



## FACT SHEET - CSG PRODUCED WATER IRRIGATION

The NSW Environment Protection Authority (EPA) is the lead regulator of environmental and health impacts of gas exploration, assessment and production activities in NSW. The following information provides guidance on the regulatory framework used to manage and beneficially reuse produced water from CSG activities by irrigation.

### What is Effluent?

Effluent is defined in the *Protection of the Environment Operations Act 1997* (POEO Act) as:

- (a) waste water from sewage collection or treatment plants, or
- (b) waste water from collection or treatment systems that are ancillary to processing industries involving livestock, agriculture, wood, paper or food, being waste water that is conveyed from the place of generation by means of a pipe, canal or conventional method used in irrigation (but not by means of a tanker or truck), or
- (c) waste water from collection or treatment systems that are ancillary to intensive livestock, aquaculture or mariculture, being waste water that is released by means of a pipe, canal or other conventional method used in irrigation as part of day to day farming operations.

### What is Produced Water?

Produced water is the term used to describe groundwater that is brought to the surface from coal seam gas (CSG) activities.

### Effluent Irrigation Guidelines and CSG Produced Water

The EPA's guideline on the *Use of Effluent by Irrigation* is an educational and advisory document for planners, designers and operators of effluent irrigation systems to encourage the safe and sustainable reuse of waste waters. A copy of the guidelines can be found at the following link:

<http://www.environment.nsw.gov.au/resources/water/effguide.pdf> .

As is evident from the POEO Act definition above, produced water is not considered to be effluent for the purposes of the Guideline. However, whilst produced water is not effluent, the Guideline does establish a number of processes and principles which are directly relevant to regulating produced water irrigation and, where appropriate, these are utilised by the EPA to effectively manage irrigation of produced water.

In NSW, all CSG activities must hold an Environment Protection Licence (EPL) issued by the EPA under the POEO Act. Copies of these licences are publicly available on the EPA website.

Where an approved CSG operation includes a produced water irrigation activity, conditions are included in the EPL by the EPA to ensure that the irrigation program is managed in a sustainable manner. The EPL will typically include conditions limiting the volume of water irrigated; specifying the quality of effluent to be irrigated to prevent harm, and prescribing soil, water and groundwater monitoring that must be undertaken by the licensee.

The Guideline is instrumental in designing the EPL conditions to ensure that the effluent irrigation system is managed in a sustainable manner and does not impact soils, surface or ground waters, and rivers and streams.

The sustainable reuse of effluent requires consideration of the complex interaction between the characteristics of the effluent, the characteristics of the soil, climate conditions and the agronomic system. These matters are also directly relevant to the irrigation of produced water. The Guidelines note that there is a range of other guidance available that might be relevant to different aspects of reuse.



In relation to the irrigation of produced water, there can be characteristics of the water that are complex or highly site specific. In these cases, site specific assessments are often required and these will involve the use of other guidance material, reference to relevant scientific literature or advice from specialists. An example might be the bicarbonate content of produced water and managing its impacts, given the particular soil characteristics in a proposed irrigation area.

In summary, the EPA's Guidelines for the *Use of Effluent in Irrigation* provide important guidance on effective management systems and controls, as well as establishing important environmental performance objectives, which are directly relevant to regulating produced water irrigation. The EPA recognises that the management of produced water can present technically complex and site specific issues that are beyond the scope of the Guidelines and, therefore, require specialised information, site specific assessments or advice from other sources to ensure that produced water is irrigated in a sustainable manner.

### **Who Approves Irrigation of Produced Water?**

The irrigation of produced waters from CSG activities is assessed and approved through the relevant planning process as prescribed under the Environmental Planning and Assessment Act 1979. Typically, the irrigation of CSG produced waters is regulated through Part 5 of the Environmental Planning and Assessment Act 1979 where the Office of Coal Seam Gas is the approval authority.

Various government agencies are involved in reviewing produced water irrigation proposals, taking into account various pieces of legislation, guidelines, industry standards and available literature. The EPA provides expert technical advice but does not have an approval role for Part 5 planning matters.

If the proposed irrigation plan is approved it will be subject to a range of conditions to ensure that it is designed, managed and monitored in an environmentally acceptable manner. Key approval conditions will typically also be reflected in the EPL for the operation.