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**LEGISLATIVE
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Barrington-Gloucester-Stroud

Preservation Alliance Inc.

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10 November 2011

The Hon Robert Brown, MLC
Chair
Legislative Council Inquiry into Coal Seam Gas
Parliament House
Macquarie Street
Sydney NSW 2000.

Dear Sir,

TAREE HEARING 31 OCTOBER – The Committee’s request for details of reports referring to methane gas migration and to coal mining at the northern end of the Gloucester Valley

We enclose copies of the following material and reports in reference to the above matters raised by you and The Hon. Jeremy Buckingham regarding the reported major methane gas migration incident and the difficulties associated with coal mining at the northern end of the Gloucester Valley. We are concerned that AGL is continuing its exploration and appears to have set out to make the project unstoppable despite the Land and Environment Court’s decision still being awaited.

The documents enclosed are:

1. C.M. Atkinson, *Coal Bed Methane Hazards in New South Wales*, January 2005, prepared for Tony Davis and Associates

The entire document is relevant in understanding the risks associated with coal seam gas extraction because the risks apply to all methane gas extraction areas.

The Stratford methane eruption is addressed on page 10. The last paragraph addressing the Stratford problem notes that:

In this case there were apparently no serious injuries and the methane gas migrated into nearby boreholes rather than houses, essential water supplies or livestock areas. This example shows that even with only a partial withdrawal of the hydrostatic pressure, methane will migrate quickly and in unpredictable directions. If the drill site conditions laid down by the State Government are similar at Stratford to those elsewhere, the most visible safety precautions would have been a wire fence and a locked gate.

We have received oral evidence of water and gas escapes being seen by landholders but (logically enough) correction procedures and stifling of information followed immediately. We so far have been unable to obtain documentary evidence or sworn statements to substantiate these claims.

2. A further copy of the geological map *Dungog 9233 1:100 000*, New South Wales Department of Mineral Resources, prepared 1991.

We gave the committee a used working copy at the Hearing; please use or dispose of that copy as you wish.

This map is relevant to the AGL coal seam gas project because it shows the complex network of major and minor faults that characterise the Stroud-Gloucester Valley and which are more complex at the northern end of the valley. These faults underlie the extreme risk of gas migration that exists throughout the valley but is correspondingly greater at the northern end. Updated geological comment received by the BGSP Alliance is that this map is accurate but that it does not reveal all details of the complex geology and additional complexity exists (see comments by Professor Alex Grady, item 6 below).

3. Copy of pages 319 to 328 from 'Economic Geology', *Geology of the Camberwell, Dungog and Bulahdelah 1:100,000 sheets 9133, 9233, 9333, 1991*, Geological Survey of New South Wales, Department of Mineral Resources.

We note that recent exploration has not revealed any discrepancies in this work and that it is still held as an authoritative source.

- Page 325 notes that the potentially mineable coal is located in the Stratford and Wards River areas where the strata are generally flat lying and coal seams occur at relatively shallow depths.
- Page 327 notes that the coal seams are characterized by a considerable degree of lateral splitting and that only open cut resources are available because of 'complex geological nature and extensive seam splitting'.
- Page 328 notes that folding and faulting have significantly reduced the potential for the development of coal resources and that economically mineable coal is restricted to shallow, good quality coal occurring in relatively flat lying strata. The commentary further notes that the Stratford and Wards River area were the only resources identified at that time.

4. F.C. Loughnan, *The Permian Coal Measures of the Stroud-Gloucester Trough*, 1954, School of Mining Engineering and Applied Geology, NSW University of Technology, Manuscript read 1 December 1954.

- Page 1 'Physiography' notes the fault system that characterises the valley and the complicated fault system that terminates the valley at the northern end.
- Page 4 notes the 'remarkable east-west tear faults' are most intense north of Craven.
- Page 6 notes the difficulty experienced by the Gloucester Main Colliery in attempting to mine coal in past years.
- Page 6 further comments on the complicated geology and the steepness of the coal beds.
- Page 8 notes that 'Perhaps no other area within the State presents such a unique opportunity for studying the rapid succession of different tectonic environments as the Stroud-Gloucester Trough'

and:

- 'Undoubtedly the most remarkable feature of the area is that due to a late E.-W. compressional stress of some magnitude which superimposed new structures on pre-existing ones causing the development of tear fractures and the displacement of whole blocks of country'.
- Page 9 notes 'the steep dip of the seams, the presence of numerous minor structures and the high level of the water table would render mining hazardous'.

5. Whitehouse, 1983, unnamed report passed to the BGSP Alliance by a concerned resident. The report appears to be by John Whitehouse, a noted geologist who worked in New South Wales at that time, particularly in the Newcastle, Hunter and Bulahdelah areas.

Page 1 notes that the seams 'are mostly steeply dipping and strongly faulted'. The report agrees with other accounts of the area's geology.

6. Commentary by Professor Alex Grady, Hobart. (Professor Grady's main professional specialisation was structural geology and included 35 years of professional activity).

This commentary was included in the BGSP Alliance's original submission to the Department of Planning. It addresses the area's geology and the hazards it creates. We ask that it be read in its entirety but particularly draw attention to his concluding comment:

- 'I think that you can see from what I have written, that I sense a major lack of understanding of the potential hydrogeological situation, together with a consequent lack of an adequate monitoring system and program, required in order to understand the hydrogeological repercussions (short and long term) of what is proposed in the project.'

7. Newspaper reports, *Sydney Morning Herald*, 4 November 2011, Page 7; 5-6 November 2011, pages 1,4,

These reports relate to earth tremors in England caused by the fracking process. The critical point is that the gas mining company advised that they were rare occurrences caused by geological faults. The Gloucester Valley's geology is exceptionally faulted and earth tremors have already been reported at the exploration stage, they will be far more severe if production proceeds on the present basis because of the valley's extreme vulnerability. New reports from the US confirm that injecting water into deep rock formations causes earthquakes.

We trust these sources satisfactorily address the matters raised by us. The BGSP Alliance considers that the valley's geology and the extreme risk of methane gas migration have not been properly addressed despite the overwhelming body of expert opinion regarding these matters.

Yours sincerely,

Garry Smith

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