

Dear Commissioners of the Independent Planning Commission,

I would like to address several of the points raised in the Santos document “Narrabri Gas Project (SSD 6456) Submission to IPC following public hearing” and the NSW DPIE document “Narrabri Gas Project (SSD 6456) Response to Independent Planning Commission Questions”. Based on available evidence, some the issues discussed in these documents are not appropriately or satisfactorily addressed, and consequently the project still harbours proposed problematic and negative outcomes that should deem it to be refused. In this submission I will specifically address issues regarding groundwater, environment and climate change.

I am a biologist and conservation ecologist, currently undertaking a PhD project focused on determining the effectiveness of biodiversity offsets. I have at least 15 years’ experience working in the field and have conducted research in the Pilliga Forest. Issues relating to the environment are my area of expertise, and are quite personal to me, which is why I am addressing these specific points in this submission.

### Groundwater

Firstly, on the subject of groundwater, there are several points in the Santos document that were inadequately addressed and require further consideration.

In section “9.2.9 Assertions that the Project is located in a major recharge zone for the GAB” on page 28, Santos state: “Some submitters stated that the Project is located in a major recharge area of the GAB, contrary to claims made in the NGP EIS, and that this poses an unacceptable risk to aquifers of the GAB.”, to which they claim was already addressed in the “NGP EIS Response to Submissions” and bluntly concluded that “The Project is not located in a significant recharge zone of the GAB in NSW.”.

The issue undermining Santos’ entire argument in this section is reliance on the subjective and undefined term, ‘major’, in the phrase “major recharge zone”. Objectively, the project overlies a recharge zone of the GAB, covering part of the Coonamble Embayment. The figure on page 6-70 of Santos’ “NGP EIS Response to Submissions” clearly shows that the entire project area encompasses a recharge zone for the GAB, that while not as ‘major’ as the land to the south-west, still contributes to recharging the GAB. Further, the figure on page 6-69 of the same document shows the project impacting an area of Pilliga Sandstone. The Pilliga Sandstone is defined as “the main aquifer of the Coonamble Embayment” in the CSIRO document “Review of Recharge Mechanisms for the Great Artesian Basin” (Herczeg, AL & Love, AJ, 2007) where it is stated “The main aquifer, the Jurassic Pilliga sandstone, outcrops at higher elevations further to the east (250m to 600m)” (page 17). If Santos plans on impacting the “main aquifer” of the relevant recharge zone, then it is apparent how this could be interpreted as being a ‘major’ recharge zone. The confusing use of undefined subjective terms here does not clarify the potential impacts, and the concern regarding the original assertion of the project area being located in a ‘major’ recharge zone remains. The expected impact here should be quantified, and use objective terminology if Santos wanted to demonstrate that the area is not a ‘major’ recharge zone, which would be the expected standard from a thorough scientific analysis.

Santos further state “The volume of water that provides the recharge in the Project area to be developed by Santos is relatively small compared to that of the dominant area of recharge in NSW to the south along the eastern flank of the Coonamble Embayment of the GAB” in an apparent attempt

to quantify the impact, yet still rely on subjective, undefined, terminology, in the case the word 'small'. Yet in the same CSIRO document (Herczeg & Love, 2007) it is stated that "the Coonamble Embayment is 11% of the GAB" (page 17), a relatively 'moderate' proportion of the GAB. Santos stating a "relatively small amount of water" here is redundant as the project occupies a 'relatively small area' in the grand scheme of things – yet impacts an area comprising part of a moderate percentage of the GAB. Figure 1 on page 9 of Herczeg & Love, 2007, is consistent with Figure 6-15 on page 6-70 of Santos' "NGP EIS Response to Submissions" and clearly shows the entire project area encompassing a recharge zone of the GAB, however in Herczeg & Love, the recharge zone's 'significance' is treated uniformly.

The point here is that the project clearly impacts a recharge zone of the GAB and the main aquifer of the Coonamble Embayment. Whether or not this area represents a 'major' recharge zone is less important than the fact that it is a recharge zone and the project therefore has the potential to negatively affect the GAB and water recharge in the Coonamble Embayment. Given the possibility of flow on effects to the GAB through this recharge zone, the project should not proceed.

There are other issues regarding uncertainty in Santos' analysis of potential groundwater impacts, specifically addressed in "9.2.6 Assertions that groundwater model uncertainty analysis demonstrates the potential groundwater impacts are unacceptable" and "9.2.7 Assertions that the Project groundwater model cannot adequately predict impact to Namoi Alluvium".

The modelling by GISERA that Santos refers to (Sreekanth et al, 2017) covers a relatively broad range of groundwater production volumes from 4.4 to 107 gegalitres, which by nature carries a substantial amount of uncertainty. A more narrow and refined range of values would produce an assessment with less uncertainty. Santos state in EIS submissions document that GISERA concludes "...changes to the water balance components induced by gas development are relatively small compared to probabilistic estimates of their baseline values"; again the use of the undefined subjective term 'small' does nothing to help quantify the impact or reduce uncertainty in their analysis or conclusions.

In regards to the Namoi Alluvium, the discrepancy between the Project model and Namoi Alluvium model that Santos refers to (page 27-28) is disregarded as 'insignificant' in the context of the spatial and temporal scales. Again this relies on an undefined subjective term, and depending on the resolution a spatial or temporal scale is examined at, the 'significance' of a discrepancy will vary. Regardless, these discrepancies and uncertainties call into question the conclusions regarding groundwater and add further substance to why the project should be refused on these grounds.

## Environment

Potential impacts to the environment and environmental heritage collectively add additional basis as to why the project should not proceed. In the NSW DPIE document, there are several environmental issues that are insufficiently considered, in particular the conclusions regarding "Ecologically sustainable development", specifically that the project represents a "safe and sustainable use of the State's natural gas resources", "would not significantly affect the environment" and that it "would not significantly affect the cultural heritage of the region" (page 2). Immediately it is clear that these points again suffer from the use of subjective terminology ('significantly') and contradiction (stating

that gas, a finite fossil fuel with innate adverse environmental impacts associated with its utilisation, could be used 'sustainably').

Considering environmental and cultural heritage, the letter states that "the project would not have significant impacts on any of the region's natural or cultural resources (gas, water, land, air, flora and fauna, cultural heritage or built environment, including the Siding Springs Observatory) either now or in the future, and it would not prevent future generations from being able to inherit and benefit from a region that has extensive and diverse natural and cultural resources" (page 5). I strongly disagree with this statement, particularly the sentiment that the project would not prevent future generations from inheriting and benefiting from the natural and cultural resources. Having previously worked in the Pilliga I am familiar with the natural and cultural resources the area provides, suggesting that industrialising the area for 25 years would not impact natural and cultural resources is ludicrous. Anyone who has visited the Pilliga will know it is a wild environment and sparsely occupied by people. It is possible to spend hours or days in parts of the forest without seeing another person, and even on some of the main roads vehicles are an infrequent site. I remember one night I camped on No 1 Break Road, one of the main east-west through roads in the Pilliga, and the entire night only two other vehicles drove past my camp. This is the Pilliga, a wild, natural area of New South Wales; this is its natural and cultural heritage. I know what effect this project and industrialisation would have – vehicle traffic, noise, lighting, pollution, road kill – these would all increase and be sustained throughout the life of the project. Gone would be the days of a sparse human influence, replaced with numbered mining vehicles occupying the road network. I've seen this happen in the Boggabri-Narrabri area, being an ecologist who worked on the Maules Creek coal project before it was approved; I remember what it was like before – quiet and peaceful, with few cars on the streets. Having recently visited the area I was shocked by the change, bright lights in the horizon forming an endless convoy of mine vehicles and even causing traffic jams in town – never would I have imaged this in Boggabri! This is what would happen to the Pilliga if this project was approved – to suggest this would not affect the natural and cultural heritage here is insulting.

In regards to biodiversity, the letter concludes "With these conditions in place, the Department considers the Narrabri Gas Project would not result in adverse impacts on the biological diversity or ecological integrity of the region." (page 9). This conclusion is erroneous as it is not possible for the clearing of existing native vegetation and local industrialisation to not adversely impact biological diversity or ecological integrity. Regardless of the degree of impact, these actions will always result in adverse impacts by nature, hence the clearing of native vegetation being identified as a key threatening process to biodiversity (OEH 2017). Further, the burning of gas extracted from the proposed Narrabri Gas Project would accelerate harm to regional biological diversity and ecological integrity through impacts to climate over the long term. Increased heat and drought stress on biodiversity and ecosystems in the region is a certain consequence of climate change driven by anthropogenic use of fossil fuels (such as gas) into the future (IPCC 2018).

The issues and shortcomings associated with supposed "ecological sustainable development" are echoed in the Santos document in section "11.1 Offset land availability" where it states that project biodiversity impacts are offset through "like for like" vegetation. I have a great deal of experience regarding the effectiveness of "like for like" offsets, considering it is the subject of my current PhD studies, and I can assure you that this method of offsetting does not guarantee conservation of impacted species or that impacts will be objectively offset. Based on preliminary results of my own

research, like for like offsetting successfully achieves desired conservation goals less than 30% of the time (Webster et al, unpublished). Reliance on this form of offsetting, despite being a standard requirement, does not mean biodiversity impacts will be negated and in my opinion render this project's biodiversity strategy inadequate and is an additional reason for the project to be refused.

In reality, considering the impacts to climate and flow on impacts to ecology, it is not possible to have "ecologically sustainable development" in the context on fossil fuel projects. All fossil fuel projects will have negative environmental and ecological impacts, given their contribution to climate change, and are not sustainable given that they deplete a finite resource. The use of such language here only detracts from actual ecologically sustainable developments and is an apparent ploy used to 'soften' the perceived impacts of the project when communicated to people unfamiliar with the terminology or naïve to the objective ecological impacts of such activities.

### Climate Change

The impacts to climate, downplayed in the NSW DPIE letter, are probably the most consequential outcomes of this proposed project and socially significant reason it should be refused. While I could methodically address many of the points addressed regarding this issue, I will focus on the most important ones. In the letter it is stated "Consequently, the Department has not recommended any conditions requiring Santos to reduce the scope 3 emissions of the Narrabri Gas Project"; "These emissions are the direct emissions (scope 1 and 2 emissions) of their customers, and it should be up to these customers to determine the best way to reduce their emissions."; and "The simple fact is no single project can affect the global climate on its own" (all on page 8).

The division of emissions into multiple 'scopes' undermines the reality that the entire Earth consists of a single atmosphere that every country and every human shares. This means that the three scopes are irrelevant; regardless of where the emissions are produced they still end up in the same place. The Department is not acting in the best interest of the people of New South Wales, Australia, or globally by refusing to require Santos to consider scope 3 emissions. All the gas extracted from this project will contribute to climate change through scope 1, 2 and 3 emissions, ignoring scope 3 emissions fundamentally overlooks a contribution to this problem. Further by shifting the burden of scope 1 and 2 emissions to the customers the Departments attempts to 'wash its hands' of the emission issues associated with the project. While customers can influence emissions, primarily it is legislative bodies such as the government that can actually cause change in this regards. Legislation can control large amounts of emissions, compared to customers who are individually only able to control small amounts. For example, the house I live in had gas connected when I moved here, while I could divest from gas and make change in this household, if the government legislated divestment entire neighbourhoods or cities would make a change.

Finally, the purported "fact" that "no single project can affect the global climate on its own" needs to be addressed. This is outright wrong, based on available climate science we know that every fossil fuel project affects climate, while the individual effects may be small they still exist, and collectively the impact has global ramifications. In order to stop climate change individual fossil fuel projects must be refused, and collectively the impact will have global ramifications. I would like to conclude with this image that I found online with the caption "it's only one piece of plastic". Well, the Narrabri Gas Project is only one project, in a global sea of other fossil fuel projects, and to ratify this problem we must not only end existing fossil fuel projects, but actively prevent more from beginning.

Please consider what I have written in this submission in response to the Santos and NSW DPIE documents. In my opinion it is clear that there are irreconcilable issues in these documents and that this project should be refused, and I hope that you will be able to see this too.

Yours sincerely,

Grant Webster



*"it's only one fossil fuel project"*

#### References

Andrew L. Herczeg and Andrew J Love (2007) Review of Recharge Mechanisms for the Great Artesian Basin. CSIRO, Australia <http://www.clw.csiro.au/publications/waterforahealthycountry/2007/wfhc-Great-Artesian-Basin-recharge-mechanisms.pdf>

IPCC (2018) Special Report Global Warming of 1.5 °C <https://www.ipcc.ch/sr15/>

OEH (2017) Clearing of Native Vegetation – profile

<https://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=20023>

J Sreekanth, Tao Cui, Trevor Pickett (2017) Uncertainty analysis of CSG-induced GAB flux and water balance changes in the Narrabri Gas Project area. CSIRO, Australia. <https://gisera.csiro.au/wp-content/uploads/2018/03/Water-7-Interim-report.pdf>

Documents Referred to:

NSW DPIE - “Narrabri Gas Project (SSD 6456) Response to Independent Planning Commission Questions

Santos - “Narrabri Gas Project (SSD 6456) Submission to IPC following public hearing”

Santos - “NGP EIS Response to Submissions”