

6 September 2018

Mr Steve O'Donoghue
Manager Resource Assessments
NSW Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Dear Mr O'Donoghue,

Thank you for providing NSW Health an opportunity to respond to the Santos Narrabri Gas Projects Environment Impact Statement Response to Submissions (RTS). Our assessment of the original EIS found that there was inadequate information provided on potential health impacts and further information was sought. We base this response on our review of the RTS and the review of the exposure assessment in the RTS conducted by the NSW EPA and in particular to the advice contained within their letter to your office dated 4/7/2018.

Coal seam gas production is relatively new industry in Australia. NSW Health plays an advisory role in assessment of the coal seam gas development applications. On review of the RTS and the prior EIS and the health impact assessment provided by EnRiskS on behalf of Santos we consider the proposed methods for mitigation of any air quality, groundwater and surface water risks to be appropriate and based upon conservative assumptions. The approval should ensure that the risk management phase includes rigorous monitoring of air and water, and implement control measures and contingencies to prevent any potential or actual harm to the public health.

NSW Health has noted that the project does not propose to use fracking or the use of fracking fluids. NSW Health would require further detailed information if this was proposed in the future. Hence, we suggest that the approval is explicit in not allowing fracking or the use of fracking fluids. It is also noted that a range of emissions were considered in the EIS and further expanded upon in the RTS. The potential emissions and hazards are similar to other industries using gas combustion, diesel combustion and deep aquifer drilling.

We prepare this response in acknowledgement of The NSW Chief Scientists *Independent Review of Coal Seam Gas Activities in NSW, Managing environmental and human health risks from CSG activities*, 2014 and with reference to academic and research programs since that time. There has been a significant increase in the number of studies published on unconventional gas from an environmental epidemiology and exposure assessment perspective over the last 5 years. We note the often conflicting findings and variable quality of studies in the scientific literature which creates uncertainty in scientific and lay communities.

We also note that there are parallels and differences in the processes and potential exposures between shale gas (more common in the US) and coal seam gas production in Australia.

We maintain a watching brief on the work of centres that are at the forefront of systematic reviews of research on unconventional gas and human health such as the US Health Effects Institute's Energy Research Program and the Colorado Department of Health and Environment. Additionally, the ongoing air quality monitoring in the Surat Basin of Queensland is providing useful insights into exposures of Australian communities with larger scale CSG industries.

As our assessment of health impact is based on the validation of exposure assessment by NSW EPA, our response to the RTS is aligned with their advice. The NSW EPA response covered a range of issues including air, water and waste. The EPA's advice finds that because the final design specification have not been finalised more information will be required from Santos prior to approval and/or conditions of consent to control emissions will be required if approved. If the development is approved, dedicated air and water monitoring will be required to ensure that the modelling in the EIS is correct and that no risks to human health are presented from the development.

While the major towns of Narrabri and Boggabri are more than 10 kilometres from the proposed gas field, and are unlikely to be significantly impacted by emissions, there are hundreds of residential lots on the periphery of the gas field. We note the proponent's commitment that 'Unless a written agreement is in place with the relevant landholder, no project infrastructure will be located within 200m of an occupied residence on that property'.

The issue of primary concern for NSW Health in relation to this development is that of air quality. The EIS and air quality addendum predict no exceedances of air quality criteria beyond the boundaries of the development, except for an exceedance of PM10 levels. A location described as "Receiver 216" is predicted to exceed the 24 hour PM10 standard on one day per year during construction (page 15 Appendix I Air Quality Addendum). Emission reductions including watering exposed areas will be important to prevent such exceedances.

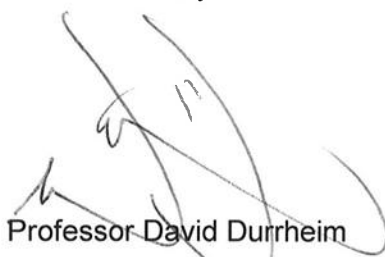
As requested in our previous response, the RTS addresses a broader range of emissions as requested and includes the contours for PM2.5 concentrations. PM2.5 is not predicted to exceed air quality standards at nearby residences. A range of other air emissions are examined in the Air Quality Addendum including NO2, VOCs, dioxins, heavy metals, ozone and other emissions and none are predicted to exceed air quality criteria at nearby residences. These estimates should be validated when the design specifications are finalised.

While we understand that engineering controls will be put in place to protect surface and groundwater against contamination from CSG operations, there will need to be monitoring to ensure the effectiveness of these safeguards. The risk of potential adverse human health impacts from surface water contamination from the project is considered to be low provided spills, irrigation and dust suppression management is consistent with the proposed management plans. Produced water recycled for beneficial reuse such as agricultural irrigation will need to meet NSW EPA environment protection licence conditions to ensure there is no impact on the food chain or subsequent impact on human health.

The EIS acknowledges the need for environmental monitoring during the construction and operational phase of the gas field if approved. It will be important to ensure that an air and water monitoring network/program is designed in consultation with community stakeholders so that there is confidence in the program. NSW Health would be interested in having input into the design of the monitoring program. The air monitoring network in the Surat Basin, Queensland both in towns and in proximity to CSG operations provides online real time monitoring of potential air impacts to communities. The learnings from this air monitoring network should be incorporated into Narrabri CSG field monitoring plan.

We would be interested in reviewing any future revisions or information throughout the further assessment of the project.

Yours sincerely

A handwritten signature in black ink, appearing to read 'David Durrheim', is written over the printed name. The signature is fluid and somewhat stylized, with a large loop at the end.

Professor David Durrheim

Service Director – Health Protection

