



MORVEN GLENavy IKAWAI IRRIGATION COMPANY LIMITED

Environmental Farm Plan for Irrigated Land Use

Background and Principles – Why we are doing this

1. Introduction

As new irrigation schemes are developed and land use intensifies, farmers increasingly find themselves farming under the watchful eye of a concerned community and an increasingly 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 meet the basic principles of sustainable farming. These include: - minimal leakage of water and nutrients, negligible erosion, no persistent toxicities, control of pests, diseases and weeds, and retention of biodiversity. Farm plans are a good way of showing this.

New Zealand farmers have been involved in the development and implementation of farm plans for many years. Farm plans in a variety of shapes and forms have been used as an aid to improve on-farm financial, production and environmental performance.

The Environmental Farm Plan for Irrigated Land use (The Farm Plan) was developed by The Ritso Society Inc, a farming and community group in central Canterbury. The aim of the project was to develop a realistic, practical approach that could be used by community irrigation schemes to address the environmental issues and show 'best practise' associated with irrigation management, especially on farm.

To make sure that 'best practice' environmental management is part of the normal farming business on all the farms in the scheme, MGI requires each water user to prepare and implement an environmental farm plan relating to the irrigated land use on their property. This plan will demonstrate how they are actively managing their use of natural resources in order to achieve high standards of environmental management and optimise production from irrigation. The plan is in accordance with the scheme's environmental management policies and is centred on six guiding principles.

2. Guiding Principles

The following guiding principles are built into the Farm Plan. These are the underlying philosophies that underpin the farm planning process. The Farm Plan's six guiding principles are¹:

1 Ease of use

In recognition that all farms are unique, the process for these farm plans has been designed to be 'user friendly'. It enables the farmers to take responsibility for their actions and have flexibility to choose and adopt practices to suit their situation

2 Legal, industry and scheme compliance

As a bottom line, land managers must comply with all legal, industry and scheme requirements relating to environmental management on their properties. This implies that land managers must be aware of and understand the requirements and how they impact their farming operation.

3 Risk based

The basis of effective environmental management is being aware of and understanding the actual and potential environmental risks associated with their activities. Once understood these risks and impacts can be strategically managed.

4 Promotes best practice

The Farm Plan encourages the adoption of best practices and aims to make 'best practice' into 'normal practice.' When best practices become normal practices they become entrenched in the day to day routine of property management.

5 Continuous improvement – Planning, Doing, Monitoring, Improving (PDMI)

Continuous improvement implies that practices are considered more than once, in light of new information and the results of previous management. This leads to future practices reflecting lessons learned along the way. A cycle of planning, doing, monitoring and improving (PDMI) ensures practices are continuously getting better.

6 Consistency

Introducing a new quality assurance programme brings new demands on land managers' time and management ability. Finding the time to understand and implement these schemes can be challenging. Wherever possible it is useful to have a consistency in approach between various quality assurance requirements. The environmental management system approach that underpins the Farm Plan provides this consistency.

¹ These principles are an adaptation of those used in the Nutrient Management Code of Practice. The use of similar principles ensures consistency between planning documents.

3. Environmental Management System Approach

An environmental management system (EMS) is a form of self regulation. It is a valuable tool because it provides a voluntary flexible approach to environmental management. It is a tool that will help prepare land managers to meet current and future challenges, whether from government regulations, consumer market preferences or communities concerned about their local environment.

This MGI scheme environmental management process uses an environmental management system (EMS) approach as its basis.

“An EMS is an environmental quality assurance programme. It is a systematic approach that can be used by any enterprise to identify and manage its impacts on the environment, while providing opportunities for improved business performance. As an integrated business management tool, an EMS can effectively complement and build on other existing activities such as property management planning, best management practices, and codes of practice and quality assurance schemes. An EMS provides a management framework based on a simple ‘plan, do, monitor, improve’ (PDMI) cycle that achieves continuous improvement. A manager uses the system to identify environmental impacts and legal responsibilities, then implements and reviews changes and improvements in a structured way. An EMS may be readily integrated into other management systems and can help draw diverse management issues together under a common approach.”

The benefits of the EMS approach include:

Community and social benefits: An EMS is a great way to demonstrate good environmental practice to the community. The information arising from the EMS approach can be used to build community confidence in the farming industry and provide the assurance that the activities of the industry are not contributing to long term environmental degradation.

Environmental benefits: An EMS can lead to environmental benefits in a number of ways including better management of environmental risks, environmental actions on farms, and an improved understanding amongst land managers of the potential impacts of farming activities on the natural environment.

Economic and business benefits: The EMS approach is an effective way of improving management skills and often leads to production efficiencies and cost savings. (e.g. more strategic use of fertiliser, maximizing use of irrigation water). In addition, there are potential benefits in terms of marketing and branding but to date these have been realised in only a few situations.

The corner stone of the EMS approach is the cycle of continuous improvement. This cycle recognises that progress will be made over time through planning, doing, monitoring and improvement. This philosophy of adaptive management is followed where policies and practices are continually improved by learning from the outcomes of previous work. The concept of the continuous improvement cycle is illustrated in Figure 1.

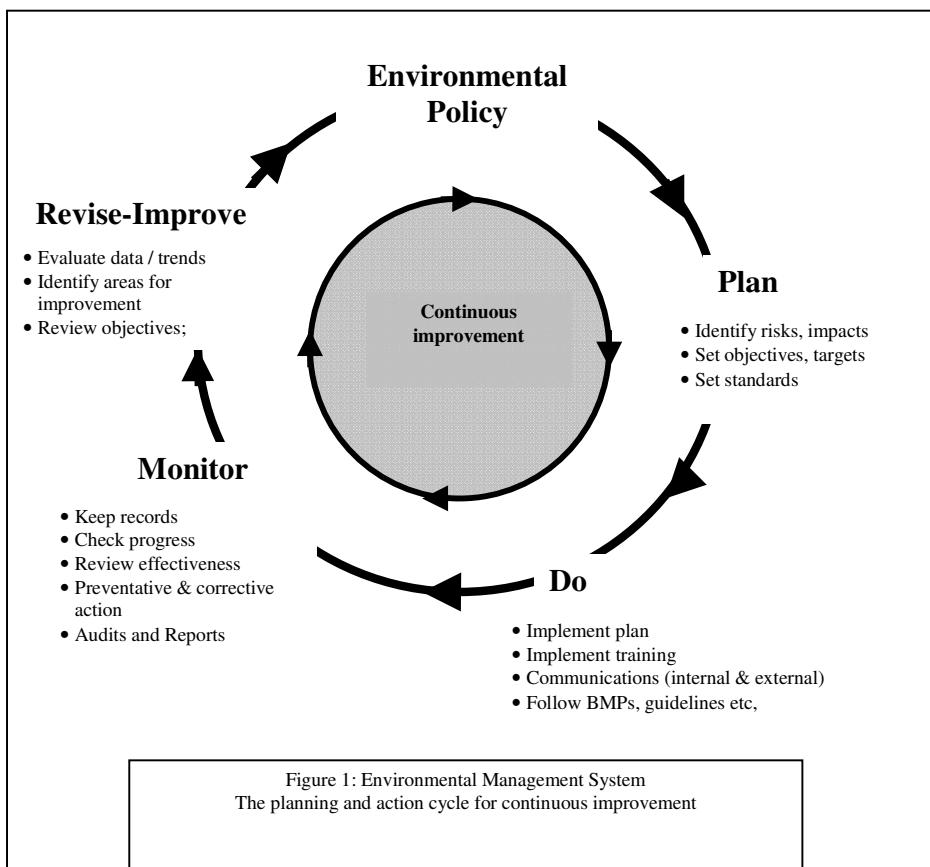


Figure 2 shows the proposed relationship within MGI between Environmental Management Strategy, Water Use Agreement and Farm Plan. Note the ongoing inter-connected process of learning by experience, through monitoring, review and revision.

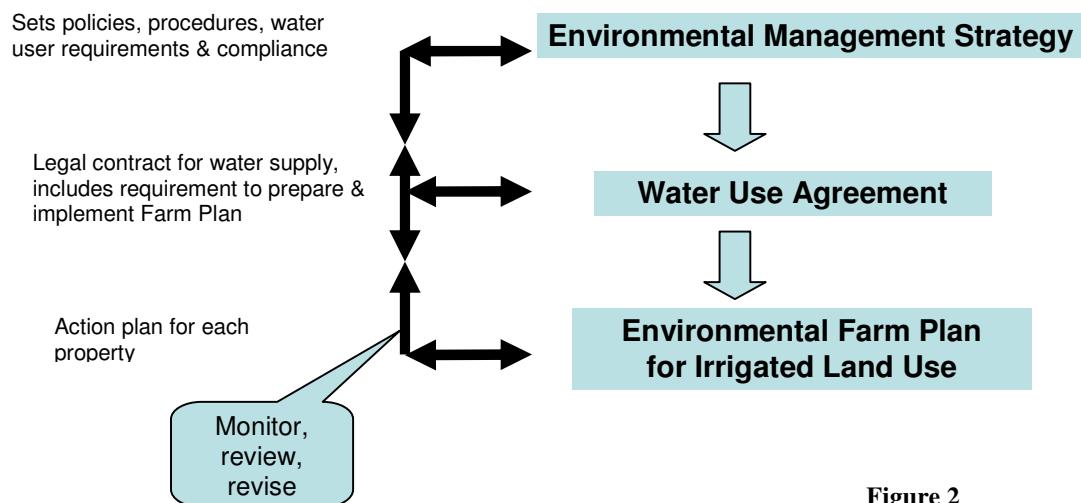


Figure 2

4. Environmental Farm Plan for Irrigated Land Use

The Farm Plan is the on-farm component of the overall plan for environmental management within the irrigation scheme. It covers six management areas, identified as the key areas in relation to the environmental effects of irrigated land use. They are:

- Irrigation management
- Soils management
- Nutrient management
- Collected animal effluent management
- Waterway and riparian management
- Biodiversity and ecosystem management

For each management area, there is an overall goal. These goals are all encompassing and set the scene for what is to be achieved in each of the management areas.

The goals in the MGI farm plan are:

1. *Our goal for best practice irrigation management is to use water efficiently, minimising runoff and drainage*
2. *Our goal for best practice soils management is to maintain or improve the physical & biological condition of our soil*
3. *Our goal for nutrient management is to minimise nutrient losses to water while managing soil fertility to optimise pasture and crop productivity*
4. *Our goal for effluent management is to manage the effluent system to optimise the productive benefits of animal effluent while taking all practical steps to avoid contamination of ground and surface water*
5. *Our goal is to protect the waterways on our farm*
6. *Our goal is to include biodiversity and ecosystem management as an integral part of our farm management*

Each of the six goals has a number of **objectives and targets** that are more specific and outline the key factors that need to be covered in order to achieve the goal.

The **objectives** have been developed by asking the question, what needs to be achieved in order to achieve the overall goal for the management area. The objectives and targets cover the main actions needed to achieve the goal.

Assessing Significance

While all of the objectives and targets must be included in the individual Farm Plans it is recognised that some objectives are less significant than others. The level of significance will vary between properties. For example, on an owner-operator property the objectives relating to staff training will be less significant than on a property with a large number of staff. Correspondingly, the level of effort put into achieving the objective is expected to be greater on those farms where the objective is of moderate to high significance. A means for assessing the level of significance is set out below.

For each objective, ask yourself what would be the effects if this objective wasn't achieved. Think about the potential adverse effects and the likelihood that they will occur in the short to medium term. You could think about it like this:

Likelihood

- If there is little chance of the effect happening (i.e. it is less than 25%), then the likelihood is **low**.
- If there is some chance of the effect happening (i.e. the chance is between 25% and 75%), then the likelihood is **medium**.
- If there is a strong chance that the effect will happen (i.e. the chance is more than 75%), then the likelihood is **high**.

Think also about the environmental consequences. If the adverse effect happens, will the effects be major or minor? Will they be very localised or widespread? Will neighbours be affected? Will the effects be easy to fix or irreversible? You could think about it like this:

Consequences

- If the effect is unlikely to cause real environmental damage, has minimal potential to affect other properties and/or would be easy to reverse, then you can call the consequence **low**.
- If the effect has some potential to cause damage or harm, is reversible but could cause adverse effects in the surrounding environment (i.e. could affect neighbouring or downstream properties), then the consequence is **medium**.
- If the effect has the potential to cause significant environmental damage or harm, both in the immediate area and surrounding environment, is difficult to reverse and likely to concern the community, then you must consider the consequence **high**.

Now you can decide whether the objective is highly significant or less important. Figure 3 below combines likelihood and consequence to decide the overall significance of any environmental risk.

		Environmental Consequence		
		Low	Medium	High
Likelihood	Low <25%	Low significance	Low significance	Medium significance
	Medium 25-75%	Low significance	Medium significance	High significance
	High >75%	Medium significance	High significance	High significance

Figure 3: Assessing objective significance

In other words, if the likelihood, consequences or both are low, then the significance is generally low. As the likelihood of adverse effects and/or the seriousness of these effects increases, the significance of the objective increases.

5. Monitoring and Recording

Monitoring

Monitoring and recording are essential for assessing whether you have achieved the goals and objectives as set out in your Farm Plan. It also helps identify areas where management could be improved. Remember, you cannot manage what you do not measure.

There should be a system for measuring and monitoring actual performance against the objectives and targets. These include evaluating compliance with relevant environmental legislation and regulations. The results should be analysed to determine areas of success and to identify activities requiring further action and improvements.

How you monitor depends on the activity that you are considering. There are no set rules but the results that you obtain should be reliable and be able to stand up to audit scrutiny. When the Auditor asks you, “Can you demonstrate this?” you need to be able to respond and/or show records.

The objectives and targets within your Farm Plan will set what you need to monitor and the type of information that you need to record. For example:

B: Soils Management

Objective 1:

To minimise the incidence of wind and/or water erosion caused as a result of farming practices

Target

Demonstrate understanding of risks and management practices used.

Close adherence to listed best management practices.

Significant variations noted together with reasons for variations and actions taken

Records

Management induced erosion incident records

Management induced erosion incident sheet			
Date	Incident	Cause	Action taken
15 Nov 09	Scouring beside track due to break in pipe.	The pipe coupling wasn't checked after it was fitted.	Staff training given on this aspect of machinery maintenance.

Note: You only have to record those occasions when an incident occurs. The rest of the time you do not need to record anything at all.

For the example given you can use the opportunity to identify the cause of the incident and the actions that you have taken to minimise the risk of the incident happening again.

Records and Information Management

Record keeping

Record keeping is often the area where Farm Plan programmes fall down. You can have the very best Farm Plan, but unless you have a good system for storing, updating and retrieving your records then the whole system can fail. The effective management of your records is essential to the successful implementation of your Farm Plan.

Record keeping serves many purposes but key uses include:

- a systematic approach to identifying and solving ongoing problems
- a reminder of the influences of seasonal variations
- as a means of measuring progress, or lack of it, over time
- to serve as a tool that might unlock additional information when required at some point in the future
- as a tool to undertake a regular critique of management practices
- as a tool to demonstrate that the land manager has taken steps to overcome various problems by implementing their stated best management practices
- a means of determining returns on investments

Accuracy and attention to detail pay off. For example, accurate records of the position of soil sample sites will aid in interpreting the results against yields, soil types, incidence of frosts, water logging, etc. These records also allow future sampling in the same positions. GPS technology is increasingly used for accurate positioning but good records using paddock landmarks and measurement from the landmarks allow relocation of the sites within a few metres. Permanent markers and an established soil sampling routine also help.

A number of sample recording sheets are on display at the workshop. These can be used as they are or adapted to your situation. The sample sheets are available in both hard copy and electronic form.

Information management

There are a range of methods that you can use to store and manage your data. These include:

- Farm calendar
- Farm map
- Multi-purpose recording sheet or white board
- Record sheets, folder or folders
- Computer database
- A combination of all of these

You can choose whatever method best suits you.

Note: A page per day farm diary can be useful for information gathering, but is discouraged for information management as records are often difficult to access and use.

6. Self Assessment and Audit

Self assessment

Making the Farm Plan work means that it must be followed, not just filed – and this requires checking. ‘Self assessment’ simply means checking whether you or your staff did what you said you would do in your Farm Plan and also checking that the actions taken had the desired effects. It either confirms that your Farm Plan was successful or identifies areas for future improvement.

Self-assessment is an integral part of an audit process and precedes any external audits. You need to ask yourself the sort of questions that you would ask of another farmer if you were an external auditor.

The self-assessment checklist in the Farm Plan template provides spaces to show:

1. the progress that you have made towards achieving the objectives and targets, ,
2. actions that are still required,
3. the person responsible for completing the task/s, and
4. the timeframe for completion.

Progress assessment

Undertaken by:

Assessment date / /

Objectives	Targets	Progress made	Actions required	Person responsible	Timeframe for completion	Completed (include date)

Monitoring actual performance is an essential part of achieving continuous improvement. It is not enough to plan carefully and follow the plan – land managers and their advisers need to check that the actions really achieved the plan’s objectives and did not cause unexpected harm to the environment.

Failing to meet objectives does not necessarily mean that the plan itself failed. It is important to learn any lessons from the results and identify improvements for the future.

Keeping good records will help identify the actions and risk factors that contribute to non achievement of the objectives, and will be invaluable when deciding on better management practices for the future.

Having completed the monitoring and assessed the plan’s success, the process begins again with planning for the following year.

Reviewing your objectives and targets will ensure that your objectives are still relevant, whether any objective has gained priority or if there are any new objectives and targets which need considering for your Farm Plan.

Remember – You cannot alter the objectives that are set as part of the Scheme Plan. However, you can provide feedback to Scheme management on the objectives and targets. This will feed into the annual Scheme review and may result in changes being made to future objectives and targets.

External audit

The requirement and conditions surrounding the external audit will be set out within the Scheme Environmental Management Strategy.

The external audit will be based on the same criteria that you would use with the self assessment. An auditor will look at the contents of your plan and whether you are following the systems and processes that you have established for yourself in that plan.

The auditor is required to assess

- The completeness and consistency of the implementation of the Farm Plan
- The effectiveness of the implementation in ensuring control of environmental operations
- The effectiveness of the systems in supporting achievement of the key performance indicators

An auditor bases all their activities on the purpose of objective evidence. They do not and cannot use subjective opinion and here-say to decide on effective implementation.

Objective evidence is:

- Records, data and reports,
- Actual practice observed during the audit,
- Stated practice.

Audits will be conducted on-farm and observation is an important aspect of the audit. The auditor will be asking him/herself. “Does what I hear, or am being told, line up with what I see?”

During the audit, the auditor will:

- Work through each of the objectives in your Farm Plan, assessing whether you have met the targets. If you have not, the auditor will be looking for evidence that you have taken action to minimise the risk of the problems that led to you not achieving the target/s occurring again.
- Make an assessment as to whether he/she feels that the best management practices, as listed in your Farm Plan, are appropriate to achieve the objectives.

At the end of the audit, the auditor will provide you with a report which details where you have met requirements and where improvements are needed. A copy of your audit report will also be passed onto the Scheme management. The Scheme management will use the information collected through the audit process to review the appropriateness of the Farm Plan goals, objectives and targets.

Farm Plan compliance and enforcement procedures

The compliance process is set out within the Scheme Environmental Management Strategy.

It includes the following elements:

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

7. Action Plan

The action plan is where you set out the tasks, time frames and costs of the various actions that are required in order to implement your Farm Plan.

Actions fall into three categories:

- a) Management changes** – These may range from minor adjustments that can be implemented immediately, to more substantial changes that need careful planning and implementation over several years.
- b) Procedures and monitoring systems** - One thing that almost everybody needs to do is to be more rigorous in their recording procedures. Setting up and maintaining suitable systems may be a feature of your action plan.
- c) Physical works** - Physical works includes projects such as building a sump for silage leachate collection, or fencing off waterways. Some of these projects may require considerable expenditure so careful planning is necessary.

Once you have identified what needs to be done, you need to set a timeframe for when you want to complete the activities. Choosing the timeframe for activities will depend on the availability of finance, labour, where your personal priorities lie, and the severity of the impact you are trying to prevent. You will also need to assign responsibility for completion of the task to either yourself or one of your staff.

A sample action plan is provided below. You can use this template or develop your own.

8. Where to from here?

Development of the Farm Plan is just the first step in the farm planning process. For some farmers it will be business as usual in terms of environmental management. For others it will mean a significant change in thinking and approach. For most farmers it will introduce new challenges particularly when it comes to monitoring and recording, and the prospects of being audited.

The next steps in the implementation of your plan are up to you. The Scheme management recognise that there will be a few challenges and are interested in your feedback and ideas of activities and specific topics to help you in the future.