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I wish to make a submission in regard to the impact of mining coal seam gas on the management of the Murray Darling Basin.

My husband and I farm in the Cecil Plains region of the Darling Downs, which forms part of the Murray Darling Basin. The soils on our property are fertile, self-mulching, black, cracking clays of the Condamine Alluvial floodplain. Our property is an irrigated cropping operation. Cotton, sorghum, corn and sunflowers are grown as a summer crop and wheat and chick-peas are grown as a winter crop. Our property accesses three discrete water sources for irrigation purposes. Overland flow harvesting of flood water opportunistically, two small allocations from the North Branch of the Condamine River and a groundwater allocation from the Central Condamine Alluvium groundwater management area.

Our groundwater allocation is our most reliable source of water, and we also use it for a rural domestic supply. After having suffered through 15 years of drought, we consider that the surface water access is opportunistic, although the North Branch supply is more reliable than flood harvesting. The Condamine Alluvium Aquifer was released to landholders for water access by the state government in the 1960's. Many landholders took the opportunity to engage in a secure supply of water. Sometime after, the government realized that the resource had been overallocated, and eventually took measures to attempt to bring the system to a sustainable level of extraction. Across the entire management area, bores were limited to extracting 70 percent of allocation. Since then, and in the last few years particularly, landholders have voluntarily submitted to further allocation reductions in sub area 3 to further attempt to bring the aquifer to sustainability. This has occurred in the height of a drought, when access to other sources of water was limited or non-existent and without compensation.

In March and April 2010 Arrow Energy, a CSG company who holds tenure over our property, and over much of the Condamine Alluvial Aquifer, approached by husband to construct a 6 well pilot program on our farm. This was the very first venture of any of the CSG companies onto intensive cropping lands on a floodplain with groundwater interests. It was immediately identified by ourselves and our farming community that such operations posed a threat to our businesses and way of life. The impacts to groundwater were at the time unknown, but given the considerable volumes of water extracted during the CSG mining process, a risk had been identified.

After this, the local irrigator group (Central Downs Irrigators Ltd) commissioned an investigation into the potential for a connection between the Walloon Coal Measures, from where the gas and water is

extracted, and the Condamine Alluvial Aquifer. John Hillier reported that the two groundwater systems were connected but the extent of the connection would require further analysis. As recently as last month Arrow Energy have publicly reported that their activities will have an impact on groundwater levels of the Condamine Alluvial Aquifer.

Bore owners with a licensed entitlement from the CAA operate under the Water Act 2000 which is administered by DERM. Stiff penalties may apply to those who exceed their annual allocation. Whilst the CSG companies must obtain an environmental authority from DERM before commencing operations, they are also administered under the Petroleum and Gas Act 2004. Section 185 of the P&G Act provides for the take and interference of unlimited quantities of groundwater during the CSG extraction process. This section does not limit the CSG company to the take or interference of water from the aquifer targeted for CSG extraction, but allows for take or interference of all groundwater within the tenure area. Furthermore, DERM are not conditioning the protection of non target groundwater aquifers in the environmental authorities because of section 185 of the P&G Act, even though groundwater falls under the jurisdiction of the Environmental Protection Act 1994.

Landholders are understandably concerned by this inequality and lack of protection for an important water resource and its licensed entitlement holders. Concerns are heightened with the potential added input from a federal level, which seems to have the capacity to further impact on licensed entitlement, but has little or no capacity for dealing with the CSG industry.

A second issue of relevance surrounds the produced water from CSG extraction. It is unknown how much water will be produced annually from CSG mining in the Surat Basin, however, all estimates exceed 100,000 ML per annum. To a large extent, the CSG companies have not found satisfactory solutions for dealing with this produced water. To date, the companies have employed various techniques including discharging to rivers and creating new irrigated agriculture, but generally continue to struggle for options to deal with such a huge volume of water. Given that the impacts to groundwater have been acknowledged to be severe, the focus on the beneficial use of this water should be in order to maintain the water balance locally, or within the basin generally. In order for this to occur, there is a requirement for the companies to act in concert and consider the problem holistically, not individually.

It should not be acceptable for water to be discharged to rivers and streams as a first option. Nor should it be acceptable for new irrigation enterprises to be established, with the express purpose of growing salt-tolerant plants for the removal of salty produced water. Serious consideration must be given to recycling the water in the area of extraction for existing uses first of all. In cases where this is simply not possible, then preferred beneficial use options must include relocating water to other areas within the basin where impacts are occurring. The produced water must also be of equal or better quality than the water it is replacing.

The 'make good' provisions also need consideration. The make good measures that a CSG company must employ include drilling the affected bore deeper, drilling a new bore, piping in an equivalent amount of water of suitable quality from elsewhere and compensating the bore owner financially. To use my own situation as an example, the CSG company has admitted that they will have an impact on groundwater levels in the CAA. If we assume that the level of impact is to the extent that my bores are impaired and the impairment has been shown to be as a result of CSG activities, then the company or companies are required to make good. Because the system has been overutilised in the past, my bore cannot be deepened any further and because I am in a management area with a moratorium in place, another bore cannot be drilled. Even if the company were granted an exemption to do so, the likelihood

of drilling a new successful bore is low. So I find myself in the position where I have to accept water piped in by the CSG company. While the company is still operating in the region, they will be able to provide me with produced CSG water to replace my allocation. The water quality must be potable, since I use it for my domestic supply, but I am not certain that this can be achieved. There's also the issue of a pipeline to consider, which will require a right of way through my property to put water into an above ground storage. This will have an impact on the various other aspects of my business. Will the pipeline go through cropped fields? Can I drive heavy machinery or plough over the pipeline? Will the pipeline cause a change in ground elevations which will require leveling? The water will evaporate from an above ground storage, so will I be provided with additional water to compensate for that? And of course, the big question is, if the groundwater levels have not recovered, where does this water come from after CSG operations have concluded and the company is no longer extracting produced water? Estimates are that this will be in about 2045. I don't want the compensation. I want water to grow crops with and use domestically. Of course, will compensation be available from a company which is effectively a wholly owned subsidiary of a wholly owned subsidiary? I don't know.

The issues surrounding coal seam gas mining in the Murray Darling Basin are complex. There are many landholders in the Condamine Groundwater Management Area who share my predicament. After voluntarily submitting to reductions in allocations at quite considerable expense there is no tolerance for any activity that will impact on this groundwater resource. CSG mining must not be allowed to occur in an area where the impacts to groundwater are severe, for the environment or for existing users of the resource.

Thank you for your consideration of this document.

Regards,

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