SUBMISSION TO DEPARTMENT OF PLANNING & ENVIRONMENT ON KEPCO BYLONG COAL PROJECT EIS FOR THREE MINES

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1. INTRODUCTION

We make this submission as members of our family farm, Ginghi, in the Bylong Valley. Our extended family has been associated with the Bylong Valley for fifty years. We are disturbed and dismayed that the approval of the three mines would result in the permanent destruction of strategic agricultural land, scarce water resources and the iconic landscape in the Bylong Valley. We are also concerned about the possible health effects of the increased dust levels and, the loss of amenity due to noise and traffic impacts.

1.1 Mines should not be approved

The two open cut mines and the underground mine should not be approved because the permanent adverse effects to the community and the biophysical environment outweigh the relatively short-term financial benefits. This submission highlights a number of serious shortcomings in the EIS. On the basis of the EIS flaws we request the Planning Assessment Commission to not approve the application for development.

1.2 Lack of consultation

We are perturbed by the lack of consultation from the proponent with residents in the Bylong Valley, Lee Creek Valley and surrounding towns and villages. The very short time period (6 weeks) allowed by the NSW Department of Planning & Environment for responses to the voluminous Korean Electric Power Company (KEPCO) EIS suggests that the NSW Government wishes to proceed with this extensive and destructive project with undue haste. Our farm is approximately 12 km from the southern border of the mine disturbance area and we have not been consulted, despite the fact that we will experience impacts from the proposed mine.

1.3 Questionable justification for the Bylong Coal Project

KEPCO claims that the coal is needed for energy security in South Korea. However, KEPCO also proposes to sell coal on the open market. According to their 2015 Annual Report KEPCO is developing other coal mines throughout the world and is increasing its nuclear power generating capacity. KEPCO has not clearly demonstrated that the coal from the three proposed mines in the Bylong Valley is an essential component of South Korea's energy security plans. It should also be noted that there are other mines in the region which are currently managed on a care and maintenance basis which could be used to supply coal to KEPCO.

Our submission raises five key objections which if adequately considered would prevent any further development of the Bylong Coal Project. We object to the development of the Bylong Coal Project because it will have the following adverse effects.

1. Water impacts in the Bylong Valley,
2. Destruction of prime agricultural land & native vegetation,
3. Destruction of Aboriginal heritage and landscape,
4. Increased dust levels and health effects, and
5. Unnecessary increase in greenhouse gases

2. ADVERSE IMPACTS ON WATER

2.1 Water availability

There are at least two untested assumptions in the EIS relating to the water impacts. The EIS assumes that:

- there is sufficient water available for the mine operation, and
- water availability for agriculture and native vegetation will not be affected outside the mine study area outlined in the EIS.

These above assumptions have been made on the basis of the proponent's numerical modelling and without robust field testing. In fact, experience with other mines shows that these assumptions cannot be justified solely on the basis of modelling.

The three proposed mines and associated coal processing operations require a high water demand, and the proponent envisages that the water will be supplied via a relatively small alluvial aquifer. The EIS does not reference any field data and test results that would give a high level of confidence that there is sufficient water supply in the aquifer. Rather, adequate water availability is assumed on the basis of numerical modelling. As indicated in the NSW Aquifer Interference Policy 2012 there should real time site-specific data gathered from the field by pumping tests to verify the numerical modelling commissioned by the proponent.

2.2 Over-allocation of water entitlements

It should also be noted that in the Bylong Valley water licences issued for agricultural use have been over-allocated and the licensed quantities do not necessarily represent the quantity of water available. The over allocation of water entitlements has been recognised by state and federal governments as a widespread issue for many years, and is also apparent in the nearby Hunter Valley. In response to the issue of over allocation and predicted reductions in rainfall in South Eastern Australia due to climate change the Department of Primary Industries, Water is reviewing the Water Sharing Plans. This review aims to design a system of water entitlements that will provide users with reliable and sustainable supplies and illustrates the critical situation facing many water users in NSW.

Our farm is dependent on groundwater, as are most farms in the Bylong Valley, for irrigation, stock and domestic use.

It has been our experience, and the experience of our neighbours, that the water level in the Growee River alluvial aquifer has on average been dropping markedly over the last 25 years.

The water levels in the two wells and one bore from which we previously used for stock and irrigation are now generally too low to provide a reliable source of water. We have been unable to locate reliable water in the main part of the Bylong Valley along the Growee Creek and now rely on one bore which is associated with a Growee Creek tributary.

Based on our records of the decline in the standing water levels in our wells has been between 6 and 10 metres. This decline can only be attributed to a combination of increased extraction in the Bylong Valley and decreased recharge.

2.3 Need for long-term analysis of groundwater trends

The cumulative deviation of mean rainfall shows that for the 20 year period between 1990 and 2010 mean annual rainfall for Wollar Station has been above average, while for 2012, 2013 and 2014 rainfall has been below average. Therefore despite overall above average rainfall conditions the standing water level continues to decline.

Without analysis of long-term groundwater trends, which is lacking in the EIS, it can only be assumed that the declining water table depths are due to over allocation of an unsustainable aquifer during periods of above average rainfall. The fact that water levels are declining in above rainfall conditions emphasises that the long-term sustainability of the alluvial aquifer as a water supply source for the mines cannot be verified or justified.

The numerical water model used in the EIS assumes that the depressurisation effects from the mine water extraction will only extend horizontally one or two kilometres and vertically by 20 metres. The water model used does not give sufficient weight to the fact the Lee Creek and Growee River aquifers are interconnected. Furthermore the model prediction does not take into account that the water table in the Bylong Valley has been dropping over the last 20 years and that the effects of excessive extraction can permeate far from the extraction site.

There is a real risk that these mines will take so much water that the water resources in the whole Bylong Valley will be depleted to an extent that the existing bores and wells will not be able to supply water. Water will not be available for agriculture and domestic use. The very real threat to water supplies in areas well beyond KEPCO's landholdings is a major reason not to approve these three mines.

2.4 Impacts on water quality

The EIS also makes assumptions which are overly optimistic about the quality of water which will be released from the mine site into the adjacent underlying aquifers, and into the Bylong River. The EIS assumes that leachate from the two large voids remaining at the conclusion of open cut mining will not significantly contribute to the downstream salt load. However salinity will increase, and while not considered 'significant' in accordance with the Aquifer Interference Policy 2012 we contend that any increase in salinity is unjustified and unacceptable.

It should be noted that the assumption about the 'insignificant' extent of increased salinity is based on modelling conducted by the consultants engaged for the EIS. However, it is well documented that saline loads in water sources adjacent to other mines have exceeded the model predictions, (Colagiuri 2012).

3. DESTRUCTION OF AGRICULTURAL LAND AND NATIVE VEGETATION

3.1 Destruction of agricultural land

The Project will directly and permanently disturb 206 ha of the verified biophysical strategic agricultural land. In addition there will be ongoing reduction in groundwater availability from 'highly productive aquifers' as defined in the NSW Aquifer Interference Policy (2012) and a permanent change in the shape of water table surface and drawdown above the underground mine area (Groundwater Impact Assessment, page 139). As well as impacts to landform, soil structure and surface water flows. The EIS notes that subsidence impacts will increase the risk of geomorphic impacts through increased water ponding at some locations in the waterway channel, and increased bed gradient and flow velocities at other locations.

3.2 Destruction of native vegetation

The clearing of native vegetation is planned the mine sites and this will include destruction of plants and ecosystems listed in the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999, and the NSW *Threatened Species Conservation Act* 1995. The clearing of this vegetation is unacceptable as the flora communities are pivotal to the beauty of the Bylong Valley and Lee Creek Valley imperative for the survival of native fauna populations in the valleys. Furthermore, we believe the proposed Biodiversity Management Plan should also be the subject of rigorous scientific review.

In addition, it is predicated that there will be a decline in water table at the River Oak and Blakely's Red Gum vegetation communities along the Bylong River, and at the River Oak/ Redgum Riparian and Blakely's Red Gum/Apple Riparian Forests along Bylong River and Lee Creek. Although these communities are not listed as 'high priority ecosystems' they are likely to have some reliance on groundwater and provide important ecosystem functions and while the level of groundwater dependence has not been determined we would argue that the precautionary principle should be applied and further efforts made to protect these trees. Tree preservation is critical for basic ecosystem functioning and trees play a vital function in soil and bank stabilization. It should also be noted that recent research has shown that riparian trees are groundwater dependent and can be affected by mining to an extent not previously appreciated, (Pfautsch, 2015).

3.3 Inadequate biodiversity offsets

The EIS proposes 6 Biodiversity Offsets (EIS 2015, page 148). However, there is no certainty that these offsets will be retained as offsets for the life of the project or at project completion. As outlined in the KEPCO EIS the current biodiversity offsets could be used for other purposes and are not enduring.

Offsets must be enduring, enforceable and auditable as required by the NSW Biodiversity Offsets Policy for Major Projects, (NSW OEH 2014). It is acknowledged that in the case of Offset Area 5 the proponent has stated that they are willing to incorporate this area into the National Park Estate, presumably at the completion of the three mines project. However, as yet this agreement is not binding. The biodiversity value of Offset Area 5 should also be questioned because it is directly above the proposed underground mine and the long-term reduction in water availability for the native vegetation in this area is a matter of considerable uncertainty.

It is not clear from the EIS what area of land at Yarran View will actually be used to contribute to biodiversity offsets because an unspecified area will be used for continued agricultural use. There is an opportunity to make Yarran View Offset and Offset Area 1 enduring because they share boundaries with the Wollemi National Park, and could be incorporated into the park.

4. DESTRUCTION OF LANDSCAPE AND ABORIGINAL HERITAGE

4.1 Aboriginal Heritage

The cliff lines and adjacent areas contain a large number of significant Aboriginal sites. In particular the consultants engaged to assess Aboriginal heritage sites identified an ochre quarry of regional significance and grinding stones. These sites are at considerable risk from damage and/or destruction from subsidence. The consultants recommended that these risks be managed by engineering controls to reduce the risk of subsidence. Although engineering methods would reduce the risk it would be much better to avoid this risk altogether by keeping the underground mine at a suitable distance away from the cliff lines.

4.2 Destruction of landscape

The EIS does not take into account the landscape impacts in the whole of the Bylong Valley. The proposed mines will impact the whole valley and the outstanding heritage value of the valley will be severely diminished. The Rylstone Kandos Business and Tourism has described the Bylong Valley as

> *"Prime agricultural land surrounded by stunning cliff walls - the Bylong Valley Way through to the Golden Highway is one of NSW's top drives" and "The Bylong Valley is renowned for its fertile pastures, underground water, and pristine stunning scenery. Visitors marvel at this breathtaking valley." (Rylstone Kandos Business and Tourism 2015).*

The KEPCO EIS (page 140) acknowledges that there will almost certainly be damage to the cliffs and rock falls from the cliff lines. These cliff lines are iconic and are essential to the cultural value and heritage value of the Bylong Valley. Iconic Australian landscapes cannot be replaced or rehabilitated with tree planting – they are an essential part of the national estate. The proposed destruction of a heritage landscape is a serious issue and sets a dangerous precedent for the preservation of iconic and valuable landscapes.

The generation of subsidence and cracking will also impact aquifer integrity and groundwater flow. Cracking from subsidence causes drainage of shallow, perched basalt aquifers and enhanced drainage from surface water systems into the alluvium. This effect could have serious consequences for the vegetation in the area of the State Forest. The extent of cracking has not and cannot be modelled therefore this impact is largely unknown and could be much worse than portrayed in the EIS.

Also in relation to cracking the EIS reports that cracking could extend to the surface alignment of Dry Creek, which would further reduce potential flows in this creek. The rate of inflow to groundwater via cracks is estimated to be 0.15 ML/day (this is 0.1% of runoff). The EIS concludes that this reduction in flow is negligible, however this system does not receive much inflow and any loss of flow could have adverse impacts on the vegetation.

4.3 Destruction of cliff lines

The dramatic cliff lines are currently visible from Bylong Valley Way and contribute markedly to the scenic value of the whole valley. The KEPCO EIS claims that the serious and irreversible damage to these cliff lines is not a problem because screening vegetation can be planted along the roadside thus making the damage hard to see by passing motorists. Using a similar argument, damage to cliff lines in the Bylong State Forest is discounted because these areas are not easily accessible to the public and therefore not easily seen. It is an egregious argument to say that features of a heritage landscape can be destroyed and then justify the destruction on the basis that the damaged cliffs can be screened from passing motorists. These cliff lines have intrinsic value not just a value for passing motorists.

If the underground mine is approved the cliff lines should be protected by reducing the length of the underground mine to the extent necessary to protect the cliff lines. In addition to not extending the mine shafts to underneath the cliff lines the underground mine should also be backfilled following coal extraction to reduce the extent of subsidence. To make these changes to the mine plan would be in accordance with the precautionary principle which states that ' …decisions should be guided by careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment …' and which the proponents claim they have applied in the EIS (page 376).

5. GREENHOUSE GASES

The EIS states that the project will contribute approximately 206 million tonnes of carbon dioxide equivalent during the life of the project. Approximately 202 million tonnes are predicted to be a result of the end use of the coal. The proponent states that this is not a problem because it is a small amount relative to world emissions. However, this statement ignores cumulative impacts and the need to limit greenhouse gas emissions wherever possible. It should be noted that the current problem of anthropocentric climate change is a result of the accumulation of greenhouse gases from a multitude of relatively small sources. Therefore the claim in the EIS that the greenhouse gas contribution is small is flawed and does not provide a compelling justification for adding to global emissions.

It is also questionable whether KEPCO has any real commitment to reducing coal use when it is currently in the business of coal mining and building fossil fuel power stations in a number of other countries and intends to expand these international activities. The Bylong Coal Project appears to be driven primarily by the desire for global expansion and profit and not to meet South Korean energy demand. In addition according to the latest KEPCO Annual Report there is no recognition of the need to move rapidly to renewables wherever possible, (KEPCO Annual Report 2015).

6. INCREASED DUST LEVELS & HEALTH EFFECTS

In the EIS the proponent has modelled particulate matter of 10 microns and less (PM 10) but has not modelled PM 2.5. The guidelines values used in the EIS to assess the health impacts of the dust are taken from the Air Quality National Environmental Protection Measure (NEPM). However according to the World Health Organisation (WHO) the NEPM levels may not protect health. The WHO states that:

> *"the risk for various outcomes has been shown to increase with exposure and there is little evidence to suggest a threshold below which no adverse health effects would be anticipated. In fact, the low end of the range of concentrations at which adverse health effects has been demonstrated is not greatly above the background concentration, which for particles smaller than 2.5 μm (PM2.5) has been estimated to be 3–5 μg/m3 in both the United States and western Europe. The epidemiological evidence shows adverse effects of PM following both short-term and long-term exposures. As thresholds have not been identified, and given that there is substantial inter-individual variability in exposure and in the response in a given exposure, it is unlikely that any standard or guideline value will lead to complete protection for every individual against all possible adverse health effects of particulate matter."*

The EIS also does not take into account the potential health effects that may occur as a result of exposure to multiple atmospheric contaminants. For example, there is the potential for synergistic effects with particulate matter, oxides of nitrogen and noise. Furthermore, the International Agency for Research on Cancer (IARC) has classified diesel engine exhaust as carcinogenic to humans based on sufficient evidence that exposure is associated with an increased risk of lung cancer, (IARC 2012). This cancer risk is not mentioned in the EIS.

The Air Quality section in the EIS is based on a compliance model and assumes that if current air quality guidelines are met then there will be no risk of adverse health outcomes to nearby residents. This assumption is erroneous. To establish health risks there should be an independent risk health assessment, which takes into account the synergistic and cumulative effects of all the exposures. Recent studies into the health effects of coal mines suggest that the current air quality guidelines do not appear to protect health, (Colagiuri 2012, CAHA 2015).

7. CONCLUSION

The adverse impacts of the three mines are unacceptable on a number of aesthetic, cultural, scientific and social grounds. If the coal project proceeds then the social character and biophysical environment of the Bylong Valley and Lee Creek Valley will be irrevocably destroyed. In addition the EIS is based on a number of questionable assumptions about the impacts on water and the landscape, which have not been tested with field studies. We believe from our first hand knowledge of the Bylong Valley, that the long-term impacts on water availability for agriculture and native vegetation are at best overly optimistic. There must be appropriate field tests and thorough analysis of historical data to more accurately predict water impacts.

As stated previously we believe these three mines should not be approved. In the KEPCO EIS the justification for three mines is unsubstantiated and the adverse impacts understated or ignored. However, if there is approval for mining then the scale and impact should be reduced by restricting mining to the underground mine
For an underground mine there will still be many adverse impacts associated and we believe that the following activities and commitments should be undertaken before approval is granted:

- **Re-assess water impacts**. Water impacts on agriculture and native vegetation and the security of the water supply should be re-assessed by independent experts, commissioned by the NSW Government, using field data and pumping tests as recommended by the Department of Primary Industries, Water. In addition commitments should be made to reverse the proposed drawdown impacts that currently exceed 1000 years. Options for reinjection should be explored.
- **Protect the cliff lines.** The underground mine should be reduced in length so that it does not destroy the cliff lines.
- **Progressive backfilling of the underground mine**. The underground mine should be progressively backfilled to reduce the subsidence impacts in accordance with best practice mining.
- **Annual reporting on biodiversity offsets**. KEPCO should annually report on the environmental state of biodiversity offsets

We strongly believe that there should be no mine extensions associated with this proposal and that KEPCO should undertake to never make an application for a mine extension.

In addition the NSW government should prohibit any additional mining in the Bylong Valley by including the Bylong Valley and associated valleys as prohibited strategic agricultural land in the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

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