Doctors for the Environment Australia

67 Payneham Road
College Park SA 5069
P 0422 974 857
E admin@dea.org.au
W www.dea.org.au

ABN: 80 178 870 373

Healthy planet, healthy people

June 19, 2014

To the Planning and Assessment Commissioners, Speakers and attending members of the Public at today's hearing on the proposed Bibblewindi (SSD-5934) and Dewhurst (SSD-6038) Gas Exploration Pilot Expansion Proposals:

First I would like to thank the Commission for allowing this letter to be read out on behalf of myself and Doctors for the Environment Australia. I regret not being able to travel to Narrabri and speak, but am grateful for the assistance of Ms Heather Ranclaud who also works in health.

Doctors for the Environment Australia is a voluntary organisation of medical doctors in all states and territories. Our training equips us with rigorous understanding of the basic needs for human health and wellbeing and the skills to access and critically evaluating and interpreting scientific information and health data. We are ideally placed to consider its implications to health risks at individual, community, state, national and international levels.

DEA's key role is to ensure that public and environmental health concerns and risks are clearly understood and used by the government, particularly in policy and decision-making processes. We have no conflicts of interest, but share a deep and enduring concern for the health of individuals, families and communities today and into the future.

Today, DEA would like to express deep concerns to the Planning and Assessment Commission regarding the impact of the proposed Bibblewindi (SSD-5934) and Dewhurst (SSD-6038) Gas Exploration Pilot Expansions. **We are concerned about the many significant risks posed by these operations on the health and wellbeing of residents of Narrabri and the region.**

At the outset we point out that although this is put forward as a 'pilot' expansion, in reality the expansion is part of a much larger, planned operation – which is full-scale production across the Pilliga Forest and surrounds. We object to the piecemeal approach of 'seemingly small' steps towards a much larger agenda. We also object to the resulting lack of recognition of, and accountability for, the large-scale cumulative impacts of such a large operation on the integrity, character and identity of a unique and important part of the Northwest New South Wales life and landscape, that would be permanently diminished if the whole project proceeds. **DEA argues that it is in the public interest that cumulative impacts of existing and intended activities be fully assessed prior to the granting of any extension of smaller scale 'pilot' activities.**

We now outline some of our prominent concerns under the headings of health risks and consequences of potential impacts on water, air and psycho-social wellbeing, then summarise. Accompanying documents provided to the PAC contain references to all of the points made in this statement – and DEA is happy to provide any more information on request.

Health risks resulting from water impacts

Doctors for the Environment Australia has written extensively on the existing evidence. There are many steps and many toxic chemicals involved in coal seam gas operations that risk water pollution with human health implications.

These include the many concerning chemicals used in the fracturing fluid. Despite their dilution, the enormous quantities required for use in the repeated fracturing of multiple wells mean that they are a serious concern - posing risks in transportation, handling, application, recovery or retention in the fracturing sites, storage and 'disposal'. While regulations have been put in place to require companies to report the chemicals added in the fracturing process, enormous uncertainty remains on what their implications are for the environment and water quality in the area and the risks of exposure to people, in the short and long term. We note that NICNAS – the National Industrial Chemicals Notification and Assessment Service – is currently producing a comprehensive assessment of chemicals expected to be used in Australia, many with toxic potential and none previously assessed for use in hydraulic fracturing. Although this work is likely to be helpful, it may raise more questions than it answers, with regard to their safety, handling, persistence, mixture properties and cumulative risk.

Probably even more concerning than these added chemicals are those found naturally within the large quantities of produced water from the coal seam. **Produced water is salty and may contain volatile organic compounds such as benzene and other BTEX chemicals, radioactive isotopes and heavy metals. Since onset and despite thus far limited numbers of wells drilled, coal seam gas operations in the Pilliga Forest have resulted in multiple water contamination incidences**. These include accidental discharge of produced water into surface water sources, overflow from storage ponds on two separate occasions and leakage of 10,000 litres of untreated saline from a pipe at the Bibblewindi site that damaged large amounts of vegetation. Salt contamination seriously damages soil, affects productivity and can also mobilise naturally occurring elements in the soil, such as uranium, allowing them to migrate into aquifers. This occurred in 2013 (reported and confirmed by the EPA in 2014), where salty wastewater from a holding pond leaked into the soil, causing lead, aluminium, arsenic, barium, boron, nickel and uranium from the soil to move into an aquifer below. Uranium levels 20 times higher than safe drinking water guidelines were reported.

Other serious water contamination problems have occurred in the Condamine River in Queensland – where treated produced water discharges contained levels of 22 chemicals, including boron and cadmium, above environmental guidelines.

Thus spills and accidents do occur. **APPEA, the peak petroleum industry body received 61 reports of environmental accidents and spills in CSG operations in 2011-12, noting that "the industry still has some way to go to match the safety performance in other parts of the world".** Research in the United States, where the unconventional gas industry is in a more advanced stage, has shown that "surface spills are an important route of potential groundwater contamination".

Although high levels of treatment, such as reverse osmosis, are effective in removing salt and many of the contaminants, we cannot be sure if all contaminants – such as benzene - are completely removed by current processes. **Hence concerns remain regarding the safety of handling the produced water, dealing with the enormous quantities of salt produced, and all methods of disposal.**

In addition to water pollution risks, the National Water Commission warns that "the coal seam gas industry... if not adequately managed and regulated, ... risks having significant, long-term and adverse impacts on adjacent surface and ground water systems". These risks include reduced water quality from water table cross contamination, gas migration into bores and reduced water quantities and draw down of water levels from bores used for livestock and other purposes.

Health risks resulting from air pollution

There is growing awareness of the vast array of concerns regarding chemicals released into the air during all steps of coal seam gas mining operations. Of substantial concern is the large amount of diesel fumes emitted by the enormous number of truck movements and machinery required for the establishment of the well operations – bringing in the pipes, creating the well pads and roads, transporting the drilling equipment, fluids and chemicals, transporting the gas and dealing with the waste. Diesel exhaust contains particulate matter and toxic gases. It was recently classified as a carcinogen by the International Agency for Research on Cancer, and it can also worsen existing conditions such as asthma and chronic obstructive pulmonary disease. Hence increased exposure of people to diesel exhaust resulting from this enormous transport burden pose elevated risks to community health, especially among the vulnerable.

There are many steps in the gas production process itself that pose air pollution risks to gas workers and to people living nearby. While most of what we know about these risks come from studies on the shale gas industry in the United States, the pollutants potentially released during coal seam gas mining in Australia are very similar. **Hence DEA argues that until more studies are done in Australia, this body of information should be taken as our current best evidence of the health risks posed here and cannot be dismissed unless independent research demonstrates otherwise.**

Of particular concern regarding air pollutants are the volatile organic compounds and poly-aromatic hydrocarbons, including the carcinogen benzene, released from venting, holding tanks, holding ponds, compressors and other

infrastructure. In addition to the direct concerns from diesel emissions from trucks and machines, chemicals in diesel exhaust can combine with the gases from the coal seams to form ground-level ozone, which can cause or worsen respiratory disease in exposed people. The numerous reports of headaches, throat and eye irritation among residents coinciding with well completion activities are consistent with symptoms known to occur as a result of exposure to volatile hydrocarbons and other pollutants associated with coal seam gas mining.

While there is still a lot unknown about air pollution emissions from coal seam gas mining, there are emerging studies from the United States where some 15 million Americans live within a mile of a drilled and fractured unconventional gas well or wells. Studies at the University of Colorado have indicated that residents living within a half mile of unconventional (tight sands) gas wells have an increased risk of exposure to a range of air pollutants at levels that can impact on health. Furthermore, these researchers found a positive association between rates of congenital heart disease among infants and the number of unconventional gas wells within a 10 miles radius of their mother's residence during pregnancy.

This research is continuing, but it is important to realise that it can only be done once a large number of people have been exposed for a long time. Unlike the United States where this has occurred, people in Australia can learn from this growing body of evidence and make decisions in advance as to whether this is acceptable or not in our country.

Health risks resulting from psycho-social and community level impacts

Expanding coal seam gas activities cause concerns for family health through water and air pollution, reduced security of water, livelihood and land value and loss of amenity in one's cherished living space. Communities can be changed with 'boom town' effects, rents and price rises, fly in fly out workforces, public infrastructure stressed and division between those who sense they are gaining and those who are experiencing loss. **Research in Queensland revealed that some rural residents affected by mining experienced distress and disempowerment, isolation and pessimism as a result. People threatened with gas wells close to their properties are looking ahead to intensive lights, noise, smells and activities that will impact on their home life, ability to sleep and general wellbeing.**

Reports from countless families and farming communities in the United States faced with this industry distress Narrabri residents, and they are aware of the small but growing evidence base from public health and medicine that is revealing that their concerns for their health and wellbeing are warranted.

Summary - What does this mean to the people of Narrabri and the surrounding region?

As described above, **coal seam gas operations do pose significant risks to water, and therefore to the health of people and livestock exposed to impacted water. They involve the use, generation or movement to the surface of many chemicals that can include toxic, allergenic, mutagenic and carcinogenic substances and methane.** While methane is not thought to be a major, direct health concern, its presence in drinking water can be a marker of contamination with other hydrocarbons from the coal seam that pose a more direct health risk but go undetected. If aquifers and surface waters used in livestock and grain and vegetable watering become contaminated, there is a risk that beef cattle, chicken, lamb and pork, and other farm products could contain these chemicals and be rejected by the market, or eaten by Australians and export consumers. Exposure through drinking water directly or through food presents a health hazard.

Studies from the United States provide us with some concerning evidence regarding the types and levels of air pollution that people are being exposed to as a result of unconventional gas operations. Consistencies between types of pollutants produced and emitted during the whole operation and the symptoms experienced in places like Tara in Queensland call for a comprehensive assessment of these significant air pollution risks. Particularly concerning is the **early evidence from the US that long term chronic exposures to these air pollutants may impact on foetal development and exacerbate existing illnesses among those with asthma and other respiratory diseases**. Whether or not the actual incidence of cancers is elevated among those living close to gas wells as a result of potential exposures to benzene or other carcinogens involved is likely to take years to determine.

Finally, we do know that without a doubt, coal seam gas mining brings a range of psycho-social and community changes. Many of these are distressing and are likely to play a role in the social and emotional wellbeing of individuals, families and communities. While often overlooked, it is important to highlight that mental health problems, such as anxiety and depression, are a leading
cause of disability and health loss in our communities. As we know that our farming communities already bear enormous stress as a result of economic circumstances and current and future impacts from climate change – **it is extremely concerning that their quality of life and sense of safety and security is under threat again by this new and expansive industry**.

Australia as a whole needs a strong, vibrant and healthy agricultural workforce – and it is in all our interest to protect farmers and rural communities. At this PAC meeting today, we ask the Commissioners to consider the emotional distress and anxiety that they have heard in the voices of residents who do not want this industry on the edge of their property and community, as significant threats to the mental health and wellbeing of some of Australia's most resilient people.

As many will have discussed today, clean and sufficient water, clean air and home and community wellbeing are crucial for the health and livelihoods of the people living in proximity to the proposed expansion. Many are farmers dependent on the safety and security of their water for their families, livestock and crops, and the coal seam gas industry does pose significant risks to their continued access to these basic health needs.

In conclusion, DEA urges the PAC to reject expansion of coal seam gas mining operations in Bibblewindi and Dewhurst in Narrabri and the Pilliga Forest. We urge the PAC to recommend a full health impact assessment to be conducted and operationalized before consideration of any further expansions. Please don't hesitate to contact me for further information as needed.

Best regards

Melissa Haswell.

Associate Professor Melissa Haswell, MSc PhD
Honorary Member, NSW Division, Doctors for the Environment Australia and Muru Marri, School of Public Health and Community Medicine, UNSW Sydney
Email m.haswell@unsw.edu.au Phone 02 9385 3324