Coal Seam Gas (CSG) Extraction – Environment and Health Impacts.

1. WATER – Not only does CSG extraction require a lot of water to start the extraction process but the aquifer itself has to be de-watered to lower the pressure and allow the gas to escape eg Gastar (Santos bought their 35% shareholding in Eastern Star Gas) on its website boasts of extracting approx 3500 – 4000 barrels (5-6MG) per day since early May as at 16/6/09. Queensland Government figures are based on 100GL per year extraction over a period of 30 years with a resulting conservative estimate of 7.5million tons of salt from the establishment of 35,000 wells. Other figures for this contaminated salt have reached over 50 million tons.
2. Extraction of this water will result in contamination of interconnected aquifers, wells and waterways from the release of the highly saline water, methane migration, heavy metals, drilling fluids and chemical additives. More than 30,000litres of drilling fluids are used in the exploration phase per well of which 30-40 per cent is never recovered and will migrate throughout the interconnected aquifers.
3. Subsidence is an inevitable outcome of the extraction of the saline water as voids are created and earth pressures readjust. Riverbeds and waterways are cracked and damaged allowing methane to escape.
4. Gas companies still have no idea of how to dispose of waste water. The Queensland government has demanded that large scale (from 1 to 100ha unlined) evaporation ponds be phased out over a period of three years. NSW is following suit. Gas companies are looking for solutions such as treatment and re-use of water for forestry plantations and dust suppression. Treatment includes the extraction of salt – for which there are no plans for its disposal. Little mention is made of the heavy metals – which must be kept out of our waterways and food chain. At the moment the DWE are formulating the DWE Inland Aquifers Interference Guidelines. Gas companies are waiting eagerly for this as they see reinjection as a solution.
5. Drawdown on aquifers. In a recent groundwater study for Queensland Gas, drawdown is expected to range from 10m to 85m in the immediate area. Recovery of aquifers, including outlying areas, based on 40 years of production could take up to 150 years. Water tables are lowered. The gas companies have suggested alternatives for farmers who will lose their bores and access to stock and domestic water.
6. Projections for Qld include the establishment of 35000 gas wells in the Surat Basin. This basin sits on top of the Great Artesian Basin. Gas companies drill to well over 1800m deep. We have seen how the pressures of this deep water hold groundwater and shallower basins such as the MDB in place. This amount of drill holes will depressurize the GAB and ultimately drain both the Great Artesian and Murray Darling Basins.
7. Contamination issues. Inter aquifer contamination by drilling fluids in the US have been linked to all sorts of cancers and leukaemia in humans . In America, deer grazing on supposedly rehabilitated gas fields have had to be destroyed due to excessive tumours. There are several examples of ranchers losing cattle while grazing near an operating gas well.
8. Fugitive emissions of methane are not dealt with adequately in environmental impact statements. Methane is 22.5 times more damaging to the atmosphere than CO2.
9. The industry is very badly regulated – probably more so than the coal industry. Under various mining, petroleum and water acts, the extracted water is treated as “waste” or “associated” water. The extractive industries do not pay for this water.
10. Community issues include the debilitation of roads and bridges through huge amounts of truck movements on former farm to market roads. Rural towns are not prepared for the onslaught of workers etc for the establishment of gas fields. Communities grow rapidly, outstripping their infrastructure capabilities. Small rural bushfire brigades are simply not equipped to deal with well blowouts posing a huge threat to the environment and mankind.
11. Property values of adjacent landholders have shown in the States to decline by around 22%. Many landholders in America adjacent to gas fields have found it impossible to sell their properties.

12. Research in the US has shown that fugitive natural gas emission may contain many contaminants, some of which are known human hormone system disrupters and others have non-cancer and cancer end points. More information is contained in http://docs.nrdc.org/health/files/hea_08091702A.pdf

CSG extraction in Australia is a new industry and only reached commercial production in 2004. Where possible I have based my information on the Australian data. However, contamination issues which can take 30 years to emerge, are based on the American experience.

http://qclng.com.au/uploads/docs/eis/appendix/Appendix-3.4-Gas-Field-Groundwater-Report-01.pdf
This is in EIS for the Chinchilla gas field and gives estimates on drawdown of aquifers and lots of other information.

https://www.sciam.com/article.cfm?id=drill-for-natural-gas-pollute-water&posted=1#comments
Several articles discussing contamination issues in America – including methane migration and contamination of drilling fluids.

http://www.impulsehydro.com/cmsAdmin/uploads/coal-seam-gas-water-discussion-paper_May_2009.pdf
Queensland government paper gives estimates of amounts of salt/contaminated waste water.

Please refer to www.ccag.org.au under Coal Seam Gas for further information – there are many relevant articles attached to this website.