

SHENHUA WATERMARK COAL PAC HEARING GUNNEDAH DEC 10-11 2104

Submission by Graeme Norman

My name is Graeme Norman. My family have farmed on the Liverpool plains for 80 years. I have two 4th generation sons amongst the audience today who have the experience, the enthusiasm and the modern day farm business management qualifications to continue this proud farming history into the future. Unfortunately this hearing will determine the futures of those young men and many other young men and women who wish to indulge in the Liverpool Plains farming community as we have done.

What we are faced with here is a mega mega-mine placed smack bang in the middle of a mega food and textile producing agricultural wonderland – farming country which is the envy not only of the rest of Australia but also of the rest of the world. If it was a coral reef, I believe it would have a world heritage listing. Unfortunately it doesn't and so it is up to us to protect it.

The size of the mine production wise is unclear. The Dept of Planning and Environment state there is 1.8 billion tonnes of coal within the exploration license area including coal under the black soil. The Dept of Resources and Energy claim the reserves to be 932 million tonnes. This is 50% larger than the Maules Creek site which has received so much publicity recently. 268 million tonnes will be extracted during the life of the mine.

In order to extract this coal, 1,629 million tonnes of overburden will be moved and 108 million tonnes of coal reject and tailings produced. I believe herein lies the problem, the production of these coal mine spoils (CMS's) is going to awaken a sleeping giant, **SALINITY**. The previous PAC hearing executive summary states "the Commission is generally satisfied that the site of this proposal, on the less fertile higher ground above the Liverpool Plains, should be able to be mined without significant impacts to the agricultural productivity of the Liverpool Plains". Well, they got it wrong and salinity was not even mentioned in the previous PAC report executive summary.

So where does the salt come from? Overburden removal and coal extraction involves blasting through and fracturing hard rock formations which make up

So where does the salt come from? Overburden removal and coal extraction involves blasting through and fracturing hard rock formations which make up the Permian strata. This geological formation is marine in origin and contains large amounts of salt. This salt is relatively stable in the hard rock formations but becomes subject to leaching when the rock is broken up into smaller pieces. An article in the Official Journal of the Society for Environmental Geochemistry and Health, states CMS's "are a worldwide environmental management challenge" and "that salinity is of most concern among the CMS's environmental impacts, especially in Australia". It goes on to say "there is a real need for the coal mining industry to understand the source, dynamics and management options of CMS salinity".

So what is the situation with the proposed Shenhua mine site? The EIS states that the mine will be producing 65.7 tonnes per day or 23,980 tonnes of salt per year at year 30 and an additional 276-1117 tonnes per year of salt output from seepage sites in rehabilitated areas. Actually seepage from rehabilitated sites is expected to continue for 500 years because the voids will be filled with CMS's i.e. fractured overburden and coal reject and tailings. Unfortunately this material cannot be placed back into the voids as hard rock and so the aggregated forms will continue to leach for centuries, polluting our groundwater and threatening the crops on the black soil surrounding the site with dryland salinity.

Shenhua intends to collect surface runoff in a series of dams but it can't collect the seepage. The Independent Expert Scientific Committee reported in April 2013 " that the proposed project is likely to enhance the risk of salinity in the region. The proposed project is likely to result in salinity impacts from the overflow of water storages, seepage from the backfilled and proposed open mine voids, connectivity between the alluvium and Permian strata and the removal of woodland from the proposed site". Sediment dams that collect runoff from overburden emplacement areas are designed to overflow to ephemeral streams. The report goes on to say " The proponent intends to mitigate impacts through treatment with a flocculant, or by moving the excess water to other storages on site where possible. Treatment with a flocculant will only control solids and other potential contaminants, including salt, are not proposed to be treated. These mitigation actions are insufficient without a full

understanding of the potential impacts of these saline releases on downstream aquatic ecosystems, assets and receptors”.

An independent review of the EIS by Earth Systems in May 2013 stated “ The salinity of surface runoff (in Native Dog Gully, Watermark Gully and Lake Goran) was also predicted to increase during operations.”

SoilFutures Consulting conducted a review of the EIS in April 2013 also. In his report, Professor Rob Banks remarks “It is apparent that the connection between soil and groundwater systems (particularly with the fate of seepage waters) has not been well made in the EIS.” Rob Banks quotes Mah and Timms (2012) report stating that the 2011 salt load of the Mooki River was 14,700 tonnes/yr. Add to this 23,980 tonnes produced from the mining operation and 276 tonnes per year from seepage (remember the seepage amount can be up to 1117 tonnes per year according to Shenhua’s own figures in the EIS). The total salt load into the Mooki River system has now increased to around 40,000 tonnes / year or close to 300% of the 2011 level. “ This potential impact has not been considered as long term offsite impact of the mine” according to Professor Banks.

I estimate between 5,000 and 8,000 ha of prime black soil farmland are irrigated between Breeza and Gunnedah with water taken directly from the Mooki River. Flooding from the Mooki can inundate over 12,000 ha of the floodplain. Groundwater supplies additional irrigation water, as well as stock and domestic supplies. Saline contamination of this resource would spell disaster for the farming community.

Professor Banks claims Watermark Gully as well as having an increase in flows post closure of 15%, it will also have an increase in salinity of 30% at year 30. As well as inundating up the 2,000ha of prime black soil farmland (some of which is our own) these flows are responsible primarily for supplying water to the Curlewis Swamp, the only large wetland in the Liverpool Plains. The impacts of changed water quality both on farming systems and Curlewis Swamp during mining and post mining are not fully considered in the EIS.

How could the previous PAC get it so wrong by claiming the mine would have no impact on the surrounding farmlands? We can now see that it will have an effect on not only the farmlands but our only wetland as well.

The Liverpool Plains have been a focal catchment for salinity research in Australia over the past 20 years because of the high level of salinity in the area that became apparent in the late 1980'. Native Dog Gully runs along the southern boundary of the EL area and is regarded in much of the literature as a salinity hotspot. Mah and Timms (2012) claims sodium and chloride measurements in the vicinity of Native Dog Gully far exceeded all crop and drinking water salinity guidelines. These measurements would have been taken only a few hundred meters from proposed site of the Eastern Shenhua mining pit. So the situation is already very sensitive in that area.

Of course there are other considerations outside the immediate farmland surrounding the proposed mine site. An extra 26,000 tonnes of salt into the Mooki River will have ramifications further downstream in the Murray Darling basin as well. Also, why are we looking at this development in isolation? What will be the cumulative effects of the BHP Billiton development combined with Shenhua in relation to this salt imbalance and the saline budget for the catchment as a whole?

I have no doubts whatsoever that salinity is a serious issue on the plains at present and that it will signal the demise of area completely if this proposal goes ahead. I implore the PAC to consider seriously the facts I have outlined in this submission. There are too many independent reports claiming that the significance of salinity as a result of the mine is understated. You simply cannot fracture that much salt containing hard rock, shift that much overburden and extract that much coal and not expect to leave a long lasting legacy. I believe destruction of world class farming land due to salinity may be that legacy. It is simply the wrong mine in the wrong place.

I thank you for your time.