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1 September 2015
NSW Planning Assessment Commission (PAC)

Submission – PAC Review, R032/15 - Springvale Mine Extension Project Second Review
(http://www.pac.nsw.gov.au/Projects/Current/tabid/102/ctl/viewreview/mid/439/pac/488/view/readonly/myctl/rev/Default.aspx)

A scientific submission in response to the *Preliminary Assessment Report: Springvale Mine Extension Project (SSD 5594), DoP, April 2015; and Addendum Report: Springvale Mine Extension Project (SSD 5594), DoP, August 2015*

To The Commission (Brian Gilligan, Abigail Goldberg, and David Johnson):

We wish to contribute further information regarding the potential impacts of the proposed extension of the Newnes Plateau longwall coal mine by Springvale Coal Pty Ltd. We note that the Newnes Plateau Shrub Swamps (NPSS) are listed as an Endangered Ecological Community (EEC) and that longwall mining has been listed as a Key Threatening Process, both under the NSW *Threatened Species Conservation Act* 1995. Our submission is in response to the reports mentioned above, and pertains to potential risks the project poses to an endangered species, the Blue Mountains Water Skink, *Eulamprus leuraensis*. We have conducted extensive research on the genetics and ecology of this threatened species, beginning in 2008 (Dubey and Shine 2010a, 2010b and 2011; Dubey et al. 2011, 2013a and 2013b; Gorissen et al, 2015).

Distribution

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The Blue Mountains Water Skink is restricted in range to the Blue Mountains and Newnes Plateau. It has been recorded within Carne West, Gang Gang South West, Gang Gang East, Carne Central, Nine Mile and Pine Swamp.

Eleven endangered peat swamps associated with the extension are potentially threatened by "subsidence-related impacts" (pp1). Of those 11 swamps, five are listed above (underlined) as containing the Blue Mountains Water Skink. Additionally, we have established the presence of the species from our annual, targeted surveys within the following swamp:

Swamp	Scientific code	Geographic Coordinates		Record
		Latitude	Longitude	
Sunnyside	SS	-33.370532°	150.181923°	Gorissen et al

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The species also inhabits the following swamp, which was not listed above:

Swamp	Scientific code	Geographic Coordinates		Record
		Latitude	Longitude	
Marrangaroo Creek	MCS	-33.413720°	150.191028°	NSW OEH, 2013

However, despite our surveys, we have not detected the species in the following swamp:

Swamp	Scientific code	Geographic Coordinates		Record
		Latitude	Longitude	
Sunnyside East	SES	-33.376344°	150.194092°	Gorissen et al

Of these eleven swamps, the Blue Mountains Water Skink thus inhabits at least seven swamps. Considering that these skinks are more likely to occur in neighbouring swamps containing other skinks (LeBreton, 1996), they may also inhabit the three remaining swamps. Our ecological research has shown that to protect this species, we need to conserve its habitat. Bearing in mind that the species is known from only ~40 swamps sites, degradation of any of those sites would further threaten this already endangered animal.

<u>Habitat</u>

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The Goldney Report stated that impacts to shrub swamps on the Newnes Plateau have been caused by a combination of factors, however primarily by:
… changes to swamp hydrology caused by cracking of the rock substrate beneath the swamp as a result of mine subsidence (East Wolgan and Junction Swamps)*

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Springvale Coal notes that flora and fauna monitoring since 2005 has not recorded any losses to threatened species populations or EECs as a result of subsidence

We wish to report losses of populations of the Blue Mountains Water Skink from two swamps affected by subsidence as a consequence of mining practices – Junction and East Wolgan Swamps. From our hydrological studies, we conclude that this species is groundwater dependent, requiring a very high soil moisture content to survive. We measured low to nil levels of soil moisture in both Junction and East Wolgan Swamps. At least one of these swamps (probably both) previously contained populations of the Blue Mountains Water Skink (NSW OEH, 2001 & 2002), however, our recent surveys have failed to detect the species from either swamp. We therefore suggest that changes to swamp hydrology caused by subsidence from longwall mining, is likely to lead to the extirpation of local populations of this endangered swamp specialist.

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Conclusion

Newnes Plateau Blue Mountains Water skinks are genetically distinct from those in the Blue Mountains (Dubey and Shine, 2010b): to conserve the genetic diversity of the species and hence maximise its resilience to any localised adverse impacts, we must conserve populations from both regions (and ideally, as many isolated swamps within each of these regions as is practical). The NPSS proposed to be undermined represent a considerable proportion of the total habitat area used by the Newnes Plateau sub-population, and our surveys suggest that these swamps are a stronghold of the Blue Mountains Water Skink in this region. Significant alteration in hydrology of the swamps, such as a severe loss of groundwater through subsidence, would substantially reduce habitat quality for this endangered reptile, and may lead to extirpations of local populations.

Ms Sarsha Gorissen
Dr Matthew Greenlees
Professor Rick Shine

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NSW Office of Environment and Heritage's Atlas of NSW Wildlife, which holds data from a number of custodians. Data obtained through the BioNet Atlas of NSW Wildlife website 20/05/2015.

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