

SANTOS Narrabri Gas Project Environmental Impact Statement (EIS) SUBMISSION

No CSG Gilgandra District Inc. 14 May 2017

Introduction

The town of Gilgandra is historically known as the "Town of Windmills". The town, and its surrounding Shire, are dependent on ground water for their very existence. During times of drought, which are frequent in the west of NSW, surface water simply is not reliable. Please consider No Coal Seam Gas Gilgandra District Incorporated's (NCSGGDInc) **strong objections to the Narrabri Gas Project (NGP) proposal**, and the request that it be rejected, with an understanding that water security is a major background tenet.

Gilgandra Shire is covered to a large extent by four **expired** Petroleum Exploration Licences (PELs), 433, 434, 450 and 462. They are all under the control of Santos (despite their expired status and for many years, no requests being made for renewals), which is the proponent of the EIS and planning documents of the NGP, now being assessed. The Tooraweenah Gas Basin appears in Santos Shareholder reports in 2011 and 2014 (at least) as one of the potential expansion areas for investors to be enticed to the Coal Seam Gas (CSG) industry. There has been some exploration activity in the Shire, including core holes and an extensive seismic testing programme undertaken in 2010. It was at this time that residents of the Shire began educating themselves about the CSG industry. A group steering committee was formed on May 5, 2013 as a result of a small public meeting of 30 people at the Curban Hall. The first public education meeting took place on June 4th, 2013 and attracted 220 residents, the largest public meeting for 16 years, the last being when Native Vegetation Laws were dramatically changed with SEPP 46 in 1997. Thus began No CSG Gilgandra District Inc, a formalised, incorporated group with the main aim of educating our community about the CSG industry and the risks it poses. After forming, the group set about gathering information from a wide range of sources, including Santos. They then held more public meetings, information stalls at local events and finally surveyed the entire Shire population regarding their views on CSG, completing the survey process in July 2016. NCSGGDInc currently has 165 members and a contact list of 324 in a Shire population of 4368 (2015 Gilgandra Shire Council statistics).

NCSGGDInc regards the NGP as just the first step in the development of an unconventional gas industry in the north west of NSW. This is apparent in the scoping documents of the proponent companies. To argue that it does not directly affect the Gilgandra Shire is erroneous as once resource companies are invested and infrastructure is in place (in the NGP), developing the adjacent resources available, in this case related gas fields, dictates that forging ahead (dependent on the economics of the day) is essential to optimise the investment. To deny this is to deny resource development history in this country. In addition to this point:

- The social, economic and local area environment changes (e.g. labour competition, population influxes, accommodation demand, road use etc.) will be felt by Narrabri's neighbouring Shires, i.e. Gilgandra.
- In an even broader sense, the consequences of corporate developments, either good or bad, always affect the population of the host state and country via the wealth created or lost by that industry.

The development of the NGP is most definitely of high relevance and importance to Gilgandra Shire residents. In addition to the above reasons, the EIS Executive Summary eludes to expansion of the industry on Page ES 7, when giving reasons for the "preferred location for the project", quote "This area also provides the proponent with an opportunity to further develop existing infrastructure in an area where gas resources are located". See Appendix 1 for proximity of the Tooraweenah Basin in the Gilgandra Shire, to the NGP. The western path of the mooted APA Group's pipeline to transport the NGP gas to the Moomba-Sydney pipeline also heightens Gilgandra Shire population's awareness and interest.

The Gilgandra Shire Survey Process and Results

The community driven surveys were conducted over a period of just under 2 years and 9 months making sure every attempt was made to talk to all residents in the Shire, over 16 years of age, to give them a chance to have their say.

The question asked was "Do you want your roads and lands Gasfield Free". They were asked to answer Yes, No or Not Sure. Prior to each of the 15 individual surveys, an information session was held, with all the information coming from reputable sources such as CSIRO, Australian Geographic, Chief Scientist Report, The Australia Institute plus many available internet links. The documentary "Fractured Country" was also shown. People were encouraged to source their own information, both for and against CSG mining, so they felt confident when answering the survey question. The surveyors were residents who volunteered to survey their own roads and neighbours. They were all advised that they were only there to survey and not to influence the community's decision.

The Gilgandra Shire survey area covered 483,600 hectares. There are approximately 1750 dwellings in the Gilgandra Shire with a confidence rate that 96% of those dwellings had at least one or, in most cases more, participating in the survey. The results were:

- **98.09% of the residents over the age of 16 have answered YES to wanting their roads and lands Gasfield Free,**
- 1.54% answered Not Sure and
- 0.37% answered No

During the survey process, there were many strong concerns expressed about the CSG industry as a whole. However the main issues that everyone seemed to be worried about were the effects on water. Gilgandra community relies solely on bore water for town, as well as farm use. People asked questions about the possibility of drawdown and chemical contamination. There were also many concerns about gas leaking into rivers and creeks and how it effects our spring water. There have been a number of reports coming from Queensland about these issues and people are genuinely concerned and want answers before they will consider accepting this industry.

The community of Gilgandra Shire has made it clear how they feel about Coal Seam Gas mining. We trust you will consider their wishes.

NCSGGDInc's Queries and Objections Arising from the NGP EIS

WATER - General Risk

As stated in the introduction and the survey findings, water trumps all other considerations when Gilgandra Shire residents consider the development of an unconventional gas industry in NSW. According to the Significance Assessment used for Groundwater and Surface Water in Chapter 10 of the EIS, "Approach to the Impact Assessment", a matrix is derived using a "sensitivity" scale and a "magnitude" scale. Even the resultant highest risk rating of "Major" is described as, "Arises when an impact will potentially cause irreversible or widespread harm to an environmental value that is irreplaceable because of its uniqueness or rarity. Avoidance through appropriate design responses is the only effective mitigation". Unless the "appropriate design response" is **"don't proceed with the activity"** it is unlikely the company's planned response will satisfy the standards required by the public who see the preservation of clean groundwater, surface water and soils as paramount. Anything less, which allows ANY possible permanent risk to these environmental assets is negligence by the company and the approving governmental body.

WATER - Groundwater and Surface Water

In Surface Water Quality, Chapter 12, the potential impacts of the construction and operational phases of the project are discussed. Sections 12.3.2 (construction) Spills quote "Accidental spills of fuel, drilling additives (although mostly biodegradable), produced water, chemicals and / or cement **could impact water quality**" and 12.4.3, (operation) Spills and leaks quote: "Accidental spills of fuel, produced water and / or chemicals **could impact surface water quality.**" Other possible sources of surface contamination are listed. Section 12.5.2 then

describes a list of management and mitigation actions that will "comprehensively and routinely manage" all these possible contamination occurrences. These statements clearly indicate that impacts are possible and in the case of "induced groundwater flows between groundwater sources", the likelihood is "almost certain". In the real world, planned responses may not be possible in suitable time frames, or be possible at all, to ameliorate consequences of these "impacts", despite these plans appearing in official company documents and government sanctioned papers.

Risks to groundwater by the NGP (EIS Appendix F) have been determined variously from level 1 (13 risk parameters) to, at worst, level 2 (3 risk parameters). The significance of these are far less than the "Major" description above. If the worst case scenario (above) is considered manageable then the lower levels of risk determined in the EIS are even more manageable. However, the public are aware that exploration activities, already undertaken in the NGP area, have resulted in:

- The permanent contamination of an aquifer with uranium levels at 20 times the acceptable/safe drinking water level [4]
- Multiple spills into the environment (at least 17)[4], many unreported until unable to remain concealed and some resulting in fines
- Irreparable damage. Huge expense has been made to rehabilitate spills and in particular the Bibblewindi site is still degraded many years after rehabilitation began.[5][6]

These incidents occurred during the exploration period. Regulations controlling the industry are constantly evolving, however, the proponent in recent years has been operating under similar regulatory controls to those in place today and mistakes continue to be made. **The community is not assured that this EIS and the Government's response to it, will create miraculous improvements for trouble free operations in a much greater numbers of wells.**

The low risk apportioned to ground and surface water damage also, disappointingly, causes the exclusion of water damage from the Cost Benefit analysis in the EIS Appendix U1, Table 2.2. This table conveniently removes water impacts, a difficult to determine and potentially large parameter, from the economic costs associated with the NGP.

WATER - Making Good

Chapter 11 of the EIS, 11.9 Mitigation and Management.

The supply of a clean reliable water source cannot be overstated and Gilgandra Shire residents treat theirs with great respect. Issues to arise with this section of the EIS are:

1. First the degradation of the water supply must be attributed to the actions of the proponent. From previous examples in the Pilliga, Queensland and elsewhere this is difficult to establish and can cause major frustration, inconvenience and cost to the landholder involved. **Reality does not reflect the written intent.**
2. Of the ten dot point actions listed to "make good" the water supply (P 11-64 of the EIS), the first eight are to rectify the problem with changes to the water extraction system and are likely to be practicable.
3. The last two dot points are far less practicable:
 - providing an alternate water supply
 - providing compensation, which could be monetary, for impairment of the water supply.

To propose replacing a water supply infers that there is an economic, efficient and possible way to do so. Depending on the damage, a substitute supply may be great distance away and completely impracticable. How is supply replacement assured into the future when companies dissolve over time? Depending on the situation, offering money for a water supply is ludicrous. Not only does no permanent water on a site mean no-one can survive there, but the value of the land asset is massively reduced disallowing the owner to sell up and leave.

These two solution methods attract only derision and incredulity from people who truly value their local clean ground water supplies.

Again, rural communities will not see this as a satisfactory way to deal with water supply security and will be intolerant of regulating bodies that accept this approach.

Queries:

- 1. Can the use of this risk assessment system assure zero permanent water impacts?**
- 2. If not, what insurance is there that "make good" alternate water supplies can persist indefinitely?**
- 3. If permanent "make good" supplies are not deemed necessary, why not? Are future generations to be denied water?**
- 4. Is the cessation of the project considered an option during the ongoing use of this water risk assessment system?**

WATER - Aquifer cross contamination

Given the knowledge that all wells fail, given enough time (some in the first year), and that CSG wells are drilled through all the overlying aquifers used for agriculture and sustaining life, the potential for aquifer cross contamination is unavoidable over time.

Query:

- 5. Is the proponent guaranteeing that aquifer cross contamination will not occur and how can they assure this?**

WATER - Produced Water Management

The water removed from the coal seams to create the required gas flow has been, and continues to be, a major concern for the proponent and the public who is scrutinising the CSG industry. Chapter 7 of the EIS, "Produced Water management" outlines the process by which the proponent intends to deal with the water and is deficient in facts that the public need in order to be confident that the tonnes of waste are being dealt with competently. The projected solid salt waste to land fill is: average output of 17,200 tonnes per year and peak output of 41,975 tonnes per year which over a twenty year project life has the capacity to create huge environmental damage, particularly when all of it could remain safe deep in the earth's crust.

The proponent's solution presented in the EIS:

- *For the peak period in around years two to four - around 117 tonnes per day of which 115 tonnes per day would be extracted through the treatment process **and disposed of off-site to a licensed landfill**. This is the equivalent of around two and a half B-double truckloads of salt per day. The residual two tonnes of salt per day would be contained within the treated water used for beneficial reuse activities (refer Table 7-3 on page 7.26 of the EIS). Approximately 145 tonnes of salt product per day would be generated and transferred to a licensed landfill under a scenario where 12 megalitres per day of treated water is generated.*
- *The long-term average over the 25-year assessment period - around 48 tonnes per day of which around 47 tonnes per day would be extracted through the treatment process and **disposed of off-site to a licensed landfill**. This is the equivalent of just over one B-double truckload of salt per day. The residual one tonne of salt per day would be contained within the treated water used for beneficial use activities as shown in Table 7-3 of the EIS*

Adding one or two tonnes of salt per day to local roads or paddocks (beneficial land use) for twenty years is not a solution as the consequence compounds over time. Only rainfall will vary the severity of the accumulation effect [2].

The solid waste solution centres on salts and omits consideration of other waste products potentially found in coal seams: BTEX's (Benzene, Toluene, Ethylbenzene and Xylene), "oil and grease (many types of organic chemicals that collectively lend an 'oily' property to the water), trace elements such as mercury, arsenic and lead, organic acids and polyaromatic hydrocarbons, radioisotopes such as radium, thorium and uranium may be

present, plus drilling fluids may contain a wide range of chemical constituents and these often vary from one operation to another". These contaminants are in low concentrations but due to the proposed handling technique and storage system, they will be concentrated and accumulated, the consequences of which must be considered.

Queries:

6. **What becomes of all the other toxins in the produced water?** If they reside in the solid salts to landfill, they need to be listed and quantified so that the public is aware of the polluting nature of this "landfill". Currently, only target values of "treated" and "amended" water content is clearly explained in Chapter 7 of the EIS.
7. **Where and what is the accredited facility that is willing to accept this toxic landfill?** This question has been asked of the proponent for at least the last six years and there has never once been a definitive response describing any site address or any receipt/storage system in place for dealing with the enormous amounts of toxic material for **long term safe and secure storage**.

It was anticipated that this EIS would finally outline a clear detailed destination solution and it does not. It also fails to be open about the toxic nature and content of the produced waste.

Many areas of Australia's soils have salinity problems that limit agricultural production when not addressed. Primary producers are very aware of the potential for production loss when salt levels rise. All the salt, and its associated toxins from the coal seam should remain buried at depth. Once brought to the surface, they simply increase surface salinity and pollution risk. **Bohena Creek "managed release" should not be an option.** (Fig 7.4 in the EIS). The pollutants still have to end up somewhere, in an environment that had lower levels prior to this industry's inception. Put simply, the **produced water creates a huge net cost to the environment.**

To quote Stuart Khan & Geena Kordek reporting to the Office of Chief Scientist and Engineer[2], "*Disposal by landfill or land application poses environmental risks unlikely to be manageable over the long term. This is because the hazardous substances (salts) in produced water are non-degradable and their ongoing effective containment may only be achieved for a finite period. Long term land application will result in ever increasing risks to soil and water.*"

The produced water treatment plant is designed for a through-put of 14 megalitres per day and at peak production, expects to handle 10 megalitres per day (a 4 unit buffer capacity. P 17 of the EIS)

Queries:

8. **There is a major oversight/understatement of the true nature of the solids destined to be deposited in landfill. What consideration of long term consequences is to be made?**
9. **What is the management plan if the produced water treatment plant breaks down and pondage fills to capacity? Does gas extraction/production stop? In the extreme circumstance that this scenario is accompanied by a deluge rain event is spare pond capacity assured to deal with it?**

GAS SUPPLY CRISIS AND UNCONVENTIONAL GAS ECONOMICS

As outlined in Santos's Executive Summary (ES), ES Page 5:

"NSW, which imports more than 95 per cent of its natural gas from other states, is at risk of supply shortages and increasing prices, largely due to Australia's changing natural gas market.

A large proportion of the gas purchased by retailers in NSW is underpinned by long-term contracts with gas producers in other states. Historically, approximately 40 per cent of NSW's natural gas has come from the Cooper Basin in South Australia, approximately 55 per cent has come from Victoria, and up to 5 per cent has come from supplies in NSW.

From 2017 a major shift will occur when all three liquefied natural gas (LNG) facilities in Queensland will reach more stable production levels. The majority of the gas that was previously contracted from the Cooper Basin will no longer be available to supply NSW, as it has been contracted from 2016 to meet some of the supply requirement of these Queensland natural gas facilities.

This absence of alternative sources of gas going forward, coupled with the diversion of gas from the Cooper Basin to fulfil LNG export contracts, means NSW will require the vast majority of its gas to be supplied from Victoria. This reliance on a single supply source may pose significant security of supply risk in the event of an interruption, as occurred in 1998 when there was an event at the Longford gas plant in Victoria that resulted in severe gas shortages across the state.

It is also important to acknowledge that when supply is sourced from interstate, it is outside the control of the NSW Government to effectively manage or influence upstream development approval timelines. Without developing gas of its own, NSW has no ability to manage its own energy supply security in a changing energy market.

The project has the potential to supply up to 200 terajoules of natural gas per day; which is sufficient gas to meet up to half of NSW's natural gas demand. This would provide NSW with a secure, long-term supply of this critical energy source and reduce the state's reliance on contracts with interstate suppliers."

As Santos is one of the main architects of the current manipulated gas supply shortage crisis (as described above and in [3]) it is difficult to trust that market forces will not operate and dictate the destination of any new supplies that come online from the NGP. It is legally required that companies optimise the returns to their shareholders and Santos will be obliged to fulfil that requirement.

It is an insult to those having gasfields foisted upon them to watch pipelines through their properties take Australian gas to export, while they pay exorbitant prices for the resource because of an unfortunate, but contrived, shortage.

The discussion around 200 Terajoules being assured to supply up to 50% of NSW domestic and commercial requirements is a misleading representation of the market facts. One stops short of calling it a lie as it is an unknown future prospect, but the gas shortages created in this state are the result of market forces and commercial greed and nothing will change in the future in a free trade market place to which Australia is committed. There is no altruism in big business. To suggest that the state can orchestrate the fate of locally mined gas is a farce. The federal government struggles to quarantine our gas supply, so a state government would have less chance.

Query:

- 10. Can and will Santos guarantee that NGP will supply 50% of the NSW future gas requirements, should the NGP go ahead?**

HYDRAULIC FRACTURING

There has been a commitment in the NGP EIS that Hydraulic Fracturing will not be pursued in the development of the Narrabri Gasfield.

Query:

- 11. Is there an iron clad guarantee that hydraulic fracturing will never take place in the NGP?**

CONCLUSION

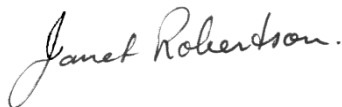
The Gilgandra Shire residents resoundingly stated his or her wish to remain living in **gasfield free roads and lands**. Other NSW communities, likewise confronted with the spectre of unconventional gasfields in their area, and who have been similarly surveyed, have also categorically stated that they wish **their roads and lands to remain gasfield free**. The only people (a small minority) who promote the unconventional gas industry are those who directly benefit in some way; political gain, monetary gain, job security etc. and most of them are not condemned to live in the resultant gasfields.

Only the overarching issues of concern to the Gilgandra residents have been dealt with here. Many lesser issues have not been considered. Lesser issues are irrelevant once, on the basis of the main issues, the decision is made that the CSG industry is not welcome in the Shire. In lieu of questioning the accuracy of all the work presented in the NGP EIS the crux comes down to what the proponent and the regulatory bodies consider assessable and acceptable solutions to the myriad production issues of CSG, **and they do not fall within the acceptable risk profile of the general public.** The constant question arising is, with all these potential risks for the environment, why is the CSG industry even being considered when alternative solutions for the world's energy issues are within reach?

The risks are too great. The risks have already come to fruition through numerous "accidents" in the exploration phase in the NGP. Despite professed "world's best practice" being used continuously by Santos since at least 2010, and the accumulated knowledge the company has gained over years of exploration and production experience in Queensland and the Narrabri area, "accidents" continue to occur. An EIS of 7000 pages will not convince the public that errors will cease despite the best of intentions and written assurances.

It is an invasive, risk laden industry which should never establish in NSW, and the current assessment of the NGP should result in the outright denial of permission to begin the production phase.

SIGNED:



for

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References:

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3. "Why Santos owns the gas crisis" Matt Stephens, AFR, 19 April 2017.
4. <http://www.paulrobertburton.com/2016/03/pilliga-state-forest-the-story-of-the-bibblewindi-spill/>
5. http://www.lockthegate.org.au/revealed_epa_investigation_report_shows_extent_of_pilliga_contamination link to 2013, "Report Investigation - Santos Ltd and Eastern Star Gas Ltd", NSW Environment Protection Authority, Internal Report.
6. <https://pateblog.nma.gov.au/2014/07/30/toxic-tales-from-the-pilliga/>

Appendix 1. Santos PEL Tenements and Projected Gasfields Extracted from Presentations to Shareholders in 2011 and 2014.

