



## IRRIGATION RESEARCH & EXTENSION COMMITTEE

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FOR IRRIGATION CROPPERS

### **Integrated risk management systems for irrigators**

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## Introduction

AEM Solutions (AEMS) has been implementing and developing risk and environmental management system solutions, across various industry sectors for the past eight years. Over that time, AEMS has designed and developed proprietary software solutions to enable planning, compliance and continual improvement to be monitored and reported. The software in conjunction with the broad experience of AEMS consultants, has helped a range of organisations to manage both production and the environment in a sustainable manner.

The AEMS Farm Solutions software is now providing solutions for various industries to address risk assessment, risk management, compliance, monitoring and reporting. AEMS Farm Solutions also incorporates web based GIS technology to allow for data capture and provision of services across the World Wide Web.

## How it Works

### Tracking

*AEMS Farm Solution* tracks management actions and the results of management actions (i.e. monitoring responses) spatially, using a sophisticated database supporting all GIS file formats.

### Reporting

*AEMS Farm Solution* generates reports of compliance against whatever requirements are specified – EMS, OH&S, environmental and catchment targets, ecolabels, risk management programs and for property management. *AEMS Farm Solution* is thus a generic tool that can be applied to any need requiring spatial tracking and reporting of management actions.

### Accountability

*AEMS Farm Solution* is a package that supports ‘accountable landscape management’ programs. Other packages that claim to serve this need are focused on EMS compliance only and do not include spatial capabilities. *AEMS Farm Solution* goes well beyond other systems in managing and accounting for impacts on the landscape environment. *AEMS Farm Solution* is focused on performance reporting rather than bureaucracy associated with processes. This is highly applicable to modern business.

### Activity Based

The *AEMS Farm Solution* software is currently being redeveloped to explicitly track ‘activities’ (management actions) and ‘assets’ (the variables affected by management). Assets can include physical or infrastructure assets or variables of value to markets such as ML of water, Carbon, Biodiversity (e.g. ‘habitat hectares’), etc.

### Powerful Back-end

The powerful database that supports *AEMS Farm Solution* enables a large database of information from numerous properties to be developed and managed. Thus, it provides the potential for natural resource impacts to be integrated across property boundaries and catchments in a holistic manner. Data is protected and confidentiality maintained where required. This enables reporting of environmental impacts on a regional basis. It will also enable assets to be aggregated and traded.

### Scenario Planning

AEMS secured financial sector input in the original development of AEMS Farm Solutions. The application tracks all assets and activities, and can be used for scenario planning taking into account financial, environmental, social (“Triple Bottom Line”) and production attributes.

## **AEMS Water Solutions (AWS)**

AEMS Water Solutions is a subset of AEMS Farms Solutions (AFS) specific for irrigators, local water authorities and government agencies.

Land and Water Management Plans (LWMPs) are required for trading of water, to access new allocations, to access and use mill or council effluent, when a change of land ownership or change of water use occurs.

In the past LWMPs have been developed and literally sat on the shelf as word documents or in manuals. The LWMP document has been seen as a “static” document that forms part of a suite of documents that producers find valuable for gaining access to resources but are difficult to be audited or to be used as dynamic management tools. The grower must then have other tools for use in calculating water deficits and water balances, scheduling irrigations and ordering water from relevant water authorities.

The common issue is that growers must complete numerous planning and compliance documents which appear to have overlapping requirements but due to the “paper manual” concept employed rarely result in multiple use of data. If data could be used for multiple compliance requirements the life of a producer would undoubtedly become easier. In addition, if a central system could utilise existing data the preparation of such plans would become much more efficient and cost effective.

AEMS has been developing AEMS Farm Solutions (AFS) for over seven years and has managed to develop a central platform that is now increasingly becoming accepted as an industry standard. AEMS works with such a wide array of industry players and irrigators from various production systems (cotton, horticulture and sugar for example) proves that this is possible. This is the basis of “AEMS Water Solutions” - a specific and highly regarded subset of the functionality of AFS for irrigators. Producers can enter data once into a series of templates that can be utilised in the development of numerous reports. The templates follow standard activities that occur on the farm, as well as utilising existing data (from sugar mills for example) for preparation of plans and in modeling. This results in the producer entering data once and allowing it to be used for Property Management Plans, financial planning, asset management and insurance, Land and Water Management Plans, Pesticide Application Management Plans, Vegetation Management Plans, Environmental Management Systems or Farm Management Systems and used for record keeping for all aspects of farm production.

In addition, AEMS Water Solutions integrates models from the CRC for Irrigation Futures (CRC IF) and other private consultants such as “Aquatech” and the model “Watertrack”.

Geographical Information Systems (GIS) data from harvest management systems or from other systems can be easily integrated to provide data entry without the need for the producer sitting at a keyboard.

The overall outcome is that Australian agricultural producers are cutting through the paperwork, analysing the financial cost and benefit of using water in various ways and are managing water according to current best practice. This maximises the benefit to the producer and minimises adverse impact on the environment. Immediate financial gains are recorded by the producer and by local water authorities that release appropriate amounts of water from dams with minimal wastage and maximum water available for environmental flows.