEY FINDINGS

- Fears of farmers centred on how environmental requirements might impinge on the profitability and economic viability of their farms
- Should the need for Nutrient Plans be extended into other areas, farmers believed that they should be explicitly developed and framed within the context of the economic sustainability of the farm business
- The cost of implementing a plan was unanimously identified as requiring substantial government cash support
- Honesty, expressed in terms of the data provided, clarity and consistency was viewed as a primary requirement in policy development and implementation
Field Officers and their perspectives

Field Officers (knowledge brokers) are frequently ignored in efforts to understand the adoption of innovations by farmers. This is equally true of their role in the promotion, uptake and implementation of farm plans. To a large extent the interpretation of farmer’s adoptive behaviour has remained grounded in their categorisation in terms of the personality traits associated with the bell and S-shaped curves, repeatedly observed in adoption studies. Early work typically described adopters as identified along these curves from early adopters through to laggards. The interpretation of these curves was frequently associated with an identification of early adopters as progressive, well-educated and the like, while laggards or late adopters, were associated with low education levels and similar assumed inadequacies. The curves continue to be observed in the spatial spread of innovations but there have been changes to how the population groups are interpreted and described.

Since the early 1970s, there has been strong empirical evidence that a range of factors and agents play a significant role in the transmission of information to farmers, in relationship building, and in the uptake and implementation of new ideas (Smith, 1973; Ingram, 2008; Nettle and Paine, 2009; and Veserager and Lindegaard, 2012). Knowledge agents or extension workers (in this case Field Officers) are a key component in the contextual environment in which farmers make decisions. Recent literature shows a growing acceptance of the importance of knowledge-agents in farmers’ acceptance of environmental initiatives.

As discussed above, in this current study, the Field Officers involved in the implementation of SLUI were interviewed and participated in a discussion group to investigate their experience and perspectives on the adoption and non-adoption of SLUI. This included some Field Officers who had been in their roles since the start of the Initiative in 2007. One of the staff who led the initial work to support the adoption of Dairy Nutrient Plans in the Mangatainoka was also interviewed. The over-all aim, however, was to explore the role and generic importance of Field Officers. Those Field Officers directly involved with SLUI were believed to offer useful insights that went beyond the experience associated with any one farm system or plan type.

The views of the farmers interviewed (both hill and dairy farmers) who, as discussed above, highlighted the key role of the Field Officers in helping promote, explain and implement their plans. This is undoubtedly a measure of the trust and understanding that the Field Officers had developed with farmers and the strength of the engagement they secured. The Field Officers themselves identified local knowledge and the capacity to build and maintain strong relationships with farmers as a pre-requisite for their work.
The Field Officers identified trust as underpinning any relationship building with farmers. Indeed the initial problems with (and farmers’ resistance to) the introduction of Dairy Nutrient Plans were identified (as noted above) as directly linked to an initial reliance on group meetings rather than one-to-one conversations. The importance of the relationship between Field Officers and farmers was confirmed by farmers and (again, as noted above), was identified by many farmers as a key factor in their adoption of SLUI. Equally, trust was described (by both Field Officers and farmers) as often difficult to achieve (or required greater effort on both sides) because the Field Officers were employees of Horizons and so for many farmers viewed as “bureaucrats” or at the very least as agents of a key regulatory authority. For many Field Officers at least some of the antagonism they experienced was directly linked to an antipathy by some farmers to Horizons, although (as discussed) Horizons was often used as code for all government authorities.

The Field Officers also argued that SLUI farmers and those farmers who had not bought-in to SLUI held similar values although some Field Officers suspected that adopters had a stronger business or profit focus and so were attracted to SLUI at least in part by the funding provided (that several farmers identified their farm accountants as urging them to sign-up to SLUI seems to confirm this view). Equally, interest in signing-up to SLUI was often associated with a fear of the loss of existing funding support or and potential increased regulatory requirements. Such views were largely confirmed by some farmers but the views offered by field officers to explain farmers’ adoption and no-adoption were also identified by farmers themselves. Certainly non-adopters more often expressed resistance to bureaucrats, but this was again a terminology sometimes adopted by individuals who held a negative perspective on government and government employees, and vigorously defended their own property rights.

Asked to suggest how SLUI could be improved to encourage wider adoption, the Field Officers emphasised the need to better identify the benefits the plans provide as well as the funding support available and the need to better publicise the achievements the plans have brought. But that the plans are often too lengthy and too complex was also noted and with that a suggestion of the need for smaller work plans more narrowly focused on specific land types. In all this the Field Officers highlighted the on-going challenge of balancing consistency and stability against shifting context within which farmers’ on-farm decisions are made.

Field Officers’ perceptions:

Of farmers with SLUI (in rank order)
1. Stronger business/profit focus
2. Same as other farmers
3. See benefits of SLUI
4. Stronger environmental focus

Of Non SLUI farmers
1. Negative attitude to Horizons
2. Lack of time, energy, age/health
3. Personality type – don’t want to appear “Green”, peer pressure, stubborn
KEY FINDINGS

- Trust and honesty underpinned Field Officers’ successful engagement with farmers
- The insights of Field Officers on their clients mirrored the views farmers held of themselves and were evidence of the strength of their engagement
- There was an inherent, positive tension between Field Officers and farmers that contributed to the effectiveness of their engagement and provided a solid basis to meet changing needs
- The changing context of on-farm decision making challenges Councils to provide appropriate information and support to field officers
Conclusions

Current trends in New Zealand’s economic policies for regional growth have been identified as favouring a market-led, business-focused approach and to downplay social and community considerations (Nel, 2015). This report on Whole Farm Plans suggests there is value in recognising and better integrating social and community considerations into strategies for sustainable development and regional growth.

That SLUI has had a positive impact on environmental resilience was broadly accepted by SLUI plan farmers and those farmers who, to date, have chosen not to sign-up. There was also a substantial acceptance by SLUI signatories that SLUI had contributed to on-farm profitability and had wider, beneficial economic effects. To this extent at least, SLUI has worked. It is perceived by farmers to have made an important contribution to resilience, both on-farm and in the community. The full impact of SLUI on environmental resilience and on-farm and regional economic profitability will ultimately only be tested in the longer-term. Much contention as to the impact of SLUI on profitability is linked to the time frame (and opportunity costs involved).

It is unclear how much WFPs (whether SLUI or Dairy Nutrient Plans) have increased farmers’ environmental awareness and their long-term willingness to promote environmental works on their farm, particularly if such works are not subsidised by government. As discussed, the financial incentives attached to SLUI and the funding of Dairy Nutrient Plans were accepted by farmers as powerful inducements or even as necessary conditions for their support. Nevertheless, many farmers, who have not chosen to be part of SLUI or who are non-plan dairy farmers, carry out independent environmental work. That stewardship was identified among farmers in the North Island almost 20 years ago may offer some limited optimism. However, European and other experience has commonly not generated the environmental learning that the adoption of farm plans or environmental initiatives was assumed to produce (Burton and Paragahawewa, 2011).

There remains a lack of agreement among many farmers that environmental initiatives (and WFPs) are integral to their long-term profitability and well-being. Some farmers also do not explicitly agree that their land management decisions contribute to and are partly responsible for the public good. Property rights are staunchly defended and often narrowly defined.

Transcending all this is the need for more information and demonstration that environmental works (whether in the hills or on the flats) have positive results. This is difficult to achieve. The inherent challenge of the plans as a product of a one-off event or of a particular context is how to apply them as part of a process of change which must be re-enforced by on-going relationships, reviews and re-contextualisation. But more visible evidence can, does, and could have a powerful impact. Where WFPs are viewed as aligned with farmers’ own priorities for their farms, this study has found that change happens and plans are more welcome. To achieve this, greater effort or modification may be required to frame WFPs in an economic and social context that achieves this alignment. The profitability and survival of the farm business is a dominant, if self-evident priority for all farm households and science based solutions should be explicitly presented in this context. Where plans are optional, most farmers do environmental activities working to the “farm plan” they hold in their heads.

There is perhaps an opportunity to work towards a stronger social context (akin to the culturally appropriate farm plans identified by Burton and Paragahawewa, 2011) and to build bridges towards sustainability that link all farmers within a local region. A recurrent comment from all
those farmers interviewed was their objection (often strongly expressed) at the apparent lack of acknowledgement by scientists and regional authorities of any environmental works they had done “off their own bat” prior to any official plan.

Field Officers have vital and influential roles in introducing and helping implement WFPs. The engagement between Field Officers and farmers is fundamental and based on trust and mutual respect. Issues raised by farmers concerning the size and complexity of their plans were echoed by at least some Field Officers, with suggestions such plans could be broken down and packaged into smaller, more digestible components. One option presented was the potential to more explicitly separate the actions required of farmers from the volume of scientific information or technical detail required (and included in plans) for legal or regulatory needs. Such information was often understood or read by farm consultants, rarely by farmers themselves.

There is an inherent tension when WFPs are used as a vehicle to implement public policy. Different structural relationships would not obviate the fact that WFPs are a policy tool. The good relationships brokered between Field Officers and farmers were recognised by farmers as a necessary and valued conduit to the wide range of skills and services Councils provided.

With WFPs now in place, a key consideration will be how such plans can be used as a platform for evolving farm and regional needs. As well as helping to achieve environmental priorities, they have the potential to provide a framework for growth and change. Some farmers are already using their plans in this way and there is clear potential included in the objectives of these plans to extend their use in this way. Extending the use of plans in this way will require an extension of the role of Field Officers as agents of change, and will challenge officials, farmers and all community members to accept that sustainability (and WFPs) are both everyone’s business and everyone’s responsibility to realise.
References


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Manawatu Standard, Tararua Farmers in Despair, 12.6.13.


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Appendices

Appendix I - Themes Explored in Questionnaire Surveys

Farmers who are signatories to SLUI

- Characteristics of farm and farm household
- Impact of 2004 flood on property and community
- Access/use of recovery aid
- Role of SLUI in shaping any land use changes/changes in land management, including impact on profitability
- Perception of SLUI on range of criteria

Farmers who have not signed-on to SLUI

- Characteristics of farm and farm household, including key environmental issues
- Impact of 2004 flood on property and community
- Access/use of recovery aid
- Post flood changes in land use/land management
- Perception of SLUI on range of criteria

Dairy Farmers with a Nutrient Farm Plan

- Initial perception/understanding when plans announced
- Experience of process of implementation
- Reflections on whole experience
- Outcomes of plan
- Thoughts or advice regarding future implementation of plans in other regions (both for farmers involved and Council authorities)

Dairy farmers without Farm Nutrient/Environmental Plans

- Characteristics of farm and farm household
- Awareness and knowledge of Nutrient Farm Plans – including positives and negatives
- Expectations of plans for farms concerned
- Expectations regarding information/support desired if a plan were introduced for their property

Field Officers

- Backgrounds and experience
- Perspectives on farmers who have signed-on to SLUI
- Perspectives on farmers who have not signed-on to SLUI
- Any changes in perceptions over time
- Potential improvements to SLUI
The role of Regional Council staff in bridging the gap between policy initiatives and landholders is central to the voluntary adoption of farm-plans by landholders based on the evidence collected for this report from both farmers and field staff and officials.

The findings presented highlight farmers’ concern that the information they receive is reliable, robust, and evidence-based. This requires a range of scientific and technical expertise that may be employed directly by a Council or in some specific roles, potentially contracted from external organisations. The expertise required must then be synthesised and translated into individual farm plans that meet individual landholder needs and satisfy broader scientific and social requirements. Effective contract management requires appropriate in-house management skills. Policy development is also a role where responsibility rests with both council staff and council members. This implies that a council should have appropriate managers on staff with broad and diverse scientific, technical, policy and agricultural skills and experience to manage contract design and delivery and help shape policies. In particular, however, policy implementation requires bridging the gap between science/policy and potential adopters of individual farm plans.

Farm plans rest on complex information and (at least for farmers) involve the risk inherent in the adoption of any new innovation or management tool. From the evidence in this report, there is less of a need for any specific technical skill or disciplinary qualifications than for individuals who have a broad understanding of farm systems, a high level of professional ethics, excellent communication skills and for empathy with the needs, concerns and priorities of individual landholders.

For many farmers, farm plans are perceived as an attempt to trample on property rights and facilitate a move towards greater compliance with mandatory Council regulations. For some, they also threaten profitability and economic survival. Successful adoption consequently involves trust by farmers in the council field staff engaging to promote adoption.

The findings from this report suggest, in summary, that to effectively promote farm plans Councils require:

- Technical and professional expertise to compile and assess scientific/environmental and other needs, to synthesise information and draft effective policy frameworks. This should also include some in-depth understanding of farm systems and farmer behaviour.
- Field staff who ideally incorporate a range of different technical/professional farm backgrounds, but have excellent communication skills and strong ethical standards. They should be team players and recognise that at heart their role involves relationship building with land users.
- Field staff are for many the public face of a Council – they play a crucial role in promotion, adoption and implementation of farm plans. Ensuring best practice may require some on-going, in-house training to ensure staff are working in concert, selling a consistent message in line with Council needs, sharing experience, and providing an information flow “back-up the system” to officials and Council members.
Appendix III - List of boxes that form parallel text

BOX 1  
(p 10)  
The extensive impact of the 2004 floods.  
(Source: Horizons)

BOX 2  
(p 11)  
Erosion generated by the 2004 floods.  
(Source: Horizons)

BOX 3  
(p 12)  
Since the 2005-6 financial year, 649 SLUI Farm Plans have been signed across the Horizons Region. Over the same period, 152 Plans have been signed in the study areas.  
(Source: Horizons)

BOX 4  
(p 12)  
Land conservation and soil stabilisation.  
(Source: Horizons)

BOX 5  
(p 13)  
Why farmers support SLUI  
(Source: Field data)

BOX 6  
(p 13)  
Values and priorities SLUI farmers attach to their farm  
(Source: Field data)

BOX 7  
(p 15)  
Sheep and beef performance in the Manawatu 2007-16.  

BOX 8  
(p 16)  
The total cost of SLUI compared to the cost of the 2004 floods  
(Source: Unpublished data from Horizons)

BOX 9  
(p 16)  
The Manawatū-Whanganui Growth Strategy  
(Source: MPI, 2015)
Values and priorities farmers who have not signed-up to SLUI attach to their farms
(Source: Field data)

Environmental work identified by non-SLUI farmers as on-going on their farms
(Source: Field data)

Changes that could persuade some farmers to sign-up to SLUI
(Source: Field data)

Farmers who have not signed-up to SLUI explain their decisions and rank their key concerns
(Source: Field data)

The positive impact of SLUI included increased resilience under drought conditions
(Source: Horizons)

Interest in plans was widespread

Fencing and riparian planting

Farmers’ views on Dairy Farm Nutrient Plans after the event
(Source: Field data)

Learnings identified by Dairy Nutrient Plan farmers as a result of planning process
(Source: Field data)

Negative factors highlighted by Dairy Nutrient Plan farmers associated with the planning process
(Source: Field data)
BOX 20
(p30)
Honesty, Clarity, Consistency and Solid information
(Source: Filed data)

BOX 21
(p32)
Farmer and Field Officer
(Source: Horizons)

BOX 22
(p33)
Field Officers’ perceptions of SLUI adopters and non-adopters
(Source: Survey of Field Officers)