Friday 19th May, 2017

Executive Director

Resource Assessments

Department of Planning and Environment

GPO Box 39

Sydney NSW 2001.

Dear Sir,

Submission as an objection to the Narrabri Coal Seam Gas Project (SSD 6456)

My late husband, Mike Atkinson (CM Atkinson), was a consultant coal geologist having been employed by Robertson Research Australia and engaged in projects involving the Bowen Basin, Queensland, East Kalimantan and Sumatra, to name a few. In retirement he worked voluntarily on various projects, eg analysing and critiquing mining proposals, assessing viability, researching and comparing data from elsewhere.

In the early 2,000's he did a lot of work on the issues of coal seam gas and environmental issues in the Pilliga. Some environmentalists are attaching some of his reports to support their arguments. I have been searching through our files and will do likewise.

One graphic example of damage associated with a drill site, Bohena no.2, was the very black dying and dead vegetation which spread for several hundred metres. He wrote up a report (see attached file "Environmental Hazards of Oil and Gas Exploration", CM Atkinson) of our visit there on 22nd November 2001. I also attach this report, "Increased Pollution at Bohena Drillsites, Pilliga, NSW". He prepared this for Canopy Native Forest Committee of TEC, and for collaborating environmental organizations including Colong Foundation for Wilderness and National Parks Association (NPA).

Around that time we made many field trips to the Pilliga assessing its ecological values, the threats to these, and building our case for increased protection. People just driving through the Pilliga Forest may mistakenly dismiss it as a boring sandy flattish area with a lot of native pine (callitris), ironbarks, yellow box and a few wattles, nothing much else. Wrong. Our first visit was in August. We camped by a dam where an enormous flock of very impressive Glossy Black Cockatoos roosted. Dozens of different varieties of acacias were flowering (I believe there are over fifty varieties there). The richness and diversity of this area became apparent as we explored and researched the area.

Here are some of the Pilliga's ecological features:-

The Pilliga Forest is the largest patch of temperate woodland in Australia.

The Pilliga contains the largest area of Narrow-leaf Ironbark, Broad-leaf Ironbark, Pilliga Box and Bimble Box (eastern form) found anywhere in NSW. It also contains many other plant communities that have largely been cleared out their former ranges, eg. Silver-leaf Ironbark, Brigalow, Green Mallee and Broombush.

Note the extraordinary numbers of species, many threatened, in the Pilliga:-

- Over 900 known plant species, probably more than 1500.
- At least 12 rare and threatened plants
- About 300 native animal species (not counting invertebrates)
- 14 frogs
- Over 200 birds
- 32 mammals (including 12 bats)
- About 50 reptiles
- 22 threatened animal species (Glossy Black Cockatoo, Regent Honeyeater, Gilbert's Whistler, Painted Honeyeater, Turquoise Parrot, Barking Owl, Masked Owl, Malleefowl, Square-tailed Kite, Black-breasted Buzzard, Bush Stone Curlew, Eastern Pygmy-possum, Squirrel Glider, Koala, Black-striped Wallaby, Rufous Bettong, Pilliga Mouse, Greater Long-eared Bat, Yellow-bellied Sheathtail Bat, Little Pied Bat, Large-eared Pied Bat, Eastern Cave Bat).

Groundwater Issues, the Great Artesian Basin (GAB)

The complexity and fine balance of the aquifers of the Pilliga needs to be addressed with immense caution and a solid scientific basis.

The Coonamble Embayment, part of the Great Artesian Basin in central western NSW, covers an area of 90,000km2 and includes the catchments of the Bogan, Macquarie and Castlereagh Rivers. The region's surface and groundwater resources support the ecology of the Pilliga Forest, the wildlife, the RAMSAR-listed Macquarie Marshes, pastoral and irrigation industries, towns and homesteads. Until coal seam gas drilling commenced only a very modest quantity of groundwater had been extracted from the main artesian aquifer, the Pilliga Sandstone aquifer, for 120 years. Recharge of the aquifer could occur naturally. This will not be possible with the massive quantities of water required for coal seam gas extraction, particularly if an extension of the already excessive coal seam gas industry is allowed to proceed.

Protection for the Great Artesian Basin as proposed by the Colong foundation for Wilderness:-

"The impact on CSG production on the GAB must be monitored and thresholds set to prevent damage to aquifer strata. The independent monitoring panel (IMP) of experts who are unrelated to the petroleum industry must advise DPE of any impacts to GAB, as well as in impacts to biodiversity, old growth forests and wilderness.

If the integrity of the GAB is impacted, then the DPE must be able to stop CSG production in the project area.

If approval is recommended for this proposal, then consent must be structured to protect the GAB and the integrity of the intake bed strata as a priority over continued CSG production.

Under no circumstances should fracking of the coal seam be proposed as this will compromise the GAB strata. If fracking is a contingent part of the proposed project, it must be refused consent as fracking will compromise the aquiclude strata that confine the GAB. Such damage will have potentially serious but unknown consequences.

The proponent must not be relied upon to provide accurate data of damage to the GAB and its confining rock strata. Experience with mine subsidence plans reveals that any such data will be framed within misleading narratives that serve the proponent's needs and not those of the regulatory agencies. Without data being available to an IMP with no ties to the CSG industry, it is likely that monitoring will not produce advice necessary for adaptation of the CSG project."

Water is gold in the Pilliga and more widely the Murray Darling Basin, essential to the ecology of the Pilliga and also to agriculture and grazing. Any disruption to the fine balance of groundwater and its replenishment has a ripple effect as far as Adelaide. The fine balance of water table level, water quality, soil chemistry and healthy vegetation should not be jeopardized.

A network of criss-crossing roads and pipelines, water extraction, lines of wells, chemical intrusions, structures, work sites – all these are doing just that – jeopardising this ecosystem. This impact will be magnified with an extension of drilling.

Recommendations:

I would like to support the recommendations presented by the Colong foundation for Wilderness and inserted here:-

After considering the environmental constraints of the Pilliga forest and hazards related to CSG production and the GAB, the Colong Foundation believes that DPE recommend refusal due to extensive and significant environmental impacts. *The proponent has shown itself not to be a good corporate citizen by gaming the gas market and its EIS does not provide enough specific data for the proposal to be approved with adequate precision.*

The Colong Foundation considers that there shall be too many unforeseen environmental impacts associated with this proposed project for it to be granted unconstrained development consent.

If these risks are not considered sufficient grounds for DPE to recommended refusal, then a DPE recommendation for approval must be subject to a consent that is limited in area and by adaptive management. No large approval of CSG resource security should be issued. It is not in the national interest to put at risk the water resources of the GAB or the biodiversity of a large part of the Pilliga forest.

If DPE decides to recommend approval of the project then consent should be regulated by the following proposed conditions:

- *No CSG infrastructure in the affected part of the Willala Wilderness;*
- *Labelled as **environmental constraint areas**, areas with:*
  Wilderness value (the NPWS can provide maps of areas that are substantially unmodified and modified by recoverable having wilderness value),
  Old growth woodlands,
  Endangered ecological communities, and
  Threatened plant and animal species habitat;
- *Independent, and site detailed **pre-production faunal and flora surveys** shall ensure the habitat of threatened native species is not cleared, but avoided and protected in environmental constraint areas;*
- *Soil erosion and stream siltation hazards must be mapped in the environmental constraint area;*
- *Trails and CSG infrastructure must avoid environmental constraint areas;*
- *To further minimise damage to the natural environment, the access roads should be established with local materials with no areas of cut and fill;*
- *To further minimise siltation, roll-overs should be constructed in preference to table-drains, and all earth works should be kept to a minimum and removed at the end of the project, including all access roads and trails;*
- *Feral animals, particularly pigs, and weeds should be continuously eradicated from the project area by pest control contractors approved by the DPE;*
- *The proponent shall undertake effective wildlife management within the Pilliga forest to secure diversity of its flora and fauna using a wildlife management team approved by the National Parks and Wildlife Service;*
- *The **natural dark sky required by the Siding Springs Observatory shall be protected** from light pollution by enclosure of gas flares in cowling and proper design of all lighting by an approved lighting engineer;*
- ***A series of CSG extraction plans** shall be developed for the project over time to implement a staged and adaptive management program for the proposed project;*
- ***Adaptive management approach** shall govern sequential series DPE controlled extraction plans each over small areas established at the outset of the project, starting in the most environmentally disturbed and least environmentally sensitive areas, and progressing from there towards more environmentally sensitive areas;*
- ***An independent monitoring panel** (IMP) experts in the GAB shall advise the DPE and community feedback on these extraction plans will inform continuous improvement of the project;*
- *In order to minimise environmental impacts, failure to meet **environmental threshold standards** specified in the consent to the satisfaction of the DPE as advised by the IMP shall result in the removal of areas from a current extraction plan and also entire extraction plan areas can be removed by the DPE on advice by the IMP;*
- *An expert **IMP shall set and advise on thresholds** regarding impacts on the GAB and advise DPE on compliance for the project to these thresholds;*
- *The **rehabilitation program shall be continuous** and require all topsoil to be returned to all clearings and a process of natural rehabilitation established at each*

disturbance site as soon as possible, in preference to any planned artificial revegetation processes;

- *As part of progressive rehabilitation, and in addition to the restoration of clearings and removal of developments established by the proponent company, all fence lines, tanks, dams, quarries, accommodation and clearings should also be removed from the project area.*

This is my submission which I hope you will accept and that you will give it serious consideration.

See also two attachments authored by CM Atkinson.

Yours faithfully,

Valerie Atkinson

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