



Oversight: PDF file of submission for CSG review attached

J Kramer to: csg.review
Cc: rebecca.radford

28/04/2013 02:28 PM

Dear Ms Radford,

My apologies. I have only just realised that I sent you the docx versions of our submission to the Chief Scientist's CSG review and covering letter last Friday morning, instead of the PDF files. The PDF files are attached with my signature.

Best wishes,

Sister Jocelyn Kramer OCD

Discalced Carmelite Nuns, Varroville

345 St Andrews Road

Varroville 2566 NSW

Tel: 02 9820 3048

fax: 02 9820 3711

From: J Kramer [mailto:jkramer@carmelvarroville.org.au]

Sent: Friday, 26 April 2013 9:30 AM

To: 'csg.review@chiefscientist.nsw.gov.au'

Subject: submission for CSG review attached

Chief Scientist and Engineer

Professor Mary O'Kane

26 April 2013

Dear Professor O'Kane,

Re: CSG review

Please find attached a submission and covering letter from the Discalced Carmelite Nuns, Varroville, NSW.

Please send an email to acknowledge receipt of this submission by the due date (today).

Yours faithfully,

Sister Jocelyn Kramer OCD

Discalced Carmelite Nuns

345 St Andrews Road

Varroville 2566 NSW

Tel: 02 9820 3048

fax: 02 9820 3711



Email: jkramer@carmelvarroville.org.au CoveringletterChiefScientist.pdf Chief Scientist.pdf



Carmel of Mary and Joseph 345 St Andrews Road Varroville NSW 2565 Australia

☎ 02 9820 3048; fax 02 9820 3711 email: jkramer@carmelvarroville.org.au

Professor Mary O'Kane
NSW Chief Scientist and Engineer

csg.review@chiefscientist.nsw.gov.au

26 April 2013

Dear Professor O'Kane,

Re: Review of coal seam gas activities in NSW

Please find attached a submission from the Discalced Carmelite Nuns, Varroville.

Yours sincerely,

Sister Jocelyn Kramer OCD

On behalf of Sisters Sarah Carpenter, Joan Fanning, Elizabeth Franks, Patricia Giuliano, Helen Hill, Jennifer Jones, Jocelyn Kramer, Dulcie McGee, Alice Mulcare, Gemma O'Keefe, Alice Page, Anna Skoczylas

We are grateful for the opportunity to make a submission to the Chief Scientist's review of coal seam gas (CSG) related activities in NSW.

This is the fifth submission the Discalced Carmelite Nuns have made on the CSG issue since 2010. Our local concern is AGL's proposed Northern Expansion of the Camden Gas Project (CGP). We have been following developments closely for the past 3 years as they relate to south-western Sydney. Our first submission was in response to AGL's public exhibition of the proposed Stage 3 (Northern Expansion) of the Camden Gas Project in 2010, in which it was proposed to locate six wells on land adjacent to our house for which the landholder had not given agreement. In 2011 we made a written submission to the NSW Upper House Inquiry into coal seam gas and appeared at a public hearing. In 2012 we made a submission following the public exhibition of AGL's Responses to Submissions and amended Development Application for the Camden Gas Project Stage 3, in which six wells were proposed for a new site adjacent to Carmelite land in Varroville, about which the Carmelite communities had not been consulted. Finally, we made a submission earlier this month (April 2013) on the Draft Mining SEPP Amendment. The issue of CSG mining continues to be a serious concern for the Carmelites, and hence we remain firm in our resolve to do whatever we can to have this matter carefully considered, and to contribute to ensuring that government and industry are accountable to the public for CSG activities in NSW.

We take this opportunity to ask the Chief Scientist and Engineer first to consider the CSG industry in the broad context of energy resources. It is our impression that the public discourse about this issue over the last few years has been characterised by narrowly focused claims and counter claims by vested interests (government, the petroleum industry and the public) without reference to an agreed body of scientific evidence to back up the claims. Even where evidence is adduced, the picture is often distorted by focusing only on economics. A good example is the recent article by Professor Jeffrey Frankel of Harvard University (SMH, 18 April 2013) in which he claims that fracking to obtain shale gas is 'the greener alternative' to coal in terms of carbon emissions. Professor Frankel, however, makes only passing reference to the significant wider environmental implications of extraction of shale gas, such as the effects of fracking on groundwater. He dismisses the unknown risks of new technologies in one sentence, and derides the precautionary principle and those who seek to apply it. We recognise that his article relates to shale gas, and that the process of extracting shale gas differs significantly from that used for coal seam gas as currently practised in NSW. Nevertheless, it would be helpful for the Chief Scientist's report to elucidate the differences between coal seam gas, shale gas and tight gas for the benefit of public understanding of the issues. Even though doing so goes beyond the terms of reference for her review of coal seam gas activities in NSW, it seems that increasingly shale gas and tight gas are being promoted by industry as future energy sources along with coal seam gas.

In the absence of a broad, independent scientific assessment of the CSG industry, the public is not in a position to make an informed judgement about it. A report this week in the Sydney Morning Herald reinforces the public's impression that policies are weighted in favour of the industry (Miners given way to contest 'sensitive' land declarations, Sean Nichols, 22 April 2013).

General issues needing consideration

There are several questions which have received no satisfactory responses to date, and we believe that these questions need to be addressed before moving to the details of specific CSG projects.

1. Australia is currently the largest contributor to global carbon emissions on a per capita basis. In the worldwide move away from fossil fuel energy sources in the face of accelerating global warming and associated climate change, what is the scientific justification for developing new (unconventional) sources of fossil fuel in Australia? What is our responsibility as affluent global citizens given that the poor are those who suffer most from the effects of climate change?
2. In terms of carbon emissions, how does CSG compare with conventional fossil fuels across the whole spectrum of exploration, extraction and processing?
3. Does it make sense for the Federal Government to try to limit carbon emissions by imposing a carbon price and at the same time for industry to be promoting development of a carbon-rich fuel and the States to be competing for this fuel (e.g. Queensland versus NSW)?
4. What are the facts behind the claim of the NSW Government (Minister Hartcher in particular) that NSW faces a gas shortage from 2014? Why have contracts for supply from other states not been renewed? What is to prevent them being renewed? In a country with a Federal system of government, why is the supply of energy rendered competitive between States rather than cooperative between States to ensure domestic supply ahead of any export considerations? What are the facts about the reserves of conventional gas available to the domestic market (variously quoted as 20 years' supply? 200 years' supply?)
5. The CSG industry initially promoted CSG as a 'transitional fuel' but has since stepped back from this position (Ben Cubby, Sydney Morning Herald, 18 April 2013), though Mr Rick Williamson recently noted on ABC TV that NSW has 20 years' supply of untapped CSG reserves. Is CSG regarded as a transitional fuel? If so, is it justified to put research and development (R & D) effort and cost into it at the expense of focusing R & D on renewable energy sources?

In relation to CSG extraction specifically, development has been allowed to proceed in recent decades in Queensland and NSW seemingly without adequate scientific controls. Baseline studies of groundwater, surface water, greenhouse gas emissions, air quality and soil quality have not been undertaken prior to exploration and extraction. Yet, the industry claims that CSG extraction can safely 'coexist' with agriculture and urban development.

6. What is the scientific evidence for this claim? How robust is the evidence?
7. What counter evidence is there? What is the strength of any counter evidence?
8. Where baseline studies are being proposed or conducted, who is conducting them? Industry? Government? An independent scientific body?

Water management

Water is a scarce and vital resource in Australia. The Federal Government has recently made the claim that Australia seeks to become ‘the food bowl’ for Asia. Nowadays, food security is a major concern for any responsible government. We cannot have food security for ourselves let alone food for export if we do not have plentiful reliable supplies of uncontaminated water. Agricultural land used for cropping and grazing, and water catchment areas need to be quarantined from unfettered CSG exploration and development to ensure protection of water resources and to assure food security for our country’s future.

9. How effective is the NSW Office of Water (or other government agency) in implementing land use protection policies in relation to CSG activities?
10. Are flood plains and riparian zones excluded from CSG exploration and development? If so, how is it that wells have been drilled 40 metres from the Nepean River at Menangle?

CSG extraction involves the production of large quantities of saline groundwater. We understand that the amounts vary considerably according to the geology of each gas field.

11. Does any regulatory authority have power to prevent CSG exploration in areas with complex geology (e.g. with many fault lines) where underground effects of CSG mining are unknown and cannot be predicted with accuracy?
12. Are the effects of depressurisation of coal seams known?
13. What are these effects? What is their magnitude and extent? What is their significance? What are their short and long term consequences?
14. How is produced water managed? Can it be returned to the coal seam?

Circumstantial and anecdotal evidence is accumulating of damage to aquifers, drying up of lakes, gas bubbling in rivers and substantial falls in the level of the water table in some areas.

15. Has this evidence been documented to date?
16. Is any regulatory authority requiring that this evidence be documented?
17. If so, by whom? By a body independent of government and the CSG industry?
18. Is remediation possible? Who undertakes it? Who assesses its effectiveness?
19. What policies are in place or being developed to protect the water table?

Regulation of the CSG industry

We understand from his announcement in February 2013 that the NSW Premier, Barry O’Farrell intends the Environmental Protection Authority to be the leading regulator of the environmental and health effects of the CSG industry in NSW. At face value, this seems a sensible decision. However, from our experience with AGL and the Camden Gas Project, we are concerned about the capacity of the EPA to regulate this industry.

Despite several breaches by AGL of its licence conditions over the last few years, the EPA has allowed the company to self-investigate and has imposed only paltry penalties (e.g. a fine of \$1500 in March 2013). We learned earlier this month (4 April 2013) from AGL’s

Community Consultative Committee (CCC) that the EPA proposed an Enforceable Undertaking to deal with AGL's non-compliance to carry out continuous monitoring of fugitive emissions at the Rosalind Park gas plant (Camden Gas Project). The CCC was informed by Mike Moraza (AGL's head of Upstream Gas) that AGL and the EPA met together to develop a short list of projects with 'the greatest benefit and appeal to the Macarthur community' to be considered for funding by AGL as part of the cost element of the Enforceable Undertaking.

As a regulatory control, this process appears to us to be flawed, since it suggests a seemingly cosy relationship between AGL and the regulator. It offers an opportunity to the Company, despite being in serious breach of its licence conditions, to parade itself as a good corporate citizen to the local community. We would prefer to see companies fined substantial sums of money as a deterrent, and for these to go towards strengthening the EPA's resources to regulate the industry.

In our submission (December 2012) in response to AGL's amended Development Application for Stage 3 of the Camden Gas Project, we noted another deficiency in the current regulatory controls. The NSW Locational Guidelines for Development in the Vicinity of Operating Coal Seam Methane Wells (2004) include separation distances for residential and sensitive use development. These distances are determined for the control of potentially hazardous development and the minimisation of land use safety conflicts. Separation distances range from 8-20 metres. The Guidelines do not mention the risks associated with multiple well heads located at one site because no such well surface locations existed at the time the Guidelines were developed. Yet, AGL's latest proposals are for up to six (6) wells co-located at each site. Therefore, the NSW Locational Guidelines need to be reviewed and updated to take account of developments within the CSG industry.

20. Which regulatory authority in NSW monitors technological advances in the industry and ensures updating of such guidelines? Is it effective?

As residents of the Scenic Hills environmental protection area of Campbelltown, we are grateful beneficiaries of the Premier's decision to place a 2 kilometre exclusion zone around CSG developments in urban areas. However, we are concerned that this decision apparently does not apply to land zoned for environmental protection, which means that parts of the Scenic Hills could still be subject to CSG activity. We request that all CSG activity be prohibited on land zoned for environmental protection. We view this as a societal obligation for the sake of intergenerational equity.

21. What is the scientific basis for the Premier's decision to enforce a 2 kilometre exclusion zone? Is it based on health considerations? If so, should it not apply to all residential areas irrespective of the size of population they contain?

Health impacts

In our submission of December 2012 in response to AGL's amended Development Application for Stage 3 of the Camden Gas Project, we dealt in detail with the inadequacies of AGL's assessment of potential impacts on greenhouse gas emissions and air quality. The key points of our critique are included here.

South-western Sydney has a large population of young people, which will increase with further urbanisation as the South West Growth Centre is developed. Already it is known that NSW has a consistently high rate of childhood asthma in all regions and among the highest prevalence of asthma in the world. The reasons for this are unknown but are thought to be environmental (Peat et al, *The Medical Journal of Australia*, Vol. 163, 3 July 1995). In this study, 904 children from Western Sydney were included in the study sample of 6394 children aged 8-11 years studied between 1991-1993. To our knowledge, more recent data are not available. An earlier study was done at a school in Campbelltown in 1989, but we have been unable to trace those data.

22. Have more recent studies been done? If so, will the findings be made public?
23. If not, are any planned?

A study entitled *State of Knowledge: Ozone*, published by the Department of Environment, Climate Change and Water (2010) reported data from the Sydney region from 1994-2004. It noted that 'High ozone concentrations and exceedences of the standards occur across the whole of Sydney, and the differences between regions are generally relatively small. However, this data demonstrates that exceedences of the current one-hour and four-hour ozone standard occur more frequently in western Sydney' (pp.29, 33). Macarthur was first included in the study in 2004, so longitudinal data for this region were not available in this particular study. Recommendations are made for ambient measurements of hydrocarbons (p.112), particularly in the light of the projected increase in population of approximately 30% in western Sydney by 2026. This increase in population is spread between existing developed areas and proposed new developments (greenfield) (p.141).

24. Have these recommendations been acted upon?
25. Have longitudinal data for the Macarthur area been collected since 2004?

This information is sufficient to raise questions about the appropriateness of introducing the coal seam gas industry into south-western Sydney in the absence of more recent data from the area on air quality and human health.

The widely publicised preliminary data from the Centre for Coastal Biogeochemistry Research, Southern Cross University (October 2012) showed a widespread enrichment of both methane and carbon dioxide within the production gas field in Tara, Queensland, compared to outside it. The authors, Dr Isaac Santos and Dr Damien Maher, claim that the findings provide evidence for significant but still unquantified greenhouse gas emissions in the Tara region. The source of these emissions is not yet known. The findings suggest the

need for baseline quantitative studies of air quality and greenhouse gases before the development of gas fields. The authors recommend that:

- baseline concentrations of greenhouse gases in the atmosphere be measured before any CSG developments
- measurements be taken periodically to identify gas leakages from infrastructure, including compression stations and long pipelines
- an early warning system be developed in which action can be taken if specific methane concentration thresholds are reached.

26. Are further studies underway to test these claims and replicate the findings?

The Tara region of Queensland is the source of anecdotal reports of symptoms of ill health, particularly in children, which residents relate to coal seam gas extraction.

27. Have any epidemiological studies been initiated to investigate these claims?

Given the indications of potential impacts of CSG extraction on air quality and human health, we find it unacceptable that AGL considered it unnecessary to undertake baseline air quality monitoring as part of its Environmental Assessment for Stage 3 of the Camden Gas Project.

The Preliminary Hazard Analysis undertaken as part of the Environmental Assessment for Stage 3 of the Camden Gas Project ‘found that the predominant sources of hazard for the Northern Expansion Project are potential CSM [coal seam methane] leaks’. These were judged (on the basis of qualitative assessment only) to be insignificant. No quantitative data were presented. We consider this unsatisfactory.

Furthermore, AGL’s Responses to Submissions document contains internal inconsistencies and contradictions concerning the use of venting in its CSG activities:

‘An Air Quality Impact Assessment (AQIA) was undertaken as part of the EA and was included as Appendix G to the EA. The conclusions set out in the AQIA continue to be valid and applicable to the Amended Project.’ (Detailed Responses to Submissions Report, p. 43).

The Submissions Report devotes less than half a page to Air Quality and Greenhouse Gas (p.124-5). One has to mine deeply into the Detailed Responses to Submissions Report to find the following additional pieces of information:

‘Air quality modelling did not predict exceedances of criteria resulting from the Northern Expansion Project... Refer to Appendix G of the EA for further information on the predicted air emissions’ (Detailed Responses to Submissions Report, p.32). *But note: no modelling was done and Appendix G provides no information on predicted air emissions.*

‘No combustion products would be released from the well sites, with all gas being captured and transferred through the gas gathering lines to the RPPG [Rosalind Park Gas Plant]. Therefore it is not expected that the Amended Project would pose a risk to the health of the local community through its operation, as demonstrated by the

coexistence of the existing CGP and local residents' (Detailed Responses to Submissions Report, p.32).

Can AGL guarantee that no combustion products would be released from the well sites or from the wider Subsurface Project Area? As we understand it, the existing CGP does not coexist with residents *in urban areas*.

This claim that all gas would be captured and transferred to the RPGP is not supported in a response provided on the question of venting, as follows:

'Venting may be a necessary but is a rare event during commissioning/production of a well, however there are several methods used to control or remove the need for venting. The Amended Project is proposing a tie-in connection to the existing CGP. In particular, wells in the southern part of the Amended Project Area *would aim to* (italics mine) immediately tie-in and send gas to the existing RPGP, which would remove the need to vent emissions at those locations... *if practical at the time of commissioning* (italics mine), wells in the central surface project area would be immediately tied-in to the gas gathering system' (Detailed Responses to Submissions Report, p.64).

No mention is made of what AGL plans to do for wells in the northern part of the Amended Project Area.

28. Which gases are vented into the atmosphere? Methane? Other volatile organic compounds? Which?
29. What monitoring/regulatory controls are there for venting and leaks at well surface locations and gas gathering lines (in addition to those for gas processing plants)? How is compliance ensured?
30. What is known about the effects on human health of gases vented during CSG extraction and processing?

Additional health issues relate to social impacts of the CSG industry. Where landholders find themselves in conflict with industry and/or government; where they experience division and disruption of their communities and lifestyle; where they experience land values declining, affecting their ability to sell and move away i.e. where they feel disempowered, one can predict and even expect mental health consequences. These matters have been raised at various public inquiries and community forums (see for example, submissions the Report of the NSW Upper House Inquiry into Coal Seam Gas).

An added burden in this situation was the NSW's Government's move in late 2012 to cut funding to the Environmental Defenders Office (EDO) in NSW, undermining the capability of the EDO to advise residents and represent the interests of those legitimately concerned for their local environment in the face of perceived threats from the CSG industry (and other developments). The timing of the funding threat to the EDO gave the impression that the State Government was moving to suppress legitimate questioning by constituents of planning decisions made by their elected representatives. It came to light in January 2013 (SMH, 11 January 2013, page 5) that this decision followed lobbying of the State Government by the Australian Coal Association and the NSW Minerals Council. It appears that the State Government, in bowing to pressure from lobbying by vested interests, has perpetrated an injustice upon those (ironically, demonised as 'activists and lobbyists' by the Australian Coal Association and NSW Minerals Council) who need legal assistance to obtain a merits review of decisions affecting their communities.

This action has engendered anger, undermined the democratic process and fostered distrust of the planning process in NSW.

Having the Chief Scientist independently review CSG activities and the decisions made by Government in relation to this issue is one way to begin restoring confidence in the planning process in NSW.

Further points about the proposed Northern expansion of the Camden Gas Project

We have noted with concern a lack of factual information (i.e. lack of transparency) coupled with the use of 'spin' to downplay the footprint of the Amended Project in AGL's presentation of it to the public. Below are some examples:

- AGL describes the location of the Amended Project as being 'in a largely undeveloped rural area with pockets of rural residential, recreational and future development lands in a predominantly cleared landscape.' (Submissions Report, p. 124). This description of the Project Area and subsurface Project Area is inaccurate and inadequate, neglecting to mention the fact that it is within the Sydney Metropolitan Area and surrounded by some 26 new and existing suburbs.
- The 'maps' (better, graphics) lack sufficient detail to enable identification of the sites of proposed well surface locations in conjunction with the Street Directory.
- Maps were not updated to reflect considerable urban expansion during the two years between exhibition of the original proposal in 2010 and of the Amended DA in 2012.
- It is not stated in any of the written documentation that drilling and operating six wells co-located at a single well-surface location is experimental, in the sense that AGL has not done it before in its CSG activities in NSW.
- Photographs in EA documents show only single wells not multiple wells.
- Well surface locations with multiple wells were not available for inspection at AGL's Open Days nor were photographs of them shown at Community Information sessions conducted by the Company, so the public remains uninformed about them.

- Nowhere is it stated in the reports that irregularly-shaped well surface location ‘assessment envelopes’ on graphics in the EA indicate refusal by adjoining landholders to grant access to the Company. This is the case in over one-third of proposed well surface locations.
- The Project has not been fully specified, so that the public does not know what further infrastructure might be needed, such as in-field compression. This indicates a deficiency in the assessment process.

On the other hand, AGL seems to over-state the contribution of its proposed Project to the local economy in terms of job creation:

- AGL states that ‘The Amended Project is in the public interest because it will facilitate the extraction of an important resource and will contribute to the local, regional and State economics (sic) through *the generation of jobs* (italics mine) and investment’ (Submissions Report, p.160). However, the EA notes that ‘*The CGP currently employs 37 staff and would employ contractors as needed to complete the construction phase of the Northern Expansion. Once construction is complete, the Northern Expansion would continue to utilise the existing 37 full time staff*’ (italics mine) (EA, Main Report, October 2010, p.20-6). Thus, any contribution to employment by the Amended Project seems transient and negligible.
- In 2012, AGL confirmed a negligible contribution to jobs creation with its observation that ‘The changes presented in the Amended Project are at such a scale that the overall social and economic impacts of the Amended Project (both beneficial and non-beneficial) are likely to remain unchanged with the amended layout’ (Submissions Report, October 2012, p.125).

We take the trouble to document these examples to draw attention to the difficulties the Department of Planning faces in assessing the Development Application and to the difficulties the public faces in challenging its deficiencies.

Finally, we wish to draw attention to lack of scientific rigour in the overall presentation of the Project. AGL repeatedly extrapolates from its experience in Stages 1 and 2 of the Camden Gas Project to Stage 3, and yet the circumstances differ in important respects. Stages 1 and 2 did not take place in the Sydney Metropolitan Area. The Company has not drilled and operated 6-well locations, so the impacts on residents (for example, noise) are not known.

It is repeatedly stated in the reports, without supporting evidence, that impacts of CSG extraction on water and air quality are negligible. One wonders whether the Company understands that absence of evidence for an impact does not constitute evidence of absence of an impact.

Upper House Inquiry into Coal Seam Gas

We hope that in her review of CSG activities in NSW the Chief Scientist will consider the report of the NSW Upper House Inquiry into Coal Seam Gas and report on the appropriateness of its recommendations and on any progress towards their implementation.

Conclusion

We submit these comments in the spirit of Pope Francis' inaugural speech in March 2013:

'I would like to ask all those who have positions of responsibility in economic, political and social life, and all men and women of goodwill: let us be 'protectors' of Creation, protectors of God's plan inscribed in nature, protectors of one another and of the environment.'

A handwritten signature in cursive script that reads "Jocelyn Kramer".

Sister Jocelyn Kramer OCD, PhD

On behalf of the Carmelite Nuns, Varroville