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RESPONSE TO THE NSW GOVERNMENT'S REPORT ON THE STRATEGIC REVIEW INTO IMPACTS OF UNDERGROUND COAL MINING ON NATURAL FEATURES IN THE SOUTHERN COALFIELD

September 2008



● *Rivers SOS is a coalition of environment/community groups; formed as a result of the wrecking of rivers in NSW by mining operations. We campaign for a safety zone of at least 1k round all rivers to protect them from ongoing damage. Groups supporting this campaign are: The Wilderness Society ● Nature Conservation Council of NSW ● Total Environment Centre ● Colong Foundation for Wilderness ● Blue Mountains Conservation Society ● Mineral Policy Institute ● Minewatch NSW ● Sutherland Environment Centre ● Macarthur, Illawarra & Southern Sydney Branches of the National Parks Association ● Gloucester Environment Group ● Nepean Action Group ● Georges River Environmental Action Team ● Hunter Environment Lobby ● Greens NSW ● Waterkeepers Australia ● Central West Environment Council ● OnlyOne Planet Australia ● Mudgee District Environment Group ● Mountain Dragon Bushwalkers ● Lithgow Environment Group ● Pages River and Tributaries Water Users' Association ● Clarence Residents' Association ● Johnsons Creek Conservation Committee ● Save Barrington Tops Committee ● NSW Canoeists Inc. ● River Canoe Club ● Caroon Coal Action Group ● Australian Coal Alliance ● Ironstone Community Action Group ● Georges River Environmental Alliance ● Barrington-Gloucester-Stroud Preservation Committee ● Upper Hunter Waterkeepers' Alliance ● Robertson Environment Protection Society ● Save Water Alliance ● Save Lake Cowal Campaign*

Our response to the Panel of Inquiry's *Report on Impacts of Longwall Mining on Natural Features in the Southern Coalfield*, July 2008.

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Cover photo: A long section of Waratah Rivulet completely drained due to subsidence-induced cracking of the underlying rock strata. (Nov. 2006)

1. Overview

The Rivers SOS Alliance was among those calling for this Inquiry, and we contributed detailed written and oral submissions to the Panel of Experts, as did many others connected with our alliance.

We believe it is important to make the following comments and criticisms of the Report, as it will in future be serving as a reference point for other inquiries, and for decisions concerning mine damage when mine plans are being considered. The NSW Department of Primary Industries has already stated that the findings of this Report will influence its review of the Subsidence Management Plan approval procedure for underground mines.

We had hoped that the Panel would recommend mandatory protection for river systems and we are disappointed that they have failed to do so. However there are some aspects of the Report that are positive and we feel it is important to analyse these along with our criticisms.

In this overview we summarise issues in the Report which are seen as significant by the Rivers SOS Alliance. The summaries will be expanded on in the following sections, where we also give our recommendations.

- **Selection and Membership of Panels:** We object to the selection process and the unbalanced composition of this and other Panels.
- **Narrow Interpretation of Terms of Reference:** The Panel has applied an unnecessarily narrow interpretation of the Terms of Reference, resulting in a failure to address a number of serious environmental impacts of mining.
- **Research and Knowledge Gaps:** The Report gives much useful information about the lack of knowledge about many aspects of mining impacts. This gap makes predictions of impacts unreliable.
- **Threat to Water Supply Catchments:** The Report dismisses significant threats and current damage to the catchments, including damage in the supposedly highly-protected Special Areas. This problem, as outlined in a number of submissions, should have been a major focus of this Report.
- **Risk Management Zones: A Weak Proposal:** RMZs are proposed for zones containing significant natural features. However identification of RMZs is to be by the mining companies, which is unsatisfactory, and the identification of an RMZ does not preclude mining or offer protection; it merely designates a focus for more research.
- **Social and Economic Significance: Unbalanced Analysis.** This section of the Report paints a uniformly rosy picture. For the sake of balance a number of negative social and economic impacts should have been addressed, such as damage to homes and river systems, seismic events, stress, and climate change.
- **The Flawed Decision-making Process:** We think the Report could have suggested more reforms in an inadequate process. Flaws in the process are ignored, such as

the farce of so-called community consultation, and the total reliance on information provided by consultants who are dependent on the mining companies for employment.

- **Positive Aspects of the Report:** The Report offers detailed and up-to-date information on many aspects of mining. The Report suggests a number of ways in which to improve assessment procedure. We support several of its 22 recommendations.

2. Selection and Membership of Panels

Because we regard this Report as important and influential, the informality and lack of due process in the selection of Panel membership is a matter of concern.

For reasons given below, the operation of Panels is less satisfactory than that of the preferred structure of Commissions of Inquiry..

We raise four major objections: first, the exclusion of the Minister for the Environment and DECC and SCA staff from the selection process for Panel membership; second, lack of transparency in the selection process; third, failure to disclose conflicts of interest, and fourth, lack of balance in the composition of the Panel.

1) Members of this Panel were selected by two Ministers, Frank Sartor and Ian Macdonald, with advice from their senior DoP and DPI staff. However, in an Inquiry which has the environment as a major concern, the Minister for the Environment and DECC staff should have had equal involvement. A representative from the Sydney Catchment Authority (SCA) should have also been included, since the catchment has such a large overlap with the Southern Coalfield.

2) The opportunity to be appointed to the Panel was not openly canvassed, positions were not advertised, and the selection process was not open to any form of public scrutiny, nor was there any avenue for appeal.

3) Panel members were not obliged to disclose pecuniary interests, conflicts of interest or other associations. The Panel was asked to investigate what is, in essence, a conflict between the need to protect the natural environment and the desire for expansion of mining. The underlying conflict made disclosure of interests even more necessary than in the case of less controversial inquiries.

Three of the five members of the Panel have, or have had, lengthy and close work associations of various kinds with the mining industry; for example, provision of consulting services to mining companies through their private companies or a university school.

We do not denigrate the expertise and capabilities of these Panel members. We realise that most mining experts work in various ways with or for mining companies, so that truly independent experts may be hard to find.

However, retired experts who are truly independent are almost certainly available.

It is often the case that retired judges or magistrates are brought out of retirement temporarily to head specific inquiries, and this example should have been followed in the case of this Panel, and, we hope, in the case of future Panels and IHAPs. This would go a long way towards avoiding the conflict of interests problem. Likewise, overseas experts would also probably be available.

In many situations persons having a conflict of interest are required to absent themselves from deliberations and decisions on the matter. This convention was not observed in this case. The fact that this Panel included mining experts with industry connections made it all the more important for these connections to be disclosed at the outset.

Undisclosed interests are objectionable. Disclosure should be required as a matter of principle. This is in keeping with normal and proper procedure for standing committees, tribunals, Councils, political and judicial appointments, company boards, etc. There is no reason for this Panel to be exempt from best-practice procedure.

The credibility of the Report itself is damaged if there is a public perception of lack of transparency. To quote Simon Longstaff from the St James Ethics Centre: "The perception of a conflict of interest can often be of concern equal to or greater than the actual conflict of interest itself."

We note that ICAC, in its 2007 *Position Paper on Corruption Risks in Development Approval Processes* commented that, for people who sent in submissions, "the possibility of conflicts of interest was of particular concern." This is certainly a particular concern for groups in the Rivers SOS Alliance, regarding Panel appointments.

4) Our fourth objection concerns the lack of balance in Panel composition. Since three mining/groundwater experts on the Panel work as consultants for mining companies or have business associations with same, it was desirable to balance this with a roughly equal number of environmental experts having no business connections with the companies. There are some well-known experts who have, for example, audited mine damage in catchments, or surveyed water quality and ecological effects of mining, and who are not at the same time engaged in work for mining companies, or seeking work in future with mining companies.

Other inclusions on this and future Panels could be certain individuals from environmental organizations who have carried out thorough research and field study in order to accumulate a high level of knowledge about the environmental problems associated with mining.

Also knowledgeable local people, some the product of generations of experience of local conditions, could bring a valuable if non-academic level of expertise to such panels.

Many of the disappointing aspects of the Report summarized below stem, in our view, from the lack of balance in the Panel's composition.

Our recommendations:

1) A formal, transparent and standardized procedure must be adopted for selection of panel members in future, i.e. for IHAPs and Panels of Experts. This procedure must include

all relevant Ministers and advice from all relevant departmental and agency staff. Above all, final decisions must not be confined to only two Ministers as at present.

2) Media advertising and other forms of canvassing for panel members should be carried out, to attract a wide choice of experts. An effort should be made to contact qualified retirees and/or overseas experts. Criteria for selection should be made public and should be as broad as possible.

3) Disclosure of pecuniary interests, conflicts of interests and all forms of association with corporations and agencies should be listed by all panel members. This is not to preclude appointment but to enhance transparency. Such listings should include all forms of consultancy work, research funding, acceptance of endowments and all other forms of professional support and associations from/with mining corporations and associated businesses. Disclosure of relevant associations other than with mining enteritis should also apply to members; for example, work for government agencies here and overseas. Disclosures should be on the public record.

4) Every effort should be made to ensure an appropriate balance of interests and experience on every Panel, as judged appropriate in each case.

3. Narrow Interpretation of Terms of Reference

The Terms of Reference can be found on p.9 of the Report. Only the Panel's interpretation of the first two of the three items in the Terms of Reference concerns us here. The third item asks for social and economic information, and is not concerned with environmental impacts.

The first task given to the Panel of Experts in item 1 was to "Undertake a strategic review of the impacts of underground mining in the Southern Coalfield on significant natural features ... with particular emphasis on risks to water flows, water quality and aquatic ecosystems." It seems clear that the review was not intended to be limited only to subsidence-related impacts.

In the second task, the Panel was asked to provide advice on best practice in regard to three matters: first, assessment of subsidence impacts; second, on avoiding or minimizing adverse impacts on significant natural features; and third, on managing, monitoring and remediation of subsidence-related impacts. The first and third of these matters relates specifically to subsidence impacts, however the second refers in general terms to "adverse impacts."

Clearly, neither the first task, with its request for a generalized review of impacts, nor even the second matter within the second task, relate specifically to subsidence-related impacts.

However the Panel, and/or its unknown (to us) advisers, gave themselves permission to sidestep investigation of all impacts which do not relate directly to subsidence, and therefore the Panel failed to inform or advise on avoidance or minimization of all other impacts. These are dismissed in five lines on p. 44 of the Report as being outside the Terms of Reference. We argue that the Inquiry is of limited use without their inclusion and that their absence from the Report demonstrates a less than rigorous approach.

Our concern is that the impacts avoided are very significant, especially in terms of water quality issues. They include pumping out of waste water from mines into local rivers and creeks, expanding emplacement areas, sourcing of massive amounts of water used in mines, acid mine drainage from numerous abandoned mines, and fugitive emissions, as well as the impact on the environment of mine surface facilities and structures, and building of access roads.

In written and oral submissions to the Panel these other impacts were often addressed. We were not informed at any time, before or after, that these impacts were outside the Terms of Reference; possibly because in any reading they are not.

We will briefly summarise the impacts which this Report failed to address, to indicate their significance in any analysis of environmental impacts of longwall mining in the Southern Coalfield.

1) The expansion of coalwash emplacement areas is of concern. One large valley in the Upper Georges River catchment has already been half-filled, with a major creek dammed and “re-located”. There are serious pollution problems concerning run-off being discharged into the Upper Georges River. Given the rapid rate of expansion of mining, we need to know where waste is to be put in the future, and advice was needed from the Experts on best practice waste management methods which are sustainable.

2) The pumping of mine waste water into the Bargo and Georges Rivers pollutes both rivers with salts and acids. This is addressed in the Rivers SOS submission to the Inquiry (p. 19). We believe that an average of 5 tonnes of salt per day is being pumped into the Bargo River from Tahmoor Colliery, though the previous pumpouts from Appin Colliery into the Georges River appear to have ceased at present.

We welcomed the opening of a de-salination plant by BHP Billiton at its Appin West mine site in 2007. This mine was formerly pumping 2.8 tonnes of salt into the Nepean River.

However we needed information from this Report about waste water management in other mines in the Southern Coalfield, and best practice advice.

The Report only manages to acknowledge in passing that mine pumpouts “may have implications for natural features such as watercourses, for example if the water is saline” (p. 75). There is no further information let alone guidance on this issue. For example, how to monitor and address water quality issues? Should other expanding collieries in the Southern Coalfield be required to install de-salination plants? What alternative methods of treatment of waste water are available?

3) The Sydney Catchment Authority’s web site notes that problems in the catchment include possible contamination of water from current mine sites.

The problem of acid mine drainage from abandoned mines has also been addressed as a serious concern in past audits for the SCA. For example, the 2001 Catchment Audit counted no fewer than 200 derelict mines in Sydney’s catchment (and of course recognized that coal waste poses a threat to water quality).

On Channel Two's *Catalyst* programme of 18.8.08, we were shown the serious environmental effects on aquatic ecosystems and water quality of zinc leaching for many years from an abandoned mine into the Grose River, in the Blue Mountains National Park. The problem of abandoned mines is even more serious when it involves contamination of Sydney's drinking water supply catchments within the Southern Coalfield.

The Report notes that mining in this area is likely to proceed for another few decades, but gives no information or advice on best practice procedures for mine closures in future, and of avoidance of subsequent contamination.

4) There is no information in this Report as to the sourcing of the large volumes of water used in local mining operations. Mining operations use tens of megalitres per day and intercept or divert significantly more. Are local mines tapping aquifers, damming local creeks, or directly using the urban water supply system? What price are they paying for water usage on this scale? What are the environmental impacts and are they factored into NSW Water Sharing Plans?

This information is not given by mining companies in the Subsidence Management Plans required for the approvals process for underground mines. We expected that this would be a necessary matter for investigation by the Panel.

5) There is further environmental impact caused by mining operations, through building of surface facilities and access roads for mines; also through exploration drilling and attempts at remediation. These impacts are considerable, especially in highly protected and pristine Special Areas of the catchment, and should have been addressed under the Terms of Reference.

6) Large amounts of methane gas are venting from the new fractures in the Upper Nepean and Upper Cataract Rivers. In the Lower Cataract River, some methane vents are still active after longwall mines went under the river ten years ago. DECC's submission points out that "*fugitive emissions from coal mining account for around 9% of NSW's total greenhouse emissions*" and increased mining "*caused fugitive methane emissions from NSW mines to rise 31% between 2000 and 2005.*" (p.14) Methane has a global warming potential 21 times higher than carbon dioxide and it is also highly flammable, so control over emissions should have been addressed by the Panel.

Our recommendations:

- **A second Panel of Experts, constituted along lines recommended above, should be convened as a matter of urgency, in order to investigate all non-subsidence related impacts of mining in the Southern Coalfield. The Report from such a Panel would provide a necessary supplement to fill significant gaps in the current Report.**
- **In future the wording of all Terms of References should leave no room for uncertainty, or for any divergences in interpretation. This may warrant detailing exclusion/inclusion of items, and giving supplementary information to the public and to agencies. In the case under consideration, much work and research for submissions from various experts, agencies and community groups was rendered irrelevant due to unwarranted exclusion of significant areas from investigation.**

4. Research and Knowledge Gaps.

The overwhelming impression that is gained on reading this Report is of the vast knowledge gaps that exist in the science of understanding mining-induced subsidence impacts. A statement on p.103 of the Report tells it all: *"... there remains considerable uncertainty as to the extent and nature of subsidence impacts on natural features, the environmental consequences of these impacts, the significance of these consequences and the importance that the community places on these features."*

These knowledge deficits exist in almost every aspect of the science, and range from predicting impacts through to remediation and most particularly, to understanding the features of the natural environment that are suffering impacts. The Report's authors have shown that mining approvals must have been given to date despite many serious consequences simply being unknown. (On the other hand, they do mention the scandalous example of Waratah Rivulet, where the catastrophic damage that occurred to this pristine watercourse was predicted in the mine's SMP but approval was given by the DMR in 2002 regardless.)

The comprehensive listing of areas requiring more research is probably the most useful feature of this Report. It clearly indicates that, in order for mining to continue without seriously jeopardising the natural environment, there needs to be a lot more work done in many different disciplines. This is work that cannot be done overnight, therefore any mining applications to be considered in the immediate future must be considered in the light of these areas of current uncertainty. This is particularly so in the case of undermining of upland swamps.

4.1 Swamps

There is no greater area of uncertainty surrounding subsidence impacts on key natural features than that which relates to the undermining of upland swamps. The following references are made in the body of the Report:

p.19 - *The Panel notes that the hydrologic properties of the Southern Coalfield swamps are poorly studied...*

p.73 - *... there is as yet no scientific consensus over the role that mining subsidence may play in impacting swamps. Consequently the impact of subsidence on swamps is a matter where the Panel is not able to make any conclusive determinations. What is clear to the Panel is that the interactions between subsidence effects and impacts ... do have potential consequences for swamps.*

p.83 - *... there is no current scientific consensus over the potential impacts that mining subsidence may have on valley infill or headwater swamps. Further, there is currently no generally accepted technique for prediction of subsidence impacts on swamps.*

p.87 - *Monitoring of subsidence impacts on swamps is at an even earlier stage of development than for watercourses, valleys and cliffines.*

p.91 - *The Panel is not aware of any attempts to remediate fracture networks beneath swamps. (This was also admitted by BHP-B during questioning at the Inquiry.)*

p.93 - *The extent of self-healing of fracture networks beneath swamps and the degree to which the ecological functioning of deeply scoured swamps can be restored through natural processes is unknown.*

p.95 - *The Panel notes there is an unresolved debate about the significance of non-mining impacts on valley infill swamps. ... The Panel considers that these issues should be subject to further research, as a priority for both industry and Government.*

Upland swamps are the key to the integrity of the river systems in the Southern Coalfield. The Report states, *"The importance of swamps as significant water stores is evident ... Contained surface water and groundwater storage from the larger swamps contributes to base flow in respective catchments ..."* (p.18) The swamps store water in this area of high rainfall, and release it slowly even in dry times, thus maintaining base flows in streams. Without this slow-release effect from the swamps, watercourses would become merely ephemeral conduits for water after rain events but that's all. The folly of undermining these swamps, particularly those in our drinking water catchment Special Areas, in light of the uncertainties noted above should be obvious to all. The problem is that there will probably have to be "sacrificial" swamps used as test cases in order to answer some of these unknowns. This is almost certainly what is happening with Swamp 2 in Dendrobium Area 2, being undermined by LWs 4 and 5.

4.2 Flora and Fauna

The Report highlights the dearth of existing knowledge in the area of environmental baseline data. In other words, we don't know enough about what is out there, especially on a regional basis. This is particularly the case with aquatic ecosystems.

p.84 – *"...surprisingly little basic biological research on aquatic ecology has been carried out in this region... "*

"...the data provides little insight into the abundances of species across the region, the life history of these species or the inter-relationships between habitats and individual species. This is critical information when assessing regional significance and impacts on populations. The lack of an adequate regional assessment of many aspects of biodiversity means that any consideration of the significance of individual sites cannot be based within a framework of relevant scientific data, and may be little more than an opinion based on anecdotal information."

"Best practice prediction of the consequences of subsidence impacts on biological systems will require a concerted effort on the part of both government and industry to improve the level of biological information available for the terrestrial and aquatic ecosystems in the Southern Coalfields. It also requires well designed monitoring studies and an experimental approach to the assessment of possible impacts on the biological systems. ..."

p.88 *"...the minimum time period for baseline studies [should be between 18 and 24 months], although even this period is insufficient to understand inter-annual variability in distribution and abundance that many animals exhibit."*

"The Panel noted in particular the lack of baseline information concerning the aquatic ecosystems in the Southern Coalfields region, which in several cases led to the situation where outcomes of rehabilitation projects cannot be assessed adequately... due to the lack of pre-mining data." The example of the grouting of the lower Cataract River is given. We think that the Bargo River and Waratah Rivulet would also be instances where there was no pre-mining baseline data with which to compare, after mining damage.

p.153 *"There is an obvious and urgent need to provide a more comprehensive assessment of existing data sets on the aquatic diversity in this region and to collect targeted information that would be useful for a regional assessment of aquatic diversity and an identification of sites of regional significance."*

p.154 "...little, if any, information is available on the general distribution of aquatic plants across the smaller creeks and streams of the Southern Coalfield. There is also a lack of taxonomic and biological information for key aquatic plant species."

"Information available to the Panel regarding the aquatic plants in the Southern Coalfield region as a whole was generally poor and mainly derived from various consultants' reports. While such reports are often quite adequate for ongoing localised impact assessment and environmental monitoring programs, they usually contain very general information and lack precise taxonomic identifications for useful biodiversity assessments."

p.155 "The AUSRIVAS methodology is one of the more commonly adopted standard methods for assessing river health ...However it places sites into very broad bands of 'health' and the usefulness of this method in assessing environmental impacts has not been well investigated. For example, it failed to detect impacts at Waratah Creek (sic), despite significant losses in flows and habitats."

p.156 "there are very few studies of the waterways in the Southern Coalfield that have identified macroinvertebrates to a taxonomic level that would be useful for an assessment of biodiversity."

"...the distribution and abundance of fishes, like the other aquatic flora and fauna, are poorly documented (in the Southern Coalfield region)."

4.3 Subsidence Effects on Valleys and Gorges

p.59 "Whilst a fundamental understanding of the mechanisms which cause this type of behaviour (valley closure and upsidence) has been developed, the detailed mechanism(s) and hence full extent of this type of behaviour requires further research."

4.4 Anomalous Subsidence Impacts

Rivers SOS is aware of the unpredicted level of subsidence that recently occurred over Xsrata's LW24A at Tahmoor Colliery. Subsidence was twice what had been predicted and this is adjacent to the sensitive Bargo River Gorge. We are yet to hear what MSEC have come up with to explain this surprising anomaly. We would have to agree with the statement in the Report on p. 85:

"The Panel is ... of the view that increased attention should be paid to geological and geophysical mapping of geological disturbances or dissimilarities which may cause anomalous subsidence movements at the surface, particularly where such discontinuities may be located close to significant natural features."

4.5 Prediction of Impacts

p.78 "... it is the view of the Panel that the prediction process needs to be extended further, so as to provide greater insight and understanding into the anticipated subsidence impacts on particular surface features of interest."

p.81 "...the Panel does not accept that a generally applicable technique for predicting cliff damage is currently available."

p.82 "To not only make predictions but for them to be generally accurate is a substantial advance on the situation that prevailed just a few years ago. However, it must be said that these predictions have been largely qualitative in nature ('minor', 'moderate', 'possible', etc.) The challenge for the mining industry and its consultants over the next few years will be to move to a new generation of predictive capacity which is essentially quantitative in nature."

"One of the weaknesses in the current system of impact assessment and subsidence management appears to be the lack of integration between the various scientific studies carried out for mining proposals. ... This lack of integration has led to situations where there

may be an incomplete overall understanding and appreciation by both the community and governments agencies, of the predicted impacts and consequences of a mining activity.”

4.6 Monitoring

p.86 “...best practice monitoring of subsidence impacts on watercourses, valleys and cliff lines is still in a developmental stage.”

p.89 Here under the heading *Water Quality and Water Supply* the SCA's draft water monitoring guidelines in relation to longwall mining in the Special Areas are listed. What is surprising to Rivers SOS is that these most basic requirements are only in draft form, implying that is only recently that anyone has thought it necessary to put together such a list ... and why are they only guidelines? They should be mandatory requirements. From personal communication with SCA officers it has certainly seemed to be the case that these monitoring guidelines were in not in place before and during the undermining of Waratah Rivulet. It also seems that this monitoring needs to be independently carried out, possibly commissioned and overseen by SCA but paid for by the mining company.

4.7 Mitigation

p.90 In regard to the isolation of ground movement by the cutting of slots – “*This control measure is still in a developmental stage ...it has shown promising results in the limited number of cases where it has been employed (eg.at Marhnyes Hole on the Georges River).* This exercise was obviously experimental and considerable damage still occurred to the rock bar at Marhnyes Hole. We object strongly to mining companies practising with such techniques on significant natural features like this.

4.8 Remediation

On p.91 the effectiveness of grouting to seal fractured river beds is discussed. Despite varied attempts at three different sites, the conclusion was that “*a 100 per cent seal was not achieved, although the effectiveness of grouting appeared to be improving with experience.*” So the mining companies continue to practise on significant natural features with unproven techniques. It is particularly scandalous that no contingency plans were in place for the remediation of Waratah Rivulet after the enormous damage that was predicted duly occurred. So Peabody is still experimenting with grouts that in any case may only partially restore that once pristine waterway.

The Report's conclusions on remediation state “*The level of confidence associated with current remediation measures for natural features is low to moderate, which equates to a medium to high risk rating. Therefore remediation should currently not be relied upon as a forward management strategy for highly-significant features.*” (p.119)

The Report's recommendations point out the need for further research into all aspects of remediation of streambed cracking, especially to do with grout use. (p.123) It is good to see that they share our concerns about the life spans of grouts and the maintenance and security of grout seals in the long term.

4.9 Rehabilitation

p.92 “*The Panel noted that little (if any) work has been done in the Southern Coalfield to re-establish biological communities, particularly aquatic flora and fauna, following subsidence-related impacts to habitats. Further, there has been little work done to successfully demonstrate re-establishment of ecosystems ...*”

Our recommendation:-

- **Adequate funding must be provided for research and monitoring in all fields where knowledge gaps are a hindrance to responsible decision-making.**
- **Funds should be supplied by the mining companies and only those scientists who do not have regular employment or business associations with the companies should be in charge of this research.**

5. Threats to Water Supply Catchments

Rivers SOS is surprised that the Report gave no consideration to impacts on water flow and water quality in the Special Areas of Sydney's drinking water supply catchments in the Southern Coalfield, supplying on average 20% of Sydney's water, as well as supplying the Wollongong and Macarthur regions.

According to research by the Water Services Association, Sydney needs to cut its water consumption by 54% to counter a national shortfall of 275 gigalitres predicted by 2015 (SMH, 13.1.05). Such dire predictions are common, and in this situation any loss and/or pollution of water in the catchments becomes ever more problematic.

Many hoped and expected that this Report would therefore recommend special conditions for mining in the catchments.

The SCA's Catchment Audit of 2007 mentions the establishment of the Inquiry no less than four times, anticipating that "*the Independent Inquiry will inform government decisions about the future of longwall mining in Sydney's drinking water catchment.*"

Members of the Rivers SOS Alliance, writing to NSW Ministers over the last year, were routinely advised that this Inquiry would provide answers to all problems and questions, however this major issue has not been addressed.

The first item of the Terms of Reference asked for a "strategic review" of impacts with "particular emphasis on risks to water flows, water quality ... " etc.. Where water supply systems in the catchments are concerned, surely risks are magnified in significance, when we are entering an era of extended droughts and water restrictions. Also, as the Sydney Catchment Authority points out, within 20 years up to 91% of the Catchment's Special Areas will have been undermined. Mining operations are expanding.

The Panel may have concluded that the catchments are not in themselves "significant natural features" as per the Terms of Reference. However we would argue that the river systems, including tributary streams, feeder swamps and ground water, are all SNFs and, as argued above, the risks to these features in the catchments have an increased significance.

However all that is offered is information about catchment geography and mine locations. The concerns about water loss and water quality expressed by scientists and experts in the field, in submissions to the Panel, are not acknowledged. On the contrary, the Report states that the Panel is "not aware" of any "scientific evidence" of

“measurable” reduction in runoff or of “any other threat” to the water supply system from subsidence impacts (p. 117).

Serious impacts are not always “measurable” and, as the Panel readily acknowledges elsewhere in the Report, “scientific evidence” is often not available. The foremost expert and researcher of swamps in the catchment areas, Dr Ann Young, writes in her submission, for example, that “we have almost no information about the hydrogeology of the Hawkesbury Sandstone capping the Southern Coalfield.”

The main problem lies in the lack of baseline data. This problem was mentioned in the 2001 Catchment Audit carried out by Dr John Williams of the CSIRO. Williams was in general concerned about “contaminants from existing and abandoned mines and quarries lowering the water quality and catchment health.” On a field trip, he observed cracking and loss of surface flow in Wongawilli Creek, assumed to be due to subsidence impacts. However he wrote in the Audit that: “In the absence of baseline data it is not possible to determine the risks to water quantity, water quality and ecosystems posed by subsidence associated with longwall mining ... It will be some years before definitive trends are recognized.”

Nevertheless, the research that is available certainly indicates that longwall mining is a threat to catchment health, in spite of the lack of baseline data. Environmental scientists who have studied this area for a number of years, such as Ann Young and Martin Krogh, cite research which points to likely environmental consequences of mine subsidence on groundwater, swamps, rivers and streams in the catchments.

Research arising from much lengthier experience with longwall mining overseas, to the detriment of water resources of all kinds, is detailed by Martin Krogh and mentioned in the Rivers SOS submission. Stephen Kunz, Senior Ecologist with Schmid & Co., claims that some 3200 miles of Pennsylvanian streams are degraded by acid mine drainage, and that mining impacts result in desiccated swamps, groundwater contaminated by methane or radon, dried up streams and cracked and fissured aquifers. Schmid and Kunz’s research into effects on wetlands, *Wetlands and Longwall Mining, 2000*, is cited in the Panel’s bibliography but in spite of Kunz’s 20 years of experience his conclusions are not considered, perhaps because, as he admits, in Pennsylvania there is also a lack of baseline data.

However Kunz quotes from Hempel’s 1998 examination of internal records of several mines which showed that around 60% of all springs, ponds and wells are permanently dewatered or degraded.

Despite this, the evidence, whether local or from the USA, fails to impress the Panel or make its way into the Report.

The Panel may be perfectly correct in demanding baseline studies and scientific certainty before accepting claims of destructive impacts on water supply. But given the water scarcity, and the ample circumstantial evidence of mine damage, their attitude seems to verge on fiddling while Rome burns. At the very least,

caution in the catchments should have been a strong recommendation arising from their Report.

Young, Krogh and others urge such caution. Dr Young wrote, for example, that *“until we have basic information, swamps need full protection.”*

The Panel did have some direct evidence presented to them of recent subsidence impacts in the catchments. For example, there were the two major “inflow events” in the Dendrobium mines in the Special Area. Information about these events is included in the Report, which comments that *“each inflow event was sourced from separate aquifers which had been breached by subsurface cracking”* and that *“such disruptions to aquifers may lead to long term changes in their storage capacity”* and *“may lead to cross contamination between fresh and saline aquifers.”*

Surely this qualifies as a threat to the water quality of the water supply system or at least to the integrity of the catchment area. We note that in China the ground water is now so contaminated that there are plans to pipe water all the way from snow melt in the Himalayas. We surely can learn from such experiences. We cannot afford to let any ground water contamination occur in our Special Areas.

The SCA's submission to the Inquiry includes a photograph of water gushing from one of four cracks in the wall of Broughtons Pass Weir, caused by mine subsidence impacts in the 1990s. Perhaps this water loss was not “measurable”, and therefore not worthy of comment from the Panel, or perhaps this incident was ignored because the “unforeseen” damage has since been patched up. However any earth tremor in future is likely to open up these large cracks in the dam wall again. This weir holds an average of 20% of Sydney's water supply, which is pumped around the clock to the Upper Canal, itself damaged by past mining operations and now further threatened by BHP Billiton's recently approved Longwall 409, near Appin.

The Reynolds Inquiry (1977), instigated to investigate the conflict between the need to protect dams in the Catchments and the desire to expand mining, documented mine damage and collapse of dams in a number of overseas examples, and the failure of an undermined reinforced dam, the New Lambton Reservoir, near Newcastle. While a dam is not a significant natural feature in itself, the collapse of Broughtons Pass Weir, or either of the two other large dams in the Catchments now being affected by longwall mining, would pose a significant environmental threat, to say the least.

The SCA's submission contains statements concerning *“loss of surface flow”* (p.3), *“emerging evidence to suggest that disruption to groundwater from mining may be affecting water inflows to some dams”* (p.9), and *“loss of water and changes to water quality”* in Waratah Rivulet, which supplies around 30% of the water in the Woronora storage dam (p. 15). It concludes that longwall mining can *“damage surface waterways resulting in loss of surface flow ... divert surface water to the subsurface ... change surface water quality, reduce water level ... and increase connectivity and leakage between aquifers”* (Appendix 3). The SCA calls for research to measure the precise volume of water loss, as one of many necessary research programmes.

Graeme Head, the CEO of the SCA, stated in an interview with environmental journalist Matthew Warren that *“the SCA is recommending a very focussed and targeted scientific programme that deals with the possible impacts on the system.”* Warren informs us that *“earlier drafts of the SCA submission took a harder line;”* also that the SCA is not

recommending a moratorium on mining. (Illawarra Mercury, 15.8.08). We think such a moratorium is essential.

This is because at present, according to the SCA's submission, it is not possible to give "sensible advice" to the government while the vital questions of impacts on water quantity and quality are unknown (p. 26). In regard to guidelines for mining proposals under Part 3A, "... *guidelines must be developed to reflect the importance of water resources*" (p.5). Mining must not be allowed to proceed in the Special Areas until adequate research is completed and adequate guidelines are in place.

We approve of the Report's statement that "*a minimum of two years of baseline data*" should be provided for significant natural features, for applications under Part 3A or for SMPs, and we argue that, in the case of the Special Areas, a three-year moratorium is indicated, in keeping with the Report's advocacy of a precautionary approach and as applied to our dwindling and precious water resources.

We finish this section with a very brief outline of environmental consequences of mining operations in the Catchments.

We have already mentioned the threat of acid mine drainage from abandoned mines in the catchments. As the SCA's 2007 Audit sums up: "... *derelict mines throughout the catchments may degrade local aquatic and terrestrial ecosystems.*" No less than seven derelict mines were listed for rehabilitation from 2005, mostly at the taxpayers' expense.

Also, two rivers in the Special Areas have recently been cracked and polluted by mining operations. These are the Upper Cataract River supplying an average 7% of Sydney's water to Broughtons Pass Weir, and the Waratah Rivulet, supplying around 30% of the water in Woronora Dam, the source of water for Sutherland Shire. Several creeks feeding the Cordeaux and Avon catchments are also likely to be badly affected by the expanding Dendrobium mine. More damage is inevitable as mining expands.

Over twenty swamps have been/are about to be undermined in the Avon-Cordeaux catchments, and could be desiccated. This has been allowed in the past, in spite of the vital role of swamps in retaining, filtering and feeding waterways in the water supply system. The Panel of Experts all but dismisses evidence of mine damage to swamps presented in submissions from the swamp expert Dr Ann Young, from the SCA, and from Martin Krogh, the environmental scientist who worked with the SCA in the area for five years.

A DECC report (May, 2008) also expresses "*particular*" concern over the "*potential impact on drinking water catchments in the Sydney Catchment...*"

The failure to address this issue allowed BHP Billiton, in a press release and a widely circulated leaflet (*Illawarra Coal Coalition News*, No. 11, August, 2008) to make the claim that the Panel's Report confirms "*what Illawarra Coal has said for some time – that our operations have no impact to Sydney's valuable water supply, or headwater swamps.*"

BHP Billiton is not responsible for the damage to Waratah Rivulet, but is responsible for damage to creeks and swamps and groundwater caused by Dendrobium mine, and for the cracking of the Upper Cataract River, Broughtons Pass Weir dam wall, and the Upper

Canal. The above statement is untrue, as anyone who has studied the damage knows all too well.

Finally, a major problem lies in the lack of legislative power needed by the Sydney Catchment Authority. It seems unable to prevent the damage to water resources which was the very reason for its creation. In the Sydney Water Catchment Management Act of 1998, the SCA's role was "*to protect the catchment areas ... to protect and enhance water quality... etc.*" In our view it is failing dismally, and we call for legislation to allow its protective role to be enforced.

Our recommendations:

- **A Commission of Inquiry (preferred to a Panel of Experts in this instance of high importance) into the Impacts of Mining in the Special Areas of Sydney's drinking water supply catchments must be set up as a matter of urgency, as mining operations in the Catchments are expanding rapidly.**
- **Research programmes into impacts of mining on water resources in Sydney's Drinking Water Supply Catchments must be amply funded and commenced as a matter of urgency.**
- **A three-year moratorium on mining in the Special Areas of Sydney's drinking water catchment should be mandated. This allows a minimum time for the necessary scientific research to be carried out.**
- **Legislative powers of the SCA to be expanded, to allow catchment protection to be enforced effectively.**

6. Risk Management Zones: A Weak Proposal

In the light of the huge amount of uncertainty that the Panel has helpfully described, their solution to allowing mining to continue, while trying to afford the environment more protection, is to recommend Risk Management Zones (RMZs) around significant natural features.

The Report states that RMZs should "*initially be identified by mining proponents, subject to additional input from key agencies and other stakeholders ...*" (S5.4.2). This is most unsatisfactory. It continues: "*DoP should have the final responsibility for identifying the location and lateral extent of RMZs ...*" Again, this is not satisfactory. This environmental matter should be in the hands of DECC, who should employ subsidence experts for advice on RMZs identified by either the mining companies, local community members, environmental groups or other agencies such as SCA.

In their submission to this Inquiry DECC indicated that they would like more than an advisory role in decisions regarding subsidence impacts. Their new responsibility for climate change issues adds to the necessity of their involvement. When the protection of the environment is under consideration in the mining approvals process, we wonder how

DECC can continue to be excluded, and why the Panel did not recommend that DECC should play an equal role with DoP and DPI. We recommend this in section 8 below.

The Panel's proposal to create RMZs is not intended to preclude mining. The creation of an RMZ, in the view of the Panel, merely indicates a need for more thorough research. Because of the current lack of knowledge and the existence of anomalies, even careful research may not achieve the necessary level of certainty.

This is a weak measure because it still allows for a margin of error which could result in damage to a significant natural feature which, once it has occurred, could be irreparable. No amount of forfeiting of bonds, as suggested, or provision of offsets will compensate for a natural asset that may be wrecked forever.

In S5.4.9 of the Report (p.115) the inherent weakness in the RMZ idea is exposed. Here increased security deposits are recommended to cover costs "*... in the event of non-approved impacts to the highly significant feature.*" This deposit is to be forfeited "*... if non-approved impacts occur as a result of errors in predictions and the feature is not able to be remedied by the mining company ...*"

The Panel should have had the courage to recommend that some key natural features, like upland swamps or rivers, are sacrosanct – they are “no go” areas for mining because they are far too important to risk being damaged, and also no proven repair techniques exist.

Rivers SOS supports the following statement in DECC's submission: "*DECC considers that many of these impacts are unacceptable as many are irreversible.*" (p. 6)

We are pleased to note that the Panel, although failing to recommend avoidance, does accept that "*...at times, decisions may need to be made by Government based on absolute values ... rather than the summation of all competing costs and benefits. In such cases, commitment to an absolute value (e.g. the desire to protect a certain feature no matter what the cost) overrides any net benefit assessment ...*" In our view, that absolute value should be applied more widely than is suggested here.

Next, the size recommended for the RMZs seems to us to be inadequate for protecting significant natural features such as river systems. It may be adequate for other significant natural features, but river systems need more protection.

The suggestion of a 400m or 420m offset for an RMZ is not a proper safeguard for river systems in our opinion, although this would be an improvement on the 70m or 120m distances being approved by DoP and DPI at present, with predictable results.

We note that an independent expert has recommended an offset distance of 500m from the Bargo River, in order to give protection from cliff falls and river bed cracking. Also a protection zone of 1k was placed around Mermaid Pool in 1975, to save this spectacular natural feature.

Rivers SOS reiterates our call for a 1k safety zone around all river systems. Reasons for this were given in the section of our submission to the Inquiry entitled "Why We Call for a 1k Safety Zone." These were repeated in our oral submission. The Report was therefore in

error when it was suggested in S5.2.4.1 that Rivers SOS had retreated from this position. The error was apparently due to the Panel's misreading of a sentence in an unpublished briefing paper and was certainly not gleaned from our formal and official statements to the Inquiry, as approved by all 38 groups in our Alliance.

Also, our call for the 1k safety zone was not based entirely on our research into far field movements as the Report suggests in S 5.2.4.1 (p. 108) Our submission made it clear that a uniform safety zone may not be ideal *"but it has the advantage of avoiding the problem of undue influence being exerted by powerful interests in numerous individual cases."*

Furthermore, our submission added that the existence of anomalies and the lack of certainty in predictions *"calls out for a reasonably ample safety zone."* (p. 6)

Insofar as our call was based on research into far field movements, the Report comments that *"There appears to be no evidence of these subsidence effects extending anywhere near that distance from rivers or significant streams."* Yet BHP Billiton has just spent an estimated \$3 million in stabilizing and monitoring the high level Nepean bridges on the Hume Highway before their mining operations nearby commenced. These longwall panels are 1.9km away. An absence of evidence of damage from far field movements apparently does not mean an absence of risk.

In conclusion, we support the idea of RMZs as a way of requiring especially careful research regarding significant natural features. However the suggestion for identification of RMZs needs revision, as does the suggested size where river systems are concerned.

RMZs, however, cannot be accepted as a substitute for adequate protection zones.

Our recommendations:

- **The suggested procedure for identification of RMZs must be improved along the lines suggested above.**
- **The Rivers SOS Alliance repeats our calls for a safety zone of at least 1 kilometre to be mandated around all river systems.**

7. Social and Economic Significance: Unbalanced Analysis

The third Term of Reference asks the Panel to *"report on the social and economic significance to the region and the State of the coal resources in the Southern Coalfield."*

In addressing this topic, Chapter 3 of the Report was woefully inadequate. It presented a uniformly rosy picture. All the economic benefits to the State, and the social benefits of well-paid jobs associated with mining in the region, were lovingly detailed; as were the donations given to community groups by the mining companies.

This is well and good as far as it goes. The current economic benefits are huge, with the NSW Government receiving nearly \$1 billion in royalties and taxes. The region

undoubtedly benefits from high wages earned by miners and others employed in the coal industry.

However a veil is drawn over negative effects and social problems.

One elephant in the room is the temporary nature of the industry. The mining bonanza will last around 30 years at most, as suggested in the Report. That is, if the use of fossil fuels is not abandoned altogether before coal seams in this region are mined out. Mines may be closed much sooner in this case. But the possible social and economic effects of climate change are not addressed in this Report.

Early closure of coal mines may sound far-fetched, nevertheless this cannot be ruled out. As one sign of the times, James Hansen, NASA's chief climate scientist, wrote to our Prime Minister and all Premiers in March 2008, asking for a halt to Australia's mining and export of coal. This call was supported by Barrie Pittock, former Head of CSIRO's Climate Impact Group. The CSIRO says Australia's emissions must fall 60% by 2050, as compared with 1990. But our emissions are on the rise. It is possible that drastic action might have to be taken to halt coal mining even before the coal runs out..

The Report of the Intergovernmental Panel on Climate Change warns of a turbulent future of violent storms, devastating droughts and higher temperatures, any of which will have significant social and economic impacts in the near future.

Chapter 3 of the Report gives the impression that the bonanza will continue forever but, whether sooner or later, the cessation of mining will cause social disruption. At the very least, a recommendation from the Panel for some provision of re-training programmes for the over two thousand unemployed miners of the future would be helpful.

Also, no explanation is given for the loss of 597 jobs in mining in the Southern Coalfield between 1997 and 2007, as shown in Table 7 of the Report. Is this job loss due to increasing mechanization ? or longer shifts ? or shortage of workers ? A job loss of this magnitude calls for comment in any analysis of social impacts.

Many other negative social and economic impacts do not get a mention. Irreparable damage to the natural environment leaves a problem for the future. An internal DECC report of May 2008 notes that "*Impacts can be long lasting and a legacy for future generations*" so there is "*a real need to consider intergenerational equity. The environmental and social costs should not be borne by the community.*"

There are also a number of health issues affecting both miners and local residents. Coal dust is carcinogenic and causes respiratory problems, and raises levels of lead in local dams and tanks. This may well be one of the most severe social impacts of coal mining. What are the mortality rates for miners who have been "dusted" ? What impact does premature death have on their families ? Is there a health issue for locals whose air, tanks and dams are polluted by coal dust ? This aspect does not rate a mention in Chapter 3.

Nor does the tragic Appin mine disaster of 24 July, 1979, when an underground explosion cost the lives of 14 miners. Appin residents, and the families of the dead men, erected a sculpture in their honour and created the Appin Mine Memorial Garden in remembrance.

This major social impact has been deleted from this Report, though the people of Appin and surrounds still live with the memory.

In 2000, mining near Appin caused an earthquake, magnitude 4 on the Richter scale, as reported by CSIRO researchers. No damage was recorded on this occasion, though residents felt their houses shake. Ongoing mining throughout the Southern Coalfield carries the risk of causing more seismic events. Those directly caused by mining are typically below magnitude 3, but an earthquake measuring 3.9 in magnitude in Utah, on 6 August 2007, caused a mine cave-in of around 50 acres, causing the death of six workers (Report from the University of Utah's Seismic Stations, June 2008).

When longwall mines went under Appin township, around 150 homes had to be repaired or even demolished. Damage to homes was also reported from other mining areas, from Douglas Park to Tahmoor and Bargo. The Mine Subsidence Board funds and organizes repairs, but residents have on occasion complained about delays and the workmanship involved.

Home owners have to move out if repairs are extensive. The overall stress contributes to illness in some cases, and some moved out of the area altogether, including Fred Borg, of Campbelltown Council, who had lived in Appin for many decades before his house was badly damaged.

Some residents in Menangle and Douglas Park are currently trying to deny entry to BHP Billiton's exploration teams and drilling rigs. One has been taken to the Mining Warden's Court on two occasions. This is distressing to those involved.

Eight families living on the Lower Cataract River saw their river cracked, drained and polluted by longwall mining in the 1990s. They won a court case against BHP in 1998, but suffered two years of stress in the process and of course nothing could restore their river to its former state. It is still polluted, after ten years, and no attempt has been made to seal most of its cracks.

Dr Glen Albrecht of the University of Newcastle has coined the term "solastalgia" for the grief and loss suffered by those who are in mourning for the destruction of their natural environment. The need to find language to describe this grief was apparent to Dr Albrecht after his research into the reactions of residents of the Hunter valley who were affected by mine expansions. The grief may not be quantifiable, but it is potent. It demands recognition as a debilitating psychological condition, caused by the destructive impact of mining on areas of natural beauty valued by residents.

In the Southern Coalfield, this grief has been especially evident in the case of the irreparable damage done to Marhnyes Hole, which was a popular swimming hole and beauty spot for generations of Appin residents until it was cracked and polluted by longwall mining in 2000.

Finally, the NSW Minerals Council's comments on social significance are typically taken at face value throughout this Chapter while comments in submissions from Southern Coalfield residents were ignored without exception. This inevitably led to errors. Thus in S3.4 the Report repeats the Council's claim regarding " ... *extensive provisions for public consultation and input into the development of specific proposals.*"

It is true that some provisions for informing communities are now in existence, and these are an improvement on the total lack of communication of previous years. But “consultation” is a misleading term. Consultation implies some ability to influence decisions and this is rarely if ever in evidence.

The section of the Rivers SOS submission entitled “Community Consultation” appears to have escaped the notice of the Panel. It contains three pages of details concerning what we have with good reason called the farce of community consultation. (pp. 20 – 22).

We feel that experience of grass roots community members of the Southern Coalfield should carry more weight in considering social impacts than the NSW Minerals Council's opinions. We also believe that more meaningful input from the public into decision-making must be instigated.

For a start, feedback to those who write submissions would be appreciated. Reasons as to why reasonable suggestions in substantive submissions and/or petitions are rejected should be justified in detail. For just one example: Rivers SOS argued that the width of longwall panels should be made narrower in sensitive areas, to lessen subsidence effects. Research on this has been conclusive and this concern is mentioned in many submissions. The Report was asked to advise on methods of minimizing adverse impacts and we were therefore disappointed that the question of longwall width was not addressed at all, especially as widths are increasing.

Rivers SOS has also argued that there should be representatives of the public on decision making committees such as the Interagency Review Committee. As it is, the minutes of this Committee are not made available and proceedings are in secret.

Our recommendations:

- **Chapter 3 of the Report must be amended in order to include an adequate account of negative aspects of mining, both social and economic, in the Southern Coalfield.**
- **A recommendation should be included regarding the provision of future re-training programmes for unemployed miners, which could be funded by industry-wide contributions along the lines of the present Mine Subsidence Board. Miners could be re-trained in renewable energy technologies, for example.**
- **Solastalgia to be recognized as a legitimate psychological effect arising from environmental destruction, requiring counselling services and compensation for those most directly impacted.**
- **Procedures enhancing public input into decision-making should be created.**

8. The Flawed Decision-Making Process

In the first place, the Rivers SOS submission recommended that investigation of sensitive sites must be carried out by truly independent experts, not as at present by experts employed by the mining companies. (p.22).

We cited two recent cases in which independent expert opinions were markedly different from that offered by consultants employed by the companies. The NSW Government and its agencies should not rely solely on information offered in EISs and SMPs by interested parties when assessing mine plans.

Also, funding of both DECC and the SCA should be increased to allow training and employment of teams of scientists capable of researching mine subsidence and other mining impacts.

A percentage of royalties from coal production must be put aside for this purpose.

In the next stage of the process, we have argued above that DECC and its Minister must play an equal role in all decision-making regarding mining approvals. SCA should be equally involved where appropriate.

We have also argued for a more meaningful public input involving genuine consultation.

The Panel approves of the decision-making framework provided by Part 3A of the EP&A Act and the recent amendments to the Mining Act, 1992. In future the role of the SMP will be as a management document (S5.4.1, p. 111).

Under the Part 3A process there must be more transparency and more opportunity for public access and involvement in the stages of the approvals process than at present. For instance, there should be access to meetings concerning adequacy testing of environmental assessment, and to meetings where government agencies are being consulted.

We do not approve of the level of control exercised by the DoP in the Part 3A process due to be finalized by 2010, and we reject the structure in which the Minister for Planning alone makes final determinations and gives approval to projects. As we have indicated regarding the selection of Panel members, the Minister for the Environment must play an equally significant role in the approvals process.

When the RMZs proposed in the Report are identified, "rigorous risk assessment" will be promoted. We agree with the Report's proposal that environmental assessments lodged under Part 3A in future should require a minimum of two years of baseline data for significant natural features, and that this data should be provided by the mining companies to support their applications.

We also agree that there should be earlier engagement with all key stakeholders (S5.4.4, p. 113).

The Report makes good suggestions for improvement of environmental assessments, including peer review of key aspects (S5.4.6, p 114).

Obviously some method of ranking significant natural features is needed to guide decisions. The Report states that consideration of this is outside its Terms of Reference and that this is “primarily a matter for the Government” (S5.2.2.3, p. 106), but Governments need guidance from experts and this is not provided in any detail in this Report.

In contrast, the submission from DECC makes the effort to present a detailed model for “ecological risk-based decision-making,” as outlined in their Appendix 5. This is an attempt to create a systematic method of identification of a hierarchy of ecological values. This is an unavoidably complex process but a necessary one. A systematic methodology is the only way to avoid arbitrary, uninformed and piecemeal decision-making. Undue power and influence could be minimized if such a system of ranking was introduced..

The Panel seemed overwhelmed by the complexity of such attempts. DECC’s proposal is described only briefly, and DECC’s suggestion that DECC should manage a programme to identify the significant natural features, funded by the mining companies, is dismissed as too expensive for the industry. The Report seems to back the industry in noting that it does not support DECC’s model because it does not include an economic trade-off .

In our view the economic trade-off is not relevant in assessing values of, and risks to, natural features. The question of the economic trade-off should only be considered after the environmental assessment has taken place, but the NSW Minerals Council argues that the economic trade-off “*should be the primary consideration of Government.*” (S5.2.4.3, p. 109).

Our recommendations:

- **Independent experts to conduct all environmental assessments, rather than consultants employed by the mining companies.**
- **A percentage of royalties should be put aside to fund employment and training of environmental scientists by DECC and SCA in order to carry out research, monitoring and assessments of subsidence impacts.**
- **Equal involvement in decision-making by DECC and its Minister, and by SCA where appropriate.**
- **DECC’s ecological risk-based assessment model should be developed as a method for standardized assessment of environmental value.**

9. Positive Aspects of the Report

Despite the fact that we do not think this Report goes far enough in its recommendations to protect the environment, we do acknowledge a number of positive recommendations made by the Panel. These are:

- a) **The call for further research** in all the areas detailed in Section 4 above.

- b) **The advocacy of the precautionary principle and the reverse onus of proof.** On our reading of this section, outlined on p.114, there is no way that undermining of swamps, either headwater or valley infill, could be approved simply because there is significant expert opinion that damage is likely and there is no body of evidence to refute this.
- c) **Improved documentation for EAs.** The recommendation that cumulative impacts within a region should be addressed is especially welcome here.

10. Conclusion

Overwhelmingly the Report highlights the need for any further mining in the Southern Coalfield to proceed with great caution and we can only agree wholeheartedly with that. If all the recommendations are accepted we shall have something of an improvement in the current situation. If, as the Report says, the public must expect that mining will have impacts and that it is the Government's responsibility to determine what environmental impacts are acceptable, then it is up to the community to let the Government know what we expect of them regarding the protection of the environment in the face of longwall mining that is obviously set to continue. It seems that groups like Rivers SOS have much work ahead of them.

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