

# LAND DEGRADATION SALINITY RISK PROJECT

## Communications



**Communications Strategy**  
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2003

(A sub report for the project **Minimising Land Degradation and Salinity Risk Using Resource Information and Modelling Techniques**)

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# **1. LAND DEGRADATION SALINITY RISK PROJECT COMMUNICATIONS STRATEGY.**

The Land Degradation and Salinity Risk Project has presented a range of communications challenges. A Communications Plan was developed by the consultant, (Malcolm Cowan, eeioh.com Pty Ltd) in collaboration with the project team. The consultant joined the Project Management Group and was involved with project team meetings, Steering Group meetings and meetings with field project participants. The Communication Plan see (Appendix) was designed to address the communication challenges surrounding the project. These included:

## **1. The initial sensitivity of the issue of salinity and land degradation.**

There was a perception that the publication of salinity levels on properties would both reflect poorly on the management of property owners and devalue properties, particularly if salinity levels were high. This issue was most sensitive in the Waterhouse area, and to a lesser extent in the Coal River Valley and Tunbridge.

This issue was managed by:

- an article in the salinity newsletter Saltline Tasmania in February 2002
- the production of a project information sheet for distribution at Agfest 2002
- two editions (May and September 2002) of a project newsletter "Creating a Watershed". This newsletter detailed the project's objectives, methodology, and progress to date. These newsletters were distributed to all landholders in the project area and other stakeholders. (See Appendix).
- personal contacts in the field between the project officers and landholders
- workshops with landholders in the three project areas.

## **2. The definition of and agreement on the terminology and language.**

The language and terminology used in describing the findings of the surveys and the potential impacts on farming systems, the hazards and risks were an internal issue for the project team and for communication with the project landholders.

This issue was managed through the production of discussion papers based on the Hazard Analysis Critical Control Point (HACCP) approach to hazard assessment and risk management. Discussions regarding the terminology were then held at an internal project team meeting and at a Steering Committee meeting. This process has clarified the team's approach to distinguishing between the existence of the hazards identified and the risk of the hazards impacting on farming systems. This approach was further refined at the meetings held with project landholders.

## **3. The communication of sensitive survey mapping and results to landholders in the project area and the management of information.**

This issue was managed through structured meetings with the landholders in which the issues were aired and discussed. Meetings held at Tunbridge and

Bridport (Waterhouse project area) were particularly successful. The Tunbridge project area already had an active group examining the sustainability of their agricultural practices and this group was used to discuss the project findings and the likely implications of that knowledge for farming systems. Two meetings were also held at Richmond (Coal Valley area).

#### **4. Managing the landholder requirements for concise key messages and recommendations.**

This will be a continuing challenge when, in the respect of salinity issues particularly, the project has found that the systems and solutions are complex and require further work for definition and understanding. In this case the “take home’ messages may be simple ones of commencing or continuing monitoring of groundwater.

A Field Day was held in collaboration with Southern Farming Systems (SFS) on “Allandale”, the property of Richard and Emily Gardner at Tunbridge. SFS reported on the NHT funded two year salinity management and risk assessment project undertaken on Allandale. Darren Kidd, LDSR project officer for the Tunbridge project area presented an update on the LDSR project findings in the surrounding district.

David Armstrong facilitated a discussion around the subject of “Major Issues for Consideration in Intensifying Land Use”. This session and the subsequent farm walk drew out discussion on issues such as closed fallows, lucerne in the rotation, wind erosion, irrigation water quality, soil sodicity, ground water monitoring etc. The discussions emphasised the point that landholders are seeking specific guidelines for changes in land use to reduce the risk of salinity.

#### **5. The demand for the technical information generated from the project by individuals and organisations involved in land management.**

These organisations, both public and private, are seeking the information for applications on-farm and off-farm and for geophysical systems applications.

It is planned to hold a Technical Workshop with appropriate service providers, researchers and planners to present the information from the project. This workshop will be held following approval of the Project outcomes.

**6. Raising general awareness of the project to stakeholders and the wider community.**

This awareness was commenced and maintained through:

- information sheet at Land Management Branch display, Agfest 2002;
- an ABC Rural Radio interview by David Armstrong;
- article in Tasmanian regions, DPIWE quarterly rural publication
- article in Local Government Association of Tasmania newsletter interactive water testing and project display at Agfest 2003

The overall Communications Plan was developed in March 2002. All the planned events have occurred. However, the timing of events around the report feedback was later than planned due to the extension of the project. These changes were reflected in the event Detailed Communication Plan.

<b>Appendix 1 LDSR Overall Communication Plan 2002 Timing Overview</b>							
	<b>April</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>August</b>	<b>September</b>	<b>October</b>
<b>Newsletter</b>		*		*	*		*
<b>Web Page</b>		*			BMP Guidelines		
<b>Project Participant Meetings</b>		*					*
		3 X regions mid May					3 X regions Draft Feedback
<b>Pre Meeting Letters</b>		*					
<b>Workshops</b>					*		
					3 X regions		
<b>Field days</b>						*	
						wider audience	
<b>Media</b>	*				*		
<b>Tas Cntry Radio</b>	yes				yes		
<b>Tas Regions</b>	yes				yes		
	yes				yes		
<b>Agfest</b>		*					
		Esta model Project Info					
<b>Reports</b>						Draft Report	*

**Appendix 2**  
**Land Degradation and Salinity Risk Project**  
**Detail Communication Plan**  
**May 2002**

The following Communication Plan was developed to be used as a basis for the generation of development of Key Messages and the devolvement of information and outcomes during and the data gathering, outcome development and report stages.

The Plan and Events were modified and adapted to take into the account results from the research and input from stakeholders and project participants.

***Key Messages***

These will be developed in two Stages

**Stage 1 Project Operation and Issues Messages**

During the data gathering and research stage messages will be focussed on dissemination of the aims and objectives of the project and the managing of issues such as confidentiality and attitudes and fears surrounding the survey and the results. Landholder and stakeholder input to the development of the Project Outcomes will be encouraged and developed.

**Stage 2 Project Outcomes and Recommendations**

The development, review and dissemination of the Outcomes and the extension of the key messages.

The following table summarises the Target Audiences and Devolvement Processes for the Messages

Target Audience	Messages	Devolvement Processes
<p><b>Landholders/farmers</b></p>	<p>Allying of fears that the project may threaten their land use capability, property values or their standing as land managers</p> <p>The project aims of anticipating land degradation risks from intensifying land use, particularly irrigation</p> <p>The development of “Best Management Practices” (BMP) to reduce and minimise land degradation</p> <p>Landholder input will be welcomed in the identification of risks and the development of BMPs.</p> <p>Dissemination of key messages developed from the outcomes of the project, including risk assessment and Best Management Practices.</p>	<p>Project staff on one to one basis, Agfest, Newsletters press releases</p> <p>Personal letters informing regarding meetings and providing opportunities for discussion of individual findings prior to landholder meetings, regional meetings and workshops</p> <p>Involvement in workshops to determine risk assessment and Best Management Practices.</p> <p>Field day(s)</p> <p>Production of Fact Sheets and publishing of web based material</p>
<p><b>State and Local authorities</b></p>	<p>Awareness of the project and it’s aims and objectives</p> <p>Awareness of the status and effects of salinity in the project areas</p> <p>Identification of input that councils can have to the aims and objectives</p>	<p>Newsletters</p> <p>Participation in stakeholder meeting and workshops as appropriate.</p>
<p><b>NHT</b></p>	<p>NHT’s role in the reduction of land degradation</p> <p>Promotion of NHT as a funder of the project</p> <p>Informal reporting of project as a stakeholder</p>	<p>Acknowledgement of funding whenever possible in releases and announcements, use of logo wherever possible, distribution of relevant newsletters and releases.</p>



Target Audience	Messages	Devolvement Processes
<p><b>Wider stakeholders</b>            E.g. landcare organisations,            National Salinity Action            Plan, Southern Farming            Systems, Private Forests            Tasmania, Sustainable            Grazing Systems,            Sustainable Practices Project            (Liz Bond) TIAR, TQA,            contractors etc</p>	<p>Awareness of the project and it's aims and objectives            Determination of opportunities for collaboration and the            avoidance of overlap and confusion in the minds of            farmers</p>	<p>Inclusion in Newsletter distribution            Participation in stakeholder meeting and workshops as appropriate            Collaborative Field Day</p>
<p><b>Industry professionals</b>            Consultants, technical            advisors, FarmBis, TRITB</p>	<p>Awareness of the project and it's aims and objectives            input will be welcomed in the identification of risks and            the development of BMPs.</p>	<p>Inclusion in Newsletter distribution            Participation in stakeholder meeting and workshops as appropriate            Specific technical seminar to review results and outcomes</p>

## ***Project Theme and “Position Statement”***

The following Theme has been developed for the Project and has been introduced in the initial (May) Newsletter.



This theme provides a convenient reference for the Project and the statement summarises the aims of the project.

## ***Resourcing***

The resourcing of the extension element of the project will be defined as the Outcomes are developed as these will be significantly dependent on the scope and format of the Outcomes to be extended. Multi media channels such as CD ROM may be appropriate for disseminating Best Practices utilising video, virtual reality photography, animation and voice over for example. Further external funding opportunities would be investigated for a project of such scope.

Stakeholder resource capacity for devolvement and extension will be assessed in the data gathering stage of the project during June and July 2002. Joint Field Days and the development of joint extension material with other stakeholders such as Southern Farming Systems will maximise the use of resources.

The National Salinity Action Plan will be investigated as a source of resources for the project.

## Event Detail

EVENT		RESPONSIBILITY	STATUS
<b>Agfest</b>			
<b>Timing</b>	3,4,5 May 2002	DPIWE	Completed
<b>Content</b>	Esta/Chris demo salt model Combine with Julie Finnigan and other DPIWE Salinity projects Project Information including Newsletter		
<b>Target Audience</b>	Farmers, general community		
<b>Aims</b>	Alert framers and the wider community of work that is being done Introduce modelling for those who have time to spare Support the acknowledgement that salinity is an issue and now is recognised as such. Demonstrate that work is being undertaken to manage land degradation and salinity risks.		

## Event Detail cont'd

EVENT		RESPONSIBILITY	STATUS
<b>Newsletter "Creating a Watershed"</b>	<b>Timing</b> May, July, August, October	Writing MC  Distribution DPIWE (with invite to Meetings)	2 editions were produced, May and Sept 2002 providing updates on the project.
	<b>Content</b> What is being done Who is doing it Where - regions Progress to date		
	<b>Target Audience</b> Project participants Stakeholders – local Landcare groups, Gov (state and local), NHT, SFS, Waterhouse Irrigation Committee, Private Forests Tas		
	<b>Aims</b> Communicate in a consistent format with landholders the aims of the project, its status and what is proposed. Prepare project team for any issues that may be raised Assure farmers that they will be kept informed that their input is valued and will be sought		

## *Event Detail cont'd*

<b>EVENT</b>		<b>RESPONSIBILITY</b>	<b>STATUS</b>
<b>Press Releases</b>	<b>Timing</b>	May, October	To Tas Cntry, Tas Regions 1st May to appear TC 24 May. (not used). The subject of salinity project work was difficult to attract Media attention without some impact statement.
	<b>Content</b>	Similar to Newsletter but more general	
	<b>Target Audience</b>	General rural community	
	<b>Media</b>	Tas Country Tas Regions (DPIWE)	
	<b>Aims</b>	To inform the wider community of the project and it's aims	
<b>Radio Interview</b>	<b>Timing</b>	May, October	Radio interview done by DA, to coincide with release. and News 12/13 Sept following Field Day
	<b>Content</b>	Similar to Newsletter but more general	
	<b>Target Audience</b>	General rural community	
	<b>Media</b>	ABC Rural	
	<b>Aims</b>	To inform the wider community of the project and it's aims	

*Event Detail cont'd*

EVENT		RESPONSIBILITY	STATUS
<b>Participant Meetings</b>	<b>Timing</b>	<p>Coal Valley Meeting 1 7.30 pm 30 May, Meeting 2 Oct</p> <p>Tunbridge Meeting 1 Letters of intent only May Meeting 2 Oct</p> <p>Waterhouse Meeting 1 Letters of Intent only May Meeting 2 Oct</p>	<p>CRV 30 May</p> <p>Tunbridge 23 Sept</p> <p>Waterhouse to be confirmed.</p>
	<b>Content</b>	<p>Meeting 1 Salinity Hazard Maps, EM Survey data, flag other maps coming (Soils early June -- low sensitivity).</p> <p>Meeting 2 Report review</p> <p>Project participants only</p>	
	<b>Target Audience</b>		

**Event Detail cont'd**

EVENT		RESPONSIBILITY	STATUS
<b>Internal Communications/ Team Member Meetings</b>	<b>Participants</b>	Project Management Team, DA, CG, AE + MC	Monthly phone hook ups held, minutes circulated
		Project Field Team, CG, DA, RM, DK EK, MRT staff 1 Salinity Hazard Maps, EM Survey data, flag other maps coming (Soils early June – low sensitivity).	
	<b>Timing</b>	Meeting 2 Report review PMT –monthly phone hook up  PFT – end of May, mid July, Branch meeting.	Hook ups: 19 April, 13 May 17 June, 6 Sept  24 June Branch Meeting (date), Hazard Anal 16 Sept

***Event Detail cont'd***

EVENT		RESPONSIBILITY	STATUS
<b>Solutions Workshops</b>	<b>Timing</b>	Late July 3 x regions	Dates to be finalised Tunbridge 23 Sept
	<b>Content/Approach</b>	Maps, data, risk assessment etc Participatory approach, inviting input and ownership Do participants agree with the risk assessment, risk levels? What practices do participants recommend to manage these risks? Project Managers to have some "Have you thought of...?" strategies in back pocket. Project participants, stakeholders able to provide input	
	<b>Target Audience</b>		
<b>Best Management Practices (BMP) /Guidelines</b>	<b>Timing</b>	August	Developed following Workshops
	<b>Content</b>	Develop following Solutions Workshops with input provided from Workshops	
	<b>Dissemination</b>	Post to DPIWE web site Input to report	
		DA, CG	



## Event Detail cont'd

### Dissemination of Results

EVENT		RESPONSIBILITY	STATUS
<b>Field Day</b>	<b>Timing</b>	Mid September	SFS joint Field Day. 12 Sept Annandale
	<b>Content</b>	Data, BMP Guidelines, Project Outcomes	
	<b>Target Audience</b>	All "at risk" landholders, wider community, stakeholders	
	<b>Participants</b>	SFS, NHT, DPIWE salinity work, Private Forests Tasmania	
	<b>Venue</b>	Outside project area, site to be finalised.	
<b>Final Report</b>	<b>Timing</b>	CG,DA	
	<b>Content</b>	AE	
	<b>Timing</b>	Dec	
	<b>Content</b>	3 Reports 1 Overall Project report 2 Regional reports 3 Modelling	

**Event Detail cont'd**

<b>EVENT</b>		<b>RESPONSIBILITY</b>	<b>STATUS</b>
<b>Technical Seminars</b>	<b>Timing</b>	Jan/Feb 2003	MC
	<b>Content</b>	BMP's, risk assessment models for technical discussion with industry service providers to: Disseminate the results Discuss the technical implications of implementation and Gain input for extension channels and technical review.	
	<b>Target Audience</b>	Technical service providers and regulators/land managers/advisors, DPIWE	
	<b>Venue</b>	1 seminar Hobart, 1 North	
			Dates, participants TBC

<b>Event Detail cont'd</b>		
<b>EVENT</b>	<b>RESPONSIBILITY</b>	<b>STATUS</b>
<b>Fact Sheets</b>	<b>Timing</b>	Following finalisation of Key Messages, Dec/ Jan 2003
	<b>Content</b>	BMPs and Salinity risk assessment extension material
	<b>Target Audience</b>	Landholders, land managers in "at risk" locations and regions.
	<b>Media</b>	Hard copy Fact Sheets" disseminated to those at risk (Australia Post selected mail out or Tas Country insert). Tas Country insert).  Published in multi media format on DPIWE Website and CD  Promotion through Media ( Tas Country, Landcare, ABC Rural Radio/Press release, links form relevant web sites)
	CG, DA, MC	BMPs etc to be developed

***APPENDIX 3. NEWSLETTERS***



# CREATING A WATERSHED

*Risk Management Strategies for Intensive Land Use*

Topics Covered Include:

- The Project
- The Team
- Why? - Risk Assessment
- What? - Field Work
- Assessment Model
- Your Input
- Outcomes
- Contact Us

**Project Newsletter May 2002**

## The Project

The DPIWE in conjunction with Mineral Resources Tasmania is currently undertaking a project in the Waterhouse, Tunbridge and Coal Valley districts to investigate the impacts of land use change, predominantly grazing to irrigated cropping. The motive for this project is that the influence of this change on environmental systems is unknown and could be adversely impacting on groundwater levels, salinity, erosion risk and soil structural stability. The project is being undertaken with financial support from the Natural Heritage Trust.

## The Team

The project team is Chris Grose, Project Team Leader undertaking the ground work in the Coal River, Darren Kidd the Tunbridge area and Rob Moreton, Waterhouse. Andrew Ezzy of Mineral Resources Tasmania is working with Coffey International on groundwater and regional hydrogeology issues. David Armstrong of Armstrong Agricultural Services is the Project Co-ordinator and a broad based Steering Committee is overseeing the project.

## Why? - Risk Assessment

We developed this project because changes in the profitability of traditional enterprises and the developments in water supply and application technology have made intensive cropping a feasible option for many landholders. This project aims to assist farmers to anticipate the risks and to adopt best practices to minimise any possible ill effects of intensification.

## What? - Field Work

To assess the risks we need to identify the levels of salt in the soil profile and to estimate the possible soil degradation that may occur. For the last 6 months the project has been focussing on assessing salinity levels in each study area using an EM31 meter mounted on the back of a 4WD bike, linked to a data logger and GPS. This setup has enabled us to cover over 15 000ha in total.

The EM 31 works by sending an electrical signal into the ground and recording the strength of the return signal. Calibration of the signal strength provides an indication of the salt level in the soil.

However, it is important to note that the strength of this signal can be affected not only by the amount of salt in the soil but also by soil moisture content, soil clay content and even soil temperature. Consequently, we have followed up the EM31 work by drilling a number of bores in each study area and collecting soil samples which will be analysed for salt, clay and moisture in order to allow calibration with the EM31 results.

Additionally, at least fifteen observation wells have been established at each study area. These wells are being monitored on a regular basis to identify changes in groundwater salt content and depth to groundwater. This information will assist not only in assessing salinity risk, but also in determining the impact that irrigation might be having on near surface groundwater quality and depth.



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# CREATING A WATERSHED

*Risk Management Strategies for Intensive Land Use*

Additional studies will be looking at the distribution of the various soil types in each area and the impact that cropping might be having on those soils - particularly with respect to erosion risk and soil structural stability. These activities are likely to be continuing well into May.

Initial results show some areas with high readings, particularly in the Coal Valley and Tunbridge areas. Further assessment is needed to determine what is causing these high values. Readings in the Waterhouse area were generally low, with a couple of "hot spots" that we are investigating.

In order to gain a better understanding of the origins of salt in each area, investigations are also under way to determine the contribution of rainfall to the salt model.

## Assesment Model

It is intended that all this information will contribute to the development of a Salinity Risk Assessment Model for use by farmers to determine their particular risk of developing salinity under a range of management scenarios.

It is also important to recognise that salt occurs naturally in the soil at varying depths and levels dependent upon the geophysical formation and the groundwater level.

## Your Input

We believe that we can manage around the risks of increasing surface level salinity and that farmers have much of the knowledge about how to do this through their experience and knowledge of their own properties. The project intends to tap into this knowledge in the process of developing a range of "best practices" to reduce the risk of salinity while increasing cropping or grazing intensity, mainly through irrigation.

We will be holding workshops later in the year in each district to report on progress and to gather ideas for "best practice" recommendations.

## Outcomes

In summary, it is hoped that the outcomes of the project will include:

- an assessment as to whether changing land use patterns from grazing to cropping is having a significant impact on soil quality and salinity risk;

- if an adverse impact is identified, provide a model for farmers to assess their individual level of risk;
- identify guidelines for improved land management that will allow farmers to continue with more intensive land use practices but minimise the risk of resource degradation from salinity or soil structure decline.

The project has funding until September 2002 and final results can be expected later in the year.

## Contact Us

Please contact the Project Team members if you have any questions or ideas regarding the project

**Chris Grose**  
**Senior Land Resource**  
**Assessment Officer, DPIWE**

*Chris Grose ph 6336 5325*  
*Darren Kidd ph 6336 5201*  
*Rob Moreton ph 6336 5441*  
*David Armstrong 6334 1033*



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*Risk Management Strategies for Intensive Land Use*

**Project Newsletter September 2002 #2**

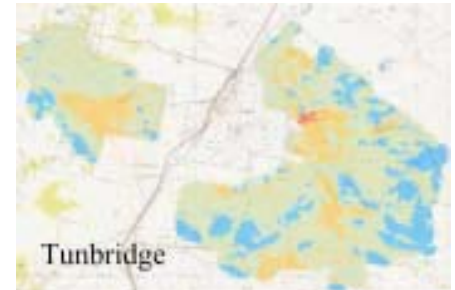
This second newsletter describes the progress and some of the outcomes to date for the Land Degradation and Salinity Risk project being jointly undertaken by DPIWE and Mineral Resources Tasmania (MRT).

You will recall that the project is investigating the environmental impacts of land use change in three study areas (Waterhouse, Tunbridge and the Coal River Valley). Of particular interest is the issue of salinity but the project is also investigating soil structural stability, erosion and soil water infiltration issues.

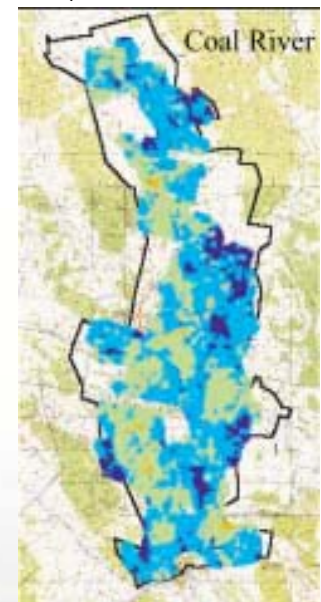
## Salinity Assessment

EM31 investigations were undertaken over the last 12 months using a four wheel bike, EM meter and GPS. Calibration of the data involved the drilling of holes to 5m depth and the collection and analysis of soil samples to determine moisture content, field texture and EC1:5

conductivities. This information was necessary to identify the relationship between EM readings and actual soil salinity (ECse) in each study area. The influence of salinity, soil texture and moisture on EM readings were investigated using statistical correlation techniques which indicated a strong relationship between EC and EM readings. These results suggest that the EM31 is a reasonable predictor of the occurrence of saline layers within the ground to a depth of 5m. The mathematical equations that define the calibrations at each study site, together with appropriate texture modifiers, were then used to convert all the raw EM data to ECse to provide an indication of the relative presence of salt within the top five metres of the soil. The results for each study area are presented in the



accompanying thumbnails (red is high salinity hazard, green is moderate and blue is low).



The maps suggest that while salt is present to some degree in the upper 5 metres of soil at all sites the number and extent of areas with high levels of salt are limited. The data does, however, provide a warning to farmers not to be complacent about salinity in their area and to review their current management practices to reduce future salinity risk



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and undertake appropriate monitoring. The results also highlight the need for more detailed investigations to determine the exact location of saline layers within the soil.

## Ground Water Monitoring

One method of monitoring salinity risk is to measure ground water quality and the depth to any saline ground water tables on a regular basis. Each study area has 15 or more such observation bores with groundwater EC levels ranging from 1 dS/m to in excess of 20 dS/m. ( sea water is around 50 dS/m) Depth to ground water is similarly variable from just a few centimetres to in excess of 5 metres. However, there is currently no evidence to indicate that present irrigation activity is impacting on groundwater levels. Continued monitoring is necessary to identify any longer term changes, particularly if areas under irrigation are increasing.

## Salt in Rainfall

Two rainfall collecting sites have been located within or near each study area and the rainwater collected has been sampled for salt content on a monthly

basis. While the results have been variable and contamination of samples a problem, the data suggests an average monthly salt budget from rainfall of 5kg/ha, 3kg/ha and 20kg/ha respectively at Coal River, Tunbridge and Waterhouse. These values are not considered significant in the short term but may be of some relevance in the much longer term if the salt accumulates in the system.

## Recharge Modelling

A number of computer models, including WAVES, FLOWTUBE and AgET, have been investigated to try predict the occurrence of groundwater recharge under a range of cropping systems. Considerable effort has been used to adapt these interstate models to Tasmanian conditions and farming systems. At the end of the day, however, they are only simple water balance models and can provide only a rough indication of likely recharge amounts. Of greater value may be a comparison of the relative recharge values under different cropping rotations to identify a management system that is likely to have the least impact on groundwater recharge.

## Soil Mapping

In order to determine other potential land degradation risks each study area has been investigated for the type and distribution of its various soils. This work is as yet incomplete but it is hoped to be able to identify areas at risk of erosion, soil structural decline and water logging.

## The Future

The project still has much work to do, particularly in the analysis of data already collected. An extension of project has been requested of the Natural Heritage Trust in order to complete this work but we are still awaiting an outcome.

## Contact Us

If you would like to know more please contact us.

**Chris Grose**  
**Senior Land Resource**  
**Assessment Officer, DPIWE**

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