



**Dairying and Clean Streams Accord
Regional Action Plan for Taranaki
Annual Report
2007/2008**

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Executive summary

This report reviews the Taranaki region's performance and achievement in meeting the targets of the Dairying & Clean Streams Accord, as set out in the Regional Action Plan for Taranaki, in the 2007/2008 year.

The preparation of the report is an action set out in the Regional Action Plan for Taranaki. The Taranaki Regional Council agreed from 2005 onwards to report to Fonterra and the Taranaki community on an annual basis on the targets of the Regional Action Plan for Taranaki (the Plan).

The Dairying and Clean Streams Accord is part of a range of activities to promote sustainable dairying farming in New Zealand. It focuses on reducing the impacts of dairying on the quality of New Zealand streams, rivers, lakes, ground water and wetlands to achieve clean and healthy water.

The Plan adapts the actions outlined in the Dairying and Clean Streams Accord to Taranaki conditions. The Regional Action Plan for Taranaki was prepared by local representatives of the Fonterra Co-operative Group, Federated Farmers, and the Taranaki Regional Council.

In total 1,347 property plans have been prepared, representing 72% of the total dairy farms in the region. Annual monitoring of works completed is conducted onsite by land management staff of the Taranaki Regional Council. In addition, all properties were inspected to monitor dairy shed discharge permit compliance. Set out below is a summary of Taranaki's progress against the targets of the Regional Action Plan for Taranaki over the 2007/2008 period:

- 72% of Taranaki dairy farms have a property plan [Taranaki target: 90% of dairy farms are to have a property plan by 2010].
- 61%* of streambank is protected by fencing. Of that protection, 56% consists of fencing that was already in place (existing) at the time of preparing the property plans, 5% consists of new work completed on dairy farms [Taranaki target: 50% of property plans are to be implemented by 2010, 90% by 2015].
- 56%* of streambank is protected by planting and vegetation. Of that protection, 52% consists of vegetation that was already in place (existing) at the time of preparing the property plans, 4% consists of new work completed on dairy farms [Taranaki target: 50% of property plans are to be implemented by 2010, 90% by 2015].
- 97%* of all regular stream crossings points at the regional level are adequately bridged or culverted [Taranaki target: 50% of regular crossing points are to have bridges or culverts by 2007, 90% by 2015].
- 100% of dairy farms in Taranaki have a farm dairy effluent discharge consent that complies with the Taranaki Regional Fresh Water Plan [Taranaki target: 100% of dairy farms to have a consent that complies with regional plan by 2004].

* The sample size of 72% of dairy farms should be representative of regional conditions.

- 76% of regionally significant wetlands are fenced [Taranaki target: 60% of regionally significant wetlands are to be fenced by 2005, 90% by 2010].
- 99.1% of dairy farms in Taranaki have a nutrient budget in place [Taranaki target: Fonterra to have 100% of dairy farms with systems in place to manage nutrient inputs and outputs by 31 December 2007].

Overall, the Accord partners and the Taranaki dairy farming community should be satisfied with the progress made to date on most of the targets set out in the Regional Action Plan for Taranaki.

However, an issue that continues to exist is the slow pace of property plan implementation. Whilst the target for 2010 has been met, this is largely due to existing fencing and planting carried out pre-Accord. If plan implementation continues at its current rate the implementation target for 2015 will not be met. The Taranaki Regional Council has continued to make adjustments to its approach to promote wider and faster implementation. However, if the 2015 implementation target is to be met, other Accord partners and ultimately dairy farmers will need to apply more effort to physical works.

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1 Introduction

1.1 Purpose

The purpose of this report is to review the Taranaki region's performance and achievements in meeting the targets of the Dairying & Clean Stream Accord, set out in the Regional Action Plan for Taranaki, over the 2007/2008 year.

The report is an action set out in the Regional Action Plan for Taranaki. The Taranaki Regional Council has agreed from 2005 onwards to report to the Fonterra Co-operative Group and the Taranaki Community on an annual basis on the targets of the Regional Action Plan.

1.2 Background

The purpose of the Dairying and Clean Stream Accord [the Accord] is to promote sustainable dairy farming in New Zealand. It focuses on reducing the impacts of dairying on the quality of New Zealand streams, rivers, lakes, ground water and wetlands.

The Accord is an agreement between Fonterra Co-operative Group [Fonterra], regional councils, unitary authorities, the Ministry for the Environment, and the Ministry of Agriculture and Forestry to work together to achieve clean healthy water in dairying areas. The goal is to have water that is suitable, where appropriate, for fish, stock water and swimming (in areas defined by regional councils).

The six priorities for actions outlined in the Accord are:

- the exclusion of dairy cattle from streams, rivers and lakes and their banks;
- farm races are to include bridges or culverts where stock regularly cross a watercourse;
- that farm dairy effluent is appropriately treated and discharged;
- that nutrients are managed effectively to minimize losses to ground and surface waters;
- regionally significant wetlands are to be fenced and their natural water regimes are protected; and
- Fonterra and regional councils develop regional action plans to implement the Accord by June 2004.

1.2.1 Regional Action Plan for Taranaki

The Taranaki Regional Council has agreed to report to Fonterra and the Taranaki Community at an aggregated regional level on the following:

- Number of farms with a riparian property plan and the implementation of such plans;
- Percentage of regular crossings with bridges or culverts;
- Farm dairy effluent discharge compliance with the Regional Fresh Water Plan for Taranaki; and
- Protection of regionally significant and important wetlands.

Fonterra has agreed not to collect Accord-related information from Taranaki dairy farmers that the Taranaki Regional Council is to collect as part of the Regional Action Plan. This approach is to ensure that there is no duplication in information collection and reporting. Fonterra make an annual contribution to the Taranaki Regional Council for its Accord related work.

From 2010 reporting will also be done at the individual property level.

1.2.2 Data collection and sources

The information for this report has been collected by the Taranaki Regional Council through the development and monitoring of property plans, the monitoring of consents and other sources of information as follows:

- Individual property plans are prepared from a GIS database framework with all measurements of lengths and areas completed to $\pm 5\%$. Information is then collected during the year on plan implementation (mainly on fencing and planting streambanks and stream crossing structures).
- Monitoring of consent compliance for dairy shed wastewater was undertaken with specified monitoring procedures on 100% of dairy farms.
- Wetland protection information was obtained from ongoing site visits/monitoring conducted by officers of the Taranaki Regional Council to identify the status and protection requirements of the wetlands.
- Information on nutrient budgets was obtained from Fonterra.






Note: a glossary is provided on page 31 of the report outlining the meaning of the terms noted above, such as monitoring, and also includes an interpretation of the following terms: reporting period, sample size, and the total length of stream bank protected by fencing and planting.





2 Report on progress 2007/2008

2.1 At a glance

Progress on the Accord targets is summarised in Table 1. A detailed overview of the targets follows throughout section two of the report.

Table 1: Progress on Accord Targets

	2004/2005	2005/2006	2006/2007	2007/2008	Target	Are we on track?
% of dairy farms that have a property plan	34%	49%	62%	72%	90% of dairy farms to have a property plan by 2010	
% of streambank protected by fencing on all property plans prepared	56%	49%	52%	61%	50% of property plans to be implemented by 2010	
- % of streambank protected by existing fencing	54%	46%	49%	56%	90% by 2015	
- % of streambank protected by new fencing	2%	3%	3%	5%		
% of streambank protected by planting & vegetation on all property plans prepared	39%	42%	46%	56%	50% of property plans to be implemented by 2010	
- % of streambank protected by existing vegetation	37%	39%	43%	52%	90% by 2015	
- % of streambank protected by new planting	2%	3%	3%	4%		

% of regular crossings with bridges or culverts	96% ¹	97%	93%	97% ²	50% of regular crossing points are to have bridges or culverts by 2007, 90% by 2015	
% of dairy farms that have a effluent discharge consent that complies with the Fresh Water Plan	99.90%	99.95%	100%	100%	100% of dairy farms to have a consent that complies with regional plans by 2004	
% of regionally significant wetlands fenced	64%	74%	79%	76%	60% of regionally significant wetlands are to be fenced by 2005, 90% by 2010	
% of farms with nutrient budget in place (Fonterra data)	22%	39%	65%	99.1%	Fonterra to have 100% of dairy farms with systems in place by 2007	

¹ Of the 750 dairy farms specifically monitored for bridge and culvert status 96% of regular crossing points are adequately bridged and/or culverted.

² Of the 1,347 riparian farm plans prepared 97% of regular crossing points are adequately bridged and/or culverted.

2.2 Exclusion of stock from water bodies

ACCORD TARGET - Dairy cattle excluded from streams, rivers and lakes



TARANAKI TARGET - Dairy farms to have a property plan



PROGRESS June 2008 - 72%

TARANAKI TARGET - Property plans to be implemented



PROGRESS Fencing 2008 - 61%

PROGRESS Planting* 2008 - 56%

Implementation

The Taranaki Regional Council has been working with landowners to develop property plans since the conception of the riparian management programme in 1993. This has been a voluntary programme for landowners.

Part of a typical plan is shown in Appendix I.

To date 1,347 property plans have been prepared out of a total of 1,868 dairy farms in Taranaki³ which is 72% of all dairy farms in Taranaki. This represents an increase of 10% from that recorded in 2007/2008 – refer to Figure 1.

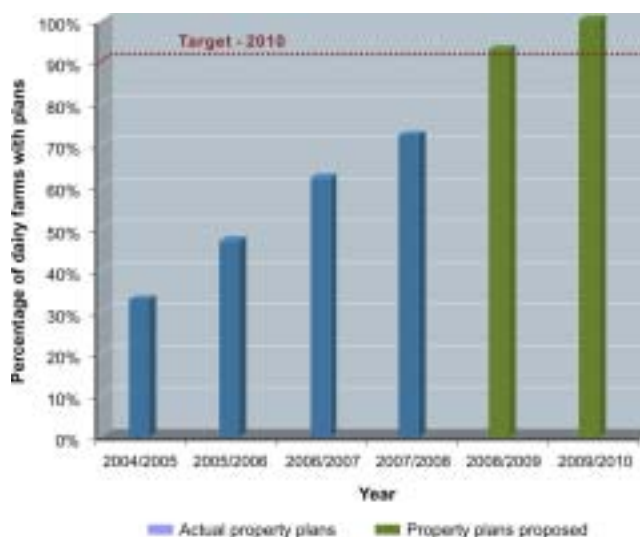


Figure 1: Percentage of total property plan out of total dairy farms & proposed plans 2004/2005 – 2009/2010

³ Note: the total number of dairy farms includes some dairy farms that are non-Fonterra suppliers (i.e. some organic suppliers) and all farms with current dairy discharge consents in Taranaki, as recorded in the consents database of the Taranaki Regional Council, for the 2007/2008 year. The number of dairy farms in Taranaki is not static due to farm amalgamations and land use changes.

*Planting = existing vegetation and planting.

Approximately 118,536 hectares of dairy farming land has been covered by the plans prepared.

A map of all the plans prepared on dairy farms to 30 June 2008 and their year of implementation is shown in Appendix II.

Of the 1,347 property plans prepared, a total of 5,200 kilometres of streambank is fenced, with a total of 3,570 kilometres protected by planting and vegetation.

A total of 3,333 kilometres of fencing is proposed [unfenced], whilst a total of 2,826 kilometres of planting is proposed [currently not planted/vegetated or requiring additional planting].

Therefore, of the property plans prepared, a total of 61% of the streambank is protected by fencing with a total of 56% protected by vegetation (refer to Tables 2 and 3).

The majority of protection is from fencing and vegetation that was already in place at the time of plan preparation. As at 30 June 2008, a total of 4,814 kilometres of fencing was recorded as already in place (existing) at the time of plan preparation (making up 56% of the fencing protection), with a total of 3,306 kilometres of vegetation already in place at the time of plan preparation (making up 52% of vegetation protection).

Table 2: Status of streambank fencing on Taranaki dairy farms

Kms	2004/05	2005/06	2006/07	2007/08
Existing at time of plan preparation to date	2303.91	3096	3980	4814
Completed on all property plans to date	85	175	243	386
Total fencing (protection)	2389	3271	4223	5200
Proposed fencing	1894.41	3468	3842	3333
Total recorded streambank for fencing (protected & proposed)	4283	6739	8065	8533
% of streambank protected by fencing	56%	49%	52%	61%

Table 3: Status of streambank planting/vegetation on Taranaki dairy farms

Kms	2004/05	2005/06	2006/07	2007/2008
Existing at time of plan preparation to date	1581.3	2077	2683	3306
Completed on all property plans to date	89	147	196	264
Total planting/vegetation (protection)	1670.3	2224	2879	3570
Proposed planting	2657.34	3050	3385	2826
Total recorded streambank for planting (protected & proposed)	4327.64	5274	6264	6396
% of streambank protected by planting & vegetation	39%	42%	46%	56%

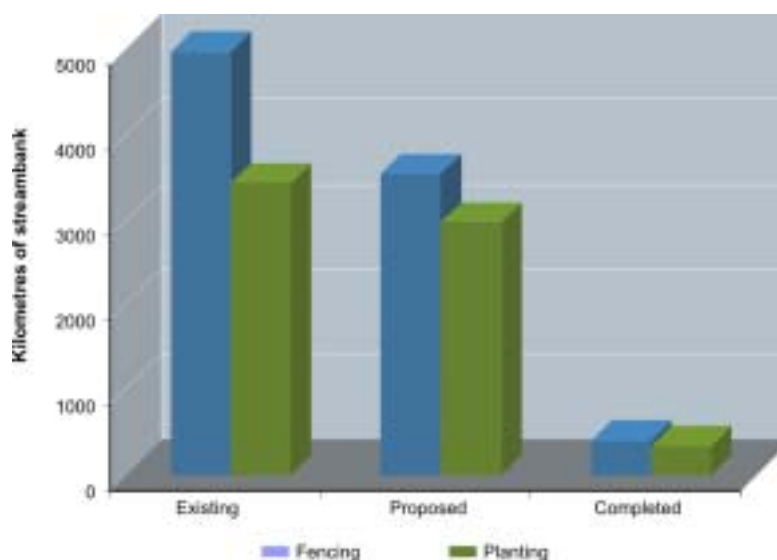


Figure 2: Status of fencing & planting in Taranaki

A total of 386 kilometres of new fencing has been completed (making up 5% of the fencing protection), whilst a total of 264 kilometres of planting has been carried out (making up 4% of the planting/vegetation protection).

Rate of implementation

Whilst the rate of implementation by Taranaki dairy farmers of new fencing and planting has been slow, the 2010 target of 50% streambank protection has been met, thanks to the work carried out on Taranaki dairy farms pre-Accord.

However, the Taranaki dairy farming community will not be able to rely on the work carried out pre-Accord to meet the 2015 target. The rate of implementation will need to increase 10-fold [when matched against proposed fencing and planting] to meet the 2015 target.

The service

The plan preparation service is offered free of charge and supported by the Riparian Plant Scheme. The 'Riparian Plant Scheme' provides plants at cost to Taranaki Regional Council riparian plan holders.

The scheme involves the Council contracting nurseries to supply suitable native riparian planting material. By bulk purchasing these plants, the cost of the plants is reduced and the Council then passes on these savings to riparian management plan holders.

In 2007/2008, the Council supplied a total of 243,869 plants to 617 property plan holders, bringing the total number of plants supplied under these schemes since 1996 to over one million (refer to Table 4).

Table 4: Number of riparian plants supplied

1996/1997	15,656
1997/1998	25,000
1998/1999	32,630
1999/2000	51,320
2000/2001	69,400
2001/2002	92,000
2002/2003	115,000
2003/2004	95,018
2004/2005	219,000
2005/2006	150,691
2006/2007	200,038
2007/2008	243,869
Total	1,309,621

Information packages outlining all aspects of the property plan programme are available to all interested parties. In addition, Taranaki Regional Council staff attend workshops and field days to advocate the benefits of developing a property plan and to promote good riparian management.

Monitoring

The Taranaki Regional Council property plan monitoring programme has been established based on a GIS mapping system. Annual monitoring of works completed (including fencing and/or planting) is conducted onsite by land management staff of the Taranaki Regional Council. The database records the date and extent of all works completed with considerable accuracy at the farm level and by extension at aggregated levels.

Action plan

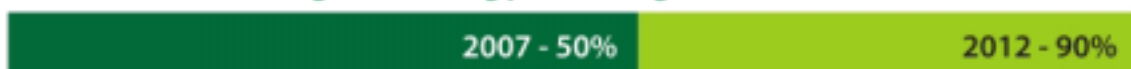
The Taranaki Regional Council will continue to provide advice and information to landowners as at present. Based on the estimated plan output per annum and the work

carried out to date, as illustrated in Figure 1, the Taranaki farming community are well on their way to achieving the target of preparing plans set for 2010.

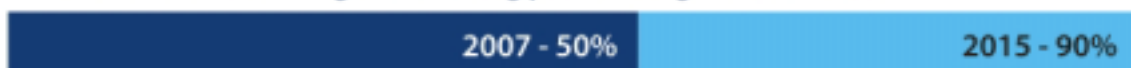
Whilst the 2010 target has been met for plan implementation, this is mainly due to existing fencing and planting, that is work carried out pre-Accord. Monitoring by the Council confirms that the implementation rate of plans is slow, as shown in Figure 2, if the implementation rate of plans continues at the same rate, Taranaki will not meet the target set for 2015. The Taranaki Regional Council cannot at this time enforce the implementation of property plans and therefore any increase in implementation will have to come from the efforts of the farming community and/or the other partners involved in the Accord.

2.3 Percentage of regular crossing with bridges or culverts

ACCORD TARGET - Regular crossing points bridged or culverted



TARANAKI TARGET - Regular crossing points bridged or culverted



PROGRESS

June 2008 - 97%

Implementation

Table 5: % of regular crossings with bridges or culverts
2004/05 – 2006/07

On-farm analysis has been carried out by the Taranaki Regional Council to identify the issues in Taranaki and the options to address the stream crossing issue during the preparation of the individual property plans.

	2004/05	2005/06	2006/07	2007/08
% of regular crossings with bridges or culverts	96%*	97%	93%	97%**

Included on each property plan are the types of existing crossings, new crossings needed and the location of the crossings.

Of the 1,347 property plans prepared, 97% of regular stream crossing points are adequately bridged and/or culverted.

An information sheet has been prepared by the Taranaki Regional Council regarding the construction of bridges and culverts for stock access purposes. The information sheet outlines smart options for stream crossings and clarifies consent requirements.

An information sheet⁴ has been prepared by the Taranaki Regional Council regarding the construction of bridges and culverts for stock access purposes. The information sheet outlines smart options for stream crossings and clarifies consent requirements.

In 2004/2005, the Council applied for and was granted support from the Ministry of Agriculture and Forestry Sustainable Farming Fund (on behalf of the Taranaki Rural Sustainability Community Group) to develop and publish guidelines for farmers

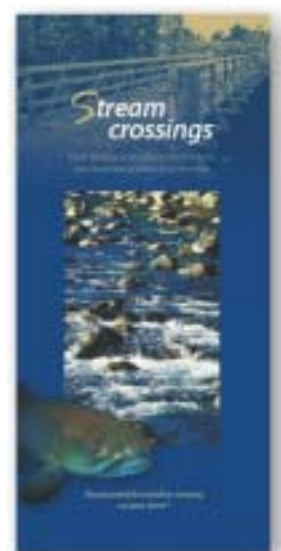


Figure 3: Guideline produced by the Council on the installation of culverts

⁴ Taranaki Regional Council 2005/2006. *Bridges and Culverts Resource Consent Information*.

*Of the 750 dairy farms specifically monitored for bridge and culvert status 96% of regular crossing points are adequately bridged and/or culverted.

**The sample size of 72% should be representative of regional conditions.

on the design, installation and maintenance of culverts so as to minimise impacts upon fish passage, bank erosion, stream bed degradation, and achieve the goal of the Dairying and Clean Streams Accord in the region. By the end of the 2004/2005 year information was being collated and assessed for application to the Taranaki region. This project was completed during the 2005/2006 year.

In addition, the Taranaki Regional Council provides resource consent advice and information in regard to the construction of bridges and culverts.

Monitoring

Stock crossings that are required are included on each property plan prepared. Each property plan is updated on an annual basis and the monitoring identifies the number of required crossings installed.

Action plan

The Taranaki dairy farming community have achieved the targets set for 2007 and 2015 and should be congratulated. The Taranaki Regional Council will continue to provide advice and information as at present to maintain delivery of the target. Based on the estimated plan output per annum and the work carried out to date, the Taranaki dairy farming community should continue to meet the target set for 2015.

2.4 Farm dairy effluent discharge compliance with plan

ACCORD TARGET - Farm dairy effluent discharges to comply with regional plan provisions

immediately - 100%

TARANAKI TARGET - Dairy farms are to have a farm dairy effluent discharge consent that complies with the regional plan

2004 - 100%

PROGRESS

June 2008 - 100%

Implementation

All dairy farms in Taranaki have a farm dairy effluent discharge consent that complies with the Regional Fresh Water Plan for Taranaki⁵.

Table 6: % of dairy farms that have an effluent discharge consent that complies with the Fresh Water Plan 2004/05 – 2007/08

	2004/05	2005/06	2006/07	2007/08
% dairy farms	99.90%	99.95%	100%	100%

The Taranaki Regional Council has in place an extensive farm dairy discharge monitoring programme⁶. The programme includes providing advice and information for all types of systems used to treat and dispose of farm dairy effluent. Such advice and information includes:

- improving existing effluent treatment systems
- effluent collection
- system selection and design
- management and maintenance
- design criteria for some systems.

Issuing, monitoring and enforcing resource consents using the latest technology, are also addressed in the programme.

Monitoring

The Taranaki Regional Council annually inspects all farm dairy effluent systems for compliance with resource consent conditions. All monitoring information is recorded in the Council's database. Appropriate enforcement action occurs where compliance is deficient. The rate of compliance with consent conditions after first inspection in 2007/2008 was 96%, down from 97.3% recorded in 2006/2007 (refer to Table 7 below).

⁵ Essentially this means that all dairy farms in Taranaki have a resource consent for the discharge and disposal of dairy effluent. The systems are then monitored for compliance with resource consent conditions.

⁶ Taranaki Regional Council, 2007. *Farm Dairy Discharge Monitoring Programme*.

Table 7: Farm dairy discharge enforcement tools used and compliance rate

Enforcement tools used	2003/04	2004/05	2005/06	2006/07	2007/08
Abatement notices	105	117	108	73	74
Infringement notices	2	4	14	11	7
Prosecutions	1	0	2	4	3
Consent non-compliance rate	5%	4.2%	4.9%	2.7%	4.1%

The overwhelming majority of dairy farmers are in compliance with their resource consents and should be congratulated. The minority in non-compliance will be monitored and appropriate action taken.

Action plan

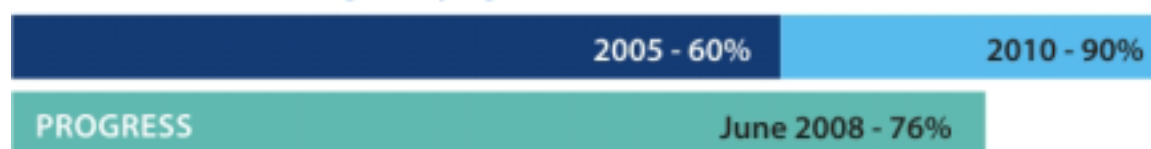
The Taranaki Regional Council will continue to offer advice and support to Taranaki dairy farmers throughout the region along with carrying out annual inspections, with necessary enforcement, to confirm compliance and maintain delivery of the target.

2.5 Protection of regionally significant and important wetlands

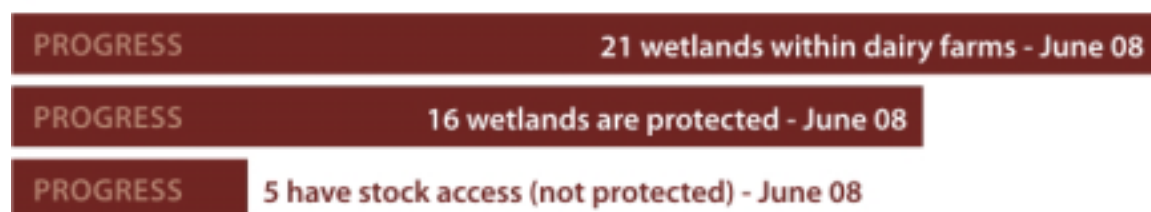
ACCORD TARGET - Regionally significant wetlands to be fenced



TARANAKI TARGET - Regionally significant wetlands to be fenced



Wetland status



Implementation

The Taranaki Regional Council has continued to advocate wetland protection through education, advice, funding, and information as part of the sustainable land management programme.

As illustrated in Figure 4, the number of wetlands protected in 2007/2008 has decreased slightly. At present 76% of wetlands are protected, down from 79% recorded in 2007/2008.

The decrease is due to the inclusion of two additional wetlands which are now on dairy farms, as a result of land use change. The two additional wetlands are both unfenced. The number of wetlands protected has actually increased from 15 wetlands in 2006/2007 to 16 wetlands in 2007/2008.

Taranaki Regional Council staff conducted site visits to properties with significant wetlands as part of the Taranaki Regional Council's Biodiversity work. At these site visits dairy farmers were offered advice with regard to protecting the significant wetlands on their properties and were encouraged to fence the wetlands.

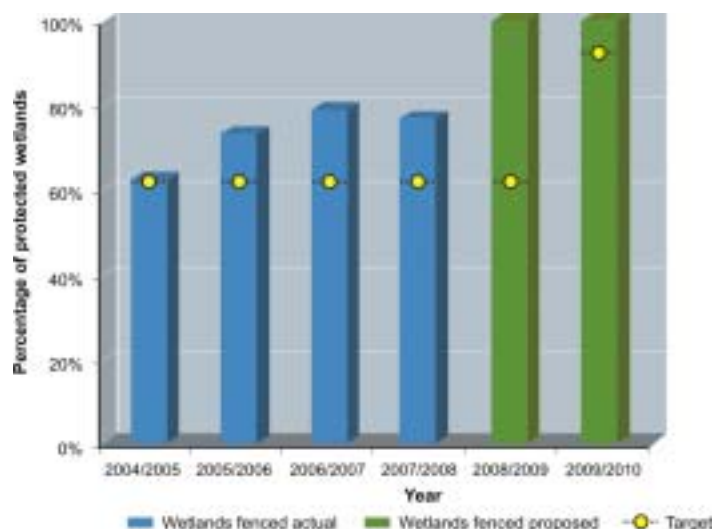


Figure 4: Wetlands fenced and proposed 2004/2005 – 2009/2010

In addition, on-farm analysis is now being carried out annually to identify the status and protection requirements of wetlands on dairy farms in Taranaki whilst preparing and monitoring property plans.

Monitoring

The Taranaki Regional Council maintains a database of the regionally significant wetlands. The database includes information on location, property owner/occupier and current protection status (including the level of protection and the extent of fencing). Regionally significant and important wetlands are included on each property plan prepared. The level of protection for each wetland is monitored and recorded on each plan.

Action plan

The Taranaki Regional Council is currently working with landowners for the enhanced protection of the wetlands, whilst working with the dairying community to maintain and enhance the already protected wetlands.

2.6 Nutrients are managed effectively

ACCORD TARGET - Dairy farms to have systems in place to manage nutrient inputs and outputs

2007 - 100%

TARANAKI TARGET - Dairy farms to have systems in place to manage nutrient inputs and outputs

2007 - 100%

PROGRESS

June 2008 - 99.1%

The Taranaki Regional Council is not required to collect information and/or report on nutrient inputs and outputs, as it is the responsibility of Fonterra under the Regional Action Plan for Taranaki. The information is only included to provide a complete progress report on Taranaki's performance in achieving the targets of the Regional Action Plan.

**Table 8: % of farms with nutrient budget in place
2004/05 – 2007/08**

	2004/05	2005/06	2006/07	2007/2008
% of dairy farms with a nutrient budget in place	22%	39%	65%	99.1%

Fonterra data in Table 8 shows that the percentage of farms with a nutrient budget in place has steadily been increasing since the implementation of the Accord.

Implementation

The responsibility for sound nutrient management is placed on the individual farmers. However, a number of initiatives are in place throughout New Zealand to actively promote nutrient management. The initiatives include:

A code of practice for fertiliser use [implemented by Fert Research]. This involves:

- A voluntary code of practice that sets limits on nutrient levels⁷; and
- User guides available to all interested parties that outline best practice in terms of fertiliser use in meeting production and environmental goals.

The Fertmark quality assurance programme. This involves:

- The registration of fertiliser products to Fertmark's constitution and rules; and
- Independent audits of nutrient levels on manufacturers and importers registered to Fertmark are carried out.

Fertiliser companies each provide advice and information to their clients on nutrient budget services, soil testing, and product information and development.

⁷ Ballance Agri-Nutrients and Ravensdown Fertiliser Co-operative both promote the voluntary code of practice.

Monitoring

Information on nutrient budgets on Taranaki dairy farms has been obtained from Fonterra. It is now mandatory that suppliers have a budget available at annual dairy inspections, with a \$200 revisit fee in place for suppliers that do not produce a nutrient budget at inspections.

Action Plan

The responsibility for sound nutrient practice to minimise losses to ground and surface waters falls on the individual farmer. However, support and guidance from Fonterra and the fertiliser companies are essential in encouraging farmers to meet the targets of the Accord. At present, information obtained/recorded by Fonterra shows that 99.1% of Taranaki dairy farms have a nutrient budget in place.

3 Water quality

3.1 Scope of this report in respect to water quality monitoring

The Accord targets focus on outputs to achieve defined goals as noted earlier. Success or otherwise in achieving the water quality goal is not measured as a part of the Accord but Councils, including this Council, have state of environment monitoring programmes in place to measure the performance of their policies including those of the Accord.

The Dairy and Clean Streams Accord is but one of the many strategies and activities in place to promote water quality objectives in the Taranaki region. For example, very substantial projects and programmes exist to provide for effective and appropriate industrial and municipal waste and wastewater disposal. The Council recognises that a wide range of activities and processes, both natural and manufactured, influence water quality in the region.

The Taranaki Regional Council has in place a comprehensive state of the environment monitoring programme which is regularly reviewed and reported on. It is not proposed to annually undertake a specific water quality report related to Accord related activities as such a task would be fraught with analytical and interpretation complexities providing little confidence in the reliability of any results.

That noted, a qualified, overview statement is provided herein, simply to present an early alert to any plainly obvious trends which arise from dairy farming activities.

3.2 Water Quality: an overview comment

The Taranaki Regional Council initiated comprehensive state of environment monitoring (SEM) in 1995 to inform itself and the regional community on the state of the region. The results of the programme describing Taranaki's environment have been reported twice to date, in 1996 and 2003 State of the Environment Reports^{8,9}. The Taranaki Regional Council is currently preparing the next Taranaki State Report to be released late 2008.

The three main components of interest when determining freshwater quality are physicochemical, biological, and microbiological monitoring results. When carried out consistency for successive years the data can indicate water quality trends. With the accumulation of at least ten years' SEM data, and the development and application of appropriate statistical analysis, the Council is now in a position to move towards quantitatively assessing absolute values and trends in freshwater quality with statistical confidence, that is, being more sure about what is happening in the region.

The findings of freshwater SEM work show that, in most cases, Taranaki has good quality freshwater, and water quality is generally not compromised for appropriate water uses. However, there are certain parameters of freshwater quality that indicate there is still room for improvement in the region's freshwater quality, or increasing pressure upon water quality. There is also a deterioration in water quality below the National Park to the coast.

⁸ Taranaki Regional Council, 1996. *State of the environment, Taranaki region*.

⁹ Taranaki Regional Council, 2003. *Taranaki – Our place, Our place. Report on the state of the environment of the Taranaki region – 2003*.

An analysis of recent and historical values in freshwater physicochemical quality¹⁰ shows that levels of nitrates and ammonia in streams are substantially better now than 25 years ago. Nitrate is monitored because it is a nutrient that if present at high levels can contribute to causing nuisance algal growths, particularly during the low flow summer months when water temperatures are relatively high. Ammonia is monitored as it can be toxic to fish. The observed concentration reductions in freshwater in Taranaki probably reflect the changes in farm effluent treatment and municipal and industrial wastewater systems that have occurred over this period. However, trend analysis indicates that more recently nitrate levels have been deteriorating, and halting this decline is a challenge for the Council and the regional community. The increasing use of nitrogenous fertilisers (particularly urea) in the region in the last few years is likely to be a contributing cause of the deterioration.

Phosphorus is the other key nutrient required for weed and algae growth. In simple terms, both nutrients are required for plant growth. For Taranaki's streams, the 'limiting' nutrient has traditionally and generally been phosphorus. Therefore, arguably trends in phosphorus contamination are of more critical interest than for nitrogen.

Dissolved and total phosphorus concentrations have been stable over the last 25 years at some sites, and have increased at others. However, at almost all sites where increases have occurred, in more recent years (the last 6 years) this trend has been halted and there are signs of reversal. This follows the pattern of use of superphosphate fertiliser in Taranaki, where heavy applications into the 1980s began to reduce in the mid 1990s before going into a recent even sharper decline. Total phosphorus is associated with suspended solid material, and reducing sediment and soil loss will also reduce phosphorus enrichment in the region's waterways.

Faecal coliforms in streams are a direct result of animal source contamination of which stock access to streams is a component. Absolute values in stream are moderately higher for most sites than generally acceptable levels for stock drinking water quality. However, trend monitoring indicates that bacteria levels are either declining or remaining static. Absolute water quality monitoring results and trend results for waterways (Stony River), or segments of waterways (Huatoki Stream at Huatoki Domain), suggest that restricting stock source contamination, including stock access to streams, can significantly improve water quality¹¹.

The Council's SEM programme also measures freshwater macroinvertebrates in the region. The presence and abundance of different types of macroinvertebrates are an excellent indicator of freshwater quality. Trend results show that there is a clear, overall tendency towards maintaining or improving water quality throughout the Ring Plain. This is consistent with physicochemical indications¹². Improvements are evident in upper, mid and lower reaches in streams. What is equally encouraging is there is only one significantly deteriorating site of the 60 analysed for the region. Table 9 summarises the results for all sixty sites measured, making comparisons in the macroinvertebrate index (MCI) between 1995 and 2005.

¹⁰ Taranaki Regional Council, 2006. *Trends in the quality of the surface water of Taranaki*.

¹¹ Taranaki Regional Council, 2006. *An interpretation of the reasons for statistically significant temporal trends in macroinvertebrate (MCI) SEM data in the Taranaki region, 1995-2005*.

¹² Taranaki Regional Council, 2006. *A discussion of trend analysis state of the environment freshwater biological data for Taranaki*.

Table 9: Health assessments for all sites (TRC-modified MCI bands) at the start and end of the 1995 to 2005 SEM programme

Band		Excellent (#)	Very good (%)	Good (%)	Fair (%)	Poor (%)	Very poor (%)
Location	Date						
Upper reaches (12 sites)	1995	0	83	17	0	0	0
	2005	8	67	25	0	0	0
Mid reaches (22 sites)	1995	0	9	32	50	9	0
	2005	0	5	63	23	9	0
Lower reaches (26 sites)	1995	0	0	12	53	31	4
	2005	0	0	31	46	23	0
Overall (60 sites)	1995	0	20	20	41	17	2
	2005	2	15	42	28	13	0

In some cases specific events or actions (e.g., improvements to point source discharges) account for the trends evaluated for individual sites, while other trends are related to more general reasons, including activities relating to farming.

It is considered that riparian initiatives (Regional Council and/or Fonterra Dairying and Clean Streams Accord) have yet to have significant benefits for stream 'health' in terms of absolute values and trends. Early signs, such as the Stony River and Huatoki Stream mentioned above, suggest that significant improvements can be achieved. These improvements will more likely be discernible when greater proportions of catchments are fenced and planted, and as shading of waterways increases with growth of vegetation. These impacts will be measured over a longer term (say another 10 years).

Overall, there was a general improvement in stream/river 'health' as determined between the start and end of the ten year SEM period. However, nitrate and, at times, bacterial levels are higher than desirable, both of which are considered directly related to farming activities. It is encouraging to note that biological monitoring indicates some improvements in water quality notably in middle and lower reaches of ring plain waterways where the cumulative effects of upstream activities would have been expected to have had the greatest influence on macroinvertebrate communities.

Groundwater quality monitoring, which is another SEM programme carried out by the Council, shows that quality of groundwater beneath dairy catchments and the streams draining such areas has been basically maintained^{13,14,15}.

Long-term groundwater data from 1986 to 2002¹⁶ gathered by the Council shows median and mean groundwater nitrate concentrations have generally decreased (improved) across

¹³ Taranaki Regional Council, 2003. *Taranaki – Our Place, Our Future. Report on the state of the environment of the Taranaki region -2003.*

¹⁴ Taranaki Regional Council, 2003. *Nitrates in shallow groundwater, technical report 2003-22.*

¹⁵ Taranaki Regional Council, 2006. *Temporal trends in groundwater quality – nutrient concentrations in Taranaki, technical report 2006-84.*

the region from 1986 to 2002, with the most significant decrease over this period observed in South Taranaki wells. This is despite there being significant increases over the period in dairy cow stocking rates, and applications of nitrogenous products to land (fertiliser, stock urine and faeces, and dairy shed effluent irrigation).

Trend analysis of SEM groundwater sites data between 1992 and 2005 show a similar story with 11 sites out of 71 sites showing a statistically significant trend in at least one nutrient species. Nitrate concentrations were significantly improving at four sites and ammonia was also improving over this period at five sites. As with the longer term record, improvements in nutrient concentrations were centred in South Taranaki. Only one site showed a significant deterioration in ammonia.

The concentration of nitrates in groundwater is influenced by a diverse set of natural and human factors. For this reason any trends need to be considered cautiously. Eighty nine percent of wells sampled in the most recent sampling round (1 July 2006 - 4 September 2007) were found to have a nitrate-nitrogen concentration below the New Zealand Ministry of Health maximum allowable value for human drinking water of 11.3 mg N/L on all occasions. Eleven percent of wells were found to have a nitrate-nitrogen concentration above the value on at least one occasion.

In addition to the SEM programmes currently carried out, the Taranaki Regional Council has undertaken an assessment of cadmium accumulation in Taranaki soils from the application of superphosphate fertiliser¹⁷. The assessment used a basic approach to modelling cadmium accumulation. The results were favourable. The cadmium levels in Taranaki soils are not considered a major environmental problem, nor are they considered to be at a level that might affect the region's health via the food chain, assessed against current guidelines. The Council has found no evidence of heavy metal accumulation in stream sediment.

The water quality monitoring results and especially the recent trend analyses are cause for some optimism especially noting the increasing pressures on water quality in the region e.g. a doubling in the region's dairy herd in the last 20 years.

However, if the community want to see these promising results continue landowners must start implementing the Accord, especially the riparian fencing/planting component, at the farm level with more intensity and at a level that is in line with stock and production input increases.

¹⁶ Taranaki Regional Council, 2003. *Nitrates in shallow groundwater, technical report 2006-22*.

¹⁷ Taranaki Regional Council, 2005. *Cadmium in Taranaki soils: An assessment of cadmium in Taranaki soils from the application of superphosphate fertiliser 2005*.

4 Issues & further actions: where to from here

4.1 Plan implementation

4.1.1 Promotion of riparian management

A communications plan was developed by the Council during the 2007/2008 year to encourage farmers to increase implementation of riparian plans. The communications activities were aimed at the group of plan holders that are “willing to do the right thing” and can be more readily motivated to act to increase the level of fencing and planting.

The riparian communications plan aims to ensure the support and involvement of Fonterra Co-operative Group Ltd, Fonterra Shareholders Council members and Federated Farmers as key stakeholders in the riparian programme.

The main method for promoting riparian fencing and planting is through Council and Fonterra staff meeting directly with farmers to discuss the riparian programme. The plan also outlines a number of other communication activities for promoting riparian planting.

Media coverage of riparian management increased during the 2007/2008 year. This was facilitated by a series of media releases on a range of topics such as benefits for farm management, riparian plant supply and the availability of contractors.

A planting day held in June attracted extensive national and local media coverage. Blue Read, Chairman Fonterra Shareholders Council and representatives of Fonterra, the Council and Federated Farmers highlighted the progress the riparian programme has made in the region and issued a challenge to farmers to increase implementation. Items appeared on TV1 and TV3 national news, the NZ Herald, rural magazines and local newspapers.

Fonterra again provided valuable and appreciated sponsorship of major prizes as incentives for plan holders to increase plant orders. The two major prizes of \$3,500 worth of riparian plants, preparation and maintenance, and a widescreen television and home theatre system were presented in June 2008. One hundred \$50 RD1 vouchers were provided as incentives for farmers that got their plant orders in early.

Council staff have also met with Fonterra Area Managers and provided information for them to promote riparian planting when they visit farmers.

4.1.2 Contractor service

In addition, the plan identifies a number of barriers to landowners completing riparian works, such as the lack of time or labour to carry out the work, the lack of necessary skills and the low priority in a busy farm management programme.

In an attempt to reduce the barriers to riparian planting, the Council introduced a new initiative in 2007/2008, the contractor service. The Council put out a tender for the provision of planting contract services for landowners who were undertaking their first lot of riparian planting. The Council facilitated the matching up of contractors with landowners and over 25,000 plants were planted as a result. Feedback from all involved in the scheme was positive.

4.1.3 Improved farmer financial position

The recent surge in the dairy payout is an aspect the Council will closely monitor in terms of plan implementation. Dairy payout over the last seven years is shown in Table 10 below.

Table 10: Fonterra Payout – Final per kg/MS

	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Fonterra payout	\$5.33	\$3.63	\$4.25	\$4.59	\$4.10	\$4.46	\$7.90 ¹⁸

The forecast for 2008/09 is \$6.60 per kg/MS. With the higher payout and hence improved financial position of many of the region's dairy farmers the financial barrier to implementation, identified in the *Riparian Implementation Strategy Survey*¹⁹, may not now exist so strongly and farmers may be able to make progress.

4.2 Moving forward

Progress in achieving Accord targets is generally good although, as noted above, the implementation of new riparian fencing and planting is progressing too slowly. This is not to say the targets will not be achieved, however an increase in effort by the dairying farming community is necessary, and time is becoming restrictive.

The Council will continue to implement the Communications Plan in an attempt to increase plan implementation. At this stage, the Council is satisfied to continue with its current implementation strategy and to monitor closely the implementation of the plans. The Council will continue to offer advice, information and assistance on all aspects of the Accord.

In addition, the Council has recently undertaken an interim review of the Regional Fresh Water Plan for Taranaki, the review among other things looked at the use of non-regulatory methods [such as riparian planting and its implementation] and the impact of such methods on improving water quality. The Council assessed the usefulness of retaining such methods as non-regulatory tools or reclassifying the methods to regulatory tools. It was determined by the Council that they would continue to utilise non-regulatory tools. However, the formal review of the Regional Fresh Water Plan is to commence in 2011 and that is when such changes may be implemented if necessary.

¹⁸ Of which 0.24 cents per kg/MS to be retained within the Co-operation.

¹⁹ Taranaki Regional Council, 2007. *Riparian Implementation Strategy Survey*.

5 Conclusion

The report reviewed the Taranaki region's performance and achievements in meeting the targets of the Dairying & Clean Streams Accord set out in the Regional Action Plan for Taranaki in the 2007/2008 year.

The Taranaki Regional Council has fulfilled its requirement in the completion of this report for Fonterra under the requirements of the Regional Action Plan for Taranaki.

The Taranaki dairy farming community is making progress towards achieving the targets set out in the Regional Action Plan for Taranaki; however an issue that continues to exist is the slow pace of property plan implementation. The 2010 target has been met as a result of existing pre-Accord fencing and planting. However, if plan implementation continues at its current rate the implementation target for 2015 will not be met. The Taranaki Regional Council has continued to make adjustments to its approach to promote wider and faster implementation. However, if the implementation targets are to be met a few years out, Accord partners and ultimately dairy farmers need to apply more effort to physical works and the current prosperity of the industry should be applied to increasing plan implementation.

Glossary/Interpretation of data

Monitoring period: the monitoring of works carried out on dairy farms (i.e. fencing, planting and crossing status) was undertaken during the summer months of 2007/2008, by Land Management Officers of the Council, this monitoring captured the work undertaken by dairy farmers after 1 July 2007 (during the winter when planting and fencing is generally undertaken). The work undertaken by dairy farmers after 1 July 2008 (during the winter of 2008) will be captured in the summer monitoring of 2008/2009 and reported on in the 2008/2009 Annual Report.

Monitoring of compliance with the Regional Fresh Water Plan for Taranaki and wetland protection is carried out by Officers of the Council throughout the year.

Monitoring of nutrient budgets is carried out by Fonterra during the annual shed inspections. The inspections are undertaken throughout the year.

Reporting period: the reporting period for this Annual Report cover the 2007/2008 financial year (1 July 2007 – 30 June 2008).

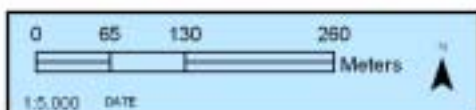
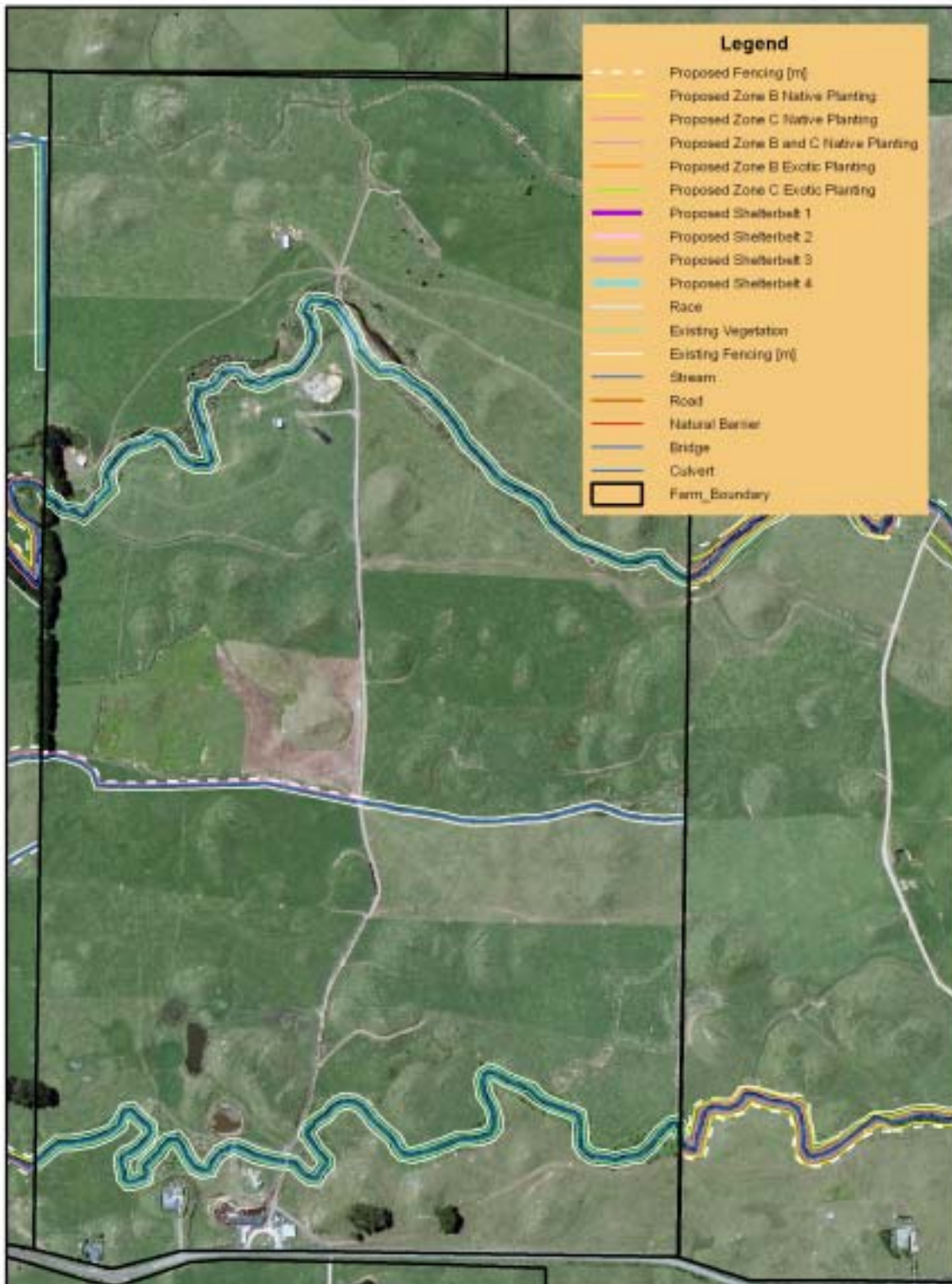
Sample size: the total number of dairy farms that have a property plan in place make up the sample size used to report on the progress of fencing and planting protection, and dairy cow stream crossing status. As the number of property plans increase, so does the accuracy of reporting on a figure that represents regional conditions. As a consequence, there will always be some movement in the annual figures that are reported on, as the sample size increases.

Note: All dairy farms in the region are monitored for compliance with the Regional Fresh Water Plan for Taranaki and compliance with consent conditions. The protection of regionally significant wetlands is also monitored on all dairy farms where a regionally significant wetland is located.

The total length of streambank protected by fencing: includes existing fencing in place at the time of plan preparation and new fencing completed since the preparation of the plans.

The total length of streambank protected by planting: includes existing vegetation in place at the time of plan preparation and new planting completed since the preparation of the plans.

Appendix I
An example of a GIS property plan



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Appendix II
Property plans prepared on dairy farms to 30 June 2008

