Namoi Water

Submission to NSW Department of Planning and Infrastructure

Photo: Pilliga CSG drilling site

Dewhurst Gas Exploration Pilot Expansion

Namoi Water: Supporting sustainable water use in the Namoi Catchment and representing water users in the Peel, Upper and Lower Namoi Catchment Area.

Executive Officer: Jon-Maree Baker
PO Box 548
Narrabri NSW 2390
PH: 02 67925222
EM: eo@namoiwater.com.au
Web: www.namoiwate.com.au

Introduction

This is a formal submission to the NSW Department of Planning and Infrastructure on the Dewhurst Gas Exploration Pilot Expansion.

Namoi Water would like to take this opportunity to comment on the application by Santos to expand their gas exploration pilot activities. This is the first of the Santos exploration projects to go to the Department of Planning and require a full Environmental Impact Statement. We hope that the Department uses this opportunity to address the concerns of the public, local councils, NSW Office of Water, NSW Environment Protection Authority (EPA) and NSW Office of Environment and Heritage (OEH) regarding the approach that Santos has taken to gain State Approval.

Namoi Water represents regulated, unregulated and groundwater users in the Peel, Upper and Lower Namoi valley. Our members are major contributors to the sustainability of local towns and the region's economic development. As employers of a significant workforce, collectively our members' contribution is well documented in the multiplier effect in terms of economic value.

General Comments

Santos has in the resent past submitted a number of applications to both Local and State Government Agencies for a variety of activities relating to Coal Seam Gas *(CSG)* development in the North-West.

The Office of Environment and Heritage have stated they remain *"concerned about the piecemeal Part 5 assessments being undertaken for coal seam gas (CSG) exploration, particularly in the Pilliga Forest... On 10 April 2013 Santos also announced a proposal for establishment of 400 production wells in the Pilliga Forest which will involve approximately 600ha of clearing... OEH recommends that the cumulative impacts of the proponent's proposed activities are comprehensively assessed via a single environmental impact assessment to demonstrate the likely significance of impacts instead of multiple separate assessments for individual components".*

This is particularly relevant to the impact of the developments on the water resources. The Environmental Impact Statement (EIS) does give an over view of the CSG infrastructure in the region. The project to date covers an extensive area of the Shire with various transport corridors and multiple sites for potential spills and contamination.

Submission Comments

Socio-economic factors

The EIS justifies the proposed expansion of the pilot by the creation of new jobs and the need to supply NSW gas demand.

The EIS identifies that during construction 11.2 FTE positions (of which it is proposed that some will be fly-in-fly-out) during construction and only 2 FTE positions during operations. The EIS then applies an economic multiplier to create a further 16 indirect jobs. However as the EIS states that the employees to be housed at the Drillers Camp at Westport (for the 15 weeks of the construction phase and are likely to be specialised personal) this multiplier effect will be reduced. It is therefore unlikely that a significant portion of the identified benefits of the project will be accrued in the local community.

A commitment by Santos that they will seek to procure at least 50% of goods and services from local and in particular locally owned business should be included in the consent.

The justification for the project is that gas will be needed to supply NSW customers as current contracts expire. There is evidence to show that the demand for gas in NSW in recent years[1] is falling. The increase in the export potential of Liquefied Natural Gas (LNG) from by the planned new LNG export facilities in Gladstone has the potential to limit access to future gas supply for NSW. This factor should be considered when addressing access to supply for NSW consumers.

The Australian Energy Market Operator (AEMO) has projected LNS demand of over 2100 PJ by 2017[2] (15 times NSW demand and 3 times national demand). However these AEMO projections are based on 9 LNG trains being built. Five of these are committed and under construction on Curtis Island near Gladstone.

In a presentation in 2011[3] Santos showed the possibility of a pipeline to connect the NSW gas fields to the Queensland network. It is worth noting that as a result of the growing number of export LNG trains, even if large areas of NSW were covered in CSG infrastructure, the increased CSG mining would be very unlikely to result in secure a gas supply for NSW. More local gas exploitation could simply lead to more LNG trains being built and export capacity being expanded.

Groundwater and water treatment

Namoi Water has a number of concerns with the information in the EIS in regard to water resources. There is a potential for contamination of the Groundwater systems during construction and operation. The treatment and disposal of the produced water is also of concern.

The EIS identifies the following potential impacts to groundwater during well construction:

- Increased vertical connection between deep and shallow aquifers/saturated strata, potentially leading to contamination of good quality groundwater by poor quality groundwater
- Contamination of the aquifers by drilling fluids if these are lost from the drill hole into the surrounding strata
- Contamination of groundwater due to spills of oil, fuels or chemicals if they occur and are not cleaned up appropriately

The EIS states that all *'chemicals used* during drilling will be non-toxic'. However in the this point was raised as concern in the application for the Drilling Fluid Treatment plant and although the volume does not constitute a need for assessment under State Environmental Planning Policy No 33 – Hazardous and Offensive Development, the chemical mix cannot be considered to be non-toxic. The EIS states that all the drilling fluid will be removed however the potential for losses exists and the solution is to mix '*loss circulation material to prevent further losses'*. The EIS does not explore the impact

[1] Australian Financial Review, AGL Gas Bank to soften price hikes, 12 June 2013
http://www.afr.com/p/2100/agl_gas_bank_to_soften_price_hikes_c2KgbsTBDoHTIHPKUl8mdK
[2] AEMO Gas Statement of Opportunities 2012
http://www.aemo.com.au/Gas/Planning/Gas-Statement-of-Opportunities
[3] Eastern Australia Business Unit
Capturing the Future
Moomba Investor Trip: 26-27 September 2011

that the loss of these chemicals will have on the aquifers that the drill is/has pasted through.

The Director General Requirements have not been met by the EIS in that there is no adequate baseline monitoring until the monitoring network is installed and data collected. The EIS provides a summary of existing groundwater quality based on samples collected in the Gunnedah and Narrabri region. This does not provide an assessment of the impacts of the project on water quality. This is a significant omission given that impacts to groundwater quality are one of the areas of greatest community concern. An assessment of the impacts of drilling on groundwater quality needs to be undertaken to determine whether drilling fluids will be released to the environment at toxic concentrations.

We are greatly concerned about the potential impacts of CSG exploration on the groundwater quality and quantity within the Great Artesian Basin (GAB) Pilliga Sandstone aquifer beds and the Quaternary (recent) unconsolidated alluvial aquifers beds. The GAB aquifer beds within PEL 238 and PAL 2 provide water for stock and domestic purposes. Of equal concern is that the CSG Program is located above the Pilliga Sandstone recharge beds to the GAB, which are unique to the region. Any activity which intercepts and potentially removes water from the recharge areas, or potentially allows cross contamination of GAB waters with the poor water quality from the coal seams should be scrutinized in light of these potential risks. Any degradation of the GAB beds may have significant consequences to this unique and highly valuable water supply.

The following are comments on the CH2MHill Model that has been used by Santos to model the cumulative impacts on groundwater, have been made by Hydrogeologist Andrea Maloney in her submission to the Federal Referral of the Santos Narrabri Exploration Project. This is the same model used in this report; here is a summary of the findings:

1. *The Conceptual diagram of the Hydrogeology of the area is at odds with their geological and topographic maps.*

2. *Their conceptual ideas of how some of the hydrostratigraphic beds interact with each other, including the aquitards and aquicludes, are a cause for concern. Especially given this information forms the basis of the numerical model. Therefore, I have no confidence in the model outcomes.*

3. *I do not agree with the designation of the Pilliga Sandstone aquifer as a Medium sensitivity receptor as 'they are locally unique but have few regional equivalents'. This statement is ambiguous. The Pilliga Sandstone aquifer Recharge Beds are very limited regionally too and should be given a High sensitivity status anyway.*

4. *Drawdown of the Pilliga Sandstone leaky confined to confined aquifer potentiometric surface is significant when pumping commences. When the poteniometric surface is lower than the Bohena Alluvial unconfined aquifer water table then leakage from the alluvial aquifer down to the Pilliga via the Keelindi Beds would have an effect on the water quality of the Pilliga sandstone aquifer and the lowering of water levels in the Bohena alluvial aquifers. This means domestic bores could start to produce lower quality water and sensitive ecosystems would be adversely affected due to lack of water in the alluvial aquifer.*

5. *The absence of any ground truthing of the numerical models hydraulic parameters and the process by with the numerical model was developed does not give me any confidence in the model outputs which forms the basis of their arguments that the Bohena Alluvium and the Pilliga Sandstone aquifers will experience drawdowns of less than 0.5m (which they say only manifests over 500 years or more)*[4]*.*

The short comings of the model and the assumptions used give rise to doubts about the robustness of the results obtained.

Depressurisation of lower part of the deepest and less productive Gunnedah-Oxley Basin Groundwater Source (called the 'Gunnedah Basin' in the EIS) is predicted to occur. The EIS reports that there are no known bores extending into this lower porous groundwater source in the Exploration and Appraisal Program area (covered by Petroleum Assessment Lease 2 and Petroleum Exploration Licence 238). Bore census information is not presented in the EIS to verify this conclusion. A recent bore census covering all of the Exploration and Appraisal Program area needs to be provided.

The EIS identifies that there are five registered extraction bores within 5 km of the wells. However, the predicted drawdown extends beyond 5 km. All bores within the potential drawdown area should be identified and potential impacts quantified.

While the EIS's conclusion that there will be no significant impacts to groundwater pressure or flows may be correct, this will need to be confirmed as part of a rigorous groundwater monitoring program. To verify the results of the modelling ongoing monitoring of the area needs to be conducted and the results made public in a timely manner. The program of the implementation of the monitoring should be in place before any further wells are constructed. As part of this program the process to rehabilitate and repair the damage to the aquifers needs to be included.

Risk Management

The risk management of the project involves a number of areas. The protection of the aquifers from contamination during drilling, and during extraction of the gas has been addressed in the section above.

Although the EIS states "There are no plans to use the process of hydraulic stimulation (also known as hydraulic fracturing or fracking) within the E&A Program." Should this change, ie "fracking" is proposed, it should first undergo a thorough separate assessment.

The protection of the surface water from contamination from the produced water is of high importance considering the history of spills at sites in the Pilliga. The produced water is to be transported to the Leewood site. However there are few details of the disposal of the treated water and the solid waste. The transfer to a receival site in

[4] Reference Number: EPBC 2013/6918
Title: Santos NSW (Eastern) P/L/Exploration (mineral, oil & gas – non-marine)/PEL 238 & PAL 2, Narrabri Area, Gunnedah Basin/NSW/Energy NSW Coal Seam Gas (CSG) Exploration & Appraisal Program
Andrea Maloney, Hydrogeologist - submission to the Federal Referral of the Santos Narrabri Exploration Project

Sydney is to be determined. What confidence can the community have that the waste will be correctly handled?

The EIS concludes that as there are no registered surface water users that use the ephemeral streams then there will be no impact of the proposed activity. However, just because there are no registered water licences, this does not mean there is no extraction for stock and domestic occurs. Thus users of the water that does flow from time to time can be impacted by rain events. If these ephemeral streams are contaminated then when they are flush by rain events the concentration of contaminates could be high.

To date the rehabilitation of sites has not been successful. Before further damage to the environment occurs the process for rehabilitation should be verified that the landscape can be returned to the predrilling conditions.

Conclusion

Namoi Water appreciates the opportunity to comment on the EIS. Further information is sought to inform the local community of the potential impacts of the project, particularly the monitoring and contingency measures that will safeguard the environment from unanticipated impacts.

Namoi Water also seeks further commitments from Santos regarding the buy local program. We trust that the Department of Planning and Infrastructure (and the Planning and Assessment Commission if making a determination) will carefully review the Namoi Water's submission on the project in the assessment of the project and the appropriate conditions that should be attached to any Project Approval.

Submission ends.