31 August 2015

Mr Clay Preshaw
NSW Planning Assessment Commission
GPO Box 3415
Sydney NSW 2001

Re. PAC Review. Submission as an objection to Springvale Mine Extension Project (Reference number R031/15)

Dear Mr Preshaw,

I strongly request that the Planning Assessment Commission (PAC) recommend refusal of consent. The proposed extension of Springvale Mine (SSD 5594) should be rejected because the proponent has made insufficient effort to minimise the environmental impacts, either in their original documentation, with its inadequate and misleading EIA, or subsequent response to the review of their proposal by the Department of Planning and Environment (DoPE), following the public submission process. None of the principal matters of concern related to environmental impacts, which I raised in my original submission opposing this development, have been satisfactorily addressed by the proponent or by the DoPE in their Preliminary Assessment Report (PAR). The conditions of consent in the PAR represent a complete failure to address the principal environmental risks associated with this proposal, namely: damage to upland swamps, and ongoing contamination of the Coxs River with polluted mine waste water discharges. My objection is supported by similar objections by the NSW EPA and the NSW OEH, and in the report by the IESC (Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development, 2014), which was established by the Commonwealth and NSW Governments for the very purpose of providing independent expert scientific advice, and which has effectively been ignored by the DoPE. This second review by the PAC provides an opportunity to redress the significant shortcomings of the previous approval, by fully considering the environmental costs of this proposal and by giving them appropriate consideration and weighting against the short-term economic benefits.

I am a research ecologist, who has completed doctoral studies on the endangered Giant Dragonfly (*Petalura gigantea*) in the peat swamps of the Blue Mountains region (Baird, 2012; Baird, 2013; Baird, 2014a; Baird, 2014b; Baird & Burgin, 2013; Baird & Ireland, 2006), undertaken peat swamp research in the endangered Newnes Plateau Shrub Swamps (Benson & Baird, 2012), have an ongoing involvement in research into the endangered Blue Mountains Water Skink (*Eulamprus leuraensis*), including on the Newnes Plateau, and am involved in ongoing research into petalurid dragonflies and their peat swamp habitats elsewhere. I have recently consulted to OEH in the development of their Landscape Species program for *P. gigantea* and *E. leuraensis*, and to consultants employed to monitor and research the impacts on upland swamps of longwall mining under the Woronora Plateau.

The concerns I raised in my original submission opposing this project, and in this current submission, relate to the potential impacts of subsidence on groundwater hydrology of the upland peat swamps of the Newnes Plateau and their dependent biota. As noted above, the concerns expressed in the earlier submission have not been addressed by Centennial Coal or the DoPE in their consent conditions. Irreversible and irreparable damage to these upland swamps will occur if water tables are lowered as a result of subsidence or other ground

movement associated with undermining by longwall panels. These swamps include those described as Newnes Plateau Shrub Swamps (NPSS) (Benson & Keith, 1990) and Newnes Plateau Hanging Swamps (NPHS) (DEC, 2006). Both types are covered by the Commonwealth THPSS EEC listing, and arguably, both could be covered by the TSC NPSS EEC listing (NPHS were only described subsequent to the listing of NPSS as an EEC in NSW in 2005). Although these two swamp vegetation types have been characterised as being different floristically, hydrogeologically and hydrogeomorphologically, there are some swamps where they are contiguous. These swamps include both valley-fill swamps and hanging swamps or valley-side swamps, and some swamp complexes include all variations. Regardless of their particular developmental differences (e.g., hanging swamps dependent on localised perched aquifers) and topographic position (valley-side vs valley-fill), all of the potentially affected NPSS and NPHS in the project area are groundwater dependent (Benson & Baird, 2012), as are important and characteristic biota, including the vulnerable *Boronia deanei*, endangered *P. gigantea* and endangered *E. leuraensis*. These geographically restricted swamps are unique to the Newnes Plateau and represent an irreplaceable repository of regional climatic and vegetation history since the Last Glacial Maximum.

Petalura and *E. leuraensis*, in particular, are dependent on the wetter parts of these swamps, where peaty substrates are saturated or where there is emergent seepage (Baird, 2012, 2014a; Benson & Baird, 2012). Both species may utilize both swamp types (NPSS and NPHS). *Petalura* is dependent on a saturated substrate for successful oviposition and larval establishment, and is vulnerable to any lowering of water tables. Any permanent or long-term lowering of water tables will be compounded by subsequent increased rates of photodegradation of the peat (e.g., Rutledge et al., 2010), oxidisation, and increased vulnerability of these drier organic-rich substrates to combustion during fire events (Benson & Baird, 2012; Horwitz et al., 1999; Horwitz & Smith, 2005). Climate change is likely to further exacerbate this ongoing process of degradation and contraction of these unique peat swamp ecosystems (Baird, 2012: ch. 8; Baird & Burgin, in review; Keith et al., 2014; Keith et al., 2010; Ramp & Chapple, 2010).

A long-term lowering of the water table of as little as 10 cm could significantly reduce the spatio-temporal distribution of suitable ovipositing and larval establishment microhabitat for *Petalura* within individual swamp patches. In some swamps, with already restricted areas of such seepage dependent microhabitat, a 10 cm lowering of water tables could result in complete loss of such habitat. Greater lowering of water tables, as is projected for swamps in the mine extension area, will have even more dramatic effects on these groundwater dependent and endangered species. It is important to note that *Petalura* larvae probably live for more than 6 years, and may live for more than 10 years, before reaching maturity and reproducing (Baird, 2012, 2014a). The species landscape-scale population dynamics is consistent with a metapopulation structure (Baird, 2012: ch. 7). The loss of populations of *Petalura* from some of these most important Newnes Plateau swamps, near the centre of their restricted geographic distribution, may have a significant impact on the metapopulation of this species in the western Blue Mountain. The loss of populations of E. *leuraensis* will result in loss of genetic diversity, and negatively impact the metapopulation of this endangered lizard on the Newnes Plateau (see Dubey & Shine, 2010a, b). Such losses cannot be mitigated by the provision of offsets. These swamps are unique and support a diverse assemblage of groundwater dependent species (including potentially unique stygofauna) which are not going to re-appear somewhere else because the proponent finds a wetland to use in this cynical and deceptive offset proposal. Any suggestion that like-for-like offsets are available to compensate for the loss of these unique Newnes Plateau swamps and their populations of

dependent threatened species, such as *P. gigantea*, *E. leuraensis* and *B. deanei*, must be rejected.

Contrary to the claims of Centennial Coal, the evidence of longwall mining-related subsidence impacts on peat swamps and streams in the western and southern coalfields is extensive. The IESC were unequivocal in their assessment of the potential risks to the upland swamps of the Newnes Plateau as a result of undermining by the proposed Springvale mine extension; that there is a significant risk of irreparable damage, and that the proponent's characterization of the groundwater hydrology of individual swamps and their catchments was highly inadequate. They clearly stated that each swamp must be understood as a discrete hydrogeological entity, and that the necessary information for doing this was lacking. Regardless of the extensive documentation provided by Centennial to argue their case, they have not been able to demonstrate that are able to prevent significant damage to this important set of unique NPSS and NPHS, and their dependent species. The DoPE PAR has disregarded this by failing to impose conditions which would preclude this.

Despite their previous record, it appears that the DoPE is prepared to sanction an unacceptable level of damage to, or loss of endangered ecological communities, loss of stream flows to, and pollution of Carne Creek, and the completely unacceptable discharge of polluted water to the Coxs River, for short-term economic benefits. The combined failure of Centennial Coal and the DoPE to provide appropriate measures to avoid significant environmental damage to the unique upland swamp ecosystems of the Newnes Plateau, and to the Coxs River, ensures that these environmental assets will be subject to a high risk of significant damage as a result of this proposal. It is essential that if this project is to be approved, that bord and pillar rather than longwall mining is used, or that all longwall panels are excluded from under any swamp and necessary buffers are provided to minimise any subsidence impacts. I urge you to recommend against the consent.

Thank you for your consideration of this submission.

Yours sincerely,

Dr Ian Baird
[redacted]

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