Accelerating the adoption of good environmental practice on dairy farms in the Upper Waikato River catchment

CSG December 2015
Today’s presentation

• Overview of the project
• A look at the Sustainable Milk Plan (SMP) process
• Project results
• SMP’s in Healthy Rivers plan change
Overview

• Largest environmental good-practice project ever undertaken by dairy industry
• Sustainable Milk Plan (SMP) provides a practical plan for change for 650 dairy farms
• Timeline July 2012 – June 2015
• Change quantified and reported back to community (e.g. CSG)
• Funding:
  – Waikato River Authority (1/3)
  – Government: Primary Growth Partnership (1/3)
  – DairyNZ levy (1/3)
Aiming for success?

• The collective actions of farmers reduces dairy industry impacts on the Waikato River
• Farmers are better prepared for the future
• Project results assist the policy making process
• Farmer and advisor capability has been increased
SMP principles

• Good practice plan / continual improvement
• Sets out the farmer’s own time bound action plan to meet agreed catchment scale targets
• Provides farmer support opportunity
• Tailored to individual farms
• Avoids duplication & adds value to other activities
• 5 target areas:
  Nutrients   Effluent   Waterways   Land   Water use
Targets

• Clear objectives and expectations required for each target area
• Sets out what you are trying to achieve and how
• Suite of narrative objectives developed by steering group.
  – debate was robust!
  – debate was lengthy!
  – N-loss ranges agreed (quartiles), not numbers!
  – Sound familiar?
Assessment

“What are the potential farmer actions to influence the quality of the river”

Questionnaire utilised
<table>
<thead>
<tr>
<th>Date:</th>
<th>Planning Period: 2013 - 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer goals:</td>
<td>To improve efficiency where possible. Maintain profitability at an optimum stocking rate Be environmentally responsible</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agreed action(s):</th>
<th>Who</th>
<th>By when?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrient Management: <em>(Industry expectation: Compliance with nutrient management rules)</em></td>
<td>A Brocksopp A Brocksopp</td>
<td>June 2013 June 2013</td>
</tr>
<tr>
<td>Update nutrient budget to Overseer 6 once the soil tests have been completed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investigate the effects of a little and often approach to N application</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effluent Management: <em>(Industry expectation: Compliance with effluent management rules)</em></td>
<td>A Brocksopp A Brocksopp</td>
<td>March 2013 March 2013</td>
</tr>
<tr>
<td>Supply Farmer x with a effluent sampling kit from the labs</td>
<td>A Brocksopp A Brocksopp</td>
<td>April 2013 April 2013</td>
</tr>
<tr>
<td>Supply Farmer x with details of AgITO training options</td>
<td>Farmer x A Brocksopp</td>
<td>April 2013 April 2013</td>
</tr>
<tr>
<td>Arrange meeting with DairyNZ consultant to discuss future developments on farm</td>
<td>Farmer x A Brocksopp</td>
<td>April 2013 April 2013</td>
</tr>
<tr>
<td>Investigate opportunity for water diversion</td>
<td>A Brocksopp</td>
<td>April 2013</td>
</tr>
<tr>
<td>Formulate a risk map for effluent application.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterway Management: <em>(Industry expectation: Cattle exclusion from waterways)</em></td>
<td>Farmer x</td>
<td>June 2013</td>
</tr>
<tr>
<td>Fence wet area in paddock C19</td>
<td>Farmer x</td>
<td>June 2013</td>
</tr>
<tr>
<td>Fence wet area in paddock C30</td>
<td>A Brocksopp</td>
<td>March 2013</td>
</tr>
<tr>
<td>Provide information on Riparian Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land Management:</td>
<td>No actions</td>
<td></td>
</tr>
<tr>
<td>Water Use: <em>(Industry expectation:Compliance with water take and use rules)</em></td>
<td>Farmer x</td>
<td>March 2013 April 2013</td>
</tr>
<tr>
<td>Attend Smart Water use field day</td>
<td>Farmer x</td>
<td></td>
</tr>
<tr>
<td>Install a water meter</td>
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<td></td>
</tr>
</tbody>
</table>
Project Results:

- 648 plans received to date (642 in analysis)
- 623 completed whole process (598 in analysis)
- 5921 individual actions were recorded (9.2 per farm)
- 70% actions completed within support period for those actions (independent audit).
- Continual improvement: 1274 new actions documented at end of process
Actions per target area (total)

- Nutrient: 31%
- Effluent: 27%
- Waterways: 11%
- Land: 12%
- Water use: 19%
Example: Top 5 nutrient actions

<table>
<thead>
<tr>
<th>Management area</th>
<th>Agreed actions</th>
<th>% of farms</th>
<th>% actions completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrient</td>
<td>Utilise nutrient budget and scenarios to understand nutrient loss drivers, optimal nutrient requirements, efficiency rates and strategies to manage nutrient losses</td>
<td>65%</td>
<td>82%</td>
</tr>
<tr>
<td></td>
<td>Update whole-farm nutrient budget to Oversee V6</td>
<td>60%</td>
<td>87%</td>
</tr>
<tr>
<td></td>
<td>Improve records of fertiliser, effluent and/or supplementary feed applications (Dairy diary)</td>
<td>26%</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>Review optimal effluent block size, location and/or application rate</td>
<td>24%</td>
<td>76%</td>
</tr>
<tr>
<td></td>
<td>Increase effluent area</td>
<td>17%</td>
<td>49%</td>
</tr>
</tbody>
</table>

- A total of 41 action categories and 141 sub-categories were defined.
- Not all farms recorded actions will have a direct impact on nutrient losses.
Modelling objectives

- Estimate total nutrient load reduction as a result of SMP implementation
  - Nitrogen and phosphorous (direct output)
  - Sediments & E. coli
- Need robust estimates of mitigation effectiveness.
- Modelling completed by David Burger (DairyNZ) and Ross Monaghan (AgResearch)
Mitigation effectiveness

• Range of information used:
  – Best practice guidelines e.g.
    — e.g. WRC (2013) - Best dairy practice guidelines
  – Scientific publications e.g.
    — Ballance MitAgator model supporting documentation developed by AgResearch (Lucci & Smith, 2014)
  – Overseer
    — 12 representative farms modelled from the Upper Waikato catchment to determine efficacy values for N and P for eight mitigation strategies (DairyNZ, unpublished data).
% Nitrogen reductions across individual farms for all actions (642 farms) and competed actions only (598 farms)

- Mean reduction 5% for N (range from 0 to 35%)
- Increase to 8% for N when all actions are fully implemented.
Phosphate reductions across individual farms for all actions (642 farms) and competed actions (594 farms).

- Mean reduction 12% for P (range from 0 to 73%)
- Increase to 21% when all actions are fully implemented.
Key points: reducing loads

• Greatest N reductions were observed for farms implementing multiple strategies involving stock exclusion from streams and optimised effluent/fertiliser application.

• Riparian and critical sources area management, stock exclusion and optimised effluent applications were the most effective measures for reducing P losses to water.
Key points: engagement

• Communication is key for all parties
• A voluntary, farmer agreed process to change has increased engagement
• Process stimulated continual improvement
• Farming calendar and financial position influences the rate of change
SMP’s in Healthy Rivers plan change

• Scalability has been demonstrated
• Process for continual improvement
• 650 farmers out of 2500 already engaged
• Methods for auditing developed
• Methods for demonstrating reductions at catchment level developed
Increasing Capability

• Upper Waikato
  – Nine consultancy businesses used
  – 40 consultants

• Waipa
  – 13 new consultants trained additional to Upper Waikato Consultants

• Recognised support
  – Farm Systems certified
  – Nutrient Management Adviser Certification Programme
  – DairyNZ developed training to support consenting
Summary

- Farmers actions have resulted in reductions of contaminants leaving the farm
- Changes take time for many reasons
- Appropriate support developed to accelerate change
- Implementation and modelling processes developed for future support (Waipa SMP project)
- Action on farm, at scale, can be achieved
Questions?