



‘How-to’ Guide

Revised Draft

April 2013

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Prepared for Irrigation New Zealand

by

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Irrigation Audited Self-Management: 'How-To' Guide

April 2013

For the background to the Irrigation Audited Self-Management process see:

C M Mulcock and I Brown (2013) 'Irrigation Audited Self-Management: Managing Water Quality and Quantity within limits' prepared for Irrigation NZ

Acknowledgements

We would like to thank the many individuals and organisations who have contributed to the development of this package for Audited Irrigation Self-Management.

Our special thanks to North Otago Irrigation Company, Morven Glenavy and Ikawai Irrigation Company, Synlait Milk Ltd and Central Plains Water Ltd for their especial generosity in sharing their ideas and experiences.

However, errors and omissions are ours.

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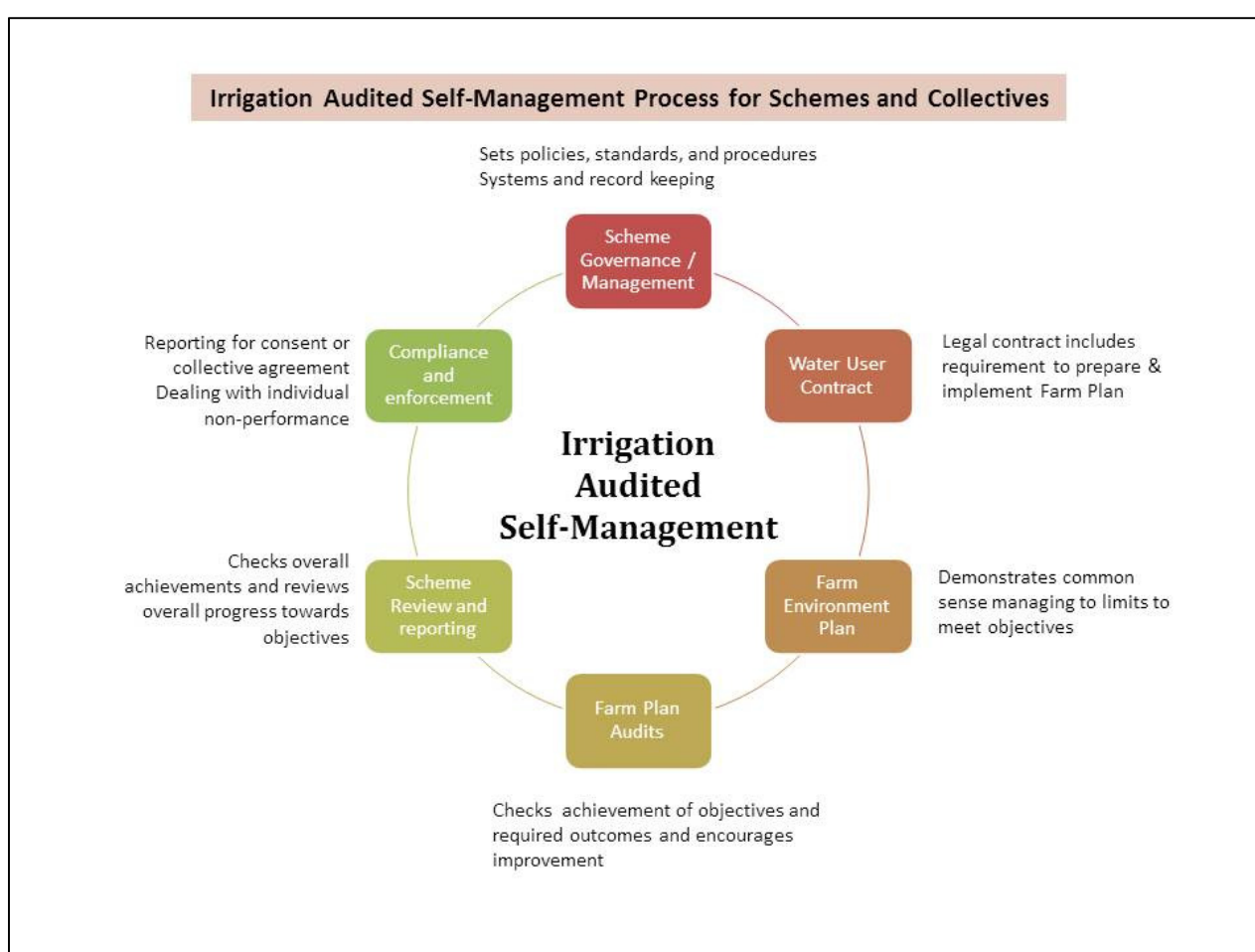
1. Introduction

This guide provides explanation, templates and examples to assist irrigation schemes and others to implement the 6 steps in the cyclical process of Irrigation Audited Self-Management (IASM) (Figure 1). It is possible for the process outlined in this document to be used by other groups or collectives, even if the participants are not linked through irrigation.

The report 'Irrigation Audited Self-Management for managing water quality and quantity within limits'¹ provides background to this process.

In this guide the term 'scheme' refers to any type of irrigation scheme, group of irrigators or catchment collective.

Figure 1: Irrigation Audited Self-Management Process for Schemes and Collectives



¹ C M Mulcock and I Brown (2013) 'Irrigation Audited Self-Management: Managing Water Quality and Quantity within limits' prepared for Irrigation NZ.

2. Scheme Governance and Management for IASM

2.1. Principles of Governance and Management for IASM

Both strong leadership and governance, and well-organised and regularly reviewed systems will be necessary for a successful audited self-management process that achieves environmental objectives for water quality and quantity.

Although the overall responsibility for environmental performance for an irrigation scheme rests at the governance and management levels of the organisation/s involved, it is the day-to-day actions of the water users in their farming businesses that are likely to have the major impact on water quality outcomes. Boards and management need to support farm businesses to improve their knowledge and understanding of the effects of their activities, as well as implementing the IASM plans, audits, reporting and compliance requirements.

The scheme's policy documents should cover the criteria that are widely used to check that it is integrating sound environmental management into its organisational management and operations, including:

- A long term vision of excellence in environmental performance;
- Clearly stated and prioritised environmental management risks and challenges;
- A credible environmental management strategy that sets out a consistent approach;
- Use of various forms of assessment, including external reviews and stakeholder feedback.

For irrigation companies and collectives, environmental reporting is also a valuable communication tool that can provide balanced information to the wider public regarding environmental impacts and benefits relating to irrigation. It gives the company an opportunity to demonstrate its efforts and investments to improve practices and reduce the negative impacts of irrigation.

There are number of features that are a required for an effective IASM process:

- An environmental policy that sets out the organisation's commitment to sound environmental management;
- Planning to implement the environmental policy;
- Implementation and operation of specified objectives and targets;
- Checking and corrective actions to measure and track performance;
- Regular review by 'top management' to ensure its on-going suitability, adequacy and effectiveness;
- Continuous evaluation and improvement.

Minimum requirements also include addressing all applicable legislation, although moving beyond compliance is encouraged by the 'continual improvement' concept.

2.2. Documenting Environmental Policies and Procedures

Whether Farm Environment Plans and other environmental management activities are required by resource consent or by another process, the scheme or collective should document its policies and procedures. This provides a set of operating rules for use on a day-to-day basis to ensure that practices are consistent and effective across the scheme and with different personnel.

Ideally the scheme would have a full package of policies and operating procedures set up as a comprehensive system for best practice and risk management across all aspects of the scheme management. Environmental management activities would only be one aspect of this system. Here we consider only the environmental management component, but these documents cannot be created in isolation and will require input from other areas of the business.

The aim of a system like this is not just to achieve compliance with resource consent conditions but to operate at a level above compliance and continuously improve what is done as an organisation. These two objectives are linked but are at different levels.

Some examples are provided of the sorts of written policies, procedures and forms that should make up the operating system / manual in relation to environmental matters. Policies and procedures from other areas of the business (e.g. operating procedures) may also deal with issues that also have 'environmental' risks e.g. leaks in pipes, valves etc (either scheme or on-farm) that cause runoff issues for streams, soil loss, neighbour issues etc, so the 'environmental management' section does not stand alone.

In general there are three aspects that the documentation should cover:

1. Policies (principles/objectives/direction)
2. Procedures, work instructions, plans, specifications, forms (how an activity is to be done)
3. Records (evidence)

Appendix 1 shows an example table of contents for a scheme or collective's environmental policies and procedures as one section of a comprehensive system for the whole business. This is based on North Otago Irrigation Company's (NOIC) schedule for their environmental policies, procedures etc. NOIC's willingness to share their material is gratefully acknowledged.

Within each section there are some documents that every scheme should have (e.g. Procedure for Farm Plans), but others that would be specific to a scheme.

Appendices 2 to 5 provide generic examples of:

- Appendix 2: Scheme environmental policy statement
- Appendix 3: Procedure for Farm Environment Plans
- Appendix 4: Procedure for Farm Plan Audits
- Appendix 5: Query / Grievance Form

These are based on material made available by Morven Glenavy Ikawai Irrigation Company Ltd (MGI) and NOIC, as well as earlier work from The Ritso Society Inc.

Specific policies and procedures to address particular environmental risks or resource consent conditions would each need to be developed for the particular issue and situation. Research, consultation, draft document, revisions, would be required specific to each issue, especially for complex matters.

For example, NOIC has developed a specific policy that sets out how the company will comply with its consent conditions associated with run off. NOIC is required to *"take all practicable steps to ensure for each irrigation supply made that the irrigation shall not cause surface runoff"*. In order

that water users, scheme personnel and others have a clear understanding of what needs to happen to achieve this consent condition NOIC has produced a policy document that includes defining 'run off', practicable steps for runoff prevention, communication, complaint management, costs, enforcement etc. As policies such as this will be specific to each scheme, no templates have been provided. The table of contents for the NOIC run-off management and mitigation policy is shown in Appendix 6, as an example of the matters covered. Each organisation would have to decide where the greatest risks are for their operations and focus on creating the appropriate controls (i.e. procedures) to manage that risk.

Good public relations (PR) and communication with irrigators, potential irrigators and the local community including iwi and environmental groups is necessary to assist develop and maintain good relationships. Without a planned strategic approach based on an analysis of the current situation and future goals efforts in this area may achieve little.

For example, negative issues that may be circulating in the community could include:

- Potential impacts of land use change
- Doubts around the community benefit of irrigation:
 - Is this irrigation scheme for the benefit of the few, or does it have benefits for the community as a whole?
 - Is it in fact, doing more harm to the community than good, and therefore not socially acceptable?

A comprehensive and targeted PR and communications plan is useful to build goodwill and support both in farming and other stakeholder groups.

2.3. Preparing operating policies and procedures

Operating procedures are important tools for defining the details that make the difference between success and failure in achieving sound environmental management across the scheme and complying with resource consents. The advantage of having these procedures sitting outside the actual consent is that they can change and be updated without having a consent variation. This is important as it allows both flexibility and continuous improvement.

Developing a complete set of operating procedures can be time-consuming process. But a little time spent in the beginning to organise the effort can help reduce frustration with the process and make the effort more efficient and effective. Using the following 6 steps will help to plan the process.

1. Identify the key areas where policies and procedures might be useful.
2. Select one or two top priority areas for attention. Consider: Which issues need clarification of the process and a more consistent approach? Which areas have highest risk of problems causing non-compliance with resource consents? In which areas are more controls desired or required?
3. For the selected top priority areas, identify all the processes, functions or operations that occur within each of these areas.
5. Identify the appropriate individual to lead the development effort for each policy or procedure and anyone else (e.g. staff, consultants) who can bring relevant expertise to the effort. Often the

environmental management documents can't be created in isolation. Input is needed from a number of areas of the business.

6. There should be a document creator, a reviewer and an approver. For example, a scheme's Environmental Policy Statement might be developed by the Environmental Manager or a contractor, reviewed by CEO and approved by the Board. Generally, policies would be approved at Board level, and procedures would be approved at CEO level.

Elements of an operating policy or procedure

- Purpose and Applicability of procedure or policy
- Detailed description of procedure – based on best practice/standards
- Monitoring actions
- Accountability
- Corrective Actions
- Date of last review or revision date

Level of Detail

The level of detail to include in standard operating procedures is one of the most difficult decisions to make. Procedures must include all steps that are essential and that should be performed the same way each time. Omitting any of these essential steps may lead to confusion for the reader or performance variation among different workers. On the other hand, procedures should not be so detailed that they are cumbersome and impractical for everyday use.

Depending on the purpose of the procedure, the action points in the procedure can be presented in a number of ways – e.g. written steps in a process, checklist, flow chart (this can readily show branches for different paths).

2.4. Using the Procedures

No document on its own is actually going to control the activity or manage the risk. It is important that the points in the document are distributed and understood by everyone involved. Training and informing everyone of the procedures and their responsibilities is as important as the preparation of the document.

For example:

- MGI's resource consent requires that all new irrigation is designed and installed in accordance with 'Irrigation Code of Practice and Irrigation Design Standards' (INZ). In order to be able to demonstrate to the regional council that this has occurred MGI has developed an operating procedure. This needs to be communicated to irrigators and to designers and installers. The details of the procedure are covered in an explanatory document and checklist that are made available on the scheme's web site and promoted in the scheme newsletter.
- NOIC has produced a short brochure that outlines the scheme's policies and procedures that are particularly relevant for farm managers.

The policy and procedures documents are also invaluable for auditing purposes.

2.5. Document control, Review and update

Managing the documents and the review and update process is also important. Unless there is a systematic approach to recording and storing the procedures, out-dated versions may end up being used.

All documents should be regularly reviewed and updated. For example: if there is a change in legislation, change in resource consent conditions, change in operations or on a two-yearly basis. The updating trigger/s should be noted in the document.

2.6. Data recording and storage

Some of the key data management issues for a scheme or collective implementing an IASM programme are:

- 'Farm unit' is the core of the farm plan process, whereas the 'water user' i.e. shareholder is the key for the irrigation scheme records.
- For each farm unit / plan there are several 'contacts': owner, lessee, manager, sharemilker etc. A particular person who has day-to-day responsibility for implementing the farm plan must also be identified.
- When information is updated (e.g. address change, manager change etc.) it should only need to be changed in one place, and then this change is effective across the system. i.e. a GIS system that identifies 'farm plan' units, owners, managers etc., should linked directly to the 'farm plan' database.
- There are a significant number of changes every year: e.g. personnel changes, especially in dairy sector, and changes in 'farm units' especially where lease blocks are changed, perhaps every year.
- A scheme may want to analyse 'water take' data and Farm Plan records together e.g. to benchmark water use by irrigation type or enterprise.

Therefore it is most likely that a specific data management solution will be required, but would need to be linked to existing data sources.

Catchment scale reporting

Some of the farm information data collected from the farm plans may be useful for benchmarking purposes with in the scheme or for other reporting.

To make this straightforward, farm plan information should be collected and recorded with this purpose in mind. For example – setting the key categories for 'enterprise', and 'irrigation type' (e.g. via 'drop down' or 'tick' boxes will reduce variation and simplify analysis.

Recognise that the farm plan information will only be as up-to-date as the farm plans. Farm Plans may only be updated every 5 years, unless there are changes to personnel or to farm activities.

Summary

There are two aspects to the data that is generated from the farm plan process: administrative records (tracking of personnel, farm plan versions and status, audit dates, audit reports, compliance etc.) and 'On-farm' information (enterprise type, irrigation type etc) that may be useful for benchmarking or reporting.

Data management could be best achieved through a combination of a linked GIS and database. A web-based system that can also be accessed and/or updated (as permitted) by various parties (independent auditors, water users etc) may reduce the need to transfer records between parties. Existing schemes will already have various systems for record-keeping, so there is unlikely to be a single 'data' solution.

3. Contractual arrangements with water users

Each scheme will have a system for contractual arrangements with their water users. These arrangements will vary from scheme to scheme. However, each scheme will need to ensure that Farm Environment Plan obligations are clearly set out and that non-compliance at the farm level can be dealt with.

These are the matters that should be considered when incorporating Farm Plan requirements into water user contract arrangements.

[to come]

4. Farm Environment Plan

4.1. Description

At the farm enterprise level, each water user must prepare and implement a Farm Environment Plan for their irrigated land use. This plan would be developed, implemented, reviewed and updated in accordance with the scheme's policies and procedures.

The IASM farm plan programme should include:

- A template for development of individual enterprise Farm Environment Plan provided by the scheme managers;
- Assistance through workshops and individual support to help water users to prepare their plans;
- Scheme standards for on-farm environmental management;
- Scheme procedures to ensure a consistent farm plan process (see example in Appendix 3).
- Implementation of scheme procedures, including compliance and enforcement;
- Provision, by the scheme, of training and education related to sustainable irrigated land use;
- Provision, by the scheme, of information to assist in managing water use, where there are benefits to providing this scheme-wide (e.g. climate information, benchmarking of water use).

4.2. Farm Plan template

The generic Farm Plan template (Appendix 7) covers 6 topics:

- Regulatory compliance
- Irrigation Design and Installation
- Irrigation management
- Nutrient and Soils management
- Waterway and riparian management
- Collected animal effluent management

It is intended that a scheme would adapt the template to fit with the particular environmental issues and land uses relevant to the scheme area and their particular regional council requirements. The template is then used by individual irrigators to develop their own environmental farm plan. The template has been designed to:

- be straight forward, yet effective;
- be suitable for all farming activities;
- make appropriate Good Management Practices the bottomline;
- promote continuous improvement using recognised Good Management Practices;
- address issues relevant to irrigated land uses;
- provide the scheme operator with a process to ensure that on-farm environmental effects are being managed;
- be consistent with requirements of other farm plans (e.g. sector specific quality assurance).

Each of the management topics has a similar template. The 'Guide to FEP template' (Appendix 8) provides an explanation of the different sections of the template.

Incorporation of Codes of Practice and Guidelines for Irrigated Land Use.

Because IASM is a process, existing (and new) codes of practice and other best management practice guidelines can readily be incorporated. There are many existing codes of practice, quality assurance systems and other guidelines for achieving sound environmental management on-farm through use of appropriate management practices. These have been developed for New Zealand farm systems, generally with extensive consultation.

Some of these are sector or product specific (e.g. pork, dairy, kiwifruit, blackcurrants). Others are general and relate to specific activities such as fertiliser use or waterway management. Growers would be expected to implement their own sector or product specific codes, quality assurance or Good Management Practice systems and documents according to market or processor requirements.

Rather than summarise or incorporate material from the various codes and guidelines into the Sustainability Protocol or the Farm Plan templates, it is more appropriate to reference or link the source material. This avoids errors and makes it more straightforward to ensure that updates are incorporated as they are produced. The relevant types of codes and guidelines that provide practical approaches to managing key environmental issues are:

- Irrigation Design Code of Practice and Irrigation Design Standards (IrrigationNZ)

- Irrigation Installation Code of Practice (IrrigationNZ)
- Irrigation Evaluation Code of Practice (IrrigationNZ)
- Code of Practice for Nutrient Management
- Spreadmark Code of Practice for the Placement of Fertiliser in New Zealand
- Sustainable Dairying: Water Accord
- Region specific waterway and riparian management guides e.g. in Canterbury: “Guide to managing waterways on Canterbury farms” & companion guides “Lowland Plains, Streams and Drains” & “Hill Country Streams”.

Relationship with other environmental farm plans

The IASM farm environment plan is specifically targeted to meet the need for a farm plan that addresses management of risks to water quality and quantity. It sets objectives and required outcomes for water quality and quantity and can, therefore, readily be audited for performance against those objectives and outcomes. The IASM plan recognises that, as a plan developed to meet regulatory requirements, copies will usually be available to the regional council.

There are many other types of farm environment plan². Not all types are readily auditable against water management objectives, and some include significant personal and financial information about the farm business. It may be more appropriate for these plans to be used to provide information for an IASM plan. Other plan types could be directly comparable. The IASM plan provides for any management area to be covered by another plan. Each scheme, collective or individual would need to confirm that the alternative plan does cover the same objective and outcomes. When the IASM plan is audited, the auditor would need to sight the audit report for the alternate plan.

4.3. Farm Plan Preparation

Schemes should use a workshop process to assist water users to prepare their initial farm plan. Based on experience from NOIC and MGI, most water users could complete their draft plan from attendance at a pre-workshop meeting and a single workshop. Completed plans should be checked on-farm and approved by (or on behalf of) the scheme management.

Each user must consider each objective and required outcome in relation to their specific property (e.g. soil type, slope, irrigation method, irrigated area, land uses) and determine how they will achieve best practice and what monitoring and records they will use to show their achievements.

Farm Plans need to be updated when owners or managers change or changes are made to farm activities. This requires a process for scheme management to check and approve changes to plans. This process should be included in the Scheme procedures and the water use agreement.

As part of the farm plan, all water users would be required to keep records on their farm practices so they can demonstrate that they are carrying out the agreed practices.

² For more information on farm plan types see: Mulcock and Brown (2013) ‘Audited Self-Management for Irrigation: Managing Water Quality and Quantity within Limits’ prepared for Irrigation NZ.

5. Auditing Farm Environment Plans

The purpose of the Farm Plan Audit is to both check on achievement of the objectives and required outcomes and to encourage improvement.

The Scheme's Farm Plan Audit procedure sets out the steps and responsibilities for the audit process. See Appendix 4 for an example audit procedure.

The frequency of the audit is likely to be determined by the regional council requirements. A suitable system is annual audits until 2 years of full compliance is achieved, and then audit frequency can be reduced to at least one year in three. This is to ensure that water users are provided with support and information and do get their plans implemented. It also gives regulatory authorities and the wider community assurance that the farm plan process is being rigorously implemented. The opportunity to reduce audit frequency provides an incentive for users. There could be other incentives that can be provided to recognise environmental management achievements.

Auditing the Farm Plans ensures that appropriate systems are in place to manage the environmental risks associated with irrigated land use. Using an independent external auditor adds credibility to the review process. An Audit Manual has been prepared (Appendix 9) as a guide to the proposed external audit and reporting process. It also provides guidance on skills required to effectively audit the farm plans, and includes a template for the audit of an individual farm plan. It includes an example of a farm plan audit.

6. Reviewing and Revising

The IASM approach incorporates a feedback loop that provides for 'continuous improvement'. This provides the basis for the adaptive management - "learning to manage by managing to learn" (Bormann et al, 1993). It recognises that there are inherent uncertainties in our understanding of catchment processes, water user priorities, and the effects of the scheme operation. Knowledge about complex natural systems continues to change, natural systems are themselves dynamic, community expectations and priorities also change. Therefore scheme management systems need to be flexible and able to evolve.

The philosophy of adaptive management is followed where policies and practices are continually revised by learning from the outcomes of previous work. The process is iterative and aspects of the management processes are revisited and reviewed. The scheme policies and procedures include processes for learning from information gained through monitoring and management actions and using that learning to make improvements both at scheme level and at farm level. In the implementation of their environmental management system, scheme managers would regularly check whether they are satisfied that the scheme is effectively addressing issues and potential areas for improvement are being identified and implemented. The Scheme policies and procedures would be revised as required.

7. Compliance and Enforcement

7.1. Dealing with individual non-performance

To ensure that an irrigation scheme can maintain community and regulator confidence that Farm Environment Plan and any other on-farm environmental management requirements (e.g. 'irrigation shall not cause surface runoff') are fully implemented, schemes need to be seen as credible and fair in implementing their environmental farm plan programmes.

The compliance process must identify the set of actions necessary to achieve compliance by all water users, and to correct or halt situations that endanger the environment. This process must be clearly set out and applied consistently across the scheme. The details would need to be developed and refined for a specific scheme and would need to meet any specific regulatory requirements.

IASM compliance should include the following elements:

- Promoting compliance (e.g. through providing training, information etc.)
- Inspections and monitoring (e.g. internal checks and independent third-party audits of Farm Management Plan performance)
- Deterrence (i.e. identification and enforcement of breaches with appropriate penalties to show that there are adverse consequences of non-compliance).

A process for responding to the situation where the independent auditor determines that the water user is non-compliant in terms of the Farm Environment Plan requirements is set out in the Audit Procedure example (Appendix 4). An example of an agreed corrective 'Action Plan' to resolve run-off problems observed at an audit is in Appendix 10.

In many cases, a scheme or collective would not be able to physically 'turn-off' the water to an individual property, but would usually have the power to suspend or cancel the agreement to provide water. This is a last resort, when all other options have been exhausted, so should be required infrequently. The provision for a scheme to suspend or cancel water supply for non-compliance with environmental management requirements should be included in the water use agreement.

7.2. Reporting for consent or collective agreement

Reporting for resource consent compliance will be set out in the consent conditions. These are likely to cover:

- *All properties in the scheme required to have a Farm Environment Plan*

A GIS system that identifies irrigated properties in the scheme command area, and their Farm Plan identifier, can be produced as a printed map.

- *An annual summary of the results of the Farm Plan audits*

An example of a summary report for the audit results could be:

Farm Plan Audits

A summary of the achievement results for the different management areas for 90 Farm Plan audits are shown in the table below.

	Irrigation System		Nutrients and Soils		Collected effluent		Waterways	
Rating	%	no of farms	%	no of farms	%	no of farms	%	no of farms
High	24%	21	90%	80	77%	37	87%	62
Medium	76%	68	9%	8	15%	7	10%	7
Low	0%	0	1%	1	8%	4	3%	2
total		89*		89**		48		71

* One audited property not currently irrigating

** One audited property (small block) does not apply fertiliser

To streamline collation of this type of data from the individual audit reports, they can be prepared using a spreadsheet or database set up to extract the required information.

- *Identification of any issues of non-compliance with the Farm Environment Plans and details of any action taken to remedy instances of non-compliance*

Accurate records need to be kept of non-compliances and actions to remedy.

8. Appendices

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APPENDIX 1

[This document is based on North Otago Irrigation Company's Environmental Policy and procedure manual.. Their willingness to share their material is gratefully acknowledged]

Example Table of Contents for Environmental Policies and Procedures

1. Environment				
		Status	Who	Date
1.1 Policies	1.1.1 Scheme Environmental Commitment statement or Policy			
	1.1.2 Corrective Action Policy			
	1.1.3 Specific issue policy – e.g. Run-off management			
1.2 Procedures	1.2.1 Procedure for Farm Plans			
	1.2.2 Procedure for Farm Plan Audit			
	1.2.3 Special issue procedure			
	1.2.4			
1.3 Forms	1.3.1 Farm Plan Template			
	1.3.2 Form for Complaint / Grievance			
1.4 Plans	1.4.1 Plan for PR & Communications with wider community			
	1.4.2 Plan for best practice workshops / training			
1.5 External Documents	1.5.1 Resource consents			
	1.5.2			
1.6 Records	1.6.1 Record of Farm Plans and location			
	1.6.2 Resource Consent File			
	1.6.3 Record of Enforcement/Warnings			
	1.6.4 Record of Farm Plan Audit reports			

APPENDIX 2

Example

Environmental Policy Statement

[Each scheme would need to tailor this to their specific situation]

Environmental responsibility is a fundamental part of xxx's business and we aim to be a leader in environmentally sustainable irrigation performance in New Zealand. To achieve this we will drive for continual improvement by:

- Meeting or, where less stringent than scheme standards, exceeding applicable legal requirements, including the conditions of our resource consents;
- Promoting responsible and efficient use of natural resources, especially water;
- Ensuring that our shareholders are aware of their environmental responsibilities and supporting them to achieve high environmental standards
- Fully integrating environmental considerations into any new development or expansion of the scheme;
- Understanding, upholding and respecting cultural heritage, in particular respecting tangata whenua values in relation to water, the natural environment and other taonga ;
- Taking opportunities to enhance biodiversity vales;
- Engaging regularly, openly and honestly with people affected by the scheme operations and taking their views into account in decision making;
- Regularly reviewing our environmental performance and reporting our progress to shareholders, xxxx Regional Council, tangata whenua and the local community.

[This example statement of environmental commitment is based on Environmental / Sustainability Policies developed by The Ritso Society / Central Plains, MGI, NOIC and RDR. Their willingness to share their material is gratefully acknowledged]

APPENDIX 3

Example of Procedure for Farm Environment Plans

[This document is based on North Otago Irrigation Company's Farm Plan procedure. Some aspects of their audit process have been made more generic. NOIC's willingness to share their material is gratefully acknowledged]

[Note that the Farm Plan Procedure will vary depending on each scheme's specific arrangement e.g. use of staff / contractors; resource consent / regional plan requirements etc]

1. Scope

This procedure specifies the requirements and work flow associated with the preparation and administration of the Farm Environment Plans (FEP) required by [condition of the resource consents held by xxxx / rule xxx in xxx Regional Plan]. This procedure covers the actions and responsibilities of [scheme] personnel and [scheme] shareholders.

2. Objective

The objective of this procedure is to provide clear written instructions for the preparation and administration of FEPs. This will ensure that [scheme] continues to comply with [its resource consents] and that FEPs are prepared and managed in a consistent and effective manner.

Farm Environment Plans (Farm Plan) are the tool by which [scheme] will ensure that appropriate management practices are implemented on farm to avoid or minimise adverse impacts on water quality and quantity of on-farm activities, especially those associated with irrigation.

3. References

3.1. Resource consents

FEPS are covered by the following resource consent conditions:

[include relevant consent conditions]

[or describe other basis for farm plan requirements]

3.2. Water Supply agreements

[Include relevant clauses from water supply agreement that refer to Farm Plan requirements]

3.3. Related Operating Procedures

- Procedure for Farm Plan Audits

3.4. Relevant contacts

e.g. contact person at regional council re farm plan implementation

4. Definitions

Farm Environment Plan

Farm Manager

Plan Implementer

Baseline practices

5. Responsibilities

5.1. [CEO]

The [Scheme] [CEO] is responsible for ensuring that [scheme]:

- notifies all shareholders of their responsibility to prepare and maintain a [scheme] FEP and manage their property so that they achieve the objectives and outcomes set out in their FEP
- supports farmers in preparing their FEPs
- provides information to help farmers implement their FEPs

5.2. [Administrator or similar role]

[Scheme] [Administrator or similar role] is responsible for notifying the [scheme] **Environmental Co-ordinator** [person with responsibility for Farm Plan preparation] of new shareholders or changes to shareholders or shareholdings that may require new FEPs or revisions to existing FEPs.

5.3. Environmental Co-ordinator

The [scheme] **Environmental Co-ordinator** is responsible for:

- ensuring that all properties that receive scheme water have a FEP
- assisting shareholders, and where relevant, their managers, sharemilkers, and other personnel, to prepare and/or update their FEP
- reviewing all new and revised FEPs and approve / check that they
- Maintaining a register of all FEPs and key person responsible for its implementation including revisions and updates
- Providing information to those responsible for farm plans with information on implementing their FEP
- Reviewing the FEP structure and content on a regular basis

5.4. [Scheme] Shareholders

- [Scheme] Shareholders are responsible for preparing and maintaining a farm plan for each of their farming operations.
- Shareholders must be committed to managing property to achieve objectives and outcomes in Farm Plan and to making changes, if required.
- [Scheme] Shareholders must notify [scheme] when there is a change of management on farm.
- Shareholders must ensure that new managers understand the Farm Plan responsibilities and Farm Plan is reviewed and updated.

- Any transfer of water allocation to another person or property must be notified to [scheme] and approved by [scheme]. All land receiving water for irrigation under a transfer arrangement must have an approved [scheme] Farm Plan, even if the transfer is temporary.

6. Procedure

6.1. Requirement for Farm Plans

- All properties receiving [scheme] water must have a FEP.
- The FEP must cover all the land managed as a farm unit, not only the area under irrigation from [scheme] water. Where a shareholder owns/operates more than one property, and these are operated as separate units, a farm plan is required for each unit.
- Properties with [10] shares or less and low environmental risk (e.g. low intensity land use/s), require a FEP, but do not require FEP audits.
- The FEP must be prepared and approved before water can be used

6.2. Preparing the FEP

- [Scheme] will notify new irrigators of the Farm Plan requirements and procedures
- [Scheme] will provide assistance to shareholders to develop FEP specific to each property
- [Scheme] will provide a template for preparation of the FEP.
- Template will specify the objectives and required outcomes. Users will retain flexibility as to how they achieve these.
- [If appropriate, state scheme charge for assistance to prepare the farm plan e.g. Shareholders are required to pay [scheme] for assistance with farm plan preparation at the current rate]

6.3. Farm Plan Approval

- The completed farm plan must be submitted to [scheme] for review and approval.
- Prior to approval, a [scheme] representative will visit the property to check the farm plan details
- Approved Farm Plans will be entered in Farm Plan register

6.4. Farm Plan updates

- Farm Plans must be reviewed and updated if:
 - Any one of the owner, manager or plan implementer changes
 - There are significant changes to farming operation or on-farm practices
 - The independent audit identifies that the management practices as listed in the FEP do not fairly represent actual on-farm practice.
- When a Farm Plan is updated it must be submitted to [scheme] for approval, and updating of the Farm Plan Register.
- All Farm Plans must be reviewed and updated every 5 years [If appropriate, state scheme charge for assistance to update the farm plan e.g. Shareholders are required to pay [scheme] for assistance with farm plan preparation at the current rate]

6.5. Responsibility for Farm Plan Implementation

- Both the shareholder and any Farm Manager appointed by the shareholder, are responsible for ensuring that the property has a Farm Plan and it is correctly implemented.

- Where a block or property is leased, the shareholder leasing the land must inform the lessee of the Farm Plan requirements. The lessee, and any Farm Manager appointed by the lessee, are responsible for preparing and maintaining the Farm Plan.

7. Review of Farm Plan

7.1. Review of baseline management practices

7.2. Review of Farm Plan structure and process

- [Scheme] will review the Farm Plan content and process, including management objectives and required outcomes at least every five years, or if the conditions relating to the relevant RMA consents for the Scheme are changed by the xxx Regional Council.
- Any review of the Farm Plan content and process will be undertaken in consultation with xxx regional council, tangata whenua and the scheme's community liaison group.

8. Farm Plan Audits

Farm Plans will be audited by an independent assessor on a regular basis, as required under [scheme] consent conditions. Non-compliance will result in enforcement procedures. Refer to 'Procedure for Farm Plan Audits'.

9. Training and Education

[Scheme] will provide on-going training and education opportunities for shareholders and farm staff to ensure that Farm Plan outcomes can be achieved, and there is an ongoing process of environmental improvement across the scheme.

10. Record Keeping and Reporting

- [Scheme] will maintain a copy of all approved Farm Plans and a register of Farm Plans and contact information
- [Scheme] will report on farm plan performance to xxxx Regional Council as required under consent xxxx .
- [Scheme] will report annually to shareholders, tangata whenua and the scheme's community liaison group on overall farm plan performance.

11. Sign-Off and Revisions

Version	Revision Status	Date	Prepared by	Checked by	Approved by
<i>1</i>	<i>Draft</i>	<i>07/02/2013</i>	<i>CM</i>	<i>IB</i>	

APPENDIX 4

Example of Procedure for Farm Environment Plan Audits

[This document is based on North Otago Irrigation Company's Farm Plan Audit procedure. Some aspects of their audit process have been made more generic. NOIC's willingness to share their material is gratefully acknowledged]

[The details of the audit process and compliance and enforcement measures will vary from scheme to scheme depending, in part, on the particular resource consent conditions, and the scheme management/personnel arrangements.]

1. Scope

This procedure specifies the requirements and work flow associated with the annual audit process for the Farm Environment Plans (FEP) as required by [condition of the resource consents held by xxxx OR rule xxx in xxx Regional Plan]. This procedure covers the actions and responsibilities of [scheme] personnel and [scheme] shareholders, but does not cover the actual audit procedure used by the independent auditor.

2. Objective

The objective of this procedure is to provide clear written instructions for the administration of the FEP audits. This will ensure that [scheme] continues to comply with [its resource consents] and that the audits and related reporting are undertaken in a consistent and effective manner, satisfactory to the consent authority [xxx regional council].

3. References

3.1. Resource consents

FEP audits are covered by the following resource consent conditions:

[include relevant consent conditions]

[or describe other basis for farm plan requirements]

3.2. Water Supply agreements

[Include relevant clauses from water supply agreement that refer to Farm Plan audit requirements]

3.3. Related Operating Procedures

- Procedure for Farm Plans

3.4. Relevant contacts

e.g.

- contact person at regional council re farm plan implementation
- independent auditor

4. Definitions

Farm Environment Plan:

Farm Manager:

Plan Implementer:

Baseline practices:

Action Plan: A plan setting out how a shareholder will address non-compliances identified by the audit process.

Non-compliance: [Define non-compliance - see Audit Manual for a possible approach]

Small holding (low risk): properties with [x] shares or less or [x] ha or less in size, with low intensity farming and/or low water use.

5. Responsibilities

5.1. [Scheme] [CEO]

The [Scheme] [CEO] is responsible for ensuring that [scheme] develops and maintains a Farm Plan Auditing process in order to ensure consistent and effective compliance with the scheme's resource consent conditions.

5.2. [Scheme] [Administrator or similar role]

[Scheme] [Administrator or similar role] is responsible for scheduling audit visits with the selected properties.

5.3. [Scheme] [Environmental Co-ordinator]

The [Scheme] [Environmental Co-ordinator] is responsible for the overall management of the Farm Plan Auditing process. This includes:

- Selection of properties to be audited each year
- Selection of independent auditor
- Communication with shareholders
- Communication and reporting to [regional council]
- Management of records
- Assisting with preparation of Action Plans and review of progress

5.4. [Scheme participants] [Shareholders]

[Scheme participants] [Shareholders] are responsible maintaining farm plans that are auditable and demonstrating practices that provide a high level of confidence that on-farm environmental risks are being appropriately managed.

5.5. Independent Auditor

The independent auditor is responsible for conducting the farm plan audit in an acceptable and timely manner and for providing individual audit reports, and a report on audit findings within one month of audit completion.

5.6. Board of Directors

The [xxx] board of directors is responsible for taking enforcement action to compel environmental compliance where other methods of managing non-compliances have failed.

6. Procedure

6.1. Schedule Audits

[Note that some aspects of the audit process may be specified in the scheme's resource consent and/or regional plan conditions]

- Audits are to be undertaken during the irrigation season
- Determining which farms are due to be audited:
 - New farm plans are to be audited annually until property has two consecutive 'full compliance' audits. This includes properties with a new manager or owner or updated plan.
 - Properties with 'non-compliance' at previous audit must be re-audited in the next irrigation season. Properties that have been rated as non-compliant as a result of poor record keeping will not necessarily trigger the re-audit process.
 - At least one third of farms to be audited each year
 - Every farm is audited at least once in three years
 - Smallholdings (low risk) are not included in annual audit process
- Appoint an independent auditor in sufficient time to schedule audit programme
- Notify plan implementers and shareholders (if different) of audit and provisional appointment time
- Finalise audit appointment with plan implementer
- Shareholders are required to pay the full cost of an audit or re-audit. This will be on a cost recovery basis to recoup the fees charged by the independent auditor.

6.2. Undertake audits and provide reports

- Independent auditor to visit farms at agreed time and carry out audit.
- Independent auditor will prepare audit report and send to shareholder and plan implementer (if different) [or could have auditor send reports to scheme administrator to send out] within [2 weeks] of carrying out the farm visit.
- Independent auditor will prepare draft audit summary report to xxxx [scheme] within [one month] of completing on farm visits.

6.3. Review and Assessment of Audit Report Findings

- Plan implementers/shareholders will have [1] weeks to respond to the independent auditor with comments/ queries.

- If plan implementer and/or shareholder disputes the auditor's findings and the auditor is not prepared to change their report, then [scheme] will set up a dispute resolution committee. This committee would have the power to:
 - Convene a hearing so that disputes or issues can be presented;
 - Visit the property, if necessary, to view issues in contention;
 - Make a decision on the audit report e.g. to amend the auditor's report, require the plan implementer and/or shareholder to accept and implement the report; appoint an new auditor to carry out a new audit.

The committee would have a membership of three:

- Two directors from the Board of [scheme] who are independent of those in dispute
- An independent person, appointed by the Board [scheme], to ensure that the committee has a balanced representation that includes both farming and environmental management expertise.
- [Scheme] will have [1] weeks to respond to the independent auditor with comments/queries.
- A finalised audit summary report and individual audit reports will be provided to [scheme] by the auditor within [2] weeks after receiving comments

6.4. Managing Non-compliances

- All non-compliance (see definitions) identified in the audits must be addressed.
- Within 2 weeks of receiving final reports from the independent auditor, [scheme] will send a letter to all shareholders and plan implementers who are non-compliant notifying them that [describe process e.g. they have one month to respond with an action plan to address non-compliance].
- The [scheme] Environmental Co-ordinator will work with shareholders and plan implementers to prepare and implement action plans.
- The [scheme] Environmental Co-ordinator will maintain a record of time spent working with shareholders and plan implementers on action plans. [Scheme] may recover these costs from the shareholder.
- The Environmental Co-ordinator will visit all non-compliant properties within 6 months of receipt of the audit report to ensure the non-compliance issue/s have been addressed.

6.5. Enforcement

- If the plan implementer and shareholder do not engage in the process to address non-compliance (e.g. do not provide a satisfactory action plan within the required time frames) and/or do not implement the required actions within the required time frames the shareholder will be considered in breach of their water supply agreement and enforcement action will be taken.
- If enforcement action is required, the case will be referred to the CEO, who is authorised to take the following actions at his/her discretion:
 - Verbal warning
 - Written warning – shareholder sent a letter stating that their access to water supply may be restricted or denied if they do not take appropriate action within a specified time [e.g. 30 days].

- Limited water restrictions – e.g. one day on, one day off or reduced amount.
- If satisfactory action still does not result the CEO will refer the matter to [scheme] board for further action. The Board may:
 - Convene a hearing so that disputes or issues can be presented
 - Restrict or deny water supply
 - Require forfeiture of shares [or 'Cancel agreement to supply water' or other 'last resort' measure]
- Irrigators subject to CEO enforcement action by the CEO may appeal to the Board. The Board's decision on enforcement is final.
- [Scheme] will use its discretion when taking enforcement action, and will take account of:
 - The seriousness of the non-compliance
 - Degree of co-operation
 - History of environmental issues
- [Scheme] aims to achieve compliance by imposing progressively escalating penalties if environmental issues are not addressed. A guideline for penalties for enforcement actions related to audits is:
 - Warning letter
 - Water supply denied for 10 days
 - Water supply denied for 20 days
 - No access to water indefinitely
- If the re-audit of a non-compliant property gives another non-compliance rating, then the shareholder/plan implementer will receive a letter stating that their access to water will be restricted or denied if appropriate action is not taken within 30 days to address all environmental issues. The Environmental Co-ordinator will visit the property at the end of the 30 day period, and if the required action has not been taken, the matter will be referred to the Board for enforcement.
- Restricting or denying access to water is a 'last resort' to compel compliance, and [scheme] will endeavour to resolve environmental issues through discussion and advice. However, in order to protect the interests of all shareholders and their on-going access to water, this step will be implemented if necessary.

7. Training and Education

[Scheme] will:

- Ensure that all shareholders are made aware of the audit procedure and their obligation to meet environmental objectives, or risk being denied access to scheme water.
- provide on-going training and education opportunities for shareholders and farm staff to ensure that Farm Plan outcomes can be achieved, and there is an ongoing process of environmental improvement across the scheme.

8. Record Keeping and Reporting

- [Scheme] will maintain a copy of all records relating to Farm Plan audits for a period of at least 7 years.
- [Scheme] will report on audit results and farm plan performance to xxxx Regional Council as required under consent xxxx . [add details, including personnel responsible]

- [Scheme] will report annually to shareholders and to the scheme's community liaison group on overall farm plan performance.

9. Sign-Off and Revisions

Version	Revision Status	Date	Prepared by	Checked by	Approved by
<i>1</i>	<i>Draft</i>	<i>07/02/2013</i>	<i>CM</i>	<i>IB</i>	

APPENDIX 5

NOIC Form for Query or Grievance

NOIC BOS 7.5.1 Form for Query Grievance

1

Once the query is received by NOIC representative/employee, the query must be recorded on this form, and it must be reported to the CEO and Environmental Coordinator WITHIN 1 BUSINESS DAY.

Record BOS 7.9.3

Caller		Query Taken by	
Address		Date	
P.O. Number			
Phone Number		Reported to	
Email Address		Date	

Query / Grievance Details :

--

Response from the Company:

--

List of Action Items and Responsibility:

--

Print Name

Date

June 2011

REV 2

North Otago Irrigation Company Ltd
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APPENDIX 6

NOIC Policy Document for Run-off Mitigation and Management: Table of Contents

NOIC BOS 3.1.5

Policy for Run-off Management & Mitigation

i

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APPENDIX 7

Generic template Farm Environment Plan

Add logo etc for scheme or collective

Farm Environment Plan

This is a generic template that needs to be tailored for a particular, scheme, collective or individual.

Property name				
Physical address				

Property Owner				
Postal address			Phone no.	
		Postcode		Mobile no.
Email address				
Contact person for owner (if different)				
Postal address			Phone no.	
		Postcode		Mobile no.

Is whole property leased?	Yes /No If yes, provide details:			
Name of lessee:				
Postal address			Phone no.	
		Postcode		Mobile no.
Email address				

Farm Manager name (if different to owner)			Position (manager, sharemilker etc)	
Postal address			Phone no.	
		Postcode		Mobile no.
Email address				

Person responsible for implementing Farm Plan	
---	--

This Farm Environment Plan is required under the resource consent/s held by xxxx irrigation scheme / under the consent held by ABC Farming Ltd, / as a condition of Permitted Activity status. It sets out the management practices that will be used to actively manage environmental issues on the property, with a focus on managing water quality and quantity within limits, as specified by xxx regional council. The Plan will be audited regularly by independent assessors in accordance with the audit, compliance and enforcement procedures as set out by xxxx Regional Council.

Notes

Version 1:

Version 2:

FARM PLAN NO: xxx
Version no: xx

Responsibility for Implementing the Farm Plan

As the person responsible for implementing this plan, I confirm that the information provided is correct:

Name (Plan implementer):.....

Signature:

Position (e.g. owner/manager):.....

Date:

Owner and Lessee Commitment

As owner/s of this farming business I/we are committed to ensuring that all activities on our property are undertaken in an environmentally sustainable and culturally sensitive manner. We agree to monitor our performance in meeting the management objectives and outcomes in this Plan, and take appropriate actions to address any areas where improvement is needed.

Name (Owner or owner representative) Signature Date: / /

Name (Lessee or lessee representative) Signature Date: / /

Technical approval by xxxxxxxx (e.g. scheme name)

I have reviewed this plan and believe it to be:

- | | | |
|---|------------|-----------|
| 1. Technically sound and feasible | Yes | No |
| 2. Addressing the cause of identified environmental risks | Yes | No |
| 3. Able to meet the plan objectives | Yes | No |

Name:

Signature:

Date:

Comments

Farm Information

Farm Plan Areas	
Total area covered by Plan (ha)	
Effective area (ha)	
Irrigated area (ABC scheme)	
Irrigated area (other water)	
TOTAL Irrigated Area (ha)	

No. of staff (labour units to operate property)	
Enterprise type	
Dairy	
Sheep/beef	
Cattle	
Mixed Cropping	
Orchard/vineyard	
Nursery	
Lifestyle	
Other	

DAIRY	
Peak. cows milked	
Cows milked in winter Y/N	
No cows wintered off farm	
No. R1 &/or R2 heifers grazed on farm	
SHEEP	
Ewes	
Hoggets	
W.lambs	
Lamb trading Y/N	
OTHER STOCK (type /no)	

Irrigation type / area (water)		
Irrigation type (water)	Scheme Water Irrigated area (ha)	Other Water Irrigated area (ha)
Pivot		
Linear move		
K-line		
Gun		
Rotary boom		
Linear boom		
Border dyke		
Long lateral		
Solid set		
Drip / micro		
Other		
Total Irrigation		

CATTLE	
Cows	
R1 & R2 cattle	
Cattle trading Y/N	
Winter grazers	
Young stock dairy support	
DEER	
Hinds	
R1 & R2 deer	
Velveting stags	
OTHER STOCK (type /no)	

Collected Effluent	
Effluent irrigation type	Area irrigated by irrigator type (ha)
Pivot	
Linear move	
K-line / pod	
Travelling irrigator	
Other	
Total effluent area (ha)	

Collected Effluent	
Effluent storage	Tick box
Less 5 days	
5-15 days	
15-30 days	
2 months	
3 months	

CROPS	
Ha in annual crop	
Standard Crop rotation (example rotation)	
Other - vineyards, orchards etc (describe)	
Nutrient budget	
Nutrient budget prepared by:(Person, company, contact details)	
Current farm nutrient losses: N kg/ha	
Current farm nutrient losses: P kg/ha	
N loss target (if known): kg/ha	
N loss target (if known): kg/property	

INSERT FARM MAP/S HERE

Name key roads and show North direction, to enable farm to be located on a road map.

Show on map, if present:

- Land management units (these should align with the blocks used in the nutrient budget)
- Irrigated area by irrigation type
- Effluent area
- Bores/wells
- Water races
- Conservation or covenanted areas/ indigenous bush/scrub
- Streams¹ and wetlands, including stock crossing points - Show which streams are fenced
- Standoff areas, feed pads
- Tracks
- Open drains
- Areas that are tile drained
- Lease blocks – including owner name (If the whole farm is leased from one owner, then record this information on page 1)

¹ A scheme may wish to include a definition of stream, wetland (e.g. from regional council or Sustainable Dairying: Water Accord (2013))

Land Management Unit²: A (Name:

SLOPE	Flat	Rolling	Mod. steep	Steep

TYPE	Movable Spray	Fixed Spray	Drip/Micro	Surface

Block Strengths

) (repeat for each block identified on Farm Map)

LAND USE	Pastoral	Arable	Small seeds	Vegetables	Other horticulture	Other.....

Area of block (ha)	Stream/s present		Wetland/s present		Soil type
	Y	N	Y	N	

Block Weaknesses

ENVIRONMENTAL RISK ASSESSMENT for Land Management Unit A

Identify risks to water quality from the combination of the natural resources (soil, stream, slope etc.) and current farm practices (stock, irrigation, cultivation etc).

Current farming activities	Risk: Low Med High N/A	Justification for your Risk Assessment	Need to Adjust or Change Practices Y/N	Current farming activities	Risk: Low Med High N/A	Justification for your Risk Assessment	Need to Adjust or Change Practices Y/N
STOCK GRAZING Intensive grazing – lighter soils Intensive grazing – heavier soils Intensive grazing – winter crops Near waterways/wetlands Near open drains				FERTILISER USE Fertiliser application near waterways/wetlands High nitrogen fertiliser use High phosphate fertiliser use			
CULTIVATION Near to waterways/wetlands Sloping paddocks With extended fallow periods				DRAINS Drain cleaning Sub-surface drainage			
IRRIGATION Application Maintenance Infrastructure (pipes / races)				EFFLUENT MANAGEMENT Effluent storage Effluent irrigation			
EARTHWORKS Tracking/races Recontouring				OTHER			

² A land management unit is a homogenous block of land that responds in a similar way under similar management. The units should align, as far as possible, with the nutrient budget blocks

Regulatory compliance³

Management Objective: To ensure full compliance with all resource management regulatory requirements

Required outcomes:

1. Full compliance with relevant regulatory requirements

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes	Evidence for Compliance
Required outcome: 1. Full compliance with relevant regulatory requirements				
Good Minimum for all farmers	Fully compliant with the regulatory requirements (consent or permitted activity) relating to: <ul style="list-style-type: none"> • Water take/use consent/s • Water metering • Land use • Dairy effluent • Offal pits • Silage pits Any indigenous vegetation and/or habitats of indigenous fauna, including wetlands, that are identified as significant by DoC, MfE, district or regional council are managed to meet any specific requirements	<input type="checkbox"/> Required <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Required		Council compliance reports Resource consents

Note: A list of all consents held for the property is contained in Appendix one to this plan.

³ **Note:** Compliance with some of these requirements may be the responsibility of the scheme responsibility (e.g. if scheme manages metering and water take)

Irrigation System Design and Installation

Management Objective: To ensure that all new irrigation systems and significant upgrades⁴ meet industry best practice standards

Required outcomes	Covered by alternative plan? Y/N	Name of alternative plan / programme
1. New irrigation infrastructure is designed and installed to deliver water to industry best practice standards		

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
Required outcome: 1. New irrigation infrastructure is designed and installed to deliver water to industry best practice standards				
Poor Generally inadequate	No design or installation checks	<input type="checkbox"/>		
Basic May be adequate for small blocks with low application depth and intensity and low water use;	<ul style="list-style-type: none"> System complies with requirements for flow meter, and limits on flow rate, volume and area irrigated System has been designed with site specific knowledge of the soil, climate and crop needs Post installation checks of application rate and distribution uniformity using DIY evaluation or certified evaluator 	<input type="checkbox"/> Required <input type="checkbox"/> Required <input type="checkbox"/> Required		Show application depth, intensity and uniformity are adequate for soil type, slope etc.
Good Minimum for most spray irrigators	<ul style="list-style-type: none"> All new on-farm irrigation infrastructure is designed in accordance with Design Standards for Piped Irrigation Systems in New Zealand (Irrigation NZ, October 2012); Code of Practice for the Design of Piped Irrigation Systems in New Zealand (Irrigation NZ, October 2012) and meets scheme requirements for flow meter, and limits on flow rate, volume and area irrigated; Independent evaluation of design/s 	<input type="checkbox"/> Required		Provide certificate from INZ accredited designer or from a suitably qualified independent reviewer

⁴ Define 'significant upgrade' e.g. conversion border to spray; k-line to pivot

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
	<ul style="list-style-type: none"> All new irrigation infrastructure is installed in accordance with Installation Code of Practice for Piped Irrigation Systems (Irrigation NZ, January 2012); Commissioning tests show that system performs to desired specifications for: <ul style="list-style-type: none"> System capacity Application depth Application intensity Application Uniformity ($\geq 85\%$) Return interval Operation and maintenance manuals obtained. 	<input type="checkbox"/> <input type="checkbox"/> Required <input type="checkbox"/> Required <input type="checkbox"/>		Provide commissioning report
Premium Required to ensure design can achieve effective and efficient use of water	<ul style="list-style-type: none"> Comprehensive evaluation and decision-making process used (e.g. INZ Decision support process). 	<input type="checkbox"/>		

Irrigation Management

Management Objective: To ensure efficient on-farm water use that meets crop needs and minimises losses.

Required outcomes		Covered by alternative plan? Y/N	Name of alternative plan / programme	
1. All irrigation applications are justified by monitoring and/or other assessment or information				
2. Farm practices optimise water applications from irrigation system				
3. All staff involved in the operation and maintenance of the irrigation system are suitably trained				
Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
Required outcome: 1. All irrigation applications are justified by monitoring and/or other assessment or information				
Poor Generally inadequate	No formal monitoring or other practices used to make irrigation application decisions	<input type="checkbox"/>		
Basic May be adequate for small blocks, low application rates, low water use; or border dyke on roster	Observations / basic checks made <ul style="list-style-type: none"> • Measure rainfall • Consideration of rain/weather forecast • Dig holes and check • Use a probe (e.g. electric fence standard) to check soil moisture • Other... 	<input type="checkbox"/> Required <input type="checkbox"/> Required <input type="checkbox"/> <input type="checkbox"/>		
Good Desirable minimum for most spray irrigators	Measurements taken and used <ul style="list-style-type: none"> • Rainfall measured and recorded • Consideration of rain/weather forecast • Soil temperature monitored • Soil moisture assessment actively used: <ul style="list-style-type: none"> ○ Buried sensors ○ Scheduling service ○ Hand held probe • Water balance calculation used 	<input type="checkbox"/> Required <input type="checkbox"/> Required <input type="checkbox"/> <input type="checkbox"/> Required <input type="checkbox"/>		<ul style="list-style-type: none"> • Soil moisture records • Staff questioning of irrigation scheduling

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
	<ul style="list-style-type: none"> • Crop irrigation scheduling model used • Use basic checks (holes / fence standard) to check technology / calculations • Other ... 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Premium Required to fully demonstrate efficient water use	"Good" plus: <ul style="list-style-type: none"> • Farm-wide water balance modelling using local climate data and ground-truthed with soil moisture monitoring • Records of measurements and irrigation decisions kept to demonstrate how soil moisture levels are managed between field capacity and the Management Allowable Deficit (irrigation trigger point) • Sensor records stored on computer or in notebook and reviewed regularly or provided by scheduling service 	<input type="checkbox"/> Required <input type="checkbox"/> Required <input type="checkbox"/> Required		<ul style="list-style-type: none"> • Provide soil moisture records • Staff questioning of irrigation scheduling
Required outcome: 2. Farm practices optimise water applications from irrigation system				
	Optimise applications for movable spray systems			
Poor Generally unacceptable	<ul style="list-style-type: none"> • Excessive application depths • Low application uniformity 	<input type="checkbox"/> <input type="checkbox"/>		
Basic May be adequate for small blocks, low application rates, low water use				

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
Premium Required to fully demonstrate efficient water use	“Good” plus: <ul style="list-style-type: none"> • Application depth and uniformity checks with buckets or rain gauge pre-season, and regularly through season • System evaluation by certified evaluator 5 yearly, and programme to remedy problems implemented • Annually complete water use checklist 	<input type="checkbox"/> Required <input type="checkbox"/> Required <input type="checkbox"/> Required		<ul style="list-style-type: none"> • Application rate checks • System evaluation report and workplan • Water use check report
	Optimise applications for fixed spray			
Poor Generally inadequate	<ul style="list-style-type: none"> • Excessive application depths • Low application uniformity 	<input type="checkbox"/> <input type="checkbox"/>		
Basic May be adequate for small blocks, low application rates, low water use;		<input type="checkbox"/> <input type="checkbox"/>		
Good Desirable minimum for most systems	<ul style="list-style-type: none"> • Adjust irrigator speeds according to evapotranspiration (ET), rainfall and soil moisture status • Monitor pasture/crop growth and development • Application of water onto non-productive land, including impermeable surfaces and river/stream margins is avoided. • Check for excessive runoff and adjust system if necessary • Close down system if excessive runoff and/or ponding occurs • Monthly: check measuring application rates with rain gauge and keep records • Wetted width widened on outer spans 	<input type="checkbox"/>		<ul style="list-style-type: none"> • Provide irrigation application calibration record (e.g. a spreadsheet). • Irrigation incident records • Application rate check results • Baseline audit report

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
	<p>on long pivots or on slopes (e.g. by fitting boom-backs or clipping hoses over truss rods and fitting wide spray sprinklers)</p> <ul style="list-style-type: none"> A baseline audit of the irrigation system is completed by an Irrigation NZ accredited evaluator to identify efficiency improvements. The report should set out the system performance, including well test(s) If required, any required upgrades should be included in a workplan with timelines for completion 			<ul style="list-style-type: none"> Upgrade work plan
Premium Required to fully demonstrate efficient water use	<p>"Good" plus:</p> <ul style="list-style-type: none"> System evaluation by certified evaluator 5 yearly, and programme to remedy problems implemented Annually complete water use checklist 			<ul style="list-style-type: none"> System evaluation report and workplan Water use check report
	Optimise applications for micro /drip			
Poor Generally inadequate				
Basic May be adequate for small blocks, low application rates, low water use;	<ul style="list-style-type: none"> Pre-season calibration of at least half system area 	<input type="checkbox"/>		
Good Desirable minimum for most systems	<ul style="list-style-type: none"> System layout plan and control points available at system on/off control station Pre-season calibration check of each block. Run-time adjustment factors 	<input type="checkbox"/>		Provide irrigation application rate record (e.g. a spreadsheet). See example at: http://www.pagebloomer.co.nz/resources/irrigation-calibration/

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
	applied <ul style="list-style-type: none"> Regular readings of operating pressure and flow logged by block System flushing at least annually Determine cause of and manage identified wet or dry spots A baseline audit of the irrigation system is completed by an Irrigation NZ accredited evaluator. If required, upgrades should be included in a workplan with timelines for completion 			Sight system layout plan Sight calibration sheets Sight log book Baseline audit sighted Upgrade workplan sighted
Premium Required to fully demonstrate efficient water use	“Good” plus: <ul style="list-style-type: none"> System maintenance plan in place and records kept System evaluation by certified evaluator within last 5 years;, and programme to remedy problems implemented Annually complete water use checklist 			Maintenance plan and records sighted Certified evaluation report sighted Completed water use checklist sighted
	Optimise applications for surface irrigation (e.g. border systems)			
Poor Generally unacceptable				
Basic May be adequate for small blocks, low application rates, low water use				
Good Desirable minimum for	<ul style="list-style-type: none"> Paddocks are monitored and clocks adjusted to soil moisture status, ET, rainfall and length of grass 			Provide irrigation application record Staff questioning of irrigation operations

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
most low pressure spray systems	<ul style="list-style-type: none"> • Monitor indicator points/areas are setup and clocks adjusted accordingly • Gate seals maintained • Sills cleaned • Head races hard grazed • Borders maintained and any holes repaired • System in place for staff to report/fix problems 			
Premium Required to fully demonstrate efficient water use				
Required outcome: 3. All staff involved in the operation and maintenance of the irrigation system are suitably trained				
Poor Generally unacceptable	No training			
Basic May be adequate for small blocks, low application rates, low water use; or border dyke	<ul style="list-style-type: none"> • Understand resource consent conditions • Limited training 			

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
Good Desirable minimum for most spray irrigators	Relative to their responsibilities, provide on-farm training for all staff involved in irrigation management, including but not limited to: <ul style="list-style-type: none"> • How to avoid runoff and/or ponding • Correct application depths • Emergency procedures • System monitoring for problem identification • System maintenance • Individual staff responsibilities and accountability 			<ul style="list-style-type: none"> • Staff questioning to determine competency • Irrigation management data and information is available to staff e.g. Guide to Good Irrigation • INZ -
Premium Required to fully demonstrate efficient water use	At least 1 staff member to achieve the Irrigation System Operator Training Standard (from Irrigation NZ). This staff member shall be the person responsible for managing the irrigation systems on-farm.			<ul style="list-style-type: none"> • Certificate of attendance

Nutrient and Soil Management

Management Objective: To minimise nutrient and sediment losses from farming activities to ground and surface water.

Required outcomes	Covered by alternative plan? Y/N	Name of alternative plan / programme
1. All sources and potential losses of nutrients, sediment and effluent are clearly identified		
2. Nitrate loss target/s for property, as set by scheme and/or regional council, are met or exceeded.		
3. Phosphate (P) and sediment losses to ground and waterways are minimised.		
4. Soils are well-managed to optimise infiltration and minimise runoff		

Acceptability of practices	Baseline Management Practices (other practices may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
Required outcome: 1. All sources and potential losses of nutrients, sediment and effluent are clearly identified				
Poor Unacceptable	No action in place to identify losses			
Basic May be adequate for small blocks and/or low intensity operation	<ul style="list-style-type: none"> Basic nutrient budget identifies all N and P inputs (only an option where Overseer or other approved budget is not required by regulation) Likely sources of sediment losses identified 			
Good Required minimum for most situations	Nutrient budget <ul style="list-style-type: none"> Whole farm nutrient budget uses budgets for each land management unit/block and is prepared by a suitably qualified operator, using Overseer or approved alternative tool and using agreed input parameter protocol (e.g. industry or regional council) . Nutrient budget calculations take full account of all nutrient inputs and outputs Particular note is taken of N and P 			<ul style="list-style-type: none"> Provide the nutrient budget & parameter report (input data)

Acceptability of practices	Baseline Management Practices (other practices may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
	<p>requirements and losses from the property.</p> <ul style="list-style-type: none"> Whole farm nutrient budgets are reviewed and revised regularly or as required by regional council. <p>Critical sites for P and sediment loss</p> <ul style="list-style-type: none"> Identify locations that are key sites for P and sediment losses Plan how to reduce P and sediment losses from these areas. 			<ul style="list-style-type: none"> Map showing critical source areas plus plan to reduce nutrient and sediment losses from these areas.
Premium Required to show excellence in nutrient management	CSA map and nutrient budget used as key on-farm management tools			<ul style="list-style-type: none"> Evidence that CSA map and nutrient budget integrated into day to day decision making processes.
Required outcome: 2. Nitrate loss target/s for property as set by Scheme and/or regional council are met or exceeded.				
Poor Unacceptable	<ul style="list-style-type: none"> Nitrate loss target not met and/or no plan in place to meet target by due date. 			
Basic May be adequate for small blocks and/or low intensity operation	<ul style="list-style-type: none"> Nitrogen risks noted and farm practices address any issues. 			<ul style="list-style-type: none"> Copy of basic nutrient plan provided.
Good Required minimum for most situations	<p>N losses managed to meet targets by:</p> <p>Selecting amount /type to apply:</p> <ul style="list-style-type: none"> Use recommendations on type and amount from qualified person (fertiliser consultant or farm advisor), or by using an industry approved tool (e.g. wheat calculator) based on: <ul style="list-style-type: none"> Soil testing and plant analysis 			<p>Copy of nutrient management plan prepared by qualified person, including:</p> <ul style="list-style-type: none"> nutrient budget soil test results and nutrient analysis (if available) fertiliser

Acceptability of practices	Baseline Management Practices (other practices may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
	<ul style="list-style-type: none"> to minimise N losses. Crop rotations adjusted to maximise the use of residual N in the soil and minimise N losses Stock wintering practices adjusted to minimise nutrient losses. Soil compaction from stock grazing and/or heavy machinery movement minimised Stock numbers adjusted to meet N target. Harvest supplements and export from property. Supplements (e.g. maize silage) substituted for proportion of N fertiliser use. 			<ul style="list-style-type: none"> Crop rotation records Record of wintering adjustment practices Stock numbers Record of supplements purchased and used on property, and made and sold from property
Premium Required to show excellence in nitrogen loss minimisation from farming activities	<ul style="list-style-type: none"> GPS technology is used for precise application and for a digital record of fertiliser proof of placement, for all N fertiliser spread on-farm 			<ul style="list-style-type: none"> Evidence of technology use
Required outcome: 3. Phosphate (P) & sediment losses to groundwater and waterways are minimised and critical source areas managed.				
Poor Unacceptable	No action in place to manage critical sources and minimise losses			
Basic May be adequate for small blocks and/or low intensity operation	Phosphate and sediment risks noted and managed for.			
Good Required minimum for most situations	Phosphate and sediment losses managed by: Selecting amount /type to apply: <ul style="list-style-type: none"> Use recommendations on type and rate of P applications, as recommended by qualified person (fertiliser consultant or 			<ul style="list-style-type: none"> Soil test and fertiliser recommendations. Fertiliser application

Acceptability of practices	Baseline Management Practices (other practices may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
	<p>farm advisor) based on:</p> <ul style="list-style-type: none"> ○ Soil testing and plant analysis ○ Nutrient budget results ○ Assessment of pasture quality ○ Need for capital or maintenance fertiliser <p>Application techniques and timing</p> <ul style="list-style-type: none"> • Use Spreadmark standards or using suitably calibrated equipment for N applications. • Use split applications where the single application rate would exceed 100kgP/ha, unless there is sound justification around not adhering to this e.g. dry autumn and winter conditions leading to a potential animal welfare issue • Limit phosphate application between June-August • Fertiliser is not applied when the soil is saturated and/or excessively dry • Fertiliser is not applied to severely compacted soils • Vegetation buffer strips of sufficient width (leave a riparian margin of at least 1-2m on flat land and 5m or more on sloping land.) to filter any runoff are maintained adjacent to all waterways <p>Managing key sites to reduce P and sediment losses</p> <ul style="list-style-type: none"> • Implement plan to reduce P losses at critical locations 			<p>records</p> <ul style="list-style-type: none"> • Nutrient budget <ul style="list-style-type: none"> • Spreadmark accreditation certificate • Fertiliser application records <ul style="list-style-type: none"> • Field observation • Proof of placement charts <ul style="list-style-type: none"> • Critical source map and action plan

Acceptability of practices	Baseline Management Practices (other practices may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
Premium Required to show excellence in phosphate and sediments minimisation from farming activities	GPS technology is used for precise application and for a digital record of fertiliser proof of placement, for all phosphate fertiliser spread on-farm			<ul style="list-style-type: none"> Evidence of technology use.
Required outcome: 4. Soils are well-managed to optimise infiltration and minimise runoff				
Poor Unacceptable				
Basic May be adequate for small blocks and/or low intensity operation				
Good Required minimum for most situations	<ul style="list-style-type: none"> Check for soil compaction Actively reduce adverse effects of significant soil compaction on water and effluent infiltration rates (e.g. using soil aerator etc) Recognize the difference in soil types and soil properties and manage accordingly to minimise soil compaction damage Increased crop residue is left in the soil Heavy machinery restricted to specified pathways 			<ul style="list-style-type: none"> Field inspection Soil aeration records Soil map of property and plan to manage major soil differences
Premium Required to show excellence in phosphate and sediments minimisation from farming activities.	<ul style="list-style-type: none"> Annual Visual Soil Assessments (VSA) on intensively cropped soils, and records kept. 			<ul style="list-style-type: none"> VSA records

Waterway and Wetland Management

Management Objective: To manage waterways, wetlands and their margins to avoid stock damage and minimise inputs of nutrients, sediment and faecal contamination

Required outcomes	Covered by alternative plan? Y/N	Name of alternative plan / programme
1. Stock damage to waterways and wetlands is minimised		
2. Farm practices minimise soil, nutrient and faecal contamination of waterways		

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
Required outcome: 1. Stock damage to waterways and wetlands minimised				
Poor Generally inadequate	<ul style="list-style-type: none"> Stock have access to waterways 			
Basic May be sufficient for some situations	<ul style="list-style-type: none"> Grazed only with sheep 			<ul style="list-style-type: none"> Field inspection
Good Minimum requirements for most waterways, wetlands and regularly wet areas	<ul style="list-style-type: none"> Stock excluded from streams and wetlands in accordance with xxx Regional Council rules All regular stock crossings have bridge or culvert 			<ul style="list-style-type: none"> Field inspection of waterways and wetlands
Premium Necessary to show excellence in water body management	<ul style="list-style-type: none"> Approaches to stock crossings managed to avoid runoff to waterways All stock crossings have bridge or culvert 			<ul style="list-style-type: none"> Field inspection of waterways and wetlands
Required outcome: 2. Farm practices minimise soil, nutrient and faecal contamination of waterways				
Poor Generally inadequate	<ul style="list-style-type: none"> Soil and nutrient contamination from farming practices regularly enters waterways 			
Basic May be sufficient for some situations				

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
Good Minimum requirements for most waterways	<ul style="list-style-type: none"> Maintain vegetated riparian margin suitable to adequately filter any run-off from freshly cultivated or fertilised blocks and/or winter grazing blocks. Width of margin may vary from 1-10metres depending on slope. Strip next to riparian margin grazed last when break feeding winter feed crops. Minimum or no-till cultivation techniques used when high risk of run-off from cultivated blocks. Runoff from stock races and tracks does not flow directly into waterways. Where necessary this runoff is directed to open pasture. 			<ul style="list-style-type: none"> Field inspection of waterways and wetlands
Premium Necessary to show excellence in water body management	<ul style="list-style-type: none"> Provide adequate filtering of sediment and nutrients e.g. by appropriate riparian buffers at low points. Riparian planting programme prepared and implemented. Permanently or frequently wet areas within paddocks are managed to avoid contamination from stock or fertiliser (e.g. fenced out, suitable planting, left uncultivated) 			<ul style="list-style-type: none"> Field inspection of waterways and wetlands

Collected Effluent Management⁵

Management Objective: To manage the operation of the effluent system to avoid adverse effects on water quality

Required outcomes	Covered by alternative plan? Y/N	Name of alternative plan / programme
1. Effluent management and discharge comply fully with all regional council consent ⁶ requirements 365 days / year		
2. Effluent discharge correctly applied to avoid contamination of surface or ground water		

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
Required outcome: 1. Effluent system and application fully compliant with regulations 365 days / year				
Poor Generally inadequate	<ul style="list-style-type: none"> Effluent consent not current Effluent consent monitoring shows major or minor non-compliance 			<ul style="list-style-type: none"> Regional council compliance report
Good Minimum requirements for most effluent management	<ul style="list-style-type: none"> Effluent consent is current Effluent system fully compliant with consent conditions Effluent system fully compliant with permitted activity conditions 			<ul style="list-style-type: none"> Regional council compliance report
Required outcome: 2. Effluent discharge correctly applied to avoid contamination of surface or ground water				
Poor Generally inadequate	<ul style="list-style-type: none"> Limited storage which means effluent must be applied even when soils conditions are not suitable. Effluent irrigator applies effluent at application rates which lead to ponding and/or runoff. 			<ul style="list-style-type: none"> Visual observation Visual observation and/or evidence that demonstrates this is happening
Basic May be sufficient for some situations	<ul style="list-style-type: none"> High risk effluent disposal areas identified Effluent applied at rates that do not lead to ponding and/or runoff. 			<ul style="list-style-type: none"> Map showing risk areas Bucket test information

⁵ This section of this FEP may be covered by an approved audited Dairy Supplier plan or similar e.g. from Fonterra, Synlait. A scheme / collective would need to decide what is acceptable.

⁶ If regional council does not require consent for collected effluent, then this section should be amended accordingly

Acceptability of practices	Baseline Practices (examples of practices, others may be added)	Current Practices	Additional actions proposed to meet outcomes & timeframes for completion	Evidence for Compliance
Good Minimum requirements for most effluent management	<ul style="list-style-type: none"> Minimise amount of effluent irrigation by careful yard management and diversion of shed roof water. Sufficient storage capacity is available at all times to ensure that effluent is not applied when soil conditions are near field capacity. Effluent irrigation system is capable of delivering the correct amount of effluent for soil type and slope. Correct amounts of effluent applied for specific soil properties and slope Ensure that effluent area covers at least 8ha/100 cows Ensure an even spread of effluent over the whole of the designated area. Take immediate action if incident or breakdowns occurs including: <ul style="list-style-type: none"> Rectify the problem Clean up if possible Take action to minimise the risk of the incident / breakage occurring again Staff who are involved in the management of the effluent system are fully trained in the use of the system. 			<ul style="list-style-type: none"> Visual observation Visual observation System set-up specifications and follow-up tests Bucket tests & visual observation Map showing effluent area. Map or dairy record of effluent applications. Visual observation + map showing exclusion zones Incident/breakdown register Staff training schedule
Premium Necessary to show excellence in effluent management	<ul style="list-style-type: none"> Proof of placement technology used to identify areas of effluent application Fail safe systems such as Gator-buddy and variable rate irrigation to minimize risk of incidents, and application of effluent to high risk areas. 			<ul style="list-style-type: none"> Proof of placement printouts Visual observation

Appendix one: List of resource consents held for this property



Guide to Template for Farm Environment Plan

Draft for Review

March 2013

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Guide to Template for Farm Environment Plan

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Guide to Template for Farm Environment Plan

This guide is intended to provide explanations for the generic Farm Environment Plan (FEP) template developed for INZ (Brown and Mulcock 2013).

1. Structure of the Farm Environment Plan

The FEP that is produced from this template is specifically designed so that:

- an irrigator, whether in a scheme, collective or as an individual
 - can demonstrate that they have implemented suitable on-farm practices, record keeping etc to manage their operation to manage water quality and water quantity within limits set by their regional council.
 - can prepare their own plan, either through one or more workshop sessions, or with support from an advisor.
- The FEP can be readily audited to check whether the pre-set management objectives and required outcomes are being achieved.

Objectives and outcomes are set, but, as far as possible, the on-farm practices implemented to achieve the outcomes are determined by the irrigator to fit with the farm system and natural resource base.

2. Farm Environment Plan Sections

2.1. Responsibility

Page 1 identifies those responsible for achieving the FEP requirements.

Property Owner

This may be a company, trust or other entity, or individual/s. The owner is generally the person/entity who holds the irrigation shares or other rights to water, and is therefore responsible for the FEP requirements. A key contact for the owner/s should be listed.

Lessee

This is the person/s or entity who lease part or all of a property. The owner/s should ensure that the lease agreement passes on FEP responsibilities as appropriate.

Person responsible for implementing FEP

This is usually the person who makes the day-to-day management decisions on the property, and is the person who should attend the audit, with others (e.g. owner) if required.

2.2. Farm Information

This section is to provide a 'picture' of the property, not great detail. It should be sufficient to provide an external auditor with an understanding of the type and scale of farm activities on the property. It also provides the scheme with information on irrigation type, enterprise type etc that can be used for benchmarking or other analysis.

2.3. Map

The purpose of the map is to identify the features of the natural and built environment that are linked to managing water quality and quantity. The completed map should give a reviewer or auditor a clear picture of the property. More than one map can be used, if desired, to show different features.

Irrigators are asked to bring 2 copies of their farm map, suitable for drawing on, when they start to prepare their farm plan, either through a workshop process, or individually. Regional Councils can often supply farm maps, on request. The maps are used in the workshop to draw the land management units and other farm information, such as waterways, stock crossings, effluent areas. The maps are then scanned and included in the final farm plan.

To show on map, if present:

- Name key roads and show North direction, to enable farm to be located on a road map.
 - Land management units (these should align with the blocks used in the nutrient budget)
 - Irrigated area by irrigation type
 - Effluent area
 - Bores/wells
 - Water races
 - Conservation or covenanted areas/ indigenous bush/scrub
 - Streams and wetlands, including stock crossing points - Show which streams are fenced
 - Standoff areas, feed pads
 - Tracks
 - Open drains
 - Areas that are tile drained
- Lease blocks – including owner name (If the whole farm is leased from one owner, then record this information on page 1)

2.4. Land Management Units

A land management unit is a homogenous block of land with that responds in a similar way under similar management. These units should as far as possible **align** with the blocks used in the nutrient budget.

Block strengths / weaknesses

A strength is a favourable land quality, while a weakness is a not-so-favourable quality. What is defined as a strength or weakness may depend on the farm activity/ies in the block e.g. stoniness may be a weakness for cropping but a strength for winter grazing of cattle (avoiding pugging).

Examples of strengths and weaknesses

- Free / poor draining
- Deep/ shallow topsoil
- Good /poor soil moisture holding capacity
- Good / poor soil structure
- Flat / moderate / steep land

- Warm aspect / exposed aspect
- Resistant / susceptible to pugging
- Flooding risk
- Erosion prone / stable (no erosion)
- Droughty
- High runoff risk
- High water table
- Naturally sheltered

2.5. *Environmental Risk Assessment*

The risks to water quality from the combination of the natural resources (soil, stream, slope etc.) and current farm practices (stock, irrigation, cultivation etc.) in each land management unit must be identified. For each topic the grower must provide a brief explanation that explains and justifies why the high/medium or low risk is given. For example a 'low' risk for irrigation application might be explained by 'low application depth per run/gentle slope.'

This table then informs the later sections where specific actions are determined to avoid or minimise adverse effects of farm activities on water quality.

3. Management Topics

IASM covers 6 management areas critical to water quality and quantity management. Other topics can be added if required e.g. some schemes have resource consent conditions requiring them to cover Biodiversity Management.

- Regulatory Compliance
- Irrigation System Design and Installation
- Irrigation Management
- Nutrient and Soil Management
- Waterway and Wetland Management
- Collected Effluent Management

3.1. *Management Objectives and Required Outcomes*

The management objective for each topic is set by the scheme to fit with their resource consent requirements or other regional council, scheme or community agreed initiative. The objective provides the overall long term direction for that management area.

For each management objective there are one or more 'required outcomes'. These are the targets that irrigators must be aiming to achieve with their farm management practices. The expectation is that all of the outcomes for a particular management area must be achieved in order to achieve the objective for that management area.

Management Objectives and Required Outcomes



Required Outcomes

Regulatory Compliance	Irrigation Design and Installation	Irrigation Management	Nutrient and Soil Management	Waterway and Wetland Management	Collected Effluent Management
Full compliance with relevant regulatory requirements	New irrigation infrastructure is designed and installed to deliver water to industry best practice standards	All irrigation applications are justified by monitoring and/or other assessment or information	All sources and potential losses of nutrients, sediment and effluent are clearly identified	Stock damage to waterways and wetlands is minimised	Effluent management and discharge comply fully with all regional council requirements 365 days / year
		Farm practices optimise water applications from irrigation system	Nitrate loss target/s for property, as set by scheme and/or regional council, are met or exceeded	Farm practices minimise soil, nutrient and faecal contamination of waterways	Effluent discharge correctly applied to avoid contamination of surface or ground water
		All staff involved in the operation and maintenance of the irrigation system are fully trained	Phosphate (P) and sediment losses to ground and waterways are minimised.		
			Soils are well-managed to optimise infiltration and minimise runoff		

3.2. *Other On-farm Environmental Management Plans*

The table below provides an option for a grower to substitute another audited plan or programme for either a single 'required outcome' (e.g. Nitrate loss target/s for the property are met or exceeded) or a complete 'management area' (e.g. Nutrient and Soil Management).

Required outcomes	Covered by alternative plan? Y/N	Name of alternative plan / programme
1. All irrigation applications are justified by monitoring and/or other assessment or		
2. Farm practices optimise water applications from irrigation system		
3. All staff involved in the operation and maintenance of the irrigation system are		

The scheme or the regional council must provide guidance (e.g. in a scheme policy or procedure) as to which plans or programmes are acceptable, and how the audit results from that plan correlate with the IASM audit grades.

3.3. *Acceptability of Practices*

Poor – identifies the types of actions (or inactions) that are not adequate to achieve the stated outcome.

Basic - 'basic' is a level of activity that stands alone. It provides for small, low intensity properties for which the 'good' level of activity is not necessary because the environmental risks are very low, usually because of low water use (application volume and/or rate) and very low nutrient inputs.

Good - identifies the minimum types of actions that need to be carried out on the majority of irrigated farms to be able to adequately manage environmental risks, especially to water quality.

Premium – identifies current practices that give a high level of environmental risk management, and the types of activity that provide for continuous improvement in water quality and/or water quantity management.

3.4. *Baseline Practices*

The FEP template sets out examples of practices that would meet the expected standard for each of good, basic and premium, and some practices that would be considered 'poor' or 'inadequate'.

However, there are numerous options for achieving each outcome, and what is suitable will depend on the type and intensity of the farming operation as well as soil, slope and other natural resource characteristics. Irrigators must be aiming to be in the good and premium categories, unless their operation fits in the 'basic' category. (see explanation of 'basic' above)

Current Practices and Additional actions etc

Irrigators identify their current practices with the 'tick boxes.' Where changes to current practices are required in order to meet the outcome then these should be entered in the Additional action column along with an appropriate timeline for implementation.

3.5. Evidence for Compliance

For each outcome, the irrigator must be able to demonstrate to the auditor how, over the entire year or years between audits, they are carrying out the stated practices to achieve the necessary outcome.

The auditor will be assessing:

- the completeness and consistency of implementation of the Farm Environmental Plan;
- the effectiveness of the implementation in ensuring control of environmental operations;
- the effectiveness of the system in supporting achievement of the objectives and outcomes.

To do this the auditor needs to have 'objective evidence'. S/he cannot use subjective opinion and "here-say" as the basis of their conclusions. To justify his or her conclusions as to whether the objectives and outcomes have been met, the auditor must be able to demonstrate how the evidence provided leads to these conclusions.

Objective evidence includes records, data, reports and actual practice observed during the audit. The auditor will review the evidence to ensure that the records, data, reports that are presented do demonstrate that the objectives and outcomes under investigation have been met.

There are no formal requirements with regard to the standard of records to be kept. Notwithstanding this, the better the records, the better the 'story' that can be told and the more likely that the auditor will be able to make an objective assessment.

In terms of record keeping there are a few simple rules.

1. Decide whether it is necessary to keep a written/electronic/photographic record of a particular activity. Only keep records where they help tell a story.
2. Records should be in a form where anybody can pick them up and understand the story that they tell.
3. Good records require a disciplined approach – once you start, then keep going.
4. Remember that a picture tells a 1000 words.

APPENDIX 10

Audit Manual for FEP Audits



Farm Environment Plan Audit Manual

March 2013

Draft for review

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Disclaimer

All information contained within this publication has been compiled with due care, checked for accuracy and published in good faith. It is for the purpose of guidelines only. The authors expressly disclaim all liability to any person relying on the whole or any part of this publication. They accept no responsibility on any grounds whatever, including liability in negligence, for the use or mis-use of the information contained in this document.

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Farm Environment Plan

Audit Manual

March 2013

For the background to the Irrigation Audited Self-Management process see:

C M Mulcock and I Brown (2013) 'Irrigation Audited Self-Management: Managing Water Quality and Quantity within limits' prepared for Irrigation NZ

Acknowledgements

We would like to thank the many individuals and organisations who have contributed to the development of this package for Audited Irrigation Self-Management.

Our special thanks to North Otago Irrigation Company, Morven Glenavy Ikawai Irrigation Company, Synlait Milk Ltd and Central Plains Water Ltd for their especial generosity in sharing their ideas and experiences.

However, errors and omissions are ours.

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Background

The IASM Farm Environmental Plan (FEP) template was developed under an IrrigationNZ sponsored project. The aim of the project was to develop a realistic, practical approach that could be used by community irrigation schemes to address the on-farm environmental issues associated with irrigation management.

As new irrigation schemes are developed and land use intensifies, farmers increasingly find themselves farming under the watchful eye of a concerned community and a demanding market place. In order to substantiate 'green' claims and alleviate community concerns, farmers will have to be able to demonstrate that their farming practices are environmentally sustainable.

To ensure that 'good practice' environmental management is part of the normal farming business on all the farms in the scheme, the irrigation scheme operator requires each water user to prepare and implement a FEP for their property. This plan must be in accordance with the scheme operator's own environmental management policies and protocols.

A critical step in the FEP process is the external audit. FEP auditing provides surety that the appropriate systems are in place to manage the environmental risks associated with irrigated land use. It also adds credibility to the FEP process.

The audit process

This manual sets out a step by step procedure, as a guide for those involved in auditing FEPs developed by irrigation scheme participants using the IrrigationNZ model. It provides guidance on planning an audit as well as the on-farm audit itself. It also outlines some of the essential skills that the auditor will need in order to effectively audit FEPs.

Any FEP external audit process should follow the all steps described. However, there will be some variation in detail, especially in relation to the management structures and roles in the particular scheme (e.g. employee roles vs contractors, and board vs staff roles). The detailed requirements and conditions surrounding the external audit should be set out within the scheme's environmental policies and procedures manual.

Planning an audit

Pre-Audit review

Prior to audit, the auditor should request as a minimum:

1. A map showing the location of the property to be audited.
2. A copy of the current FEP for the property including any associated maps. (e.g. land management units, critical nutrient source area maps etc)
3. A copy of the latest nutrient budget/s for the property including the associated parameter reports and/or the associated Overseer file.
4. A copy of previous audit reports.

If this information is not provided prior to the audit, then the audit should be postponed until such time that sufficient information is provided.

The auditor should thoroughly review the information provided using a pre-audit checklist to guide the review. (Copy provided in Appendix 1)

The pre-audit review should provide the auditor with a good understanding of the property to be audited and guide him/her to the key areas of interest. In particular the review should provide the opportunity for the auditor to:

1. Consider the plan objectives and outcomes in relation to site factors, external compliance history and previous audit history;
2. Assess the overall robustness of the farm management programme to manage identified risks; and
3. Assess the robustness of the nutrient budget results provide.

It is not the auditor's primary job to judge the technical soundness or completeness of the FEP. All FEPs prepared within a scheme area have to go through an approval procedure and should contain the following approval certificate on the front page of the plan.

Technical approval

I have considered this plan and believe it to be:

- | | | |
|--|------------|-----------|
| 1. Technically sound and feasible | Yes | No |
| 2. Addressing the cause of the identified environmental risk | Yes | No |
| 3. Able to meet the plan objectives | Yes | No |

Comments:

Name: (Please print)

Signature: *(for the ABC Irrigation Scheme)*

Date: / /

If as a result of the pre-audit review and/or the actual audit, the auditor has concerns about the FEP itself, then these concerns should be noted and recorded in the Farm Audit report. However, if there is sufficient evidence to verify that the objective and outcomes under consideration have been met, then such concerns should not be used as a basis for non-compliance.

Sampling

An auditor's main task is to verify whether or not the objectives and outcomes as set out within the FEP have been met. Time constraints mean an auditor cannot examine all the records, data, and evidence put forward for each objective and outcome within the FEP in detail. Such an approach is also not necessary. However if problems are encountered then, depending on their severity, it may be necessary to investigate in more depth in order to gain a greater level of confidence.

The IrrigationNZ FEP is structured in such a way that it requires an audit of each management area within the FEP. For each management area the audit should be based on sampling sufficient examples in detail to be able to establish, with confidence, the degree of compliance or non-compliance demonstrated in the particular area of interest under review.

Some basic guides to sampling include:

- i. The depth of sampling must be consistent with the significance of the objectives and outcomes under review. (I.e. spend more time on the significant aspects of operation rather than the less significant ones.)

- ii. The depth of sampling must be consistent with the results of previous audits. (I.e. If problems have been evident in previous audits then extra scrutiny should be applied in this area.)
- iii. The depth of sampling should be directly proportional to the degree of training and understanding demonstrated by the personnel responsible for the operation. If the personnel, when questioned by the auditor, either do not know, or directly contradict what is set out in the FEP then the auditor should sample the records of the operation more intensively.

There are no sampling plans or statistical methods suitable for use in auditing the FEP. The depth of sampling and the degree of rigour to which records are examined has to be left to the judgment of the auditor.

Timing

Depending on the size of a property, the complexity of operations, and previous audit history, the pre-audit review could take up to 1 hour. The on-farm component of the audit will generally take from 2-3 hours. This should be sufficient time for the auditor to introduce the audit process, inspect the property (including a farm visit) and review the records. Preparation of the audit report, including allowing time for follow-up and receiving feedback from the landowner, should take no more than 1-2 hours.

The best time of the year to undertake the audit is during the peak of the irrigation season. This allows the auditor to identify any issues that can be attributed to the operation of the irrigation systems.

On-farm audit

Objective Evidence

Having planned an audit, the auditor now faces one of the most difficult actions required of them, the actual on-farm audit. The auditor is required to assess:

- the completeness and consistency of FEP implementation;
- the effectiveness of the implementation in ensuring control of environmental issues;
- the effectiveness of the farming systems in supporting achievement of the objectives and outcomes.

An auditor must base all of their activities on '***Objective Evidence***.' An auditor must not use subjective opinion and "here-say" as the basis of their conclusions.

Objective Evidence is:

- information supplied as records, data, reports and photographs,
- actual practice observed during the audit, and
- stated practice, if the stated practice can be reasonably supported by other evidence.

Objective evidence should not be accepted on "face value" alone. An auditor should review and cross-reference the evidence to ensure that the information presented does demonstrate that the objectives and outcomes under investigation have been met.

When assessing evidence to answer the question, "*have the objectives and outcomes been met,*" the auditor needs to ask themselves:

- *What is the evidence demonstrating?*
- *Where is the evidence leading?*
- *What story does the evidence tell?*
- *Is the evidence complete and is it accurate?*
- *If previous non-compliance has occurred, have appropriate corrective actions been put in place?*

The auditor should also test the level of understanding of the personnel involved in implementing the various aspects of the FEP. For example:

- Are they familiar with the environmental aspects of their work and their importance?
- Do they understand the purpose of the FEP process and what it is trying to achieve?
- Do they know their responsibility and authority?
- Do they know what to do in incident/accident/emergency situations?

The auditor will need to collect and record objective evidence of the good and the bad. To justify his or her conclusions as to whether the objectives and outcomes have been met, the auditor must be able to demonstrate how the evidence provided leads to these conclusions.

Details of progress made for each objective under review, and all evidence provided, should be recorded in the property audit report. This information will form the basis of the final conclusions on whether or not the property is compliant or non-compliant.

Questioning and Communication

The auditor will be meeting with and interviewing farm staff in a role that is different from their normal operational function.

During an audit, the auditor has to gather objective evidence that demonstrates whether or not the objectives and outcomes as set out within the FEP have been met. This cannot be achieved through an audit that just looks at records and observes work practices. Such an approach would not give the ability to understand the degree of effectiveness of, and commitment to, the management system.

Management system audits depend upon people demonstrating their knowledge and implementation of the requirements.

One of the guides to how evidence must be examined by an auditor is their understanding of the farm staff's familiarity with the FEP. If the auditor has prepared properly, by reviewing the plan, they know what should be happening before they enter the property.

The auditor's task is to find out:

- *Is it happening?*
- *Is it understood?*
- *Is it effective?*

To do this, the auditor must ask questions and must communicate with farm staff.

Simply asking the question: *"Do you do this test every week?"* because that is what the listed management practice says should happen will usually give the response of: "Yes" (or "No").

Such questioning does not allow the auditor to assess the staff member's understanding of what they are supposed to do, because the question itself suggests that the answer should be "Yes". It does not

allow the auditor to assess the method of work used for the test because the auditor has not "prompted" the operator to discuss it further. A staff member may be able to provide all the right documentation but if they don't understand why they are following a particular course of action, then the risk of failure is high.

Asking the question:

"Can you tell me how you match the need to turn on the irrigator with current soil moisture status?", encourages the staff member to "walk" the auditor through every step of the operation and allows the auditor to verify:

- Does the operator understand the stated management practice?
- Are the good management practices as listed in the plan the same as the actual practice?
- Are the listed actions being enacted?
- Is the operation effective?

Further, supplemental questions or comments may help clarify the situation.

For example:

- *"How often do you do this?"*
- *"Can you show me the record of the results?"*
- *"How do you know if the results are OK?"*
- *"What do you do if there is a problem?"*

Using this approach the auditor can quickly establish the adequacy and accuracy of the evidence provided. It will also help establish if appropriate actions have been taken in the case where there has been an accident or system failure.

Breakages, accidents and system failures occur even in the best set up and managed farming operations. As an auditor you should be looking for evidence that where a problem has occurred that it was addressed in a timely manner, and more importantly that appropriate actions were taken to minimise the risk of the problem occurring again.

An auditor has to be able to make those that they are interviewing relax, as much as possible. Simply asking question after question is, probably, the least efficient way of auditing. It is far better for the auditor to communicate with those they are interviewing in such a way that the auditor can simply stand back and listen, with occasional prompts, where necessary.

The ability to communicate is one of the essential skills of a good auditor. It is not just words, it is:

- being a good listener,
- showing interest in what is being said, or shown
- knowing what to say and when to say it, and
- respecting feeling and sensitivities.

"The sign of a good auditor is someone who can make the minimum amount of noise and extract the maximum amount of information."

FEP structure and the nature of the audit

The IrrigationNZ FEP is structured in such a way that allows for an '**audit**' against the objectives and outcomes for each management area, and a '**standards assessment**' for each outcome as to where the

property sits in relation to good management practice standards. While not part of the audit, understanding where the property sits in relation to recognised good practice standards provides the auditor with further information upon which to base their conclusions. Reporting on this also provides the landholder with a snapshot as to where they fit in relation to recognised industry good management practice guidelines. More detail on the structure of the FEP is provided in the IrrigationNZ FEP Guide.

Before beginning the audit, the auditor should be clear as to whether their responsibility extends to reporting on the audit alone or the audit and the standards assessment.

The audit

The overall aim of the audit is twofold:

- to determine if the objectives and outcomes for each management area (e.g. irrigation management) covered by the FEP have been achieved, and
- to provide an overall compliance grading for the property.

Making these calls is a four step process, a worked example of which is provided in the sample audit report in Appendix 2.

Step 1: Outcome ratings

For each outcome within each management area the auditor should make an assessment as to whether the outcome has been met. This is best done using the following 1-3 rating scale.

1	2	3
Unlikely that the outcome has been met.	Possible that the outcome has been met.	Likely that the outcome has been met.

In making this assessment, the auditor should clearly set out the basis for their conclusion. (e.g. field observation, soil moisture records etc.)

Also for each outcome, the auditor may undertake a **standards assessment**¹ if asked to do so as part of the audit. The purpose of the standards assessment is a grading to give farmers a snapshot of where they are at i.e. it will benchmarking the level of Good Management Practices being achieved.

For each standards category, (i.e. basic, good and premium), required practices are listed in order to meet that standard. The auditors job is to record the standard obtained for each outcome. In order to meet the 'premium' standard, the required practices as listed under the 'good' category must also be met. If a standards assessment is undertaken the results could be listed in the following manner.

3/P
i.e. Likely that outcome met to Premium standard

Step 2: Objective rating

Average the outcome rating scores to obtain an overall rating for the management area. (e.g. Outcome ratings: 3, 3, and 2 = average 2.67)

¹ Note: The standards assessment component of the audit can be undertaken manually but ideally it is better suited to use with an electronic database.

Use the following table to provide an assessment of the level of confidence that the objective has been met.

Average outcome score	< 2.0	2.0-2.4	>2.4
Level of confidence	Low	Medium	High

Standards assessments can also be applied at Objective level. To achieve a 'Premium' status for the objective, premium ratings must be achieved for each outcome area under that objective. Similarly to achieve a 'good' status for the objective, good or premium ratings must be achieved for each outcome area under that objective.

Step three: Reasons for objective rating and actions required

By providing a call on whether an objective has been met or not, the auditor is effectively making a judgement based on the following statement:

The systems and processes in place plus an assessment of action on the ground provide a low/medium/high level of confidence that the objective for (e.g. irrigation management) has been met.

To complete the process the auditor must be able to justify their thinking by listing both the positive and negative reasons for their decision together with a list of actions required for improvement.

Step four: Overall compliance grading for the property.

Guidelines around what constitutes compliance may be provided through the regional plan and/or the irrigation schemes environmental policies and protocols. Therefore, different regional councils and/or different schemes may have different thresholds around what constitutes a pass / fail.

Table 1 provides an example of how the pass / fail and compliance grading decisions can be made when using the IrrigationNZ FEP approach.

Table 1: Example of determining Compliance grading from Management Area Ratings

Pass / Fail	Overall Ratings for each management area*	Compliance grading	Compliance status
Pass	All high	A	<i>Fully compliant (No action required)</i>
Pass	All medium, or a mix of medium and high	B	<i>Non-compliant - low risk (Written action plan required) (Follow-up by scheme personnel)</i>
Fail	Any lows	C	<i>Non-compliant – high risk (Written action plan required) (Follow-up by scheme personnel & re-audit required within 12 months)</i>

*To determine the ratings that match with A,B,C grades need to note that properties will not necessarily need to cover all management areas (i.e. some may not need to do any of: Waterway and Wetland Management; Collected Effluent Management or Irrigation System Design and Installation)

Note: It is not the auditor's responsibility to follow up where action is required. This responsibility lies with the scheme managers.

The audit report

When the auditor has finished each audit, they should reflect on what they have found. Has sufficient information been collected to make an informed decision? The auditor's decisions must be based on objective evidence. If the evidence hasn't been provided or the records are incomplete, then the auditor is not in a position to grant a fully compliant rating.

The auditor should prepare a separate audit report for each property audited. A sample audit report is attached in Appendix 2. A draft of the report should be completed while on farm and discussed with the farmer before leaving the property. It is a good idea to highlight both the areas of good performance and the areas of non-compliance. The auditor needs to ensure that the farmer understands the reasons for any non-compliant ratings that have been given.

A copy of the draft audit report should be sent to the farmer within 2 weeks of the actual on-farm audit.

In seeking feedback from the farmer the auditor should invite comments to:

- identify any obvious errors or mistakes.
- submit any additional information that wasn't available at the time of audit.
- confirm or otherwise that the audit provides a 'fair and reasonable' assessment of the situation on the property.

When making the call on the final audit report, the auditor should take into account all of the feedback received. However, ultimately the auditor must make the final decision. In doing so, the auditor should keep whatever records necessary to justify their final decisions.

The property owner/s plus the person responsible for implementing the plan should receive their final report within a reasonable period, (i.e. no longer than one month following the audit).

In addition to the individual property reports the auditor will probably be required to prepare a summary report for the scheme. The scheme will stipulate what they require in this report but it is likely to include:

- i. An outline of the audit process used.
- ii. A summary of the gradings for each management objective for all properties audited.
- iii. A summary of the overall compliance ratings for all properties audited.
- iv. Key issues identified during the audit.
- v. Recommendations for future audits.

Summary

The audit is a critical step in the FEP process. The audit enhances the credibility of the planning process, and also helps assure external parties that the on-farm environmental risks associated with irrigated land use are being effectively managed.

The audit itself requires careful planning on the part of the auditor. On-farm the auditor's main task is to verify whether or not the objectives and outcomes as set out within the FEP have been met. Simply because of time constraints, the auditor cannot examine all the records, data, and evidence put forward for each objective within the FEP. An audit should be based on sampling sufficient examples in detail to be able to establish, with confidence, the degree of compliance or non-compliance demonstrated in the particular area of interest under review.

The auditor must base all their decisions on objective evidence. An auditor cannot use subjective opinion and here-say as the basis of their conclusions. When assessing evidence to answer the question, have the objectives and outcomes been met, the auditor needs to be asking him or herself.

- What is the evidence demonstrating?
- Where is the evidence leading?
- What story does the evidence tell?
- Is the evidence complete and is it accurate?
- Is non-compliance indicated and if so, have appropriate corrective actions been put in place?

Details of progress made for each objective under review, and all evidence provided, should be recorded in the property audit report. This information will form the basis of the final conclusion and recommended actions from the audit.

Appendix 1: Audit checklist

Note: If farm plan records are stored in a database, the key information should be retrieved directly to this form

Farm name	Key contact:	Position:
Phone no. :	Cell phone no. :	Email:
FEP has been approved Y / N	FEP relates to farm area Y / N	FEP and NB area are same Y / N
Dates of previous audits:		

Objectives to be audited	Site factor considerations	External compliance history considerations	Previous audit history considerations

Any issues from nutrient budget to be followed up on during audit:

--

Any issues identified in pre-audit check to be followed up on during audit

--

Appendix 2: Example Audit report

[to come]

APPENDIX 11

Action Plan: Sunny Hills Dairy

Date: September 6 2011

This Action Plan identifies how issues of non-compliance identified in the 2011 audit of Sunny Hills Dairy's Farm Environmental Plan will be resolved.

Actions agreed by:

Signed: _____ Date: _____
Joe Farmer (land owner)

Signed: _____ Date: _____
Sarah Officer (Regional Council)

Signed: _____ Date: _____
Dave Person (Irrigation Co)

Management Area: Irrigation Management

Issue:

The irrigation operation on the farm has been causing significant runoff. Some causes of the problems have been rectified, but other matters still need to be addressed.

Improvements made in past two seasons:

- Nozzles on k-line were historically providing 0.6mm/sec. These have now been replaced to provide 0.4mm/sec.
- K-lines is now be moved on 12 hour shifts, rather than 24 hour shifts, as previously.
- A GPS system is now used for shifting K-lines to ensure no overlap.
- Soil moisture monitoring system now incorporates rainfall data.
- Taps on sprinklers near towers.

Actions Required:

A full system assessment must be undertaken by an Irrigation NZ accredited evaluator by December 20 2011 [specify date]. Their report should set out the system performance for both the centre pivot and K-line system and make recommendations on upgrades. It is important that these recommendations are actioned.

This evaluation cannot occur until the system is operating at full capacity (approx November), therefore a cautious approach to irrigation management is required to minimise the risk of run-off in the meantime and the interim actions outlined below will be instigated.

A list of INZ accredited assessors and their contact details is provided below.

Interim Actions (in place immediately)

- End gun on pivot to be turned off (or turned off in high risk areas) until its application rate has been assessed.
- Be very careful to schedule irrigation so that the amount of water applied is linked to evapotranspiration, rainfall and soil moisture status, e.g. Monitor evapotranspiration and soil moisture status and adjust scheduling accordingly.
- Review data from aquaflex on a daily basis to inform scheduling decisions – the amount of water applied must not exceed the amount required to restore soil moisture to field capacity.
- Ensure new irrigation manager is trained in system operation within the next month.
- Develop a farm map that identifies areas that have a high, medium and low risk of run-off and pay close attention to practices within these areas. If in doubt, do not irrigate high risk areas. Risk factors include slopes greater than 7%, shady areas, the presence of watercourses, areas of known ponding, gullies where run-off may leave the property boundary, etc.
- Monitor run-off 'hot spots' at
 - Hills Rd boundary paddock
 - St Stephen's Rd crossing point
 - Simons Rd culverts

Take a photo every time there is a change in water movement at these points. This is important to ground-truth the run-off problem. If increased run-off is observed at these sites, ask yourself why and what can I do to prevent it?

Medium-Term Actions (in place before Christmas)

- Develop clear written irrigation scheduling procedures – xxx irrigation co to assist by providing template.
- Ensure all staff involved in irrigation management receive comprehensive training and that these staff sign that they have received and understood this training – xxx irrigation co to assist by providing staff training checklist.

Long-term Actions

- Improve drainage in wet areas to reduce risk of ponding.

- Capture run-off at bottom of paddock adjacent to St Stephens Rd by creating a dam or 'wetland'. Regional Council to provide further advice on suitable options to address this issue.

Actions for xxxx Regional Council

- By [insert timeframe], Sarah to provide further information on options for dealing with run-off in drain in paddock beside St Stephens Rd - particularly creating a dam or 'wetland' at bottom of paddock to prevent run-off from entering neighbours property.
- Sarah to provide advice on difference between nil and negligible run-off and the standard expected by [insert timeframe].
- Sarah to prepare note for council file documenting existing ponds in paddocks 56, 55, 54, 52, 22 and 21. These ponds existed prior to irrigation – *complete*.