28 January 2019

NATIONAL PARKS ASSOCIATION OF NSW
protecting nature through community action

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The Chief Scientist NSW
Attention: Catchment Panel

Via email to
<catchment.panel@chiefscientist.nsw.gov.au>

Presentation to the Independent Panel on Mining in Sydney's Drinking Water Catchment, 31 January 2019: Coal Mining Impact on Biota of Special Areas

Please find below a transcript of our proposed presentation to be made on Thursday 31 January 2019 on behalf of the Southern Sydney Branch of National Parks Association of NSW Inc (NPA). The presentation supplements our earlier submission dated 12 November 2018.

The presentation will be delivered by Gary Schoer, BSc (Hons), Dip Ed, (UNSW), Dip Env Studs (Macq). Mr Schoer has qualifications in zoology, and has over many years contributed to the debate on coal mining and coal seam gas-related issues from a zoological perspective. The presentation to your Panel includes input from several other Branch and Head office Association members who bring a different range of other skills and experience, so enumeration of the different points made by each presenter for NPA is suggested.

Yours faithfully

Brian Everingham

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President, Southern Sydney Branch
National Parks Association of NSW

Major issues related to assessing the known and potential impacts of coal mining within Sydney's drinking water catchments, especially the "Special Areas"

1. Scientific Committee Determination

- The NSW Scientific Committee, established by the *Threatened Species Conservation Act*, has made a Final Determination to list Coastal Upland Swamp in the Sydney Basin Bioregion as an ENDANGERED ECOLOGICAL COMMUNITY on Part 3 of Schedule 1 of the Act. The listing of Endangered Ecological Communities is provided for by Part 2 of the Act.

- References quoted are fully documented in this Determination available at: https://www.environment.nsw.gov.au/determinations/coastaluplandswampfd.htm

- The Scientific Committee is urged to pay particular attention to the extracts and commentary on these by NPA as below.

- NPA believes that while the threatened plants and animals within this EEC deserve special protection from significant threats such as long wall mining, it is the assemblages of particular plants identified by the Scientific Committee in their determination that also need attention. Losses to this distinguishing MIX of plant species that defines this community is often underemphasized compared to the currently defined threatened plant species. What is common from an individual species perspective today may be threatened in the future if threats to the integrity of the total community are not addressed in significant ways.

- NPA wishes to see explicit ways that these threats can be reduced to an "insignificant" level…not to a "minimal" level or other such weasel words commonly encountered in Environmental Impact Assessments and the like conducted by non independent consultants paid directly by the proponents of new or continuing coal mining operations . For without specific recommendations that the Government of the day agrees to act on the work of the Scientific Committee (SC) and indeed the Chief Scientist's Office (CSO), these precious communities and streams will continue to be compromised, as they have been already with swamp death (eg Flat Rock Swamp…See Krogh 2004) and river tributary drainage. Losses due to connected fracturing of the surface in Dendrobium lands will have implications for flora and fauna if not addressed, so the CSO needs to be as critically involved in making recommendations that address likely impacts on flora and fauna as they

have been in questioning the reported large scale of water losses in the Part 1 Report.

- The Scientific committee estimates that up to 200 vascular species may occur within this EEC, but the fact that the community also includes "micro-organisms, fungi, cryptogamic plants and a diverse fauna, both vertebrate and invertebrate" should send a message to the SC that macro plant loss is only one potential negative impact of long-wall mining on such communities. There have been many expressed concerns in the Stage One report that pizo-electric monitoring in this EEC has been inadequate. The SC also needs to address the lack of broader biological monitoring as part of its critical assessments and related recommendations.

- The SC provides an excellent summary of animal diversity in this EEC. The species common now (e.g. Swamp Wallaby) could be the threatened species of the future. Swamp wallabies are commonly impacted by vehicles within so called protected areas like Royal National park, and efforts by NPA to reduce mandatory road speeds have been largely unsuccessful. So it is important that species in less trafficked areas such as many parts of the Special Areas be not impacted by avoidable impacts such as fodder and water loss resulting from the additional impact of risky long wall mining regimes. It is indeed cumulative impacts that have led to the loss of many mammal species from Royal National Park as urbanisation and traffic flows increased. Indeed, the occurrences of this EEC and hence the particular mixes of associated species within National parks such as Royal National Park are quite limited compared to the Woronora Plateau examples according to the SC.

- Viz…

- "Coastal Upland Swamp in the Sydney Basin Bioregion provides habitat to a wide variety of birds, mammals, amphibians, reptiles and invertebrate species. Some typical mammal and bird species include the swamp wallaby (Wallabia bicolor), Brown Antechinus (Antechinus stuartii), Swamp Rat (Rattus lutreolus), New Holland Honeyeater (Phylidonyris novaehollandiae), Southern Emu-wren (Stipiturus malachrus), Grey Fantail (Rhipidura albiscapa) and Beautiful Firetail (Stagonopleura bella). The Australian Crayfish (Euastacus australasiensis), the Hairy Crayfish (E. hirsutus) and the Sydney Crayfish (E. spinifer) are abundant and distinctive inhabitants of Coastal Upland Swamp. Stygofauna within the groundwater are abundant and comprise relatively few co-occurring species, but these exhibit high levels of local endemism (Hose 2008, 2009). Threatened species that have been recorded in the community include the Vulnerable Pultenaea aristata,

Giant Burrowing Frog (Heleioporus australiacus), Red-crowned Toadlet (Pseudophryne australis), Rosenberg's Goanna (Varanus rosenbergi) and the Endangered Green and Golden Bell Frog (Litoria aurea). The Eastern Ground Parrot (Pezoporus wallicus wallicus) was once common on Maddens Plains and was thought to be locally extinct until recently rediscovered within upland swamp landscapes of Woronora River catchment. The community also provides habitat for the Endangered Giant Dragonfly (Petalura gigantea), which is now very uncommon in coastal regions."

- Keith documents the fact that "regionally, the distribution of Coastal Upland Swamp in the Sydney Basin Bioregion shows a strong relationship to climatic gradients. The community reaches its greatest development on the central eastern portion of the Woronora plateau, which also represents the greatest extent and one of the oldest recorded occurrences of upland wetlands on the Australian mainland (Keith et al. 2006)"

- "Approximately 83% of this EEC occurs on the Woronora Plateau. The size of mapped swamps is highly skewed, with the largest 5% of swamps (>14 ha) accounting for just less than half (47%) of the total area of the community. Large swamps also contribute disproportionately to species diversity and hydrological function, due to their large volumes of peaty sediments that contribute sustained high-quality flows to discharge streams and their diverse array of habitat mosaics that encompass suitable conditions for a wide array of species."

- NPA believes it is thus beholden on this Chief Scientist's Panel to acknowledge the special place that these local examples of this EEC has in the overall range of occurrence within the Sydney Basin when assessing potential impacts of coal mining.

- The SC quotes scientific predictions that with increasing impacts form climate change, fire frequency on this EEC will increase 'High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition' is listed as a Key Threatening Process under the Threatened Species Conservation Act 1995. Soils could well dry out under such climatic and fire regimes, to the extent that Keith et al (2011) predicts that within 50 years, 70% of this EEC may be lost. Add to these accumulative risks, the potential impact of (poorly managed) long wall coal mining will add an ADDITIONAL cumulative risk to this EEC.

NPA will not duplicate the extensive evidence quoted in the EEC determination as to the potential additional risk that Long-wall mining could add to this EEC, but the Panel is urged to especially consider this section and detailed analysis and

arguments in:

> Krogh M (2004) Assessment of Potential Causes Underlying the Collapse of Flatrock Swamp. Internal Sydney Catchment Authority Report.

And…

> Krogh M (2007) Management of Longwall Coal Mining Impacts in Sydney's Southern Drinking Water Catchments. Australasian Journal of Environmental Management 14, 155-165.

In helping to enunciate explicit nature of this risk under different scenarios especially panel width, NPA seeks from this Panel explicit strong recommendations to government that would help to reduce these risks to "negligible" in the short term in view of the breadth of cumulative risks that can only increase if the current governance arrangements remain substantially unchallenged.

2. The question of independent scientific assessment

Much of the commentary on the pursuit of good decision making in this space revolves around expressed desire, especially by government overseeing bodies, that scientific advice should be "independent". Why? So that all stakeholders can be convinced that what passes for informed analysis of risk, level of potential impact, and nature of potential impacts is indeed valid.

In the first part of NPA Southern Sydney Branch's submission to this Panel, we submitted a copy of a presentation made to a Planning and Assessment Commission related to the proposal by BHP to commence long-wall mining beneath the then Dharawal State Conservation Area. How does this specific response of NPA and other NGO's to a voluminous Environmental Impact Assessment relate to the current Panel's deliberation?

NPA's submission to the PAC spent a good deal of its analysis pointing out the non scientific, open ended way that presumably qualified scientists framed the question of risk. We were urged to consider positively the improved capability of predicting the degree of possible subsidence. Yet, there was not the same amount of analysis of what this meant for predicted surface water losses, and certainly negligible analysis of what this might mean for threatened and other broader ecological communities. More often than not, the LANGUAGE of the EIA was biased towards a predicted "minimal" impact. There were some statement about how higher order streams predicted to suffer some "minimal" damage might be patched up…despite knowledge to the contrary that this was far from an exact science despite some show efforts in some damaged rocky creek beds of the Waratah Rivulet. And there was absolutely no evidence that once an upland swamp was damaged, that a proven remediation method was available.

What the EIA did not do was to address any more conservative alternatives to very wide long wall panels, that could, if BHP was genuinely determined, lead to a negligible impact on ecosystems through far less predicted subsidence impacts. NPA admits though, that there are still major hurdles transferring knowledge about predicted subsidence levels to actual impacts on swamp ecosystems and riverine beds in particular. River bed cracking over long wall areas on the Waratah Rivulet were associated with only moderate width long wall panels and factors other than width of panels need to be considered when determining if upland swamps were at risk…factors like local geology, valley nature, panel height, rainfall regime etc as enumerated by the SC.

There have been various criticisms that there has been a history of sub-optimal piezoelectric monitoring of ground water levels in swamps, and until issues such as this and a more determined effort to give some more considerable weighting to biological and ecosystem impacts potentially related to surface and sub-surface water behaviours, assurances that "impacts" will be "minimal" are nothing more than wishful thinking masquerading as science. Certainly, the scale of possible water losses due to connected fractures in the Dendrobium workings should act as a trigger point for less tokenistic attention to potential ecological impacts within both upland swamps and riparian ecosystems.

NPA would like to recommend that the unstated (and sometimes stated according to one report from a former botanical consultant who has worked in the mining impact space) pressures of scientifically knowledgeable and experienced need to be removed by the following strategy, not recommended for the first time in this Planning and Environmental Assessment space.

The Department of Planning and Environment or an appropriate Authority should maintain a detailed database of appropriately qualified consultants, who will be available to conduct transparently independent studies during environmental assessments (including analysing broader impacts of coal mining.) Fees should be paid by the proponent to that Authority to help maintain arm's distance between the proponent and the consultant.

NPA further proposes that the necessarily broadened aim of such investigations should go beyond predicting and minimising risk, to recommending mine design criteria that would help to guarantee that NO harm occurs to these precious, sometimes endangered, ecosystems and ensure that there are no further referrals of currently unthreatened ecosystems to the SC for a possible higher threat status. It is ironic that BHP displayed a "No Harm" sign near its Appin workings while it was in the process of demonstrating that it could both predict damage caused by long wall mining and tried to enunciate an ability to do at least some repair work to any damage in its proposed new workings at the then Dharawal State Conservation Area.

If the PAC did not accept this degree of assurance by the "Big Australian" to the extent that the government finally upgraded the conservation status of this reserve, what more proof does this Panel need beyond the evidence of water losses, reportedly from connected mine-related fractures, to recommend that coal mining is indeed phased out in the short term in these drinking water catchments? And is this not a classic example of where the Precautionary Principle (lack of full evidence should not be taken as a sufficient reason not to act in a way that would help prevent damage) should apply. Applying the principle of Okham's Razor would also point to the clearly obvious and simplest solution to achieve the desired outcome rather than complex machinations that history shows often has less chance of success.

That solution is to rapidly phase out coal mining using long wall technology in Sydney's drinking water catchments to avoid further damage to Sydney's drinking water suppl especially by connected fracture zones, and remove one important cumulative impact from the several that are threatening the Coastal Upland Swamps, riparian and other ecosystems.

That is NPA's preferred outcome from this Panel's deliberation.

A government that cannot commit to this higher standard of assessment and achievement is not contributing in an explicit way to a valid scientific process to help ensure sustainability of ecosystems (and drinking water) in these coalfields.

The urgency to initiate immediate actions to improve scientific validity of impact assessment will help to ensure that continuing damage is not done to already damaged swamps and river beds.

We reiterate, however, that there needs to be a determination by government to phase out inappropriate coal mining in the short term, as this type of operation is unknown elsewhere in major drinking water catchments.

…there are no international examples of long wall mining operating in publicly owned drinking water catchments" NSW Chief Scientist report, May 2014

And the warning bells of the potential large degree of water loss by connected fracturing needs to be heeded, by a rigorous and urgent application of the Precautionary Principle…we are about to initiate the supply of water through the desalination plant, and we cannot afford to be continually pragmatic in ways that favour big coal companies well above the needs of drinking water security and ecosystem sustainability.

Krogh's cautionary conclusions below need to be strengthened now that there is some substantive proof that long wall mining is indeed affecting the quantity of water available for potable purposes. With the delayed impact of the scale of long wall mining currently taking place, we cannot afford to postulate that these

precious ecosytems will survive into the future even if there is currently not a massive amount of evidence that wholescale destruction is nigh, but with Climate change impacts adding to that from this formally “key threatening process”, as Keith has said, the future of these Coastal Upland Swamps is far from secure and severely threatened at a generational level.

NPA requests that the OCS Panel makes strong, explicit recommendations to Government that has a increased sense of urgency due to the findings of Part one of this Inquiry, the continually threatened ecosystems that have been given only tokenistic attention to date, and the mandate to actually transfer statements of value of these ecosystems into explicit actions whose urgency needs to be spelled out clearly and strongly to government. Without this resolve by both OCS and the NSW Government, this report, with undoubtedly a high level of credibility, will be yet another hollow document, containing some substance, but ignored like many recommendations in past studies*

Eg * **Krogh, M**, *Management of Longwall Coal Mining Impacts in Sydney's Southern Drinking Water Catchments* Australasian Journal of Environmental Management Volume 14 Issue 3 (Sept 2007)

Abstract: *Conflict between mining and drinking water supply is currently increasing as mining companies seek to extract previously untapped coal reserves within drinking water catchments, while water authorities struggle to keep up with the water demands of a growing population in Sydney. Some of the most active longwall coal leases in the southern coalfields of New South Wales are currently found near or under areas set aside for drinking water catchment protection. Despite new mining approval processes and the listing of the alteration of habitat following subsidence due to longwall mining as a Key Threatening Process', longwall mining continues to exert a detrimental impact in many areas. In many cases a precautionary approach to mining is either not being adopted or it is ineffective, leaving the only recourse as remediation once subsidence impacts occur. Current remediation techniques do not fully rehabilitate the stream system. Further management initiatives are required which address both coal and water supply issues so that an equitable sharing of resources can be obtained. This can only be achieved through cooperation and forward planning of mining operations which take account of critical surface features such as reservoirs, major water courses and swamps.*