

Naomi Hogan
Newcastle@wilderness.org.au
PO Box 414, Hamilton NSW 2303
(02) 4929 4395



The Wilderness Society Newcastle submission on the Dewhurst Gas Exploration Pilot Expansion SSD 13_6038

9th November, 2013

Dear Madam/Sir,

RE: Submission to the Dewhurst Gas Exploration Pilot Expansion SSD 13_6038

Thank you for the opportunity to provide our insight, request for further information and objections to this proposed State Significant Development.

This is the second of the Santos exploration projects to go to the Department of Planning and require a full Environmental Impact Statement within the past six weeks. We hope that the Department uses this opportunity to address the concerns of the public, local councils, NSW Office of Water, Environmental Protection Authority (EPA) and the Office of Environment and Heritage (OEH) regarding the approach that Santos has taken to gain State Approval.

OEH has stated they remain *"OEH recommends that the cumulative impacts of the proponent's proposed activities are comprehensively assessed via a single environmental impact assessment to demonstrate the likely significance of impacts instead of multiple separate assessments for individual components"*. (OEH, Santos Dewhurst 22-25 Pilot Wells (PEL 238) – Biodiversity Comments, 2013)

We are pleased to see that these concerns have been included in the DGRs particularly: "likely interactions between the development and *existing, approved and proposed* gas exploration and production activities in the vicinity of the site;

and for Water Resources the: "cumulative impacts associated with existing developments as well as *any currently approved developments or proposed future developments*;

However we are concerned that these have not been address by the Santos EIS as detailed in this submission. Santos have recently announced they plan to drill 850 wells in the Pilliga Forest and we hope that the impacts of this expansion is taken into consideration as part of this assessment as a gas field of that size in the Pilliga would most likely result in local extinction of many threatened species such as the Federally listed Koala, Pilliga Mouse and Southern Long-eared Bat as well as the State lists Pygmy Possum and Black-striped wallaby.

We are also extremely concerned about the Departments removal of the Heritage DGRs. Gomeroi Traditional Owners have a strong and ongoing connection to the Pilliga and from

our work with the Traditional Owners of the Pilliga we know that the area has many sacred sites, song-lines, burial grounds and traditional significance that are not included in the AIHMs register. We hope that the removal of the Heritage related DGRs will be remedied and a full Aboriginal Heritage Assessment will be required for this EIS.

Below is The Wilderness Society Newcastle detailed response to the Director General Requirements:

GENERAL REQUIREMENTS

– Detailed description of the development

- **justification for the proposed plan, including efficiency of resource recovery, safety and environmental protection**

The project does not meet the Ecologically Sustainable Development (ESD) principles for the following reasons:

Precautionary principle: The impacts of drilling in the Pilliga Forest on both the shallow groundwater aquifers and groundwater dependent ecosystems and the Pilliga Sandstone the recharge area for the Great Artesian Basin are still unknown. This is due to the lack of data in the groundwater model and a lack of baseline data to determine any changes in pressure should the drilling go ahead. In addition there little known about the population distribution of the Pilliga Mouse and Eastern Pygmy-possum in the Pilliga Forest and therefore requires an Environmental Impact Statement. The South-eastern Long-eared bat is highly sensitive to 'edge effects' and the increased clearing required for the additional 15 wells as well as new access tracks and gas and water pipelines that make up this exploration project could tip the threshold of this threatened species in this location which is one of the last know areas of high population. This requires further investigation.

Intergenerational equity: The Pilliga Forest is a State owned resource enjoyed by the public for bushwalking, camping, tourism, birdwatching, forestry and cultural heritage practices. It is a part of Australia's cultural heritage and these values will be significantly compromised should the gas field be approved. Long term water resource security could also be put in question from the full gasfield production that should be considered in this respect. We question the Santos assumption that the drilling will have no impact on the upper aquifers.

Conservation of biological diversity and ecological integrity: The impacts of drilling on the biological diversity, that includes rare and likely endemic Stygofauna populations is still unknown. The combined impacts of these wells with the rest of the exploration project has massive impact due to reduced habitat, vehicle strike, increased edge effect and water contamination.

- **likely staging of the development – including construction, operational stage's and rehabilitation**

Rehabilitation practices to date in the Pilliga have been largely unsuccessful ranging from excavation of contaminated soil down to the clay layer to mulching and gypsum with no regrowth after a year. Irrigation is not dispersing the pollution, and tree kill sites are actually expanding. In some instances, previous spills and pond discharge have resulted in soil

contamination that has not recovered over 12 years, and certainly have not improved since 'rehabilitation' efforts commenced.

- **likely interactions between the development and *existing, approved and proposed gas exploration* and production activities in the vicinity of the site;**

Santos have recently announced they plan on drilling 850 wells within the Pilliga Forest and adjoining private property. Their description is of existing and approved sites, however does not include proposed gas exploration.

- **consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments**

The Santos project area in the Pilliga East Forest was identified as Tier 1 biodiversity in the NSW Government Draft Strategic Regional Land Use Policy. The description for Tier 1 Terrestrial Biodiversity includes "habitat for threatened plants and animals for which habitat loss due to mining and coal seam gas is likely to place them at risk of local extinction"¹. Furthermore, the document states that "there are areas of terrestrial and aquatic habitat where impacts from coal mining and coal seam gas should be avoided because the identified natural values cannot sustain further significant loss".

- **risk assessment of the potential environmental impacts of the development identifying key issues for further assessment**

The risks associated with coal seam gas drilling in the Pilliga have been significantly underestimated by the Santos risk assessment, in particular:

Water – There have been to date over 23 reported hazardous incidents involving the spilling of contaminated coal seam gas water into soil, local water-ways and bore water contamination.

Biodiversity – There is already Phytophthora a noxious weed presents at drilling sites. The code of practice would not necessarily mitigate risks to Stygofauna, this would require further investigation.

Hazards – The Pilliga Forest is a highly bush-fire prone region where bush-fires burn very hot causing the evacuation of nearby towns. There is a high danger risk for Santos staff working in the region, high risk of damage to infrastructure causing high ecological damage should a fire go through the project area the full extent has not been assessed.

Heritage – The Heritage risk assessment is lacking (refer to the Heritage section of this submission)

KEY ISSUES – LAND RESOURCES

- An assessment of the potential impacts on
 - Soils and land capability (including contamination)

We are currently investigating the tar-like substance appearing at the attempted rehabilitation sites and would like your Department to have a full understanding of the cause of the tree deaths and soil contamination and a clear demonstration of a successfully

rehabilitated site before approving any further drilling. Below are images of the attempted rehabilitation.



Attempted rehabilitation of a well pad Pilliga Forest: N. Bowskill March 2013



Black substance found throughout the above well pad site in the Pilliga Forest, March 2013



The previous spill at Bibblewindi is still being investigated in the Land and Environment Court. Notice in this rehabilitation area the trees that had been left standing due to having foliage are now completely dead, and the impacts of previous contamination efforts continue to impact the area. Photo 20 October 2013

- **Agricultural land**

The extended PEL area covers millions of hectares of land where Santos have leases and future plans to develop four large gas fields. The broader impacts of the numerous large gasfields should be assessed as soon as possible. Getting the water model right is also important at this early stage to ensure impacts on groundwater users can be properly accounted for.

- **Forestry**

As part of this objection, we would like to proactively recommend a future inquiry that investigates the impacts of the proposed coal seam gas field development in the Jacks Creek and Pilliga State Forests. It would consider the economic impact on forestry from this coal seam gas field activity, involving hundreds of cleared pads, roads and heavy industrialisation that may have a detrimental impact in limiting the availability of timber in the region.

We note that in the recent small scale initial period of exploration activities, gas drillers Santos is already causing a disruption to Forestry users in the Jacks Creek and Pilliga East State Forests. We also note the numerous kill and spill sites that have already taken place in these Pilliga region state forests, which Santos staff on a public bus tour on 25 October 2013 told members of the public that the kill areas would take around 50 years to regenerate.

The killing of vegetation in areas of State Forests for 50 years does not appear to be conducive to a sustainable and economically viable timber industry in the region.

WATER RESOURCES

- **Adequate baseline monitoring for all surface water and groundwater sources and dependent ecosystems within and adjacent to the development**

The drilling of these wells will produce an additional 331 and 413 megalitres over three years for the operation of Dewhurst 13-18H and Dewhurst 26-31 pilots, respectively of highly saline water containing heavy-metals and petrochemicals. Santos still do not have approval for any long-term sustainable management of this toxic produced water that poses a huge threat to the local creeks and groundwater from spills.

Despite the risks posed by the new tri-lateral wells there is no established baseline data for the important groundwater systems underlying the Pilliga such as the recharge zone for the Great Artesian Basin. The aquifer monitoring bores required to do this have not yet been commissioned and some are still to be constructed.

In addition, the cumulative water model used by Santos lacks the basic data required to assess the impacts of drilling for coal seam gas on groundwater in the future.

Both the Shallow and Deep Aquifer Monitoring Bores must be in place and recording data for the required length of time to establish baseline prior to any drilling that would alter the baseline water pressures and quality. The shallow Aquifer Monitoring Bore (SAMB) network - targets Pilliga sandstone, Keelindi beds and Purlewaugh formation SAMB network to establish a baseline groundwater level and pressure conditions in Pilliga sandstones a critical recharge zone for the Great Artesian Basin. The Deep AMB (DAMB) targets the Maules Crk (Bohena seam), Black jack group (Hoskinson seam) to establish a baseline that could assess the effects of depressurising the coal seam.

Currently the proposal does not meet this DGR as there is no adequate baseline monitoring until the monitoring network is installed and data collected.

Santos have stated that the data used in their water model and the report *Narrabri Groundwater Model Report (CH2M HILL, 2013)* is commercial in confidence, however it must be made available for independent scrutiny. It is disappointing that the NSW Office of Water also found there to be insufficient information to assess the adequacy of the model in making future prediction on groundwater pressure.

- **Demonstrated compliance with the NSW Aquifer Interference Policy (2012)**

This proposal does not comply with the NSW Aquifer Interference Policy. Section 3.2.3 Determining water prediction it states that for SSD the estimate must be based on a complex modelling platform that is:

- Calibrated against suitable baseline data and in the case of a reliable water resource for a minimum of two years.

We would argue that the Pilliga Sandstones that feed the Great Artesian Basin are a 'reliable water resource' and therefore Santos has not met this important guideline.

In addition there are a number of uncertainties related to multi-lateral drilling that have not been addressed. The 'Triple Stacked' drilling of horizontal coal seam gas wells through the casing of the existing wells, at Dewhurst 13-18H and 31 poses great danger to the Great Artesian Basin and other aquifers as it is very difficult, if not impossible, to seal the junction between the casing and the lateral.

When questioned about sealing these junctions in July this year, NSW Chief Scientist Professor Mary O'Kane said she had been told by Santos that they had difficulty sealing these junctions known as Kick Off Points (KOPs). It is clear that Santos hold little concern for the pollution of aquifers by either drill fluids or gas escapes and the down draining of aquifers.

- **Detailed assessment of potential impacts on the quality and quantity of existing surface water and groundwater resources, including:**
 - **Detailed modelling**

There is insufficient back-ground data to validate the Santos groundwater model. In addition baseline data must be established for a minimum of 2 years according to the Aquifer Interference Guidelines for State Significant Developments. Clearly this has not been met.

- **Cumulative impacts associated with existing developments as well as any currently approved developments or proposed future developments**

We have serious concerns regarding Santos cumulative impacts groundwater model. Santos have not specified or assessed the impacts of any proposed future developments despite announcing to shareholders they plan to drill 850 wells in the Pilliga.

BIODIVERSITY

- **An assessment of potential impacts of the development on any**
 - **Terrestrial or aquatic threatened species or populations and their habitats, endangered ecological communities and groundwater dependent ecosystems**

The low number of species identified by Santos consultants is anomalous with the Wildlife Atlas and recent surveys by ecologists David Millege and Phil Sparks as reported in the attached report National Significance: the ecological values of Pilliga East Forest and the threats posed by coal seam gas mining 2011-2012 (attached).

In particular it is concerning that the Pilliga Mouse breeding habitat was not identified within the well sites when the area has been identified as having a high amount of breeding habitat and breeding mice have been found. The adequacy of these surveys are questionable.

The threatened species that will be adversely impacted by the Dewhurst Pilot and may be at risk of extinction include the Pilliga Mouse, Eastern Pygmy-possum, Black-Striped Wallaby, Southern Long-eared Bat and Koala. The impacts from these wells must also

taken into account in the context of the other infrastructure and cumulative impacts of the clearing and contamination events that have occurred in the Pilliga.

The EIS says that potential impacts to Stygofauna communities are considered to be negligible. However significant populations of Stygofauna have been found within the sampled groundwater however, a study by Serov 2012, showing that there are unique stygofauna populations within the alluvial groundwater of the Pilliga East Project Area. We need a full baseline study of Stygofauna across the Pilliga East State Forest and an independent assessment of the potential impacts from coal seam gas drilling on Stygofauna populations. Attached is the Stygofauna report by Serov that shows the presence of rare stygofauna populations in the Pilliga East (Attachment 3).

The impact assessment also ignores:

- The fact that the expected extent of impact is much greater if Santos's plans for the Pilliga CSG field (850 wells) is taken into account;
- Direct pollution of streams from waste water discharge, probably causing habitat losses and food contamination resulting in deaths of aquatic vertebrates;
- leakages from poorly maintained pipes that may have adversely affected vertebrates drinking pooled water, and contaminated soils and polluted drainage lines and ground water.

We recommend:

- A Species Impact Statement to assess the impacts of the proposed development on the Pilliga Mouse, Eastern Pygmy-possum, Black-striped Wallaby and Koala populations. This is due to the presence of breeding habitat for the Pilliga Mouse and Eastern Pygmy Possum, the significance of the area for the Black-striped Wallaby population in NSW and the lack of consideration of secondary habitat on the Koala population. There is little known about the population distribution of the Pilliga Mouse and Eastern Pygmy-possum in the Pilliga Forest and therefore requires an Environmental Impact Statement. The South-eastern Long-eared bat is highly sensitive to 'edge effects' and the increased clearing required for the additional 15 wells as well as new access tracks and gas and water pipelines that make up this exploration project could tip the threshold of this threatened species in this location which is one of the last know areas of high population.
- Baseline ecological surveys to assess the population dynamics and status of the Pilliga Mouse, Eastern Pygmy-possum, Black-striped Wallaby, Southern Long-eared Bat and Koala populations of the Pilliga Forest.

AIR QUALITY

Another requirement is to assess the risk of fugitive emissions on environmental and human health. The baseline atmospheric methane data collection against which to assess any future potential fugitive emissions and Independent Health Impact Assessment of north-west NSW to establish baseline health data and air quality information has not yet been conducted.

The lack of suitable site-specific NO₂ data being available to quantify the existing ambient levels at the site is a concern. Using data from the Muswellbrook NSW EPA monitoring site is completely inappropriate and should not even have been used for this EIS. The air quality in the heavily industrialised Muswellbrook and the forest ecosystem of the Pilliga are worlds

apart. A suitable ambient monitoring station must therefore be set up in the vicinity of the proposed Pilliga gasfield site before drilling commences.

The same can be said for the need to acquire suitable site-specific CO data collection points to quantify the existing ambient levels at the site. Without these baselines, there will be no way to accurately measure or prove increasing levels as a result of the coal seam gas drilling in the forest.

Further, we recommend a peer review of the modelling used to ascertain the Nitrous Oxide conversions and modelling methodology described on page 13 of the Air Quality Impact Assessment to ensure these calculations are correct.

GREENHOUSE GASES

The flare and vent stack impacts should have been assessed as part of this EIS, despite being stated as an unlikely occurrence. If venting or flaring does take place, there should be exact measuring and reporting of the emissions.

The stated safe guards against fugitive emissions in the sensors at transitional points across the well head and pipe network that will trigger automatic shut down of wells until the leaks are found and repaired are welcomed. This data, and the occurrences of these shut down events due to pollution must be made public and investigated by the EPA.

The EIS provided very little data on the cumulative greenhouse gas impacts of a gasfield going ahead, and did not lay out a clear way for the cumulative greenhouse impacts over time to be assessed or measured.

The cumulative impact of the entire gasfield of 850 wells could have a large greenhouse impact. The proponent should be providing a rigorous assessment.

WASTE

The current means of trucking contaminated water to Sydney has a high risk of spillage and high carbon footprint.

HAZARDS

- **attention to public safety, chemical use and including bushfires**

Santos state that; "Excess gas will be flared" Santos does not appear to have a clear bushfire strategy, especially for gas flaring which cannot be shut down on catastrophic fire days. We request that Santos completes a full fire assessment including potential damage to infrastructure including post fire ecological hazards from chemicals produced water etc, pipeline gas leaks and fugitive emissions, increased risks due to increased vehicle use, risks to staff and RFS workers and risks from flaring gas wells

The Pilliga is highly susceptible to fires, largely due to the high incidence of ironstone attracting lightning strikes. It is not unusual for the Rural Fire Service to record up to 1000 over a 24 hour period in the Pilliga region.

SOCIAL & ECONOMIC

The assessment that has been done doesn't take into account any costs of the project, only claimed benefits. This approach has been labelled as "biased", "abused" and "deficient" by the ABS, Productivity Commission and Land and Environment Court respectively and doesn't comply with DGRs.

DGRs call for a demonstration of "net benefit" to the NSW community. To an economist, this is a clear call for cost benefit analysis. There is no cost benefit analysis in the EIS. NSW Treasury and Department of Planning put out guidelines in Nov last year specifically to guide cost benefit analysis of mining and CSG projects. These have not been followed

REHABILITATION

No further drilling should be approved until Santos have determined the cause of the dead trees surrounding each well pad and are able to demonstrate a successfully rehabilitated well pad.

CONSULTATION

It is extremely disappointing that Aboriginal Heritage requirements for were taken out of the Director General Requirements. There is a Native Title claim over the project area and Santos must include the Gomeroi Native Title Claimants, Gomeroi Traditional Owners of the Pilliga and the Narrabri Local Aboriginal Land Council in their consultation.

Thank you for your consideration of this objection to the Santos SSD 13_6038, should you have any questions please don't hesitate to contact me on the details provided below.

Yours sincerely,

Naomi Hogan
Campaign Manager
The Wilderness Society Newcastle