Develop your own EMS – a grain farming example

April 2002

Using the international environmental management system standard (ISO 14001).

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Contents

NOTES FOR THE READER

This book is a step-by-step guide for developing an environmental management system (EMS), based on the international standard ISO14001. The guide uses an example EMS for Blue Hills Station, a grain farming operation, based on the participation of grain farmers from New South Wales and Queensland. A number of these farmers have achieved full ISO14001 certification using this approach; others have used ISO14001 as a guide only.

This process has been reviewed by farmers and technical staff participating in the project and has been guided by desktop and on-farm ISO14001 certification audits. What is presented here does not form a complete EMS; there are physical resources like maps, aerial photos, and the intellectual resources of the farm management, that we cannot present here.

Our aim has been to illustrate how an environmental management system might be developed for a property in the northern grains region (in this case on the Liverpool Plains of NSW, but some relevant Queensland information is included for reference).

There are guiding notes in the book to assist you. They are identified by this symbol and blue text. They are not part of the example EMS, but aim to help you in your understanding of the EMS process.

The particular details of the actions taken in the example Blue Hills Station EMS are not as important as the process that has been followed. The EMS process aims to identify significant environmental impacts and their causes on a property, and work out how best to respond, given the resources available to the farm business.

Environmental issues and the best responses may vary from catchment to catchment, as can the level of farm management skills and available resources. The principle of continual improvement is part of any EMS, and this allows farm managers and owners to broaden their environmental vision to include issues that are not included here.

Remember:
Blue Hills Station and owners Bob and Janet Mills are fictitious; the EMS **process** is real.

A SUMMARY OF THE BLUE HILLS STATION EMS

The development of the Blue Hills Station EMS follows a series of steps that are outlined in this book. The process uses the ISO14001 standard for guidance. The process is summarised below, indicating the corresponding step(s) in the Blue Hills Station EMS and the appropriate requirement from ISO14001. We have provided this summary to help explain what we are requiring of our staff and relevant business contacts.

EMS cycle of continual improvement	Steps in the EMS process	Corresponding requirement of the ISO14001 standard
PLAN	Step 1 Environmental review	4.3.1 Environmental aspects
	Step 2 Environmental policy	4.2 Environmental policy
	Step 3 Legal requirements	4.3.2 Legal and other requirements
	Step 4 Environmental impacts	4.3.1 Environmental aspects
DO	Step 5 Objectives and targets	4.3.3 Objectives and targets
	Step 6 Develop action plans	4.3.4 Environmental management program(s)
CHECK	Step 7 Appropriate monitoring	4.5.1 Monitoring and measurement
ACT	Step 8 Prevention Emergency planning Clear communication Appropriate training Dealing with problems	4.4.7 Emergency preparedness and response 4.4.2 Training, awareness and competence 4.4.3 Communication 4.5.2 Non-conformance and corrective and preventive action
	Step 9 Management and review Correct procedures Internal checks and reviews Appropriate records Controlling documents	4.1 General requirements 4.4.1 Structure and responsibility 4.4.4 EMS documentation 4.4.5 Document control 4.4.6 Operational control 4.5.3 Records 4.5.4 EMS audit 4.6 Management review

Environmental management system

Blue Hills Station

Bob and Janet Mills – 2001

Procedures for managing documents

Latest revision: The latest version of the EMS document is held in Bob Mills' office in EMS File Drawer 1. This is the only valid copy.

Amendments to the EMS: All approved changes and amendments to this copy of the EMS are recorded on this cover page.

The following environmental management system (EMS) developed for Blue Hills Station has been produced as part of an industry-funded EMS project conducted by NSW Agriculture.

The goal of this EMS is to:

- aid in the environmental management and efficiency of grain and beef production on Blue Hills Station;
- manage and prevent environmental impacts; and
- continually improve our farm and environmental management.

The EMS has been developed to meet the requirements of ISO14001 and provides a structure that helps us to address all the important issues of our farm environment.

Having an EMS ensures that any interested party, such as a customer, can quickly see that environmental issues are always considered on our property, and are a core part of business.

The EMS process was started in September 2000 and is quite new for our property and for us. Introducing and implementing the EMS has taken some time and effort. The EMS is a dynamic document, so we will need to revise and alter it from time to time for it to be truly useful. Internal and external audits will ensure the EMS meets our goals.

STEP 1 INITIAL ENVIRONMENTAL REVIEW (IER)

The format of this document is flexible. This is only one example. If you already have a similar document in place, there is no need to change it. Farm plans and maps are often better at describing and reviewing the activities on a property.

Introduction

The environmental review began in September 2000. The aim of this EMS is to record the key environmental issues that we need to address and to show what we will do to deal with these issues.

To start the review we used a self-assessment manual developed by NSW Agriculture. From this self-assessment we identified that the key issues on the property included soil health, chemical storage, waste management (oil and chemical containers) and the risk of soil loss from run-off and flooding.

Some of the recommendations from the self-assessment guide helped us to identify the principal environmental impacts (for Step 4) and outline how to tackle these in the **action plans** (Step 6).

Bob and Janet Mills, Blue Hills Station
October 2001

The first task of any farm developing an EMS should be to use some form of self-assessment to highlight the issues that will need to be addressed in the EMS. The role of the environmental review is to collect relevant information that, when combined with the environmental policy and legal and other guidelines, will help you decide on the most effective actions to manage the environment and natural resources of your farm.

Description of Blue Hills Station and the surrounding area

Blue Hills Station is a 924 ha cropping enterprise, farming on mainly flat black soil (for approximately 30 years) with some paddocks of lighter sandy soil. When Bob and Janet Mills purchased the property in 1990, soil erosion was a major, though hidden, problem. Conventional tillage practices and continuous cropping left the country exposed to summer rains and flooding, which caused soil erosion and degradation. Zero till, stubble retention, opportunity cropping and changes to the angle of strip cropping have resulted in improved soil health and improved productivity. The move into controlled-traffic farming, using GPS to lay out tracks, and the conversion of all machinery to the same wheel width, has recently been introduced.

The immediate area around our property comprises arable farmland with a small urban area (Blue Hills) and the Grundy State Forest on the eastern boundary. Blue Hills is a small village with a stable population and supportive residents. Spring Creek runs along the eastern edge of the property and has been degraded by changes to its course and cultivation of the floodplain.

The property is classified by the Liverpool Plains Catchment Investment Strategy as predominantly landscape management unit ***(LMU) E Floodways and Floodplains***.

Floodways and floodplains exist in association with the major rivers and creeks in the catchment. Floodways are where a channel may leave the river, meander, and rejoin the river. The floodplain is that area with a slope of 0–2% and may include swamp and outwash areas. Soils include deep Black Earths, Brown or Grey clays and some Earthy Sands. Some floodways are farmed, others are managed as pasture and some retain native vegetation of grasses, understorey, River Red Gum, Myall, and Grey, Yellow or Bimble Box. The floodplain is intensively farmed and largely cleared of vegetation. This land management unit is a dynamic environment and subject to inundation and severe erosion.

Blue Hills Station is generally classified under Land Capability Classification as: ‘Class II: Suitable for regular cultivation. Soil conservation practices such as strip cropping, conservation tillage and adequate crop rotations recommended’, all of which are practised on our farm.

Environmental issues

The key issues that we want to address include catchment level problems, such as the effects of flooding and salinity, and local concerns regarding soil health, and chemical storage and use.

Other problems that affect our property include weeds in the riparian zone, and soil erosion. We would also like to increase the biological activity of the soil and reduce chemical use.

STEP 2 ENVIRONMENTAL POLICY

In order to address the environmental issues that affect our farm, we have developed an environmental policy. There is some guidance available in the ISO14001 standard, and we have included the requirements of the standard in our environmental policy (see bold text on the following page).

Motivation for developing a policy may include:

- *the expectations of others;*
- *its relevance to activities on the farm;*
- *a commitment to environmental protection and continual improvement;*
- *minimising waste and preventing pollution;*
- *the need to meet legal requirements and industry codes;*
- *providing education and training;*
- *a commitment from the owner/management.*

It is suggested that the policy be displayed in the office and workshop for staff and visitors to see. The policy should be explained to staff and contractors. All staff, including management, must be committed to achieving the policy, otherwise it becomes ineffective.

BLUE HILLS STATION ENVIRONMENTAL POLICY

The purpose of Blue Hills Station's environmental policy is to define a vision for the future of Blue Hills Station and to set its environmental priorities and goals. This policy covers all aspects of our farming operations. **The policy is a publicly available document outlining our environmental management commitment.**

The policy is the responsibility of Bob and Janet Mills.

The property produces grain crops and beef cattle for domestic and international markets. We are committed to managing key environmental issues on Blue Hills Station, particularly soil health. We will maintain **environmental standards that are consistent with the Liverpool Plains Catchment Investment Strategy, industry Codes of Practice, and all relevant legislation.**

Through **continual improvement** of our farm (described **in our environmental management system**) we are committed to achieve these objectives by:

- **preventing pollution** of land, water and air by conforming to government regulations and industry codes of best practice, and by continually improving our farming operations using realistic and achievable guidelines;
- protecting native fauna and flora in all of our farm operations;
- **dedicating** human and financial **resources** to fulfil our environmental goals;
- **minimising the amount of waste** we produce on the farm and using recycling wherever possible and practicable;
- using the most appropriate indicators available to **monitor** farm operations and record our environmental progress; and
- **informing all farm members**, employees and contractors of their environmental responsibilities, through training and communication.

We aim to produce a quality product and to achieve ecologically sustainable production of grain on Blue Hills Station by minimising direct and indirect environmental and social impacts and by conserving our natural resources.

This policy will be reviewed annually.

Bob and Janet Mills
Blue Hills Station, New South Wales
October 2001

STEP 3 REVIEWING LEGAL AND OTHER REQUIREMENTS

PROCEDURE

As a starting point, we need to identify legal documents such as the Environment Protection Acts, State Codes of Practice, and other specific guidelines or standards (see list below).

Information on legislation is gathered and updated using the Australasian Legal Information Institute (AUSTLII) website:

http://www.austlii.edu.au/au/legis/

and by contact with NSW Farmers, NSW Agriculture and the local shire Council. Other useful resources include the Queensland Farmers Federation website:

www.qff.org.au/Policies/Environment

We check our compliance with key legislation and guidelines as part of the internal audit process (see the internal audit checklist in step 9).

Specific Environmental Legislation, Guidelines and Codes of Practice and how they determine our responsibilities

Guiding document	**Objective**
Blue Hills Station environmental policy	Principal guiding document for EMS.
'…continual improvement…'	Support the continual improvement of the EMS.
'..implement all current legal requirements..'	To meet the family's legal responsibilities
'..minimising wastes..'	Recycling where possible.
'informing all farm members …'	To ensure that all staff are aware of the family's environmental policy and objectives and that all staff meet their environmental responsibilities.
'..preventing pollution..'	Safe storage and use of chemicals and fuels.
'..broadly communicate this policy..'	The policy is displayed in our office and is available to the public on request. The certification number will be displayed on our letterhead.
NSW State legislation:	**Requirement**
Native Vegetation Conservation Act 1997	'...to prevent the inappropriate clearing of vegetation, and to promote the significance of native vegetation...'
Noxious Weeds Act 1993	'To identify noxious weeds in respect of which particular control measures need to be taken, to specify those control measures, to specify the duties of public and private landholders as to the control of those noxious weeds…'
New South Wales Occupational Health and Safety Act 2000	'To secure the health, safety and welfare of persons at work and to protect other persons at a place of work against risks to health or safety arising out of the activities of persons at work.'

NSW State Legislation:	**Requirement**
Pesticides Act 1999 No. 80	'To promote the protection of human health, the environment, property and trade...' Understand your responsibilities regarding the management of pesticide storage and application. Do not use pesticides if harm is unavoidable. Store pesticides in the correct containers. Read and follow the instructions on the label. Liability is shared between all those involved in decision making for pesticide use. Spray under suitable conditions. Notify neighbours. Undertake risk assessment before applying pesticides. **Mandatory recording of chemical application.**
Protection of the Environment Operations Act 1997	Notify EPA of any pollution incident (spill) as soon as practicable after becoming aware of the incident. Similarly, contractors to notify farm management following incident.
Threatened Species Conservation Act 1995 No. 101	'..to ensure that the impact of any action affecting threatened species, populations and ecological communities is properly assessed, and to encourage the conservation of threatened species, populations and ecological communities by the adoption of measures involving co-operative management.'
Waste Minimisation and Management Act 1995	Treat waste as a resource. Reduce the environmental impact of waste. No licence conditions are relevant to this property.
Qld State legislation:	**Requirement**
Agricultural and Veterinary Chemicals (Qld) Act 1994	Safe storage and handling of agricultural and veterinary chemicals.
Environmental Protection Act 1994	Principal guiding document for environmental management. Outlines a responsibility to meet a general Environmental Duty of Care. A person must not carry out any activity that causes or is likely to cause environmental harm unless they take reasonable and practicable measures to prevent or minimise harm. Requires demonstration of due diligence.
Nature Conservation Act 1992	Protection of habitats. Recognises the role of individuals, particularly landholders in the conservation of nature. Places conditions on property subject to conservation, international and World Heritage agreements. May have some implications for landholders concerning the protection of threatened species and habitats.
Vegetation Management Act 1999	Requires reference to vegetation maps to assess whether any endangered vegetation communities are present on the property. 'Of concern' regional ecosystems cannot be cleared on leasehold land. Clearing may require an application as an 'assessable development' under the *Integrated Planning Act 1997*. The following do not require an application: • Essential management; • Routine management in an area not 'endangered'; • Regrowth and Forest practices. For more detail contact your regional vegetation management committee, Department of Natural Resources.

Qld State Legislation	**Requirement**
Water Act 2000	How do WAMPs affect your access to water? Will you require a water licence?
Workplace Health and Safety Act 1995 The Storage and Use of Chemicals at Rural Workplaces Industry Code of Practice 2000 For more information see: **http://www.detir.qld.gov.au/hs/icp/icp008.pdf** Other farm safety guidelines at: **http://www.detir.qld.gov.au/hs/safelink/rural/** Also contact Farmsafe Qld: Toowoomba 4637 4000 Rockhampton 4933 1332	To meet health and safety obligations. Includes chemical storage and use guidelines: • maintain labels on chemical containers • storage and disposal of unlabelled containers • MSDS sheets available for all chemicals • risk assessment – prevent environmental and human exposure • record keeping – site assessment (annual) • details of application procedures • health monitoring and training • record maintenance periods • transport (incl. dangerous goods) • chemical storage shed design – roof ventilation – concrete block walls, floor and door sills • emergency preparation and clean-up procedures • personal protective equipment • disposal of containers • training • managing spray drift
Federal Legislation	**Requirement**
Environment Protection and Biodiversity Conservation Act 1999	Commonwealth focus on 'national environmental significance' including: • World Heritage areas • Ramsar wetlands • nationally threatened species and communities • listed migratory species
Regional Guidelines	**Provide direction for key farming activities**
Regional example: *Liverpool Plains Catchment Investment Strategy*	Six key natural resource management issues to be managed adopting best management options for tree cover, ground cover and cropping suitability targets. • dryland salinity and ground water recharge • flooding • soil erosion • water quality and quantity • biodiversity • riparian zone
Guidelines	**Provide direction for key farming activities**

Local example: *Guidelines for the Application of Agricultural Chemicals in the Gunnedah District 1998*, 3rd edn	Outlines planning and responsibilities for growers and applicators. To continually strive to eliminate off-target pesticide movement and the negative human, biological and environmental impacts resulting from pesticide exposure in the Gunnedah district.

Guidelines	**Provide direction for key farming activities**
Graincare On-farm Quality Assurance	Modules and code requirements for management, chemicals and grain. Food safety focus to meet market and customer requirements, including: • training • internal audits and corrective action • document control • ag-vet chemical storage • inputs and suppliers • crop management • harvesting and equipment • on-farm grain storage and handling
Other	**Detailed guidance**
Australian Standard 1940	Standard for storage and handling of fuel. • minor storage 5000 L petrol, 10 000 L diesel • emergency planning • signs • spill prevention, control and clean-up • fire extinguishers • bunding • larger than minor storage must have strict procedures in place as indicated by Sect. 9.
Australian Standard 4801	Employers obligations for occupational health and safety
WorkCover NSW Code of Practice No.422 Safe Storage and Use of Chemicals.	To meet health and safety obligations. Includes chemical storage and use guidelines.
Shire Council Guidelines	Will vary from shire to shire.

STEP 4 WORKING OUT WHICH ENVIRONMENTAL IMPACTS TO ADDRESS IN THE EMS

We now need to ensure that we cover all the possible environmental impacts that could occur on our property, work out which ones are most important (significant) and look at how to address the causes of these impacts. We do this by using the following:

1. our own knowledge and practical experience;
2. discussion with NSW Agriculture extension advisers;
3. documents, Codes of Practice and Natural Resource Management Plans (Liverpool Plains Catchment Investment Strategy);
4. the aspects/impacts register (Table 1, page 15).

To operate this farm, we carry out a number of key **activities** such as cultivation, spraying, fertilising and harvesting. There are also a number of **aspects** to each of these activities. The aspects/impacts register outlines the range of farm activities and expands these into a list of aspects and the related **impacts** of these activities.

An **aspect** can most easily be defined as being the part of an activity that **causes an impact**. In this EMS we are aiming to address the cause rather than just the impact. By addressing the cause we aim to prevent the problem recurring in the future.

The ISO14001 standard requires a clear process to identify the range of aspects that are part of the farming activities, and to determine which of these can cause a significant impact on the environment.

The aspects/impacts register is not designed to cover everything we do, but rather to list those areas where impacts are occurring or may occur. To keep the listing up to date, we will review the aspects/impacts register every year during our management review.

The following method of working out which impacts are significant is one possible method. There are other ways of assessing risks that can be used. The important thing is to cover all farm activities, and to clearly show how you assessed which impacts need to be addressed in your EMS.

A thorough aspects/impacts register ensures that you have recognised all key natural resource and farm management issues. You can then identify areas for further improvement.

TABLE 1 ASPECTS AND IMPACTS OF FARMING ACTIVITIES

PROCEDURE

1. Check that the list of activities and aspects in the Table are relevant to your farm. Add or delete as needed.
2. Look at the list of impacts and assess whether any of these are occurring or could potentially occur on your property.
3. For all these impacts calculate the risk assessment based on the matrix shown below. Calculate likelihood versus severity and place the score in the risk column.

Likelihood		**Severity (including potential)**	
Continuous or several times per day	5	Breaks law/guideline	5
Very frequent (several times per week)	4	Severe impact	4
Frequent (several times per year)	3	Moderate impact	3
Seldom (once every couple of years)	2	Indirect impact	2
Once in 10 years	1	Minor indirect impact	1
Unheard of	0	Negligible	0

4. To work out which impacts are **significant** use the following:
    - Impacts with a corresponding legal requirement or guideline, such as a best management practice or catchment guideline, are automatically significant.
    - The top ranked impacts are significant. Based on your ability to tackle these impacts you can decide the score above which an impact is significant. In this example, scores 12 and above are considered as significant.
5. Start to work out your response to the **significant** impacts by considering the cause (**aspect**) and the related activity. These impacts can then be looked at in step 5.

Table 1. Example aspects and impacts evaluation

Activity	Aspect	Impact	Legal/ other	Risk assessment			Risk	Significant	Impact is currently being managed?
				Likelihood	Severity	Score	RANK	yes/no	yes/no
Cropping	Tillage	Soil structure decline		3	4	12		yes	
	Tillage	Loss of organic matter							
	Tillage	Soil compaction							
	Tillage	Soil loss							
	Tillage	Soil health							
	Tillage	Noise	Y	5	2	10		yes	yes
	Tillage	Air quality/dust							
	Tillage	Farm safety	Y						
	Tillage	Machinery W & T							
	Tillage	Fuel/energy use							
	Tillage	Fossil fuel decline							
	Tillage	Emissions/greenhouse gas							
	Tillage	Weed spread							
	Pesticide use	Soil and water contamination	Y						
	Pesticide use	Human safety	Y						
	Pesticide use	Residues – livestock	Y						
	Pesticide use	Residues – grain/products	Y						
	Stubble burning	Local air contamination	Y						
	Stubble burning	Loss of organic matter							
	Stubble burning	Habitat destruction							
	Stubble burning	Soil erosion							
	Stubble burning	Fertility decline	Y						
	Fertiliser use	Human safety	Y						
	Fertiliser use	Soil and water contamination	Y						
	Fertiliser use	Nutrient leaching							
	Minimum tillage	Increase in herbicide use							
	Minimum tillage	Herbicide-resistant weeds							
Harvesting	In wet conditions	Soil compaction							
	Procedure	Human safety	Y						
Chem. store	Spillage	Soil and water contamination	Y						
	Spillage	Human safety	Y						
	Tank condition	Soil and water contamination							

Activity	Aspect	Impact	Legal/ other	Risk assessment			Risk	Significant	Impact is currently being managed? yes/no
				Likelihood	Severity	Score	RANK	yes/no	
	Container condition	Chemical loss $							
Grain store	Treatment	Residues – grain/products	Y						
Stock management	Veterinary chemicals	Human safety	Y						
	Veterinary chemicals	Residues – livestock	Y						
	Ground cover levels	Soil erosion	Y						
	Riparian management	Soil erosion							
	Riparian management	Sedimentation of streams							
	Riparian management	Water contamination							
	Dip sites	Soil and water contamination	Y						
	Dip sites	Human safety	Y						
Emergency	Planning	Human safety	Y						
	Planning	Soil and water contamination							
	Planning	Asset damage							
	Drought	Stock/grain losses							
	Drought	Asset damage							
	Flooding	Stock/grain losses							
	Flooding	Asset damage							
Landscape	Weed management	Human safety	Y						
	Weed management	Noxious weeds	Y						
	Weed management	Herbicide-resistant weeds							
	Feral animal control	Soil and water contamination							
	Feral animal control	Human safety							
	Revegetation	Capital cost							
	Revegetation	Habitat creation							

Activity	Aspect	Impact	Legal/ other	Risk assessment			Risk	Significant	Impact is currently being managed?
				Likelihood	Severity	Score	RANK	yes/no	yes/no
	Revegetation	Buffers							
	Tree cover	Habitat creation	Y						
Site preparation	Removal of native vegetation	Species loss	Y						
	Removal of native vegetation	Fossil fuel depletion							
	Removal of native vegetation	Soil erosion							
	Removal of native vegetation	Dryland salinity							
	Removal of native vegetation	Air quality/dust	Y						
	Removal of native vegetation	Noise	Y						
	Removal of native vegetation	Fossil fuel depletion							
Waste management	Waste oil	Soil and water contamination	Y						
	Waste disposal	Soil and water contamination	Y						
	Waste disposal	Contribution to landfill	Y						
	Waste disposal	Groundwater contamination							
	Chemical containers	Soil and water contamination	Y						
	Chemical containers	Human safety	Y						
	Septic failure	Soil and water contamination							
Fuel storage	Spillage	Soil and water contamination	Y						
	Spillage	Human safety	Y						
	Tank condition	Soil and water contamination	Y						
	Tank condition	Fuel loss $							
	Tank condition	Human safety	Y						

STEP 5 OBJECTIVES AND TARGETS

Objectives and targets are based on the commitments in the environmental policy and on the results of the previous steps.

To list our issues and then develop action plans we have considered the time and cost involved, and our ability to deal with the issue in mind. All issues that make it to the final list below are considered suitable for developing into action plans. Where we are currently addressing impacts and their causes, we have no need to set out an objective. Where possible we have grouped similar impacts together into key issues.

We will revisit our objectives and targets at our yearly management review, and regularly check the Action Plan Summary posted on the office wall. This will ensure that all action plans are still relevant and that targets are being met. When action plans have been completed, new ones will be considered in line with our focus on continual improvement.

The following objectives are proposed and the corresponding targets are set out in detail in the action plans.

Significant impact or issue identified in Table 1	Proposed objectives to tackle these issues
Chemical storage and containers	Improve chemical storage on Blue Hills Station.
Pest management	Learn and implement integrated pest management (IPM). Apply chemicals safely and efficiently.
Grain storage	Improve grain storage quality and capability.
Farm safety	Protect family and any staff or visitors from injury.
Native vegetation and dryland salinity	Establish tree lines and agroforestry plots. Maintain current opportunity cropping and ground water monitoring activities.
Soil erosion	Monitor selected suitable indicators.
Soil health	Maintain and encourage soil biota to maximise nutrient cycling, with minimal nutrient leaching.
Machinery efficiency	Install guidance system for tractors. Set up a practical maintenance schedule.
Fuel storage	Improve fuel storage on Blue Hills Station.
Waste oil	Collect and recycle waste oil.

*The **objectives** are the core focus of the EMS and are developed into action plans with clearly defined targets, dates and responsibilities, such as the example shown on page 21. It is important that the process of steps 1–6, from reviewing your farming operations through to setting objectives and targets, is clearly set out in your EMS.*

STEP 6 ACTION PLANS

The Action Plan Summary is the collection of action plans that were developed from the initial environmental review. The action plans may be altered to reflect changes in management, laws and industry directions. It is usual for some action plans to be changed, and others will be needed. Where more detail is required, individual action plan sheets (page 21) are used to record all the details for each plan.

Example Action Plan Summary

	Objective	**Targets**	**When**	**Done**
1	Improve chemical storage on Blue Hills Station	Construct a suitable chemical store.	Dec. 2001	
		Customise the store to suit farm requirements, with safety shower, HAZCHEM warnings and appropriate protective equipment.	Apr. 2002	
		Establish record keeping and MSDS sheets for all chemicals in storage.	Apr. 2002	
		Adopt closed transfer system for all chemicals where possible.	July 2002	
2	Apply chemicals safely and efficiently	Install weather station.	Dec. 2001	
		Install activated carbon filter in tractor.	Mar. 2002	
		Notify neighbours prior to spraying.	Dec. 2001	
3	Expand integrated pest and weed management (IPM)	Trial shielded sprayer for volunteer weeds.	Jan. 2001	
		Complete IPM training.	Dec. 2002	
4	Improve grain storage quality and capability	Meet GrainCare requirements.	June 2002	
		Install alternative drying system.	Jan. 2003	
5	Protect family and any staff or visitors from injury	Conduct a property risk assessment.	Dec. 2001	
		Determine priorities and put in place and practise an emergency response plan.	Feb. 2002	
6	Improve farm layout to reduce soil loss and compaction	Opportunity cropping practised across farm.	July 2001	
		Roads designed and constructed to eliminate headlands where possible.	July 2002	
7	Improve soil health	Trial soil treatments to address lack of stubble breakdown.	Dec. 2001	
		Establish tests for monitoring soil biota.	Dec. 2002	
		Trial pasture or green manure rotations.	Apr. 2002	
8	Establish tree areas	Agroforestry plot established.	July 2002	
9	Improve maintenance records	Develop a suitable maintenance record system.	Dec. 2001	
10	Improve waste management	Find a suitable method of storing waste oil, and a contractor to recycle oil.	Dec. 2001	

EXAMPLE OF AN INDIVIDUAL ACTION PLAN SHEET

Action Plan 1 Chemical Storage July 2002					
Objective (What to do)	**Improve chemical storage on Blue Hills Station**				
Why	To reduce the risk of off-site contamination				
References	EMS				
Targets	1. Construct shed for storing chemicals. 2. Customise the container to suit farm requirements, with safety shower, HAZCHEM warnings and appropriate protective equipment. 3. Establish record keeping and MSDS sheets for all chemicals in storage. 4. Adopt closed transfer system for all chemicals wherever possible.				
When to do it	**Target**	**Date**	**Responsibility**	**Performance Indicators**	**Completed (tick)**
	1	Dec. 2001	Bob Mills	Shed constructed.	
	2	Apr. 2002	Bob Mills	Shower, safety signs and protective equipment in place.	
	3	Apr. 2002	Bob Mills	Register placed inside shed and reconciled with purchases. Relevant MSDS sheets on file.	
	4	July 2002	Bob Mills	Closed transfer drums used for all chemicals, where available.	
Cost/Benefit	Cost: Materials and signs, upgrade to closed transfer system. Benefit: Reduce the risk of off-site contamination and risk to human health and safety. Better control of chemical purchases.				
Monitoring and recording	Monitor chemical containers for leaks. Check shower is functioning.				
Corrective action/review					

Acknowledgment to Michael Spence (M.E. McKay and Assoc.) for original action plan layout.

STEP 7 MONITORING

MONITORING AND MEASUREMENT

Monitoring is an essential part of any EMS. If we don't monitor we will never really know whether or not we are making progress towards achieving our goals. Good information will tell us how we are going and allow us to adjust our management if targets are not met.

The Blue Hills Station monitoring program provides information to aid the management of the natural resources and the farming operations on Blue Hills Station. Relevant monitoring allows us to check the progress of our action plans and the condition of natural resources on the property. The monitoring program describes where, who, and how all samples or observations are to be taken. The monitoring program is kept on the office wall and referred to weekly to help us plan relevant activities. Much of the monitoring is carried out by our agronomist who provides the information in monthly reports.

Blue Hills Station monitoring program

Activity or Indicator	Method	Who	When	Record
Rainfall	Gauge (mm)	Bob Mills	daily	Farm diary
Winds **– Speed** **– Direction**	Weather station	Bob Mills	daily	Farm diary
Weather conditions for spray events	As per spray guidelines. Measured prior to spray events.	Bob Mills	As required	Farm diary
Chemical store inventory	Monitor quantity of stored chemical and condition of containers.	Bob Mills	2 monthly	Shed diary
	Record all usage of pesticides.	Bob Mills	As required	Spray diary
Sediment run-off/erosion from paddock	Monitor soil levels against pegs placed in key erosion points of riparian zone – photo taken.	Bob Mills	Following storm event	Photo album
Soil Health	Invertebrate activity – cloth strip.	Agronomist	Monthly	Farm diary
Soil pH	pH test kit	Agronomist	6 monthly	Computer
Soil water	Monitor soil profile in fallow and crop.	Bob Mills	As required	Computer
Soil nutrients	Soil samples to accredited lab to aid in fertiliser and crop decisions.	Agronomist	Prior to crop	Computer
Pest Levels	Agronomist makes recommendation on basis of crop scouting.	Agronomist	As crop cycle demands	Record in diary when action needed
Ground Cover	Stubble cover > 30% quadrats	Agronomist	Per crop	Farm diary
	Pasture cover > 70% quadrats	Bob Mills	when stock are moved	Farm diary
Water use efficiency	kg grain/mm/ha/annum	Bob Mills	Per crop	Computer
Grain silos	Monitor condition of silos, stored grain and pest levels.	Bob Mills	Procedure in Appendix 4	Farm diary
Legal and other requirements	Monitor changes in laws, BMPs and guidelines, and check compliance.	Bob Mills	annually	Manage-ment review
EMS targets in action plans	Regularly review progress of action plans.	Bob Mills	annually	Manage-ment review

Note: Agronomist's reports are kept in the monitoring results' folder in EMS file drawer 1.

STEP 8 PREVENTION

A COMMITMENT TO PREVENTION

A commitment to prevention within an EMS is simply about commonsense management. If we can prevent accidents and incidents from occurring we will reduce the risk of injury to family and staff, reduce the likelihood of environmental impacts, and minimise production and financial losses.

EMERGENCY RESPONSE AND PLANNING

The main aim of this section is to ensure the safety and protect the health of all farm staff and family.

PROCEDURE

Potential emergencies have been identified through a risk assessment using the "15 minute safety check" http://www.workcover.nsw.gov.au/pdf/farm.pdf. The major threats identified are fire, workplace injuries, flood, and chemical spills. The ways we identify and plan for emergencies are listed on page 25.

Most States have well-documented Workplace (or Occupational) Health & Safety (WH&S or OH&S) legislation and guidelines. ***HAZPAK*** *is a good risk management tool worth considering for all businesses.*

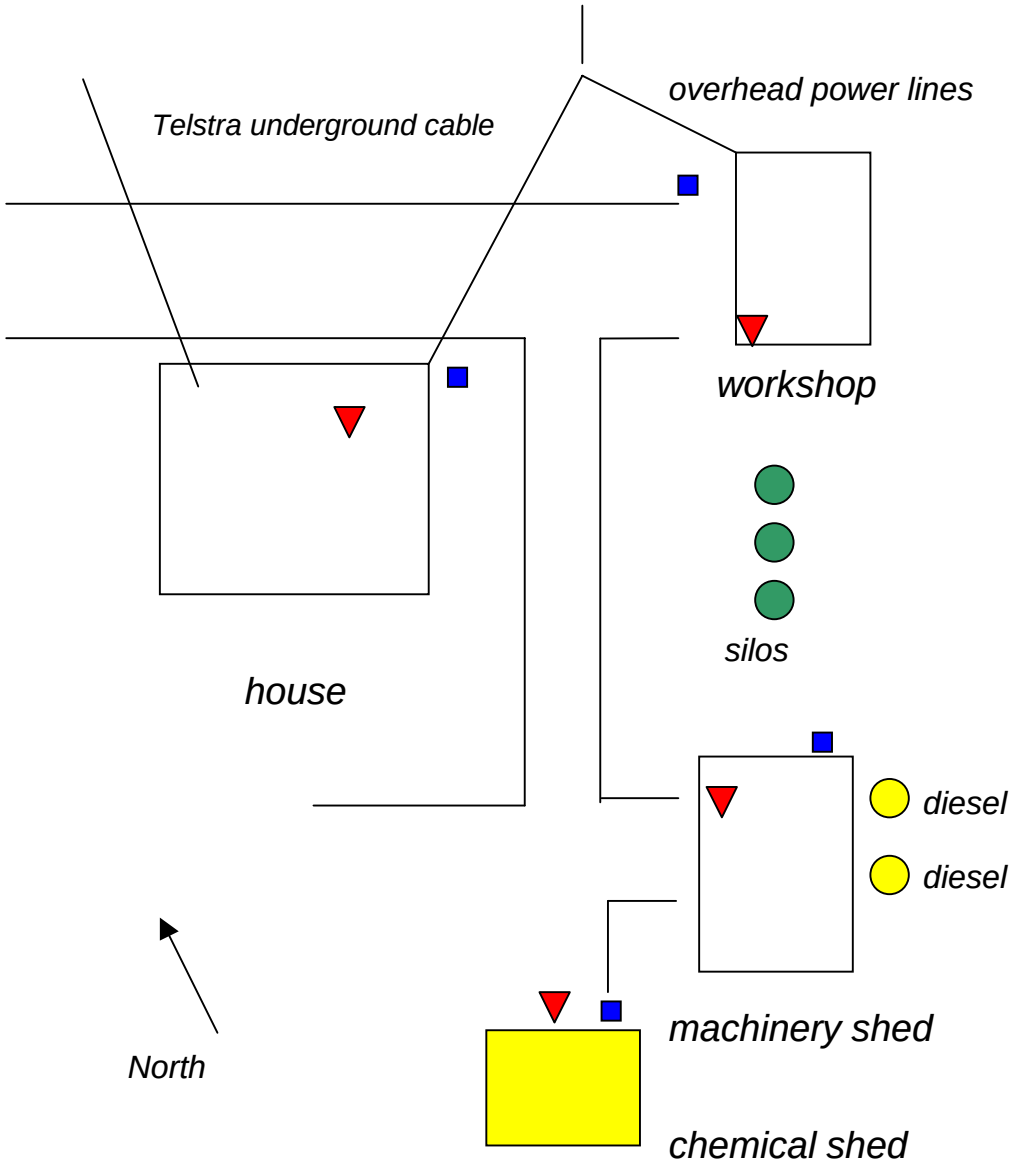
The key requirements for the EMS are that:

- *a risk analysis is done;*
- *an emergency plan is developed;*
- *staff are trained in the emergency response plan;*
- *records of the training are kept;*
- *an appropriate site plan is clearly placed for reference; and*
- *emergency responses are practised periodically.*

Example emergency plan Refer to site plan for location of safety equipment and contacts	
Incident **In order of risk**	**Response in bold type** *Preventive measures in italics*
House fire *Record test dates here, e.g. tested 30 Nov. 2001*	• **Assess fire before contacting fire service immediately.** • **Isolate fire where possible using appropriate extinguishers.** • **Complete issue review record and review cause.**
	▪ *Conduct fire drill with family to train children how to react to a fire.* ▪ *Have strategically placed and properly serviced fire fighting equipment in house and machinery shed.* ▪ *Install smoke alarms if not already present.*
Chemical spills	• **Clean up by applying absorbent material and removing contaminated soil into bucket.** • **Report according to legal requirements (if spill is significant).** • **Complete issue review record and review cause.**
	• *Ensure storage and mixing occurs in specified bunded locations.* • *Ensure all operators have protective clothing.* • *Adequate spill kits available.* • *Ensure relevant MSDSs are available and referred to.*
Chemical spill affecting user	• **Stop work.** • **If chemical has come into contact with skin, use decontamination shower to thoroughly rinse affected area; use eyebath where chemical has come into contact with face and eyes.** • **Remove contaminated clothing where possible.** • **Follow instructions on container or material safety data sheets (MSDSs) if chemical is swallowed; all data sheets should be displayed within the chemical storage area.** • **Contact Poisons Information Centre for guidance in treating the affected person.** • **Complete issue review record, and review cause.**
	• *Appropriate training.*
Accident/Injury	• **If accident occurs – stop work.** • **Apply first aid.** • **Assess condition of the patient, and contact ambulance if required.** • **Complete incident report.** • **Contact WorkCover where necessary.**
	▪ *First aid kits to be maintained.*

Example emergency plan (continued) Refer to site plan for location of safety equipment and contacts.	
Incident (in order of risk)	**Response in bold type** *Preventive measures in italics*
Equipment/ machinery fire	• **Assess fire before contacting fire service immediately if required.** • **Isolate fire where possible using appropriate extinguishers.** • **Complete incident report.**
	▪ *Ensure that all machinery have strategically placed and properly serviced fire fighting equipment.*
Fire in or around machinery and storage sheds	• **Assess fire before contacting fire service immediately if required.** • **Isolate fire where possible using appropriate extinguishers.** • **Complete incident report.**
	▪ *Have strategically placed and properly serviced fire fighting equipment in all sheds.* ▪ *Maintain fire breaks around fuel stores and between buildings.*
Fuel spills *Tested 15 Dec. 2001*	• **Cut off flow of fuel to prevent further spillage.** • **Transfer remaining fuel to other storage.** • **Spread absorption material (sawdust/sand) and prevent spill from reaching waterways.** • **Clean up, removing contaminated soil into secure container.** • **Inform relevant authorities if required.** • **Complete incident report.**
	▪ *Automatic cut-off valves installed on hoses*
Flood	• **Where possible move machinery to higher ground.** • **Move stock to higher ground.**
	• *Monitor weather data and flood warnings for advice on flood heights and weather conditions.*
Discharges to waterways	• **Where contamination occurs, notify authorities and downstream neighbours immediately.** • **Complete incident report.**
	▪ *All activities with potential to contaminate soil and waterways are conducted where possible within designated bunded area*
Fertiliser spills	• **Remove remaining fertiliser from spill area.** • **Clean up as for chemical/fuel spill.** • **Complete incident report.**
Sewage treatment system failure	▪ *Ensure septic (or other) system is regularly maintained and serviced.* ▪ *Monitor efficiency of absorption trench.*

Blue Hills Station Site Plan



Key

Fire extinguisher GPS coordinates –

Hazardous area

Water

Emergency phone numbers

Fire/Police/Ambulance	000
Local Fire Service	0747 3224
Poisons Hotline	13 11 26

Communications and issue review records

The requirement for corrective and preventive action in an EMS is met by regular reviews (internal audits and management review) of the EMS. The communication register and issue review records also play a key role in determining whether corrective and preventive action may be needed.

Prevention is stressed through emergency planning, good communication, allocation of responsibilities (where they apply) and review – they are all covered in Step 9.

Communication involves 'relevant' and 'interested' parties. For Blue Hills Station this may include NSW Agriculture, the Department of Land and Water Resources and other agencies, the grains industry, property neighbours and other stakeholders. Communications dealing with management of the EMS are recorded in the communication register.

NOTE: Complaints record sheets are important for any management plan for intensive farming operations (piggeries, chicken sheds). Broadacre farming usually has fewer complaints, so this is not a major issue for most grain farmers. A communications record sheet (which can include complaints) is included to satisfy ISO14001 requirements.

The environmental policy will be made available to any member of the public upon request. Our environmental policy has been communicated to neighbours, a casual employee, and to relevant contractors.

PROCEDURE

On receiving a complaint or inquiry, we record the details of the communication in the register. We will then work out what action is to be taken. Where action is needed, we record the particulars in an **issue review record** (see page 29).

WHEN **Date**	**WHO** **Person(s) involved**	**DETAILS** **Type of communication**	**Action needed ? Yes/No** ***If yes , complete an issue review record***	**EMS requires amendment? Yes/No**

Note: If the EMS needs to be changed, the final column must include a reference to what changes are to be made.

ISSUE REVIEW RECORD

In line with the wish to integrate all parts of farm management where practicable, all incidents arising from farm activities, including Occupational Health and Safety Issues and Quality Assurance, have been incorporated into Corrective and Preventive Action by inclusion in an issues review record.

'Issue' is described as covering an emergency, spill, accident, hazard, problem in the EMS, any activity or incident that would need corrective and preventive actions to be undertaken, and any issue that could impact on the farm or its management.

Issue of concern _____Review date _____

Where did the issue occur? _____

When did the issue occur? _____

Details: _____

_____

Risk (assess probability of causing harm and the seriousness of that harm)

LOW MEDIUM HIGH

Were there any injuries? _____

Was there damage to property or machinery? _____

Was the issue avoidable? If so, how?

_____

Did the Emergency Response Plan include procedures to be followed? *Yes/No*

Was the procedure followed? *Yes/No* Did the procedure work? *Yes/No*

If 'no', why not? _____

What improvements should be made to the procedure?

_____

Are there any control and preventive actions that should be put in place? *Yes/No*

_____

If 'no', what else should be done? _____

Is there anything that should be reviewed during the management review?

_____

Signed: _____

Training, awareness and competence

Training, awareness and competence is part of the ISO14001 standard and is required to meet due diligence obligations. It is also considered within quality assurance (e.g. GrainCare) and Occupational Health and Safety.

On Blue Hills Station we are committed to providing appropriate training to all staff whose work may create a significant environmental impact. This ensures that they are competent to carry out their duties. This includes recognising the current skills, experience and education of staff.

When staff are employed, a copy of the environmental policy is provided and management directions explained. Employees' skills and expertise are noted on the training register. For key farm operations there are set procedures to follow.

NOTE: Contractors may also need to demonstrate that they have suitable skills when working on the property. A procedure for spray contractors is being developed for Blue Hills Station and this may extend to grain harvest contractors.

The **basic knowledge** needed to operate our environmental management system effectively is listed below. Participation in the NSW Agriculture pilot grain EMS project assists with this training.

Farm owner/manager must:

- write an effective environmental policy;
- describe the aims of the EMS;
- identify significant environmental impacts and risks;
- list the legal and other requirements of the business;
- carry out environmental monitoring and measurement;
- implement appropriate pollution control and waste disposal;
- efficiently and safely use energy and materials.

Staff must:

- identify significant environmental impacts and risks relating to employees' tasks;
- carry out relevant environmental monitoring and measurement;
- implement appropriate pollution control and waste disposal;
- inform the owner/manager of any incidents;
- demonstrate understanding of appropriate procedures;
- efficiently and safely use energy and materials.

Contractors will be informed of their environmental responsibilities and the expectations of farm management (see the 'procedures manual' section in step 9, page 32).

Contractors must:

- implement environmental policy and relevant procedures;
- meet specific requirements for contractors.

Blue Hills Station – Training required

The following areas of training have been identified following the formation of action plans. To successfully complete the action plans shown on page 20 we need to complete this training. All relevant training records are kept in the EMS File Drawer under 'Training'.

Training area	**Who**	**Training required**	**Training completed**	**To be done by (date)**	**Done** (tick)
Farm management	Bob Mills	**Implementation of Blue Hills Station EMS**	EMS development – NSW Agriculture	June 2001	
Integrated Pest Management	Bob Mills	**Pest identification IPM strategies**		June 2002	
Quality Assurance	Bob Mills	**GrainCare requirements for grain growers**		June 2002	
Occupational Health and Safety	Bob Mills	**Farm safety review** – possibly HAZPAK assessment		Sept. 2002	

Blue Hills Station – Training register

Who	**Training completed**	**Provider**	**Location**	**Certificate issued Yes/No**

STEP 9 FARM MANAGEMENT AND REVIEW OF THE EMS

This step covers the management of the EMS, from procedures for key farm activities and how records and documents are kept, through to regular checks and reviews to make sure we are on track with meeting our goals and the requirements of ISO14001.

OPERATIONAL CONTROL

Bob Mills manages all farm activities and the environmental management system.

This section may require more detail if staff are employed on the property, or there are farm operations with stricter licensing requirements on the property (irrigation, feedlots for example).

If seeking ISO14001 certification, you will need written procedures (or photos, or signs) for any operation relating to the significant impacts shown in step 5. Some examples of written procedures are shown here.

Example procedures manual for key farm activities

These are examples only. Your procedures will show the key activities that occur on your own farm. These procedures should be tested during the year as part of the internal audit process.

AGRICULTURAL CHEMICALS

Storage

- Chemicals should only be transported in a ute or truck.
- Where possible, bulk use chemicals should be purchased as reusable closed transfer drums. Steel 20 litre drums should only be purchased as a last resort.
- Chemicals coming into the chemical store should be entered in the inventory, located in the filing cabinet inside the door.
- An MSDS for all chemicals within the shed should be in the filing cabinet.
- Steel drums should be raised above the floor to prevent rust.
- Empty enviro-drums should be stored in the area behind the shed, to be picked up by supplier.
- Empty 20 litre drums and other containers should only be placed in the storage area when correctly rinsed. Empty drums that have not been rinsed are to be filled with water and left in the shed with the label intact. These drums should be rinsed when that chemical is next used.
- Rinsed 20 litre containers should be taken to the next ‘drum muster’ day.
- MSDSs are available from www.msdsonline.com/ or from the supplier.

Transfer

- Spray rig to be filled with required amount of water before chemical is loaded.
- Before filling chemical hopper, check that outloading taps are off.
- Operator is to wear the appropriate protective gear when handling chemicals. The appropriate protective equipment for each chemical is listed on the MSDS. Protective equipment is to remain in the chemicals shed.
- When using closed transfer system drums, use the appropriate coupling. When pumping from other drums, use the probe. Avoid pouring chemicals directly into hopper.
- Operator is not to leave chemicals shed while chemical transfer pump is on.
- When required amount of chemical is in the chemical hopper, turn on outloading taps and commence rinsing of hopper, coupling and pump.
- Ensure that all rinsate goes into spray rig.

Chemical application

- Spraying area should be inspected no more than one day before application.
- When spraying is planned on or near Blue Hills Station boundaries, relevant neighbours are to be informed using the Spray Notification sheets located in the top filing cabinet in office. This should be done the day before spraying where possible.
- Where there is doubt about rates of chemical required, spraying should be delayed until advice is sought from an agronomist. For fallow spraying, rates lower than label rates can be used where required. When spraying in-crop, label rates and withholding periods are to be observed. Rates higher than label rates are not to be used under any circumstance.
- Where possible, spray rig should be full of water and in a ready-to-spray condition, in order to take advantage of good spraying conditions.
- Do not spray in inversion conditions (still air) or when wind is in the direction of a nearby neighbour. The weather station should be consulted if weather is questionable.
- If using hydraulic nozzles, pressure should not exceed 220 kPa. Contractors should be made aware of this requirement.
- When using AI nozzles, pressure should range between 500 and 700 kPa.
- When spraying near public roads, do not spray while wind is in direction of road. Switch off sprayline and stop rig when traffic approaches. Contractors should be made aware of this requirement.
- Public relations aspect should be considered even if no risk to health exists.
- Rotating beacon should be used when crossing public roads.
- On completion of a job, the spraying log book located in the spray rig cabin should be filled out. Items requiring attention should also be recorded in this book.
- Avoid the use of aircraft for spraying. If this is unavoidable, insist that the pilot contact management before loading the aircraft, to avoid committing to spraying under unsuitable conditions.

PLANTING

JD Planter

- Ensure all maintenance and repair items from previous season have been carried out. These items are listed in the back of the owner's manual located in the XYZ tractor.

- Fit appropriate discs for the crop.
- Rinse chemical screens. Test and calibrate chemical applicators.
- Consult agronomist on plant population required. Calculate population into seeds per metre of row.
- Ensure gloves and face shield are carried on tractor for handling of treated seed.
- Periodically check depth of seed, seed spacing and chemical applicators.

- After completion of each block, note the date of planting, variety, population, chemicals applied and comments in the log book for later entry into Records program.
- After a known area has been planted, refill seed boxes to ensure seed rate is consistent.
- Slightly under-order seed to avoid carryover of seed at the end of the season.
- Rotating beacon should be on when crossing public roads.
- At end of season list items requiring repair in the back of the owner's manual.

RG Airseeder

- Before each season the airseeder is given a total rebuild to ensure that it is still fit for planting.
- Calculate seeding rate required as seeds per metre of row.
- If chemical-treated seed is used, make sure face mask and gloves are carried on tractor.
- Periodically check plant population and seeding depth on all rows.
- After a known area has been planted refill seeder (when using bagged seed) to check that seeding rate is consistent with target population.
- At the completion of each block, note the date of planting, variety, population, chemical rates applied and comments in the log book for later entry in Records program (see page 47).
- At the end of season, make sure hopper bins are cleaned out and gas lines are plugged.

USE OF ANHYDROUS AMMONIA (NH_3)

- At start of season, notify supplier's NH_3 specialist and ensure hoses and equipment have been inspected by him within the last 6 months.
- Wear equipment provided on nurse tank when transferring NH_3. Ask delivery drivers to do the same. Ensure a face shield and work gloves are on the tractor. These should be worn when working on gas equipment in the field.
- Observe wind direction when preparing to refill applicator tank. Where possible, nurse tanks should be placed so they can be accessed from several angles.
- Known nurse tank refills/replacement should be noted in the log on the tractor.
- Reset the hectare counter on tractor after each fill and continually check calibration after each load.
- 5 Litres of petrol should be carried on the planter to run nurse tank engines.
- When a block has been completed, note the date and the rate in the log, for later entry into records program.
- At the end of the season, applicator tank taps are to be turned off and gas lines plugged.

WASTE OIL

- The waste oil tank is located on the north wall of the workshop.
- Periodically check the level of the tank.
- When 75% full (tank size is 1200 litres) contact contractor on 0123 4567. Minimum requirement for pick up is 1000 litres.

HARVEST

- Ensure maintenance items contained in log in header cabin have been completed well before harvest
- Check engines, gearboxes, chains and guards on augers. Check battery level on moisture meter, chaser bin tyres, wheel bearings, and drive chains and sprockets.
- Check that PTO drive guards and guards on exposed items are functional.

- Clean out available silos and bases with firefighter.
- Inform all contractors of our environmental policy. This should be sighted and signed off by all contractors before commencing work.
- Fire truck should be located as close as possible to block being harvested.
- When harvesting dusty crops, engine bays of header should be cleaned as part of daily maintenance to prevent fire.
- Daily check harvester's grain loss.
- When harvesting high-moisture grain, continually monitor moisture levels as silo is filled, to prioritise grain drying. Silo number, date and estimated average moisture level should be entered in log book contained on main loading auger.
- Ensure aerators are on in silos containing wet loads.
- Estimate yield for each block and store in header log for later entry in Records program.
- Note in header log any blocks with problem weeds or diseases for later entry in Records program.
- When working near public roads, rotating beacons should be used.
- At the close of season, note items requiring maintenance in header log book.
- Hose out header and chaser bins at the end of season.

GRAIN STORAGE

- Silos and bases should be hosed out with fire fighter as they become empty.
- Aerators should be left on (weather permitting) in silos containing wet grain. This is to be considered a temporary measure.
- As grain is outloaded, moisture level should be checked. In grain travelling to the coast, an NIR test from GrainCorp should be taken.
- Truck registration number, destination, estimated load and date should be recorded in the log located on the main auger.
- The area around the silos should be maintained clean and free of grain, weeds and rubbish.

CONTRACTORS AND SUPPLIERS

Although most contractors have not yet been included in the EMS, they MUST conform to the EMS while employed on Blue Hills Station. Bob Mills informs contractors of any environmental measures that apply to them. Bob keeps a record of contractor agreements, with the contractor's acknowledgment of having read and understood the Blue Hills Station environmental policy. These agreements are held in the archive file.

Suppliers will soon be included as we expand the scope of the EMS. At present, they have little to do with EMS. Suppliers of chemical, fuel and seed are most significant. They will receive copies of our environmental policy and we will ask them to meet their obligations and our purchasing standards. In many cases there is only one supplier, so this limits our ability to have preferred suppliers.

GENERAL CONTRACTOR PROCEDURE

- All principal contractors/suppliers are to be sent a copy of the environmental policy, and a signed acknowledgment copy is requested from them before work starts. These contractors currently are:
  - *State Forests (agroforestry work)*
  - *suppliers of anhydrous ammonia*
  - *Mills Rural (agronomy and agricultural supplies).*
- Inform all irregular or one-off contractors, when they arrive, of our EMS and environmental policy. OH&S policy and contractual requirements are to be sighted and signed off by all contractors before starting work.

BUILDINGS

- Repair all windows and glass panels when broken..
- Repair all window and door screens when broken.
- Paint all outside wooden surfaces when necessary.

PRODUCT SALES

- If contracted, check grain specifications with contract requirements.
- Confirm that moisture levels are under grain delivery standards.
- Fill in a Product Transaction/Sales record, found at the 'Blue Hills Station' office.
- Upon request of the holder of any contract, fill in a Vendor Declaration form, found in the 'Blue Hills Station' office.

SPECIALISED EQUIPMENT USE

Chainsaw

- Use the appropriate safety equipment. A list/photo can be found with the chainsaw.
- Only experienced or trained users permitted.
- Follow the operating procedures listed in the manual, found with the chainsaw.
- Maintain in accordance with manual.

Brushcutter

- Use the appropriate safety equipment. A list/photo can be found with the brushcutter.
- Only experienced or trained users permitted.
- Follow the operating procedures listed in the manual, found with the brushcutter.
- Maintain in accordance with manual.

PERSONAL INJURY

- Employees are informed of our EMS and environmental policy. OH&S policy and contractual requirements are to be sighted and signed off by all employees before starting work.
- Injured worker informs management as soon as they are injured.
- Within 48 hours of being notified, Blue Hills Station Partnership informs insurer, by telephone.
- Within 7 days of notification, Blue Hills Station Partnership sends the form 'Employers report of injury' to insurer. This form is found in the OH&S section in the file drawer 'References and Records'.
- Within 7 days of notification Blue Hills Station Partnership sends the form 'Accident Report' to WorkCover. This form is found in the OH&S section in the file drawer 'References and Records'.
- Management must investigate the causes of the injury and take corrective actions recommended.
- All incident/injury reports are to be included in the annual management review.

INSURANCE CLAIMS

- An issue review record must be completed on any incident that warrants an insurance claim.
- The claim must be notified to the insurer as soon as possible and a claim and GST (Input Tax Credits) advice form requested.
- The claim form is to be returned as soon as possible. The GST advice form **must precede** the claim form.
- If requested by the insurer, do not disturb the site before a claim investigation.

Acknowledgments to Peter Jones and Jim McDonald.

Internal checks and reviews

Any available person from NSW Agriculture EMS staff, family or neighbouring farmers will carry out these audits. If this is not possible, Bob Mills will self-audit based on the Small Business Quality Management Guidelines.

If possible, an independent person should conduct these. For ISO14001 certification they are referred to as audits.

PROCEDURE

Objective	Check how well the EMS is functioning on Blue Hills Station.
Where	Blue Hills Station
Date and frequency	To best fit in with the farming cycle, the audits will be carried out during the cropping season.
Scope	Indicated on front page of checklist.
Auditor	Various (some may be self-audited)
Audit structure	**A.** Interview with farm management – complete checklist. Brief inspection of key farm documents and site inspection. **B.** Audit significant farm activities that can be observed.
Audit duration	**A.** 4 hours **B.** 4 hours (approximate) Recommended minimum for ISO14001 requirements
Reference documents	EMS manual Relevant EMS documents and records Monitoring records Audit checklist
Report structure	Meets ISO14001 Review objective evidence Dated Conclusions and recommendations
Legal information	Review planning and compliance with legislation.
Priorities	Streamline paperwork – Concise and clear records – Continual improvement
Language	Plain English
Audit length	Concise, with observations and recommendations.

The internal check or audit is essentially a way of checking that the EMS has met the requirements of the ISO14001 standard and your own expectations. The results of the audit are used in the management review and any third party certification/surveillance audits. The unpredictable nature of farming means that the audits and their timing are flexible, to allow all the main farm activities to be reviewed.

AUDIT CHECKLIST - KEY RECOMMENDATIONS

Person auditing	Date
Part A. Management system audit	Insert recommendations from this checklist.
Part B. Key farm activities	Insert recommendations from the audit of the key farm activities viewed over the year.

There are some limitations on the way internal audits are conducted on many farming properties. For example, single operators carry out most of the farm management, with some support from other people. So there is often no independent person to carry out an internal audit. The Small Business Guidelines for Quality Management (page 94) provides guidance for self-auditing if no other option is available. This is carried out in much the same way as the environmental self-assessment module was completed.

To complete the audit you are looking for the answer YES, plus objective evidence of:
1. correctly implemented procedures;
2. relevant and accurate documents;
3. good understanding in staff;
4. effective environmental protection.

Additional questions may be needed depending on your range of activities. Key farm activities such as spraying, harvesting, storage or planting should also be audited in part B to check that the EMS is working on the farm.

If you follow this format it is quite easy to expand the audit to incorporate Quality and Farm Safety questions to demonstrate compliance with GrainCare requirements or Occupational Health and Safety legislation.

PART A – GENERIC MANAGEMENT SYSTEM CHECKLIST - EXAMPLE

ELEMENT	DONE	TO DO	OBSERVATIONS/COMMENTS
An environmental policy is displayed on the property.			
All staff have received a copy of the policy.			
The environmental policy is presented to contractors and suppliers to sign off on.			
A register of legal and other obligations is maintained and updated at least annually.			
Compliance with key environmental legislation has been checked.			
There is an up-to-date list of all current farm activities and possible related impacts.			
The significant impacts have been listed.			
This risk assessment of farm activities and environmental impacts is annually reviewed.			
Objectives and targets have been set to address significant impacts on the property.			
The set objectives and targets are reviewed at least annually.			
The key farm activities on the property are covered by procedures, and procedures are annually assessed for changes.			
An emergency plan covering all potential risks is prepared and is displayed on the property.			
The goals of the EMS have been communicated to staff, contractors and neighbours (where relevant).			
Communications from neighbours and interested parties are recorded. Any immediate actions needed are attended to and recorded. All other matters are considered during management reviews.			
Corrective action Issue review records are used to report on and respond to all issues or incidents of significance.			
Where a question is not relevant, write N/A in the observations column.			

ELEMENT	DONE	TO DO	OBSERVATIONS/COMMENTS
A monitoring program is in place and relevant records are kept.			
Appropriate records are kept, are easy to locate, are protected against damage or loss and are reviewed at least annually.			
A list of records is kept, detailing name, date of issue, where copies are stored and the minimum period for which records are retained.			
The EMS Manual documentation is checked to ensure that only the latest version of each document is being used.			
An internal audit of the management system and farm activities is carried out at least annually.			
The EMS is reviewed at least annually, and changes or updates made where needed. The review covers audit reports, issue review records, corrective action records, farm activities environmental aspects/impacts review, business goals, action plans, monitoring records, communications, staff training and capabilities.			

RELATED FARM MANAGEMENT – QUALITY ASSURANCE & FARM SAFETY - EXAMPLE

ELEMENT	DONE	TO DO	OBSERVATIONS/COMMENTS
Household wastes are disposed of to landfill or are recycled.			
Waste oil is collected and recycled.			
Chemical containers are rinsed and disposed of correctly. DrumMuster is used to recycle compliant containers.			
Metal and machinery wastes are recycled or sold.			
The potential risk of chemical contamination from persistent pesticides on the farm has been assessed and a record kept.			
Unregistered chemicals have been disposed of in legal off-farm areas (ChemCollect) or isolated from other chemicals in separate locked storage.			

ELEMENT	DONE	TO DO	OBSERVATIONS/COMMENTS
All farm chemicals are purchased from Agsafe accredited suppliers.			
All chemicals are safely stored in a secure area according to the label.			
A farm chemical inventory or equivalent system is used to record the chemical name, date received, place of purchase, quantity purchased, batch number and expiry date / date of manufacture.			
A stocktake of the chemical store is completed every 12 months, and a record kept of any chemicals disposed of and how, the date of the stocktake and name of the person.			
Chemicals used are approved and applied according to the label or permit.			
Chemical application equipment is calibrated at least yearly, and the date and person responsible recorded.			
The application of chemicals is recorded, detailing date, chemical used, application rate and method, area treated, withholding period/date safe to harvest/stock, and name of operator.			Pesticides Act requirement
The chemical storage area has adequate spill control measures.			
The application of fertilisers and soil additives is recorded, detailing name of product, date, area treated, rate, and person applying.			
Fertilisers and soil additives are stored, applied and disposed of in a manner that does not pose a contamination risk.			
Where there is a significant risk of heavy metal contamination, fertilisers and soil additives are selected to minimise the risk.			
Grain stores are monitored as per GrainCare guidelines.			
Grease, oil, fuel, farm machinery, and workshop equipment are separated from grain storage areas to prevent contamination of produce.			
Fuel and oil storage areas are identified and meet storage requirements – AS1940.			

ELEMENT	DONE	TO DO	OBSERVATIONS/COMMENTS
Fuel hoses have automatic cut-off nozzles.			
A site plan is displayed in the office and the workshop, identifying hazardous storage areas, environmentally sensitive areas, safety equipment and contaminated sites.			
Regular equipment maintenance of farm machinery is carried out and a clear record kept.			
Safety equipment is in identified place, is regularly inspected for damage, wear and compliance dates.			
Delivery vehicles are checked for cleanliness, physical contamination and weed infestation before loading.			
Copies of customer specifications are kept, or written specifications have been developed by the business and agreed with customers.			
Produce ready for delivery is checked to ensure it meets customers' needs			
Where produce does not meet specification, the customer is informed before delivery and a record kept of the notification and the customer's advice.			
A record has been kept of harvest/sale date and growing/grazing area, and destination of produce.			
A record of the job description, responsibility and training for staff is maintained.			
The person responsible for supervising the use of farm chemicals has a current certificate from an NRA-approved farm chemical use course.			

This checklist can be added to as appropriate.

PART B – EXAMPLE AUDIT OF KEY FARM ACTIVITIES (ONE ACTIVITY ASSESSED ON EACH SHEET)

1. Read the relevant procedure (see Procedures Manual) Procedure for.....

COMMENTS

2. Observe the activity and compare it with the procedure.
   - Were any differences observed? *YES / NO*
3. Questions for operator:

- Have you read and understood the procedure, or had the Procedure explained to you? *YES / NO*
- Have you recorded the relevant information for this activity (*if needed*)? *YES / NO*
- If 'No' in point number 2:
  Why was the procedure not followed as written?

4. Are the records for this activity:

- Up to date? *YES / NO*
- Easy to read? *YES / NO*
- Easy to find? *YES / NO*

5. Recommendations

- Does this procedure need any changes to be improved ? *YES / NO*
- Does the recording format require any changes to show all the required information? *YES / NO*
- Does the operator require further training? *YES / NO*
- Have recommendations from previous audits for this activity been carried out? *YES / NO*
- Other recommendations?

6. Auditor's name .....Signed.....Date .....

Management review

A management review is completed each year with the following considered as part of that review:

- normal farm activities;
- incidents, accidents and potential emergency situations;
- past activities, current activities and planned activities.

The purpose of a management review is to assess the EMS to see whether it is still suitable to the farm business, and if it is adequate and effective. The management review will be timed to coincide with financial and production reviews.

Specific tasks that can be covered include:

- *reviewing the environmental policy (does it say what you want?);*
- *checking for any new laws or guidelines;*
- *reviewing the aspects/impacts register;*
- *reviewing action plans (have targets been achieved?);*
- *updating monitoring and action plan wall planners;*
- *addressing concerns raised by neighbours or other parties;*
- *checking that records are up to date;*
- *assessing the results of internal audits.*

The management review will use this information to check how well the system is meeting the needs of the farm, and whether the information taken from the system is assisting management decisions.

EXAMPLE MANAGEMENT REVIEW FORMAT

Date
Review No.

Persons attending	Position	Location
		'Blue Hills Station' Blue Ridge

Topic	Comments and actions
Environmental policy statement *Is it still relevant?*	
Review of legal issues *Any new guidelines to follow?*	
Results of internal audit *What are the recommendations?*	
Review training	
Review communications register	
Review issue review records *Anything urgent to deal with?*	

Action plan targets for 2001 – Alterations to dates – Progress so far	
Action plan number	**Progress and comments**
	What has happened with the objectives and targets? Have they been met or should they be altered?
New action plans proposed (if relevant)	
	What issues should now be tackled?
Miscellaneous actions or events *To be truly effective and cut down on meetings and paperwork, the management review should tie in with other management activities like financial planning and production.*	

How and where are records kept?

Records are essential to demonstrate due diligence. The number of records and the documentation system will vary according to need. Any existing system should be checked first to see how it can be adapted for EMS record keeping.

Appropriate records need to be kept up to date. The location of records needs to be clearly identified.

PROCEDURE

All EMS-related records are to be stored in File Drawer 1 in the office. Records are to be kept in the office, except for these key site records:

- chemicals shed register;
- grain storage register;
- workshop maintenance register.

Bob Mills is the sole person in charge of these records. Except where otherwise indicated, all records will be maintained permanently. Included are training records, GrainCare records, monitoring results and the results of any audits and reviews conducted. There is no need for other special record keeping at present. Records and record keeping for EMS will be reviewed at each annual management review.

A list of all **relevant** records is displayed on the EMS Filing Cabinet in the farm office, titled ‘Blue Hills Station list of environmental records and EMS documents’.

Blue Hills Station list of environmental records and EMS documents

Title	Date of issue	Number of copies/type	WHERE ?	Details – when reviewed – retained until
Individual monitoring records: soil, crop, water, chemical		Various 1 copy on file	EMS file drawer 1 MONITORING	Format and relevance reviewed annually during management review.
Internal audit records	various	paper	EMS file drawer 1 archives	
Communications register and issue review records	various	paper	EMS file drawer 1 archives	Reviewed annually during management review.
Training records	Oct. 2000	various	EMS file drawer 1	Updated as required. Retained permanently.
Self-assessment guide	Sept. 1999	1 paper	EMS file drawer 1 archives	Retained permanently.
Management review records		2 copies	EMS file drawer 1	Retained permanently.
Bore licence	2/1/99 receipt	90GL55608	EMS file drawer 1	Retained permanently.
Chemical store records	various	register	Inside store door	Retained permanently.
Chemical spray records	various	1 paper	Tractor diary	Retained permanently.
Grain store inspection records	various	1 paper	Farm diary	Retained permanently.
Piezometer records	various	1 paper	Farm diary	Retained permanently.
Machinery maintenance records	various	1 paper	Farm diary	Retained permanently.
Contractor agreements	various	1 copy of each	EMS file drawer 1	Retained permanently.

Where are EMS documents kept?

PROCEDURE FOR DOCUMENT CONTROL

An EMS document/record list has been prepared to allow people to know where information can be found. Information related to the management of the property, such as internal operating procedures, site maps and plans, emergency procedures and work instructions, is listed.

We integrate EMS information with other management systems information (i.e. quality assurance) as far as possible. OH&S documents are referred to where they specify items that may have an environmental impact.

FILING AND STORING OF DOCUMENTS

All documents are stored in the office filing cabinets, some are on the computer and others are at relevant locations on the farm.

All documents will have an issue date. All documents (except out-of-date sections that are replaced in the EMS manual or appendices) will be kept in the archive files.

If a document is related to another it is cross-referenced. This document list is placed on the EMS filing cabinet in the office. Holders of documents are identified.

In all cases Bob Mills is the sole holder of documents and records.

Any changes made to Blue Hills Station documents are authorised by Bob Mills.

REMOVAL OF OBSOLETE FILES

EMS documents are reviewed annually to ensure they are up to date. Only out-of-date versions of the EMS manual are destroyed. All other documents are kept permanently.

Blue Hills Station list of EMS documents

Title	Date of issue	Number of copies/type	Where?	Details – when reviewed – retained until
EMS manual	Oct. 2001	1 paper 1 electronic -(not valid)	EMS file drawer 1	Reviewed annually during management review. Out-of-date copies destroyed.
Initial environmental review – aspects/impacts & legislation	Aug. 2001	2 paper	EMS file drawer 1	Baseline document. Reviewed annually during management review.
Site plan	Feb. 2002	2 paper	Displayed at house and workshop	
Farm Maps	Jan. 2000	various	EMS file drawer 1	Updated when required.
Blue Hills Station Monitoring program	Oct. 2000	2 paper	Displayed office wall	Reviewed annually during management review. Old sheets retained in MONITORING file.
Environmental management program	Oct. 2001	2 paper	EMS file drawer 1	Contains action plans that are reviewed annually during management review.
Procedures manual for key farming activities	Mar. 2001	2 paper	EMS file drawer 1 Chemical Shed	Outlines farm and EMS procedures. Reviewed annually during management review.
Internal audit checklist	June 2001	1 electronic	C:My Documents/ EMS	Reviewed annually during management review. Retained permanently.
Liverpool Plains Catchment Investment Strategy	Jan. 2001	1 copy	EMS file drawer 1	Retained permanently.
Grain Care QA Code of Practice	Apr. 2000	1 copy	EMS file drawer 1	Retained permanently.

External audits and ISO14001 certification

As owners of Blue Hills Station, we made a decision to seek ISO14001 certification for our EMS. To gauge our readiness we first contacted NSW Agriculture, before then contacting a range of certification companies to get estimates of the time and cost involved and the process to be followed.

The audit and certification process for Blue Hills Station involved the following steps:

1. an initial inquiry with the chosen certification body;

2. the completion of a questionnaire and application to the certification body prior to them conducting a **preliminary document review**;

3. a one day **preliminary audit** on Blue Hills Station;

4. a final **certification audit on Blue Hills Station**;

5. ongoing **surveillance audits** to be conducted at least annually.

ISO14001 CERTIFICATION ADVICE

External auditing and certification to the ISO14001 standard is an option available to anybody developing an EMS. Following the structure of this example Blue Hills Station EMS will help you to be ready for ISO14001 audits. Because the audit is done in two stages, any gaps in your EMS can be identified and fixed prior to the final certification audit.

There are a number of certification companies in Australia that conduct certification audits. Contact NSW Agriculture Environmental Systems Specialist Genevieve Carruthers on (02) 6626 1237 for more details, or advice concerning the certification process.

Alternatively the Joint Accreditation Scheme Australia New Zealand website http://www.standards.com.au/jasanz/ provides information on certification companies, auditors and organisations with ISO14001 certification.

A checklist aimed at farmers wanting to assess their readiness for ISO14001 is available at www.agric.nsw.gov.au/reader/ems.

Resources to assist the development of your EMS

The following resources can assist you in the development of an environmental management system.

NSW Agriculture EMS website: www.agric.nsw.gov.au/reader/ems
Self-assessment questionnaire, Basic EMS example, ISO14001 checklist and EMS information and resources.

Environmental Management System Guidelines.
NSW Government, November 1998, New South Wales Department of Public Works and Services.

Developing an Environmental Management System.
A practical guidebook for agricultural businesses.
Agriculture Western Australia. 2001.

Incorporating biodiversity into environmental management systems for Victorian agriculture.
Victorian Department of Natural Resources and Environment, 2001.

Law of the Land: A guide to environmental law for farmers.
Environmental Defender's Office Ltd, Sydney, 2nd edition, 1998.

FARMCARE Code of Practice for Sustainable Fruit and Vegetable Production in Queensland. Checklist. How well do you comply?
Queensland Fruit and Vegetable Growers 1999.

Environmental Management Systems for Piggeries.
M.G. Spence, Proc. National Pig Environment Conference, 1998.