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INTEGRATED CATCHMENT MANAGEMENT: EVALUATION REPORT JUNE 2010

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EXECUTIVE SUMMARY

In 2006 Environment Waikato (EW) began a pilot project within two of the region's catchments - Little Waipa and Waipapa. This process, the Integrated Catchment Management (ICM) project used all current policy tools - education, incentives (e.g. Clean Streams), enabling compliance and enforcing regulations - to work with farmers to change or improve their agricultural practices which are contributing to rising nitrogen levels within the Waikato hydro-lakes.

The project has a key deliverable in the EW Long Term Plan (LTP). Specifically, *Performance Measure:* Monitor farmer implementation of Farm Plans in Integrated Catchment Management (ICM) catchments. *2009/2010 target:* 50% (of actions implemented).

An evaluation of the project was conducted by Momentum Research and Evaluation Limited. A purposive sample was drawn of 19 of the 37 farmers (51%) that had completed Farm Plans at the time of evaluation.

The aim of the interviews was to: gather feedback from participating farmers and determine the extent to which they had implemented the recommended actions in the Farm Plans. This was to track progress and start to understand the timing of uptake and consistency, with a wider sample than in previous evaluations.

FINDINGS

The findings from the interviews indicate that the ICM project continues to be well received in the catchment, and farmers' opinions about EW are more positive as a result of interacting with ICM staff.

Fifty seven out of the 105 farms have engaged in the project so far, with 49 having completed Farm Plans. This is an increase of 20 (69%) in the past twelve months from the 29 completed plans reported in June 2009. The coverage of the project by land area is 51% (Little Waipa) and 44% (Waipapa).

Findings show that farmers are making changes on farm as a result of the project. Across all the Farm Plans a total of 73 actions were recommended. Farmers reported on the actions they had undertaken which amounted to 42% of the 73 actions being completed. A further 30% had been started by farmers prior to the plan and were continuing or completed, and another 5% had been started but were not yet completed. These figures indicate that the LTCCP target of at least 50% has been achieved. Consistent with previous evaluations changes they are most likely to make are those that are easy to implement, affordable and have a financial or other benefit. The ICM project has been a key factor in encouraging action uptake.

Barriers to change include the financial outlay, belief that an action will adversely affect productivity and lack of proof that a particular action or piece of technology will work. Overall satisfaction with the project, the staff and with Environment Waikato is high, although there is some indication that farmers are unsure as to the future of the project.

The ICM project is a voluntary project which seeks to educate farmers about the regional plan rules, ensure compliance, create awareness and lift knowledge of nutrient management, offer advice and guidance on changing farm systems for compliance and on nutrient management by providing a Farm Plan, and increase the confidence of farmers around changing practices. These services are designed to increase the rate of adoption of best practices by assisting farmers to reach decisions more quickly and bring about action. However, given the uncertainty of policy direction farmers are unlikely to adopt

changes that will be costly or radically change their farm systems as the results of this evaluation demonstrate, with recommendations needing capital outlays and system changes not adopted.

This evaluation relies on self-reports of uptake of actions and thus cannot comment on the nutrient efficiencies gained by the farmers interviewed. A fuller assessment of nutrient efficiency gains should be part of the ongoing project.

The findings complement the assessment made through the 2009 evaluation that the voluntary nature of this project does not secure permanent nutrient efficiency gains. While most farmers interviewed had not made changes to their farm system since the time their Farm Plan was written, and reported their Farm Plans was still relevant, this evaluation shows that for actions that are re-occurring (e.g. fertiliser application) some farmers varied from the recommended practice due to external factors (e.g. drought).

In addition, it is likely as the project progresses that farm systems will change, or farms will change hands, which means that plans will need to be revised and change tracked over time.

RECOMMENDATIONS

The evaluation highlights the need, to more accurately track progress in actions over time. This evaluation has utilised self-reporting as a measure of uptake. Future evaluations should include:

- Repeat visits to confirm the uptake of actions, and track progress through repeat Overseer modeling.
- Repeat visits to confirm that the Farm Plan is still relevant to the farming system.

There is a continuing need for this project to be communicated to its participants; the preferred method of communication being the newsletter.

There is a need to ensure that ICM project staff continue to deliver high quality, relevant, nutrient management advice and stay current with research into this area providing a credible source of knowledge for the participants.

1.0 BACKGROUND

In 2006 Environment Waikato (EW) began a pilot project within two of the region's catchments - Little Waipa and Waipapa. This process, the Integrated Catchment Management (ICM) project used all current policy tools - education, incentives (e.g. Clean Streams), enabling compliance and enforcing regulations - to work with farmers to change or improve their agricultural practices which are contributing to rising nitrogen levels within the Waikato hydro-lakes.

The ICM pilot project took place over three years (2006-2009) and included community consultation, working with individual farmers to develop farm management plans, and collation and modeling of data using OVERSEER, to determine potential effectiveness. The initial consultation process identified that on-farm nutrient management was a priority for farmers and that mainly nitrogen (N) and then phosphorus (P) levels were priority issues for the catchments. So the project focused on nutrient management, with a larger focus on N and latterly on P.

A series of evaluative measures were undertaken, and reports were prepared over the three years of the pilot with a final report completed in June 2009. The final evaluation report concluded that the ICM pilot

approach was effective at engaging the community and the farmers, and encouraging change, had provided a significant amount of qualitative and quantitative data on factors that affect achievement of nutrient efficiency on-farm, and had a positive impact on reducing N loss in the catchments (Hungerford, 2009).

The project was programmed to continue and expand into the 2009/2010 year with a focus on increasing the numbers of farms with plans, revisiting farms that had plans, and working with industry to further encourage changes.

The project has a key deliverable in the Long Term Council Community Plan Regional. Specifically, *Performance Measure:* Monitor farmer implementation of Farm Plans in Integrated Catchment Management (ICM) catchments. *2009/2010 target:* 50% (of actions implemented).

2.0 EVALUATION

The pilot project was evaluated over the past three years by Ruth Hungerford of Momentum Research and Evaluation Limited, and a series of reports produced[1]. In 2010 Momentum Research and Evaluation Limited was asked to undertake telephone interviews with a sample of up to 20 participating farmers.

The aim of the interviews was to: gather feedback from participating farmers and determine the extent to which they had implemented the recommended actions in the Farm Plans. This was to track progress and start to understand the timing of uptake and consistency, with a wider sample than in previous years.

SAMPLE

The sample was purposive, chosen from the list of farmers that are involved in the project and who have Farm Plans. Effort was made to ensure the sample included farmers who had been involved for some time across both catchments, as well as some who had been involved more recently. Twenty seven farmers were telephoned and asked to participate. Of these two refused, seven were unable to be contacted,[2] and 19 agreed to be interviewed.

As some farmers have more than one farm, and each farm has its own farm plan, there are 19 farmers in the sample, and 25 farms and Farm Plans[3]. The sample represents 51% of 37 farmers with completed Farm Plans.

The table below indicates the range of farm systems respondents operated. There were 23 dairy farms and two sheep and cattle farms. Of the dairy farms, 17 (73%) were System 1 or System 2 farms, three (13%) were System 3, 3 (13%) were System 4 or System 5.

[1] Environment Waikato documents TR2008/49 and TR2009/17.

[2] A process of four phone calls per farmer was instigated. At the first 'no answer' a message was left if there was an answering machine. A second call was made within a couple of days and at the third call another message was left. If there was no answer to a fourth call, no message was left, and that farmer was not called again, as it was deemed that they did not wish to participate. However if they did call back within the data collection timeframe, and wished to participate, then they were included in the sample.

[3]; 15 farmers were in the Little Waipa catchment, 47% of the total who have Farm Plans in Little Waipa, and 4 were in the Waipapa, 80% of the total who have Farm Plans in Waipapa.

The table compares the sample distribution with the 2007/08 DairyBase survey of owner operators in the Waikato region - a self-selected sample of 199 (Sutton, pers.comm, 2009). By comparison, in this sample more farmers in the low to medium input levels were interviewed.

TABLE 1: FARM SYSTEMS OF SAMPLE FARMS

DairyNZ Systems	Number	% of sample	Dairy Base % of region
1	7	73%	37%
2	10		
3	3	13%	37%
4	2	13%	26%
5	1		
		100%	100%
Drystock systems	2		
Total	25		

INTERVIEW QUESTIONNAIRE

The interview questionnaire from the previous year was revised to ensure it covered the project activities and recommended actions for the past 12 months. Each interview took between 20-30 minutes to complete and they were conducted over a three week period in June 2010 (see Appendix 2).

3.0 FINDINGS

This section reports in findings from the interviews with the 19 farmers about their 25 farms. Farmers were interviewed about:

1. Their opinions of Environment Waikato and the ICM project (Success Area: Engagement)
2. Their Farm Plans and actions undertaken (Success Area: Actions undertaken)
3. Barriers to and benefits of uptake of actions (Success Areas: Actions undertaken; Farm planning process)
4. Their involvement in the project (Success Areas: Engagement; Communication)
5. Communication with Environment Waikato (Success Area[4]: Communication)

The findings are presented below. The first section includes an update on project coverage. The next sections present the interview findings under the headings consistent with the area of success they refer to. Quotes from interview participants are presented in italics. Where there is more than one quote listed, each quote is from a different participant.

3.1 CATCHMENTS AND COVERAGE

There are two catchments included in the ICM project – Little Waipa which has 79 farms and 68 farmers and Waipapa which has 26 farms and 22 farmers[5]. In total there are 105 farms eligible to participate in ICM in the two catchments.

[4] When the ICM project began it had key success areas that it aimed to meet.

When this report went to print (30 June 2010), 43 farms in the Little Waipa had completed Farm Plans, with three in progress and a further 17 that had had a first contact. Six farms in the Waipapa had completed Farm Plans with five in progress and a further ten that had had a first contact.

The total of 49 completed Farm Plans is an increase of 20 (69%) in the past twelve months from the 29 completed plans reported in June 2009. In terms of farmers there are a total of 37 farmers with Farm Plans in place, an increase of 12 (48%) from 2009.

Table 2 (below) and Figures 1 and 2 (pages 4 and 5) present the percentage of the catchment by farm and by land area, covered by Farm Plans. In total, 47% of the 105 farms in both catchments have completed Farm Plans, with a further eight per cent in the process of being completed. When analysed by farmer, 41% of the 90 farmers have completed Farm Plans.

In terms of land area 51% of the land area in the Little Waipa has been covered by a Farm Plan and in the Waipapa 44% of the land area is cover by a Farm Plan. These figures are an increase of 30% and seven per cent, respectively, in the past 12 months since June 2009.

TABLE 2: FARM PLANS IN 2009 AND 2010 AND % OF CATCHMENT COVERED BY COMPLETED FARM PLANS

	Number of Farm Plans 2009	Number of farmers 2009	% of catchment covered by a farm plan	Number of Farm Plans 2010	Number of farmers 2010	% of catchment covered by a farm plan 2010
Little Waipa	25	21	21% (land area) 32% (farms)	43	32	51% (land area) 54% (farms)
Waipapa	4	4	37% (land area) 18% (farms)	6	5	44% (land area) 23% (farms)
Total	**29**	**25**	29% (farms)	**49**	**37**	47% (farms)

[5] Note: These numbers differed to those in the previous evaluation report (2009) as there have been some farms that have changed ownership and boundaries, in the past 12 months.

FIGURE 1: LITTLE WAIPA CATCHMENT: ICM PARTICIPATION

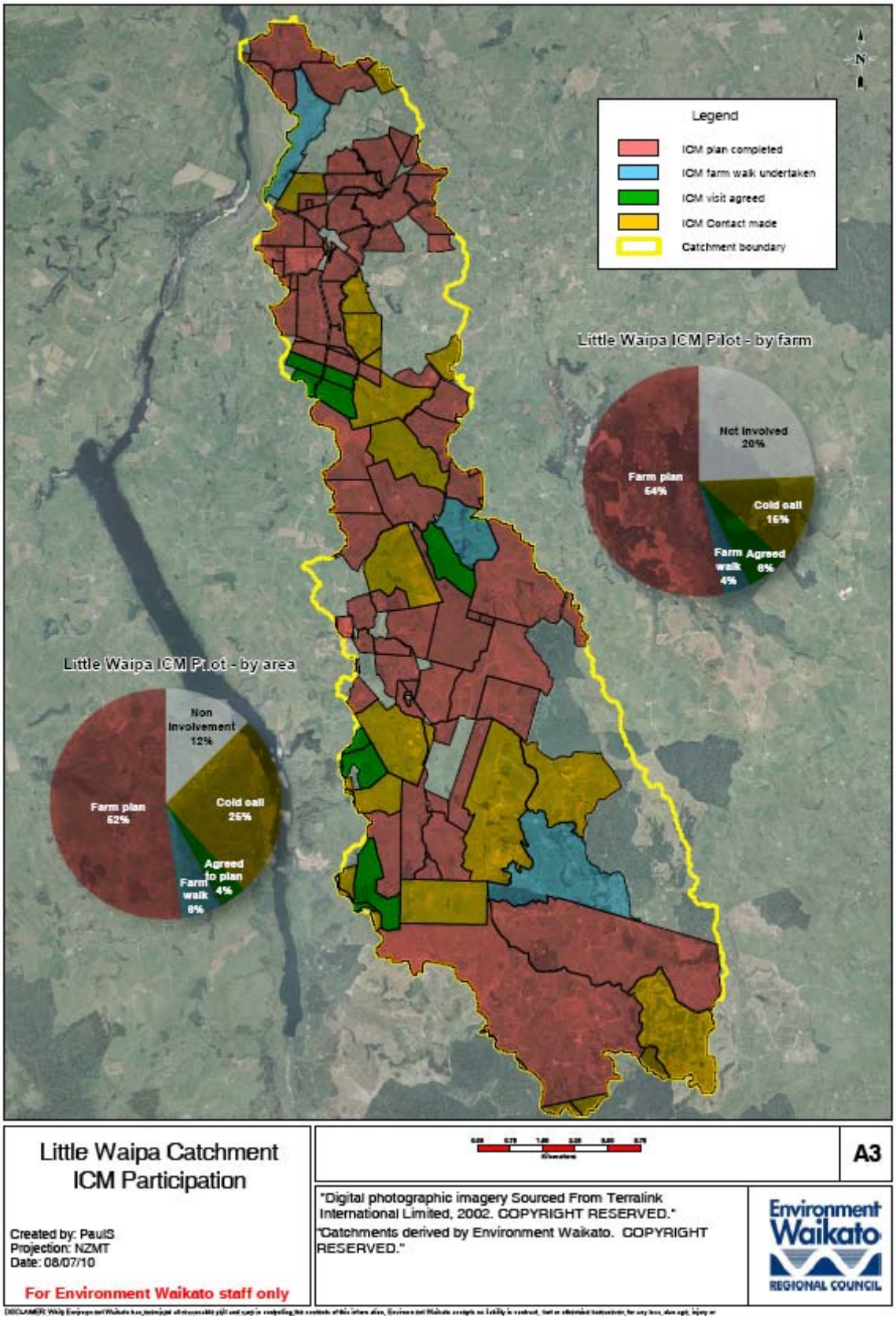
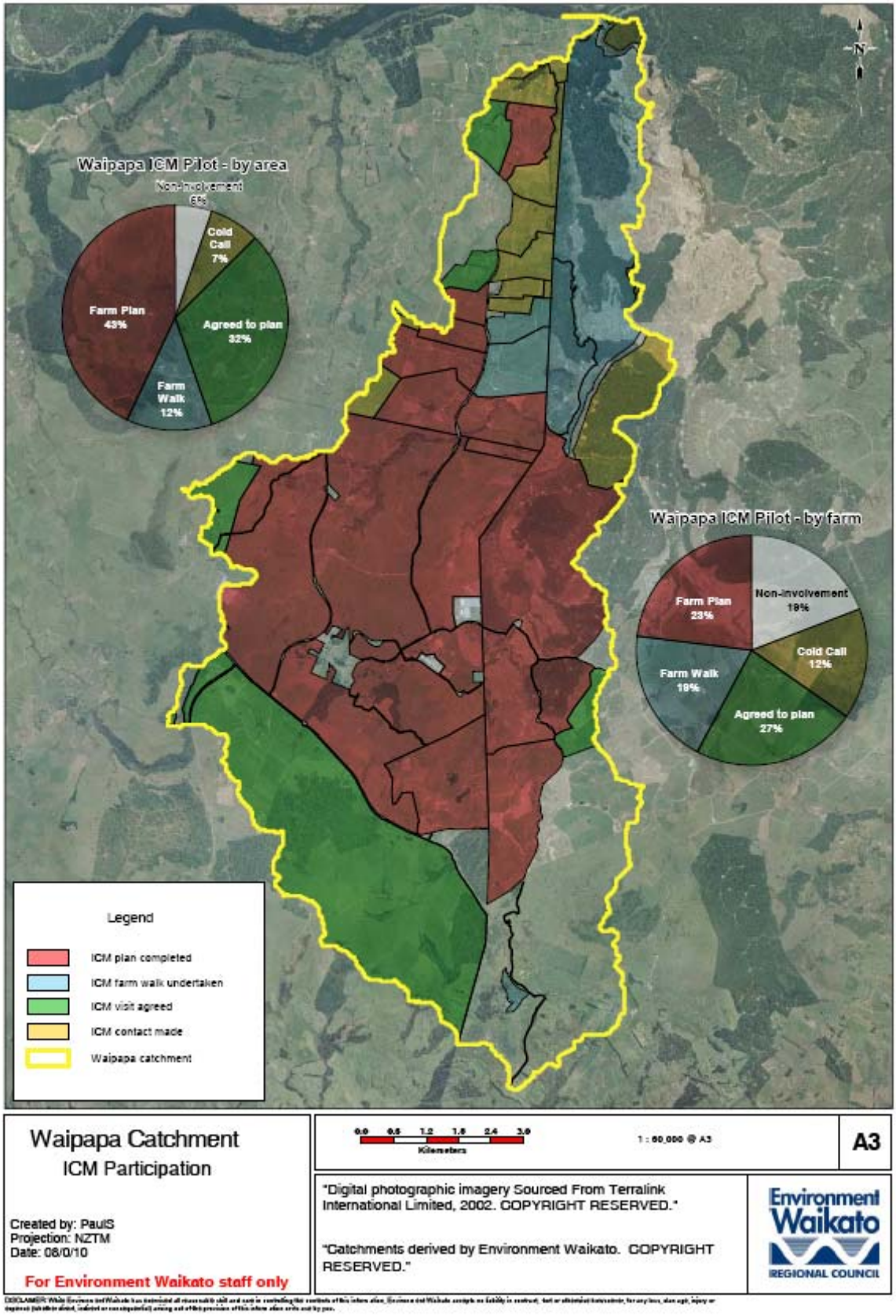


FIGURE 2: WAIPAPA CATCHMENT: ICM PARTICIPATION



3.2 ENGAGEMENT

3.2.1 AWARENESS OF ENVIRONMENT WAIKATO'S CONCERNS

Farmers were asked "since being involved with this project do you have a better understanding of Environment Waikato's concerns about nutrient management issues on farm or is it no different than before?". Fifteen (79%) farmers stated that their understanding of Environment Waikato's concerns about nutrient losses on farm was better than before the ICM project. Four (21%) farmers stated that their understanding of Environment Waikato's concerns was no different than before, as they were fairly well informed prior to the project.

When asked what, in their opinion Environment Waikato's concerns were, farmers made comments about leaching, nutrient loss, effluent management and the effect on waterways.

> *Mainly the nitrogen and phosphate losses and leaching and effect on waterways.*
>
> *Where those nutrients end up after they're applied. Those extra nutrients. The balance of what is needed and what is applied. At the moment there seems to be an overloading of some elements. The nitrogen levels and other elements increasing in the rivers and lakes are of concern.*
>
> *Mainly the amount of nutrient run off ending up in rivers and lakes*

3.2.2 RELATIONSHIP WITH ENVIRONMENT WAIKATO

Farmers were asked to rate their relationship with EW. They were asked "overall, on a scale from very poor to excellent, how would you rank your relationship with Environment Waikato in general?" Overall farmers' opinion of their relationship with Environment Waikato was high. Twelve (63%) farmers rated their relationship with Environment Waikato as 'excellent', and seven (37%) as 'good'.

The comments about the ratings indicate that for many farmers their relationship of Environment Waikato had improved as a direct result of the project.

> *[My opinion has] altered [because of this project], because we have more contact, and more understanding – both ways – them [EW] understanding how things are for us and us understanding how things are for them.*
>
> *Before I thought they were more the enemy – I said to [ICM staff] – a week before he came to see me the helicopter flew over and I got a letter two days later to say they had flown and everything looked fine, but they might follow up with a visit. So, when [ICM staff] pulled in I thought 'here we go, here's trouble'. I saw [ICM staff] at the Fieldays yesterday and went and thanked him for the plan. Working with [ICM staff], if I had a problem I would ring him. [My opinion has changed] because of having to work with them and they are good people to work with.*
>
> *I'm still recovering from the early days – [with a compliance issue] I thought it [EW] was ridiculous outfit. This project has been working with people together and has been a breath of fresh air from what it was. …. When they first spoke at the Puketurua Hall about this project- that it was working with farmers - I thought 'that's a bit of a turnaround, but they have done it and it has worked well – they are working alongside and it is a better way to do things.*

One farmer commented that he noticed improved relationships with Environment Waikato amongst his farm managers. He also stated that in his opinion, *"the best thing [about this project] is the improvement of the relationship with Environment Waikato. For me, one of the best things about it, that it has done, is*

building a positive relationship with [ICM staff] and that side of Environment Waikato, and we feel we are working together for something rather than being the other side of the fence, moat or whatever. "

These results are consistent with the findings of the 2008 and 2009 evaluations, which revealed that the ICM project had resulted in more positive opinions towards Environment Waikato (Hungerford, 2009).

3.2.3 SATISFACTION WITH PROJECT

Farmers were asked "overall, how satisfied have you been with the project?". Overall satisfaction with the project was high. Fourteen (74%) famers rated their satisfaction with the ICM project as 'very satisfied' and five (26%) as 'satisfied'. No farmers were dissatisfied with the project.

Farmers used phrases such as "working alongside", "working with" and "partnership" to describe their views of the project and why they thought the project worked well. Some noted the scientific approach taken by ICM staff to understanding their farm system and offering advice. The quality of the staff, their knowledge of the subject, and the way they interact with the farmers were key factors in the level of satisfaction.

> *Because of the way in which they did it. The manner it was conducted. [ICM staff] came in with the attitude of working alongside.*
>
> *I learnt things. It was a scientific approach. Constructive all the way. Not 'stickish' [i.e. big stick approach] and not absolutely mandatory and so you can work with [ICM staff] and choose what to do.*
>
> *[ICM staff] is welcome to come back. Any time*

Farmers also commented that the project had raised their awareness, encouraged changes on farm, and gave them a contact point with Environment Waikato.

> *It got us involved with [ICM staff] and [ICM staff] so we have good a dialogue that goes on there now and they help us on a number of things. It increased awareness and we did some things with our effluent system (as a result).*

Two farmers who stated they were 'satisfied' expressed some frustration that not all the farmers in the catchments were involved and had taken it on board. They commented that there was 'still work to be done' to get all farmers to improve their practices and to have a whole catchment approach.

> *There's still work to be done. I believe myself to be reasonably environmentally aware and compliant and there are farms out there that aren't and still need to be monitored or encouraged to be compliant. I think people have had long enough – the excuse that they aren't aware – they can't use that any longer – they need to be encouraged to get into line.*
>
> *In terms of providing an information source and base – it's been very very good and worthwhile, but their ability to effect major change is pretty limited. … to be effective the community needs to own the problem. We need to get strategic members of the community on board and have a structure – there's no structure to it. So it's not ICM – just doing Farm Plans – some farms around us – they haven't changed management or practices. They [EW] could have dealt with it and haven't. ... Can't have one farm getting down to 30kgN and another doing 70 or 80, and not doing anything about it.*

One famer who was 'satisfied' commented that in their opinion it was also an industry issue and while the industry had got more involved there was also a need for some leadership from Environment Waikato to assist farmers to make decisions about on farm issues in relation to nutrient efficiency.

> *Not sure that they can do much more. It's an industry issue as well. The industry have got involved in the past few years –there is a lot more information coming out of Fonterra – they are leading this quite well. We need some real leadership from EW. I'm at a cross roads ... I want to use what I have to the max – I'm looking at spending another 100thousand on underground line, then dropping production next year – I'm not sure if I should do it. Where do I go?*

The remaining 'satisfied' farmer questioned where the project was leading and how the information being collected was going to be used in the future. In his opinion it was heading towards creating *"more red tape"* for him to *"wander through".*

> *But I still am wondering where it will lead to – all I can see it leading to is more red tape for me to wander through in my life.*

3.2.4 FUTURE ISSUES

Farmers were asked for any further comments on the project. Some farmers wanted to know what Environment Waikato's future plans were with the project, with their information, and with the issues of nutrient management on all farms in their catchments.

> *Want to know where it's heading. Why this is so very, very important when we had clean streams working within our community? Where does the information go about my property?*

> *As long as they can work on these farmers that are pouring on the N. Everything is voluntary. Goes back to the fertiliser companies and the bank managers – the young ones (bank managers) out there – they go to varsity and learn that you put N on and grow grass – don't think you can farm without it. My bank manager asked why I'm not putting it on. These advisors are still telling you to put it on. Got to change the advisors and bank manager.*

One farmer expressed frustration at Environment Waikato's response to the Transpower power lines issue.

This [ICM] is a drive to be more environmentally-friendly. My property is affected by new power lines and we have had no support from EW about that and seems like a double standard to me.

3.3 ACTIONS UNDERTAKEN

3.3.1 RELEVANCE OF FARM PLANS

In order to assess whether Farm Plans were still relevant to a farms current system, i.e. since the farm plan had been drawn up the farmer had not changed their production system; farmers were asked about their farm system, when they had received their Farm Plans and whether they considered their plan still relevant to their farm system.

They were asked if they have made any changes to their farm or systems since the plan was prepared, whether they had reviewed or updated their farm plan and if they considered the plan was still relevant to their system, and if not, why not.

Six (24%) farmers had changed their systems since the Farm plan. Changes included[6]:

- Expansion (3 farms)
- Lowered stocking rate (2 farms)
- Changed effluent system (1 farm)
- Changed to more high input system (1 farm)
- Intensifying (1 farm)
- Winter milking (1 farm) although they intend to discontinue this next season.

Of the six farms above, two had had their plans reviewed and four had not. The farmer from one of these four considered that their plan was no longer relevant and farmers from the remaining three farms said their plans were still relevant.

Overall, 24 (96%) farmers considered their plans were still relevant. One farmer with two farms, who had lowered stocking rates and changed the effluent system, stated that the plans were still relevant but the nutrient budget and the description of the effluent system needed updating.

The one (4%) farmer who stated that the plan was no longer relevant said it was because he had expanded, was winter milking, and was *"getting towards the intensive end"*.

> *We are winter milking now although we're not going to do it again next year. We are getting towards the intensive end, growing our own feed on the runoff. Due for a bit of catch up. It Would be good to get them [ICM staff] back. Have taken another farm over – didn't have the other farm before. Running both blocks and another run off.*

TABLE 3: REPORTED CHANGES TO FARM SYSTEMS AND RELEVANCE OF FARM PLANS

Question	Yes		No		Yes but some update needed		TOTALS
	No.	%	No.	%	No.	%	
Have you made changes to your farm or system since the plan was prepared?	6	24%	19	76%	NA	NA	25
Have you reviewed or updated your farm plan?	3	12%	22	88%	NA	NA	25
Do you consider your farm plan is still relevant to your system?	22	96%	1	4%	2	8%	25

[6] Note that some farms had more than one type of change so the numbers of farms who had changed adds to more than six.

3.3.2 UPTAKE OF BEST PRACTICE

Farmers were asked to recall the actions from their Farm Plans. Of the 18 farmers interviewed most recalled actions from memory while a couple got their Farm Plan out to refer to. In total 73 actions were recalled from within the 25 Farm Plans in the sample. These were:

- Increase effluent area (11 farms)
- Deal with hot spots (8 farms)
- Stop using Urea (N) in winter months (8 farms)
- Use riparian fencing and planting (5 farms)
- Fence off springs (5 farms)
- New effluent system (storage) (4 farms)
- Assess the use of DCD (nitrification inhibitors) (4 farms)
- Stop using N on effluent area (3 farms)
- Lower N use to within safe ranges (3 farms)
- Plant out steep areas (3 farms)
- Measure effluent application depth (3 farms)
- Increase Assess putting in a feed pad (2 farms)
- Grow maize on effluent block (2 farms)
- Update / regularly test soil fertility (2 farms)
- Wintering off (1 farm)
- Assess putting in a stand off pad (1 farm)
- Lower stocking rate (1 farms)
- Test effluent nutrient status to understand yearly application rates (1 farm)
- Mine Olsen Ps (2 farms)
- Do VSA to test soil health (1 farm)
- Create cut offs on tracks and races to allow sediment to flow to paddocks (1 farm)
- Create water detention structures in paddocks (1 farm)
- Other (bridge a stream) (1 farm)

This broad range of actions recalled indicates good uptake of the Farm Plan information. However, a few farmers did not recall some actions when prompted by the interviewer who had access to the database of Farm Plan actions.

SUSTAINING ACTION

A focus for this evaluation was to monitor the success of Farm Plan implementation by assessing not only perceived relevance of the plan, but how recommended actions were sustained over time. This was in relation to not only the change to farm systems as discussed above, but also to the regular activities in the Farm Plan.

While not specifically asked what actions farmers had discontinued, an important finding from the interviews this year has been the impact of outside factors, such as the weather, on farmers' ability to continue with some of the actions. This particularly applies to actions that are re-occurring such as fertiliser application, compared with fencing a stream which is a 'once off' action albeit with some future ongoing maintenance. The application of Urea N in winter was an action that had been forgone this year for some farmers. Two of the farmers who had stopped applying Urea N in winter as a result of the

project, had applied some this season due to the recent droughts and poor autumn weather which from their perspective had slowed growth. However, they noted that prior to the project they would have used it routinely, whereas now they use it when they believe it is required.

> *Used some last year – it's option A or B – severe season and extremely cold winter. Used it longer this year, than we would have. I would have used routinely prior to the plan. Now only use it if there are circumstances that require it. I can't do two or three hard years in a row- have had two already – can't do another one so have applied some N.*
>
> *But it depends - there are financial pressures this year and weather – so urea has to go on in May.*

These findings indicate the need to consider continuation of actions in the ongoing maintenance and evaluation of the project. Now that it has been operating for four years some farmers have had plans for two or three years and have undertaken actions initially, but due to outside factors have not undertaken the action in this period. Table 4 (below) reports these actions as 'intermittent uptake.

ACTION UPTAKE

Table 4 (below) details the recalled actions and the extent of uptake.

Notes about the table data:

i. *Started pre-plan*: Some actions recommended by the ICM staff to farmers were already started prior to the farm planning process,. For example 'riparian fencing and planting' was ongoing at the time of the farm plan visit. 'Not putting UreaN on in winter' was something that some farmers had done intermittently in the past, and as part of the farm planning process they agreed to continue, or make routine, this practice. The farm planning process acted as a reinforcement of best practices for these farmers.

ii. *Started*: Actions recorded here have been started as a result of the plan , and are not yet completed. This usually applied to actions that take more time to complete or need to be done at certain times of the year, such as riparian fencing and planting, for example.

iii. *Done*: Actions recorded here have been completed.

iv. *Intermittent uptake*: Actions recorded here have been done since the plan, but farmers have not continued with them. For example, applying winter N.

v. *Intending to do*: Actions recorded here are those that farmers have a definite plan to do within the next six to twelve months. For example, measuring effluent depth once they start milking again.

vi. *Not done*: actions recorded here are once that farmers have not done and have no immediate plans to undertake.

TABLE 4: ACTIONS SUGGESTED AND FARMERS' INTENTION TO UNDERTAKE

Action	Number of farms	Completed or partially completed actions				Intending to do	Not done
		Started pre-plan and have continued	Started post-plan but not completed yet	Done	Intermittent uptake		
Stop using Urea N in winter	8	4	0	2	2	0	0
Increase effluent area	11	1	0	7	0	2	1
Stop using N on effluent area	3	1	0	1	0	0	1
Lower N use to within safe ranges	3	1	0	2	0	0	0
New effluent storage system	4	0	1	2	0	0	1
Use riparian fencing and planting	5	1	2	2	0	0	0
Increase wintering off	1	0	0	1	0	0	0
Assess the use of DCDs	4	0	0	0	0	0	4
Assess putting in a feed pad	2	0	0	0	0	0	2
Assess putting in a stand off pad	1	0	0	0	0	0	1
Deal with hot spots	8	0	0	6	0	2	0
Plant out steep/low producing slopes in trees	3	1	1	1	0	0	0
Fence off springs on farm or using managed grazing in these areas	5	3	0	2	0	0	0
Lower stocking rate	1	0	0	1	0	0	0
Grow maize on effluent block	2	2	0	0	0	0	0
Update / regularly test soil fertility	2	2	0	0	0	0	0
Measure effluent application depth	3	0	0	1	0	2	0
Test effluent nutrient status to understand yearly application rates	1	0	0	1	0	0	0
Mine Olsen Ps	2	1	0	1	0	0	0
Do VSA to test soil health	1	0	0	0	0	1	0
Create cut offs on tracks and races to allow sediment to flow to paddocks	1	5	0	0	0	0	0
Create water detention structures in paddock/	1	0	0	1	0	0	0
Other: Put bridge over stream	1	0	0	0	0	0	1
TOTALS	**73**	**22**	**4**	**31**	**2**	**7**	**11**
Percentages	**100%**	**30%**	**5%**	**42%**	**3%**	**10%**	**15%**

As Table 4 details, 31 (42%) of the actions suggested in all the Farm Plans had been completed, 22 (30%) had been started pre-plan and were continuing or completed, four (5%) had been started but were not yet completed. Seven (10%) were planned to be undertaken within the next 6 to 12 months, and eleven

(15%) had not been done and/or were not planned to be done. Two farms had actions (winter N application) that they had done in the past but which they had not continued with this season.

Similar to the findings from the 2009 evaluation the majority of farmers who were recommended to increase effluent areas or upgrade effluent storage systems had either done so or were intending to do so. However, one farmer had not extended his effluent area because in his opinion the area he had was more than sufficient. Whilst he did also state that he did intend to extend it, however the criteria for 'intending to do so' was that there needed to be a definite timeframe within the next six to 12 months, which this farmer did not have.

> *[What we have] is way beyond what most people have. We contain it over winter and then put it on in summer. Put it in a holding dam then spread it over the whole farm. Do intend to extend it.*

The farmer who did not intend to put in effluent storage had consented ponds which had been enlarged in 2005, and chose to continue with those rather than upgrade them at this stage.

> *We still have consented ponds but in the next year or two we might increase herd size – would need to look at them then. At the moment they are consented. Had it re consented within the last three years. In 2005 we enlarged the ponds.*

As stated previously Table 4 illustrates that an activity like 'no use of winter N' is variably applied because of the link to external pressures. Recommended actions that were not undertaken by some farmers were the use of DCDs, putting in a feed pad, putting in a stand off pad and putting in a bridge. The latter three activities all involve capital investment while the lack of uptake of DCDs by all farmers recommended to try this activity reflects farmers' reticence about the product.

More detail on farmers' assessment of the benefits of, and barriers to, uptake of the recommended practices are discussed below and detailed in Appendix 1.

3.3.3 Reasons for uptake

Farmers gave a number of reasons why they undertook the action or were planning to undertake it, and as well were asked to comment on the benefit to them of undertaking the action. In some cases the reasons and the benefit overlapped (e.g. improved productivity, wanting to be compliant), while in others they were separate (e.g. less work was a benefit but not the reason the action was adopted).

An analysis of the reasons the farmers gave for undertaking the actions showed that farmers undertook actions for a number reasons. These included:

- the action was easy to implement (for example,
- the action was affordable
- the action had a financial benefit (for example, spending less on fertiliser)
- the action has an aesthetic benefit (for example, enhances the property)
- the action has a productivity benefit (for example, improving less fertile areas, not applying effluent when raining)
- the action had another farm specific benefit (for example, improved stock management, preventing erosion, less work)
- there was an incentive (for example, Clean Streams funding)
- the farmer had an environmental focus
- the ICM project encouraging suggested actions

- there was an outside influence (for example, fertiliser costs)
- there was a desire to be compliant
- they had already started doing it or were planning to do it

Overall findings indicate that the ICM project was often a key factor in farmers' decisions to make changes, with nine out of 19 farmers mentioning this as a reason for undertaking an action. For thirteen of the 73 actions the ICM project was mentioned by at least one farmer as a reason, or one of the reasons, why they undertook the action. Sometimes the project was reported as the factor that 'tipped the scales' as the following comments, indicate.

> *We were going to do anyway but there was a bit more impetus from [ICM staff]; it tipped the scales.*

> *Have completed that now. In the last two years. We were working away at and we had made a start and have now continued. Had embarked on and would like to follow through however [this plan] highlighted the importance. Part of Clean Streams [programme] and received funding through them. (Benefits) In a monetary way – no benefits – there's quite a bit of extra work in fencing and planting trees then spraying weeds etc. No direct monetary benefit – if you wanted to sell your property it may make it more attractive. Done it to try and produce the buffer area to keep the stock out, and be more environmental.*

> *Made a conscious effort to do this (because of the plan).*

For more detail, see Table 5, Appendix 1, which details the actions that were undertaken or were in intending to be done by the sample of farmers, and which reasons were linked to which actions.

Prioritising Actions

A number of farmers also noted that they prioritised the actions they took. One farmer explained that he would do the 'easy' things first, then move on to the more costly or difficult issues. For example, on his farm he'd fenced off the steep areas that he could do easily. Then he focused on getting quotes for the more difficult areas, that would involve moving tracks, and will attend to those next. However, he also went on to say that if there was an issue that the farm plan had identified as "serious" (i.e. non-compliant) then they would have attended to that first.

> *None of the areas were identified as bad and had to be done right away – if something was a serious issue [i.e. non-compliant] then that would be sorted right away.*

Compliance

As the previous quote and Table 5 (Appendix 1) illustrates compliance is an area that ICM also addresses. A number of farmers reported that one reason they undertook actions was to either address a non-compliance issue and/or to prevent future non-compliance. The following are some examples of comments made by farmers when asked for reasons why they undertook an action and/or the benefits to them of undertaking an action.

> *We have put in a lined storage pond (for one shed) and are putting in another one (for the other shed) and retiring the unlined ones. The first change in terms of the rotary shed was because of non compliance.*

> *[Did this to] lower [the] risk of non compliance.*

In terms of cost return – it's relatively cost neutral. Benefits - it's the good stewardship and 'obeying our governors' [EW].

Want to be within regulations.

[Did it to] stay out of trouble with EW.

3.3.4 BARRIERS TO UPTAKE

Reasons why farmers had not changed practices and / or had not changed them yet included:

- the financial cost
- that they were prioritising (undertaking one action at a time)
- that the action would adversely affect productivity (for example, N on effluent area)
- that the action was not necessary (for example, expanding the effluent area)
- that the action was not proven to work (for example, DCDs)
- outside factors (for example, weather)
- timing (for example, not milking so no effluent)

One example of an action not being considered necessary was with effluent storage. The farmer who had not changed their effluent storage did not do so because their system was currently consented so they did not see the need to change. However, they stated that they would consider it if they, for example, increased their herd size.

Still have consented ponds but next year or two, we might increase herd size, [so would] need to look at them. At the moment they are consented. Had it re-consented within the last three years. In 2005 we enlarged the ponds – they were marginal and then made them larger.

The use of DCDs was an action that no farmers undertook. The primary reasons for not undertaking this were that they considered it financially costly, not proven, not necessary, and not a top priority.

DCDs. Looked into it. Have chosen not to use it – because of economics. I question the benefits – more research needs to be done on DCDs on these soil types.

Haven't done as yet and have strong reasons. We prioritise and do things in incremental steps. We do the things that are of most benefit first. The biggest winners first. DCDs – the jury is out on that. Have looked into it. We may well do that soon.

DCDs talked about it but it's not on priority list – our N discharge wasn't up real high, and there's a question on the economics of it and we wanted to prioritise.

We looked at it and have been discussing it and would possibly look at – at the moment if it is cost effective. It's a good idea if it's going to stop the N problem but we don't have a problem …because only 27kgNha now…so is it putting the money in wrong place. If we add DCDs would only drop it to 25. It would have had very little effect.

Putting in feed pads was also something that was not undertaken by the two farms in the sample that had it in their plan. One quoted financial reasons (costly) and prioritising where money was to be spent, although it was something he might consider in the future. The other farmer stated that they did not see it as necessary for their system.

Neighbours have built one and they do use it. Never went down that road in the end. Took over new property and all capital went into that. Spending money where getting best benefit and spent money on concrete around the cow shed. Still keen on it. Still would like to do it but spent money to buy new farm and improving facilities for staff.

Feed pads – wasn't necessary because we were feeding palm kernel with trailers. We are more looking at in the shed feeding. Fairly free draining – so less pugging.

The one farmer who was recommended to put in a stand off pad had not done so due to the costs involved.

In the future when money is available might look at doing it. But it needs proper construction. We are looking into it and considering it in the next year or two.

One farmer had started fencing and riparian planting but reported the cost and lack of incentive funding, as being a barrier. He stated that if the funding was reinstated he would apply again.

Have cleaned some streams out and planted them out with flaxes and ti trees. Did that before [ICM staff] came – had applied for a Clean Stream [incentive], but then time had run out for that, then grants stopped. Only doing a bit at a time. Have fenced the streams off. If the trees were available – it's all down to cost. Been a costly year – gave up milking early. If they reinstated the grants then I would apply again.

Some actions were planned, but had not been completed yet due to timing. For example, one farmer had not measured effluent application as they were not milking so he had nothing to measure yet, but he planned to do it once milking started again.

I'm intending to do it once I start milking again.

Another farmer , had had to get someone in to cut a tree down before he could take the next step of enlarging his sand trap.

Sand trap –[recommended to put a bigger one in] – plan to do it sometime this season to get someone in to do it. It was something that had been thinking about doing anyway – need to get a tree cut down before I can do it. Plan to do it this season.

As was noted in the previous section, external factors such as weather conditions have affected farmers' abilities to sustain some of the actions suggested. This was particularly true for the application of winter N, however it could also apply to a number of on-going activities, for example around fertiliser use and application, which may need to be evaluated through other means than the self-reports given here.

3.3.5 Opinions of Farm Plans

Farmers were asked for their opinion of their Farm Plan and its usefulness. Overall views of Farm Plans were positive. For some farmers the plan was 'confirmation' that they were 'on the right track' while for others it was useful as it raised their awareness, highlighted any areas of concern, and showed them how they could improve their farming systems to address nutrient issues. No farmers stated that there were parts of the farm plan that were not useful. This suggests that farmers are satisfied with the plans and feel they are tailored and relevant to their farm context. However, there are farmers who are choosing not to implement some recommendations.

Confirmation. That we were doing a good job. Somebody outside, who had nothing to do with our business, who could look at it objectively, has the programme, has seen other properties and could give us that objective view.

Looking at what we were doing not right and improving on those. All the little things. We were lucky – this farm was well set up, but needed tweaking and improved it across the board.

Another farmer stated that he was applying the information in his Farm Plan to his farming operations in other areas both within and outside regional Environment Waikato boundaries. He discussed how an issue was identified by ICM staff on one farm. He took the initiative to check his other farms and had implemented the same changes before the ICM staff visited those farms. He also introduced the same change to other farms in other regions.

We had the same sand trap issue on [another] farm – fixed that in same way [before ICM staff had visited that farm]. Have already implemented [this action] on the other two farms – did it on all our farms. Doing it on [farms outside of EW boundaries] now too.

3.3.6 FARMER CHANGES IN KNOWLEDGE

Farmers were asked "since doing a Farm Plan do you think you know more about managing nutrient losses on your farm? " Sixteen (84%) of the 19 farmers who had Farm Plans agreed that their knowledge of nutrient losses on farm had increased as a result of the ICM project. When asked what specific knowledge they had gained farmers mentioned some specific areas of knowledge (e.g. the impact of 'hot spots' or learning about their soil structure) while others talked more generally (e.g. the over use of nitrogen).

The overuse of N – don't use it much anyway – [ICM staff] made me aware that we had got into the habit of putting it on.

Talked about P losses with [ICM staff] quite a bit…. The soil structure was really useful – he did some profiles – found lots of worms – it was good for us – a pat on the back that we're not doing too bad.

The three (17%) farmers who stated that their knowledge was 'no different than before' noted that this was because they were already aware of nutrient management issues; that is it was an interest area for them and one that they had taken into account in their farm system.

I'd like to say that there were things that were really good and it motivated me; to say things were different but I was already doing it. I had a farm soil scientist adviser, had Summit Quinphos, water management and effluent management was right up there. Had already fenced everything off. Only put on N if I have to. Always been a back to nature person.

One farmer who stated that they had not increased their knowledge, however, continued on to say:

But it's [the farm plan] made us aware that we were doing it anyway. We didn't realise how good a job we were doing. We knew we were doing our best – do reading and study to keep up and fencing off the bits and pieces we could. Didn't realise how successful we'd been because nothing to measure yourself against. The plan showed us how successful we've been. This programme quantified it for us.

3.3.7 OTHER SOURCES OF INFORMATION

Thirteen (72%) farmers had received information from sources other than Environment Waikato, about nutrient management issues on farm. Sources reported were mostly fertiliser representatives, with one reporting a farm advisor, and two reporting other industry sources (e.g. DairyNZ, Fonterra). One farmer noted that the information was 'consistent'.

> *Information is coming from a range of sources – Fonterra and farming papers, not just Environment Waikato. Information is consistent across the board, supports each other.*

3.4 COMMUNICATION

3.4.1 COMMUNICATION METHODS

Of the 18 farmers interviewed, 17 had received phone calls and emails from ICM staff, 16 recalled receiving a newsletter and 13 had seen media articles either in farming publications (for example, Dairy NZ, Dairy Exporter), from Environment Waikato, or other newspapers (e.g. Waikato Times).

Some farmers also wanted the media to highlight the positive things that farmers were, and one considered that this could be something that Environment Waikato could promote.

> *You get bad media about what farmers do – not enough given to owners who have made a point of doing well. … What about all the farmers that do it right – the positive stuff isn't anywhere. If I was going to say they [Environment Waikato] could do more: get out the positive news. That would go a long way to building relationships too [between farmers and Environment Waikato] because it would be Environment Waikato complimenting people.*

Most of those who had received the newsletters reported that it kept them up to date about the project, and also gave them some insight into the direction that Environment Waikato was heading, and this was valued.

> *[Newsletter has] been good. [Why?] The general awareness it creates among farmers. Keeping the issue in front of us and keep us aware of where we need to be in years to come.*

> *Good. Always thumb through and see what they are up to and what they are working on.*

When asked to comment on the best method for keeping them informed, most (15) preferred the newsletter.

3.4.2 FIELD DAYS

Of the 18 farmers who were interviewed, 11 (61%) had attended at least one field day, and seven (38%) had not.

Reasons farmers gave for attending field days were because they were interested in the specific topic being presented, wanted to see what other farmers were doing or because they were hosting the day.

> *More of an interest to see what's happening – where they (Environment Waikato) are getting to with the project; Quite interesting – to look at what others are doing.*

> *Went because it was run on effluent management. It was on effluent mgmt and I wanted to see what other farms were doing and check that what we were doing was right.*

Reasons farmers gave for not attending were unavailable or busy with work commitments, and/or uninterested in the topic being presented.

> *Had other commitments to go to, and trying to get work finished.*

4.0 Concluding Comments and Recommendations

The findings from the interviews indicate that the ICM project continues to be well received in the catchment, and farmers' opinions about EW are more positive as a result of interacting with ICM staff.

Fifty seven out of the 105 farms have engaged in the project so far, with 49 having completed Farm Plans. This is an increase of 20 (69%) in the past twelve months from the 29 completed plans reported in June 2009. The coverage of the project by land area is 51% (Little Waipa) and 44% (Waipapa).

Findings show that farmers are making changes on farm as a result of the project, with 42% of suggested actions being completed. A further 30% had been started by farmers prior to the plan and were continuing or completed, and another 5% had been started but were not yet completed. These figures indicate that the LTP target of at least 50% has been achieved.

Consistent with previous evaluations changes they are most likely to make are those that are easy to implement, affordable and have a financial or other benefit. The ICM project has been a key factor in encouraging action uptake.

Barriers to change include the financial outlay, belief that an action will adversely affect productivity and lack of proof that a particular action or piece of technology will work. Overall satisfaction with the project, the staff and with Environment Waikato is high, although there is some indication that farmers are unsure as to the future of the project.

The ICM project is a voluntary project which seeks to educate farmers about the regional plan rules, ensure compliance, create awareness and lift knowledge of nutrient management, offer advice and guidance on changing farm systems for compliance and on nutrient management by providing a Farm Plan, and increase the confidence of farmers around changing practices. These services are designed to increase the rate of adoption of best practices by assisting farmers to reach decisions more quickly and bring about action. However, given the uncertainty of policy direction farmers are unlikely to adopt changes that will be costly or radically change their farm systems as the results of this evaluation demonstrate, with recommendations needing capital outlays and system changes not adopted.

This evaluation relies on self-reports of uptake of actions and thus cannot comment on the nutrient efficiencies gained by the farmers interviewed. A fuller assessment of nutrient efficiency gains should be part of the ongoing project.

The findings complement the assessment made through the 2009 evaluation that the voluntary nature of this project does not secure permanent nutrient efficiency gains. While most farmers interviewed had not made changes to their farm system and reported their Farm Plans was still relevant, this evaluation shows that for actions that are re-occurring (e.g. fertiliser application) some farmers varied from the recommended practice due to external factors.

In addition, it is likely as the project progresses that farm systems will change, or farms will change hands, which means that plans will need to be revised and change tracked over time.

RECOMMENDATIONS

The evaluation highlights the need, to more accurately track progress in actions over time. This evaluation has utilised self-reporting as a measure of uptake. Future evaluations should include:

- Repeat visits to confirm the uptake of actions, and track progress through repeat Overseer modeling.
- Repeat visits to confirm that the Farm Plan is still relevant to the farming system.

There is a continuing need for this project to be communicated to its participants; the preferred method of communication being the newsletter.

There is a need to ensure that ICM project staff continue to deliver high quality, relevant, nutrient management advice and stay current with research into this area providing a credible source of knowledge for the participants.

REFERENCES

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APPENDIX 1: ACTIONS UNDERTAKEN AND FARMERS' REASONS FOR UPTAKE

TABLE 5: ACTIONS UNDERTAKEN AND FARMERS' REASONS FOR UPTAKE

Action	Reasons / Benefits	Example of Farmer Comments
Stop using Urea N in winter	ICM project Already started it Compliance Environmental	*Made a conscious effort to do this (because of the plan).* *…I would have used routinely prior to the plan. Now only use it if there are circumstances that require it.* *In terms of cost return – it's relatively cost neutral. Benefits - it's the good stewardship and obeying our governors. Cost neutral - reducing some cash going out but it affects our production.*
Increase effluent area	Productivity Financial Environmental focus ICM project Compliance	*I can spread it [effluent] to less fertile areas.* *(benefits) The first thing it was an economic thing (buying less fertiliser), and then efficient nutrient management and environmental impact.* *We were going to do anyway but there was a bit more impetus from [ICM staff]; it tipped the scales.* *Stay out of trouble with EW.* *Saving money in the long run – not having to put so much fertiliser on. Grow more grass through the season.* *Lower risk of non compliance. Will hopefully get bigger bang for buck in nutrients going onto the land. Improved water quality.*
Stop using N on effluent area	ICM project Already started it	*Don't put it on there now. Was a result of the plan. It hasn't affected any pasture growth – just have to be regular with effluent application.* *Already doing it.*
Lower N use to within safe ranges	Financial Environmental focus ICM project Compliance Already started it	*Financially not as much of a cost. Other than that – I suppose just trying to be prudent with it – do it at optimum times. Just being more conscious of it environmentally, and not doing areas we don't need to so – for example, gateways. More conscious of it through Environment Waikato's [ICM] involvement.* *Want to be within regulations. Dropped N inputs by 1/3. Urea use dropped from 300 to 200k.*

Action	Reasons / Benefits	Example of Farmer Comments
Assess or put in new effluent storage system	Compliance Productivity ICM project Farm specific benefit (less work) Environment	*Not getting in trouble with EW. Better use of the effluent.* *Had it in mind and it was written into the plan. (Benefits) It reduces a job during the busy period and makes it easier – we don't have to irrigate the effluent onto the pastures when we have had heavy rain. Reduce fertiliser use.* *We have put in a lined storage pond (for one shed) and are putting in another one (for the other shed) and retiring the unlined ones. The first change in terms of the rotary shed was because of non compliance. The herringbone – future proof our infrastructure there. We want to hold our head up – with our owners re: the impact on environment.*
Use riparian fencing and planting	Already started Aesthetic Environmental Financial ICM project ncentive (funding)	*Already fenced. He wanted us to plant it – but it's a real time issue – (3ha) – planting and looking after it. (Benefits) It's cosmetic. Good for the river and that.* *Have been planting out the riparian areas so they won't be able to be grazed. (Benefits) Aesthetic. Timber production.* *Have completed that now. In the last two years. We were working away at and we had made a start and have now continued. Had embarked on and would like to follow through however [this plan] highlighted the importance. Part of clean streams and received funding through them. (Benefits) In a monetary way – no benefits – there's quite a bit of extra work in fencing and planting trees then spraying weeds etc. No direct monetary benefit – if you wanted to sell your property it may make it more attractive. Done it to try and produce the buffer area to keep the stock out, and be more environmental.* *Had a fencing subsidy. Planted last winter – have planted over 600 trees. They are in the ground and fenced properly.*
Increase wintering off	Financial Environmental	*Increased that. It's a stupid recommendation though because it's still in the catchment – in the big picture – it just shifts it somewhere else. Just gave it somebody else. If we'd sent them to Rotorua then it would have just moved the problem to Rotorua. … [Benefit] It's just feed source. Reduces the N being dumped on the farm.*
Deal with hot spots	ICM project Already started	*Sand trap - put a bigger one in – plan to do it sometime this season to get someone in to do it. Was something that had been thinking about doing anyway – need to get a tree cut down before I can do it. Plan to do it this season.* *[ICM staff] was concerned while it [effluent] was sitting on ground, it was leaching, so we did a short term solution – put it on the calf shavings, soak it up, then spread it. Then long term will be concrete storage. Plus [ICM staff] pointed out that the bare hillside on [farm] would eventually not need it, so needed to bear that in mind and have process for spreading it further.*

Action	Reasons / Benefits	Example of Farmer Comments
Plant out steep/low producing slopes in trees	Incentive Farm specific benefit (reducing erosion)	*Had a fencing subsidy. Planted last winter – have planted over 600 trees. They are in the ground and fenced properly.* *Gully erosion and re-fencing - work in progress – prioritising.*
Fence off springs on farm or using managed grazing in these areas	ICM project Already started it Environmental Aesthetics Farm specific benefit (stock management, reducing erosion)	*Was really doing it before. If it looked too wet –mainly to do with run off. Have a small stream that is there when it rains. So, was doing it before but the plan highlighted the importance for me. [Benefit] Not for me. Benefit is no rubbish going into rivers, so benefits all of us.* *Don't think there's any real benefit other than won't pug. Mostly environmental.* *Long term- save a few cows getting stuck in the wet patch. Amenities – improves the look of the farm. Don't get a lot of benefit from grazing the wet areas anyway.* *Good Stewardship. Lower productive areas fenced off and retired and hopefully able to better manage the livestock.* *Fencing waterways - done that. The plan was one of the pieces of information we got. In terms of the [farm owners] – we have taken quite an environmental bent in the last couple of years and that philosophy has been generated from different sources. So we took (from those sources) what would fit with our system. The drivers are wanting us to do the environmental bent. [Drivers?] The whole issue around waterway quality and protection, the Maori word for looking after the land, and the global climate change. We are looking at the longer term and being in a position to do something about it – financially.* *Benefits were stopping erosion and keeping tracks. Looks better too. Conversions been done in the past few years and owner wanted to do things right – worked with someone in EW about what he should and shouldn't do right from the start. Anything that's too steep – he left in trees or took the trees off and letting natives grow back – 4.5thousand ha of land and only 2.5thousand ha in grass. All waterways – creeks – been fenced off so no access to cows. All that sort of stuff was done from start so [ICM staff] was saying 'oh that's good, you've done that.*
Lower stocking rate	ICM project Environmental	*It tied with our thinking. The plan. (Benefits) Can probably do the same production by feeding them better and there's less effluent coming out.*
Grow maize on effluent block	Already started it	*We make supplement on the effluent area and feed out – do it anyway and always done that – put it back into the cows.*

Action	Reasons / Benefits	Example of Farmer Comments
Update / regularly test soil fertility	Already started Financial	*Do soil tests every year and then only put on what's needed. It's (fertiliser) a big cost so why not?*
Measure effluent application depth	Environmental ICM Project	*To help Environment Waikato. We can't see a benefit to us because we can't spread it any further because if we have our effluent sprinkler going full, we still aren't using the full area. We have the system to spread it further but not the amount of effluent. So they want us to measure it to see how much we actually do produce so we can work it out.* *I want to do it to see what nutrients are being put on. I had been going to get it tested (had considered doing this prior to [ICM staff] visit but had not thought to measure the depth as well).*
Test effluent nutrient status to understand yearly application rates	Already started (planned)	*I want to do it to see what nutrients are being put on. I had been going to get it tested.*
Mine Olsen Ps	Financial Already started	*A lot (of the reason for doing it) is the price of fertiliser, now it's a big cost I guess. (benefit) saving money.* *Do that already*
DO VSAs to test soil health	ICM project	*Check for clover nodules - I do a soil assessments three times a year anyway (but not checking clover for nodules) Will do it in spring when clover grows.*
Create cut off's on tracks and races to allow sediment to flow to paddocks	ICM project	*Get water off the race –keep cutouts open - otherwise it runs down the race and runoffs - have a stream on the farm. The cut outs needed cleaning when [ICM staff] was here. I hadn't done it for a while – but was something that had been doing.*
Create water detention structures in paddock/	On farm benefit (erosion) Aesthetics ICM project	*(Benefits) Problem was causing – erosion (soil) and would also it would take the tracks away eventually .So benefits were stopping erosion and keeping tracks. Looks better too.*

APPENDIX 2: INTERVIEW SCHEDULE

Evaluation of Environment Waikato's
Integrated Catchment Management (ICM) Pilot
Farmers' Interview Schedule
June 2010

My name is _____ from Momentum Research and Evaluation. I am calling on behalf of Environment Waikato has asked me to get some feedback about the nutrient management project they've been running in your catchment. Ross Abercrombie, Paul Smith and Don Harford are the staff you may have had contact with for the project.

I am ringing to see if you would be willing to participate in a brief phone interview to answer some questions about the project and your experience of it.

The interview takes about 20 minutes.

Would this be a good time for you? (*or can I call you back at a more convenient time*?)

That's great. Thank you. Just to let you know that what you tell me is confidential. We are talking to a number of farmers that Environment Waikato has been working with. The information from all the farmers will be put together and fed back to Environment Waikato in the form of a brief report. Environment Waikato is aware of who is involved in the project, but will not know who I have interviewed.

In saying this, this is an opportunity to have your say, if you feel strongly about anything to do with this project it's important that they know so this can be reported back. It is likely that lessons learnt from this approach may be taken in other catchments, and for this reason Environment Waikato would like open and honest feedback.

Name of interviewee:	
Position:	
Catchment Area	
Additional Information (e.g. Farm type)	
Name of interviewer:	
Name of note-taker:	
Additional Information:	
Interview date:	
Interview time:	
Phone number	

Part A: Farm system

The first questions are about your farm and the Farm Plan that Environment Waikato prepared about your farm.

1. Firstly, would you describe your farm system as low input, moderate or high input?

Low input	Moderate input	High input

2. (If low input) are you all grass-based (if yes tick 1) or do you import some feed? (If some feed) is that less than 14%? (if yes, tick 2).

   (If moderate or high input) do you use the DairyNZ system categorization? *If no, use the table to explain what the different systems (3-5) are and get them to tell you which their farm is. Some will be able to tell you what system they are and some you just need to explain the different categories.*

DairyBase (DairyNZ) – Production System categorization	**Tick one**
System 1 – No supplement fed to the herd except supplement harvested off the effective. **All grass** self-contained, **all cows on dairy platform** for the year, **no imported feed.**	
System 2 - Feed imported for dry cows, or cows grazed off milking area and **no grazing off the effective milking area**. **Approximately 4 - 14% of total feed** is imported	
System 3 - **Feed imported to extend lactation** (typically autumn) and for dry cows. **Approximately 10-20%** of total feed is imported. Farms feeding 1 to 2kg of meal or grain/day for most of the season might best fit in System 3.	
System 4 - **Feed imported to extend both ends** Approx 20% to 30% of total feed is imported.	
System 5 - **Imported feed used all year.** Approximately 20 - of total feed is imported. Imported feed is used all year, throughout lactation & for dry cows. Approximately **25 – 40%** (but can be up to 55%) of total feed is imported.	

3. When did you receive your Farm Plan from Environment Waikato?

Within the past year (July 09 –10)	1-2 years ago (July 08 – June 09)	2-3 years ago (July 07 –June 08)

4. Have you made any changes to your farm or farm system since the plan was prepared?

Yes	No

4a If yes, what? (e.g. intensified, expanded...)

5. Have you reviewed or updated your Farm Plan since it was first prepared?

Yes	No

6. Do you consider your Farm Plan is still relevant to your system?

Yes	No

5a If no, why?

Part B: Farm plan

The next few questions are about the Farm Plan that EW prepared about your farm. We would like to get some feedback about the kinds of actions that the farm plan suggested for your farm and whether you have done these or are considering them.

7. What actions did the Farm Plan suggest for your farm? (*Note in table with a x) or if they can't remember – use table or notes from the interview log to prompt)*

8. Have you undertaken these actions? (*use the probes to get specifics on what they have and have not done, why and when, and the benefits of each and record in the table)*

Probes
Done – Why did you decide to do _____? Would you have done this or considered this without the input of the Farm Plan? How long did it take to get this in place?
Intending – When are you planning to do this? Why are you waiting to do _____? Is there anything that would encourage you to do this sooner?
Not doing – why have you decided not to do _____? Is there anything that would encourage you to do this?
Benefits - Thinking about the things that you have done, what has been the benefit, for you of ...? (match the benefits they are reporting to the action they have undertaken)

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Actions	In Plan		Undertaken Actions			Why?	Benefits
	Yes	No	Done	Intending To do	Not going to do		
Increase effluent area							
Stop using N on effluent area							
Measure effluent application depth to understand application.							
Test effluent nutrient status to understand yearly application rates – size of effluent area needed.							
Stop using Urea N in winter months							
Avoiding applying fertiliser in adverse weather (wet/dry)							
Assess putting in a feed pad							
Assess putting in a standoff pad							
For unsealed feedpads – seal these (*to bring farm into compliance with rule)*							
If discharging effluent to water under consent - then assess land application							

Assess or put in effluent storage to allow effluent storage in wet periods							
Actions	**In Plan**		**Undertaken Actions**			**Why?**	**Benefits**
	Yes	**No**	**Done**	**Intending To do**	**Not going to do**		
Lower N use to within safe ranges (depends on farm system but max shld be 200kg but agronomically up to 150kgN sensible)							
Assess use of or increase maize (winter crop) to balance diet and decrease Urea use							
Grow a maize crop on your effluent area to harvest nutrient build up – and feed out this on other blocks on farm to spread fertility							
Use riparian fencing and planting							
Enhance any wetland areas							
Fence off springs on farm or using managed grazing in these areas (only graze when dry)							
Plant out steep/low producing slopes in trees - afforestation for carbon and nutrients							
Update and regularly test soil fertility in conjunction with your fert rep							

Use VSA to assess soil health							
Mine soil fertility (Olsen P's) to lower to within agronomic optimum (20-30 on ash, 35-45 on pumice)							
Actions	**In Plan**		**Undertaken Actions**			**Why?**	**Benefits**
	Yes	**No**	**Done**	**Intending To do**	**Not going to do**		
Use low impact cropping practices – less cultivation, low tillage, spray and undersow crops							
Create cut off's on tracks and races to allow sediment to flow to paddocks (filter out) prior to entering water – for P							
Create water detention structures in paddock/on raceways to decrease sediment flows to water							
Avoid winter pugging in paddocks (minimising P runoff)							
Assess wintering off cows outside of catchment							
Assess the use of DCD (nitrification inhibitors)							
Ensure any hot spots are dealt with - silage stacks/diesel tanks/ sand trap piles etc							

Other (detail)							

9. Has the Farm Plan increased your knowledge about managing nutrient losses on your farm?

Yes	No
x	

9a. If yes, What do you know now that you did not before?

10. What was most useful about the Farm Plan?

11. What was least useful about it?

12. Since being involved with this project do you have a better understanding of Environment Waikato's concerns about nutrient management issues on farm or is it no different than before?

No different than before	Increased

13. In your own words what do you think that Environment Waikato's concerns are about nutrient management issues on farm?

Part C: Involvement with the project

Communication

The next questions are about the ways that Environment Waikato has communicated with you.

14. Have you had phone / email contact from the staff?
Received newsletters?
Seen any newspaper or media articles?

	Yes	No
Phone / email contact with staff		
Newsletters		
Media articles		

14a. If yes (to media articles), can you remember where you saw them?

14b. If yes (to newsletters) How useful have you found the newsletters, and why?

14c. What is the best way for EW to keep you up to date?

Phone	
Email	
Newsletter	

Field Days

15. Have you attended any of the Field Days that have been organised?

Yes	No

15a. If yes or no, Why did you attend (or not attend)?

15b. If yes, How useful did you find the field day(s) that you attended, and why?

16. Have you sought information elsewhere (i.e. not from EW) about nutrient management?

Yes	No

16a. If yes, where?

Part D: Opinion of EW and ICM

17. If you have made any requests of Environment Waikato staff on this project have they followed them up?

Yes	No	Have not made any

18. Overall, on a scale from very poor to excellent, how would you rank your relationship with Environment Waikato in general?

Very poor	Poor	Okay	Good	Excellent

19. Has the relationship always been like this? Has this altered b/c of the project?

20. Overall, how satisfied have you been with the project?

Very unsatisfied	Unsatisfied	Neither	Satisfied	Very satisfied

21. Why? **Probes:** *What works well? What doesn't work well? What else could they do?*

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22. Any further comments?

Thank you very much for your time and participation. Please feel free to contact me Ruth Hungerford (856 8292) if you have any queries.