

ENVIRONMENTAL FARM PLAN FOR IRRIGATED LAND USE

AUDIT REPORT EXAMPLE DAIRY FARM PLAN

This farm plan audit report example has been prepared as part of
'An Environmental Management System for Irrigation Schemes in New Zealand'

The Ritso Society Inc.
June 2009



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ENVIRONMENTAL FARM PLAN FOR IRRIGATED LAND USE AUDIT REPORT EXAMPLE: DAIRY FARM PLAN

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This Environmental Management System (EMS) for Irrigation Schemes has a number of components.

The templates, manuals and worked examples included in "An Environmental Management System for Irrigation Schemes in New Zealand" are listed below, and are all available on www.ritso.org.nz. They may be copied or adapted for specific schemes.

Scheme Sustainability Protocol

Preparing Your Farm Plan for Irrigated Land Use: Workshop Manual
Environmental Farm Plan for Irrigated Land Use: Audit Manual (includes audit template)

Environmental Farm Plan for Irrigated Land Use: dairy farm template
Environmental Farm Plan for Irrigated Land Use: cropping farm template

Environmental Farm Plan for Irrigated Land Use: example of a dairy farm plan
Environmental Farm Plan for Irrigated Land Use: example of a mixed cropping & sheep plan

Farm Plan Audit: example of a dairy farm plan audit report
Farm Plan Audit: example of a mixed cropping & sheep farm audit report

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Best Water Irrigation Scheme Ltd¹ 2008 Farm Plan Audit Report

Property name: Lincoln University Dairy farm

Property owner: Lincoln University

Person responsible for plan implementation: Ron Pellow

Date of audit: 10 March 2009

¹ 'Best Water Irrigation Scheme Ltd' is an imaginary irrigation scheme

Management area: Irrigation management*Note:* A separate sheet should be used for each management area.

| Objectives | Targets | Progress made and actions still required | FCom ² | CoCA | CoFA | NCom | Verification |
|---|--|---|-------------------|------|------|------|--|
| Objective 1: To comply with all resource consent requirements relating to the supply of irrigation water including: | Full compliance with consent requirements | Full compliance with Environment Canterbury consent requirements achieved. | ✓ | | | | |
| Objective 2: To ensure that all irrigation systems on the property are capable of operating to meet industry & scheme standards for best practice irrigation | <p>Existing systems – North Pivot System evaluation undertaken by April 2006</p> <p>Evaluations to be undertaken on k-lines, long laterals & southern cross gun by May 2009</p> <p>All upgrades will be completed no later than 24 months after receipt of the evaluation report.</p> | <p>North Pivot – Evaluation completed by Page Bloomer, 22 Jan 06, see Nth Blk Rpt (Irrig Focus Day File)</p> <p>South Block - Evaluation completed by Bloomer & Daveron, 5 Oct 04, see paper file Irrigation file (Pellow office)</p> <p>The long laterals, k-lines and southern cross gun will be evaluated by an Irrigation NZ accredited evaluator. With a report setting out the system performance, including well test and the timelines for upgrades, if required.</p> | | | ✓ | | <p>Page Bloomer evaluation reports</p> <p>Bloomer Davoren evaluation reports</p> |
| Objective 3: To ensure all key staff members are fully trained in the operation & maintenance of those aspects of the irrigation system for which they are responsible. | <p>All key staff reach irrigation training standard.</p> <p>No major and no more than 5 minor staff related irrigation incidents per year.</p> | <p>Staff trained to use the GPS and aquaflex soil moisture monitoring equipment.</p> <p>System to be extended to cover all aspects of irrigation management.</p> <p>Formalised staff training approach and documentation to be developed.</p> | | | | ✓ | Discussions with farm staff |
| Objective 4: To maximise water application effectiveness while | Soil moisture levels between field capacity and recharge level 80% of time. | Four Aquaflex lines set up in paddocks N2, N7, S6 and S9 corresponding with the main soil types on the property. | ✓ | | | | Aquaflex record |

² FCom – Fully compliant; CoCA – Compliant with corrective actions; CoCF – Compliant with future actions; NCom – Non compliant.

| Objectives | Targets | Progress made and actions still required | FCom ² | CoCA | CoFA | NCom | Verification |
|---|--|---|-------------------|------|------|------|---|
| minimising excess drainage and runoff. | | Soil moisture deficit trigger points (25% below field capacity) have been established to commence irrigation Going into Autumn the trigger point is set at 50% below field capacity. Forecast predictions of rainfall are used to modify scheduling of irrigation Improvements have been made to the distribution uniformity in corners by GPS-ing everything and adding more sprinklers. | | | | | |
| Objective 5: To implement a robust irrigation equipment and machinery maintenance system | No major and no more than 5 minor mechanical failures each year caused through inadequate maintenance. | Routine maintenance undertaken on all machinery each winter. Equipment and machinery maintenance schedule and documentation system to be developed. | ✓ | | | | Discussions with farm manager Notes on aquaflex sheets |

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| Best management practices | |
| Have all the best management practices been used? If not why not? | Yes |
| Have any BMPs been rejected in the plan. (i.e. inappropriate?) | No |
| Have any new BMPs been introduced that are not recorded in the plan? | No |
| Monitoring | |
| Do the records identify progress or deficiencies in meeting the stated objectives and targets? | Partly. Some improvements in recording systems are needed particularly those records relating to staff training and equipment and machinery maintenance |
| Were the records easily located, understandable and complete? | Yes |
| Corrective actions | |
| If the objectives/targets have not been met what corrective actions have commenced? | Objective 3. An updated staff training programme is to be developed. |
| Are these actions working? If not why not? What further steps are planned? | Yes |

Management area: Soils management

Note: A separate sheet should be used for each management area.

| Objectives | Targets | Progress made and actions still required | FCom ³ | CoCA | CoFA | NCom | Verification |
|--|--|---|-------------------|------|------|------|---|
| Objective 1: To minimise the incidence of wind and/or water erosion caused as a result of farming practices. | No major and no more than x minor erosion incidents each year. | There is a very low risk of wind and/or water erosion on this property. No specific action required | ✓ | | | | Observation |
| Objective 2: To optimise soil structure and soil biological activity | Maintain or improve soil organic matter results each year. | Strong pastures with high clover content maintained. Pastures renewed as required. Compaction minimised by use of safe areas, on-off grazing when wet in spring. Compacted areas are promptly repaired. Regular soil organic matter tests undertaken. | ✓ | | | | Field observations Soil organic matter results |
| Objective 3: To minimise the risk of soil contamination from fertiliser inputs. | 100% Fertmark compliant products used | Only Fertmark registered products are used on the property. All fertiliser is supplied by Ravensdown. | ✓ | | | | Fertiliser record sheets |

| Best management practices | |
|--|-----|
| Have all the best management practices been used? If not why not? | Yes |
| Have any BMPs been rejected in the plan. (i.e. inappropriate?) | No |
| Have any new BMPs been introduced that are not recorded in the plan? | No |
| Monitoring | |
| Do the records identify progress or deficiencies in meeting the stated objectives and targets? | Yes |
| Were the records easily located, understandable and complete? | Yes |

³ **FCom** – Fully compliant; **CoCA** – Compliant with corrective actions; **CoCF** – Compliant with future actions; **NCom** – Non compliant.

| | |
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| Corrective actions | |
| If the objectives/targets have not been met what corrective actions have commenced? | N/A |
| Are these actions working? If not why not? What further steps are planned? | N/A |

Management area: Nutrient management

Note: A separate sheet should be used for each management area.

| Objectives | Targets | Progress made and actions still required | FCom ⁴ | CoCA | CoFA | NCom | Verification |
|--|---|---|-------------------|------|------|------|---|
| Objective 1: To minimise nutrient losses to surface and ground water through the use of nutrient budgeting. | Initial nutrient budget/s prepared for effluent and non-effluent areas of farm by June 2008 Nutrient budgets reviewed and revised every two years. Nitrate leaching losses not to exceed 22 kgN/ha on average over the season | Completed in 2008 by accredited Ravensdown Senior Field Officer, Chris Irvine | ✓ | | | | Nutrient budget |
| Objective 2: To minimise nitrate leaching and/or run-off losses to surface and ground water through careful fertiliser management. | Rate of nitrogen applied not to exceed 200 kgN/ha/year Maximum rate per application – 40 kg/ha Close adherence to listed best management practices. Significant variations noted together with reasons for variations. | All fertiliser applied according to recommendations from nutrient budget and nutrient management plan. Nitrate losses limited to less than 22kgN/ha averaged over the season. Self imposed N limit of 200kg/ha adhered to. Strict monitoring of supplements brought onto the farm. N is not applied when the aquaflex readings indicate drainage from the soil profile. | ✓ | | | | Fertiliser application records Aquaflex records Lysimeter results |
| Objective 3: To minimise phosphate run-off losses to surface water through careful fertiliser management. | Close adherence to listed best management practices. Significant variations noted together with reasons for variations. | Best management practices as indicated adhered to. P application rates determined from the soil test results. – The aim is to keep the P Olsen levels in the mid-30s | ✓ | | | | Discussions with farm staff. |
| Objective 4: To apply nutrients where needed to maximise impact and minimise losses to non | Close adherence to listed best management practices. Significant variations noted together with reasons for variations. | Using Central Canterbury Groundspreaders as local operator They regularly test machinery and spread pattern tests are available. Staff are experienced. However they have not completed all Spreadmark modules and are not certified as a company. They | ✓ | | | | Ground spreading records |

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| Objectives | Targets | Progress made and actions still required | FCom ⁴ | CoCA | CoFA | NCom | Verification |
|---------------|---------|---|-------------------|------|------|------|--------------|
| target areas. | | also are now providing a GPS map of where each load of fertiliser is applied. Will continue to encourage to join programme and review engagement. | | | | | |

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| Best management practices | |
| Have all the best management practices been used? If not why not? | Yes |
| Have any BMPs been rejected in the plan. (i.e. inappropriate?) | No |
| Have any new BMPs been introduced that are not recorded in the plan? | No |
| Monitoring | |
| Do the records identify progress or deficiencies in meeting the stated objectives and targets? | Yes. |
| Were the records easily located, understandable and complete? | Yes |
| Corrective actions | |
| If the objectives/targets have not been met what corrective actions have commenced? | N/A |
| Are these actions working? If not why not? What further steps are planned? | N/A |

Management area: Collected animal effluent management

Note: A separate sheet should be used for each management area.

| Objectives | Targets | Progress made and actions still required | FCom ⁵ | CoCA | CoFA | NCom | Verification |
|--|---|---|-------------------|------|------|------|-----------------------------|
| Objective 1: To comply with all Regional Council requirements relating to effluent management and disposal | Full compliance with consent and/or permitted activity requirements | Annual inspection undertaken in March 2009. Fully compliant | ✓ | | | | Regional Council letter |
| Objective 2: To ensure all key staff members are fully trained in the operation and maintenance of the effluent application system | All key staff pass effluent management training course with merit. No major and no more than 2 minor staff related effluent management incidents per year. | Routine staff training is undertaken as required but there is not a standardized staff training system in place. Specific dairy effluent management staff training programme to be implemented. System will include provision for the keeping of training records. | | | | ✓ | Discussions with staff |
| Objective 3: To implement a robust equipment and machinery maintenance programme. | No major and no more than x minor breakdowns caused as a result of inadequate system maintenance | Routine maintenance is undertaken as required but there is not a standardized maintenance system in place. There have been no major breakdowns in the past 12 months. Specific dairy effluent equipment and maintenance schedule to be implemented. System will include provision for the keeping of maintenance records. | ✓ | | | | Discussions with staff |
| Objective 4: To minimise the volume of effluent produced | Close adherence to listed best management practices. Significant variations noted together with reasons for variations. | Close adherence to the listed BMPs | ✓ | | | | On-farm observations |
| Objective 5: To ensure that the effluent system is set up to minimise the | System evaluation undertaken by August 2009. | The options for system upgrade are currently being considered. Complete review of system evaluation options and | | | ✓ | | Discussions with farm staff |

⁵ FCom – Fully compliant; CoCA – Compliant with corrective actions; CoCF – Compliant with future actions; NCom – Non compliant.

| Objectives | Targets | Progress made and actions still required | FCom ⁵ | CoCA | CoFA | NCom | Verification |
|--|--|---|-------------------|------|------|------|-----------------------------|
| risks associated with effluent disposal. | All upgrades completed no later than six months after receipt of the system evaluation report. | implement evaluation programme | | | | | |
| Objective 6: To avoid contamination of groundwater and surface water | Close adherence to listed best management practices. Significant variations noted together with reasons for variations. Designated disposal area marked on map. Return period of at least 24 days (Centre Pivot) | Effluent spread over 28ha under spans 5-6-7 on North Block centre pivot. To investigate options for spreading effluent over a larger area. | ✓ | | | | Field observations |
| Objective 7: To Implement specific procedures for dealing with leakage or spillage from any part of the disposal system. | 100% adherence to the procedures | Spillages and breakages dealt with as required. Note System for recording leakages and spillages still to be developed. | | | | ✓ | Discussions with farm staff |

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| Best management practices | |
| Have all the best management practices been used? If not why not? | Yes |
| Have any BMPs been rejected in the plan. (i.e. inappropriate?) | No |
| Have any new BMPs been introduced that are not recorded in the plan? | No |
| Monitoring | |
| Do the records identify progress or deficiencies in meeting the stated objectives and targets? | Partly, More detailed records are need with regard objectives 2 and 3 |
| Were the records easily located, understandable and complete? | Yes |
| Corrective actions | |

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| If the objectives/targets have not been met what corrective actions have commenced? | Plans are in place to set up systems for Objectives 2 and 3. |
| Are these actions working? If not why not? What further steps are planned? | Too early to tell yet |

Management area: Waterway and riparian management

Note: A separate sheet should be used for each management area.

| Objectives | Targets | Progress made and actions still required | FCom ⁶ | CoCA | CoFA | NCom | Verification |
|--|---|---|-------------------|------|------|------|-----------------------------|
| Objective 1: To exclude all cattle from waterways. | 100% cattle exclusion from waterways ⁷ | There are no natural waterways on the property. Cattle are excluded from the drains that follow the south block boundary and the main road. (see map) | ✓ | | | | Field observations |
| Objective 2: To minimise soil loss and contamination of waterways. | Close adherence to listed best management practices. Significant variations noted together with reasons for variations. | Listed best practices are closely adhered to. | ✓ | | | | Discussions with farm staff |
| Objective 3: To enhance water quality and stream life | 10% of riparian margins on the main waterways on property planted by 2010. | 16000 native plants have been planted along road boundaries and next to eh drains. | ✓ | | | | Field observations |

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| Best management practices | |
| Have all the best management practices been used? If not why not? | Yes |
| Have any BMPs been rejected in the plan. (i.e. inappropriate?) | No |
| Have any new BMPs been introduced that are not recorded in the plan? | No |
| Monitoring | |
| Do the records identify progress or deficiencies in meeting the stated objectives and targets? | Yes |
| Were the records easily located, understandable and complete? | Yes |
| Corrective actions | |
| If the objectives/targets have not been met what corrective actions have commenced? | N/A |
| Are these actions working? If not why not? What further steps are planned? | N/A |

⁶ **FCom** – Fully compliant; **CoCA** – Compliant with corrective actions; **CoCF** – Compliant with future actions; **NCom** – Non compliant.

⁷ For the purposes of this plan a waterway includes all streams, creeks and rivers, farm drains, and significant wetlands.

Management area: Biodiversity and ecosystem management

Note: A separate sheet should be used for each management area.

| Objectives | Targets | Progress made and actions still required | FCom ⁸ | CoCA | CoFA | NCom | Verification |
|---|---|---|-------------------|------|------|------|--------------|
| Objective 1: Maintain native plants and animals and their habitats | 100% protection of moderate and high value biodiversity sites. Where this is not practical an equivalent offset area will be established. | 16000 native plants planted on road boundaries and next to the drains. Planting is according to a plan prepared by Steve Wratten and Colin Meurk. | ✓ | | | | |
| Objective 2: To enhance/minimise loss of shelter and habitat | At least 100m of habitat or shelter planting per year | 16000 native plants planted on road boundaries and next to the drains. Planting is according to a plan prepared by Steve Wratten and Colin Meurk. | ✓ | | | | |

| | |
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| Best management practices | |
| Have all the best management practices been used? If not why not? | Yes |
| Have any BMPs been rejected in the plan. (i.e. inappropriate?) | No |
| Have any new BMPs been introduced that are not recorded in the plan? | No |
| Monitoring | |
| Do the records identify progress or deficiencies in meeting the stated objectives and targets? | No |
| Were the records easily located, understandable and complete? | Yes |
| Corrective actions | |
| If the objectives/targets have not been met what corrective actions have commenced? | N/A |
| Are these actions working? If not why not? What further steps are planned? | N/A |

⁸ **FCom** – Fully compliant; **CoCA** – Compliant with corrective actions; **CoCF** – Compliant with future actions; **NCom** – Non compliant.

Audit conclusion

Has the farm reached the necessary standard⁹ of environmental management?

Yes Yes subject to the presentation of further evidence to verify compliance No

The evidence required relates to the following objectives and targets

Irrigation Management

Objective 3

Formalised staff training approach and documentation to be developed.

Collected animal effluent management

Objective 2

Specific dairy effluent management staff training programme to be implemented.

Objective 7

System for recording leakages and spillages still to be developed.

Signed off _____ Auditor

Date audit completed: 10 March 2009

Additional evidence presented

Sufficient evidence presented to verify compliance for all activities originally assessed as non-compliant?

Yes No

If no, what actions are needed for the farm to be likely to succeed at a subsequent audit?

Signed off _____ Auditor

Date reassessment completed: / /

⁹ **Standard** –Compliant ratings received for all Scheme and regulatory requirements, and listed management policies.