

Chapter 26 – Social and Health

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I oppose the Narrabri Gas Project Environmental Impact Statement as I believe it is lacking in detail and fails to appropriately address the social and health impacts on the community.

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Introduction

The Social and Health chapter of the EIS is a highly simplistic view of the potential impacts to our community. It appears as if the proponent has no interest in truly identifying the potential negative impacts and even less interest in proactively managing the likely impacts. The lack of detail and deliberate evasion of important elements leave all stakeholders without the ability to appropriately manage the impacts into the future.

The EIS makes no consideration for the broader, secondary and cumulative social impacts of the CSG industry. The boom/bust cycle that the industry inevitably creates must be taken into account. The approach the EIS takes is that employment outcomes are the only impacts and these flow onto housing and service impact. This segmenting approach is a conventional approach to analysis of the social impacts by the CSG industry, however in this day and age in NSW this is no longer a suitable approach. Since bringing in new Social Impact Guidelines (draft concluded in March 2017), it is clear that our NSW Planning Department now requires serious and detailed assessment of the entire social and health impacts created by the whole life cycle of the project.

“In July 2013, a media statement by the Liberal National Party in Queensland indicated a political agenda to “cut red-tape for major resource projects to proceed in the state” (Seeney, 2013a). It announced modifications to the Queensland SIA policy, which reduce the prescriptive character of the previous guidelines.”ⁱ It is our belief that this Chapter of the EIS follows these Queensland guidelines, rather than the more acceptable new Guidelines introduced by NSW this year.

As made plainly clear by Dr Tim Forcey when he was interviewed by Allan Jones on 8th April “The Narrabri EIS is a cut and paste from the Surat Basin”ⁱⁱ.

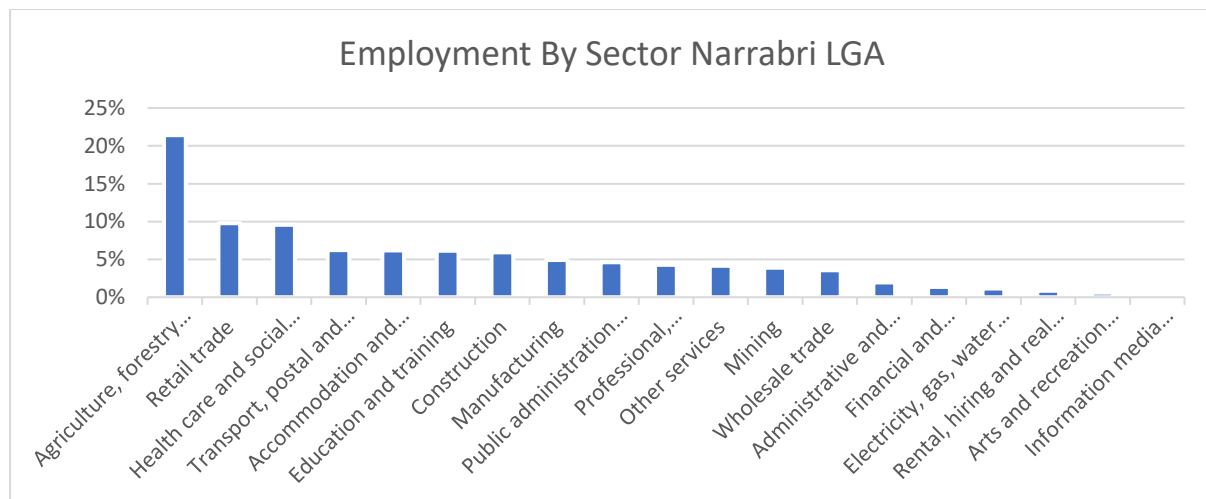
Narrabri Has a Resilient and Balanced Economy

Currently Narrabri has a resilient and balanced economy, that suffers through gradual booms and busts with steady progress. The rapid and extreme jolts to a community from the CSG industry not only create the immediate impacts but often result in a complete hollowing out, leaving the community worse off than before. This is often heightened by the hype created by project proponents and government entities seeking to embellish the truth for their own personal gain which often leads to poor investment decisions and ultimately very sore losers.

As outlined in the EIS, the number of house sales since 1999 has been roughly constant and median house prices have gradually increased since 1999. These indicators are consistent with a resilient, diversified and well balanced economy. Furthermore, the unemployment rate is lower than the state average and housing rental demand is historically low at between 0% and 2%. This is a community that is bubbling along nicely, without a need for intense shocks to its social fabric.

In 2014/15 Narrabri Shire generated over B\$1 in Gross Regional Product (79th most productive LGA in NSW), a 0.2% increase on 2010/2011. ABARE has stated that 2016 agriculture production is up even further so we can assume this figure is conservative. Interestingly the Worker Productivity of the Shire is \$142,500 GRP per worker which puts us 21st in the stateⁱⁱⁱ.

Narrabri Shire currently has a sustainable and resilient economy with 21% of employment in agriculture, 10% in both retail and healthcare and several sectors providing between 2% and 9% of employment including transport, accommodation and food, education and training, construction manufacturing, public administration, professional, scientific and technical services, other, mining, wholesale trade and administrative and support services.



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Social Impacts Will be Created Over The Whole Life Cycle of the Project

Whilst the EIS prefers an approach of simply identifying the construction phase and operational phase, much work has been done to identify the full range of stages in the life cycle of such a project.

Gas Industry Social and Environmental Research Alliance (GISERA)'s work states "headline indicators such as employment and income are important, but should not overshadow indirect effects which may in the long run play a greater influence in determining how rural transition is experienced by the region."^v

A socially responsible EIS would consider how this project impacts the community as whole, both secondary and cumulative impacts, over the full life cycle of the project. A body of work has been developed around the Resource Community Cycle by Taylor and used to analyse the impacts of a coal development in Queensland and recommends consideration of the whole life cycle^{vi}.

USA has undertaken comprehensive research over a longer period given the length of history of extractive industries in that country. They have found the following patterns in the stages of the lifecycle of the project; "Energy booms may not be the economic windfall that boosters make them out to be. After the initial surge in income and jobs that comes with drilling, problems inevitably follow: higher crime rate, decreased educational attainment and over the long run, significant declines in income. The more heavily a community ties itself to the drilling economy, the greater the decline. "The magnitude of this relationship is substantial," the study authors are quoted saying in the *Washington Post*, "decreasing per capita income by as much as \$7,000 for a county with high participation in the boom."^{vii}

The way the CSG industry works is not one of diversifying a communities' economy. It totally captures the economy for a short period of time, wreaking havoc in the rapid expansion of the industry and the equally rapid disbandment of the industry, leaving gaping wounds in places where the community had become completely dependent on it.

CSG cannot co-exist with community, just as it cannot co-exist with agriculture, it must dominate, then depart, purely by the nature of the industry. It is completely contrary to sustainability and resilience.

Page 93 appendix T1 mitigation strategy states Santos will engage service providers on an ongoing basis through various forums initiated by Santos to monitor change in demand on services from the

project. We suggest this process should be resourced by Santos but be the initiation and management of an independent body.

Impacts on social infrastructure caused by the project should be funded directly by Santos, not by the Gas Community Benefit Fund. The NSW Government has committed that for every two dollars paid by a gas producer into an authorised Gas Community Benefit Fund, the company is entitled to claim a one dollar rebate on its gas royalties, up to a maximum of 10 per cent of the royalty due in each year. Given this fund is actually partially funded by the tax payer (through the forfeit of royalties) it should not be used to fix up the problems caused by the proponent. We propose that the criteria around this fund must be tight and independently managed, with regular audits of the independence undertaken.

End Of Project Life Impacts

The EIS has not adequately considered nor planned for the end of the limited life span of the project. This omission could have major impacts on our community and it is negligent to simply leave it out.

Job Creation Benefits Are Over Stated

The way the EIS outlines the benefits created through new jobs is confusing and ultimately overstates the true job creation outputs.

Locals will only be likely to secure 8% (105 jobs) (in purple in the table below) in the 3-4 year construction phase due to the specialised nature of the skills required and an abundance of these skills in other regions such as the Hunter and Queensland. Therefore 92% of construction phase workers will come from outside Narrabri.

The operational phase is where the local community will benefit from any sustainable job outcomes. Santos estimates that only 13% of the new operational phase jobs will be suitable for Narrabri people (44.5 new jobs; in yellow, on top of the 25 current Narrabri jobs).

The EIS attempts to deliberately confuse the reader with unnecessary detail in the tables. We have helped the community and media's understanding of the numbers by recreating a more useful table. Yellow indicates the new jobs for locals and blue indicates the number of people expected to relocate to Narrabri for jobs:

Timeframe	Who will get the jobs	Number	% of Total (rounded)
Operational Phase for lifetime of project	Existing Narrabri Roles	50 (actually 22)	15%
	New Narrabri-filled Roles	44.5	13%
	People relocating to Narrabri	50	15%
	People filling roles and living elsewhere	200.5	58%
	TOTAL	345	
Construction Phase (3-4 years)	Narrabri-filled Roles	105	8%
	People filling roles and living elsewhere	1,195	92%
	TOTAL	1,300	

It is worth noting that the current number of local jobs is inaccurate. Currently only 22 local jobs (7% of the total operational jobs) are provided by Santos.^{viii}

It is also estimated that 50 people will move to Narrabri for the jobs in the operational phase (in blue) as the true growth created by the project. However, in a construed sense of logic, section 26-13 assumes that an average family is 2.6 people and it goes on to state that if 50 people move to

Narrabri to run the operation of the project then that is a population increase of 130 people, or 1.7%. It is ludicrous to use a family size multiplier that includes children in a family, into an increase in overall population size. This gives an exaggerated estimation of population growth designed to give ammunition to the argument of the pro-population growth media driven elements in the community. Based on a LGA population of 12,925 in 2011 census the true population growth is 50 people plus partners (estimate 80 people) would be 0.62%, less than half of that stated. This exaggeration is again perpetrated on page 61 of Appendix T2.

Whilst the creation of 44.5 new jobs for local Narrabri people appears to be advantageous to our community, it is now well known that these jobs are filled by workers currently employed in agriculture and manufacturing, therefore actually creating a drain on the employment resources of the community.

The Australia Institute reviewed CSG industry funded research in their paper “Be Careful What You Wish For” and found “that while there was an increase in short term construction related jobs, there were virtually no additional jobs in retail or manufacturing as a result of unconventional gas development^{ix}.”

A subsequent study by the same authors found that for every ten people employed in CSG, eighteen agricultural jobs were lost^x.

In other words, the unconventional gas boom had virtually no employment benefits outside of the gas industry itself. In the words of the authors, “job spillovers into non mining employment are negligible”. It also shows that agricultural jobs were lost and that the jobs benefits employment gains were almost entirely short term construction jobs and (largely construction phase related) professional services jobs.”

A Santos funded study into the Economic Impacts of the Narrabri Gas Project indicated that Australia wide, the development of the CSG sector is not expected to increase or decrease Australia’s total labour supply. The employment impacts of the project are instead likely to manifest mainly as changes in the composition of the labour force and the mix of different industries. They identified different sectors of the economy will be impacted in different ways; with an increase in economic activity concentrated in the construction sector (additional growth of 0.16 per cent) and mining (additional growth of 0.11 per cent). The sectors of agriculture will see a net loss of -0.07%, manufacturing -0.06% and transport -0.03%^{xi} as workers shift to the CSG industry.

The negative impacts created by this project are all justified on the basis on the employment outcomes created. When in reality the benefits to the Narrabri region are extremely limited.

CSG Industry Divides Communities

Section 26-13 utilises a single study from Queensland to ascertain that the CSG industry doesn’t divide the community. The EIS quotes Coote (2013) that identified in Queensland the CSG industry is “not dividing the community”.

Whilst on the ground, everyday, at sports events, dinner parties, coffee dates, meetings and street chats we know that this statement is completely untrue of Narrabri, we also have highly credible qualitative study that confirms this. The University of Newcastle undertook detailed work in 2016, publishing in December 2016 that identified that “social division has already occurred” in Narrabri Shire^{xii}.

In an attempt to win the hearts and minds of the farming community in 2012 Santos employee Warwick Moppett posed for pro-CSG ads in front of crops he didn't farm, on land he didn't own, deliberately deceiving the community^{xiii} and further driving wedges into the community.

The rhetoric used by the industry often asserts that CSG is just like the cotton industry as a new industry coming to town that is met with scepticism. It often asserts that drilling wells is just like drilling water bores done by agriculture. It often asserts that anyone questioning the industry is a blow in from outside the industry. These deliberate, well planned plays pit sections of the community against each other in order to create division and garner favour with different people. These are not tactics used by a company that has the communities' best interests at heart and who are looking for equitable and cooperative ways to create a new and productive future for all involved.

People for the Plains have had personal experiences where the industry is dividing community. As one example, when we attempted to hold a community meeting at the Narrabri Golf Club, pressure was exerted by Santos to cancel our booking the day before the event (Santos is a sponsor of the Club of around \$10,000 at the time we believe). An industry truly interested in social cohesion would not have turned this venue against a regular, long-term customer such as us.

In the lead up to the last NSW Election ABC NENW Radio ran a live radio program in the Bakery in Narrabri. Whilst people were being interviewed upstairs in the Bakery, people gathered in the street, with pro and anti CSG signs. This was a peaceful gathering without disrespect, until Kevin Humphries stood up on a chair to present to the Pro-CSG side yelling "You don't need to listen to these non-locals". A 70 year old man standing with the those questioning the CSG industry said "hang on, I am a local farmer". To which our MP turned to him and said "And you can go back to what you had before, nothing!" and roused the pro-CSG protestors to yell and cheer.

Furthermore we know division is also created by the industry in Queensland, once again from first hand experience and secondly from industry funded work by GISERA. The survey of the Western Darling Downs found that almost half the local population was "only just coping" with, "not coping" with or actively resisting the changes to their communities caused by unconventional gas development. Less than a quarter of people surveyed approved of the unconventional gas industry.

Only 6% of people felt the community was improving as a result of the industry, while many were struggling to cope with the changes the industry had brought.^{xiv}

University of Queensland outlined the exaggerating effect that the industry has, blowing up previous smaller tensions that are currently managed at an acceptable level. "The CSG industry, in other words, has exacerbated certain prior community tensions, which inform current disputes. Forms of social stratification and power struggles have important historical dimensions."^{xv}

Sadly our federal politicians create further divides by using landholder compensation to drive bigger wedges between neighbours such as Barnaby's suggestion to pay royalty payments to people with gas wells^{xvi}. This is not a strategy that will address landholder concerns nor make up for the negative impacts this industry creates. All it will do is further divide communities.

University of Queensland study found "The small Queensland town of Miles, for example, has a steady town population of around 1,200 with estimates of the non-resident workforce in town and in camps ranging up to 1,000. One interviewee lamented how "nine out of ten people you see on the

street are strangers". In a small country town with traditionally strong social cohesion, the presence of "strangers", mostly men, was described by local residents as being "disturbing".^{xvii}

GISERA (CSG industry funded) has already undertaken quantitative work in Narrabri around the social impacts and community division created. It is too pre-emptive to continue with the assessment of the EIS without waiting for the science to be completed.

Man Camps As a Solution to Housing Demands

The EIS has a heavy reliance on temporary accommodation to alleviate housing demand problems in Narrabri as 90% of construction phase workers are expected to be FIFO or DIDO. It is well known that the FIFO and DIDO workforces reduce the positive benefits to the community.

The Office of the Chief Economist for the Federal Government quoted a report by Rolfe that found that "positive impacts of resource projects on economic growth in the Surat Basin are very sensitive to the extent that the existing workforce can be utilised and the level of non-resident workforce based outside the region. If workers commute, the positive impacts will be much smaller."^{xviii}

Many negative impacts can be generated directly by the poor behaviour that such a housing system naturally creates, but also indirectly by what having FIFO/DIDO workers in a community takes away from a normal live-in workforce. The region already suffers from this due to the reliance on temporary workers accommodation to date in both Narrabri and Boggabri, which will be further increased due to the Narrabri Gas Project.

The first paragraph of 26-13 under 26.3.3 states there wouldn't be a significant impact on the demand for housing, yet the EIS states there are 3 new housing estates planned for Narrabri. It is difficult to follow the reasoning of these seemingly contradictory statements. It would appear that the proponent is selling the community two different stories – one of development opportunities concurrently, one of no negative impacts.

That is exactly how communities become over-capitalised and how towns become left with housing developments that are completely unlive in such as in Chinchilla in Queensland. A number of media articles in the last six months have sought to bring to light the housing impacts created throughout the entire life cycle of CSG projects.

Even in Gladstone rents doubled over night, as did house values in town. The kinds of impacts seen were summed up "Rents skyrocketed, with seniors no longer able to afford to live in the community they'd known all their lives. Teachers, nurses and police were either forced to move away by the high costs, or threw in their day job to join the crews constructing the plants. Business owners, too, lost staff to jobs that were paying "obscene amounts" of money and struggled to maintain a grip on wages as house and rental prices soared through the roof."^{xix}

In Miles, Dalby Chinchilla and Roma house prices and rents increased then crashed below their original values with people quoting "in the past 12 months more than 1,000 houses have been listed for sale in the region but only 325 have been sold"; "the value of her unimproved land tripled in three years, before dropping more than \$20,000 below its original value."^{xx}

"In Dalby, many homes are worth \$50,000-\$100,000 less than they were at the height of the boom, and rents are \$50-\$60 a week lower. Miles and Chinchilla saw even higher peaks and bigger falls."^{xxi}

Increased house prices puts upward pressure on rates with locals bearing the brunt. "Local residents incur the majority of the costs in the form of rising house prices (for aspiring owners) and rising rates"^{xxii}.

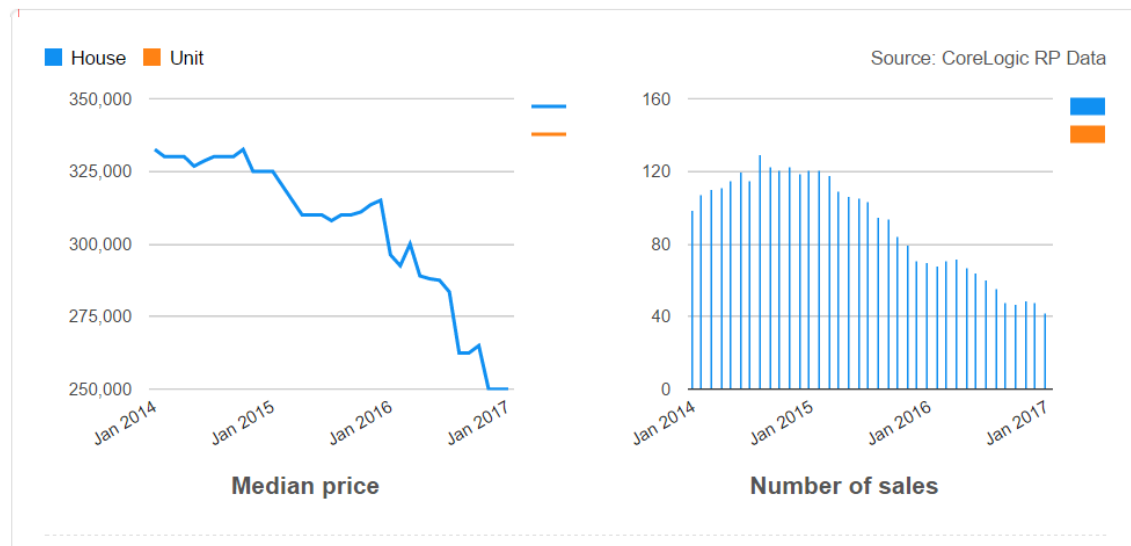
This in turn often drives our low income earners including senior citizens^{xxiii}. “Rapid change can often lead to social instability, a reduction of community cohesiveness, and individual and community wellbeing decline.” “Also affecting the character of certain towns is an outward migration of older residents who took the opportunity to sell their house for a good price. As a result, there are reports that towns are losing their volunteering resources and their informal childcare providers.”^{xxiv}

Roma in Western Queensland provides a stark and obvious picture of the way house prices and rents rise quickly in the construction phase and drop rapidly, afterwards, often lower than prior to the “boom”.

Suburb Profile Report For Roma QLD (4455)



Roma House: Median price \$250,000, Annual capital growth 2.54%, Number of sales 42, Weekly median advertised rent \$270



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There is an expectation within the community that the proponent would provide honest information about the expected roll out of the project so that they may make these extremely important decisions about their investments.

We have seen time and again in the lifecycle of a CSG project, the rapid boom and bust that ravages communities. Yet the EIS chooses to ignore these impacts, disregard the changes over time and essentially lie to the community about what to expect. Not only is this morally apprehensible it is completely impractical as it robs community service organisations and people of the opportunity to properly prepare so they can proactively respond.

Cost of Living and Cost of Doing Business Rise

Rifkin et al stated that “Lower income households are pressured by increases in the cost of living in the region due to increased demand for goods and services, potentially leading to the outmigration of these households, something that has been reported in the Darling Downs.”^{xxvi}

An extractive industries study of the Darling Downs in Queensland asked stakeholder groups for their perceptions on how their financial capital had changed in the last five years since the rapid expansion of the resources sector. Stakeholder groups from the CSG and mining industries stated

they were financially better off, while others such as agriculture, advocacy groups, community and government all stated that they were financially worse off than five years ago. Interestingly, the business stakeholder group believed themselves to be financially worse off than 5 years ago^{xxvii}.

What the business group noted was an increase in economic activity within the resources sector creating inflationary pressure on services, transport, rentals, living costs, council rates and labour costs. Whilst these businesses had not seen the economic gains from direct involvement in the resources sector, they had the borne the accompanying cost increases, ultimately leading to a decreased economic position.

The business mix has been altered in the Darling Downs, with some small businesses such as car sales, coach charters and bakeries flourishing as a result of resources development, others have closed or lost profit. The opportunities created by the resources sector were ideal for chains such as KFC, Woolworths and McDonalds^{xxviii}.

A CSIRO study of the Darling Downs concluded that less than 5% of people living in CSG fields believe it will lead to a better life^{xxix}.

The industry creates the “haves” and the “have nots”

Due to the hype created by the gas companies, often businesses will take risks and over-capitalize leaving themselves exposed when business drops away, as has been seen in Queensland already^{xxx}. Whilst businesses are responsible for their decisions they are undoubtedly influenced by the company, their local Council and Chamber of Commerce. Often these bodies heavily promote the benefits and overstate the gains to be made, which leads businesses into trouble.

In the EIS process the proponents have an obligation to provide honest and accurate information so there are no casualties to the hype.

There Will be Significant Impact on Health (including but not limited to, Facilities)

The EIS identifies there will be no great impact to the health facilities (26.3.4) in the shire as only 50 people are identified as moving to the town. However when the positive population growth numbers are identified (and exaggerated) they are stated at 130 people. Again, two stories for the community. Whilst 50 people may not have a considerable impact on the health facilities of the shire, these must be considered in conjunction with other new developments in the Shire. For instance, the Maules Creek Whitehaven coal mine identified that they would have a significant impact on the health facilities in Boggabri therefore their mitigation and management strategy included the financial support of the Boggabri Medical facility to the tune of \$20,000 per annum. Whilst this amount has not yet been received by the facility (despite the condition coming into play in 2012) this project must take into account the cumulative impact to this facility. Gas worker health problems, on top of the Maules Creek mine demands (as well as the other open cut and underground operations) would have a significant impact on the health facilities of Boggabri.

There have been incidences in Queensland where gas workers were treated after being exposed to gas leaks.^{xxxi} It would be more prudent to assume the same would occur in Narrabri, and be prepared for this rather than to pretend nothing will go wrong.

Brisbane based GP Dr Geralyn McCarron outlined to a meeting in Chinchilla in 2016 the statistics for that region "Between 2007 and 2012 the population of the Darling Downs increased by 7% from 235,193 to 251,893.

"During the same time frame acute hospital admissions for respiratory conditions increased by 124%, acute hospital admissions for circulatory conditions increased by 114%, invasive cancer incidence increased by 14%, and hospital admissions for attempted suicides increased by 50%."xxxii

It is not enough to simply classify that there will not be significant impact on health facilities. One thing is certain, there will be significant impact on mental health services in the Shire should this project proceed.

Emissions from CSG Do Create Negative Health Impacts

Section 23.3.6 states that emissions from the CSG development are "not expected to impact directly on health" and it fails to assess the methane emissions from all aspects of CSG infrastructure.

However, recently released footage of the FLIR camera shows significant releases of methane gases from all gas infrastructure (pipelines, compressor stations, ponds, wells etc). CSG is recognised to be up to 86% made up of methane. It is unrealistic to state that there will be no health impact when this level of methane is constantly emitted.

Whilst the EIS has stated there will be no impact on health, nowhere has a health baseline been established, nor is there any suggestion that a baseline be identified before the project starts. The EIS itself states "there is limited data available" on the current health of the Shire residents (section 26.2.9 or page 14). How can we know the level of impacts if we don't know what the current situation is?

The negative health impacts generated by the project has been completely disregarded on the basis of a single 2013 Queensland Health report that stated there is "no clear link between health complaints of Tara residents and natural gas".

Whilst it is only now being discovered, we are of the opinion that CSG is the new asbestos scourge. An assessment of all the peer-reviewed science reports on the health impacts of Unconventional Natural Gas Developments (UNGD) in USA showed an extremely significant growth in the number of reports completed more recently. "Of the 685 papers reviewed it established that 84% of public health studies contain findings that indicate public health hazards, elevated risks, or adverse health outcomes; 69% of water quality studies contain findings that indicate potential, positive association, or actual incidence of water contamination; and 87% of air quality studies contain findings that indicate elevated air pollutant emissions and/or atmospheric concentrations. This paper demonstrates that the weight of the findings in the scientific literature indicates hazards and elevated risks to human health as well as possible adverse health outcomes associated with UNGD."

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"Further, UGDP affects human health and well-being not only through direct exposures to toxic chemicals in air, water and soil, but also through many stressors introduced into communities. These include excessive noise and light pollution, increases in traffic accidents and fatalities, increases in domestic violence, alcohol and drug use, crime and disruptions of family and community relationships". xxxiv

According to submissions made to the NSW Chief Scientist & Engineer by Ablett, "Under natural conditions, fossil fuels contribute a relatively small volume of PAHs (Poly Aromatic Hydrocarbons) to the environment. Because most coal and oil deposits are trapped deep beneath layers of rock, there is little chance to emit PAHs to the surface environment. For the first time, Coal Seam Gas mining will allow large amounts of these chemicals to be solubilised from coal seams and leached out into ground water, and fracking chemicals to be released into our atmosphere. This poses a new major health risk for NSW, with a possible increase in cancer cases on par with or greater than asbestos."xxxv

PAH exposure during prenatal and/or early life have been found to impact childrens' self-regulating behaviours and social competency. Children with poor self-regulation skills have difficulty managing disruptive thoughts, emotions, and impulses; poor social competency limits their ability to get along with others. This leads to the development of many childhood psychopathologies..... such as ADHD, OCD, substance use disorders, and eating disorders.”^{xxxvi}

In his report, Dr Wayne Somerville outlines the ways humans' health can be impacted by CSG through soil, water and air polluted by the chemicals used, by the dust and particulate matter generated and by the water and its components brought up from the coal seams.

Dr Somerville also provides an alternative view to Santos' EIS on the health impacts from CSG in the Tara region, quoting a variety of studies, compared to the single report quoted in the EIS about the Tara residents. “In 2013 medical tests found a high level of hippuric acid, a metabolite produced following exposure to toluene, in the blood of a young boy who lived in the Tara estates. In 2013, Dr Geralyn McCarron obtained information from 113 people and found 58% of surveyed residents reported that their health was definitely adversely affected by CSG mining, and a further 19% were uncertain. The reported symptoms were outside the scope of what would be expected for a small rural community, and resembled the “down-winder's syndrome” found in overseas communities exposed to gas mining pollutants. In the McCarron (2013) Tara study, there were reported increases across all age groups in coughing, chest tightness, rashes, difficulty sleeping, joint pains, muscle pains and spasms, and nausea and vomiting.”^{xxxvii}

Table 6.2 in T2 outlines ways human health can be impacted from spills, leaks or contaminations of drilling fluids or produced water. This is all based on the assumption of zero human error, yet Mary O’Kane, Chief Scientist said in her report that human error was inevitable. The EIS must work on the assumption that at some stage human error will occur and proactive management and mitigation strategies must include this. The current strategies do not therefore this EIS must be rejected.

The EIS Appendix T2 on page 63 mentions a few studies into the health impacts of CSG that are still not published. We believe it is prudent and sensible to await the results of these and other studies and develop proactive and appropriate mitigation measures before pushing ahead with the project.

It is simply unacceptable (and laughable) to use one Queensland study to assume no negative health impacts will be created by the NGP.

Air Quality Measures Unsuitable

The EIS states that an air quality management plan will be developed and “include a suite of measures that “could” be implemented to avoid, mitigate and manage potential air impacts”. How can the community have confidence in such weasel words as “could”? These mitigation strategies are unsuitable for the level of risk to the community.

In Appendix L (air quality assessment) summary it states that all air impacts were reviewed including PAHs and VOCs yet the mitigation and management strategies don't seem to incorporate these leaving the community concerned about air quality.

All aspects of air quality must be measured and managed and if breaches occur swift consequences must be felt, including: emissions of nitrogen dioxide, carbon monoxide, particulate matter (PM10/PM2.5), ozone as well as acrolein, formaldehyde and acetaldehyde (volatile organic compounds) and polycyclic aromatic hydrocarbons (PAHs) associated with the operation of the Leewood gas processing and power generation facility.

Land Access Agreements Are a Poor Way To Deal With Health Impacts

As often stated in Appendix T1, section O “Santos will not place infrastructure on land without an Access Agreement”. However past experience of their *modus operandi* we know the ways that this agreement is reached is often reprehensible. Therefore this statement provides no confidence to landholders that their best interests will be considered, making this an ineffectual mitigation strategy.

Page 24 of Chapter 26 states that the health impacts of the project will be managed and formalised through Land Access Agreements (LAA). This is a non-sensical mitigation strategy. It is a ridiculous assumption that the only people who will suffer health impacts will be those that enter a Land Access Agreement to have wells installed on their property.

It is highly reasonable that those suffering the greatest mental health impacts through stress and anxiety caused by the industry, do not have gas wells on their farm and therefore do not have a LAA. It is worth noting that people who have other gas infrastructure (such as roads, powerlines, pipelines, dams, compressor stations etc) on their land do not have LAA's.

During the Exploration phase of this project we have already seen those landholders suffering the greatest stress are those not entering agreements with the proponent and this is unlikely to be different in the production phase. Personal stories have already arisen within the project area and immediate surrounds, of self-harm risks and even suicide, and again we are only in the Exploration phase.

This industry causes devastating personal costs and it is simply not acceptable to brush it under the carpet. The proponent must take responsibility for their role and the government must take responsibility for their role, before we will see an end to the pain, torment and deaths.

During the LAA process all the power for the negotiation process lies with the proponent. They hold the purse strings with the threat of litigation the only option for landholders. What's more, is that most LAA also feature confidentiality clauses so neighbours cannot discuss with each other to ensure equity for all.^{xxxviii} This power imbalance is highly likely to further compound the feelings of powerlessness and stress and is a completely inadequate solution to the health impacts of the project, in fact the irony is that the LAA process is often the cause of the health impacts.

In Queensland, under the constant bullying and stress caused by QGC, George Bender took his own life. It is well understood that the primary reason for his suicide is the CSG industry, their tactics for getting agreement and the legislature under which these agreements must be reached.^{xxxix} By no stretch of the imagination is it acceptable to assume that the health impacts of the project can be managed through the LAA process. What a joke! It would be funny if we weren't playing with actual peoples' lives.

There must be alternative solutions to access resources and support for those impacted by the health impacts of the project. It is suggested that a health fund be established to provide emotional and physical support to those suffering from the project.

A former CSG Landholder Liaison Officer, John Wilcox publicly stated "The negotiating tactics by some of the team I would say were 'unreputable'. That was only a small part of the team but they are employed by the gas companies and they are there to deliver what keeps the CSG companies going."^{xl}

GISERA has been charged with a number of research projects including “Human Health Impacts of CSG Activity” which is currently underway and proposed to be completed by August 2017. We insist that this project cannot progress until the industry funded research by GISERA is completed.

There Will Be Visual Impact Around Yarrie Lake

26.3.5 States there will be a 200m exclusion zone around Yarrie Lake to ensure there is no visual impact on the recreational values of the Lake. 200m is far too short given the geography of the area. It is flat, with limited vegetation, meaning line of sight could reach at least 500m. Exclusion zones around Yarrie Lake must be at least 500m.

Training Needs Not Being Managed Appropriately

26.3.7 page 25 outlines adequate and relevant training available at Tamworth TAFE to help community members upskill to meet the demands of jobs created. Firstly this is a huge time commitment to travel two hours one-way to Tamworth for training. Or are they suggesting people should live in Tamworth or Gunnedah, in which case Narrabri will not benefit.

GISERA has outlined a more detailed direct and indirect impacts of CSG and has made specific mention of the importance of local workers having the appropriate skills in order to minimise the negative impacts and maximise the positive impacts of the industry. “Labour force skills: the skills that local workers possess are crucial in filling new jobs produced by resource sector expansions. In this regard, the role of initial skills, training opportunities and labour migration combine to determine how much local labour is used”^{xli}.

At Narrabri Shire Council meeting in March 2017 Santos’ Peter Mitchley commented that Narrabri doesn’t have the skills need for the project and therefore they would need to bring people in from outside the area. A company interested in the wellbeing of the community would put practical steps in place to build the capacity of local community people. These steps could include funding the Narrabri Trade Training School, resourcing the Narrabri High School and the Narrabri TAFE.

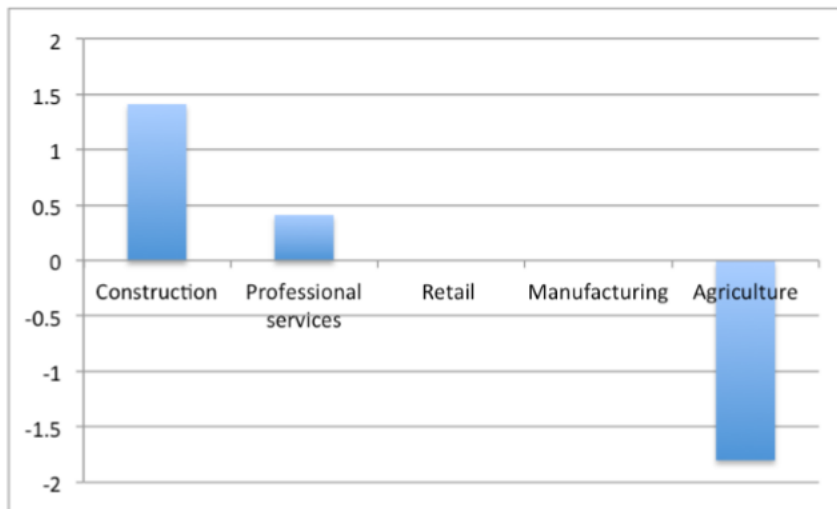
NGP Will Compete With Agriculture

The EIS states that the project “may” compete with agriculture (and mining), however for staff causing a potential impact (on page 26) of “heightened cost of labour” for the agriculture industry.

NGP WILL compete with agriculture for jobs and it will drive up the cost of doing business for the other sectors.

The Australia Institute found that for every ten people employed in CSG, eighteen agricultural jobs were lost^{xlii}.

Figure 9 Spillover job impacts per CSG job.



Source: Flemming and Measham 2013 and 2015a

xliii

Furthermore, at a national scale an increase of 50,000 jobs in the mining sector correlates to a loss of 80,000 jobs in the agricultural sector^{xliv}.

The gas industry's own work by GISERA plainly outlines that one of three impacts created by the CSG industry is "a movement of labour from manufacturing and/or agriculture (tradable goods sectors) to the resources sector is likely to occur as the manufacturing and agricultural sectors, in general, cannot compete with the wages offered by the resource extraction industry."^{xlv}

Peer reviewed studies in USA show that gas drilling is shrinking the Pennsylvania dairy industry. "During the period of fracking expansion (2007-2011) the most heavily drilled counties experienced a 30% loss of milk cows compared to a 3% loss in counties with fewer than 100 wells. Milk production dropped 23% in the heavily drilled counties and 1% in counties with under 100 wells."

As second study by Timothy W. Kelsey, stated "Changes in dairy cow numbers also seem to be associated with the level of Marcellus shale drilling activity. Counties with 150 or more Marcellus shale wells on average experienced an 18.7 percent decrease in dairy cows, compared to only a 1.2 percent average decrease in counties with no Marcellus wells. The NASS and Department of Environmental Protection data suggest that increases in the number of Marcellus shale wells are associated with declines in cow numbers and milk production."^{xlvi}

A Lack of Well Placement Map is Unprecedented

It is concerning that there is now map outlining well placement. The EIS points out that the placement of wells depends on the Field Development Protocol which will be worked out later. This is an unusual and unprecedented approach which is less than satisfactory and provides no security to landholders surrounding the project. This EIS should not be approved until a map of well placement is provided in a appropriate level of detail.

Narrabri Gas Project Will Impact Land Values

The impact to land values by the NGP has not been addressed. The EIS identifies the appropriate mitigation strategy for any negative impact to the agricultural industry to be landholder compensation, in order to recompense landholders for the loss of agricultural productivity.

However a CSIRO study has for the first time put a dollar figure on the losses to farmers due to coal seam gas (CSG) mining on their land. Using 24 different scenarios the sample area averaged a loss of \$2.17 million over 20 years when CSG mining activity was present. It found the biggest cause of losses to agricultural production was from gas industry access tracks and lease areas.^{xlvii} At the proposed level of \$30,000 p.a. for the lifespan of the project, say 20 years, \$600,000, leaving a landholder \$1.57 million out of pocket, purely based on the loss of production. Therefore this in no way meets the loss of land value as well.

Work done in the USA lists countless examples^{xlviii} of losses in land value as prospective buyers are driven away by the noise, vehicular movements, and health impacts and stresses caused by living next to gas infrastructure including one Texan court case in 2014 where a family was awarded just under \$3million including \$275,000 for the loss in market value of their property caused by the drilling.^{xlix}

Whilst in Australia we are continually told that not enough properties have changed hands to be able to determine if land values have been impacted by CSG developments.

However a study on the impact of the Coal Seam Gas industry on land values in NSW Report for: NSW Valuer General February 2014 it reviewed many USA and Canada studies that largely showed a reduction in land values impacted by drilling. It pointed out that the Queensland State Valuation Service will reduce the valuation of lands with CSG wells on their place of an allowance of between 2.5% and 20%.ⁱ

Aside from decreasing land values, is the inability to borrow money due to CSG wells. We have also seen a loan denied by the Commonwealth Bank with the letter showing the presence of four wells on the 240-hectare property, currently on the market, as the sole reason given for refusing the owners' application for a \$500,000 bridging loan to buy a new home.ⁱⁱ

There is no way landholder compensation can fully reimburse landholders for the far-reaching and complex impacts of having CSG on their farms.

The EIS fails to consider the broader landholder impacts such as spread of noxious weeds due to huge number of vehicular movements.ⁱⁱⁱ

The EIS fails to address the risks created by spills or accidents, such as the blowout at an Arrow Energy well that spewed produced water for 24 hoursⁱⁱⁱⁱ nor to properly identify suitable mitigation strategies for such occurrences.

My personal experience from friends and relatives in Queensland who are landholders is the sheer amount of time spent policing Agreements and ensure the gas companies meet their obligations is in itself a great burden on the agricultural industry.

26.2.6 quotes Narrabri Shire Council's Extractive Industries Policy stating "demanding a nil net effect on surface water and aquifers used by the community", when in fact council's Policy is to "demand a 'Nil' effect position in regard to the quality of surface water, domestic, stock and irrigation aquifers used by our community." The difference is that the EIS has included "net" effect which in effect has the potential to reduce the strength of the policy.

Proactive Approach to the Social and Health Impacts

Not only is the EIS badly lacking in applicable mitigation and management measures for the likely negative social and health impacts of the Narrabri Gas Project, it completely misses out on any

proactive mitigation and management measures for creating positive impacts from the project for our community.

A raft of proactive measures are demanded of the project proponent to ensure that the Narrabri community is not only not worse off after this industry wreaks its devastation, but that it is better off after the industry comes to town. This includes better off economically, physical infrastructure, in social capital and in community health.

Some suggested measures are listed below, however we firstly recommend that no approval be given to this project until the social and health impact studies are completed and the science is well understood, and therefore the applicable management strategies are well known:

- Procurement policies of the proponent and all sub-contractors are to include the use of local labour where possible (during construction phase AND particularly during operational phase). Simple tactics could include:
 - advertising for roles locally first
 - working with Narrabri, Coonabarabran, Wee Waa, Moree and Gunnedah High Schools to develop trainee programs
 - working with Narrabri TAFE to establish applicable courses
 - consider the establishment of a purpose built training facility for the ongoing training of operational staff
 - regular local recruitment drives using a visual prop such as a bus to accept applications (been done in Qld)
 - special consideration or pay incentives given to local employees
 - disincentives given to employees in FIFO accommodation
 - a guarantee from the proponent that they will never force staff to choose to live in FIFO accommodation if they have local accommodation (as we have seen happen in Qld)
 - serious repercussions should these not be undertaken
- Workers (including those living in workers camps) given rosters that allow them to engage in the community. Simple tactics could include:
 - Flexibility in work roster to allow participation in mid-week or weekend adult sports competitions, hobbies and training events
 - Flexibility to in work roster to allow parents to attend children's school, sport or hobby activities
 - holidays for important community events such as the Narrabri Show, ANZAC day etc
- Complementary industries encouraged to establish locally. Inexpensive CSG provided locally with infrastructure to support it could create new industries, expand existing industries or value add.
- A petroleum rates program should be introduced to allow Council's to recuperate the increase in costs of maintaining infrastructure utilised by the CSG industry, similar to the system used in Queensland or similar to Voluntary Payment Agreements used by the coal industry in NSW.
- Health services, particularly mental health services should establish an independent body to oversee these impacts and make recommendations to the proponent and government as to where increased spending should be put to counteract these impacts.

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