

<b>Pilliga Study Trip</b>	
<b>Notes taken by Robert Bisley and David McNamara</b>	<b>Date:</b> Wednesday 22 <sup>nd</sup> , Thursday 23 <sup>rd</sup> and Friday 24 <sup>th</sup> of November 2017
<b>Project:</b> Coal Seam Gas	
<b>Location:</b> Coonabarabran, Pilliga State Forest and Narrabri	
<b>The purpose of the meeting:</b> To inform Commissioners about the potential impacts of coal seam gas processes.	
<b>PAC Commissioners:</b> Lynelle Briggs, Roger Fisher, Ilona Millar and John Hann <b>PAC Secretariat:</b> David McNamara and Robert Bisley	
<p>22<sup>nd</sup> of November 2017 – Pilliga Pottery, Blue Wren Café Attendees: Jane Judd, Meg Leathart, Maria Ricketts, Eva Rickett, Anthony O’Halloran, Phil Spark</p> <p>The following matters were raised with the Commission:</p> <p>Background on North West Alliance:</p> <ul style="list-style-type: none"> <li>• The North West Alliance (NWA) includes a number of individuals from varying backgrounds including farmers, Aboriginal people, environmentalists and business people.</li> <li>• The NWA has enabled environmental groups from individual towns to come together under a common banner against CSG.</li> <li>• The NWA represents towns of all sizes ranging from major regional centres such as Dubbo, to towns of small sizes such as Mullaly.</li> <li>• The issue of CSG, as well as climate change, has bonded many residents.</li> <li>• Opposition to CSG within the region has helped build the community.</li> </ul> <p>History and position of Blue Wren Café:</p> <ul style="list-style-type: none"> <li>• The property has changed since the owners moved to the property several decades ago.</li> <li>• Climate change has seen the area become a lot hotter and drier.</li> <li>• In recent years, the area has seen some ferocious bush fires pass through the region.</li> <li>• CSG threatens water supplies. Access to water, particularly the Great Artesian Basin, is extremely important. Without access to water, it would not be possible to survive on an isolated rural property.</li> <li>• The Pilliga region is a unique mix of soil types. Predominantly sandstone with thrusts of volcanic soils.</li> <li>• Water is particularly critical for the forest types that have developed in the Pilliga, with around 600-800ml of rainfall received each year.</li> <li>• The Pilliga is home to around 50% of the flora types within the state. Wild flower tours contribute to local tourism.</li> <li>• From a botanist’s point of view, there is concern that the CSG proposal will: <ul style="list-style-type: none"> <li>○ Result in significant amounts of excess salt;</li> <li>○ Fragment the Pilliga with numerous road access trails and CSG well sites;</li> <li>○ Encourage the growth of non-local species and wild grasses along the edge of fragmented roads;</li> <li>○ Increase bushfire risk; and</li> <li>○ Increase risk to volunteer fire fighters in an emergency attempting to navigate through unmarked CSG trails.</li> </ul> </li> </ul>	

- Well sites and new roads will effectively privatise more parts of the state forest.
- Concerns have been raised over a potential spill zone that has not been rehabilitated properly. The toxic water has harmed a lot of organic matter and led to several exotic species flourishing.

22<sup>nd</sup> of November 2017 – Siding Springs Observatory

Attendees: Jane Judd, Meg Leathart, Duncan Graham, Peter Verwayen, Malcolm Hartley

The following matters were raised with the Commission:

- Siding Springs is the best place for optical astronomy in Australia due to a number of factors such as low light pollution, latitude and longitude, elevation and climactic conditions.
- The area including and around Siding Springs was identified as Australia's first dark night sky park.
- There are 57 telescopes at Siding Springs that are owned by many countries; more are planned.
- The telescopes are located on the second highest peak at Siding Springs.
- Siding Springs is the second largest drawer of tourists to the area and employs 35 individuals.
- The Australian National University has invested hundreds of millions into the facilities.
- The national park next to Siding Springs has been particularly useful in minimising light pollution.
- Coonabarabran High School benefits greatly from connection and proximity to the observatory. There are several programs and initiatives that link and provide students with exposure to the observatory. As a result of the programs, the high school sees strong academic results.
- Flares in the proposed CSG field will be active within sight of the observatory. The primary concern relates to the scattering of light associated with the light from flares.
- At the moment, Siding Springs has not been impacted significantly by light pollution from surrounding developments. However, the gradual build-up of lighting pollution that will result in the observatory potentially losing its ideal lighting conditions and its advantage over other international sites.
- There would be adverse consequences for Australia's research efforts in this field and flow-on economic and social effects for Coonabarabran and the region.
- There is another proposed gas project at Tooraweenah that Siding Springs is also concerned about.
- It was considered that the applicant of the CSG proposal could potentially enclose the flares or explore other options such as capture to mitigate the light impacts.
- The observatory has tried to make the applicant aware of the possible mitigation measures.

23<sup>rd</sup> of November 2017 – Pilliga State Forest

Attendees: Jane Judd, Meg Leathart, Margaret Fleck, David Paul, Peter Thompson, Helen Stevens, Malcolm Hartley

The following matters were raised with the Commission:

First stop – water dam

- The Pilliga is home to a significant number of bird species.
- 195 bird species have been identified in the Pilliga over the last 5 years.
- The Pilliga has been identified as part of the Briggilow Belt which is one of 19 biodiversity 'hot spots' in Australia.
- It has been identified as home to several vulnerable species such as the painted honey eater and diamond fire tail.
- As there are only approximately 800 bird species in Australia, around 1/4 of Australia's bird species are represented in the Pilliga.
- Small birds find the Pilliga's shrubbery understory to be a particularly attractive environment.

- In the northern part of the Pilliga, partnerships have been established to construct a feral proof fence to encourage the reintroduction of locally extinct mammals.

#### Second stop – spill site

- The site was viewed from outside Santos security fences.
- The cause of the spill from the well-site is unknown but appears to be related to contaminated water spilling 100 metres or so from a breach in the dam wall
- Santos has not provided a formal response to the spill.
- Plants planted by Santos within the spill zone are not endemic species for the area and required irrigation.
- The slow rate of regeneration suggests there may have been chemicals involved with the spill water.
- The land is regenerating better towards the end furthest from the origin of the spill.

During the visit and as the convoy of vehicles left the spill site, visitors were photographed by a Santos employee, who then followed the convoy for some kilometres through the State forest, before the Chairperson stopped the convoy and asked the Santos employee to stop following the convoy and delete any photographs taken. The Santos employee departed in his vehicle.

#### Third stop – Bibblewindi gas well rehabilitation

- The site was viewed from outside Santos security fences.
- Bibblewindi is an example of a partially rehabilitated site.
- Even though the site has been partially rehabilitated, the area close to the concrete pad appears to have been subject to spillage and contamination.
- Rehabilitation is progressing after 10 years, however the level of ecological diversity is not close to what naturally occurs in the Pilliga forest.
- The flora planted close to the well has created its own micro climate where only the hardiest species can survive.
- Small levee banks were erected around the well as a precautionary measure.

#### Fourth stop – Bohena Creek water hole

- The waterhole is groundwater fed and permanently holds water.
- The waterhole sits around 2-3m below Bohena creek and shows that the alluvial aquifers sit just below the surface.
- There are around 30 similar permanent water holes that exist along the creek.
- Mussels spawn within the water holes. Another water hole is a registered midden site.
- The EIS says that the water holes have a medium reliance on rainfall, whereas in reality they are filled from the alluvial aquifer.
- The EIS also states that the water holes contain low levels of biodiversity. A study by UNE staff found significant levels of biodiversity, with around 12 species of stygofauna at around 20 locations.
- The EIS states that, as a result of CSG mining, there will be approximately half a meter drop in the Namoi alluvial water level, which would significantly damage the water holes.
- Lower water level may give rise to outbreaks of blue/green algae
- Water refuges are also important to bird life. Birds drink from the water holes and if the water holes were contaminated or their salinity was increased or they dried up, it could severely impact on the health of birds.
- It is unclear how the proposed impacts to the waterways could be offset.

#### Fifth Stop – Leewood

- Viewed from public road.
- Regeneration area for pasture, utilising produced water from treatment facility
- Soil profile is poor shallow soil with clay barrier.
- Sandy soils are naturally acidic and the introduction of salt will not be tolerated by traditional local plant species.
- Plants such as lucerne may thrive for a period of time until salt levels build up. This location will be a very interesting test case as to how long that takes in this region.
- The clay barrier effectively caps salt flow through the system, but it will leach back up over time with CSG.

23<sup>rd</sup> of November 2017 – Narrabri – Namoi Water office

Attendees: Jane Judd, Jon-Marie Baker, Steve Carlin, Matt Norrie, Mark Handlyn, Anne Kennedy, Andrea Broughton, Sally Hunter, Tony Pickard, Sarah Ciesiolka

The following matters were raised with the Commission:

- The need for more certainty around land use and planning at State Government level.
- Greater transparency of the PAC's processes (and possibly how the terms of reference are developed) would provide the community with some certainty.
- Namoi water represents water license holders within the Namoi catchment.
- Significant amounts of water modelling and water use reform have occurred in the valley in the past 15-20 years.
- Landholders within the catchment have already experienced considerable reductions in their water entitlements.
- There is a lot of work being undertaken to preserve existing water resources within the region.
- There is concern that the CSG application could undermine many of the water saving measures and that the wider impacts of the project (ie. outside of the project area) will not be considered or assessed as part of the project.
- Several landowners relayed the reliance of their farm businesses on ground water and their personal experience of the difficulties associated with co-existence with extractive industries.
- It is recommended that when assessing the Santos proposal, the project should encompass the wider Petroleum Exploration License areas and impacts on the Great Artesian Basin.
- The Santos project still contains many uncertainties around water modelling.
  - Santos is not collecting water data as accurately as it should.
  - When preparing the response to submissions, Namoi Water wouldn't be satisfied if Santos rehashed old information.
  - There is not much faith in the accuracy of the predicted 0.5m drop in ground water levels.
  - Santos hasn't completed thorough shallow aquifer water monitoring. It only presently monitors at 6 sites.
  - Santos is not equipped to undertake monitoring requirements. This includes the measurement of underground flow rates and the modelling that comes with it.
- Queensland, when approving CSG, were better placed to monitor changes to groundwater.
- Namoi Water requests EPA become the authority for the monitoring of groundwater, and not rely on the applicant to do it.
- If the project was to proceed there would be a significant impact on use of water locally.
- There is risk of contaminating local aquifers, chemically and also through the introduction of bacteria.
- Contamination is certainly possible from the drilling fluids used to drill the well holes.

- Contamination can also lead to the growth of blue-green algae blooms.
- Santos has dismissed any potential water impacts associated with fracking.
- Impacts on aquifers are hard to detect until after any damage has been done – what is the early warning system?
- Santos proposes to discharge water directly into Bohena Creek. Bohena Creek doesn't flow regularly, however it does flow into the Namoi, then Barwon, then Darling rivers.
- Santos' discharge into Bohena Creek during dry periods is likely to flow into the alluvial system.
- The impacts on the alluvial system will shift through to the Great Artesian Basin, resulting in potential contamination of the recharge area.
- Relying on make good provisions for stock and domestic water supplies would 'be a fail' given the limited response options and lag time between the impact and make good requirements.
- The proposal will only provide minimal economic benefits to the local community.
- There will be few jobs available for local residents, however specialists may move to the area.
- One problem is that the community may see a transition of the local workforce currently working in agriculture to jobs in CSG. This could detract from the security of agriculture to the region.
- The region has seen previous well intended conditions/mitigation measures applied to other projects determined by the PAC which have not been implemented very well in the Narrabri area. It is requested that the writing of the conditions be further tightened to not allow applicants to avoid their commitments during the construction and operational phases of the project.
- Namoi Water has previously been part of Santos' consultative committee. However, the committee has not been active in developing the project or in preparing the response to submissions.
- The NSW Government needs to develop a long-term future for gas extraction within the region.

23<sup>rd</sup> of November 2017 – Bundock Farming Co - Potato Farm

Attendees: Jane Judd, Margaret Fleck, Sarah Ciesiolka

The following matters were raised with the Commission:

- Bundock Farming Co is the largest potato producer in NSW, producing 50 million potatoes; a million kilograms of peanuts annually and enough produce (wheat) to make 3,000kg of bread. The annual business turnover is \$50 million.
- 350 tonnes of potatoes can leave the property in a single day.
- The farm relies entirely on groundwater to irrigate produce.
- Significant investment has been made in infrastructure (pivot irrigation)
- If the groundwater is contaminated buyers would potentially not accept the produce due to the risk to consumers.
- Even though the farm is located 6km outside the planned project area, it is no longer possible to obtain insurance against the impacts of loss of water or water contamination.

24<sup>th</sup> of November 2017 – Narrabri Shire Visitor Information Centre park

Attendees: Sally Hunter, Mal Donaldson, Alistair Donaldson, Stuart Murray, Geoff O'Neill, Pat Jones

The following matters were raised with the Commission:

- There have been 5 coal mines approved across the region surrounding Narrabri.
- There has been a disconnect between the PAC's recommendations on the coal mines and what is carried out on the ground:

- Many of the commitments made within the environmental impact statements for the mines have not been carried out or companies have exploited loop holes to not comply with the conditions of approval.
- Conditions of consent be less ambiguous and there should be no room for varying interpretations of consents.
- There is a need for an independent mediator to ensure conditions are being enforced.
- The Gunnedah Oxley basin hasn't been considered by Santos within their EIS.
- The EIS assumes that the Gunnedah Oxley alluvial system is of very low value water and has no known users, which is incorrect.
- The EIS predicts draw down and reduced pressurisation which would significantly impact on the users of that water.
- The EIS doesn't address the linkage of how the high level aquifers will be impacted when the applicant drills through them to accesses the low level ones. Water flows from the higher-level aquifers to the lower level ones will have a flow on impact.
- Raised concerns with flares remaining active during hot weather and subsequently increasing the threat of bushfire.
- There is a need to comprehensively map fugitive methane and the resulting bubbling of rivers when it finds its way up.
- Concerns with the total values of salt that is proposed to be disposed on the land.
- The applicant's EIS doesn't recognise the social cost of community division that is associated with CSG.
- If the project was approved, many employees would leave local business to join the bigger operations as local operators are unable to match wages.
- Raised concern with the long-term risks to the Great Artesian Basin (GAB) associated with the applicant's stated 1% chance of failure when drilling for CSG. This project potentially opens the door for CSG to spread throughout North-West NSW, just like mining progressed through the Hunter Valley.
- Concern for the impact of associated CSG pipeline infrastructure throughout the region & along the entire route
- The clean and green environment provides Australian farmers a competitive advantage on the global market.
- Seek recognition of the importance of the GAB to Australian agricultural and regional economies.
- Re-pressurisation of existing bores has returned the Great Artesian Basin to arguably the best health it has been since white settlement of Australia.
- Significant concern with the absence of detail in the proposal regarding gas operations and the extent to which details have been deferred to management plans that would be developed post-approval.. The management plans should be completed prior to approval to ensure accountability.