

**INQUIRY INTO PERFORMANCE OF THE NSW  
ENVIRONMENT PROTECTION AUTHORITY**

**Organisation:** Santos Ltd  
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29 August 2014

The Chairman  
General Purpose Standing Committee No. 5  
Parliament House  
Macquarie Street  
Sydney NSW 2000

The Hon Robert Brown MLC,

**RE: Performance of the NSW Environment Protection Authority (Inquiry)**

Santos welcomes the opportunity to provide information to the General Purpose Standing Committee No 5 inquiry into the performance of the NSW Environmental Protection Authority (EPA) as it applies to the following term of reference:

- 1) *b)iii) EPA investigation into ground water contamination in the Pilliga by Santos' coal seam gas exploration*

The facts regarding the Bibblewindi Pond incident in the Pilliga including the EPA investigation and fine are on the public record:

- NSW EPA Media Release Santos fined \$1,500 for water pollution<sup>1</sup> 18 February 2014
- NSW Government Questions and Answers on Pilliga Pond Incident<sup>2</sup> 13 March 2014

**Santos**

Santos is a leading Australian oil and gas producer, supplying Australian and Asian customers. An energy pioneer since 1954, with its origins in the Cooper Basin, Santos is one of Australia's largest producers of gas to the domestic market and has the largest exploration and production acreage position in Australia of any company.

With over 3,000 employees across Australia and Asia, Santos' foundations are based on safe, sustainable operations and working in partnership with host communities, governments, business partners and shareholders.

**Santos' Narrabri Gas Project**

Santos is currently undertaking gas exploration and appraisal activities near Narrabri in north-west NSW. Santos is proposing to develop the Narrabri Gas Project which would involve the commercial production of gas from the Narrabri area. Santos has commenced the process for seeking major project approval under the planning legislation. The Narrabri Gas Project, should it be approved, will deliver substantial quantities of natural gas to the NSW market whilst minimising the impact on the environment, rural communities and agriculture, while creating significant local and regional benefits.

<sup>1</sup> Available at <http://www.epa.nsw.gov.au/epamedia/EPAMedia14021802.htm>

<sup>2</sup> Available at [http://www.resourcesandenergy.nsw.gov.au/\\_data/assets/pdf\\_file/0009/516492/FactSheet-Pilliga.pdf](http://www.resourcesandenergy.nsw.gov.au/_data/assets/pdf_file/0009/516492/FactSheet-Pilliga.pdf)

New South Wales currently receives the majority of its gas from interstate and produces less than 5 per cent of its domestic gas needs. The proposed development would contribute to the NSW economy, including the regional economies, via the direct supply chain and also through the creation of indirect job opportunities. Importantly, the project has the potential to supply up to 50% of NSW's gas requirements which is significant given the impending expiration of existing interstate gas contracts.

The Project is located near the town of Narrabri, approximately 500 kilometres north west of Sydney, within Petroleum Exploration Lease 238 (PEL 238). The Project area covers around 98,000 hectares in the Pilliga and on private land.

Gas extraction activities are proposed to be located in the parts of the Pilliga designated by the NSW Government for logging, natural gas development and other commercial activities as facilitated by the Brigalow and Nandewar Community Conservation Area Agreement, which also resulted in the creation of the conservation areas to the south. Access to the Pilliga will be subject to agreement with the NSW Forestry Corporation.

As some private land is included in the project area, Santos has pledged to only locate well sites on private land subject to the landholders' willingness to be involved with Santos' activities. Santos is a signatory to the Agreed Principles of Land Access<sup>3</sup>.

To connect the gas into the NSW domestic market, a transmission pipeline running south will be constructed.

### **Santos' Water Monitoring Program**

Santos is committed to gathering comprehensive baseline data on groundwater and surface water systems across the areas of our operations.

Santos existing water monitoring program includes groundwater and surface monitoring across more than 300 monitoring locations across the Namoi Catchment area including outside of the Narrabri Gas Project area. Water quality and level data from the program is available to the community via the Santos Water Portal<sup>4</sup>.

The *Water Portal* is a Santos-led initiative to help landholders and communities access the most up-to-date monitoring information, along with long-term trends of water quality and water levels in areas where we operate. The Water Portal is not a regulatory requirement, but the company is leading the way in the provision of this data to the general public.

### **Santos and the EPA**

Santos' existing exploration and appraisal activities in Narrabri are primarily regulated by the EPA, the Office of Coal Seam Gas (OCSG), the Division of Mineral Resources and Energy (DRE), the Office of Water, and the Department of Planning. There are also other agencies which have a regulatory role in gas exploration.

### **Bibbiewindi Pond Incident**

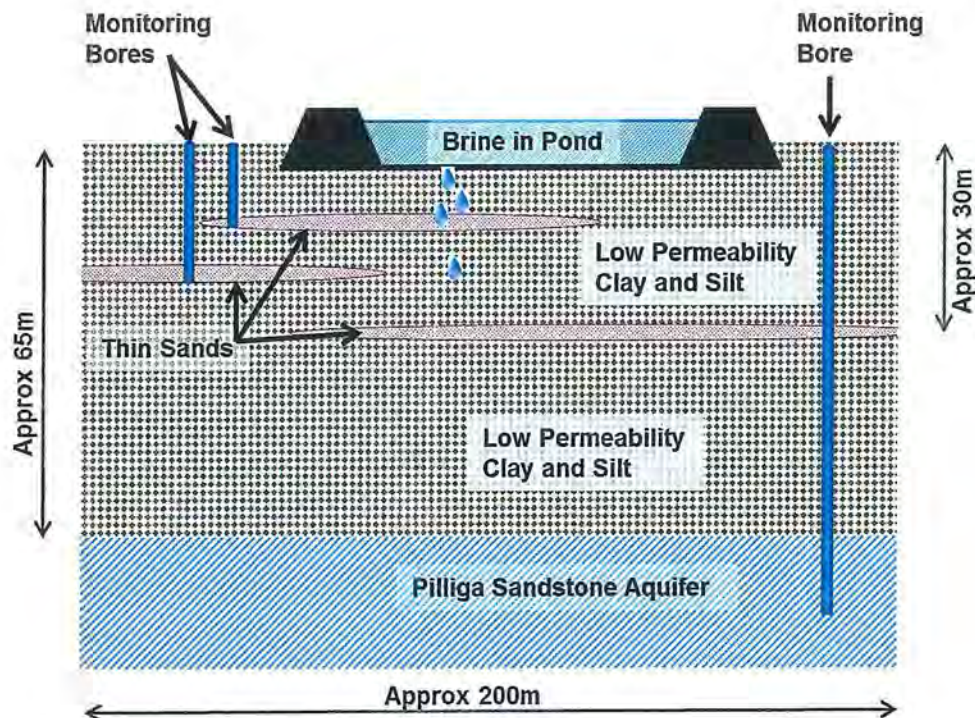
A conceptual cross-section through Bibbiewindi Pond 3 is shown below. From this diagram, it can be seen that the pond sits over several shallow, thin, isolated sand zones. These thin sand layers are not connected to anything and cannot be used as a water source. The Pilliga sandstone aquifer, used by local farmers and residential water users as a water source, is located 65 metres below the ground.

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<sup>3</sup> Available at <http://www.resourcesandenergy.nsw.gov.au/landholders-and-community/coal-seam-gas/community/land-access-agreement>

<sup>4</sup> Available at <http://www.santoswaterportal.com.au/>





Bibblewindi Pond 3 was installed by Eastern Star Gas (ESG) in 2007. In December 2011, shortly after its acquisition of ESG (November 2011), Santos shut in the gas field operations including the Bibblewindi Water Treatment Plant which included Bibblewindi Pond 3 and undertook an operational review of the facilities. Arising from the review, Santos decided the gas field would remain shut in pending redesigning and implementing a revised produced water management plan and Santos commenced a broad rehabilitation program.

As part of the rehabilitation program, Santos conducted an investigation into the integrity of Bibblewindi Pond 3 and potential subsurface impacts. In early 2012, Santos retained an independent consultant engineer to carry-out detailed volume studies on the pond. These studies showed no unexplained volume losses which implied no leakage from the pond. However, to further rule out integrity issues, in May 2012, Santos retained an independent consultant to carry out further investigations. Sensitive electrical testing was undertaken to identify potential breaches in the liner. This testing highlighted electrical conductivity between the pond and surrounds indicating possible small seepage of pond water. The first study remains important as it demonstrates that the volume lost through any pond liner integrity issue is very small.

Santos provided the NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS) and the EPA with a copy of the consultant's findings on 18 May 2012 and notified the agencies that it had concerns about the integrity of the liner of Bibblewindi Pond 3. Between May 2012 and April 2013, Santos undertook further bore monitoring at the Bibblewindi Water Treatment Plant and, in January 2013, installed an additional 8 subsurface monitoring bores near Bibblewindi Pond 3 in consultation with DTIRIS. Santos self-notified the results to the relevant authorities, including DTIRIS and the EPA, on 27 March 2013.

The data obtained from the network of monitoring bores highlighted localised areas with elevated levels of salinity (at a depth of between 20m and 33m from the low permeability clays and slightly elevated levels of naturally occurring trace elements in localised groundwater in the shallow sands below the pond from the monitoring bores. These trace elements included aluminium, arsenic, barium, nickel, strontium and uranium. These elevated levels are largely as a result of seeping water leaching the naturally occurring minerals out of the surrounding soils and clays. The volumes detected are, as expected, very small – on average, Santos cannot extract more than 10 litres per day from all the layers of thin sands.



The localised groundwater where these elevated concentrations were found is very limited in area and volume and the water is not used for agriculture, stock irrigation, human consumption or domestic purposes. The detected concentrations are below those found in surrounding soils. There is no danger to stocks or crops in the area and there is no risk to private bores.<sup>5</sup> Importantly, there was no uranium in the pond water.

The useable high quality aquifer is located 65 metres below the ground, and which is used by local farmers and residential users as a water source, as per the diagram above, remains unaltered and meets the strict government guidelines for freshwater ecosystems. The nearest water bore taking water from this aquifer is more than 4 km away from the pond.

The water in this groundwater system is barely moving and, if left un-remedied, would take more than 100,000 years to reach a useable aquifer bore by which time further dilution will have occurred.<sup>6</sup> Further, the emptying of the pond (as discussed below), combined with the pumping out of the water in this groundwater system through our monitoring bores, means that the volume of migrating fluid will be continually diminishing.

It is important to note that seepage from the pond has not reached anywhere near the useable aquifer down at 65 metres.

## **Uranium**

There was no uranium in the pond water.

Post the Bibblewindi pond incident, there were a number of claims, especially concerning uranium. For context, the highest elevated uranium content found in our monitoring bores was 335 micrograms per litre. Naturally-occurring soils across Australia can be anywhere between 300 to more than 700 micrograms per kilogram. By contrast, the Namoi River sediments have naturally-occurring concentrations of ca. 800 micrograms per kilogram.

This issue does not present a risk to any human, their livelihood or the environment and it will be remedied in time.

## **Rehabilitation**

Santos is committed to rehabilitating the Bibblewindi Water Treatment Plant site, including pond 3, and providing upgraded water management facilities. In late 2012, Santos commenced removal of the reverse osmosis plant and commenced rehabilitation. Santos applied for approval from the NSW Government to replace the water storage facilities at Bibblewindi with a new facility at the Santos Leewood property located outside of the Pilliga. The new Leewood facility involves the construction of purpose built, double lined ponds with an alarmed leak detection system and subsurface monitoring bore network and is to be used to store the water transferred from Bibblewindi pond 3.

Approval was granted for the new Leewood facility in March 2013 and construction commenced in August 2013. The new Leewood ponds have now been built and Santos is currently transferring the contents of Bibblewindi pond 3 to the Leewood facility and this process is nearing completion. Santos is committed to fully rehabilitate the Bibblewindi pond 3 area once the transfer of the contents of pond 3 to Leewood is finalised. As required by the conditions imposed by the EPA on the Environment Protection Licence, Santos is currently pumping water from the affected area near pond 3 and will continue to do so until the contaminates equate to the ambient levels or acceptable levels to the EPA's satisfaction.

<sup>5</sup> [http://www.resourcesandenergy.nsw.gov.au/\\_data/assets/pdf\\_file/0009/516492/FactSheet-Pilliga.pdf](http://www.resourcesandenergy.nsw.gov.au/_data/assets/pdf_file/0009/516492/FactSheet-Pilliga.pdf)

<sup>6</sup> CH2MHill (2013), Hydrogeological Definition Study – Bibblewindi (Final Report), Prepared for Santos Limited

## Conclusion

Santos self-reported the Bibblewindi Pond 3 incident to DRE and the EPA and notified the relevant authorities of the results of the groundwater investigations. Santos co-operated with the EPA investigation, has constructed a new water management facility, is decommissioning the old facility and is committed to rehabilitating the affected area. Santos was fined by the EPA for the incident and is required to comply with the remediation requirements imposed by the EPA in Santos' environmental protection licence.

Santos welcomes the Committee's interest in the Narrabri Gas Project and is available to assist the Committee further if required.

If you have any questions, please contact \_\_\_\_\_, Manager Environment and Water

Yours sincerely,

**Peter Mitchley**

General Manager, Energy NSW  
Santos Ltd