



## Impacts of Coal Seam Gas (Coal Bed Methane) Extraction on Water Resources in Australia

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While extraction of methane from shale gas deposits has been the principal source of the recent expansion of the industry in the United States and potentially in Europe, extraction of methane from coal bed methane deposits (termed 'coal seam gas' in Australia) has been the focus in Australia. The two sources of methane share many of the same characteristics, with hydraulic fracturing generally (but not always) required to extract coal seam gas also. However, as coal seam gas deposits generally occur at shallower depths than shale gas, the potential impacts of extraction and hydraulic fracturing on surface and groundwater resources may be potentially of more concern for coal seam gas than for shale gas.

To determine the potential for coal seam gas extraction (and coal mining more generally) to impact on water resources and water-related assets in Australia, the Commonwealth Government has recently established an Independent Expert Scientific Committee (the IESC) to provide advice to Commonwealth and State Government regulators on potential water-related impacts of coal seam gas and large coal mining developments. The IESC has in turn implemented a program of research termed 'bioregional assessments' to investigate these potential impacts. A bioregional assessment can be defined as a scientific analysis of the ecology, hydrology, geology and hydrogeology of a bioregion, with explicit assessment of the potential direct, indirect and cumulative impacts of coal seam gas and large coal mining development on water resources. These bioregional assessments are now being carried out across large portions of eastern Australia which are underlain by coal reserves. Further details of the program can be found at <http://www.environment.gov.au/coal-seam-gas-mining/bioregional-assessments.html>.

This presentation will provide an overview of the issues related to the impacts of coal seam gas extraction on surface and groundwater resources and water-related assets in Australia. The methodology of undertaking bioregional assessments will be described, and the application of this methodology to six priority bioregions in eastern Australia will be detailed. Preliminary results of the program of research to date will be assessed in light of the requirements of the IESC to provide independent advice to the Australian Commonwealth and State Governments. Finally, parallels (and differences) between the expansion of the industry in Australia with that in the United States and Europe will be drawn.