

Environment Management Systems in Rural Australia: Practice and policy lessons from implementing the Australian Landcare Management System (ALMS)



Tony Gleeson

JUNE 2006



Natural Heritage Trust
Helping Communities Helping Australia
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**Australian Landcare Management
System**

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Tony Gleeson

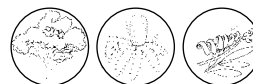
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“Above all our most acute need was to devise a system that would be attractive to landholders, that would take account of their capabilities and aspirations, that would enable creativity and sustained commitment and at the same time would meet the legitimate community requirement to have measurable improvement in environmental performance.

It was for these reasons that we chose a catchment-linked, whole-of-farm approach that combines requirements for prescribed environmental outcomes with management process standards and which is capable of delivering both national and international recognition”¹



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Australian Landcare Management
System

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Front cover photo: ALMS members from North Central Victoria creating customised ALMS plans using *myEMS*.

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Short report

About the report

This is a report on an Australian Landcare Management System (ALMS) Pilot Trial conducted between 2003 and 2006 by Australian Landcare Management System Ltd (ALMS Ltd) and collaborators.

About ALMS Ltd

ALMS Ltd is a not-for-profit company established by landholders in 2003 to assist land managers throughout Australia improve environmental outcomes and to gain recognition for their achievements. It achieves these dual purposes by supporting ALMS.

About ALMS

ALMS is a whole-of-farm, catchment-linked and externally-audited environmental management system requiring all three categories of participating landholders (Eucalyptus, Banksia and Grevillia) to comply with internationally recognised management processes codified in the ISO 14001 standards and to provide support for biodiversity conservation. Banksia and Grevillia certifications require landholders also to exchange information with the relevant catchment authority. Grevilla membership requires landholders to have acquired ISO 14001 certification.

Different accreditation requirements apply to auditors undertaking audits for the different ALMS membership categories. Auditors undertake a certification audit at the time of application by a landholder to an ALMS membership category and compliance audits apply thereafter.

About the Pilot Trial

The ALMS Pilot involved landholders in the Eastern Hills and Murray Plains in South Australia and in the North Central Catchment Management Region of Victoria. Forty-nine landholders participated in the pilot with 32 landholders (65 per cent) achieving ALMS Eucalyptus certification. As expected, no application for other membership categories has been made at this time.

A further ten landholders beyond the ALMS Pilot have achieved ALMS Eucalyptus certification and, before the end of July 2006, an additional thirty landholders will be audited against the requirements for ALMS Eucalyptus certification.

By the end of July 2006 ALMS expects to have 65 landholders across three States with externally-audited environmental management systems.

Pilot Trial Outcome

The ALMS Pilot and parallel work has shown that landholders, using tools developed by and in association with ALMS, are able to develop and implement environment management systems that comply with ISO 14001 standards. Furthermore, although it is early days, it is apparent that the participating landholders will implement activities that will lead to improved environmental outcomes and hence improved business outcomes.

There is, however, a major problem.

Need to recognise better environment management

Most landholders, including many who have progressed through to ALMS Eucalyptus membership, judge the drivers for improving environmental management, whether through the adoption of ALMS or some other management system, to be insufficient for them to sustain their activities to improve environmental outcomes.

Consequently, it is unlikely that ALMS (and similar initiatives) will have a sustained impact on environmental outcomes unless the potential drivers for improving environmental outcomes are able to operate more effectively.

The market- and non-market-based drivers for improving environmental management cannot operate effectively unless there is a credible way of recognising improved land management. This could be achieved through the adoption of a voluntary Australian land management certification system based on the design features of ALMS and using tools developed by ALMS and many other organisations involved in the National EMS Pilot Trials.

Major findings

1. Land managers who wish to improve environmental outcomes, and who are provided with effective tools to help do this, are capable of adopting the ISO 14001 set of management standards.
2. ISO 14001 based continuous improvement environmental management systems focus on aspects of activities that have major environmental impacts, in other words, on the causes of environmental impacts rather than on the impacts (symptoms) themselves.
3. Management plans devised by ALMS landholders are specific and time bound and are likely to lead to improved environmental outcomes so long as the commitment to improving environmental management is sustained.
4. The web based software program *myEMS* is an effective tool to assist in the development, maintenance and auditing of environmental management systems that comply with the internationally accepted ISO 14001 standards. Additionally, *myEMS* is a potent tool for improving access to information on what landholders consider to be the important impacts that their activities have on the environment and what they intend doing to improve environmental outcomes.
5. Improving landholder access to and use of mapping tools, spatial data sets and environmental monitoring tools would enhance the rate of environmental improvement using ALMS and (presumably) similar management systems.
6. For most Australian farms there is no reason for implementing environmental management systems on an agricultural industry-by-industry basis.

There are many valid reasons for not adopting an industry-by-industry approach to environmental management systems including the need, from an ecological point of view, to take a holistic approach, the need for efficient support and auditing arrangements on a local basis and the need to not constrain changes in land use that are conducive to improved environmental outcomes.

In 2001, sixty-two per cent of farms producing 72 per cent of agricultural production by value operated two or more agricultural industries. In 2006, ALMS catchment-based groups of landholders operated between five and eight different agricultural industries within reasonably small geographical areas. As well, farms occupy only 60 per cent of the Australian land mass, all of which needs to be well managed environmentally.

7. The effectiveness of environmental management systems depends on the policy and program settings within which they operate, and these need to be revised.

There needs to be greater recognition of the fact that environmental management systems lead to both private and public goods and benefits. Providing separate incentive arrangements according to those criteria will lead to fragmentation and distortion of environmentally focused activities.

The creativity and long term commitment necessary for improving environmental outcomes would be constrained by the setting of environmental indicators and targets not linked to individual landholders' aspirations, requirements and capabilities.

Short term and frequently changing approaches to supporting improved environmental practices are likely to substantially increase transaction costs and lead to piecemeal approaches to environmental management.

Inclusion of support for environmental management systems could dramatically improve the effectiveness and efficiency of complementary policy instruments.

8. The main constraint to improving environmental outcomes is the lack of effective drivers.
9. Existing commercial and non-commercial drivers for improving environmental outcomes would operate more effectively, and additional drivers would evolve, if improving land management were credibly recognised.
10. Improving land management could be credibly recognised by establishing one or more voluntary systems for certifying improving land management using the systems and knowledge gained through the ALMS Pilot Trials, and other EMS Pilot Trials.

Recommendations

Recommendation 1: That ALMS, and similarly applied environmental management systems, be supported as a central instrument in policies and programs to support improved environmental management (Page 41)

Recommendation 2: Support programs aimed at improving environmental management processes and practices should provide land managers with access to a variety of tools including those that quickly and cost effectively lead to an externally audited continuous improvement management system (Page 4)

Recommendation 3: Current work aimed at ensuring landholders have access to and can use computer based spatial data based systems and relevant data sets needs to be continued and possibly enhanced (Page 41)

Recommendation 4: The National Framework for Environmental Management Systems should be revised to include a robust policy analysis to support or otherwise the place of environment management systems in the portfolio of public policy instruments to improve environmental management (Page 44)

Recommendation 5: Future programs to support the introduction of environment management systems be directed towards innovative landholders who wish to improve environmental outcomes and who, in most cases, operate a mix of industries (Page 44)

Recommendation 6: That further investment in supporting the introduction of environment management systems includes investment in strengthening the drivers for such innovations (page 45)

Purpose of the report

The purpose of this report is to present experiences gained from the development and early implementation of the Australian Landcare Management System (ALMS) and, more particularly, to report on the usefulness of ALMS to landholders in different catchments in relation to objective of the Environment Management System (EMS) National Pilot Program.

The objectives of the EMS National Pilot Trial were to develop and assess the value of EMS as a business management tool to improve natural resource management, from the enterprise level up to the catchment scale; to assist industry competitiveness and production efficiency; and to assist primary producers meet emerging market demands for quality and environmental assurance.

Lessons were sought from the ALMS Pilot Trial in relation to:

- **Implementation:** how best to implement catchment linked environment management systems across regions differing in environmental issues, industries and organisational structures and capabilities
- **Tools:** how best to further develop and refine environment management tools to assist the implementation of EMS
- **Recognition:** how to provide recognition and motivation for participating land managers within and across catchments irrespective of their particular circumstances, including their industry mix.

What was done

The ALMS Pilot Trial was undertaken by ALMS Ltd, a not-for-profit company established by landholders to improve environmental outcomes in ways that provide a base for recognition for participating land holders.

The Pilot Trial was designed as an action learning research process to determine the best ways to develop and implement an externally-audited, catchment-linked ISO 14001-based EMS across Australia.

The Pilot Trial was conducted in two catchments in South Australia and Victoria. Additional activities were undertaken by ALMS Ltd in other catchments in Queensland and Victoria to broaden the experiences on which findings from the Pilot Trial are based.

The ALMS EMS Pilot Trial was supported by ALMS Ltd and collaborators through activities to:

- improve the design of ALMS
- improve the effectiveness of tools available to ALMS and partnering catchment management authorities
- integrate farm and sub-catchment planning through ALMS
- identify opportunities and constraints to the development of alliances to improve natural resource management
- improve the capture of benefits from improving environmental management
- determine how best to implement an Australian land management certification system.

In undertaking the ALMS Pilot Trial ALMS Ltd:

- implemented ALMS with two farmer groups, in the Eastern Hills and Murray Plains Catchment Group, South Australia (EH&MP) and in the North Central Catchment Management Authority region, Victoria (NCCMA) with the target of having at least ten participating farmers per region
- monitored the implementation of ALMS with the farmer groups to assess how best to apply ALMS in particular circumstances
- further developed and trialled ALMS support tools
- evaluated the impact of ALMS on environmental and business outcomes
- built on existing networks of landcare and catchment coordinators and facilitators in each region by using and expanding on existing partnerships and participatory approaches
- implemented a continuous learning process across the two regions and a communication/participatory strategy to extend such learning beyond those directly involved in the ALMS EMS Pilot Trial
- contributed to the overall evaluation of the EMS National Pilot Program Framework.

The design of ALMS

The purpose of ALMS

The purpose of ALMS is to improve environmental outcomes in ways that provide recognition and benefits for participating landholders through a range of existing and emerging mechanisms.

ALMS recognises that improving environmental outcomes is only one of several challenges facing land managers. Given that land managers need to integrate across the various facets of land management ALMS, has developed tools and processes to facilitate that integration. Nevertheless, ALMS has retained a clear and purposeful focus on improving environmental outcomes in ways that provide recognition.

ALMS has adopted this single purpose objective because it judges that it is neither possible nor desirable to develop a single, multi-purpose, total property management system that could be applied universally and externally audited.

A single multi-purpose total property management system across all land management situations, within agriculture and beyond, is inappropriate because of the great variability in management requirements and capabilities that apply across Australia. Even within the narrower focus of environment management ALMS found it necessary to select a management system, the ISO 14001 system, which caters for such variability. In fact, ISO 14001 requires that environment management plans be customised for each property.

ALMS also judged that a comprehensive total property management system it is not desirable because the requirements for partnership between the public sector and land managers justifiably vary greatly according to various purposes and components of such systems.

ALMS has responded to the clarion call across communities for improving environmental outcomes and for the 'green' claims of land managers to be justified. Meeting these requirements necessitates elegant and focused responses. Such responses are unlikely to come from approaches that add complexity and prescription across a broader spectrum of objectives.

ALMS is a management system

ALMS is a catchment-linked, whole-of-property, ISO 14001-compliant EMS with three categories of membership (Eucalyptus, Banksia and Grevillia) differentiated on the basis of the accreditation requirements of auditors and on the need to exchange information with the local catchment management authority.

The ISO 14001 environment management standards codify a set of interconnected management processes. Application of these management processes results in the development of action plans and operational procedures aimed at strengthening or modifying the activities of land managers that have, respectively, positive or negative environmental impacts.

Design features of ALMS

The principal design features of ALMS are that:

1. It has *ecological integrity*--- meaning that it deals with the interactive and interdependent dimensions of the components of ecosystems and takes account of the spatial and temporal dimensions.

2. It is **attractive to landholders**--- meaning that it provides sufficient and balanced intrinsic and extrinsic motivation to enable sustained participation and creativity.
3. It is **credible**--- meaning that a range of interested parties, including landholders and their peers, domestic and international food and fibre markets and community and public sector organisations and individuals, have confidence that it will lead to improved environmental outcomes.
4. It is primarily **focused on causes**, not symptoms--- so that it deals with aspects of management activities that have environmental impacts rather than only with the impacts (symptoms) themselves.
5. It is **externally audited** ---by auditors accredited to perform certification and compliance audits according to prescribed standards hence providing for local, regional, national and international recognition.
6. It is **strengthened by diversity**---in motivation, capability, land use (industries).
7. It **integrates**---production and conservation.
8. It has **balance**---between process and outcome standards.
9. It is based on sound **understandings** ---of human behaviour and of policy development and implementation.

More details of the rationale for ALMS and of its design features are presented in the *Guide to ALMS* (second edition). However, there is one feature of ALMS that warrants particular comment, and that is its full adoption of the ISO 14001 set of environment management standards.

ALMS has fully embraced the ISO 14001 set of environment management standards, in part because such an approach enables international recognition. However, irrespective of whether such recognition is important for a particular land based business, the essentially attractive feature of the ISO 14001 set of management standards is that it requires land managers to develop and implement action plans that address the aspects of land management activities that have the greatest environmental impacts, both positive and negative. In other words the ISO 14001 set of management standards requires a focus on causes, not symptoms, for without that focus land managers, and their support programs, will forever be playing a catch up game.

The ALMS experience is that land managers who wish to improve environmental outcomes, and who are provided with effective tools to help do that, are able to adopt the ISO 14001 set of management standards.

Lessons learnt in relation to design

The lessons learnt in relation to design are important.

Clarity of purpose: ALMS is designed to deliver against a clear and focused objective, that is, in conjunction with other means such as regulation and education, to improve environmental outcomes. The other objectives of the National EMS Pilot Program (assisting industry competitiveness, production efficiency and meeting market requirements) are recognised as important consequential benefits of achieving the prime objective.

ALMS is a good illustration of the policy maxim of having multiple policy instruments to meet an objective rather than, as happens too often, multiple objectives being assigned to single policy instruments.

Innovators drive innovation: ALMS has worked with committed innovators to improve the ease of application of a management system designed to improve environmental outcomes. This approach contrasts with those environmental management approaches designed for mass application from the outset.

Approaches seeking mass application from the outset, either by design or because their adoption is a prerequisite to, for example, obtaining access to resources, may not tap into the innovative capabilities of land managers committed to achieving the established objective. This latter route can lead to the adoption of less robust systems with reduced likelihood of achieving the prime objective.

Organisational charters and cultures are important: Perceptions of extreme difficulty and complexity grow when the design principles necessary to achieve an objective do not fit comfortably with the charters, policies and cultures of influential organisations established for other purposes. These factors have contributed to a widespread and unfounded perception that 'ISO' does not work.

Support from local organisations and individuals

Support from local organisations is critical to success, as is the commitment of key individuals.

In Victoria the ALMS Pilot was supported by the North Central Catchment Management Authority (NCCMA) and the Victorian Department of Primary Industries (DPI) and, in South Australia, by the Eastern Hills and Murray Catchment Landcare Group and the South Australian Murray Darling Catchment Authority.

Furthermore the ALMS Trial would not have been possible without persistent and insightful inputs, particularly from Jim Moran in Victoria and Bruce Munday in South Australia.

The commitment of landholders to participate in the trial without assurance of benefit can only be understood by acknowledging their strong intrinsic desire to protect the environment and the strength of their respect for local advocates of ALMS.

In hindsight one is tempted to suggest more formal arrangements between collaborating organisations would have been beneficial. Inevitably, however, this would have led to inflexibility and a consequential reduction in our ability to apply an adaptive management style that proved to be so essential in recognising and overcoming unforeseen difficulties.

ALMS had difficulty in applying the EMS Program Baseline Survey that was judged by landholders and ALMS support staff alike to be complex and intrusive. Rejection of that particular survey approach left a gap in our understanding of the circumstances within which participating landholders operated. Again, with the benefit of hindsight, it would have been useful to have conducted less structured interviews with participating farm business members on each farm to better understand their joint and individual aspirations and capabilities.

More effort and resources should have been assigned at the beginning of the ALMS Trial to develop stronger empathy between local support organisations, trial participants and those responsible for developing and implementing ALMS.

On the positive side, increasingly frequent telephone and email communication between the central office of ALMS and those involved in supporting the ALMS trials in Victoria and South Australia were important feedback loops through which problems with implementing the trials were identified and resolved.

Identifying landholder participants

In both Victoria and South Australia most landholder participants in the ALMS Pilot were members of previously established landholder groups. In Victoria the groups were established with a focus on salinity and in South Australia in relation to landcare activities more broadly. Consequently, forming the ALMS landholder groups was uneventful in those instances.

Landholders had a variety of reasons for participating in the ALMS Pilot, all of which revolved around their desire to improve environmental outcomes and to be recognised as committed environmental managers.

Landholders identified potential benefits of ALMS certification being:

- self satisfaction in implementing a systematic environmental plan
- peer and local community recognition
- on farm productivity gains
- greater surety of access to resources and maintenance or enhancement of asset values
- greater capacity to reduce and manage legal risk
- possible future market advantage.

Experience from ALMS groups within and beyond the ALMS Pilot Project indicates that formation of the landholder groups is a critical element in the successful application of ALMS.

Given the importance placed by ALMS on catchment considerations formation of landholder groups on a sub-catchment basis would be preferable but this factor should not override the benefits of networks based on common social, business and location features.

Developing ALMS plans

ALMS Ltd had settled on the design principles and features of ALMS before the ALMS Pilot Project commenced. These features were reflected in the *Australian EMS Manual and Workbook* developed in collaboration with several other EMS Groups and with support from the DAFF/NHT 'Tools' project. Consequentially, at the beginning of the ALMS Pilot, workshops with landholders were designed around use of the *Australian EMS Manual and Workbook*.

The length and frequency of workshops were adjusted to take into account the travelling needs and other preferences of landholders. Landholders were expected to continue to develop their EMS plans between workshops.

Several factors constrained both the rate of progress in developing ALMS plans and in the quality of those plans.

Initial confusion as to the meaning of certain ISO 14001 terms resulted in considerable loss of time and frustration among both landholders and ALMS trainers. Nevertheless the attrition rate of landholders was low, indicating a strong commitment to continue with the ALMS Pilot. ALMS trainers were experienced group facilitators but had no training or previous experience in facilitating the implementation of an ISO 14001 EMS. This lack of capability in relation to ISO 14001 implementation contributed to a loss of time and frustration among both landholders and ALMS trainers.

Landholders were trained in ISO 14001 in ALMS workshops and were expected to complete sections of their ISO 14001 EMS between workshops. Notwithstanding their commitment to the ALMS Pilot little progress was made between workshops and variation in progress between landholders contributed to difficulties in training in subsequent workshops.

There was only limited use of spatial data in the ALMS workshops, in part because of time constraints, but mainly because there was no efficient way of accessing government held data sets.

Information on legal requirements was hard to access resulting in the need for considerable project funds being expended to redress that constraint. Efforts to initiate a national approach to developing tools to access information on legal requirements were not successful notwithstanding a seemingly watertight case for public sector leadership and investment.

ALMS developed an integrated approach to overcoming these obstacles, including:

- use of the web based software tool, *myEMS*
- developing a community sharing approach to populating *myEMS* with prompt (default) data
- developing an ALMS Clinic approach
- improving the expertise of ALMS trainers
- increasing communication between and within ALMS landholder groups.

myEMS

"ALMS is the next phase for Landcare and it can happen using myEMS"- Bruce Munday, Eastern Hills and Murray Plains Catchment Group.

From mid 2004 ALMS began to phase out use of the *Australian EMS Manual and Workbook* in favour of the web based software product, *myEMS*.

Synapse Research & Consulting Pty Ltd, with strong links to the evolving ALMS, had developed *myEMS* in the three years before mid 2004, with support from FarmBis Australia, the Queensland Murray Darling Committee and private investors.

The development of *myEMS* was based on:

- Acceptance of ISO 14001 as being relevant and effective so long as it is implemented as a continuous improvement cycle rather than partially. ISO 14001 is a sound set of processes in part because it focuses on the activities of land managers rather than on the natural resources themselves.
- Assessment that much of the opposition to use of ISO 14001 is based on hearsay and not on analysis of need or on experience of using ISO 14001 with land managers who wish to improve environmental outcomes.
- Knowing that manual recording of data in EMS manuals is unattractive for most landholders, and not cost effective.
- Judgement that although ISO 14001 is reasonably complex it is preferable to simplify implementation, maintenance and auditing of the internationally accepted standard than to develop an alternative approach.
- There being no alternative cost effective product.

myEMS is a web-based tool that environmental managers use to develop and document an ISO 14001 compliant EMS. Through a series of interconnected frames, and assisted by prompts relevant to the business under consideration, the environmental manager can proceed through the ISO 14001 steps to arrive at documented action plans and operational procedures.

myEMS enables the efficient development of an ISO 14001-compliant EMS hence calling into question the accuracy of the perception that developing an ISO 14001-compliant EMS is too difficult and /or costly for most land managers. It provides clear guidance in how to complete an EMS, it simplifies the generation and management of documents and it deals effectively with the need for interdependency between sections of the EMS.

myEMS enables the *myEMS* administrator to aggregate qualitative and quantitative data from individual properties and analyse and report on this data subject to approval being given by individual land managers. It also enables integration with other tools such as membership databases, spatial information tools and resource monitoring guides.

myEMS is owned by *myEMS* Pty Ltd² a company established by Synapse Research & Consulting Pty Ltd to ensure the product is used, supported and enhanced to its fullest potential.

myEMS is designed to be purchased by an association such as ALMS or a catchment management authority or by a corporation which then enables use of the product by multiple land managers. This arrangement has significant cost advantages and enables relatively easy distribution of product upgrades. However, the more significant benefits relate to the ease of sharing data and of auditing that are enabled by *myEMS*.

myEMS has been well received by ALMS members and by ALMS trainers. With few exceptions, however, catchment management authorities and industry organisations have yet to ap-

² *myEMS* Pty Ltd and ALMS Ltd have two common directors, Jock Douglas and Tony Gleeson. Those directors abstained from decisions made by ALMS Ltd on the purchase of *myEMS*.

precipitate the role it could play in their need to link catchment and property level planning and to document and report on activities throughout the catchment.

"We were about to chuck it in when we discovered myEMS"-Jim Moran, Dept of Primary Industries, Victoria

Community sharing of information

myEMS Pty Ltd, in partnership with ALMS Ltd, has adopted a community sharing of prompt data in *myEMS* whereby landholders and associations using the software may, with the approval of the participating organisation, share their prompt data with other *myEMS* users. This arrangement has proved to be a potent driver of efficiency in the collection and use of data relevant to the development and application of environment management systems.

ALMS Clinics

ALMS experienced difficulties with paper based transcription and storage of information, difficulties with scheduling workshops, difficulties with landholders not progressing their EMS planning between workshops, difficulties in meeting the full costs of traditional approaches to planning EMS and, most of all, difficulties arising from the impression that EMS is all about planning, not doing.

The use of the web-based software tool *myEMS* enabled ALMS to take a fresh look at traditional group training processes leading to adoption of an *ALMS Clinic* approach to address the difficulties outlined above.

Instead of attending a prolonged series of workshops ALMS landholders schedule appointments at an *ALMS Clinic* for the development of their property EMS. Early indications are that with adequate preparation and intensive training most landholders could complete their EMS to the ISO 14001-compliant ALMS Eucalyptus audit stage within five half-day appointments.

The combined use of *myEMS* and the *ALMS Clinic* approach enabled ALMS to deal with difficulties arising from paper based transcription and storage of information, difficulties with scheduling workshops, difficulties with landholders not progressing their EMS planning between workshops, difficulties in meeting the full costs of traditional approaches to planning EMS and, most important of all with difficulties arising from the impression that EMS is all about planning, not doing.

Improving the expertise of ALMS trainers

Much effort was put into ALMS trainers becoming more familiar with the ISO 14001 standards in large part through their participation in EMS auditing courses and through the development of prompt data for populating *myEMS*.

Increasing communication between and within ALMS landholder groups

ALMS placed more emphasis on communication between participating landholders, in part through the holding of the first ALMS Muster³ at Mitchell in Queensland in March 2005 and through the circulation of newsletters and an irregular information sheet titled 'Voices in ALMS'.

At the ALMS Muster ALMS landholders and support personnel exchanged experiences and contributed to the refinement of ALMS and its development strategies.

³ ALMS Ltd appreciates the support for the ALMS Muster provided by the Queensland Murray Darling Committee.

ALMS auditing

The design of ALMS requires landholders in each of the three categories of membership to be audited by a second party auditor (Eucalyptus members) or by a third party auditor (Banksia and Grevillia members) with criteria for auditing and criteria for accreditation of auditors being determined by ALMS Ltd as outlined in the *Guide for ALMS Auditing*.

During 2005-06 landholder participants in the ALMS Pilot were audited twice according to the criteria relating to Eucalyptus membership. In brief this requires landholders to have a catchment-linked EMS that is ISO 14001 compliant, that they take into account catchment priorities and strategies and that they provide support for biodiversity conservation. An EMS was judged to be ISO 14001 compliant if it could be expected, with or without limited additional documentation, to be suitable for ISO 14001 auditing.

In NCCMA 22 out of 37 landholders achieved ALMS Eucalyptus certification with nearly all of those who did not achieve certification having elected not to continue with the Pilot. Most of these landholders were in one of the three groups involved in the ALMS NCCMA Pilot.

In EH& MP 10 out of 12 landholders achieved Eucalyptus certification with two landholders not having been audited yet, for logistical reasons. These will be audited when circumstances permit.

In total in the ALMS Pilot Trial 32 landholders developed an EMS that met the requirements for ALMS Eucalyptus certification. This is a 60 per cent achievement beyond the project requirement to have 20 landholders with a certified EMS.

ALMS has an additional 10 landholders with Eucalyptus certified management systems in Queensland and confidently expects a high rate of certification from another 27 landholder applicants in North East CMA, Victoria.

By the end of July 2006 ALMS should have about 65 ALMS Eucalyptus certified landholders, over three times that required by the ALMS Pilot Project requirements.

Landholders seek the auditing and certification afforded by ALMS for they appreciate that without credible external auditing there will be no recognition.

While the progression of a significant number of landholders through to ALMS Eucalyptus certification is rewarding it is a poor indicator of the positive and negative factors affecting the likely rate and extent of sustained improvement in environmental outcomes.

On the positive side, landholders who elected to participate in the ALMS Pilot and related ALMS activities have done so because of a commitment to environmental improvement, a belief in the local people supporting ALMS, a wish to be recognised as good environmental managers and because of confidence in the design of ALMS. These landholders have persisted notwithstanding difficulties with the initial paper based recording systems and some teething problems with establishing prompt data sets in the web based software product, *myEMS*.

On the negative side, landholders who have not participated and landholders who have not persisted have not done so almost universally because of a lack of perceived recognition of benefits that would flow from ALMS certification.

The importance of a lack of recognition of improved environmental outcomes cannot be stressed too much. Not only has it limited participation but also it will reduce the willingness of landholders to maintain and implement an ALMS Plan.

Indications of environmental outcomes using *myEMS* data

"The whole farm approach brought our share farmer into recording what was happening with respect to environmental issues. The Action Plans give me clear direction and timelines to report against. We are reviewing our Annual Management Review meeting to make sure targets are met"- Prue Henschke, CA Henschke & Co.

Introduction

Delay in developing ALMS action plans until late 2005 and early 2006, for reasons outlined earlier, means that we have had little time over which to monitor environmental outcomes. Hence there is little evidence of improved environmental outcomes at this stage; and it would be unrealistic to expect otherwise.

Whether the developed action plans translate fully into improved environmental outcomes will be heavily dependent on the capacity of ALMS Ltd to continue to support members and on a general strengthening of the drivers for improved environmental outcomes.

Discussions with landholders and the completed end of project surveys indicate that ALMS has had a positive influence on land holder motivation and capability to improve environmental management. Furthermore, the high retention rate of participants indicates that landholders believe their participation was worthwhile.

Some ALMS landholders have executed relatively simple action plans to improve environmental outcomes and certainly the process of developing the ALMS action plans has strengthened the intent of landholders to improve environmental outcomes.

Benefits arising from the ALMS Pilot include a raised awareness of natural resource issues in catchments, the link made between land manager's activities and environmental impacts, the legal responsibilities of land managers, the development of *myEMS* and the *ALMS Clinic* approach to developing ALMS Action Plans, learning resource monitoring tools, the growth of ALMS and the increased readiness of land holders and ALMS trainers to respond to demands for ISO 14001 certification should it be required.

ALMS Ltd has no reason to believe that the rate of progress in improving environmental outcomes using EMS is less than that applying generally to the NHT and NAP programs. This is particularly instructive given the experimental and innovative nature of land based environmental management systems at this time.

myEMS enables ALMS Ltd to quickly generate reports identifying, for instance, critical environmental impacts and the action plans designed to improve environmental outcomes.

The following sections present data from *myEMS* to illustrate:

- the mix of industries on farms managed by ALMS landholders
- the activities undertaken by ALMS landholders
- the aspects of activities having environmental impacts on farms managed by ALMS landholders
- the environmental impacts of aspects of activities on farms managed by ALMS landholders
- the risk of aspects having environmental impacts on farms managed by ALMS landholders
- the objectives set by ALMS landholders to improve environmental outcomes
- the actions taken by ALMS landholders to improve environmental outcomes

Multi-industry nature of ALMS farms

Industries are the distinct business operations that are run by a landholder. For example, beef is an industry; as is horticulture, cotton and fodder production.

myEMS allows a landholder to nominate their industries. Once they have nominated their industries, they are presented only with information relevant to their nominated industries, for example activities and aspects. Some of the information in *myEMS* crosses the industry boundaries and applies to all industries. For example, many legal requirements apply irrespective of the particular industry/s being operated.

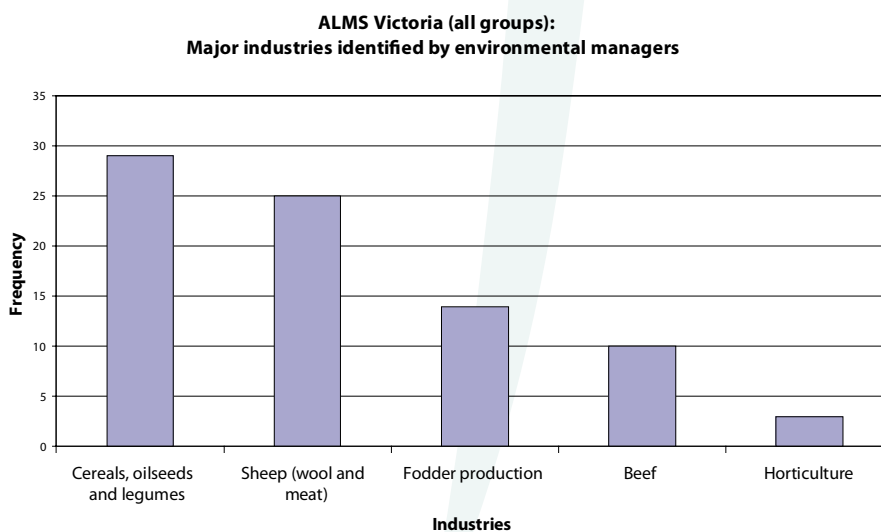
The following snapshot of industries in each of the three states in which ALMS members are using *myEMS* indicates the multi-industry nature of Australian farming, with the average number of industries per landholder in each State being 2.0. The data also indicate differences in industry mixes between States.

INDUSTRIES OPERATED BY ALMS LANDHOLDERS IN VICTORIA

Figure 1 shows that cereals, oilseeds and legumes and sheep (wool and meat) are the most common industries operated by the 43 registered *myEMS* users within two ALMS groups in Victoria. Other industries which are operated by multiple landholders are fodder production, beef and horticulture.

Even excluding industries which are not listed as they are operated by only one landholder, these data indicate the multiple industry nature of farm businesses run by ALMS members in Victoria. Each ALMS member in Victoria operates a business with an average of 1.9 industries.

Figure 1 Distribution of industries among ALMS *myEMS* users in Victoria

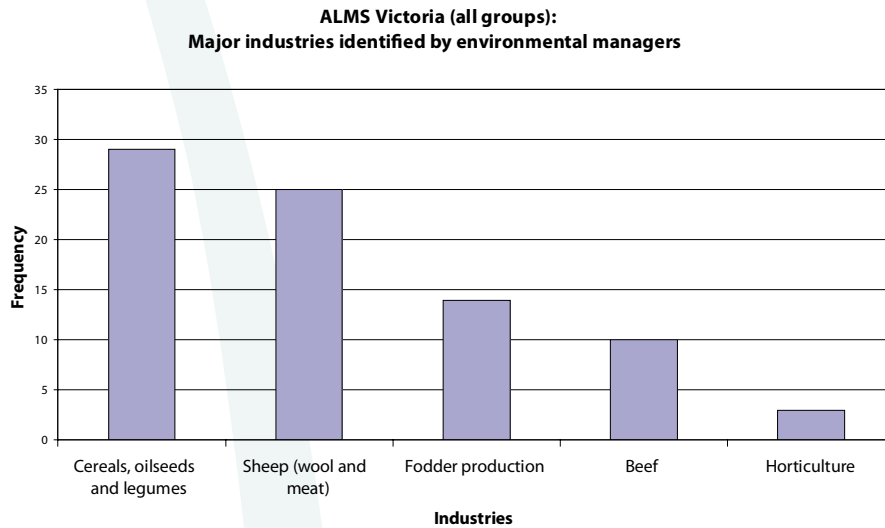


INDUSTRIES OPERATED BY ALMS LANDHOLDERS IN QUEENSLAND

Figure 2 indicates the multiple industry nature of farming businesses operated by the 25 registered *myEMS* users within two ALMS groups in Queensland. Each ALMS member in Queensland operates a business with an average of 2.0 industries.

Beef is the most common industry being operated by the 25 ALMS members in Queensland. Other industries which are operated by multiple landholders are sheep (wool and meat), cereals, oilseeds and legumes, cotton, goats and nature conservation.

Figure 2 Distribution of industries among ALMS *myEMS* users in Queensland

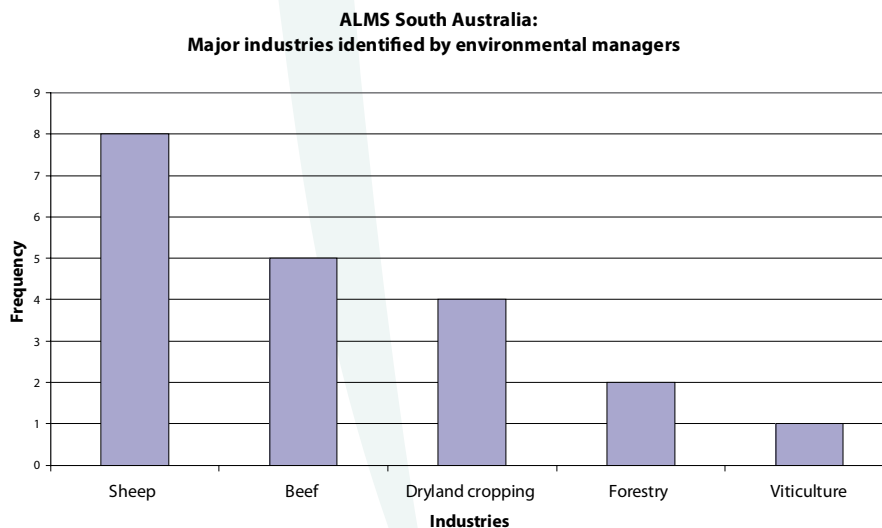


INDUSTRIES OPERATED BY ALMS LANDHOLDERS IN SOUTH AUSTRALIA

Figure 3 shows that sheep is the most common industry being operated by the 10 ALMS registered *myEMS* users in South Australia. Other industries which are operated by multiple landholders are beef, dryland cropping and forestry. Viticulture is operated by only one landholder.

Each ALMS member in South Australia operates a business with an average of 2.0 industries.

Figure 3 Distribution of industries among ALMS *myEMS* users in South Australia



Activities of ALMS landholders

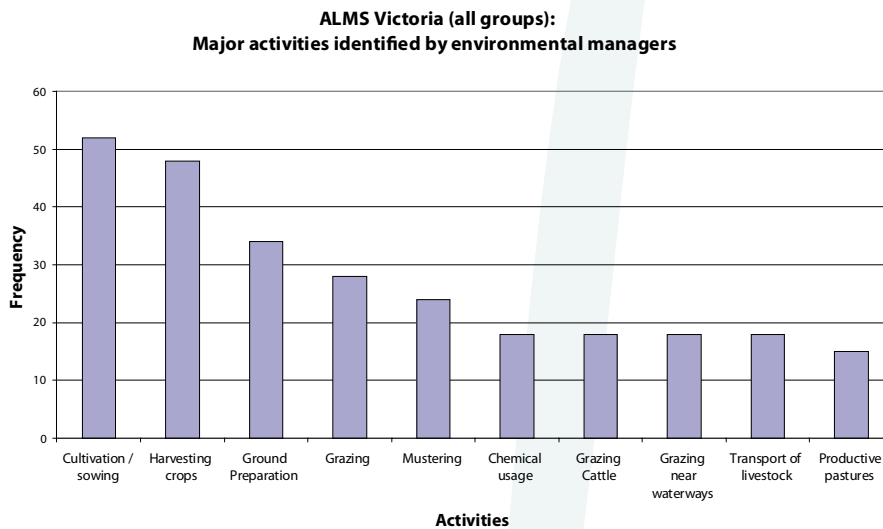
Activities are the doing things that describe what the business does. Almost all activities have some impact, positive or negative, on the environment, which may occur at any or all stages of the activity life cycle, i.e. from raw material acquisition and distribution to use and disposal. Such impacts may be local, regional or global, short or long term with varying levels of significance. Each landholder has nominated the activities they undertake in their business operations which have environmental consequences. The results are shown in figures 4 (Victoria), 5 (Queensland) and 6 (South Australia).

Each landholder has nominated the activities which they undertake in their business operations which have environmental consequences. The results are shown in figures 4 (Victoria), 5 (Queensland) and 6 (South Australia).

ACTIVITIES OF ALMS LANDHOLDERS IN VICTORIA

Figure 4 shows that cultivation/sowing and harvesting crops are the activities identified as having the most significant environmental consequences by ALMS members in Victoria. Other activities identified as having significant environmental consequences include ground preparation, grazing, especially near waterways, mustering, chemical usage and , transport of stock.

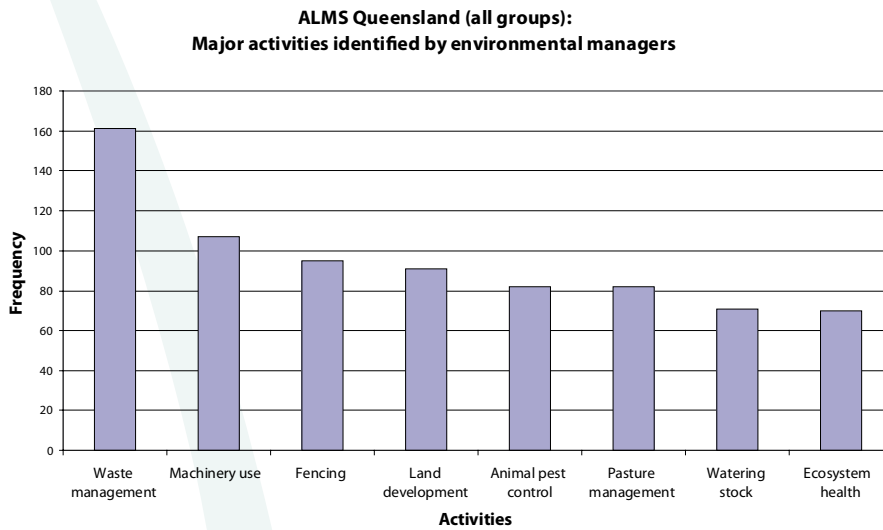
Figure 4 Distribution of activities among ALMS *myEMS* users in Victoria



ACTIVITIES OF ALMS LANDHOLDERS IN QUEENSLAND

Figure 5 shows that waste management is the activity identified as having the most significant environmental consequences by ALMS members in Queensland. Other activities that have been identified as having significant environmental consequences include machinery use, fencing, land development, animal pest control, grazing/pasture management, watering stock and maintaining ecosystem health.

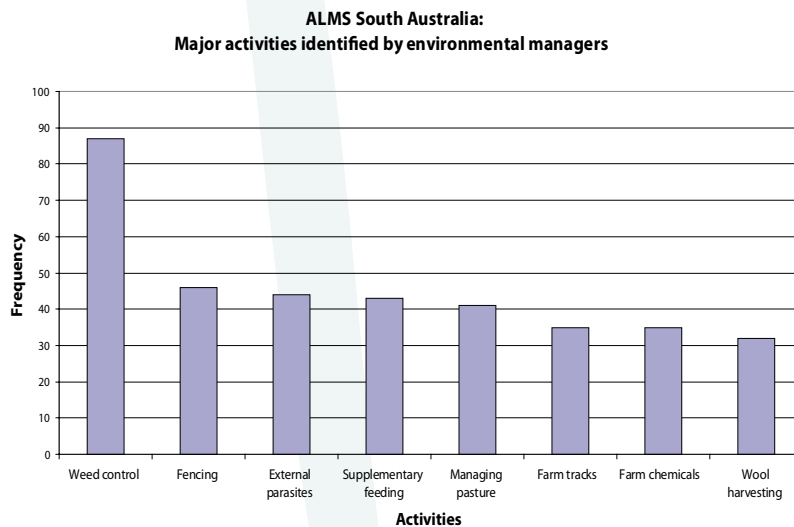
Figure 5 Distribution of activities among ALMS *myEMS* users in Queensland



ACTIVITIES OF ALMS LANDHOLDERS IN SOUTH AUSTRALIA

Figure 6 shows that weed control is the activity identified as having the most significant environmental consequences by ALMS members in South Australia. Other activities having significant environmental consequences include fencing, parasite control, supplementary feeding, managing pastures, managing farm tracks, using chemicals and wool harvesting.

Figure 6 Distribution of activities among ALMS *myEMS* users in South Australia



Aspects of activities of ALMS landholders

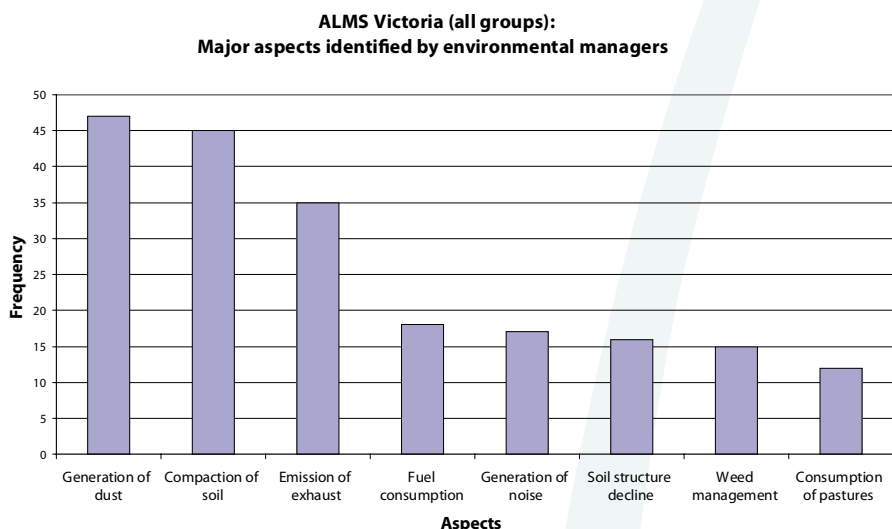
Aspects are features of activities that have environmental impacts (positive or negative). Aspects describe the actual process of interaction with the environment that occurs during certain activities eg. emission of exhaust, consumption of fuel, generation of waste, generation of noise, discharge of oil, consumption of water, disturbance of soil, etc. Action plans and operational procedures address aspects so as to modify impacts.

Each landholder has nominated the aspects related to their activities in *myEMS*. The results are shown in Figures 7 (Victoria), 8 (Queensland) and 9 (South Australia).

ASPECTS OF ACTIVITIES OF ALMS LANDHOLDERS IN VICTORIA

Figure 7 shows that generation of dust, compaction of soil and emission of exhaust gases are the three most frequently nominated environmental aspects among ALMS members in Victoria. Other aspects that rank highly are fuel consumption, generation of noise, soil structure decline, weed management and consumption of pasture and crops.

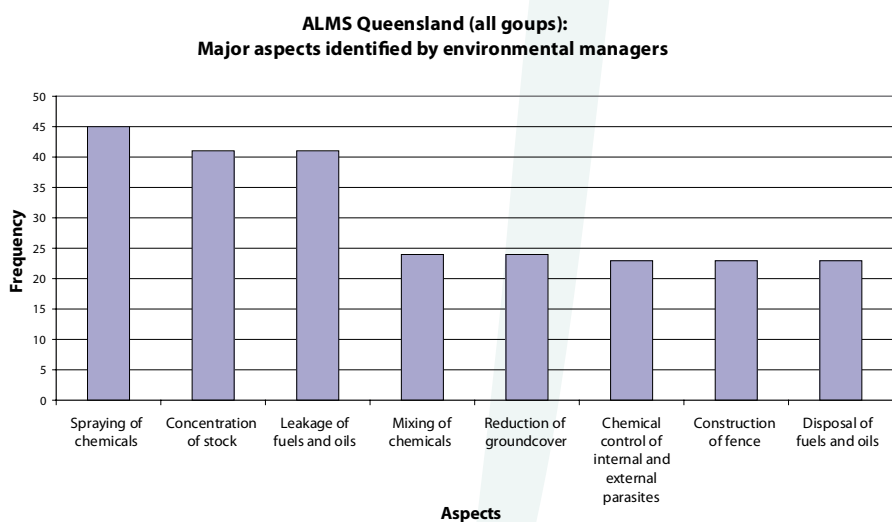
Figure 7 Distribution of aspects among ALMS *myEMS* users in Victoria



ASPECTS OF ACTIVITIES OF ALMS LANDHOLDERS IN QUEENSLAND

Figure 8 shows that spraying of chemicals, concentration of stock and leakage of fuels and oils are the three most frequently nominated environmental aspects among ALMS members in Queensland. Other aspects that rank highly are mixing of chemicals, reduction of groundcover, control of parasites, fence construction and disposal of fuels and oils.

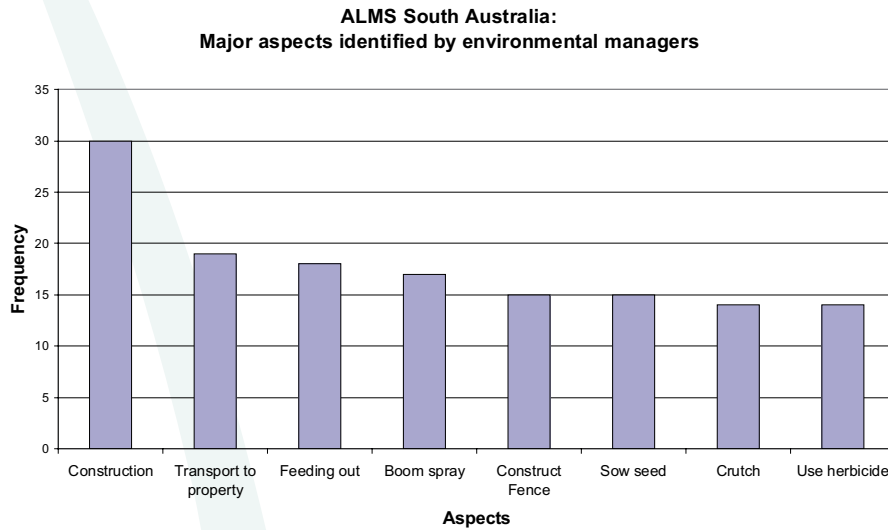
Figure 8 Distribution of aspects among ALMS *myEMS* users in Queensland



ASPECTS OF ACTIVITIES OF ALMS LANDHOLDERS IN SOUTH AUSTRALIA

Figure 9 shows that construction (of farm infrastructure) is the most frequently nominated environmental aspect among ALMS members in South Australia. Other aspects that rank highly are transport to property, feeding out, boom spray, constructing fences, sowing seed, crutching and using herbicide.

Figure 9 Distribution of aspects among ALMS *myEMS* users in South Australia



Impacts of aspects of ALMS landholders

Impacts describe any change to the environment, whether adverse or beneficial, wholly or partially resulting from the aspects of the activities of an organisation.

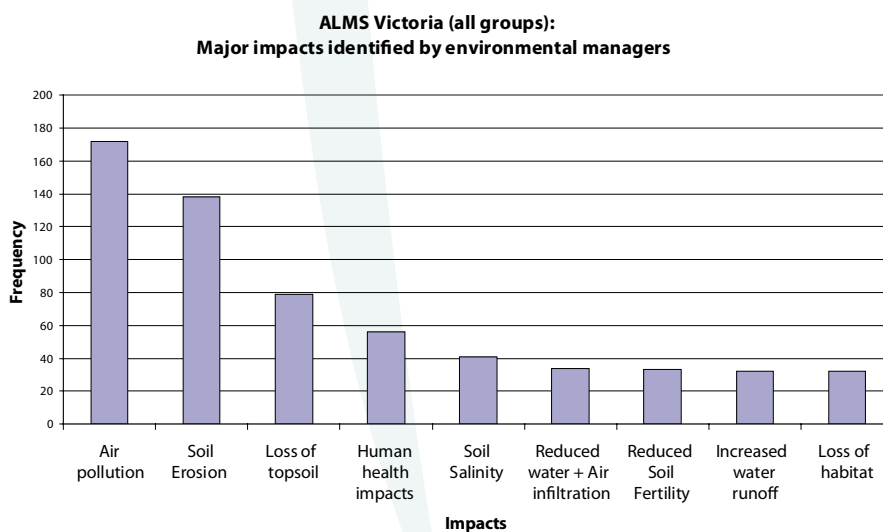
Impacts describe the actual change in the environment e.g. pollution of air, pollution of soil, depletion of ozone, erosion of soil, degradation of habitat etc.

Each landholder has nominated the impacts (effects) related to the environmental aspects (causes) in *myEMS*. The results are shown in Figures 10 (Victoria), 11 (Queensland) and 12 (South Australia).

ENVIRONMENTAL IMPACTS OF ALMS LANDHOLDERS IN VICTORIA

Figure 10 shows that air pollution, soil erosion, loss of topsoil and human health impacts are the most common impacts identified by ALMS members in Victoria. Other impacts that ranked highly are soil salinity, reduced water and air infiltration, reduced soil fertility, increased water runoff and loss of habitat.

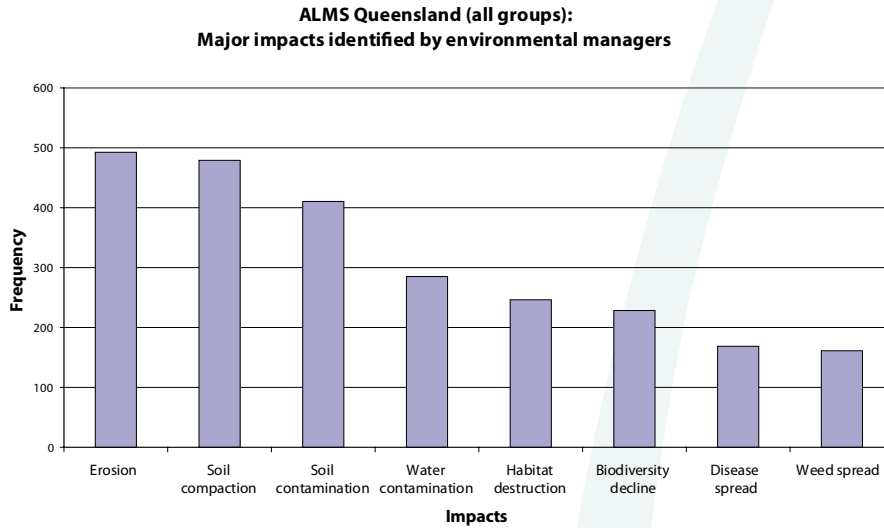
Figure 10 Distribution of impacts among ALMS *myEMS* users in Victoria



ENVIRONMENTAL IMPACTS OF ALMS LANDHOLDERS IN QUEENSLAND

Figure 11 shows that erosion, soil compaction and soil contamination are the most common impacts identified by ALMS members in Queensland. Other impacts that ranked highly are water contamination, habitat destruction, biodiversity decline, disease spread and weed spread.

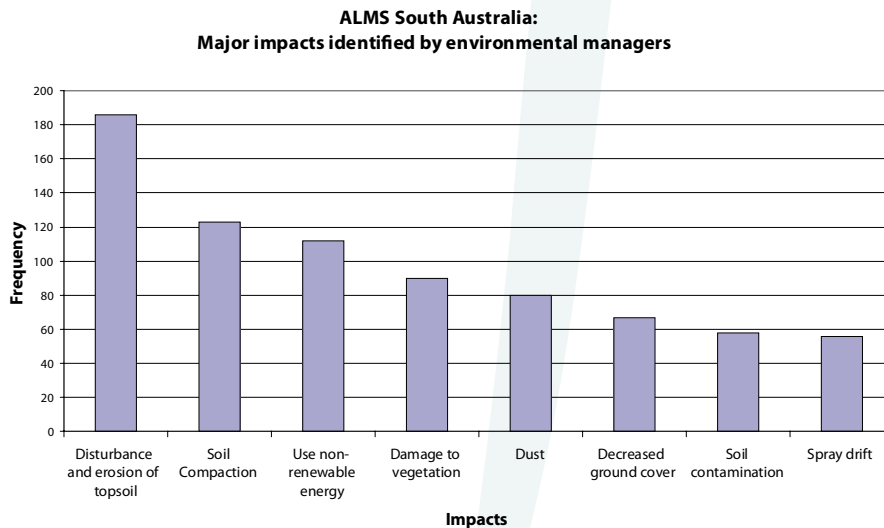
Figure 11 Distribution of impacts among ALMS *myEMS* users in Queensland



ENVIRONMENTAL IMPACTS OF ALMS LANDHOLDERS IN SOUTH AUSTRALIA

Figure 12 shows that disturbance and erosion of topsoil is the most common impact identified by ALMS members in South Australia. Other impacts that ranked highly are soil compaction, use of non-renewable energy, damage to vegetation, dust, decreased ground cover, soil contamination and spray drift.

Figure 12 Distribution of impacts among ALMS *myEMS* users in South Australia



Risk assessment

Once landholders identified their environmental impacts, they undertook a risk assessment process to identify what would be the likelihood and severity of these impacts given that the environmentally impacting aspect had occurred.

Each impact is assigned a risk score on which significance of the impact is determined.

The following are examples of Significant Aspects Registers (Figures 13 and 14).

Figure 13 Sample Significant Aspects Register (output from risk assessment process) for ALMS member

Significant Aspects Register v5 (08/11/2005)					
Activity					
Removal of Native/Remnant Vegetation	Rise in Ground water table	Soil Salinity	4	4	16
Groundcover Management	Consumption of pastures, crops and vegetation	Water pollution - Uncontrolled water/soil runoff	4	4	16
Groundcover Management	Consumption of pastures, crops and vegetation	Soil Salinity	4	4	16
Cultivation and sowing	Soil structure decline	Soil Erosion - Wind + Water	3	5	15
Harvesting Crops	Compaction of Soil	Increased water runoff	3	4	12
Cultivation and sowing	Generation of Dust	Erosion	3	4	12
Grazing near waterways	Disturbance of Riparian Areas	Erosion of stream + River banks	3	4	12

Figure 14 Sample Significant Aspects Register (output from risk assessment process) for ALMS member

Significant Aspects Register v13 (21/03/2006)					
Supply water to stock	Stock accessing dams and springs	Decrease in water quality	5	5	25
Supply water to stock	Stock accessing dams and springs	Decrease in livestock health	5	5	25
Supply water to stock	Stock accessing dams and springs	Erosion of dam banks	5	5	25
Grazing	Stock camping	Bare soil	5	5	25
Grazing	Stock camping	Nutrient concentration	5	5	25
Supply water to stock	Pumping water	Greenhouse emissions	5	5	25
Supply water to stock	Pumping water	Energy use from electric pump	5	5	25
Supply water to stock	Stock accessing dams and springs	Detrimental effect on water quality downstream	5	4	20
Weed control	Chemical use	Potential chemical contamination/resistant	5	4	20
Fodder conservation	Hay storage	Fire risk	5	4	20
Grazing	Movement of stock to water	Soil erosion along stock pads	5	4	20
Grazing	Stock camping	Broad leaf weed invasion	5	4	20

These tables illustrate the variability in significant aspects and impacts between farms. This diversity is reflected in the objectives and management plans which follow.

Objectives of action plans of ALMS landholders

Objectives are written to address the significant aspects identified through the risk assessment process. In this way ALMS members deal with the causes rather than with the symptoms of environmental change.

The following are examples of excerpts from objectives documents created in *myEMS* by ALMS members (Figures 15 and 16).

Figure 15 Sample Objectives for ALMS member

Objectives v6 (08/11/2005)	
SIGNIFICANTANT IMPACT	OBJECTIVES
Soil Salinity	Protect, enhance and replant remnant vegetation stands on and around property to slow rise in ground water table.
Water pollution - Uncontrolled water/soil runoff	Manage grazing systems and crops to maximise groundcover and prevent runoff to waterways
Soil Salinity	Lower ground water table at levels 2 metre below surface Manage grazing systems, crops and vegetation to prevent overgrazing, maintain groundcover and slow the impact of soil salinity
Increased water runoff	Identify best option for machines and vehicles in stubbles Minimise traffic across stubbles
Erosion	Modify ground preparation practices and equipment to minimise dust Reduce the amount of dust produced during cropping activities
Soil Erosion - Wind + Water	Reduce the impact of non wetting on crop establishment and the germination of weeds in the furrow
Erosion of stream + River banks	Protect waterways and riparian areas from grazing stock and manage appropriately to enhance quality.

Figure 16 Sample Objectives for ALMS member

Objectives v19 (21/03/2006)	
SIGNIFICANTANT IMPACT	OBJECTIVES
Detrimental effect on water quality downstream	Isolate stock from paddock 12 dam by end of 2009
Decrease on water flora & fauna	Monitor water quality on all dams using water watch kits & criteria
Decrease in water quality	Monitor water quality as per water watch kit & criteria Refer isolation of major dams
Decrease in livestock health	Maintain vegetation along collection gullies to reduce organic matter entering water supply
Potential chemical contamination/resistance	Aim to reduce need for chemicals to control weeds Only licenced spray contractors to be used Use rotational grazing as another tool to control weeds Maintain enough pasture cover to reduce weed germination
Fire risk	Reduce risk of bush fire accessing shedded hay Reduce risk of fire staring within stored hay
Soil erosion along stock pads	Reduce erosion impact of stock tracking to water
Bare soil	Reduce erosion/pasture loss/nutrient in balance in stock camps
Nutrient concentration	Reduce concentration of paddock nutrients in sheep camps by rotational grazing by 2002
Broad leaf weed invasion	Reduce impact of broad leaf weeds in sheep camps
Greenhouse emissions	Install solar/windmill pumps on dam 6 and dam 12 by may 2001
Energy use from electric pump	Refer solar/windmill on dam 6 & dam 12

Management plans to address objectives of ALMS landholders

A management plan is developed to address a specific objective. Management plans can consist of action plans and/or procedures.

The following sample management plans demonstrate how the particular landholder addressed each objective by creating a number of targets, each of which has a review date. Some of the targets also have procedures required to achieve the target.

During the audits, ALMS' auditors used the management plans as a primary source of evidence, and then ground-truthed the documentary evidence by collecting other evidence (eg whether the landholder was making progress towards achieving the management plans) during a site visit.

Figure 17 Sample Management Plan for ALMS member

Management Plans v4 (08/11/2005)			
OBJECTIVE	ACTION PLANS		PROCEDURES
Target	Review	Date	
Reduce the level of hard setting on susceptible soil types	Increase organic carbon levels on susceptible soils by 0.2%	01/08/2008	Monitoring organic carbon levels procedure
To prevent broad-acre wind erosion	In all paddocks maintain a minimum of 50% groundcover on the majority of the paddock at all times	01/08/2006	Monitoring groundcover procedure
To continue to grow profitable crops	To continue to grow wheat & oats on 40% of Paddocks-ongoing	01/08/2006	
Reduce the impact of non wetting on crop establishment and the germination of weeds in the furrow	Map soil types and soil capabilities and crop appropriately	14/11/2007	
Identify best option for machines and vehicles in stubbles	In all paddocks maintain a minimum of 50% groundcover on the majority of paddocks at all times	01/08/2006	Monitoring groundcover procedure
Minimise traffic across stubbles	Plan machinery operations to minimise soil compaction and maximise stubbles for groundcover	08/11/2007	
Protect, enhance and replant remnant vegetation stands on and around property to slow rise in ground water table.	Develop 5 year farm paddock plans with DPI Salinity Project Manager	15/11/2007	
Manage grazing systems and crops to maximise groundcover and prevent runoff to waterways	Increase pasture, shrub and tree cover to be not less than 80% as per 5 year farm paddock plan to slow water movement.	08/11/2007	
Lower ground water table at levels 2 metre below surface	Using 5 year paddock plan, manage crops, pastures and vegetation to keep ground water levels below 2 metres.	08/11/2007	

Manage grazing systems, crops and systems, crops and vegetation to prevent overgrazing, maintain groundcover and slow the impact of soil salinity	Immediately implement vegetation to prevent overgrazing, maintain groundcover and slow the impact of soil salinity grazing management plans and maintain groundcover at 80% or more	08/11/2007	
Modify ground preparation practices and equipment to minimise dust	Implement minimum tillage and reduced traffic regime to minimise dust during machinery operations.	08/11/2007 procedure	Minimum tillage
Protect waterways and riparian areas from grazing stock and manage appropriately to enhance quality.	Develop plans to fence off 80% of riparian strips.	08/11/2007	Fencing procedure

Figure 18 Sample Management Plan for ALMS member

Management Plans v12 (16/03/2006)			
Objective	Action Plans	Procedures	
	Target	Review Date	
Minimise rabbit numbers by baiting and shooting to a manageable level by July 2008 (Objective 3)		Minimising rabbit	numbers procedure
Change stocking management from continuous grazing to time controlled grazing by 2010 (Objective 1)	Apply for fencing funding of Pelican Creek	31/03/2006	Grazing procedure
	Conduct Internal Audit By 30th June	01/06/2006	
	Subdivide Block 6	31/07/2007	
Minimise chemical contamination by installing bunting in chemical shed by July 2006 (Objective 2)	Put bunting around Chemical Shed according to Standard	31/07/2006	Chemical shed standards
	Refer to Chemical Storage Standards	31/03/2006	

Discussion of data from myEMS for ALMS landholders

"ALMS and myEMS-why would you do it any other way?"-Darren Marshall, Queensland Murray Darling Committee

MYEMS IS A POTENT INFORMATION MANAGEMENT TOOL

The most significant point illustrated by the foregoing data from myEMS is that it is a potent tool for improving access to information on what landholders consider to be the important impacts that their activities have on the environment and what they intend doing to improve environmental outcomes.

This aggregation of information on individual landholder requirements and actions has enormous implications for the policies and strategies that could be adopted by organisations supporting improved environmental outcomes and for agencies with responsibilities for increasing the information base to assist landholders improve environmental outcomes.

THERE IS NO VALID BASIS FOR IMPLEMENTING ENVIRONMENT MANAGEMENT SYSTEMS ON AN INDUSTRY-BY-INDUSTRY BASIS FOR MOST AUSTRALIAN FARMS

The second conclusion arising from these data is that landholders operate multiple industries, an observation supporting analysis undertaken by ALMS Ltd of the mix of industries on Australian farms, as presented in Appendix 1.

The data in Appendix 1 shows that 62 per cent of Australian farms producing 72 per cent of agricultural products operate two or more industries. The importance of the multi-industry nature of Australian farms is further highlighted by the data that show that only 10 per cent of Australian cotton is produced on the 10 per cent of farms with only cotton, with the corresponding figures for sheep (wool and meat) being 3 and 11 per cent.

Not only do the *myEMS* data support the ALMS Ltd analysis but they extend it to show that even within the relatively small geographic areas covered by groups of ALMS landholders there is large variability in the industries operated by landholders. Even excluding industries which are not listed as they were operated by only one landholder, 43, 25 and ten ALMS landholders in Victoria, Queensland and South Australia respectively operated 5, 8 and 5 different industries.

Industry-specific information and specialised industry capabilities need to be brought to bear on the development of improved environmental management activities. However, given the spatial dimensions of environmental management, the need for environmental management to take account of the environmental interplay between activities in different industries and the practicalities of developing and auditing environmental plans and outcomes it frankly is a madness to be promoting environment management systems on most Australia farms on an industry by industry basis.

ISO 14001 BASED CONTINUOUS IMPROVEMENT ENVIRONMENTAL MANAGEMENT SYSTEMS FOCUS ON ASPECTS OF ACTIVITIES HAVING MAJOR ENVIRONMENTAL IMPACTS

It is evident from the documentation of landholder experiences that landholders adopting ALMS identify aspects of activities having major environmental impacts and that they are able to devise appropriate action plans to address those aspects.

Management plans devised by ALMS landholders will have both on- and off-site effects and will result in a mix of private and public goods

The *myEMS* data show also that when landholders themselves identify the aspects of their activities having environmental impacts they do so in a holistic way that focuses priority on aspects of activities that are likely to have major impacts, both on and off farm. This approach might be contrasted to the more common approach wherein landholders are encouraged to deal with single environmental symptoms using indicators and targets established external to the farm.

In Victoria, environment impacts ranked highly by ALMS landholders include air pollution, soil erosion, loss of topsoil, human health, soil salinity, reduced water and air infiltration, reduced soil fertility, increased water runoff and loss of habitat. Comparable data from Queensland include soil erosion, soil compaction, soil contamination, water contamination, habitat destruction, biodiversity decline, disease spread and weeds spread and, in South Australia, disturbance and erosion of topsoil, soil compaction, use of non-renewable energy, damage to vegetation, dust, decreased ground cover, soil contamination and spray drift.

These data, combined with ecological and policy considerations, point to the need for partnerships between the public and private sectors that do not rely on an artificial distinction between activities depending on whether they produce public or private goods and benefits. Such policies fragment environmental management approaches and will not lead to sustained efforts by landholders to address sustainability issues.

Management plans devised by ALMS landholders are specific and time bound

The *myEMS* data highlights the specificity and timelines of the management plans devised by landholders to deal with the environmental impacts of aspects of their activities. This documentation greatly encourages an on-going commitment to improved environmental outcomes.

Building networks, extending learning and contributing to the overall EMS Pilot Program

The not-for-profit company ALMS Ltd was established before the pilot trial started and thus was able to bring to bear much expertise and energy to support the trial. Additionally, ALMS benefits greatly from the culture, skills and networking established through Landcare.

Before the ALMS Pilot trial started in June 2005 ALMS had undertaken substantial networking and consultation activities, including:

- Workshops in Brisbane involving about 50 industry and agency people to present and discuss ALMS proposals and at Bribe Island to obtain inputs on the development of ALMS related tools.
- Seminars at DNR &M, Indooroopilly, at BRS Canberra and at DPI&F Yeerongpilly.
- ALMS launch at the Science Centre, Canberra with about 60 attendees
- Presentation to Qld Landcare Conference, Goondiwindi
- Presentation to Murrumbidgee Landcare Conference, Canberra
- Presentation at Ballina EMS Conference.
- Meetings with Premier Beattie, the Queensland Ministerial Natural Resource Council and several meetings with Queensland Government officials including Director Generals and with DAFF officials.
- Several meetings with ALMS Steering Committee and two ALMS Ltd Board meetings.

ALMS Ltd maintained an extensive networking and communication strategy during the Pilot project, including:

- Participation by at least three ALMS Ltd board members or ALMS facilitators in each of the three EMS Forums.
- Participation in two EMS Conferences, an Ecolabelling Conference at ANU, Canberra, in two Qld. Landcare Conferences, in Australia 21 Forums in Adelaide, Brisbane and Canberra discussing accreditation and certification and in a workshop with the UK Executive Director of LEAF.
- ALMS Muster in Mitchell in March 2005 attended by about 50 people, including a DAFF representative.
- Eight ALMS Board meetings, face-to-face or teleconferencing, meetings with URS and DAFF, several workshop/ meetings with industry and officials in Qld to discuss property level planning and meeting in May 2005 with Director General DPI&E, AgForce, QFF and CSIRO to discuss ALMS.
- ALMS/myEMS presentations/posters/discussions to/with the VFF (twice), to AgForce State Conference, to agricultural consultant group in Victoria, with MLA several times, with HAL, with NSW Great Lakes Council, with Landcare/DIPNA officials in Sydney twice, to NCCMA, to SA Murray River Catchment representatives, to Mitchell Landcare Group, various discussions with Burdekin Dry Tropics Board representatives, on-going close consultation with QMDC, various meetings in Victoria on the AVC Project and ALMS.

In addition to the above ALMS Ltd:

- Prepared 21 monthly reports, 7 milestone reports, 6 quarterly reports, a mid term report and a final report; and contributed to baseline surveying and two end-of-program surveys.
- Took a lead role in developing and distributing the *Australian EMS Manual and Workbook*; with nearly 300 copies distributed.
- Prepared and distributed a *Guide to ALMS* and pamphlets on ALMS and on *myEMS*, *ALMS Guide for Facilitators* and two editions of an ALMS Poster
- Wrote articles on ALMS/*myEMS* for the NHT Newsletter and for DAFF EMS newsletter, prepared one ALMS Newsletter and several EH&MP ALMS Newsletters.
- Prepared two editions of “Voices in ALMS” each distributed to about 200 people including ALMS members and associates, all Pilot Trial Project Officers, DAFF, URS etc.
- Developed ALMS website.
- Responded to many email and phone queries concerning ALMS.

A list of ALMS Ltd publications is provided at the end of this report.

On the positive side the progress achieved through the ALMS Pilot Trial would not have been possible without the financial and other support provided through the EMS Pilot Program, collaborating organisations and a large number of landholders and their advisers. Furthermore, ALMS landholders appreciated the support enabled by the ALMS Pilot Trial and many valued the peer support from other landholders and from ALMS support staff. Additionally, the communication and networking prompted groups outside of the ALMS pilot groups to undertake ALMS with the result that approximately twice as many landholders will have Eucalyptus certified management systems as compared to what would have happened if the communication and networking had been restricted to the pilot project landholders.

However there are also some less positive lessons including:

- Given that ALMS Ltd was unable to match project funds, insufficient project resources were allocated to maintain communication within and between groups of landholders undertaking ALMS
- Resources expending in liaising with industry organisations and government departments did not, or at least have not yet, produced tangible results commensurate with the effort.
- The program reporting requirements did not result in communication and learning that had significant impacts on the ALMS Pilot Trial. In fact no comments of substance were received from recipients of these reports and they elicited no enquiries from other EMS project operatives.

In a nutshell these difficulties arise because:

- ALMS has different constituent members to those of many industry and State-based farm organisations
- The EMS Pathways Program, which excluded community-based groups such as ALMS Ltd, reduced the potential for ALMS to negotiate collaborative arrangements, particularly with the individual industry focused research and development corporations
- The emphasis on the introduction of EMS needing to be industry (industry organisation) driven and the lack of insistence on application of the definition of EMS as being a continuous improvement process resulted in sectoral and relatively short time focused interests dominating the collective mindsets governing what in effect an introduction of a significant managerial innovation.

Discussion, conclusions and recommendations

Introduction

Over the past three years the not-for-profit organisation ALMS Ltd has implemented an EMS Pilot Project in the Eastern Hill and Murray Plains Catchment (SA) and in the area covered by the North Central Catchment Management Authority (Victoria). The project has resulted in 32 landholders having received ALMS Eucalyptus membership status on the basis of audits done by ALMS accredited auditors.

In addition to the pilot activities, ALMS has worked with three landholder groups in Queensland and an additional group in Victoria resulting to date in a further 10 certified Eucalyptus members in Queensland and the probability of another 27 in Victoria by the end of July 2006. This breadth of experience has strengthened our confidence in the conclusions and recommendations arising from the ALMS EMS Pilot project.

ALMS is a catchment linked whole of property ISO 14001 compliant EMS with three categories of membership (Eucalyptus, Banksia and Grevillia) differentiated on the basis of the accreditation requirements of auditors and on the need or otherwise to exchange information with the catchment management authority.

The ISO 14001 environment management standards codify a set of interconnected management processes. Application of these management processes results in the development of action plans and operational procedures aimed at strengthening or modifying the activities of land managers that have, respectively, positive or negative environmental impacts.

Environment management systems as applied by ALMS Ltd are an effective way of improving land based environmental outcomes

"The EMS and associated action planning and management review provide a framework for the improvements we are committed to achieving" -Tim and Janet Kelly 'Evercrech', SA 2006.

The experience from the ALMS Pilot Trial is that ALMS is well designed to improve environmental outcomes and to provide a foundation for greater recognition of the environmental achievements of participating landholders.

ALMS enables expression of the motivations and aspirations of landholders hence strengthening the sustained commitment and creativity required for improving environmental outcomes.

ALMS focuses on the principal factors affecting environmental outcomes, that is the aspects of landholder activities that have environmental impacts, both positive and negative.

ALMS has ecological integrity in that it recognises the interactive and interdependent dimensions of the components of ecosystems, as well as the spatial (whole-of-property and catchment linked) and temporal (ongoing) dimensions.

ALMS leads to credible outcomes, meaning that it has a credible audit process enabling a range of interested parties, including landholders and their peers, domestic and international food and fibre markets and community and public sector organisations and individuals, to have confidence that, in combination with other policy instruments, it will lead to improved and measurable environmental outcomes.

Some commentators on the utility of environmental management systems (EMS) for improving environmental outcomes point to the fact that EMS alone will not guarantee improved environmental outcomes. However, no single measure would and the comment misses the crucial point that EMS has the potential to enhance the effectiveness of varying mixes of policy instruments, including regulation, education, training and research and market based mechanisms as well as being, in its own right, a powerful environmental management tool.

Rather than positing EMS as a sole instrument and finding it wanting the question that needs to be addressed is whether the addition of EMS/ALMS to the policy instrument mix is an effective way of improving environmental outcomes.

The ALMS experience is that there are solid conceptual and empirical grounds for believing this to be so.

ISO 14001 requires application of prescribed management processes leading to implementation of action plans and the monitoring of the impacts of those plans. Those plans have objectives and targets established by the landholder responsible for their implementation.

Criticisms of the utility of ISO 14001 on the basis of it prescribing only processes and not environmental practices or environmental targets are in fact criticisms of the relevance of the practices and outcomes selected by the landholder, usually with due regard to relevant advice and available information.

Given that improving environmental outcomes beyond that required by legislation is constrained principally by landholder motivation and capability it must remain a moot point as to whether imposed practices and targets, as compared to informed self-determination of practices and targets, would be a better approach. Certainly there are many examples wherein externally promoted or prescribed practices and targets, have not lead to better environmental outcomes, for example land disaggregation and development requirements, and there is no apparent reason why the current obsession by agencies and individuals other than land managers to prescribe environmental indicators and targets will be any more effective.

A potential danger to the use of environment management systems for land based activities is that the policy and program settings will lurch from having been project based (National EMS Pilot Program) through being 'industry driven' (National EMS Pathways Program) to being given over to Catchment Management Authorities as a tool to assist them meet externally negotiated environmental outcome targets.

A cynic, and there are many of them, might see this as a cost shifting exercise but that is not the main danger. The main danger is that such a move curtails the strength of EMS, at least as codified in the ISO 14001 standards, whereby individual environmental managers are empowered, in an informed way, to identify and address the factors affecting environmental outcomes as determined by their own management requirements and regimes.

It is time to empower land managers. The ALMS pilot project clearly shows that when EMS is applied correctly, that is as an audited continuous improvement process, it has great potential to achieve this object.

RECOMMENDATION 1: THAT ALMS, AND SIMILARLY APPLIED ENVIRONMENTAL MANAGEMENT SYSTEMS, BE SUPPORTED AS A CENTRAL INSTRUMENT IN POLICIES AND PROGRAMS TO SUPPORT IMPROVED ENVIRONMENTAL MANAGEMENT.

Landholders wishing to improve environmental outcomes can implement ALMS using existing tools

Landholders who wish to improve environmental outcomes have demonstrated they can use existing tools to develop an ISO 14001 compliant EMS. These tools include the Australian EMS Manual and Workbook, the web based software product *myEMS*, various self assessment and best management practice guidelines, peer support and the *ALMS Clinic* process.

Different landholders have different degrees of commitment to improving environmental management, as they have differing capabilities to do so. This diversity in motivation and capability needs not only to be accommodated but utilised to the fullest extent possible.

RECOMMENDATION 2: SUPPORT PROGRAMS AIMED AT IMPROVING ENVIRONMENTAL MANAGEMENT PROCESSES AND PRACTICES SHOULD PROVIDE LAND MANAGERS WITH ACCESS TO A VARIETY OF TOOLS INCLUDING THOSE THAT QUICKLY AND COST EFFECTIVELY LEAD TO AN EXTERNALLY AUDITED CONTINUOUS IMPROVEMENT MANAGEMENT SYSTEM.

Improving landholder access to and use of mapping tools, spatial data sets and environmental monitoring tools would enhance the rate of environmental improvement using ALMS and similar management systems

The ALMS pilot experiences and ALMS activities more broadly indicate that better access to and use of cost effective digital mapping tools and spatial data sets would improve the adoption of ALMS and the quality of the resulting action plans. Furthermore ALMS needs to improve access to and use of available environmental monitoring tools.

RECOMMENDATION 3: CURRENT WORK AIMED AT ENSURING LANDHOLDERS HAVE ACCESS TO AND CAN USE COMPUTER BASED SPATIAL DATA BASED SYSTEMS AND RELEVANT DATA SETS NEEDS TO BE CONTINUED AND POSSIBLY ENHANCED.

The effectiveness of environment management systems is dependent upon the policy and program settings within which they operate

The question continues to be asked as to why the public sector might invest in the development and application of environmental management systems.

Perhaps this is not such a surprising question given the presentational context for the EMS Pilot Program, as is illustrated by the statement of objective, *viz*:

“The object of the EMS National Pilot Trial was to develop and assess the value of EMS as a business management tool to improve natural resource management, from the enterprise level up to the catchment scale, and to assist industry competitiveness and production efficiency and to assist primary producers meet emerging market demands for quality and environmental assurance.”

By default this statement infers that environment management systems deliver only private benefits and hence the question as to why environment management systems might be part of a portfolio of instruments supported by both the private and public sectors.

Current policy settings and support programs for improving environmental outcomes are based on broad acceptance of the fact that investment in environmental management is constrained by market failure, that is where the degree and or nature of private sector investment in environmental management will not lead to socially optimal outcomes.

Market failure in environmental management arises because of externalities (that is, off site environmental effects), the full or partial public goods nature of many environmental outcomes (that is, they are not or cannot be priced and they are not diminished by use) and because of a raft of historically based attitudes and organisational constraints on information flow.

These factors justify current partnerships between the public and private sectors to improve environmental management- so far so good. However current public sector support is heavily focused on improving the ‘quality’ of natural ‘resources’, for instance through tree planting programs and water saving initiatives, and inevitably this leads to a focus on symptoms, not causes. These approaches, and similar, marginalise the environmental effort away from the core activities of land managers that impact most substantially on the environment.

Furthermore attention is being directed increasingly towards ‘ecoservice’ payments wherein payments are made for particular environmental outcomes, such as biodiversity conservation, beyond those required by regulation and/or as codified in duty of care standards.

Putting aside equity considerations inherent in ecosystem payments and the problem of such payments being capitalised in land prices, ecoservice payment mechanisms are based invariably on the false premise that managerial practices leading to public good outcomes can be separated from managerial practices that lead to private good outcomes. There is also the dubious presumption that ecoservices are more likely to arise where environmental outcomes are now most limiting. Finally, it needs to be recognised that most if not all environmental outcomes, including biodiversity conservation, are a mix of public and private goods.

Rather than approaches such as those mentioned above, or perhaps in addition to them, partnerships between the public sector and land managers should be increasingly be based on managing the positive and negative impacts of the activities of land managers for it is only through limiting the managerial causes of adverse environmental impacts and through strengthening the managerial causes of positive environmental impacts that real and lasting progress will be made.

And this is why support for environment management systems should be included in the portfolio of measures to address the problem of market failure in environmental management.

Recommendation 4: The National Framework for Environmental Management Systems be revised to include a robust policy analysis to support or otherwise the place of environment management systems in the portfolio of public policy instruments to improve environmental management.

The innovative nature of environmental management systems needs to be recognised

The adoption of environment management systems that are truly systems rather than parts of systems will be/would be a revolutionary managerial innovation; that is, it will require introduction of a new system rather than changes to the parameters or operational aspects of an existing system. On several grounds it is arguable however that the introduction of environmental management systems is progressing in an organisational environment not conducive to innovation.

First the introduction of environmental management systems is progressing in an organisational environment that is heavily dependent on public and private organisations whose charters incline them to service all members irrespective of their commitment to innovation or to environmental improvement. This has the effect of needing to modify what is being introduced to meet the varying aspirations and capabilities of land managers rather than to trial innovative approaches that would help improve the design of systems that would be both effective and attractive to landholders.

Second the introduction of environmental management systems is heavily dependent on organisations whose charter is restricted to particular agricultural land use types (industries) notwithstanding that most farms operate two or more industries and a significant proportion of land (40 %) is not used for agriculture. Furthermore, for the majority of farms most net farm household income is not derived from agricultural activity. These factors (and others) need to be taken into consideration when determining the respective roles of organisations involved in improving environmental management.

Third the management of the introduction of environmental management systems has not been well aligned to the experimental nature of the program. There has been an overload of ineffective reporting and survey arrangements, none of which has improved the design or application of ALMS.

RECOMMENDATION 5: FUTURE PROGRAMS TO SUPPORT THE INTRODUCTION OF ENVIRONMENT MANAGEMENT SYSTEMS BE DIRECTED TOWARDS INNOVATIVE LANDHOLDERS WHO WISH TO IMPROVE ENVIRONMENTAL OUTCOMES AND WHO, IN THE MAJORITY OF CASES, OPERATE MIXED INDUSTRIES.

There is a need for credible recognition of improving land management

"In ALMS we certainly have a system but we still have not got the drivers for broad scale adoption"- Joe Keynes, 2002 National Individual Landcare Award winner and member of the SA Murray Darling Basin Natural Resources Management Board.

Understandably most investment to date can be characterised as ‘push’ investment ie support to ease the adoption costs of EMS. That support has demonstrated that, on both conceptual and empirical grounds, landholders can adopt ALMS and that it will lead to improved environmental outcomes.

Having made that demonstration and noting that the principal constraint to improving environmental outcomes is a lack of drivers for improving environmental outcomes, whether by including EMS in the toolkit or not, it is now necessary to strengthen the drivers and hence the benefit flow to encourage adoption of better environmental processes and practices.

Sustained strengthening of drivers for improving environmental management primarily rests on the need of landholders and the public, private and community sectors to be able to recognise improved environmental management.

The experiences of ALMS in the Pilot Trial and broader analyses by ALMS identify that implementation of one or a limited number of voluntary Australian land management certification systems would enable a strengthening of the drivers for improving environmental outcomes.

RECOMMENDATION 6: THAT ANY FURTHER INVESTMENT IN SUPPORTING THE INTRODUCTION OF ENVIRONMENT MANAGEMENT SYSTEMS INCLUDES INVESTMENT IN STRENGTHENING THE DRIVERS FOR SUCH INNOVATIONS.

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Appendix

Industry mix on Australian farms for the year ending 30 June 2001

Industry	Proportion (%) of producers in that group with only 1 industry (e.g. beef), with 2 industries or with more than 2 industries		
	1 Industry	2 Industries	> 2 Industries
All Industries	39	34	27
Beef	26	41	33
Dairy	38	40	22
Sheep (wool and meat)	11	35	54
Poultry	43	33	24
Pigs	6	18	76
Other Livestock	6	48	46
Cereal Crops	5	29	66
Oilseed Crops (excluding cotton)	0	7	93
Other Crops (excluding cotton & sugar cane)	1	11	88
Cotton	10	29	61
Sugar	68	21	11
Vegetables	32	35	33
Fruit (including grapes, apples, pears & stone fruit)	59	25	16
Nurseries (including cut flowers and turf)	62	23	15

Industry	Proportion (%) of estimated value of agricultural operations attributed to producers in that group with only 1 industry (e.g. beef), with 2 industries or with more than 2 industries		
	1 Industry	2 Industries	> 2 Industries
All Industries	29	30	41
Beef	11	37	52
Dairy	39	37	24
Sheep (wool and meat)	3	23	74
Poultry	55	25	20
Pigs	10	16	74
Other Livestock	2	36	62
Cereal Crops	3	21	76
Oilseed Crops (excluding cotton)	0	4	96
Other Crops (excluding cotton & sugar cane)	0	7	93
Cotton	10	26	64
Sugar	52	28	20
Vegetables	33	30	37
Fruit (including grapes, apples, pears & stone fruit)	52	25	23
Nurseries (including cut flowers and turf)	56	25	19



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