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SECRETARY, PLANNING & ENVIRONMENT NSW  
Level 22, 320 Pitt St, Sydney 2000  
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### **Submission regarding Narrabri Gas Project EIS**

CRAG is a group of concerned citizens living in and around Coonabarabran. Our members include teachers, astronomers, farmers, business people, retirees and we are supported by a large number of the rest of our community. All submissions, even the briefest are from people who care deeply about this issue.

We the members of CRAG strongly object to the Narrabri Gas Project. In spite of its 7000 pages the EIS is inadequate and the project itself should not go ahead.

#### **Natural Areas**

- CSG extraction is spatially intensive. While individual wells typically have a relatively small footprint of about 1 ha, the cumulative regional footprint of numerous connected gas fields and associated infrastructure is considerable. This multiplies all impacts - air, light, sound, dust, water pollution - over a very wide area.
- The EIS claims only 1000ha of forest in total will be directly impacted. This does not include roads, pipelines and infrastructure. The truth is that the entire 95 000 ha will be impacted indirectly because of the necessary infrastructure.
- It is the size of the relatively undisturbed Pilliga that makes it so valuable ecologically. There will be increased fragmentation of this natural area. From the map in the Executive Summary it is apparent that there are large areas where there are no existing roads. There will probably need to more than double the length of roads to access undisturbed areas.
- Mapping in the EIS is vague and unreliable making it impossible to be accurate about potential impacts. This does not comply with legislative requirements.
- The Pilliga was known as a hotspot for koalas. Because of a recent drought-induced population crash they are still not doing well and are threatened with local extinction. They are still found in the project area and can recover if left alone.
- Studies in USA have shown a decline in the number of owls in gas extraction areas. The Pilliga is an important refuge for owls.
- A "rewilding" project has been commenced in the adjacent Pilliga National Park by Australian Wildlife Conservancy in conjunction with NPWS. Their recent rediscovery of an Eastern Pygmy Possum, the first in 6 years, indicates the undiscovered ecological value of the Pilliga natural areas.
- Impacts are not just limited to habitat removal as claimed ("small proportion of habitat being removed relative to that being retained") and the proposed 50 metre indirect impact buffer zone does not contain the constant hum, the light, the dust, the sound of vehicles, the fugitive emissions.

- Fox and other predator access will be escalated by this increase in numbers and length of roads and tracks. This will more than double the risk to native animals, contrary to the EIS's claims.
- No studies have been made into the impacts on the stygofauna discovered in 2012. In fact the surveys appear to have been designed to avoid finding them.
- Rehabilitation has so far been unsuccessful, with only a few eucalypts and wattles regenerating. Very few grasses or understory plants have established and areas claimed to have been rehabilitated are dominated by invasive plants such as African Lovegrass.
- Relying for regeneration on the limited seed bank remaining in topsoil stored at the site for many years has proved unsatisfactory.
- **Recommendation: That the EIS be rejected as inadequate because it provides no map or other information genuinely indicating where development will occur.**
- **Recommendation: That the EIS be rejected because it lacks a genuine rehabilitation strategy for the impact on the natural environment.**

### Groundwater

- Recharge to the Great Artesian Basin (GAB) occurs across the project area from the Namoi in the north to the Warrumbungles in the south. This recharge may be relatively small but it is necessary to maintain the pressure head for bores.
- Groundwater extracted for agricultural use in the area comes from higher aquifers and the GAB. These bore holes do not penetrate below the GAB aquifers. The gas wells will penetrate the GAB and provide a greatly increased number of pathways for higher level water to move down to the depressurized coal seams below.
- Water in the coal seams, that contains many toxins will also rise up through these pathways and pollute the high quality aquifers.
- Drilling shatters the rock it penetrates, it doesn't just pass through cleanly. This will increase the pathways. There is proven downward connection between the GAB and the target coal seams.
- The EIS acknowledges the resulting drawdown of 0.5 metres on local bores but dismisses the effects as being outside the consideration time of the EIS. They may have departed but local people and ecosystems will be left with the consequences.
- Shallow groundwater is essential for groundwater dependent ecosystems. The Pilliga Forest itself is just such an ecosystem, as are waterholes and billabongs along creek lines such as Bohena Creek.
- **Recommendation: That the EIS be rejected as inadequate because of its very poor examination of the cumulative long term draw down and pollution of aquifers.**

### Air Quality

- Baseline data indicates no CH<sub>4</sub> occurs naturally in the Pilliga.
- Questions need to be raised regarding where they've placed the monitoring sites for the presence of methane.
- Wells and infrastructure leak. Approximately 5% leak in the first year, more will fail with age, all will fail with maturity. A full rupture occurred after 48 years in the Moomba/Adelaide gas pipeline
- Leakage can occur from anywhere around a well, even at considerable distances because gas migrates easily through rock.
- Well integrity is not improving, it's still as bad as it ever was.
- Methane (CH<sub>4</sub>) is purposefully vented and leaked
  - during drilling,
  - during the initial drill fluid flow back period.

- Additionally, fugitive methane emissions occur at all stages from exploration to end use, especially
  - continuously at pad sites via leaking wells
  - during gas processing
  - during transmission, storage and distribution.
- On a visit to a drilling site, there was a strong smell of hydrogen sulfide (H<sub>2</sub>S)
- Gases are still escaping from waste water and solids, even when being dumped in landfill.
- Regulations won't stop well leakage. Wells don't obey regulations. Gas leakage is an unacceptable part of the production process.
- The weasel word for leakage is "sustained casing pressure." Santos uses similar terms to disguise leakage requiring "workovers" several times throughout the life of a well.
- **Recommendation: That the EIS be revised to include random independent publicly-available air quality monitoring to confirm data matches and discrepancies before any decision is made.**

### Soils and Spills

- Produced water has been in contact with the coal for millions of years and has thus absorbed contaminants for the coal. These are the organic molecules sought as unconventional gas – methane but also benzene, toluene, xylene, ethyl benzene. They also contain heavy metals such as uranium, lead, cadmium, boron and others.
- Spills of this contaminated water have occurred on more than 20 occasions over the life of the exploration period that involved only about 50 wells whether by accident, failure of regulation, or lack of monitoring. There will be significantly more if there are 850 wells.
- There have been reports on the ABC (4/5/17) that there were 3 spills of untreated CSG waste water from Santos' infrastructure in Queensland in the preceding 3 weeks.
- Remediation is failing for already impacted areas. The death zone for trees in the vicinity of the Bibblewindi spill is increasing, well pads which have been claimed as rehabilitated actually support invasive and/or non-local species, there has been no return of ants - indicators of soil health.
- **Recommendation: That the EIS be rejected as inadequate because of its unrealistically optimistic treatment of the risks relating to produced water spills.**

### Waste Water

- The two major by-products of the industry are contaminated water and toxic salts.
- Unlike Shale Gas, CSG produces more water than it uses. It is called "produced water".
- This is ancient water which has been in contact with the coal beds for millions of years. Anything which is present in the coal seam will have dissolved in the water including heavy metals (arsenic, mercury, lead, chromium) radioactive substances (uranium) aromatic hydrocarbon compounds (BTEX – benzene, toluene, ethyl benzene, xylene). Treatment of the extracted water leads to concentration and release of these substances.
- Treated water will be allowed to be disposed of into Bohena Creek when there is a flow rate greater than 100 megalitres per day. Minor changes to the chemistry of the water can affect fish breeding further downriver and the existence of recently discovered species of Stygofauna.
- **Recommendation: That the EIS be resubmitted to include adequate evaluation of treated water disposal based on accurate data of Bohena Creek flows (requiring a gauging station), base line study of stygofauna and public information on the composition of the treated water.**

## Salt

- The “produced water” contains large quantities of a variety of dissolved salts, not just table salt as well as heavy metals, radioactive solids, products of explosive decomposition, drilling chemicals and hydrocarbon residues. Many of these are toxic and/or carcinogenic.
- The salts are to be separated from the water by an energy-hungry method called reverse osmosis. Santos will not pay for this energy, they just use some of the gas which they have extracted and don’t pay royalties on it.
- There is no use for the tonnes of salt. It has been misclassified as general waste instead of hazardous controlled waste and will be trucked to a licensed landfill where it will need to be stored – forever.
- There is no information about the site of such a landfill and the local communities have not been consulted.
- **Recommendation: That the EIS be rejected and no decision be made until a revised EIS provides a detailed, realistic proposal to deal with the mountain of salt to be produced.**

## Fire

- In the risk assessment Santos claims that “risk of uncontrolled loss of gas leading to a fire was low to very low”. There is no consideration of the cumulative risk associated with 850 wells. And no reference to the risk that is posed by having high pressure flammable gas in a fire prone forest.
- Forestry will be required to do more Hazard Reduction over the entire 95 000 ha to protect the extensive infrastructure. This will alter the natural structure of the ecosystems over time.
- Santos claims its only responsibility is for the safety of their workers, not to fight the fires which are characteristic of the Pilliga. This places an additional economic burden on the community.
- There is great unease in members of the RFS regarding fighting fire in the project area.
- **Recommendation: That the EIS be revised to include provisions to reduce fire risk by enclosing all flares and by training and resourcing a standing fire-fighting group of staff.**

## Light Pollution

- Siding Spring Observatory (SSO) is an internationally important research facility requiring a clear dark sky.
- Light pollution from an increase in coal extraction in the area over the last 20 years has already reduced the darkness of our night sky.
- WH&S requires strong lighting in any 24 hour worksite.
- Traffic movements would greatly increase, thus increasing the amount of dust in the air and affecting clarity of observing.
- Flaring may be constant. This will be a minor problem at this stage but Santos’ shareholder information indicates that once this project is established, gas fields will then be developed at Tooraweenah, and five other nearby areas. This could cause the closure of SSO.
- All the above affect sky brightness and the quality of SSO research.
- The cities have lost their dark skies and city dwellers travel great distances to see the true dark night sky. Tourism to Australia’s only Dark Sky Park, based around the Warrumbungle National Park and SSO, would cease.
- Currently the unmanned Bibblewindi flare creates more light pollution than the entire town of Coonabarabran with a population of 3000 people.

- **Recommendation: That the EIS be rejected because it fails to set out ways to avoid serious cumulative light and dust pollution to the detriment of Siding Spring Observatory.**

### Health Issues

- Those living in the vicinity of gas wells in Queensland show acute symptoms of chemical exposure including severe headaches, nausea, vomiting, nose bleeds, rashes, eye, throat and severe skin irritations. These same symptoms were recorded in those exposed to the gas from the massive leak at Porter Ranch in California.
- The smaller an organism is the more it is affected by pollution. In gas areas in Qld and the USA there has been an increase in nosebleeds and respiratory problems in children.
- New significant data from the USA, where the industry has been operating for 20 years are beginning to show chronic effects such as a correlation between low birth weight and poor educational outcomes with proximity to gas wells.
- There are reports from USA of sickness, birth defects and death in cattle exposed to the produced water.
- The worldwide gas drilling boom is an uncontrolled health experiment on an enormous scale.
- **Recommendation: That a revised EIS include the chemical analysis of the gas being extracted rather than just cutting and pasting Queensland data.**
- **Recommendation: That the EIS be rejected until the health impacts of the gas fields are independently studied and included in a revised EIS.**

### Jobs and Business

- Industrial developments have social consequences. The industry's social impact assessments need to take into account the unequal distribution of impacts among the local population.
- There is no guarantee regarding where the gas will go and what it will cost. This gas will probably not be directed to solving the "gas crisis" of the industry's making but be piped to Gladstone in Queensland where it will be exported to fulfill ill-advised contracts made earlier.
- Workers are sucked from existing businesses – agriculture, engineering, trades – causing them to close. Then when the gas runs out there are no jobs left in town.
- They only promise 150 direct jobs. Most of these will be specialist workers and will not live in the area. Only 10% will be local jobs.
- They have not indicated how many jobs will be lost if their industry goes ahead eg light pollution would reduce the quality of scientific research at Siding Spring Observatory; tourism and science jobs would be impacted.
- This boom and bust cycle has massive community impacts – real estate values peak then collapse as they have in Roma, all rental housing is either used by the industry or used as a local address by FIFO workers actually living elsewhere, sporting clubs struggle to find enough players for a team.
- Studies have shown that for every job created by the industry, 1.7 jobs are lost in agriculture which is much more important for long-term sustainability.
- Apiculture is a significant industry in the Pilliga and bees are very sensitive to adverse environmental conditions.
- **Recommendation: That the EIS be rejected for its inadequate and unrealistic assessment of local and regional social and economic impacts.**

### Landowners will be impacted by:

- Reduction in land values.

- Inability to get loans from banks.
- Inability to get insurance in general and especially against damage caused by the industry.
- Landowners are equally liable with the company for damage to neighbours. Even after the industry has left, landholders bear a long term liability which cannot be insured against
- Inconvenience of infrastructure on land, restricting passage of their own machinery across their own land.
- Inconvenience of 24 hour activity – noise from drilling and wells running, traffic from constant access by company employees, bringing in of weeds on vehicles.
- The compensation framework is biased against the landholders who are bound by secrecy clauses.
- **Recommendation: The EIS be rejected because it provides no solution to the insurance problem.**

### Consultation process

- Our experience has been that this process has been woefully inadequate and misrepresentative.
- There is a difference between “consult” and “inform”. Only those who are in the immediate area of the project have been consulted. The rest have been informed.
- Project tours were used to inform and there was no feedback from issues raised on the tour. There was no reply to questions asked on such tours.
- There is a very narrow definition of stakeholder. Santos hand-picked those it wished to “consult”. This project is considered to be of State Significance, thus the entire population of NSW can be considered to be stakeholders. Statewide opposition has been expressed wherever information stalls and events have occurred.
- The Australia Institute report reveals that the majority of Australians across all states support a moratorium on CSG (59% in NSW).
- When offered the opportunity to address a wider range of stakeholders at the Narrabri Economic Forum they refused to attend.
- Lack of a social licence is evinced by Credit Suisse’s report that community opposition was a significant factor in their poor assessment of the project.
- **Recommendation: That the EIS be rejected because of the lack of any attempt to test the concept of “social licence” and “prior informed consent” through genuine community consultation.**

### Aboriginal Heritage

- The EIS trivialises the Aboriginal view of “country” which is based around landscape and connections, not just the presence or absence of artefacts.
- Since time immemorial, all places have been known and have significance and all places have story attached to them.
- There are no empty lands and no sacrifice areas in Aboriginal culture. There are no places where *terra nullius* applies.
- The context of current Aboriginal concerns for the Pilliga is the great loss and exclusion over the past 200 years. The Pilliga is special because it is a large area relatively untouched by colonialism. The Narrabri Gas Field would destroy that sanctity.
- Rather than addressing the real priority for social and cultural healing, the project and the EIS are disempowering and divisive for Aboriginal people in the region.
- **Recommendation: That the EIS be rejected because of its narrow, piecemeal, divisive and neocolonial treatment of the project’s impacts on Aboriginal people and heritage.**

## Climate Change

- Coal Seam Gas is not the solution to the so-called “Energy Crisis.”
- CSG does not have less environmental impact than coal when you take fugitive emissions into account. In fact the Climate Council report claims it is a “no-brainer” because so much is lost in fugitive emissions as to make it much worse than coal.
- Over a 20 year time frame CH<sub>4</sub> is 86 times worse than CO<sub>2</sub> as a greenhouse gas, over 100 year time frame it is 34 times worse. Thus even small leakage is significant.
- With the potential for increase in climate change this is of International significance. Unmeasured methane leaks could cause Australia to fail its Paris climate commitments.
- It is no cheaper nor cleaner than coal and is not a transition fuel.
- Santos’ business model is based on an expected 4°C temperature rise to which they are willing and eager to contribute. This will make many areas unlivable.
- **Recommendation: That the EIS be rejected because it is based on accepting climate consequences of the project that will cause dangerous climate warming globally, contrary to the 2015 Paris agreement.**

## Economics

- There is enough conventional gas in Bass Strait to provide all we need for a very long time.
- This project does not make economic sense. Gas from the Pilliga is extremely expensive to produce.
- The cost/ benefit analysis fails to consider the costs to the community of ground and water damage, damage to tourism, damage to Indigenous health, job losses in other industries.
- The industry regularly exaggerates job benefits. Of the 2.5 million jobs they claim to support in NSW, 2.2 million are employed in businesses that use gas for running hot water taps in the bathroom.
- Santos has already valued the Narrabri Gas Project at \$0. It has accumulated massive debts. Approval of the EIS would be the only asset it has to sell.
- The NGP will become a stranded asset because people in the surrounding areas will not agree to access.
- The benefits of mining accrue largely to overseas shareholders of the mining companies but the costs accrue to local communities and governments.
- **Recommendation: That the EIS be rejected because of its La La Land economic analysis.**

## Problems with the EIS

- The thicker the pile of paper, the lower the risk that anyone will read it.
- So-called “sensitive receivers” are referred to with respect to air quality and noise levels. By definition these are human. Small humans are more sensitive, as are small native fauna such as gliders, owls, bees and bats.
- Discussion of risks is averaged over the entire project area, two thirds of which is natural area, one third is farmland. Thus the possibility of risk to natural areas is actually greater than they quote and potential for risk to agricultural areas is also greater than they quote.
- Risk analysis is over their expected life of the project, approximately 25 years. Infrastructure is only guaranteed for that time. After that time, risk is on the public and is not calculated.
- The EIS is peppered with terms such as “where possible” and “reasonable and feasible measures”. These are meaningless.

- There is no detail in the EIS regarding management of at least 16 important issues such as Air Quality and the Field Protocol. These will apparently be developed in the future without community input or oversight.
- “Restrictions to land use” would not be limited to private land. Access to the forest where activities are being carried out will also be restricted by gates, fencing and roads. There will be total loss of public access to what is a public resource. This is the equivalent of privatising public land.
- Are unsuccessful wells included in the 850 well total or only the ones that are productive?
- I acknowledge that they claim that fracking is not intended in this area but this has been left open-ended and may not be so in the long term.
- **Recommendation: That the EIS be revised so that it looks at all impacts over a 100 year period and the cumulative impacts of the planned expansion to 7 gas fields across north west NSW.**

### Concluding Recommendations

- **Buy back all petroleum exploration licences in NSW.**
- **Close down the coal seam gas/unconventional gas industry in NSW.**
- **Acknowledge that this industry is so risky it will require so many regulations that just cannot be monitored, that it just shouldn't go ahead.**
- **Acknowledge that the regulatory cost of this industry (it would create an industry of its own just to monitor it) that it threatens our democracy.**
- **Focus government energy policy and funding on building a rapid and complete transition from fossil fuels to renewable energy.**
- **Introduce a new system to produce EISs independent of developers to avoid the current structurally corrupt system whereby the developer pays for the opinion and so almost inevitably gets the opinion they want.**
- **In 2014, the NSW Chief Scientist, Mary O'Kane released a report which made 16 recommendations. At the time she said that “there is still much for the Government to do” before the industry could go ahead safely. Few of these recommendations have been implemented and until all of them are, the industry should not go ahead.**

Yours faithfully

Peter Small  
 Convenor  
 Coonabarabran Residents Against Gas