



Blue Mountains Conservation Society Inc

ABN 38 686 119 087

PO Box 29 Wentworth Falls NSW 2782

Phone: (02) 4757 1872

E-Mail: bmcs@bluemountains.org.au Web Site: www.bluemountains.org.au

Nature Conservation Saves for Tomorrow

Mr Richard Tacon
General Manager – Western Ops
Lidsdale House
Locked Bag 1002
WALLERAWANG NSW 2845

Richard.Tacon@centennialcoal.com.au

Referral Business Entry Point
EIA Policy Section (EPBC Act)
Approvals and Wildlife Division
Department of Sustainability, Environment, Water,
Population, the Arts and Communities
GPO Box 787
Canberra ACT 2601
epbc.referrals@environment.gov.au

**Reference Numbers: 2011/5949 and 2011/5952 – A controlled action under the *EPBC Act*
'Preliminary Documentation' – Springvale Colliery Longwalls 415, 416, 417
and Angus Place Colliery Longwalls 910 and 900**

1. Preamble

1.1 Unacceptable response period

The 'preliminary documentation', even allowing that Centennial has received permission to treat the separate collieries within the one set of documentation, comprises ~64 Mb. The Society became aware of this on ~2 December. Submissions are required by 17.00 hr Thursday 15 December. This is ~10 working days and 14-15 days for those who are paid to work weekends and owned by 'business'. The Society again draws your attention to this outrageous practice whereby a substantial document is placed on public exhibition for such a ridiculously short period.

Springvale-Angus Place Collieries and their various consultants have spent many months producing the documentation, [http://www.centennialcoal.com.au/index.php?option=com_content&view=article&id=35%3Aangus-place-springvale-jv&catid=14%3Aoperations-a-community&Itemid=43&limitstart=2] and have also obtained independent peer reviews of Centennial's two proposals and a tabulation of concerns and Centennial's responses [http://www.centennialcoal.com.au/images/stories/uploads/raylene/109493_Peer_Review_and_Responses_27-10-11.pdf] yet the public exhibition period and opportunity to assimilate the document, and then make a submission is only 10 working days.

The Society contends that this process is totally inequitable and heavily biased towards the suppression of carefully considered submissions by volunteer-based environmental organisations. SEWPAC should take this on board and amend its practices accordingly

1.2 Saturation principle

The size of current documents largely stems from the use of consultants who include (for completeness?) vast amounts of superfluous material. The Society appreciates that the reports are window-dressing opportunities for the consultants, and also structured to enable each report to stand alone, but it nevertheless results in too much repetition. This is then exacerbated by the company's staff extracting sections from the consultants' reports to produce an over-riding document.

SEWPAC has the capacity to provide guidelines which curtail the mindless repetition, both of and in electronic documents, and could enforce the guidelines by refusing to process the documents until they are 'guideline-compliant'.

The saturation approach potentially has more sinister consequences. Government departments become drowned in electronic paper, could fail to read past the executive summaries, and could thereby have less complete appreciations of the proposals. Similarly, volunteer-based groups, who need to digest all the detail, could become worn down by the electronic barrage to the point of capitulation.

Were the matter limited to SEWPAC, the problem might be manageable, but there are also submissions to State Government. Clarence Colliery, also in the Centennial stable, has concurrently released its SMPA for LWs 700W and 800. The application [http://www.centennialcoal.com.au/index.php?option=com_content&view=article&id=601&Itemid=48&limitstart=2] comprises four parts amounting to 13.5 Mb and numerous appendices amounting to >170 Mb and requires a submission by December 19.

2. Common sense and the Precautionary Principle

2.1 General considerations

Longwall mining has repeatedly been deemed a factor in damaging water courses and their ecosystems. Largely because of this history, and as a consequence of scientific evaluation, longwall mining is recognised as a key threatening process under NSW legislation¹. In the Thirlmere Lakes area, the lag time between the start of LW mining in 1989-90 and development of an anecdotal and then a science-based appreciation of its impacts on the Lake's levels is in the order of 15-20 years². It is hardly surprising that monitoring by commercial interests fails to yield definitive answers.

The Planning Assessment Commission's July 2010 report (pertinent to damage to swamps and watercourses in the Southern Coalfield and elsewhere) emphasises (p88) the deficiencies of monitoring in terms of: (i) its ability to detect and quantify changes in the flora of swamps; and (ii) its capacity to decipher causative factors and their relative importance³. In other words, the current techniques for monitoring the behaviour of flora (and to this BMCS would add the monitoring for groundwater and soil moisture) relative to impacts from mining versus other variables are not up to the task. A consultant can therefore state, by default, that there is no evidence for a subsidence-induced impact, thereby placing the onus on those advocating the *Precautionary Principle* to prove otherwise.

The SCA audit for 2010⁴ recommended as follows:

*“Recommendation 2: The Department of Planning should undertake detailed consideration of the potential **cumulative** impacts of all mining activities within the SCA Special Areas.”*

“Recommendation 17: NOW and SCA undertake research aimed at understanding the extent, connectivity and interaction between sub-surface aquifers (confined and unconfined), perched aquifers and surface waters within the Catchment.”

These are important steps forward, but there can be cumulative impacts from a single activity (say LW mining from several mines) or multiple activities (say LW mining, open-cut mining, power generation and forestry), and in turn these can each be considered at a single time or over an extended period. The result is that a matrix of cumulative impacts must be developed. Furthermore, although the SCA is looking after its own interests in terms of Special Areas and Catchments, the approach is just

¹ http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/threat_profile.aspx?id=20001

² Based on information in Pells Consulting, *Report on the water levels of Thirlmere Lakes*, P053.R1, October 2011

³ Ann Young, Submission re 2011/5949 Proposed longwalls 415, 416, 417 at Springvale Colliery, May 11 2011

⁴ <http://www.environment.nsw.gov.au/resources/water/10973recomend.pdf>

as important for environmental assessment of any area subject to a threatening activity; particularly if those areas do include water-supply catchments (Angus Place) or affect watercourses which enter the GBMWA (Springvale).

2.2 The Peer Reviews

BMCS notes that both peer reviewers [K Fryirs pp4-6 and G H pp5-8]⁵ express concerns about the groundwater and surface water monitoring program and the limits of its effectiveness.

For example, Fryirs p4 states “... I have greater concern for the analysis of the impacts of near-surface responses on swamp structure and function...Geomorphologically, once a swamp is dewatered and surface morphology disrupted, the structural integrity of the system is compromised. Once disturbed these systems have very long recovery times given the geomorphic processes that are set in train and the secondary consequences of those processes”; also in Fryirs p6, “Two years of data in the swamps, although significant in the context of swamp science, is not enough to adequately predict the hydrological impacts of mining, nor the natural function of these systems so that it can be used as a reference condition against which to assess impact...Overall, while the proposed monitoring program may be rigorous enough to detect largescale, gross changes in the system over timescales of months or years, it does not yet have the spatial resolution to detect subtle or small-scale changes that are internal to these systems”; and again on p8, “There is little likelihood that the Sunnyside East and Carne West swamps under proposed longwalls 415, 416 and 417 in the Springvale area will remain ‘intact’ given that they are located within the Type 1 geological zone which has a higher likelihood of anomalous subsidence impact from longwall mining.”

Hose (p6 abridged) indicates:

“The water quality program does not allow for a BACI design to test for long term effects” and “...does not include control sites remote from the mining area. Such sites would be necessary for a robust BACI design... Water level monitoring within the swamps is limited to the central swamp zone and does not consider swamp marginal areas where changes to water level will impact the areal extent of the swamp vegetation community...The qualitative analysis of data is subjective. While potentially useful, this approach should be complimented by more traditional statistical approaches.”

2.3 The implications

SEWPAC decided to make the Angus Place and Springvale LWs ‘controlled actions’. The company has now submitted Preliminary Documents. The aim is to satisfy SEWPAC that the company and its consultants are sufficiently confident of the outcomes from extracting the LWs, and that sufficient risk management and monitoring are envisaged and in train, for unfettered approval to be given. The Society questions this based on Sections 2.1 and 2.2, the analysis in Sections 3 and 4 leading to conclusions in Section 5, the seemingly flawed advice of consultants, and the record of the company as embodied in the \$1.45 million Enforceable Undertaking under Section 486DA of the EPBC Act. The Society contends that the LWs should not be sanctioned without the enforcement of ‘risk-free’ protection for the principal THPSS in the area.

Although Springvale emphasises it is exercising an abundance of caution in referring LWs 415-417 to cover mining through to September 2014 (Referral document p16⁶), the referral would seem to be a test-case. Examination of Referral document Figure 4 shows that areas to the east of LW 417 contain magnificent THPSS which are even better than those whose headwaters are impacted by LWs 416 and 417. So, in the window created by the present referral, Springvale (Referral document p16)⁶ “...will assess the impacts, for a new State based planning approval which will include future mining areas including Longwall mining activities to the east and south of LW 416. The mine plan for the mine extension project is still being determined, the outcome of which will be the result of the assessment process. At this time, Springvale Coal will also prepare a referral for these future mining areas...” Without being too derogatory, if SEWPAC accepts the ‘assurances and monitoring placebos’ attached to the original referral and now the ‘preliminary documents’, without either rejecting the additional LWs, or imposing full protection zones or (less satisfactorily) ‘risk-free’ panel widths, magnificent THPSS will be compromised.

⁵ Preliminary documents, 109493_Peer_Review_and_Responses_27-10-11.pdf

⁶ EPBC Referral 2011/5949, Springvale Longwalls 415, 416 and 417, Referral document.

3. Previous submissions re 2011/5949 and 2011/5952

3.1 LWs should be controlled actions

Submissions supporting that the LWs constitute controlled actions were made to SEWPAC on 19/05/2011 [Sv – 2011/5949] and 24/05/2011 [AP – 2011/5952]. A substantial amount of detailed assessment was provided in both submissions. The analysis was presumably a contributing factor in SEWPAC’s decision to make both sets of LWs controlled actions. The Society notes that little has changed in the current ‘preliminary documentation’. The same consultants are giving the same assurances couched in such terms as ‘*unlikely to be significantly affected*’, ‘*not likely to significantly compromise*’ and ‘*not likely to have occurred as a result of the actual subsidence process.*’ Once again, impacts are subjected to reductionism and ‘minimalisation’, and consultants who have an insubstantial basis for their preferred beliefs, justify their positions by citing each other.

The previous submissions are obviously available to SEWPAC. Nevertheless, pertinent sections from the submissions will be re-stated below, because they must necessarily be addressed by SEWPAC in determining whether the actions should be rejected or substantially modified in terms of National Environmental Significance.

3.2 2011/5949 – Springvale LWs

3.2.1 Matters of National Environmental Significance

*“The Society believes **the longwalls should be a controlled action** in respect of the following matters of national environmental significance (MNES):*

- *The longwalls pose a significant threat to an endangered ecological community (EEC), namely temperate highland peat swamps on sandstone (THPSS).*
- *The longwalls and the related surface activities therefore threaten one vulnerable flora specie, *Boronia deanei*, due to its special relationship to THPSS.*
- *The longwalls further present an indirect threat to at least three endangered or vulnerable fauna species and their particular habitats.”*

3.2.2 Other issues of National Environmental Significance

*“The Society also wishes to highlight the following dot-points because they seem to carry little weight in EPBS assessments despite being of national and international significance, and despite (in the opinion of this Society) being **grounds for making all coal developments controlled actions**:*

- *The longwalls exacerbate the risk to the water quality entering the World heritage Area.*
- *The longwalls contribute to the inability of Australia to meet its commitments regarding greenhouse gas emissions and climate change.”*

3.2.3 Incomplete, misleading or incorrect content of the referral

*“In the context of this referral and the recent referrals by Angus Place Colliery, the Society is extremely concerned about the following and believes **they constitute grounds for making the proposal a controlled action**:*

- *Processes involved in the State system [e.g. the subsidence management planning (SMP) process, and the associated prevention, evaluation and remediation of damage caused by mining] and the application of the EPBC Act (e.g. divesting responsibility to the State DP&I in terms of assessment requirements); the limitations extend to the lack of direct interaction between government departments and environmental stakeholders (government meets with the company and the company’s consultants, but usually not with enviro-groups, either in three-party or two-party*

meetings) – it seems that we are considered to be **biased amateurs** (despite qualifications to the contrary), whereas the company staff and consultants are deemed **unbiased professionals**⁷.

- The whole process of risk assessment and risk management through monitoring, particularly where the monitoring may be (and commonly is!) an inadequate compromise which generates inconclusive data open to misinterpretation and/or selective presentation.
- **‘Expert’ interpretations of such monitoring which, through endless repetition in reports to government departments, take on the aura of evidence-based truths.** Assertions are made which, were they treated as a favoured, preferred or possible interpretation, whilst acknowledging data limitations and alternative views, would be acceptable. But this does not happen or is sufficiently subtle as to be overlooked.
- The perpetuation of such ill-founded or contentious interpretations in massive reports to different branches of government, particularly when the interpretations are cited by other consultants as justification for their own insubstantial beliefs.”

3.3 2011/5952 – Angus Place LWs

“Matters meriting the proposal be deemed a controlled action

- (a) The Society believes that longwall 910 poses a significant threat to an endangered ecological community (EEC), namely temperate highland peat swamps on sandstone (THPSS).
- (b) The Society also wishes to highlight the following which seem to carry little weight in EPBC assessments despite being of national and international significance: (i) longwall 910 exacerbates the risk to the water quality entering the World Heritage Area; and (ii) the longwalls contribute to the inability of Australia to meet its commitments regarding greenhouse gas emissions and climate change.
- (c) The Society is extremely concerned about the processes limiting enviro-group involvement and the misleading or incorrect content of the referral and believes that these constitute a basis for making the referral a controlled action. Four aspects are emphasised:
 - (i) Processes involved in the State system [e.g. the subsidence management planning (SMP) process, and the associated prevention, evaluation and remediation of damage caused by mining] and the application of the EPBC Act (e.g. divesting responsibility to the State DP&I in terms of assessment requirements); there is a lack of direct interaction between government departments and environmental stakeholders (government meets with the company and the company’s consultants, but usually not with enviro-groups, either in three-party or two-party meetings); the company is not required to send correspondence regarding Subsidence Management Status Reports to government, and there seems to be no basis for government considering such reports when they are forwarded to DP&I (DI&I at the time) by the enviro-group for information.
 - (ii) The whole process of risk assessment and risk management through monitoring permits damage and enables ‘preferred’ interpretations, particularly where the monitoring may be (and commonly is!) an inadequate compromise which generates inconclusive data.
 - (iii) The preferred interpretations of monitoring are endlessly repeated in reports to government departments, and thereby assume an aura of evidence-based truths. Assertions are made which, were they termed a favoured, preferred or possible interpretation, whilst also acknowledging data limitations and alternative views, would be acceptable. But this does not happen or is sufficiently subtle as to be overlooked.
 - (iv) Such ill-founded or contentious interpretations are perpetuated in massive reports to different branches of government, and then tend to be referenced by another consultant as justification for an otherwise insubstantial interpretation, or a limiting control on that interpretation.”

⁷ Stop laughing, it’s serious! The fact that BMCS members do the work for no financial reward seemingly impugns their integrity and competence.

4. “Preliminary documentation” re 2011/5949 and 2011/5952

The principal document was prepared by RPS and dated October 27 2011. The document will be referred to as RPS. Peer review of the content of the various reports and responses by the company to the peer reviews took place in the September-October period. These will be designated PRF for K Fryirs, PRH for G Hose and PRC for the company response to the reviews.

4.1 Mining methods

SEWPAC raised the following: “4. Please provide detailed evidence-based information on why alternate non-longwall mining methods cannot be used, in particular exploring the use of bord and pillar mining methods under sensitive areas such as the Temperate Highland Peat Swamps on Sandstone ecological community.”

RPS p22 cites Strata Engineering: “It is concluded that there is no known precedent, for a safe and viable bord and pillar mining operation in the geotechnical environment under consideration at Angus Place and Springvale.”

Neither PRF nor PRH has the expertise to comment on the findings of Strata Engineering; both acknowledge this. RPS p23 however concludes “...that Longwall mining method is the only viable mining method at Angus Place and Springvale and that alternate non Longwall mining methods cannot be used in THPSS locations or elsewhere.” The Society contends that the conclusion is poorly based and purpose-driven. Thus:

- The existence of Airly Mine, which Centennial commissioned last year, shows that bord and pillar mining is a practicable alternative. Airly Mine has poor roof conditions, is working the same seam, and has a cover-depth which varies from the Springvale maximum to greater than that at Angus Place. **There is a clear need to explain why this does not constitute a mining engineering precedent.**
- Strata Engineering (RPS p23) states: “...it is considered very unlikely that it would be feasible to devise a bord and pillar system incorporating a level of secondary extraction sufficient to produce a viable overall outcome.” A factor in this ‘viability’ is economics, although the dictates of the consultancy inevitably focus on safety aspects. Bord and pillar inevitably means that much more coal is left in the ground and the company’s profit is affected. **However, the alternative involves a risk to THPSS, particularly for the SV LWs in respect of major pristine swamps, and this is unacceptable.**
- Strata Engineering (RPS p23) also suggests that switching from LW to B&P under THPSS would be unsafe and uneconomic in the absence of secondary extraction. **This is highly likely in view of the subsurface damage resulting from LW mining, but why should this be used to justify persisting with LWs under the THPSS? A far safer and more realistic approach would be for Centennial to design its LW distribution to avoid undermining the THPSS.**

The Society accepts that Centennial wishes to maximise its return, just as much as enviro-groups wish to protect the environment. The solution does not involve pushing ahead with mining and letting the environment carry the risk. **Foregoing portions of LWs to avoid undermining THPSS does not reduce the mine’s safety and still enables profitable extraction.** Some coal will be left in the ground and the gross revenue will be less, but the environment is worth it!

4.2 Groundwater, surface water and mining-related issues⁸

The Society finds this difficult to analyse because RPS relies heavily on Aurecon’s current document and Aurecon’s previous reports which have been extensively dealt with in BMCS’ submissions to SEWPAC and the NSW Department of Planning and Infrastructure (DPI). Much emphasis is placed on Aurecon’s consultancy and the experience of its consultants in respect of Newnes Plateau. This no doubt true, but it leads to unfortunate circumstances in which the consultant has ‘blinkered ownership’ of interpretations and hypotheses and a vested interest in their perpetuation⁹.

⁸ Much of the emphasis in this section will be on Springvale’s LWs, but much of the content will also be applicable to the Angus Place LWs.

⁹ Pertinent aspects of this are developed in Section 3 (and particularly 3.3) of SpringvaleReferralLWs415-417_BMCSComments_110513.doc as provided to SEWPAC; the document may be obtained from BMCS through admin@bluemountains.org.au

4.2.1 Mining-related impacts

RPS S3.2.2 pp29-30 cites Aurecon’s predictions regarding Springvale. All comments indulge in extreme minimalisation as cited:

“No direct subsidence impacts are expected on Sunnyside and Carne West Swamps...any impacts are likely to be negligible.”
 “There is potential for minor temporary changes in flow rate from the southern end of Sunnyside East Swamp due to the subsidence of the ground surface and change in gradient...the impacts are likely to be temporary...”
 “There may be changes measured in groundwater level in piezometers in Sunnyside East Swamp due to the same tilt in the ground surface... these are most likely to be temporary only.”
 “It is possible that there will be minor horizontal surface cracking (related to valley bulging effects i.e. within steeply incised valleys)... these cracks (if they occur) will initially fill with water before eventually filling with silt/peat from within the swamp, so that is likely there will be no long-term permanent impact on groundwater level or flows in the swamp.”
 “Hanging swamps in the area have also been considered. If large scale cracking were to occur at the surface, then groundwater conditions in these swamps could be impacted...only minor surface cracking is predicted...negligible impacts are expected on hanging swamps...”

First ‘direct subsidence impact’: it would seem that this is used in a highly restricted sense by Centennial and its consultants to refer to effects directly caused by the subsidence process consequent upon the collapse of the LW following progressive coal-extraction. By adopting this approach they are able to say problems induced by emergency discharges of mine-make are unrelated to subsidence. BMCS believes that subsidence is a consequence of the mining method and substantial mine-make also reflects the mining method; indeed, all impacts related to the extraction of coal may be termed mining-related. It is conceivable that the nature of the subsidence management planning process encourages a restrictive definition, but BMCS considers that attempting to isolate the parts is an exercise in reductionism, which in turn permits minimalisation and increases the capacity to characterise the effects as minor or negligible.

The second and third quoted statements acknowledge that ‘direct subsidence impacts’ will occur, no matter how temporary. They also introduce the role of dilatancy in relation to subsidence. Dilation (increasing the total occupied volume) through crack development will lower the local piezometric pressure. The pressure can be expressed as a function of the elevation head

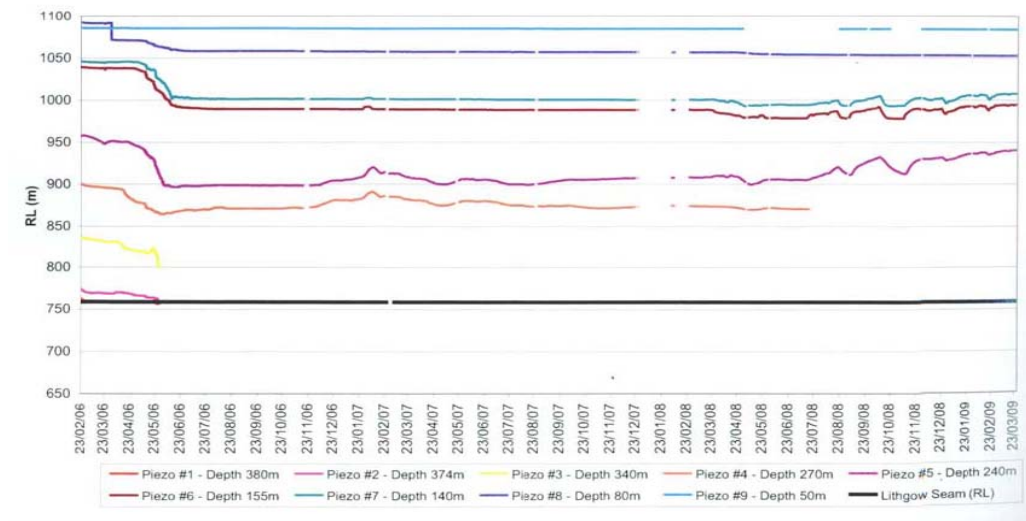


Fig. 1¹⁰ SPR 39 Elevation Head (m)

of the piezometers (Fig. 1). It is clear from Figure 1 that subsidence-induced total depressurization extended at least 100 m above the Lithgow Seam in borehole SPR 39 piezometers between Springvale’s LWs 410 and 411. It also demonstrates partial pressure drops of about 30-50 m (RL) for all remaining piezometers with the exception of the one (piezo #9) closest to ground level, and relatively little pressure-recovery over the next two years. Three points are emphasised: (i) subsidence induces

¹⁰ After Aurecon, Environmental Assessment Report for Project Approval 06_0021, Volume 2 Appendix 7.4 Fig.4

dilatation impacts for at least 350 m above the Lithgow Seam, irrespective of the mechanical significance of the MYC; (ii) such dilation and pressure variation must influence permeability and hydraulic conductance; and (iii) this has the potential to lower the watertable and affect surface flow.

The above-quoted fourth statement is an appeal to 'self-healing' which has been strongly rejected by the Colong Foundation, Dr Ann Young and BMCS¹¹. Furthermore, PRF p4 indicates "...concern for the analysis of the impacts of near-surface responses on swamp structure and function" since "Geomorphologically, once a swamp is dewatered and surface morphology disrupted, the structural integrity of the system is compromised." "There is no scientific evidence in this report (from either the international literature or data collection on-site) to conclude that 'even though cracks will divert water from the swamp that ponds and cracks will fill with peat and water, resulting in no permanent impact on groundwater level'. I know of no international geomorphological literature to support this claim in this report." PRC inadequately responds to this. BMCS reiterates that 'self-healing' is an unacceptable term. It attempts to detract from damage involving the creation of cracks and realignment/'loss' of flow, by emphasising a process of crack-infill which may in some cases induce some flow-recovery. The flow-realignment/'loss' and degree of recovery very much reflect the magnitude and distribution of the cracking versus the volume of flow.

In relation to the fifth quotation, BMCS notes that groundwater-dependent hanging swamps can be affected by cracking which either may be occluded or need not propagate to surface. Large scale cracking would be an obvious disaster; lesser cracking is still able to affect hanging swamps, particularly under the drought conditions which were extensively invoked (by Sv and its consultants) to explain anomalous data.

It is clear from the above-five statements that some impacts are expected. The debate becomes one of whether or not the impacts are 'acceptable'. Centennial and its consultants clearly believe they are. The Society disagrees. The question regarding the future LWs can best be examined by referring to problems in areas where 'no-impact' assurances were wrong.

4.2.1.1 East Wolgan Swamp (EWS) and Narrow Swamp (NS)

A more detailed history of EWS is presented by the Colong Foundation in its separate submission¹².

Based on data in the Subsidence Management Status Reports, BMCS formally drew Springvale's attention to anomalous surface flow losses in East Wolgan Creek in September 2008. Attention was concurrently drawn to a similar situation in Narrow Creek, although the magnitude of the losses was less striking. Springvale and its consultant (now Aurecon) rejected what was said and ascribed the losses to the EWS and NS 'mopping up' the water and slowing the flow-rates, thereby permitting higher evaporation-rates.

BMCS members subsequently walked the EWS and creek. They discovered that the surface water was disappearing down a hole in the stream bed and took appropriate photographs. There was no evidence of the water reappearing further down the creek. The matter was again raised with Springvale and, in response to a request for a site visit, BMCS members went to the locality with the consultant and Springvale staff. Surprise was expressed and the matter was scheduled for further investigation and official notification under the Newnes Plateau Swamp Management Plan. BMCS was not part of the subsequent meetings with government over EWS; and despite being geographically, structurally and geomorphologically similar to EWS, and upsidence cracking occurring in NS from LWs 920-940 (Environmental Assessment Report for Project Approval 06_0021, Volume 2 Appendix 3.1 p34), NS apparently received little further attention,

In August 2009, the consultant finally made a presentation to BMCS embodying his hypothesis about the 'unique' circumstances which lead to the EWS losses was finally given to BMCS in August 2009. The presentation had previously been made to government and decisions were made regarding further investigations involving geophysical techniques which required formal approvals from government. The investigations and report were completed by August 3 2011 (information provided by Centennial), but it was still to go to government for consideration. BMCS requested a copy of the report but it was not 'possible'. BMCS still has not to date seen the report.

¹¹ Section 3.3.2.1(a) in SpringvaleReferralLWs415-417_BMCSComments_110513.doc; the document may be obtained from BMCS through admin@bluemountains.org.au

¹² Keith Muir, *Modify controlled actions – the proposed longwalls 415, 416, 417 at Springvale Colliery and proposed longwalls 910 and 900 at Angus Place Colliery to protect matters of national environmental significance*, Colong Foundation Submission, December 5 2011.

It has taken more than three years to produce a report which (as far as is currently known) only deals with damage to the peat and the superficial swamp. Apparently the water losses (>8 ML/day) to a depth of 60-80 m and never to return remain at best a theory! BMCS has requested information on swamp-remediation plans but although there have been discussions (presumably between government, Springvale and the ever-present consultant) a plan has yet to be developed. It is clear that the concepts of risk management and remediation proceed at snail's pace while 'mining-in-ignorance' continues unabated.

Before leaving the EWS saga, BMCS regrets Springvale's reluctance to listen to external input. For many years, at End-of-Panel meetings with Springvale staff and in correspondence linked to Subsidence Management Status Reports, the Society raised questions about the impact of lineament-defined fracture zones on upsidence (particularly in respect of NS and EWS). The suggestion was categorically rejected. It would seem that more recently, having finally acknowledged the extent of the East Wolgan problem in terms of its interaction between subsidence-related stress and fracture/fault zones, Centennial has now sought consulting advice (Preliminary Documents, Appendix 9) in order to lessen the risk from the proposed LWs. Necessity is a great teacher!

BMCS also regrets the ever-present attempts to dissemble and misrepresent environmental damage. Thus, in the original referral document¹³ it was stated (13.2 p75 para3): "*The development of the peat slumps that occurred along East Wolgan Swamp above LW411 were probably exacerbated by mine subsidence interaction with geological structure within the Wolgan Lineament, however, it was the coincidence of high emergency mine water discharges (i.e 9 ML/day) that caused the erosion slumps in the peat...*" The consultant (DgS) is presenting the damage as a unique set of circumstances, such that the 'direct subsidence impact' is separate from the 'emergency discharges' (see section 3.2.1 para2). Yet mine-make discharges through LDPs are a normal feature of underground mining and inevitably influence the longitudinal and transverse profiles, water quality and ecosystems of the receiver-streams; superficial cracking is a common accompaniment of longwall mining and is usually predicted, even if termed 'minor'; and photo-lineaments (focusing creeks and swamps) typically denote structural weaknesses. Such fracture zones affect Kangaroo Ck, Narrow Swamp, East Wolgan Swamp, Sunnyside Swamp, and Sunnyside East, Carne West and Gang Gang Swamps (see Referral document Fig 4; Preliminary document p33). The damage at East Wolgan Swamp, and the less obvious effects at Kangaroo Ck and Narrow Swamp, should have been anticipated; indicators of the problems should not have been minimalised, and concerns raised should not have been rejected.

4.2.1.2 Kangaroo Ck (KC) and Junction Swamp (JS)

Upsidence and cracking have influenced surface flows in KC (e.g. Angus Place Environmental Assessment Reports for Project Approval 06_0021, Volume 1 Appendix 3.1 p34, Volume 2 Appendix 7.4 pp7, 15; Springvale SMSR No14 Nov 7 2010 Attachment 6 pp2, 8; BMCS Submission to Angus Place Colliery¹⁴). The damage commenced with LWs 920 and 930, has been perpetuated with LWs 940 and 950, and will no doubt be exacerbated by LWs 960-980. Although there has been partial recovery, this doesn't the fact that damage has occurred and ecosystems may have been affected.

Impacts on JS have a long history preceding my involvement with BMCS. Because of this, I have opted to avoid duplication and support the ample information regarding permanent damage at JS that is provided in the Colong submission¹⁵.

4.2.2 The Mt York Claystone (MYC) and vertical hydraulic conductance

RPS S3.2.2 p30 again argues that "...there will be no interconnected fracturing between the aquifer supporting the swamps and the longwalls..." because of the vertical distance and because the "...swamps and their important aquifer zones occur above the semi-plastic Mount York Claystone (main aquitard)...The elasticity and 'sealing effect' of the Mount York Claystone will prevent interconnectedness between the predicted minor surface cracking and the fracturing zone of longwalls 415-417."

¹³ EPBC Referral 2011/5949, Springvale Longwalls 415, 416 and 417, Attachment 4, Subsidence Prediction and Impact Assessment, DgS Report No. SPV-003/1 20 Feb 2011

¹⁴ Brian Marshall, *AngusPlaceAugDec2008Reports_BMCSSubmission090601.doc*; the document may be obtained from BMCS through admin@bluemountains.org.au

¹⁵ Keith Muir, Modify controlled actions – the proposed longwalls 415, 416, 417 at Springvale Colliery and 910 and 900 at Angus Place Colliery to protect matters of national environmental significance, Colong Foundation Submission, December 5 2011.

BMCS previously addressed the empirical model of Longwall-associated fracturing and the role of the MYC in two documents (APP1 and APP2)¹⁶ relating to the Project Approval 06_0021 Modification under Part 3A for Angus Place Colliery.

In APP1 Section 7.1 BMCS noted that, whereas the 'B' zone (characterised by discontinuous sub-surface fracturing due to flexural folding of the strata) does not usually provide a direct flow path to the 'A' zone and mine workings and is unlikely to have broad-scale interaction with surface cracking when cover depths exceed 300 m, limited interaction leading to increased horizontal and vertical rock mass permeability may occur where the topography is deeply incised and there are through-going fracture zones. These factors variously apply over the Newnes Plateau and its periphery.

In APP1 Section 7.3 BMCS noted the consultant's views about the role of the MYC in shielding the overlying Banks Wall Sandstone and its aquifers from the impacts of longwall mining, and his conclusion that that for aquifer-drainage to occur there would need to be a significant hydraulic connection between the upper and lower aquifers. He cited a pumping test at Clarence Colliery in support in support of his belief. The Society responded:

"It is not possible to evaluate the tests without knowing the period of pumping, the nature of the mining process (i.e. was it longwall?) in the area being tested, and whether the rocks had re-pressurised prior to the pumping – so the tests will therefore be taken at face value. Nevertheless, if one is talking slow bleeding through one or two aquitards, pumping should have been for months rather than weeks." (BMCS notes that despite at least two requests to Centennial for a copy of the report, it has not been provided!)

"The interaction of the 'A', 'B' and surface zones is inter alia a function of the depth of cover, seam thickness, mechanical properties of the stratigraphic units, and the distribution of secondary structures. For example, it was noted in Section 7.1 that "...broad-scale interaction between the 'B' zone and surface cracking seems improbable for cover depths exceeding 300 m", so more localised interaction could be possible where the cover is deeply incised. Likewise, pre-existing fracturing associated with faulting or heterogeneities linked to variations in layer thickness (especially the coal seam) could cause localised upward extension of the 'A', 'B' and surface interfaces.

The general layer-cake approach adopted in the various models and analyses undertaken is unrealistic. Rock sequences may be correlated over a wide area, but the internal character of a stratigraphic unit may vary intensively; bedding may be lenticular and have conglomeratic phases, and cross bedding further varies the mechanical properties. As a function of bedding thickness and competence the layers are crossed by pre-existing joint systems and separated from each other by bedding-plane partings, all of which influence the water-bearing ('aquifer') characteristics, the horizontal and vertical permeabilities, and the caving and failure characteristics within the 'A', 'B' and surface zones. In essence, sedimentary rocks and rock masses are anisotropic in their properties over a range of scales. Simplistic models are useful, but they do not handle the level of variation that will be encountered when attempting to explain the consequences of longwall mining.

The MYC is typically finer grained than the sandstone sequences and comprises thinly bedded claystones, siltstones and lenticular beds of fine- to medium-grained sandstone. As with the other semi-permeable layers in EARv2 Appendix 7.4 Fig 2, it is an aquitard in that its vertical hydraulic conductivity is very low (typically several magnitudes less than the horizontal hydraulic conductivity), but largely due to vertical link-fracturing it does transmit water over time.

In terms of the bulk hydraulic conductivity, the Hawkesbury Sandstone and intercalated shale layers of the Mangrove Mountain district have horizontal/vertical conductivity ratio in the order of 10-20. I do not have equivalent figures for a Narrabeen Group sequence.

The Society remains of the view that low and possibly localised (via fault and fracture zones) vertical hydraulic conductivity is enhanced by longwall mining and could influence groundwater levels associated with NPSS. The Society recognises that dilational effects during subsidence take place over a much shorter timeframe and are of a magnitude which might mask the effects of vertical conductivity."

¹⁶ Identified here as APP1 and APP2; for your convenience they are separate attachments to the email covering the present submission and are respectively identified as AngusPlaceProjApprov06_0021_BMCSSubmission_110110.pdf (= APP1) and AngusPlaceProjApprov06_0021_BMCSReplyToAP'sResponse_110508.pdf (= APP2).

In response to the consultant's implication that the absence of a total loss of pressure means there cannot be continuous cracking into the goaf, BMCS noted (APP2 Section 2.5.2) that this would be correct if one were dealing with (say) a metre-wide open fracture from surface to goaf. But such a simplistic model is not being advocated because it totally disregards the complexity (including rates) of vertical hydraulic conductance and seems to disregard the dynamics associated with ongoing precipitation, infiltration and groundwater flow, which supplement pressure heads irrespective of the pressure collapse at the goaf.

The matters of fracturing, vertical hydraulic conductance and role of the MYC are again returned to in BMCS' response to the Springvale Referral documents¹⁷. The section is abridged below:

"...interaction of the 'A', 'B' and surface zones is a function of the depth of cover, seam thickness, mechanical properties of the stratigraphic units, and the distribution of secondary structures...localised interaction could be possible where the cover is deeply incised. Likewise, pre-existing fracturing associated with faulting or heterogeneities linked to variations in layer thickness (especially the coal seam) could cause localised upward extension of the 'A', 'B' and surface interfaces. Such upward extensions would enhance localised vertical connectivity."

"...the internal character of a stratigraphic unit may vary intensively; bedding may be lenticular and have conglomeratic phases, and cross bedding further varies the mechanical properties. As a function of bedding thickness and competence the layers are crossed by pre-existing joint systems and separated from each other by bedding-plane partings, all of which influence the water-bearing ('aquifer') characteristics, the horizontal and vertical permeabilities, and the caving and failure characteristics within the 'A', 'B' and surface zones...Simplistic models...do not handle the level of variation which will be encountered when attempting to explain the consequences of longwall mining...the potential for vertical connectivity could exceed model predictions."

The Mount York Claystone...comprises thinly bedded claystones, siltstones and lenticular beds of fine- to medium-grained sandstone...it is an aquitard in that its vertical hydraulic conductivity is very low (typically several magnitudes less than the horizontal hydraulic conductivity), but largely due to vertical link-fracturing it does transmit water over time.

The Society remains of the view that low and possibly localised (via fault and fracture zones) vertical hydraulic conductivity is enhanced by longwall mining and could exercise long-term influence over groundwater levels associated with THPSS."

Recent work on the water levels in Thirlmere Lakes¹⁸ is instructive. It shows that the pre-mining flow-direction of groundwater from high ground to the valleys, including the Lakes, steepened downwards towards the Bulli Seam and eastwards towards the depressurised LWs. This is despite the nearest LWs being about 750m east of the Lakes and about 300m below surface. The work also showed that the Bald Hill Claystone (an aquitard similar to the MYC but stratigraphically higher) influenced the flow-paths but did not alter the principal finding.

Even though the flow-direction is towards the LWs, this does not necessarily imply there will be high flow-rates or large flow quantities, as these are functions of the vertical permeability and time. In consequence, because the permeabilities are generally low, re-equilibration from pre- to post-LW flow-paths could take many tens of years. This is unlikely to be detected by crude short-term monitoring, particularly when overprinted by the El Niño and then La Niña conditions over at least the last decade.

The implications of this work for LWs under endangered THPSS on Newnes Plateau and the 'sealing effect' of the MYC, are enormous. There would seem to be no doubt that groundwater flow would be down towards the LW rather than laterally into the swamp. There is also little doubt that the MYC would slow flow but not preclude it from happening. The inference is that undertaking LW mining under THPSS without causing an adverse long-term impact is impossible.

¹⁷ Section 3.3.2.1(d) in SpringvaleReferralLWs415-417_BMCSComments_110513.doc; the document may be obtained from BMCS through admin@bluemountains.org.au

¹⁸ Pells Consulting, *Report on the water levels of Thirlmere Lakes*, P053.R1, October 2011

4.3 Flora (THPSS) considerations

The Centre for Mined Land Rehabilitation, The University of Queensland (UQ) was charged *inter alia* with providing (p3)¹⁹ “a report which describes how Springvale Coal Pty Ltd will ensure that the ecosystem health of the swamps (in terms of structure, function, and community composition) remains intact and the need for any ecological community recovery from mining impacts is avoided.” There were additional provisions but this is sufficient; all BMCS wants are intact healthy THPSS and avoidance of the need for recovery from mining impacts!

4.3.1 Flora monitoring to date

In relation to data collected (commencing 2002-3) and methodology before UQ’s relatively recent involvement (late 2009?), UQ emphasises (p38) “...the shortcomings of the existing monitoring program which is based around accepted methodology.” Nevertheless, UQ has used various types of nMDS plot to evaluate the data and effect sensitivity analysis to gauge the magnitude of changes needed to produce a trajectory. UQ concluded (p16): “...that nMDS techniques will describe change in plots as a trajectory; however, the level of impact required to produce a distinct trajectory, given the current data format is insufficiently sensitive in terms of impact detection,” is too great²⁰. “To this end, a more sensitive means of collecting and analysing data is required.”

The Society most certainly endorses UQ’s findings regarding inadequate sensitivity and meaningfulness of the data as originally collected. Indeed, the Society expressed many such thoughts in a document (‘Landscape’ Flora Monitoring Programs on Newnes Plateau)²¹ delivered to Centennial and UQ on or about March 3 2010. Of particular note are the following question and response:

“Why is the Society raising this matter now? The answer is composite:

- (a) *The sampling inadequacy has long been recognised, but dealing with it in the context of flora was deemed a waste of time. The previous consultant regularly concluded that any changes at the sites sampled were a function of rainfall and seasonal variations and not attributable to mining-induced subsidence. Damage elsewhere in NPSS outside the sparsely distributed 400m² quadrats was disregarded.*
- (b) *The Society elected to focus on the groundwater and surface water programs and on direct evidence of fracturing, not because the company or its consultant attributed many changes in these parts of the monitoring program to mining-induced subsidence, but because the spectrum of data were inter-related, instrument-recorded and amenable to objective analysis. This contrasted with the somewhat subjective evaluation of flora in terms of such things as cover, abundance, condition, and species diversity.*
- (c) *The introduction of a new consulting organisation (UQ) and a ‘landscape’ approach was meant (inter alia) to provide a better appreciation of the consequences of subsidence. The Society was therefore hoping for a more realistic approach to the potential problems, rather than focusing on data from the same limited sets of quadrats and presenting them via simple graphs and multi-dimensional scaling plots which seem open to varying interpretations [See Springvale4Monthly090307-0707-1107_BMCSCComments20100105.doc (emailed 02/02/2010)].”*

BMCS then outlined five principal deficiencies related to the previous work: sampling density and distribution limitations; observational limitations; quadrat limitations; interpretative limitations; and THPSS limitations. Each of these was expanded to illustrate the scope of the deficiency.

¹⁹ 109493_AP-SV_Preliminary_Documentation_October_2011_Part_7.pdf

²⁰ Words added to make better sense of the quotation.

²¹ Brian Marshall, LandscapeFloraMonitoring_BMCSCConcerns20100304.doc; for your convenience, the document is forwarded as an attachment to the email covering this submission; any SMSRs referred to may be obtained from Centennial Coal in the first instance; the other document referenced (Springvale4Monthly090307-0707-1107_BMCSCComments20100105.doc) may be obtained from BMCS through admin@bluemountains.org.au

The Society concluded that: “...the following items are fundamental to the whole process of environmental protection through monitoring and risk management:

The nature of the damage-causing processes and their interaction with the geologic, physiographic and hydrologic

- *The dependency of ecosystems such as THPSS on physiographic, hydrologic, geologic and climatic factors must be understood as this is fundamental to identifying risks on a site-specific basis – one size does not fit all!*
- *The monitoring program must be capable of detecting impacts from the identified threats... – a consultant may report ‘no direct impact from subsidence’, when a more appropriate conclusion could be that the parameters of the impact were poorly defined and/or the monitoring program inadequately designed²² - the designer of a monitoring program must clearly identify the criteria which will be used to substantiate/reject a mining-induced impact.*
- *If any of the above three dot-points cannot be comprehensively met, then the monitoring program at best becomes an exercise in futility, and at worst is designed to appease and exhaust conservation groups while unimpeded mining continues. In such circumstances, the Precautionary Principle demands that protection zones be introduced and/or mining ceases until the above dot-points are complied with.*

Based on the above, the Society contends that the flora monitoring program is comprehensively inadequate.”

It is interesting that the points made in March 2010 are essentially those which concern SEWPAC and are just being addressed by UQ. Progress(?) is slow!

It is paradoxically puzzling that despite BMCS’ contention about the inadequacy of past flora monitoring and UQ’s recognition of its shortcomings, UQ still reports that (p37): “*Despite the limitations of monitoring undertaken to date since 2003, the monitoring data...have shown:*

No obvious impact to swamp vegetation following undermining (including periods of monitoring for over 3 years post-mining);

No obvious increase in disturbances as a result of the undermining;

No increase in weeds within the swamps following undermining; and

No obvious drying out (or increase in moisture) following undermining.”

BMCS’ initial reaction is one of incredulity. A more generous alternative might be that UQ cited the mantra either for political reasons, or to use the scandalous statements to highlight the inadequacy of past monitoring and its facile findings. Regardless, SEWPAC fined Centennial \$1.45 million through an Enforceable Undertaking because of damage to THPSS. Also, as stated by the Colong Foundation²³: “*The allegation that the weeds, dead vegetation, stream bed cracking and swamp desiccation do not exist because an expert university report states there is no damage elevates absurdity above commonsense.*” If SEWPAC in some way has doubts about this, the Society would be only too pleased to take pertinent representatives on a ‘damage’ tour.

The Society concludes by quoting Michael Henson²⁴ (p24): “*The distribution of most of the severe to moderate cases of dessication was clustered in the western areas of the Newnes Plateau...Potential causes include the dewatering and dessication of swamp substrates due to mine subsidence, surface cracking and the subsequent loss of groundwater, the effects of flushing with mine dewatering discharges, or potentially vegetation dieback associated with a plant pathogen...As a significant proportion of these swamps was generally in otherwise remote and visually intact catchments and their distribution overlapped with the current extent of Longwall mining the first two causes seem more plausible.*”

²² E.g., is it rational to believe that abstracting mine water from different Longwalls (and different coal seams) in adjacent collieries will cause a **uniform** lowering of the ‘landscape’ watertable (as opposed to localised variable impacts)? Is it likely that all NPSS in the ‘landscape’ will respond to watertable-lowering in the same way? Are the NPSS related to a single watertable or are localised/perched watertables significant? What aspect of the flora monitoring results can be used to identify a subsidence-induced impact, bearing in mind the magnitude of ‘noise’ coming from seasonal, climatic and physiographic factors? Is it likely that the floristically variable spectrum of ‘wet’ to ‘dry’ NPSS will respond to mining-induced and ‘noise’-related impacts in statistically determinable ways?

²³ Keith Muir, Modify controlled actions – the proposed longwalls 415, 416, 417 at Springvale Colliery and 910 and 900 at Angus Place Colliery to protect matters of national environmental significance, Colong Foundation Submission, December 5 2011.

²⁴ Michael Henson, *Newnes Plateau Shrub Swamp Aerial Assessment Project Report 2010*, Save Our Swamps Project, 40 pp

4.3.2 The UQ proposal

The UQ report next outlines the more sensitive means of collecting and analysing data and presents a “*Monitoring Protocol for testing null hypothesis of EEC impact by Longwall mining activities*” (p28), together with a “*Monitoring Frequency Procedure*” (p29). The Society notes that a refined quadrat approach is being used and welcomes the use of high-resolution aerial imagery in relating quadrat data to the bigger picture. However, BMCS has concerns about the rationale for the frequency of monitoring shown in Table 7 (p29), although it appreciates the need to stop monitoring as soon as possible in order to minimise damage. The concerns are embodied in the following rationale statements (Table 7) and accompanying comments:

- (a) “*Within the window of potential impacts from undermining being detected, terminated if the groundwater level has not significantly lowered*” – (i) the window is 3 years from the date of undermining, yet based on the last three paragraphs of Section 4.2.2, this ‘window’ could be far too short, and (ii) what constitutes a ‘**significant**’ lowering of groundwater level?
- (b) “*Only if piezometer data indicates sustained groundwater lowering as flora data unlikely to detect impacts from undermining*” – (i) this is now more than three years since undermining, but it could still be too early for ‘sustained’ groundwater lowering, (ii) with triennial monitoring how many readings would be needed to establish a ‘sustained’ pattern? And (iii) it suggests that you are not expecting the flora to detect undermining.

From (a) and (b) it seems that the approach is using ‘anomalous’ groundwater movements to tell you whether to expect a response from the flora. Yet even with a control, anomalous groundwater behaviour will be difficult to identify because the magnitude-of-precipitation effect is likely to mask any response to undermining.

The Society acknowledges the value of the UQ work from a research viewpoint, but because the original work is unreliable, the proposed approach will need 5-10+ years of investigation to determine its merits (or lack of them). Based on the groundwater piezometry to date, there are two classes of swamp (groundwater-dominated and rainfall-dominated) and neither of them (in the majority of cases) is said to show subsidence/mining-related impacts. This creates a paradox to the extent that, **if** the groundwater data are unrelated to mining and/or dominated by other factors, and UQ is using groundwater lowering as its principal determinant, any flora changes must necessarily be ascribed to non-mining effects. **Could it be that catastrophic mining-related impacts are needed to test the effectiveness of the UQ proposal?**

The peer reviews²⁵ are broadly complementary about the UQ proposal, but do have substantial concerns.

PRF pp4-5 indicates that “...*structural and hydrological integrity drives swamp function and therefore the maintenance of flora and fauna diversity. Although no significant flora and fauna impacts have yet been detected in the mined areas, the length of record does not yet allow for a definitive conclusion that there will not be future impacts. Flora and fauna adaptation is often significantly lagged behind structural changes (unless the change is catastrophic). Therefore the monitoring program needs to be at a fine enough resolution to detect minor structural or hydrological changes and to monitor flora and fauna response associated with these changes...Statements to the effect that “there have been no impacts to the swamps” should be considered with significant caution. The existing sampling strategy for the monitoring program will likely not detect subtle changes in these systems and so this should be explicitly stated.*”

PRH p10 lists several weaknesses:

“*The monitoring program examines change at the plot scale, rather than at the swamp scale.*”

The implications of this approach for management, reporting and response actions should be further considered before it is adopted.

Comparisons of impacted plots with control plots is based on replicated transects within plots but the independence of transects...is questionable.

The monitoring strategy describes possible indicators for use but does not include specific trigger values for short-term responses.

A focus on the vegetation sampling to central swamp areas means that peripheral areas are no longer sampled as they might have been. Consequently, changes in swamp area may not be detected by the vegetation surveys.

²⁵ 109493_Peer_Review_and_Responses_27-10-11.pdf

The Society concludes that the proposal has gone some way to creating a methodology, but it currently does not meet the requests set down in item 6 of SEWPAC's letter.

4.4 Fauna and GBMWA concerns

4.4.1 Fauna threats

RPS p39 states (citing Biodiversity Monitoring Services 2011): *“The overwhelming conclusion that can be drawn from the analysis of results from eight years monitoring surveys is that there has been no identifiable impacts from underground mining on the fauna populations and their habitats on Newnes Plateau”*; also, *“Measures in species diversity and habitat complexity have detected no significant changes in values between pre-mining and post-mining. Additionally, no impacts to populations of any of the EPBC Act species recorded, namely Blue Mountains Water Skink, Southern Barred Frog, Giant Burrowing Frog and Large-eared Pied Bat, have been detected”*; and again, *“Based on the outcomes of the monitoring to date in areas that have been undermined and in areas that have not been undermined, predictions of the proposed actions conclude that there will be no negative impacts on fauna use (or habitat).”*

The Society suggests that aspects of the above claims bear closer examination. No identifiable impacts from underground mining on fauna populations could be correct, but it seems to disregard the impact on habitat arising through mining-induced damage to THPSS and watercourses. For example, such things as ponding, realignment/'lost' flows, and discharges of mine water into streams all have consequences. Damage to habitat also results from clearing for exploration and monitoring purposes.

4.4.2 Concern for the GBMWA

The Springvale LWs will 'suck' groundwater and focus it as mine-make which will need to be pumped out. As currently happens, the mine-make will be transferred to Delta under the Delta-Springvale Water Transfer Scheme (DSWTS). 'Real' (short-term) emergency discharges will be via LDPs into the Wolgan River system, but provision exists for more protracted (long-term) discharges as has happened in the past.

As mine-make discharges (irrespective of duration) receive little or no treatment, the water quality is inappropriate for discharge into a river system which passes through the Emirates' holdings, in which there has been a platypus sighting²⁶, and then into the WHA. Furthermore, a range of situations²⁷ could lead to the 'need' for protracted discharges resulting in physical and chemical pollution. Springvale suggests that problems with the DSWTS have been resolved and that protracted discharges are most unlikely. But circumstances change!

5. Concluding remarks

- The Society continues to raise the issue of the inequitably short time-frame for submissions. Why should this not be changed?
- The reasons given for the LWs being a Controlled Action remain must necessarily be addressed by SEWPAC in determining whether the actions should be rejected or substantially modified in terms of National Environmental Significance.
- The 'Preliminary documents' are reiterative in their 'no-impact' beliefs, increasingly focus on monitoring and risk management to justify proceeding with the LWs, and invoke dubious remediation processes when confidence is literally undermined by reality.
- Argument that LW mining is the only economically viable and safe option is self-serving and debateable. Profitable extraction is compatible with mine-safety and foregoing portions of LWs to ensure the integrity of THPSS and their associated watercourses.

²⁶ Refer to 14th April 11 WVR&S Conservation Matters - Autumn Edition.pdf, forwarded as a separate email attachment for your information.

²⁷ For example, Delta and/or Centennial could terminate the arrangement for operational reasons including transfer costs, inferior water quality, and decommissioning the ageing Wallerawang power plant.

- The focus on mining-related impacts in the context of past damage, empirical assurances, theoretical considerations and current investigations is substantial. It is fundamental to an understanding of rock mass behaviour, vertical hydraulic conductance and the reorientation of groundwater flow lines consequent upon LW extraction.
- There is ‘hard’ evidence that subsidence induces dilatatory impacts for at least 350 m above the Lithgow Seam, irrespective of the mechanical significance of the MYC. Such dilation and pressure variation, which must influence permeability and hydraulic conductance, has the potential to lower the watertable and affect surface flow.
- Recent work on the reorientation of groundwater flow-paths consequent upon LW development takes in the order of 10 to many tens of years, is not amenable to short-term monitoring, and carries the implication that LW mining under THPSS without causing an adverse long-term impact is impossible.
- Claims that past flora monitoring shows no impact from undermining by LWs is testimony both to the monitoring’s inadequacy, including its low sensitivity, and to the nature of the findings. Current proposals involve an improved methodology, but do not meet all of SEWPAC’s requirements and comprise a long-term research field rather than an incisive ‘tool’ for detecting and discriminating between impacts.
- Impacts on THPSS and watercourses, mine-make discharges, clearing for exploration and monitoring, and even remediation activities, all involve damage to habitat and are a potential threat to listed fauna including the Giant Dragonfly.
- ‘Emergency’ discharges of mine-make are a potential threat to the quality of surface water entering the GBMWhA. The east-flowing groundwater regime which underpins the GBMWhA is threatened by transferring groundwater (mine-make) west of the Blue Mountains under the Delta-Springvale Water Transfer Scheme.
- Overall, increasing wider and local awareness of the environmental damage inflicted by LW mining suggests applying the Precautionary Principle such that the additional LWs be rejected in toto, or that they proceed subject to full protection zones for THPSS and associated water courses, or (less satisfactorily) ‘risk-free’ panel widths be imposed. Uncertainty in the peer reviews is consistent with this approach.



*Dr Brian Marshall,
For the Management Committee*

14 December, 2011