Climate Risk

20 July 2020

Georgina Woods
NSW Coordinator,
Lock the Gate Alliance

Dear Ms Woods,

In response to your request for considerations regarding climate change with respect to the proposed Narrabri Gas project I have noted several gaps in the project documentation that you may wish to raise with the Independent Planning Commission.

The most obvious question is the reason climate change exacerbation of environmental hazards been omitted from the 'Hazard and risk assessment report, Appendix S' of the Environmental Impact Statement? GHD offers **climate change** modelling, impact analysis, risk and vulnerability studies as a standard service and is a founding member the Infrastructure Sustainability Council of Australia (ISCA) which requires climate impacts to be analysed in project ratings. So it's very odd that this report makes not a single mention of 'climate change.' Inclusion

Following on from the above. Appendix S makes reference to bushfire risks, but does not include climate change impacts in the analysis of risk. Climate change will tend to increase the probability of days when bushfires are possible. I have attached a report I have produced considering the projections from one of the CORDEX international climate models downscaled to the area which suggests a 150% increase in the probability of bushfire conditions under IPCC's Representative Concentration Pathway 8.5, which is the current global emissions trajectory. This would have an impact on estimated bushfire ignition probability of 1 in 70 years notes in the document titled "Question to Santos - Email of 2 September 2019"[1], in principle raising the probability to 1 in 28 years – i.e. climate change could results in a reasonably high probability of the project starting a bushfire during its lifetime.

While Appendix S refers to management plans regarding fire-fighting, and plant management the analysis again fails to consider the ability of the facility and its staff to cope with a pyro-cumulus events which show clear trends to increase in parts of Australia (Dowdy et al 2019)[2] under various climate models. Such events are considered unfightable fires.

---

1 https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-6456%2120200611T033526.639%20GMT

2 https://www.nature.com/articles/s41598-019-46362-x

Climate Risk

With regard to the above I would draw your attention to the recent guilty plea by the US based Pacific Gas and Electric (PG&E) for causing the death of 84 people during an ignition caused during 2018 fires in California. It may be worth checking that the company's insurance extends to cover such outcomes if climate change impacts have not been considered.

With regard to subsidence risk, again there is no reference to climate change in Appendix S. Climate change can exacerbate drought conditions which can cause subsidence in clay soils. According to various mapping, this area does have soils which are susceptible to subsidence. In the attached EasyXDI report, the subsidence risk will proximately double over the next 30 years under the models used. This would have a bearing on risks associated with subsidence - pipe cracking and so forth – which should be re-calculated in light of climate change.

Extreme Temperatures: In Appendix S, table 2.11 notes that the risk analysis has been conducted 25 degrees Celsius. It would have been useful to see an analysis under severe temperature conditions above 40°C or even approaching 50°C. For example, at these temperatures electronic systems can fail to operate (in the same way that mobile phone stops working if left in the sun). It would be important to demonstrate that the safety measures specified for all hazards would occur if there were a failure of electronic control systems in extreme temperatures.

Finally I would suggest that including climate change is now a rather mainstream expectation for infrastructure development. For example the NSW State Infrastructure Strategy for 2018-2018[3] states:

> *NSW's future prosperity depends on its ability, and willingness, to get the maximum economic and social benefit from existing and new infrastructure assets. To do this, good practices need to be applied to infrastructure planning, assessment, procurement, construction and management:*
> *• to meet rising demand for public services*
> *• to support longer term plans for jobs and housing prepared by the Greater Sydney Commission and the Department of Planning and Environment*
> *• to anticipate and respond to megatrends, including taking advantage of opportunities generated by technological transformation and managing threats such as climate change.*

I trust these observations assist you in your considerations of the relevance of climate change to the proposed development.

Kind Regards

Dr Karl Mallon, Director of Science, Climate Risk p/l

[3] https://insw-sis.visualise.today/documents/INSW_2018SIS_BuildingMomentum.pdf