

Questions and Answers 4 Corners

April 2013



The following questions were provided to AGL by the ABC's 4 Corners program. AGL prepared the following comprehensive answers and submitted them to the program prior to the air date of 1 April 2013.

1. What is AGL's response to recently announced changes to coal seam gas regulation in NSW? How will these impact AGL's current and proposed operations in Camden and Gloucester?

We understand your question to mean AGL's response to the draft State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) (Coal Seam Gas Exclusion Zones) 2013 which was released for public exhibition on 21 March 2013.

There are a number of aspects of the NSW Government's announcement that AGL supports, for example, the further involvement of the EPA and Chief Scientist in regulating the industry. AGL is certainly prepared for our activities to stand up to scrutiny.

AGL is concerned that the draft policy potentially sterilises reserves of natural gas that would otherwise be available to supply the state.

The absence of multiple new sources of gas supply in NSW will also add to substantial upward pressure on gas and electricity prices in the state.

AGL considers it essential that the final policy not only protects the environment, but does not compromise the security of gas supplies for businesses and the people of New South Wales.

The existing Camden Gas Project is not impacted by the NSW government's proposed changes, however the proposed Camden Northern Expansion, which AGL had already put on hold, would be unlikely to go ahead in its current form. The approved Stage 1 of the Gloucester Gas Project is unaffected, however any future stages are likely to be impacted. Until the details are final it is not possible to make an assessment on the impact on future stages.

2. What is AGL's response to the recently announced changes to the federal regulation of coal seam gas, specifically the Federal Government's amendments to the Environment Protection and Biodiversity Conservation Act 1999, which will require federal assessment and approval of coal seam gas and large coal mining developments which have a significant impact on a water resource? Is AGL concerned that these amendments will have an impact on the future stages of the Gloucester Gas Project development?

AGL is confident that existing environmental protections in Australia's national environment law cover the key water concerns announced by Minister Burke in

March. Our projects already go through a rigorous water and environmental assessment at both the State and Federal level, and AGL proactively monitors local water levels and water quality characteristics.

Stage 1 of AGL's Gloucester Gas Project has already been assessed by the Independent Expert Scientific Committee on water issues and subsequently approved by Minister Burke. We expect that further stages of the project would also undergo this rigorous assessment as well as any additional assessment, as part of the proposed Federal regulations.

3. Will stage 3 (*which we understand to mean the Northern Expansion, as we don't refer to stages of this project*) of your development at Camden proceed to production? What is the likelihood of that happening if the proposed NSW 2 kilometre exclusion laws eventuate?

See answer to Q1.

4. What will Camden stage 3 contribute to jobs growth and energy supply?

The proposed Northern Expansion Project has the potential to contribute to the supply of natural gas to approximately 580,000 New South Wales households. It would reduce the reliance on gas supplies from interstate which will be required to alleviate future gas supply shortages.

AGL's Camden Gas Project currently employs approximately 60 local people, 40 per cent of suppliers are from the Macarthur region and spend \$4 million in the local area annually.

5. Without the stage 3 gas development, how will NSW supply be affected and how will that impact on price?

See answer to Q4.

6. Why did AGL not do any baseline water table monitoring for Stages 1 and 2 of your project in Camden?

Through development of our conceptual model and extensive knowledge of the Sydney Basin, we have confidence that extracting CSG from the Bulli and Balgownie coal seams, which lie around 700 metres below the surface, would not impact on the water table or shallow beneficial aquifers that are separated from the coal seam by at least 400 metres, including thick layers of virtually impermeable rocks. Although we had no dedicated water table monitoring bores during Stage 1 and Stage 2 development we did collect a lot of other data which provided valuable proxy information, confirming the low impact of the activities – including volumes of water removed from the coal seams, and water quality of the produced coal seam water, and monitoring of water supply bores that tap the Hawkesbury Sandstone aquifer.

AGL has recently announced the addition and accelerated installation of eight dedicated groundwater monitoring bores (increasing the current number of existing monitoring bores from three to 11) to test water levels and water quality in the project area. AGL will also increase the frequency of water quality sampling at the monitoring bores to quarterly.

7. What percentage of wells have been fraced in stage 1 and 2 at Camden?

79 percent of the wells in the existing Camden Gas project were hydraulically fractured. 62% of these were performed using only sand and water.

In the past four years, no new wells have been fractured as the stimulation technique now used is horizontal drilling.

8. What type of, if any, environmental problems arose from drilling or fracing in stage 1 and 2?

None. Natural gas production from coal seams in NSW remains a low impact and low risk industry. AGL's track record shows that natural gas from coal seams can be safely produced without harm to the environment or human health and can comfortably coexist with other land uses.

9. Locals claim that at times of fracing and drilling, the Nepean River changed in levels and also the fish stock was affected. What is your response to this?

This is simply not true and there is absolutely no credible evidence to support this.

Some technical background:

A fracture stimulation job, when performed, enhances existing fractures within the coal seam, extending approximately 40 metres out from the well bore in the coal seam. Due to the density and structural differences between the coal and the surrounding rocks, the fracture remains contained within the coal seam and could not propagat 700 metres vertically through thick, dense rock, to affect the Nepean River – there is simply not enough energy in the system for this to occur and importantly the size and volumes of the fracture treatment are so small that this is simply not a realistic scenario.

The Nepean River level and quality naturally varies with responses to anthropogenic use and also rainfall/climatic variation. The water produced from the coals during the dewatering phase has the same water saline water signature which further confirms the produced water is native to the coal seam and does not come from overlying aquifers or rivers.

10. Why did AGL fail to do continuous air monitoring at the Camden Gas Project as stated in your press release of 15th August 2012?

The EPA is still considering its regulatory response to the matter raised in item 10. However, in relation to AGL's failure to comply with the environment protection licence condition to maintain and operate its equipment in a proper and efficient manner, the EPA has issued a penalty infringement notice for such non-compliance (see media release dated 13 March 2013). AGL has paid the fine for this penalty infringement notice.

11. Was this is breach of your Environment Protection Licence and if so what were the consequences?

The EPA recently advised that they are currently considering the regulatory response to this licence breach. (See EPA media release of 12 March)



12. Is the Gloucester Gas Project economically viable if only the first stage proceeds to development?

This is a decision yet to be made by the AGL Board.

13. When do you expect the Gloucester Gas Project will begin production?

It is likely that production would commence in 2016.

14. Has AGL decided where the 110 wells will be placed in Gloucester - ie have you submitted the DII location sheets identifying the final location of wells? (NSW Final Instrument Approval - Project Design Requirements – 2.1 p6) If so, can you please provide a copy.

No documents have been submitted to address the project approval conditions. The planning of well sites is still being undertaken. These will be based upon geological data, landowner consultation, and surface/environmental constraints.

15. Why is the Gloucester Gas Project important? - You've stated that it will "ensure the security of gas supplies to meet NSW's growing energy needs". Can you please expand on this?

New South Wales is facing a gas supply crisis as existing supply contracts roll off between 2014 and 2017.

This roll off of contracts will coincide with very substantial increases in demand for gas as LNG export projects come on line in Gladstone.

The absence of multiple new sources of supply in NSW will add to substantial upward pressure on gas and electricity prices in the state. The Gloucester Gas Project will help address this potential future gas shortage in NSW.

16. Where will the gas from this project be utilised? Is there a domestic or international contract?

Domestic only. The natural gas from all of AGL's NSW gas projects is to supply our NSW business and residential customers.

17. Some community members in Gloucester have raised concerns about the impact of the Stage One 110 wells, and the entire project's 330 wells, on the local environment, waterways, and the local farming and tourism industries. What is your response to claims the Gas Project will "industrialise" the valley? What is your response to claims the project will threaten Gloucester's \$30 million tourism industry by impacting on the beauty and tranquillity of the area?

AGL's track record shows that natural gas from coal seams can be safely produced without harm to the environment or human health and can comfortably coexist with other land uses. AGL is flexible in its CSG activities and placement of infrastructure, so we can work with the local community to minimise impact to other land uses and visual amenity.

The project will contribute to jobs and economic investment in the region.

It should be noted that the Environmental Assessment is for 110 wells for Stage 1. Based upon current knowledge, approximately 200-300 (not 330) wells are likely to be developed in the Concept Area over a 20 year time period.

18. As you are aware Professor Philip Pells has reviewed your (Parsons Brinkerhoff) Phase 2 groundwater study and believes the model is inadequate and flawed. What is your response to Professor Pells' peer review?

Specifically, Professor Pells believes a much larger study encompassing the groundwater systems for the entire lease area is needed, because the geology is so complex and differs from area to area. What is your reaction to this? Why didn't AGL study the whole lease area in its Phase 2 groundwater study? Professor Pells says only 0.25 per cent of the total project area was studied for the Phase 2 study. (I note that on January 25, 2013 AGL Upstream Infrastructure Investments made a submission to the NSW Department of Planning raising concerns that the EIS for the nearby proposed Stratford Extension Project (p7 of letter) "does not provide a detailed conceptual model for all of the strata and the whole Gloucester Basin. A broader understanding of basin-wide flow systems would have been useful to more fully assess the Stratford Extension Project from AGL's Gloucester Gas Project perspective".)

Professor Pells also criticised the Phase 2 study for not conducting any numerical analysis of the model presented. Why wasn't the numerical analysis conducted? Professor Pells ran the data himself, and found your conclusions - that there was no evidence of natural connectivity between shallow and deep groundwater systems - were not supported by your own model. In fact, Professor Pells found that the near surface groundwater headed in a downwards direction towards depressurisation - significantly reducing the baseflow that feeds the streams of the Gloucester valley. What is your response to this?

Attached is a transcript of an interview last year on ABC Radio with AGL Manager of Hydrogeology, John Ross. It covers much of your queries above. I should point out that Pells' critique is now out of date as much of the work that AGL planned in 2012/13 which Mr Pells alluded to in his critique, have now been completed or have commenced.

19. The NSW Parliamentary Inquiry into Coal Seam Gas heard evidence at Taree on Monday 31st 2011 from the general manager of MidCoast Water Robert Loadsman - (starts p23 of transcript:
<http://www.parliament.nsw.gov.au/Prod/parliament/committee.nsf/0/6C9369E0B303F26ECA2578F600171B74>)

Mr Loadsman raised concerns that the Manning District Water Supply Scheme draws water from the catchment downstream of the proposed development. He said there was no mention of the potential for impacts on drinking water quality in the Environmental Assessment for the project, and no mention of the Manning District Water Supply Scheme at all. Why wasn't the risk to drinking water considered in the environmental assessment for the project?

Also, Mr Loadsman mentions (p23) the project approval includes a provision for a river discharge. Is this still the case?

The Gloucester Gas Project environmental assessment report did not "consider impacts on drinking water quality downstream of the proposed discharge" (see 4th paragraph of Mr Loadsman's response in the transcript) because this Manning District Water Supply river Scheme was too far downstream to be considered at risk from the project. There is no local draw on the Avon River as a drinking water supply – it is a known saline catchment.

The Manning District Water Supply Scheme is more than 40 kilometres downstream of the Avon River and there is no risk of diminishing the volume or impacting the quality of the Manning River flows at this location.

The Part 3A concept plan statement of commitments for the Gloucester Gas Project provides for treated water discharge during periods of high rainfall. There is no approval under the Part 3A project conditions for river discharges at this time. The relevant environmental protection licence relating to the discharge has not yet been issued. In any event, any discharge will not result in any risk of an impact on drinking

water quality because discharges would be to a high standard compatible with the natural water quality during high river flows.

(Question 19 – supplementary question) Can you please provide evidence to support your statement that there is no risk to the Manning District Water Supply Scheme, and provide further explanation as to why it was not considered in the environmental assessment but rejected as a risk prior to this.

AGL’s concept plan approval allows for the release of a small quantity of high quality, drinkable water into a small area of the upper Manning River catchment. There is no risk of diminished source water quality for the Manning District. Our project would not impact the Manning River flows or the Bootawa Dam water scheme operated by Mid Coast Water.

The Part 3A concept plan statement of commitments for the Gloucester Gas Project provides for treated water discharge during periods of high rainfall and runoff. Before this could happen, we would be required to obtain an Environmental Protection Licence (EPL) – we do not have this EPL at this time.

The water that would potentially be released as a licensed discharge in the Avon River catchment:

- **Would be free of contaminants**
- **Would be of HIGHER quality than some surface water runoff across the wider catchment.**

CSG produced water from the Gloucester Gas Project:

- **Is slightly salty groundwater that would have naturally drained back to the catchment as a baseflow**
- **Would first be treated by passing it through a membrane to make it less salty.**

So, we would actually be improving the quality of the water in the Avon River catchment if stream discharges occurred.

The volume of water that AGL would potentially release would be extremely small in comparison to the flows in the lower Manning River– less than .05 per cent of typical high flows. If it were to happen at all, a release would occur only during a high flow event (i.e. lots of rain), so this fraction of a per cent would be even less.

Finally, the Manning District Water supply is drawn from a very large catchment area. Our project area is a very small per cent of this catchment area.

Further proof of this last point: the NSW Office of Water operates the largest water monitoring network in Australia to provide reliable and timely water information critical to managing water across New South Wales. The closest (upstream) gauging station to the Manning District Water supply collection point is the Manning River at Killawarra. Real-time data for it can be viewed here:

<http://realtimedata.water.nsw.gov.au/water.stm> . This data shows the catchment area of 6560 square kilometres. The closest gauging station to our project area is the Avon River D/S Waukivory Creek. Real-time data for it can be viewed here:

<http://realtimedata.water.nsw.gov.au/water.stm> . This data shows the catchment area of 225 square kilometres. In other words, the project is on a mere 3.5% of the catchment area and does not provide a major contribution to flow in the lower Manning River.



20. How does AGL plan to dispose of the estimated 2 megalitres of produced water each day?

The 2 ML of produced water per day (averaged over a twelve month period) is the maximum produced water volumes at the start of the Stage 1 project, and over the life of the project, the annual produced water volumes are expected to be much less. The brackish water is expected to be either blended and irrigated or desalinated and irrigated. All irrigated waters are expected to be compliant with ANZECC guidelines and/or catchment water quality criteria.