

# Submission on Santos Coal Seam Gas Project

## Other options

The project's claims on "do nothing" are frivolous and not supported by factual analysis. Claims of "may be..." are not supported by information obtained under a program with defined statistical parameters and statistical analysis. Without such data, claims of "may be" should be ignored.

The evidence Santos has made the statement relating to options to claim "should the project be relocated slightly to the east, west or south....this would not result in an economic project." This statement suggests that the economic viability of the project is weak. If a parameter, such as a slight relocation causes the project to become uneconomic, the project itself does not have a very significant level of financial resilience. A slight perturbation in its underlying projections could cause the project to become uneconomic. There are other concerns about the economic soundness of this project which are raised in other parts of this submission.

The scale of the project and its claimed capability of producing almost half of the NSW gas consumption presents a risk to the reliability of gas supply to consumers in NSW. Should the project proceed, that level of supply presents a sovereign risk to NSW. The claim that Santos is developing this coal seam gas project to give NSW gas supply reliability must be understood as being an economic argument. I suggest that a 50% supply would enable Santos to be a price maker (if demand was strong) rather than a price taker. Consumers in NSW must be protected against monopoly supply situations. For this reason, the scale of the project should be limited so that it provides no greater than 20% of the State's gas requirements.

## Health impacts arising from coal seam gas

It is noted that the documentation appears to ignore the known health effects from the combustion of coal seam gas on indoor air quality. The health risk assessment report fails to identify the risk to human health arising from indoor gas combustion. Because the NSW Health Department and the NSW OEH have been reluctant to make regulatory requirements on the use of indoor gas fired appliances, this does not permit this EIS to ignore the evidence. There is international evidence which shows there is a need to address the indoor air quality health affects arising from unflued gas combustion. The likelihood that there will be no change to the regulation of indoor combustion of natural gas over the life of this project is questionable. In contrast to the general silence within the NSW State Government, international awareness of this issue is likely to lead to a move away from the use of gas for heating and cooking in future years.

It is also noted that the Santos documentation does not address the existence of fugitive coal seam gas emissions from the construction of the gas collection infrastructure. The documents do not provide detailed independently verified reports to support the zero emissions claim.

## Waste management

The Santos documentation infers that the use of landfills for the disposal of wastes poses zero risk. This relies upon the assumption that the landfill operator can store the waste with zero future risk. This assumption is not supported by evidence which shows that some landfills operations cause

environmental problems due to a range of factors. Although the waste is received by the landfill, the waste generator should be responsible for that risk at the time any approval is considered rather than relying upon the implicit assumption that the landfill disposal poses zero risk over the life of the landfill. In the case of this project, the transfer of saline solid waste to landfill will cause a significant change to the biological processes in the landfill. Assuming that the proposed landfill is that operated for municipal waste, the question of whether this type of waste stream will impact the methane generation (and capture by the landfill operator) needs to be addressed.

Another element of waste management that is deficient is the disposal of spent drilling fluids. The proponent has not identified the classification of this waste nor has the proponent identified which existing licenced waste treatment facilities are licenced to receive this type of waste. Without knowledge of this aspects, it would not be possible for the proponent to include the actual costs of this element of the project. The risk assessment prepared by Santos does not identify any risk for the end disposal of this waste and presumably claims there is zero risk for the life of this waste. No justification of this assumption is provided.

## Risk of groundwater leakage out of existing aquifers

The Santos documentation quotes the “NSW Code of Practice for Coal Seam Gas Well Integrity” on the basis that compliance with this Code will provide in perpetuity assurance that aquifer integrity will not be compromised. A review of the Code shows that it was not based upon scientific evidence to support the “in perpetuity” claim. The well installation procedure involves the use of steel and various casing materials which are known to deteriorate over time. Underground temperatures and pressures that will impact the bore materials, present a risk to the structural integrity of the bore material over time. Converting the 850 extraction bores to “monitoring bores” does not appear to be an appropriate method to address the long-term future risk. The risk of aquifer integrity loss arising from the 850 wells is not zero. The 25-year assessment period provided in the Santos documentation does not address the need to protect the integrity of the Great Artesian Basin in perpetuity. Should a loss of integrity occur at some time in the future, what will be the source of funds to correct that situation? How will that defect be detected? What monitoring systems will be put in place by Santos to monitor the integrity of the bores into the 22nd Century and beyond? These aspects have not been addressed by the proponent. The approving body has a duty of care to ensure that these issues are clearly addressed and properly funded. The proponent is claiming that by merely complying with the current State Government code, all risk is transferred to the State. This situation is unreasonable as the State code is subject to review and amendment over time – particularly over the time scale of impact that may arise from this project.

## Benefit cost issues

The GHD report states: It was outside the scope of this analysis to independently appraise project parameters such as forecast gas prices, capital and operating costs and gas production estimates.” Such a statement effectively undermines the conclusions of this analysis. The analysis is based solely on information provided by the proponent. The data has not been independently assessed at arm’s length. The proponent has made no attempt to use credible independent sources for data used in the cost benefit analysis. This means that the cost benefit analysis is of limited credibility.

The economic viability of the project is based upon the assumption that there will be no change in future demand for coal seam gas. The wholesale price for gas was around \$4/GJ in 2015 while current prices are around double at \$8/GJ. The \$8.70/GJ gas price used in the cost benefit analysis is highly speculative given the time frame over which production is scheduled to occur. Although the documents include an analysis for a 30% fall in gas prices, over a 25-year period that level of variation is far less than the variation in gas prices seen in the last 2 years. Hence the magnitude of possible gas price variations in the assessment is highly likely to understate what may occur in the future.

The projected future costs of electricity generation have been declining significantly due to lower costs associated with renewable energy sources. These cost reductions are likely to see a shift away from gas demand for electricity generation and this raises questions about the validity of projected future gas revenues. The current costs for the installation of wind generation is less than gas electricity generation. Both wind and solar generation costs have been reducing significantly over the past 10 years. This pattern is reasonably expected to continue.

The current electricity generation in NSW is dominated by ageing coal fired generators. As many of these units are at or near the end of their economic life, there is a pressing need for new electricity generation capacity to be provided. This new capacity is more likely to come from renewable sources as these are currently at or less than that of gas electricity generation. The result is that the claimed “benefits” of gas electricity relative to coal fired generation may never eventuate into the market because gas electricity generation costs are not decreasing at the same rate as either wind or solar. A more likely scenario is that gas demand is likely to decline.

This is compounded by the recent Federal Government’s proposal to reduce the disparity between gas prices received for gas exports relative to the local gas costs. The combined effect of these future changes is highly likely to undermine projected income streams asserted by Santos as the proponent.

Another area of Federal and State Government intervention in the electricity industry comes from the regulatory systems in place. To assume that the current regulatory arrangement will remain in place for the life of this project would be foolish in the extreme. The integration of renewal energy systems into the electricity generation network will take place if Australia is to have a cost-efficient system. Battery storage systems are part of the future network. The regulatory changes necessary to introduce large scale renewable energy into the network poses big problems for the future of gas. These changes mean that predicting the underlying gas cost into the future is problematic. The projected cost benefits are therefore considered to be highly speculative. The failure of the documents to even consider the problems in the underlying assumptions raises questions about the integrity of those involved.

Attention is drawn to the greenhouse assessment costs. The cost is based upon USA September 2015 costs. The question the proponent needs to address is: is this a reasonable and conservative approach to greenhouse gas assessment? The precautionary principle needs to be applied to this assessment not one based upon the opinions of the proponent. The assessment appears to be dominated by source greenhouse gas emissions and gives less weight to second and third tier greenhouse gas considerations. This is not consistent with the precautionary principle. As there is

just one earth, the atmosphere does not respond differently depending upon whether a GHG is from a tier 1, tier 2 or tier 3 source. All GHGs should be equally weighted.

## Social impacts on the local community

It is noteworthy that the community health risk assessment report fails to identify the social impact of the project on the Indigenous community and the stress caused to the region's farmers in terms of the long-term risk of groundwater impacts. The proponent's response is merely that the project satisfies Government requirements. As Governments change over time and laws can be changed, satisfying Government requirements in 2017 is not to say that this project will satisfy the Government requirements in 2027 or 2047. The current failure of Government to give landowners reasonable power to stop CSG developments which may impact regional groundwater imposes considerable stress on landowners. Landowners are disempowered by mining operations under current Government laws. The Government failure to shift this power imbalance has caused and is continuing to cause severe stress to many landowners. This situation is unhelpful. The lack of statistically valid data on the level of stress is recognised but not acted upon in the health risk assessment. The precautionary principle calls for a stop on CSG projects until the necessary level of valid data is obtained. The short-term history of CSG means there is insufficient data and the development should not be approved.

## Impacts on Aboriginal Groups

While it is apparent that the proponent has sought to follow the specified procedure for the conduct of consultation with the Aboriginal community, this has not resulted in an accepted agreement of the project. The Aboriginal community has not accepted the merits of this project and its impact on Aboriginal heritage. While successive Governments have sought to improve outcomes for Aboriginal persons, the repeated over-riding of Aboriginal claims is a major part of the problem and causes loss of self-esteem and disempowerment. The claim of Santos that they "will work it all out" is problematic. The financial analysis of this project shows that it is marginal and conditional upon gas prices remaining high. The proponent has not addressed how it will address Aboriginal needs when the project starts to lose money.

## Greenhouse Gas Emissions

The project is heavily reliant upon the assumption that coal seam gas extracted will be used for replacement of coal fired electricity generation. The basis of this claim is not supported by recent evidence. The more likely scenario is that Australia will move from a predominantly coal fired electricity generation system to a renewable energy system. This is the current discussion in the electricity generation sector and the Finkel report will provide a significant sign of this shift. The result is that the Santos documents grossly overstate the claimed reduction in greenhouse gas emissions (GHGs) arising from the project. This is because the GHGs arising from coal seam gas combustion far exceed those from renewable energy.

The project fails to identify the option of using renewable energy systems to provide electrical energy for the work sites. The location of the development makes it ideal for renewable energy systems. The use of self-generated gas as a zero cost input means that GHG emissions from the project could be easily reduced by utilising renewable energy systems instead of using grid, gas or diesel powered generation.

As coal seam gas is a GHG, the real issue that must be addressed for this project is the 3.77Mt CO<sub>2</sub> equivalent released into the atmosphere each year and 95Mt over the 25-year extraction period from the combustion of the coal seam gas. With the Federal Government intention that Australia should achieve zero carbon emissions by 2050 (or sooner), it is very doubtful that this project will assist this objective to be met. A more likely scenario is that the project will be halted due to demand for gas diminishing part way through the project.

## Air Quality Assessment

The assessment report referred to air quality data at OEH sites in the Hunter Valley. This data is unrelated to the site in the Narrabri region. The air quality data collected by Santos in the local area shows that air quality is very good (as expected). While that is the case, the opportunity for site emissions to be reduced by the use of renewable energy sources instead of the proposed gas or diesel fired generators should be explored. This is because the current costs of renewable energy systems when operating costs are included, are similar if not less than that of gas systems. This would deliver air emissions based upon currently available technology and reflect the 25 year proposed life of the project.

When the documents refer extensively to the Federal Government's National Environment Protection Measure (NEPM) air quality objectives, it needs to be noted that these objectives are politically derived. NEPM objectives arise as a lowest common denominator reached by agreement between the Federal and State Environment Ministers. NEPMs are derived from the World Health Organisation (WHO) and other scientific documents and then adjusted for what the Ministers believe the public will accept. The resulting NEPMs are therefore a compromise. In Australia's case, the NEPMs are largely out of date due to the lapse of time for changes to be made relative to when WHO documents are first released. The health assessment should be conducted with reference to original scientific data or reports, such as that produced by the WHO. Referencing politically derived criteria does not necessarily equate to protecting public health. In Austria's case, the NEPM objectives are typically higher than WHO guidelines. For this reason, WHO guidelines on both outdoor and indoor air quality are science based and should be referenced as the basis for assessing this proposal. It is also important that WHO indoor air quality guidelines are also used as the coal seam gas produced may be combusted inside places of work and residence. Ignoring indoor air quality effects arising from (unflued) gas combustion does not reflect the duty of care placed upon the approving body and NSW health authorities for this project.

## Surface Water Impacts

The proponent has not demonstrated that the transfer of saline wastewater into Bohena Creek during periods of high flow will not cause impacts arising from the salt burden imposed on downstream systems. As the waters eventually become part of Adelaide's water supply, the known problems in the lower reaches of the Murray Darling system cannot be ignored by this proposal. The documentation suggests that all impacts end after the wastewater enters Bohena Creek. The monitoring proposed by Santos will not prevent harm to the environment from the cumulative long term discharge of saline wastewater (treated water), and runoff of saline spread around the local area mobilised due to rainfall runoff. The impact of saline loading is a major problem for sustainability of the Murray Darling system. This project just adds to that problem. No solutions are

provided. No measures to bind soluble wastewater components to prevent subsequent mobilisation are provided. Salt loading of the Murray-Darling system has not been addressed in the documents.

The use of saline wastewater for “dust suppression” means that the proponent will be motivated to spread the saline wastewater around every road in the area whenever the opportunity arises. This salty material will subsequently be picked up by rainfall runoff and transferred into the local streams. This will cause an increase in salt levels in local streams. The proponent does not have an alternative method for “disposing” of salty wastewater.

The history of CSG extraction operations reveals that proponents have a desire to avoid public scrutiny and delay the reporting of spills or incidents. This type of behaviour is not acceptable and is not in the public interest. The activities of Santos in the past do not indicate that this company is delivering on the early reporting of incidents. Hence, the credibility of Santos in conducting this operation without harm to the environment is questionable.

## Conclusion

The Narrabri coal seam gas project should not be approved in its current form. The Santos proposal has questionable financial viability given the current flux in gas prices coupled with the predicament of electricity generation in NSW. This is because replacement of the near end of economic life coal fired generation has not been planned. The lack of Federal and State Government leadership on future energy supply is a problem that has not been analysed by the proponent. The ever-reducing cost associated with renewable energy sources strongly suggests that the assumptions in the Santos proposal are highly optimistic and not credible.

The precautionary principle, which underpins sustainability, says that a lack of scientific evidence should not be over-ridden in the haste to approve this project. There are significant credibility assertions and information gaps surrounding the project. The project has large scale environmental impacts that last potentially for centuries well beyond the 25-year project. Groundwater movement within and inflow pathways into the Great Artesian Basin must be protected indefinitely. The proponent has not demonstrated that the environment will not be impacted by the project by bringing deep underground material to the surface. The documents provided by Santos do not address the magnitude and time-scale of the environmental impacts arising from the project. For this reason, the project should be refused.