
More haste, less speed hits coal seam surge

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The race to advance coal seam projects may have overlooked some vital assessments, writes Mathew Murphy.

Wayne Newton has lived on his Dalby cotton and grain farm in Queensland ever since he married his wife, Bev, almost 33 years ago. Like most farmers, he knows every patch of his 900 hectares. But there is one area which is causing him concern.

Almost four years ago, two employees from Arrow Energy knocked on his door. Newton was not altogether surprised to see them. Other farmers in the area had been tapped on the shoulder and told their land would be used as a pin cushion to drill gas wells. Asian demand for energy had made coal seam gas, once the ugly stepsister to conventional gas, more economical and Queensland is CSG mecca for energy companies.

Newton was told by Arrow that he would receive one exploration well on a non-farming part of his property. In return, he would be paid \$500 a year, a figure much more generous than the average \$250 a well a year most farmers say they pocket.

"We weren't asked as much as we were told that this was going to happen," he said. "It seems inevitable that they will drill more wells but we will have to wait and see."

Newton is concerned about the effect on groundwater. He is one of a number of farmers who are questioning the rapid development of tens of billions of dollars of investment in coal seam gas, and to a lesser degree, the underground coal gasification industries.

First, it is important to understand the differences between the two processes. UCG involves injecting oxidants down a well and over non-mined coal seams. The hot combustion effect converts the coal into syngas, which is transported up a second well where it can be used as a fuel, a chemical feedstock or for power generation. The syngas is a mixture of hydrogen, carbon monoxide, methane, carbon dioxide and, sometimes, nitrogen.

CSG involves hydraulic fracking, a controversial process which pumps fluid, under pressure, into a coal seam to improve the flow rate of the gas. What is released is almost entirely methane, a relatively pure gas which is used domestically to cook food and heat homes. It is the reason CSG is often called a "greener" gas when compared with conventional gas, which has a higher carbon dioxide content.

Fracking is being put under the microscope overseas. In the US, where companies including BHP Billiton are spending billions on shale gas interests, legislation has been introduced called the Fracturing Responsibility and Awareness of Chemicals Act, or the FRAC Act, which requires companies to disclose the chemicals it mixes with water to pump underground.

The potential for connectivity between aquifers in the fracking process is significant. Landholders are concerned about maintaining current water levels and the quality of the water which is left.

In Queensland, the presence of cancer-causing chemicals known as BTEX (benzene, toluene, ethylbenzene and xylenes) has been recorded in wells of both UCG and CSG proponents.

In May, Cougar Energy found traces of toluene in its T5038 monitoring well at its UCG pilot project at Kingaroy. That recording was at 45 parts per billion (ppb). However, a reading of 4ppb was recorded a few weeks later.

In June, its T5037 monitoring well recorded benzene at 2ppb. A month later the Queensland Department of Environment and Resource Management shut down the Kingaroy project. Then, last month, after receiving an independent expert's report highly critical of the technical expertise and operations, the government accepted its recommendation to shut down Kingaroy permanently, unless Cougar could show just cause why it should continue.

Among the CSG players, Australia Pacific LNG, then a joint venture between Origin Energy and ConocoPhillips, announced in October that it too had found traces of BTEX at undisclosed levels from eight exploration wells in the Surat Basin, 300 kilometres north-west of Brisbane.

Australia Pacific LNG was not alone. In November, Arrow Energy also found trace amounts of BTEX at around 1 to 3ppb.

Both companies have denied using the chemicals in fracking fluids.

The Cougar founder and managing director, Len Walker, who has worked on developing UCG for almost 30 years, says he does not believe he is getting a fair go when compared to his more fancied CSG counterparts.

"To put the test results in perspective, the Australian drinking water guidelines for toluene is 800ppb and the highest concentration recorded by the company was 45ppb," Dr Walker said. "The only monitoring bore to return a test result for benzene in excess (of the Australian standard) of 1ppb was T5037 where a benzene concentration of 2ppb was detected.

"And they had been confined to isolated monitoring bores that do not access potable water."

Cougar has submitted a detailed rebuttal poking holes in the independent expert's report and could still appeal to Queensland's Planning and Environment Court.

However, the Queensland government looks set to stare down any challenge. Last week it said the department "is confident the [government's] decision will withstand any legal challenge."

Walker said Queensland was wasting its first mover advantage in UCG.

"If you were to ask anyone in the world three or four years ago, there would have been no doubt that Queensland was leading the world internationally in underground coal gasification," he said. "Now complete uncertainty exists for the industry. The two other main UCG proponents, Linc Energy and Carbon Energy, who are doing their pilot burns, are still unsure about whether they can do any projects until June 2012, so there is no incentive to spend any money."

Arrow and Origin say they are following the state's additional monitoring requirements.

Dean Ellwood, the department's assistant director-general for environment, said the incident at Cougar's Kingaroy site was "fundamentally different" to the recent incidents at CSG sites.

"In the case of Cougar, the well being used to extract gas from the seam cracked, allowing contaminated water to get into a groundwater supply," he said.

Cougar disputes that any amount of groundwater was contaminated.

"In the recent case investigated at Arrow Energy's CSG site there was no evidence of environmental harm, operational failure, or any impact on groundwater landholder bores," Ellwood said. "The circumstances in relation to APLNG are similar to that of Arrow."

Even more worrying than the traces of BTEX is the broader issue of groundwater management, according to Ian Hayllor, chairman of the Basin Sustainability Alliance.

"The BTEX levels are honestly pretty low. It is not greater than what you would get if you were filling up your car or walking down a street in a major city. The concern is that these chemicals got into these wells, and no one seems to know how they got there," he said.

The agricultural lobby group AgForce wants a moratorium on further CSG development until the impacts of fracking can be assessed by a national regulator.

Late last month, the federal Environment Minister, Tony Burke, agreed to visit affected landowners. AgForce has extended the same invitation to the Queensland Environment Minister, Kate Jones, and Mines Minister, Stirling Hinchliffe, who will both share the responsibility for the gas industry's development following Anna Bligh's cabinet reshuffle last month.

In NSW, the companies might be different and the industry less mature than in Queensland, but similar rumblings are already occurring.

"We have to look at different energy sources, but we do need to start looking at the science and at the very least let's get the legislation right," the vice-president of NSW Farmers Association, Fiona Simson, says. "Dollars on the table for farmers are not the answer but they are part of the answer."

On the NSW scene, while AGL is producing its small CSG project in Camden, Eastern Star Gas is likely to be the first to be exporting LNG from Newcastle in 2014 - the same time as its more talked-about Queensland counterparts.

Simson, Hayllor and Newton are all quick to emphasise that they do not want to see an end to the CSG industry. However all feel that the NSW and Queensland governments have raced to advance CSG projects without first carrying out proper due diligence.

For UCG, the future looks less rosy. Linc and Carbon are continuing their respective projects but Cougar says it may have to look overseas to keep the company afloat.

"We will be looking around to advance other projects," Walker said. "It would be incredibly disappointing given all the work that has been done in Queensland for it to come to this."