

A Farm and Industry Economic Evaluation of the Use of Coal Seam Water in Agriculture: A Case Study of Chinchilla District, Queensland

David Monckton¹, Jim Cavaye¹, Sue Vink², and Neil Huth³

¹ School of Agriculture and Food Sciences, St Lucia Campus, The University of Queensland, Brisbane, Queensland, Australia

² Centre for Water in the Minerals Industry, St Lucia Campus, The University of Queensland, Brisbane, Queensland, Australia

³ Gas Industry Social and Environmental Research Alliance (GISERA), CSIRO, 203 Tor Street, Rockville, Toowoomba, Queensland, Australia

Abstract

This study examines the feasibility of using coal seam water (CSW) for irrigation in different and innovative ways which will enable a ‘win-win’ for gas and agricultural producers. It will do this by demonstrating enterprise feasibility and evaluating industry and regional-scale impacts. The impediments to CSW use by primary producers will be examined by evaluating such things as management practices and risk factors. The scope of the project involves using Chinchilla District as a case study to examine three sub-projects namely;

1. Undertaking financial analysis of on-farm CSW irrigation development - using modelling and farm case study interviews to obtain quantifiable measures capable of economic evaluation.
2. Understanding how the use of CSW impacts on industry establishment – how producers collectively incorporate CSW in farm production systems, how they determine optimal use and maximise economic returns such that new industries are established.
3. Estimating the cumulative impact of use of CSW at the regional-scale covering issues such as;
 - regional economic impacts
 - different effects in different regions
 - sustainability of production systems
 - community impacts - does this enhance co-existence?
 - environmental impacts – benefits may include increased environmental flows to streams.

The scope of analysis undertaken here will evaluate economic costs and benefits now and into the future and as such will provide social benefits to producers, their families and workers in supporting industries. These changes will be evaluated from an economic perspective quantitatively and qualitatively. This work will combine application of theoretical economic modelling with practical on-the-ground survey of current and potential water users in the Chinchilla District.

An important aspect of this thesis is to combine biophysical modelling (APSIM) with economic modelling tools (DAM EASY and others) as referred to in {Lisson S, 2003}. This study analyses the costs and benefits of various irrigation scenarios involving investment in on-farm water

storages (OFWS) and how to best manage water from all sources. The use of modelling tools such as this is seen as being particularly useful here because of its ability to model particular characteristics of CSW supply compared with alternative water sources and determine which scenario will provide the best economic returns.