

## MEETING MINUTES

October 9, 2012

**Minutes:** Santos Community Committee – Narrabri Shire  
Tuesday, October 9, 2012  
Narrabri Shire Council Chambers, Narrabri

**Attendance:** David Ross (Chair), Lisa Montgomery, Bevan O'Regan, Tony Pickard, Gerrit Nehrkorn, Victoria Hamilton, Brendon Warnock, Cate McMahon (Santos) Annie Alexander (Santos), Ron Campey, Judy Simmonds, Cathy Redding, Ian Duffy, Glenn Toogood (Santos), Sam Crafter (Santos).

**Apologies:** Ken Flower, Terry Hynch, Michael Guest

	Discussion	Action/By Whom
<b>1. Welcome and introductions</b>	The chair opened the meeting at: 5.39pm <ul style="list-style-type: none"><li>- Chair welcomed committee. Asked members to re-introduce themselves for the benefit of first time members and declare any financial interests they may have in Santos.</li></ul>	
<b>2. Ground rules for our meetings</b>	Chair would like the committee to come up with a list of ground rules for appropriate behaviour to ensure that, while robust discussion is encouraged, it is done in a respectful manner. Ground Rules: <ul style="list-style-type: none"><li>• Not a place for personal agendas, the committee is a place for gaining information not an opportunity to criticise or give negative vibes.</li><li>• Honesty and Proven facts from Santos and from all participating.</li><li>• All speakers must address the chair if they would like to speak.</li><li>• No personal attacks, respect each other's opinions.</li></ul> Chair asks if the committee is comfortable with chair policing the ground rules the committee has developed for future meetings. The committee agreed. <ul style="list-style-type: none"><li>• Respect the experts.</li><li>• Take information back to whatever body you are representing. Remember you</li></ul>	

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are in this role to represent and pass information on, and bring information back to the meeting from the community.

Committee agrees that the rules are acceptable and can be added to at anytime in the future as required.

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### 3. Previous Meeting Minutes

- Chair went through actions from previous meetings.
- Action 8: Chair to get a response from Council to see if Cadastral maps are available for public access. – *Council's response: GPS officer has advised that the cadastral maps are available through the Land & Property Information's (LPI) Spatial Information exchange (SIX) website, <http://lite.maps.nsw.gov.au/> is the best one for new users, where anyone can access Lot\Section\DP details. What aren't available are ownership details, that information can only be accessed with the expressed permission of the owners or as per the Privacy Act 1998.* Completed.
- Action 15: Proposed dates for the site tour: Thurs 15<sup>th</sup> Friday 16<sup>th</sup> November agreed upon for those that can attend. Committee member voices concern that the tour should be as soon as possible to show the full extent of damage before clean up has taken place. Committee member offers to take willing members on personal tour sooner. Santos recommends scheduling visits every 6months for a total overview of operations. Due to time constraints, committee members reach a consensus that the 15<sup>th</sup> and 16<sup>th</sup> November are the earliest dates possible and that one committee member is invited to provide his description to the rest of the committee on the damage that may not be evident at individual sites by the time we visit.
- Committee member suggests that future minutes be recorded and made available for secretary, and for chairman holds onto this record. The committee voted that the minutes remain as they are, believing that they are currently an acceptable record of the meetings but recording them can be revised in the future.

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### 4. Overview of Santos' surface water management Glen Toogood Team Leader Environment and Water for Santos.

- Chair introduced presenter Glenn Toogood, Team Leader Environment and Water for Santos. Glenn is a Hydrologist, 5 years experience of water management, worked for Santos since June 2012.
- Presentation Overview of Santos surface water management. *(See appendix 1 for full presentation)*
  - Hydrogeological Overview of region.
  - Explanation of how water is absorbed and trapped in coal.
  - Surface facilities
  - Water process – transferring from wells to management facilities.
  - CSG water production
  - How water is treated and the water quality (80% treated water 20% residual)
  - Potential uses for treated water
  - Water monitoring and studies.

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### Questions:

- Chair invited committee to ask questions.
- Committee Member asks: where does the Orallo formation start in relation to current Santos operations? Santos responds the Orallo formation would underlie the whole area of operations. Santos class the Orallo as the Alluvium, which in parts will run across the Pilliga formation. There will be some parts that you will see outcropping, if you drive through the tracks around the Pilliga you can see changes to the geology.
- Committee Member refers to Table 7.16 Pg 90 of the Namoi Water Study to a reference provided by Eastern Star Gas and questions where information on pH levels has come from as he believes it is not correct in relation to the typical quality of the local water.  
Santos responds stating they would need to have a closer look at the table but explains Hydrologists investigate changes in water chemistry, they look at where the water is recharging, what causes the increase in dissolve solid state of locations, e.g. heavy rainfall can cause increase in total dissolved solids and

Santos to provide response to questions on Namoi Water Study

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surface water run off.

Committee member clarifies a question from last meeting regarding table 7.11 of the Namoi water study regarding rock formations, Santos clarified in presentation that 'everything is an aquifer'.

- Committee Member asks what is the level of Sulphate reducing bacteria that are brought up from the coal seam? Santos responds not much, typically found in surface water ponds when interaction with oxygen occurs. Committee member believes that it does come from Coal seam. Santos clarifies that it does need ingredients from the coal seam but when it comes in contact with oxygen that is when the process commences. Committee member believes this is contrary to his research.
- Committee Member asks if Santos uses evaporative ponds to get rid of salt? Santos responds that evaporative ponds are not used in NSW and that is not a proposal for this area as it takes up too much land; it is more effective to use chemical treatment. Evaporative wells can no longer be used as a form of water management in NSW or QLD.
- Committee Member asks what happens to the brine, is it stored? Santos says its temporarily store in lined ponds, the two options to dispose of it are deep aquifer injections, or crystallisation. A second committee member asks about reinjection of the brine. If it is reinjected into the aquifer where it came from how can you be sure it doesn't go into the irrigation aquifer? Santos responds saying that to reinject Santos targets areas with poor water quality, they dig a completely new injection hole (essentially an upside down well).
- Second question from committee member is; will Santos have any say or effect on the strategic regional land use plan. Will that determine where Santos can drill? Santos say the aquifer interference policy sits in hand with that strategy and looks at how Santos manages aquifers and land, through this policy Santos will have to answer more questions. This policy is out there to protect beneficial aquifers like the Alluvium. Santos has a model and is confident that they wont

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have an interference with the existing users in the region. Yes there is an interaction between the strategic land management team and Santos, through the NSW Gateway Process.

- Committee Member asks about the pressurisation of the artesian springs in the area. Santos explains that there are Sub artesian formations in some locations where it is free flowing, committee member asks are these totally separate to deep seams, Santos says yes, these deep seams generally tend to pinch out and come to a stop rather than at the surface. Committee Member asks; could reinjected water end up in those hot artesian springs at Pilliga and Burren. Santos: No it would not, the process of reinjection is difficult. Santos explains that every kilometre you go down into the earth you go up 30 °C. If you get a fracture point in a more hard rock basin it will bring up very hot water and Santos does explore as part of their renewable energy process in Central Australian deep bores for geothermal energy.
- Committee member asks about brine management: is it a centralised process, how many processing sites per wells? Santos: around the Pilliga area it is a centralised water treatment for the brine. In the Pilliga there is a network of pipes typically 1.2 metres underground, the size of pipes vary depending of the volumes of water. In isolated areas there may be separate facilities. Committee member asks; how much brine water is produced per year. Santos: overall the figures across the whole fields and full scale production would be about 5 Giga Litres a year of which 1 Giga litre would be brine and 4 would be treated water. To do that amount of productions Santos would have to go through a full assessment, over the next three years Santos is simply gathering data to be able to show plans on how to handle water management, brine management. Santos would need to go through a rigorous approvals process before they got to this scale.
- Committee Member asks if a production well is in a farmed paddock, where

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would the produced water go? Santos: it would be piped to a treatment facility. Ideally in an area like the Pilliga there would be one treatment facility for a couple of hundred wells. However, during the exploration process there will be a holding pit for pilot wells on properties, Santos operations handle unpredictable events like high rainfall. Operations staff and monitoring meters cover the monitoring of the ponds. The team of drilling analysts? Discover the likely water producing ability of that location during core hole drilling, so that they can work out the temporary holding pond and design accordingly. Holding ponds on farms are only for the pilot program, the long-term plan is for water to be piped. Committee member comments that Santos can say all this but we have to just accept this, do we?

- Committee member raises further question about Sulphur reducing bacteria and other bacteria, questioning how they suddenly appear in isolated lined ponds if they weren't already in the water when it was underground. Santos explains that there is an abundance of oxygen on the surface compared to underground, which causes the bacteria to form. Santos to get expert to respond and give committee clarity on this topic of bacteria present. Santos suggests an independent ex CSIRO Hydro geochemist to answer these types of question and explain the GAB in more detail.
- Committee Member asks if a drilled bore is capped, what is stopping the water from flowing elsewhere? Santos explains that there is a double annular sleeve that goes down the bore hole which is a steel sleeve with another sleeve in the middle and cement around the outside of it that will protect it and confine it. Committee member asks if an earthquake like the one experienced in Gunnedah could damage the sleeve. Santos explains that they are built to be pretty indestructible and withstand earthquakes
- Community member asks can a technician explain the processes before drilling commences, what they do in regards to research and assessment of the site to be 100% sure that the drilling will not interconnect two separate aquifers. Santos responds that a driller would be best to answer this question.

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- Committee member raises the topic that on the first meeting the committee requested to get an analysis of the water in the Biblewindi ponds. Santos believes there is some information available from the EPA investigation. The committee member agrees it is for public access but it is confusing and incomplete.  
  
Action – to obtain analysis of the water in the three Biblewindi ponds.
- Chair thanks Santos for the presentation.
- Sam Crafter, Manager Community and Government Relations for Santos presents update to community on upcoming and proposed work and the rehabilitation work that is happening. *(See appendix 1 for full presentation)*  
  
Action Chair to send Ron Campey and Lisa Montgomery presentations from last month's meeting.
- Santos explains that their purpose is to extract the gas that is in the coal seam, if they interfere with the aquifer above all they will ever do is pump water and never get to the gas, Santos objective is to isolate the aquifers to be able to get the gas, and not to disrupt the other areas.
- Exploration process; rehabilitated 5 wells in January. Santos is looking to do a 50 well program in three years of work, to gather data, to help go through approval processes.
- Explained the targets for explorations in the Narrabri area coming up.
- Review of Environment Factors (REF) is the document required by Government that outlines and demonstrates how Santos activities interact with the local environment and ecology and community.
- Santos is looking to do some activity at the start of 2013, ideally Santos would like to bring REFs to the committee to see before they are submitted, this might not always be an option due to time restraints.
- Chair recommends that before the committee is presented with REFs some members may need to become more familiar with these type of documents.  
  
Action: member to forward website link explaining REFs to chair for distribution.

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Committee member suggests a website that might help to familiarise members with what should be in a REF.

Website links suggested by committee member are as follows:

<http://www.environment.nsw.gov.au/resources/protectedareas/110028REFProGde.pdf>  
<http://www.environment.nsw.gov.au/resources/protectedareas/08370REFtemplate.doc>

- Santos presents update on rehabilitation in the Pilliga. *(See appendix 1 for full presentation)*
- Santos makes committee aware there is a crew scouting work on route from Dewhurst to Bibblewindi, because the longer term solution would be to build a buried pipeline to transfer water from pilots to water facility at Bibblewindi.
- Question from committee, does Santos intend to resurrect a quarry application in that area to put a deep storage pond on a high level reducing the amount of effort required to pump water to the facility. Santos responds that no, not that they are aware of.

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### **5. General Business**

#### **- Media**

#### **- Next meeting**

- Chair explains no media release was produced for last meeting and the chair has had no media contact.
- Next meeting 13<sup>th</sup> November 2012
- Chair noted that he had identified three possible issues for the committee to discuss at the next meeting; namely, continue on water management, come up to speed on REFs and further details on rehabilitation. Committee agrees that they would like to hear more about the rehabilitation processes that are currently happening from Santos at next meeting.

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**Meeting Closed:** 7.50pm



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### Attachment 1.

### Attachment 2. Actions

Action Raised	Date Raised	Progress Made
Santos to send info on how to access minutes and media releases.	15 <sup>th</sup> August.	Completed
Santos and chair to provide proposed meeting dates for next six months, at next meeting	15 <sup>th</sup> August.	Completed
Santos to provide Committee with information on legislation information at next meeting.	15 <sup>th</sup> August.	Completed
Santos to investigate into logistics of transporting Committee members on a tour of the CSG sites.	15 <sup>th</sup> August.	In progress
Santos to provide Chair with a copy of the presentation and other documents to go out with minutes.	15 <sup>th</sup> August.	Completed
Chair to draft a discrepancies flow chart for future discussion	15 <sup>th</sup> August	Completed.
Chair to obtain list of the committee members questions that could not be answered by Santos representative and get Santos to respond to them.	11 <sup>th</sup> September	In Progress
Chair to get a response from Council to see if Cadastral maps are available for public access	11 <sup>th</sup> September	Completed
Santos to get a water expert to find out at what level artisan water found	11 <sup>th</sup> September	Completed
Santos to organise a Hydrologist to present on water at a future meeting.	11 <sup>th</sup> September	Completed
Santos to organise a driller to present at future meeting	11 <sup>th</sup> September	In progress
Santos to organise a Water Specialists to present at next meeting.	11 <sup>th</sup> September	Completed
Santos to check map distributed at first meeting and update and provide chair with new map for distribution, if necessary.	11 <sup>th</sup> September	Completed
Santos operations to developed proposed itinerary for the site tour, to present to committee for comment.	11 <sup>th</sup> September	In progress
Chair to contact each committee member to see who would be available to attend site tour and what date and time would work best.	11 <sup>th</sup> September	Completed
Organise an expert to respond to questions about Sulpha Bacteria, organise independent ex CSIRO Hydro geochemist to present at future meeting.	9 <sup>th</sup> October	
Obtain analysis of the water in the three Biblewindi ponds.	9 <sup>th</sup> October	

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Chair to send Ron Campey and Lisa Montgomery presentations from last months meeting.	9 <sup>th</sup> October	
Committee member to forward website link explaining REFs to chair for distribution.	9 <sup>th</sup> October	
Santos to provide response to questions on Namoi Water Study	9 <sup>th</sup> October	

**Appendix 1: Presentation**

- Santos Surface Water Management
- Upcoming work and Pilliga rehabilitation.

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### **Appendix 2:**

i) With respect to further information on security deposits, the following link is provided to the NSW Trade and Investment website, providing examples (although obviously Santos does not have control over the contents of this website)

<http://www.resources.nsw.gov.au/environment/ref/2012>

ii) Link to the approval letter for Dewhurst 19 for those who are interested:

[http://www.resources.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0009/419823/57-Approval-Letter-PEL238,-PAL2-Stratigraphic-DH.pdf](http://www.resources.nsw.gov.au/__data/assets/pdf_file/0009/419823/57-Approval-Letter-PEL238,-PAL2-Stratigraphic-DH.pdf)

iii) a revised map of Santos' core holes within the region, including Culgoora.