

Submission to the Planning Assessment Commission concerning Shenhua Watermark project SSD-4975 June 2014

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Our relevant experience

- 30 years each of teaching landform, soil and environmental studies at the University of Wollongong, and extensive publications in these fields, including a definitive study of groundwater and soil sequences in the lower Namoi valley (Young et al. 2002).
- authorship of the widely used textbooks *Soils in the Australian Landscape* (Oxford University Press) and *Environmental Change in Australia Since 1788* (Oxford University Press)
- membership of Community Consultative Committees for mines in the Southern Coalfield

Principles of approval

In his keynote address to the Mine Subsidence Technical Society Conference (Galvin 2014) recently, Prof. Jim Galvin noted that his corresponding address to the first conference in 1988 did not feature the word 'risk' and nor did any of the 1988 conference papers. The dramatic change in the following 25 years was highlighted by the title of the 2014 conference - *Risk management in action* - but even more by the graphs he presented of improved safety performance coinciding with the move to risk-based management. The drops in the graphs were dramatic, and illustrated the effectiveness of strong purposeful legislation. Certainly, in response to that legislation, companies were proactive in introducing stringent workplace safety procedures and encouraging workers to be involved. Importantly, he further argued that **it is time for a similar purposeful risk-based approach to be introduced in managing mining-related impacts**. The approval process and conditions should be explicitly risk-based, allowing for the uncertainties inherent in dealing with natural (rather than engineered) scenarios, and specifying clear performance criteria, the actions to be taken in response to impact triggers, the practical and proven techniques to remediate damaged features, and the use of monitoring results to drive improved performance. It is time to move beyond 'current best practice' and description of impacts as 'residual' and able to be 'minimised, mitigated and/or at least compensated for', as if damage to the social, environmental and economic fabric of the area were inevitable and acceptable if ameliorated. **We believe the community expects a similar change in the standard of accountability as occurred with worker safety to be implemented for mining-related impacts on the landscape and we urge this PAC to be a pioneer in this step.**

The project proposes a 30 year operation in 3 open-cut pits. **This should not be approved in one step, but staged with progress from one stage to another, contingent on exemplary performance during the preceding stage.** Firstly, this means genuine penalties are built in to the process and the community can have some confidence that adverse impacts bring relatively rapid consequences for the mining activity. Secondly, it allows for the changes in community standards and expectations which are intrinsic to such a long project. We have seen major changes in community views and in scientific understanding of environmental issues generally, and of coal-related impacts in particular, even within the last 5-10 years. We note as a precedent an example from the Southern Coalfield, where approval of Dendrobium Area 3B was given only for an initial group of longwalls, with not even development workings permitted beyond that before various reviews of monitoring and modelling and further approvals were completed.

As this is the first approval to be considered in the Strategic Agricultural Lands of the region, it is important to recall just how important the agricultural resources are. The combination of soil quality, climate and accessible aquifers make these areas unique in their agricultural productivity. We suggest that three outcomes are vital:

1. The conditions must set a very high bar suitable to accommodate future cumulative impacts of any other mines that may be approved. Too frequently to date, mines have been assessed as if they were stand-alone alterations to the landscape.
2. The conditions must provide for adaptive mining strategies so that any impacts beyond those deemed acceptable trigger immediate practical response and change to mining practice.
3. For the Biophysical Strategic Agricultural Lands, the bar must be Zero Harm. No damage to these lands can be considered acceptable.

The draft approval conditions will not achieve these outcomes.

The draft approval conditions

The draft approval conditions should be extensively re-written. They are certainly inadequate to prevent and uncertain even to 'minimise and offset' the adverse environmental impacts which so clearly are likely to be associated with the project. They do not set clear standards and performance measures, and so do not define what is an 'acceptable' environmental performance.

They lack clearly defined criteria.

The language of conditions is imprecise and leaves much room for the company to argue about whether a condition has been breached or not. **We do not agree that the Department of Planning's recommended conditions are 'comprehensive and precautionary'.**

Consider clause 25, Table 11. It requires the company to 'minimise cumulative water impacts with other nearby mines'. What criteria define 'minimising'? Indeed the word 'minimise' appears frequently, even in respect of conditions that would seem amenable to being absolute. For example (and it is only one!), why are on-site mine water storages only required to be constructed and maintained to 'minimise permeability'? Surely a requirement for them to be impermeable or to have a base of a specified low permeability is feasible. Similarly, the overburden emplacements are to 'prevent or manage' long term saline groundwater seepage. Obviously the details will be picked up in management plans but the language of the approval should be more precise. For example, it might require that seepage should be prevented beyond the boundaries of the mine lease.

Clause 25 also requires 'negligible' change to groundwater levels and quality in the Upper Namoi alluvial aquifer. How does this relate to the clear criteria set in the NSW Aquifer Interference Policy? As noted in A. Young's recent paper to the 9th Triennial Workshop of the Mine Subsidence Technical Society (Pells et al. 2014), groundwater systems are one aspect of mining-related impacts for which criteria for acceptable levels have been set.

Clear quantitative criteria must be set to define the performance measures.

They lack rigour in enforcing good planning

Clause 51 has no force as a condition. It asks for 'best endeavours' to maintain agricultural productivity in 'non-operational project-related land'. Either the company is required to maintain productivity or it is not.

Clause 26 requires the Applicant to prepare a Water Management Plan to 'be submitted to the Secretary for approval prior to the commencement of any development on the site'. At first glance this seems a good precaution. But our experience of similar clauses used in other mine approvals rings warning bells. The approval of BHPB's Dendrobium Area 3B Subsidence Management Plan in February 2013 included a number of similarly phrased conditions - for a biodiversity offset strategy to be submitted by 31 October 2013, and for reviews of the groundwater model by 31 October 2013 and of the watercourse and the swamp impact monitoring management and contingency plans by 31 May 2013. While documents relating to these conditions were submitted by the required dates and these have been discussed back and forth with government agencies, none of the documents have been finalised and made available publically to date. **Submission to the Secretary is not good enough. Management plans must be finalised before any work commences on site.**

Also it is imperative that the baseline data mentioned in the condition be established before any work proceeds. A rule-of-thumb seems to be a minimum of 2 years of data pre-mining, to allow at least definition of seasonal changes. In a recent discussion with a highly respected hydrologist, a figure of 5 years was given for properly calibrating a streamflow model to allow mining-related impacts to be determined. This is given force by comments from agencies, such as the NSW Office of Water's concern about 'potential 'large uncertainties' in the 'model simulation-based scenario' for groundwater, and comment that 'supplied data infers but does not demonstrate that at least two years of monitoring data is available' for the Mooki River.

We are dismayed by the weakness of responses required to exceedances. Consider Clause 26(iv) which asks for 'a plan to respond to any exceedances' and 'mitigate any adverse .. impacts'. In our experience, such plans involve meetings, discussion, monitoring, arguing about how significant impacts may be. The 'responses' take place over months and perhaps years. They speak of 'mitigation' when no proven practical means of mitigation or remediation are available, at least without involving significant collateral damage. **There is no requirement for action until very significant and often irreparable damage has happened.**

The Adaptive Management requirement in Clause 2 of Schedule 5 adds nothing substantive. 'Reasonable and feasible steps' and the precise timetable of their implementation need to be specified before exceedances occur.

They lack definition of techniques to achieve desired outcomes

We very strongly support the protection of high quality agricultural land especially BSAL but we are bewildered by the condition in Clause 48 Table 15 to 'establish at least 100 ha of BSAL'. This may be a desirable aim, but it is demonstrably not an achievable outcome. We know of no instance where it has been achieved. Soil formation *de novo* is usually associated with mixing of urban wastes; soil enhancement ranges widely but does not involve 'establishment' of hectares of a different category of soils; soil formation is a complex geological process. This is particularly pertinent to high quality agricultural soils. The BSAL soils are derived largely from sediment eroded from basalts that were extruded 50-18 million years ago. Since then climate has been very different to today's - often much wetter, much warmer, at times supporting dense forest. It may be that the genesis of the soils is related to those conditions, rather than today's. Soil formation in Australia is slow - under natural conditions, only a few millimetres per thousand years (McKenzie et al. 2004, p 33). Dates obtained by us for similar soil sequences further down the Namoi valley range from

about 6,000 to 18,000 years (Young et al. 2002). How the company proposes to establish soils of the same structure, mineralogy, fertility etc is a mystery to us.

It would be reasonable to require the company to maintain any BSAL within the lease under agriculture. Or to transfer those areas to ownership by adjacent agricultural properties if they are contiguous. Or to fund initiatives to enhance the agricultural productivity of high quality soils that do not meet all the BSAL criteria, either within or adjacent to the lease area.

They lack attention to specific concerns raised by concerned parties

We have not done a full search of these but note just two:

- there is no condition regarding flow down the Mooki River although the Namoi Catchment Management Authority regarded it as imperative that clean runoff from the site be directed into relevant tributaries. This may of course be gathered up in the Water Management Plan but only salinity and heritage are mentioned specifically in the draft approval conditions.
- impacts on BSAL is one of the most contentious aspects of mining in the region and OAS&FS comment that it should not be included in any biodiversity offset areas. The draft conditions require establishment of 100 ha of BSAL (see comments above), better definition of BSAL (in keeping with OAS&FS recommendation but as part of the Rehabilitation Plan, not as a decision tool for location of activities within the lease boundaries). Beyond this, the conditions do not specifically mention BSAL and no condition to exclude it from offset areas is given.

Community consultative committee

We suggest that this committee be given by the company an annual sum of \$25,000 indexed to CPI and managed by the Chair of the CCC to obtain independent technical advice of interest to the CCC community members. A similar scheme has been used with Tahmoor and Dendrobium CCCs. We suggest also that at least 2 members of the CCC be members of a recognised environmental organisation and 2 members represent farming organisations.

References

- J. GALVIN 2014 "Risk management in subsidence engineering", *Mine subsidence: Risk management in action*, 9th Triennial Conference Mine Subsidence Technical Society, Pokolbin, Proceedings vol 1, pp 1-10
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- R.W. YOUNG, A.R.M. YOUNG, D.M. PRICE & R.A.L. WRAY 2002 "Geomorphology of the Namoi alluvial plain, northwestern New South Wales" *Australian Journal of Earth Sciences* 49, 509-523.