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Nature Conservation Saves for Tomorrow

Coalpac Consolidation Project 10_0178

The principal conclusions of this submission are in Section 4 on pp18-19.

1. The Coalpac Consolidation Project (CCP)

1.1 Coalpac's basic proposal

Coalpac Pty Ltd sought an approval under Part 3A of the *EP&A Act 1979*. Because the Environmental Requirements were notified before the repeal of the Part 3A legislation, the Project is deemed 'transitional Part 3A' and will be handled by the NSW Department of Planning and Infrastructure. The Project is a 'Controlled Action' under Commonwealth's *EPBC Act 1999*, so the Federal Minister will review the Environmental Assessment to see whether or not approval is appropriate.

The aim of the Project is to achieve economies by consolidating and substantially extending the operations of Invincible and Cullen Valley Mines. The anticipation is that the consolidated operations will produce up to 3.5 Mt of coal annually over a 21-year mine-life. Extraction from **seven seams** within the Permian Coal Measures is to be achieved by open-cut and highwall mining methods. A reserve approximating 108 Mt of Run of Mine coal is claimed. Other methods of mining are considered to be uneconomic and impracticable.

As an adjunct to the coal mining, the proposal aims is to extract Marrangaroo Sandstone from beneath the Lithgow Seam in the northern part of the area, preparatory to on-site crushing and washing for the construction-sand market.

1.2 The Society's position

The histories of the Cullen Valley and Invincible Mines are complex. The Cullen Valley Mine evolved through consolidation of mines (initially underground operations) extending back to the late 1800's. The Invincible Mine commenced as an underground operation in 1901 and evolved via a second underground operation until the late 90's when open-cut extraction commenced. Both Mines have been intermittent as a function of coal-price fluctuations.

The salient points are that the region firstly experienced progressive consolidation of underground mines, and then witnessed movement to open-cut and high-wall mining with larger surface areas adversely affected. The region is now threatened by further consolidation and enlargement of the impacted surface areas. This has protracted and cumulative impacts on groundwater, surface water, and fauna and flora through destruction of habitat. Throughout much of this long history, there was little concern for environmental damage and equally little concern for rehabilitation. Commitments for management and mitigation in the current EA will only have value to the extent that they are closely monitored and enforced by punitive measures; and that requires a government commitment to staff government departments at a level which would be able to ensure full compliance. **Do you think this will happen?**

BMCS totally rejects the CCP for a vast spectrum of reasons, many of which are now identified:

- Ben Bullen State Forest (BBSF) is publicly owned land of high conservational and recreational significance; it should not be compromised by highly destructive open-cut mining for the dollar-benefit of Coalpac's Australian and International shareholders; nor should the coal's dollar-value be placed above the long-term benefits of preserving the region's scenic values, biota, and geological heritage; and nor should its carbon-'sink' value be sacrificed to enable coal-exploitation which will add 1.3 per cent to Australia's total carbon emissions.

- BBSF has internationally recognised pagoda rock formations and outstanding scenic values which contribute to the region's current and future potential for tourism; the BBSF also has more than 500 native plant species which create habitat for 35 mammalian species of which 15 are threatened; and it forms part of an essential buffer along the western boundary of the Greater Blue Mountains World Heritage Area.

- The CCP will destroy **843 ha** of BBSF and alienate it from visitation for the period of mining (21 years) plus the period needed for superficial rehabilitation, irrespective of the gross inadequacy of so-called 'best-practice' rehabilitation processes.

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- The primary driver of decreases in population-density and species-loss is habitat fragmentation and extirpation[1]. Area-reduction of BBSF by open-cut mining therefore has a dual environmental impact: (a) species-loss and decreased population-densities in the **remaining BBSF**, and (b) destruction of viable natural habitat in the **excised and mined 843 ha**.

- The magnitude of risk: the **843 ha** of Coalpac's proposed sacrifice to the 'coal god' has more than 400 plant species; the area includes 196 ha with 19,200 'vulnerable' *Eucalyptus cannonii* trees, and about 40 hectares of 'critically endangered' Box Gum Woodland, all listed under the Commonwealth's *EPBC Act*; it also provides habitat for 35 species of mammals, with some 40% of these listed as threatened under the *EPBC Act.*

- Clear-felling the region and creating massive open cuts will destroy scenic landscape, mature native forest, and dependent ecosystems which have evolved over many thousands to millions of years. Mining will take place over a mere 21 years and then, assuming that mining will not continue beyond the 21 year approval period[2], the cosmetic cover-up (rehabilitation) will be finalised over the next 5-10 years. Even allowing very rapid growth-rates and disregarding rehabilitation's outrageous deficiencies (see ***Appendix I p20***) it will be 50-100years before mature forest with a balanced and integrated understorey is developed.

- Subsidence and instability: high back-walls to the open cuts create a risk of collapse which can in turn threaten natural cliff stability; similarly highwall horizontal mining off the back-walls proximal to pagodas risks instability and even collapse of these landforms. Predicting behaviour when there are rapid topographic changes, common through-going joint systems, and previous underground mining activity is difficult, particularly when multi-seam extraction is contemplated[3].

- Groundwater and surface water: the extensive open-cut operations and anticipated use of 'old' mine-water may impinge on the quality and quantity of the north-eastern flowing groundwater which underpins the BBSF and significant swamps and watercourses, and westward-flowing surface water which feeds the Turon River.

- Past environmental performance: despite many field surveys before lodging the Preliminary EA, the proponent missed approximately 75 native plant species, and even though forewarned, the number of missed native plant species has increased to over 100 in the formal EA on exhibition; Invincible Colliery claimed in relation to gaining approval that its open-cut operations would not be visible from the Castlereagh Highway, yet high back-walls are blatantly obvious; again the Invincible Colliery has been fined for various exceedances on double-digit occasions; and Coalpac failed to identify the threatened *Persoonia marginata* species on its Cullen Valley mining lease.

- Social considerations: Cullen Bullen is already being affected by nearby open-cut mining, but the increased intensity and scale of the proposed operations will induce greater health risks from airborne dust, reduce amenity through blasting and heavy equipment noise, and particularly pose such risks for children attending Cullen Bullen Public School; these threats

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[1] Fattorini, S and Borges, P A V, 2012, *Species-Area relationships underestimate extinction rates*, Acta Oecologica 40 27-30.

[2] This raises the interesting question of whether Coalpac will reduce or even stop significant production if the coal price drops, or whether (under a buoyant coal price) the company intends to expand its activities; but into which areas?

[3] Newman, D and Zipf, R K, *Analysis of highwall mining stability – the effects of multiple seams and prior auger mining on design*, http://www.cdc.gov/niosh/mining/pubs/pdfs/aohms.pdf; also discussed in Zipf, R K, *Ground control design for highwall mining*, http://www.cdc.gov/niosh/mining/pubs/pdfs/gcdfh.pdf

will continue unabated for the next 21 years, such that property values will diminish and the natural bushland values which contribute to the inhabitants' quality-of-life will become a partially 'rehabilitated' moonscape.

- Cumulative impacts: concerns about loss of biota and habitat, impacts on the hydrologic regime, destruction of scenic values, erosion of social amenity, and the generation of greenhouse gas emissions (GGE) are commonly dealt with by reductionism (i.e. each factor is considered as an independent issue) and minimisation (i.e. the hectares of a destroyed plant species are compared with the hectares of that species in the remainder of BBSF; or the mining-related GGE are compared with state-wide or even global GGE). Such approaches disregard the cumulative/synergistic (i.e. non-reductionist) consequences of the proposal's specific impacts; they also disregard the cumulative/synergistic effect of several mines/proposals encroaching on BBSF, with each one destroying a 'few tens of hectares' of an endangered ecological community – such minimisation assumes that the proposed activity will take place in isolation.

Additional aspects will be developed and others updated in relation to specific parts of the EA in Sections 2 and 3 below. In each section the principal aspects will be presented as dot-points. The principal conclusions are on pp18-19 Section 4.

2. Planning procedures and related concerns.

2.1 BMCS, LEG and Colong Foundation submissions

BMCS, the Lithgow Environment Group and the Colong Foundation are separate organizations and each has ownership of its submission to Planning under letterhead. Nevertheless, there is close cooperation by members of these organizations because each has differing types of expertise[4] and each has one or more representatives on the Gardens of Stone and Western Escarpment subcommittee of BMCS. It is also true that BMCS has links through membership with the other two organisations, and that several members of LEG comprise BMCS' Lithgow Regional Subcommittee. **These matters are emphasised because each group shares the principal concerns of the other two groups and endorses the contents of their submissions.**

- Based on this commonality, the Society requests that the three submissions (Colong, LEG and BMCS) be treated both collectively and individually. This is emphasised because the organisations have inevitably focused on different (though complementary) aspects of the CCP.

- It is further emphasised because where one submission refers Planning to the content of another, there is some concern that Planning treats the issue as a single item from a statistical viewpoint. This should not and must not happen.

2.2 Environmental Assessments and consultants' reports

The ensuing matters were partly raised in a paper[5] presented at meetings of BMCS and RiversSOS with Planning & Infrastructure on 16 September 2011 (Dan Keary and Shayne Watson) and 5 December 2011 (David Kitto). They were similarly raised in the BMCS response to the Planning System Review[6]. **Because the current Coalpac EA typifies many of the concerns, BMCS believes that the matters raised below are pertinent to Planning's assessment of the CCP.**

2.2.1 The saturation principle

EAs comprise enormous documents including the appended reports of the various consultants. The latter include (for completeness?) vast amounts of superfluous material because each consulting agency reiterates information presented in the proponent's 'Main' report. BMCS appreciates that the reports are window-dressing opportunities for the consultants, and

[4] Unlike companies which have large budgets and pay consultants to cover the differing specialities, BMCS and LEG rely entirely on volunteers, whilst the Colong Foundation has only one principal employee. It is therefore necessary to share knowledge and respect each other's abilities. For example, LEG has expertise in floristics, aqueous chemistry and power generation, BMCS has expertise in rock mechanics, geologic structure and hydrogeology, and the Colong Foundation has expertise in environmental sciences and the acts and procedures applicable to resources exploitation.

[5] Blue Mountains Conservation Society Paper for The RiversSOS Meeting with the Department of Planning, 16 September 2011 – available from BMCS and identified as BMCSRiversSOSPaperForPlanning_110916.doc

[6] Supplementary BMCS Submission On NSW Planning Review Issues Paper (NPRIP), 28 February 2012 – available from BMCS and identified as PlanningReviewIssues_BMCSSupplSubm'n_120228.pdf

also structured to enable each report to stand alone, but it nevertheless results in too much repetition. If there are 10 consultants' reports there will be 10 sets of reiteration. The proponent should be required to excise such data prior to submission

Having taken months/years to assemble all the data, the EA is evaluated and (if acceptable) put out for public exhibition and response within a disproportionately short exhibition period which makes no allowance for constraints endemic to volunteer-based organizations. This approach (here termed the saturation principle) may be inadvertent, but it potentially has sinister implications should the aim be to submerge government and community groups in a mass of irrelevant 'paper'. The costs to the proponent are negligible compared with future profits (if the proposal is approved) and are in any case tax-deductible; but government (P&I) becomes drowned in electronic paper, could fail to read past the executive summaries, and could thereby have less complete appreciations of the proposals[7]; and volunteer-based groups, which need to digest all the detail, could become worn down by the electronic barrage to the point of capitulation. If the proponents' objective is to impede the capacity of volunteer groups to make submissions, the aim is being achieved.

- BMCS strongly believes that Planning should recognise its own best interests, and also acknowledge the limited capacity of volunteer-based organizations, by enforcing the removal of extraneous data from appendices and increasing the length of public exhibition periods[8].

2.2.2 'Cross-fertilization' or collusion?

In past instances, it would seem that various consulting groups have met to ensure a consistent story. For example, a groundwater consultant presents an 'experience-based' interpretation of what might happen and cites the 'supporting' conclusions of the mining and flora consultants, but when the reports of these consultants are examined, it becomes apparent that their conclusions substantially rely on the groundwater consultant's experience-based input. There are obviously grey areas between seeking opinion, cross-fertilization to better inform a consultant's evidence-based positions, and collusion which leads to a consultant offering interpretation beyond his/her expertise and evidence-base. The latter incestuous process is poor science and leads to 'shaped' findings. A consultant should provide his/her interpretation of his/her investigation in his/her area of expertise; practising 'group-think' is unacceptable – or it should be!

- BMCS strongly believes that Planning should be cognizant of 'cross-fertilization' and collusive practices which lead to over-enthusiastic endorsements of the proponent's interests. Such awareness should be conveyed in instructions, with penalties highlighted, to those preparing applications.

2.2.3 Reductionism and minimization

Proponents and their consultants regularly engage in reductionism and minimization.

Reductionism involves ignoring more regional concerns such as the impacts of other open-cut mining operations on BBSF when dealing with the CCP's impacts on such things as social amenity (property values, noise, dust, traffic, and visual pollution), the hydrologic regime, and threatened species and endangered ecosystems. At a more local level (i.e. within the project's limits) it can comprise isolating groundwater from surface water considerations as if they were totally independent, separating the cliff-collapse risks due to highwall mining from subsurface pillar failure due to pump-out from old workings, and seeing preservation of a plant species (perhaps by a narrow buffer) as being separate from other parts of an encompassing ecosystem.

Minimization largely amounts to playing down an impact by disparaging its significance. Typically, an impact is said to be 'unlikely' and then, even in the event that something does happen, it would be 'minor' or of 'negligible significance'[9]. Alternatively, a simple numerical comparison is made by expressing the compromised area of forest (say) as a percentage of the total area of forest; a few percent is 'obviously' of no real significance! Typical examples from LW mining are: (i) any reduction of surface flow due to local upsidence is inevitably deemed 'minor' and likely to 'recover over time due to self-

[7] This may well be consistent with (or have even caused) the spreadsheet approach to assessments but it does not meet the needs of a government which has committed to looking at other constituencies than coal mining and CSG extraction.
[8] The length of the exhibition period for the CCP is recognised as being closer to what should be the norm.
[9] This is usually considered in the context of either the dollar-value of the proposal or the costs of reducing the risk, and effectively being classed as 'acceptable collateral damage' or 'capable of remediation'.

healing'[10]; and (ii) in terms of the hydrological regime, the additional discharge of mine-make from two proposed longwalls is deemed to be insignificant when compared with the magnitude of approved discharges from twenty existing longwalls[11].

Examples from the CCP: (i) in percentage terms and assuming that progressive rehabilitation actually recreates the original hydrologic regime (**but it doesn't!**) *"The loss of total catchment from the Turon River due to the Project is therefore negligible"* (CCP v1 pxii); and (ii) GGE from the CCP is calculated at 0.0069 Gt of CO_2-e and compared with total global GGE of 3000 Gt per annum with the conclusion that (CCP v1 px) *"…the Project will not individually have any significant impact on global warming"* [12]. Item (ii) is astonishing for two reasons: **first, any addition of CO_2-e must worsen the global GGE position; and second, the comparison demonstrates either a lack of understanding of atmospheric CO_2 versus anthropogenic CO_2-e, or a convenient and reprehensible misuse of data[13].**

- BMCS strongly believes that Planning should recognize the subterfuges of reductionism and minimization, and take action to stamp out these shoddy practices. The corollary requires a stronger commitment to appreciating and dealing with cumulative impacts (see 2.2.4).

2.2.4 Cumulative impacts

The need for a full and constructive recognition of cumulative impacts stems from the preceding section 2.2.3; companies practice reductionism, whereas social and environmental considerations require a proper approach to the synergistic nature of cumulative impacts. Synergy is emphasised because the addition of a new mine or the expansion of an existing mine in a region disproportionately enhances adverse impacts. So, for any given impact (say on a type of woodland or truck movements) the cumulative impact exceeds the sum of the contributions from the pre-existing and proposed operations. Clearly, proposed additions or expansions should not be treated in isolation, whereas most EAs (even when they have a section on cumulative impacts) fail to treat it comprehensively and, in some cases, suggest that addition of its contaminants would have little impact on the quality of an already polluted watercourse. **The latter line of argument leads to such statements as mining should be allowed because previous mining has already compromised the region.**

Cumulative 'regional' impacts, as for example along the Western Escarpment of the Blue Mountains, can be examined with respect to a single activity (say open-cut mining from several mines), or from multiple activities (say open-cut mining, LW mining, power generation, forestry and high-impact recreation), and each of these can be considered at a discrete time or over time. Conversely, a cumulative 'site-specific' impact can arise from the many impacts listed in Section 8 of Coalpac's EA.

- BMCS finds it regrettable that Coalpac's EA, despite its length and glossy paper, fails to fully evaluate both site-specific and regional cumulative impacts.

- BMCS is of the view that the regional impact of the CCP in relation to already-damaging open-cut and LW mining along the Western Escarpment, on the Dividing Range, and in the Gardens of Stone environmentally sensitive landscape renders the CCP unacceptable.

- BMCS is similarly of the view that the site-specific cumulative impact of the CCP is unacceptable and outweighs the so-called management and mitigation practices and economic arguments.

- BMCS finds it particularly offensive that, at a time when the World (including Australia) is attempting to reduce GGE, economic manipulations and bio-offsets are used to justify increasing GGE, damaging local communities, and destroying scenic values and complex ecosystems. When CCP (if approved) finishes and walks away with its profits, the region will be a monument to the destructive capacity of open-cut mining and the short-sightedness of governments.

3. Deficiencies of the Coalpac EA

[10] But does self-healing stop all losses or perhaps just reduce the rate of loss, and how does this impact on surface flows, and riparian and groundwater-dependent ecosystems? what is the impact of the current discharges and how will adding to them improve matters?
[11] But what is the existing impact of the current discharges and how will adding to them improve matters?
[12] This is classical minimization – the aim of the CCP is to make the GGE from Coalpac look ludicrously small (insignificant) compared with global emissions, yet the sum of global emissions includes numerous small inputs – or putting it differently, what is the cumulative impact of numerous so-called 'insignificant' emissions?
[13] 3000 Gt is the **total pool of CO_2** in the atmosphere – it is **not** the global annual anthropogenic emissions so the comparison is a false one. Global anthropogenic annual emissions are in the order of 35 Gt of CO_2, so the CCP's contribution of **0.0069 Gt** of CO_2-e will be **0.02%** rather than the implied **0.0003% -** this is more than hundred times bigger than the implied figure and is certainly significant. Furthermore, with Australia's carbon footprint now ~546 Mt $C0_2$-e, the CCP's contribution would amount to more than **1.26% -** very significant!

3.1 CCP v1 S2.5 Geology

3.1.1 S2.5.1 Stratigraphy

Irrespective of the reference sited on p18, the Coal Measures and underlying Berry Formation are Permian in age. The Permian is unconformable upon a 'basement' in which the only Carboniferous rocks are late granitic and dioritic intrusions. This basic error from a consulting organization has presumably been accepted by Enhance Place which has worked in the region for many years; **it does not inspire confidence.**

The seven coal seams and intercalated rocks are shown in Figure 4 (p20). BMCS appreciates that Figure 4 is 'indicative' but Coalpac has much more stratigraphic data as it has stipulated a reserve of 108 Mt of ROM coal (S2.5.2). The provision of vertical dip-parallel sections to scale or, better still a panel diagram, would have provided a basis for seeing how seam thicknesses vary over the region to be mined. Such data have bearing in relation to estimates of coal-foregone (CCP v1 pxxiii).

3.2.2 Omitted structural data

Highwall mining is an integral part of this proposal. **It is therefore disturbing that no information is provided regarding fracture systems and faulting in the region of the pagodas. It is even more disturbing that there is no regional map of the principal fracture systems or even an airphoto interpretation of lineaments**[14].

3.2 CCP v1 S8.1 Highwall (HW) Mining
CCP v2F Geonet stability and subsidence assessment

3.2.1 S8.1.1 Back ground
S8.1.2 Methodology
S2F.1-3 Introduction, Geotechnical information and SHM pillar dimensions

BMCS notes that the Geonet study is a **preliminary assessment** based on assumptions. These include: using rock-mass data from the Ulan Seam, said to be analogous to the Lithgow-Lidsdale Seam and to have given adequate results for Cullen Valley and Invincible Mines; and stipulating that the four seams are unweathered, of uniform thickness, lack structural disruption by faulting, and hold no groundwater. Absence of groundwater certainly does **not** apply to the Lithgow-Lidsdale Seam, and insufficient information is provided (or is as yet unavailable) to evaluate the other items (e.g. S2F.3.1 p20 *"Characteristic highwall conditions of topography and seam thickness are variable over the proposed highwall mining blocks in the Coalpac Consolidation Project mining area."* The selected FoS of 1.3 is able *"…to cope with local variations in coal seam geology and material strength"*).

BMCS concludes that the vast majority of the information provided in the sections (as specified in the Section 3.2.1 title) is controlled by:

- The maintenance of safe mining conditions as any collapse would be on to parts of the Superior Highwall Minor (SHM) equipment.
- Pre-selection of a minimum operating FoS of 1.3 as the stability criterion – this is recommended as standard practice in an ACARP-funded CSIRO report (S2F.3.2 p23).
- Empirical determination of pillar span and width/height dimensions consistent with maximum overburden height for each seam and an FoS of 1.3 – this provides operational safety but it may not ensure long-term stability (S2F.3.2 p23).
- The SHM machine configuration and dimensions which, despite the superficial complexity in S2F.3 pp10-27, impose practical constraints – in consequence, *"…SHM spans of 3.5 m will be made for mining in the Katoomba and Lithgow seams and spans of 3.0 m will be designed in the…Moolarben and Irondale seams."*

[14] BMCS is aware that a little more information is provided in CCP v2F pp10-16 (also duplicated in CCP v1 S8.1 p105) – on p10 one learns that the dip-directions reflect a very open NE-trending syncline, most faults trend NNW or NNE (though dips vary from sub-vertical to low-angled), and that *"It is **anticipated** that the major rock-mass jointing will follow the same orientations"*. BMCS hopes that there is more information than this **'anticipation'.**

Finally, and effectively emphasising that the design criteria are little more than a first-pass exercise, *"…more detailed highwall mining design and geotechnical analysis is carried out for each highwall mining panel as part of the evaluation and approval process by DTIRIS-MR"* Also, *"…until the open-cut areas have been excavated, the full extent of previous mining operations will not be known, and further detailed analyses will include the as-mined conditions…to effectively evaluate each highwall panel…"* (S8.1.2 p106).

3.2.2 S8.1.2 Methodology
S8.1.3 Subsidence
S2F.4-9 Geomechanical assessment of SHM Pillars

The main aim of this 2-D and 3-D modelling was to further assess the stability of the pillars, modify the pillar geometry if necessary, determine the probable amount of subsidence, and make recommendations regarding barrier pillars and their implications. As with any such modelling, assumptions were made about stress distributions and geological data, the latter being supplied by the company.

The principal finding was that the maximum subsidence of landscape ridges would be less than 20 mm, whilst in areas overlying previous underground mining of the Lithgow Seam it would be from 10-15 mm.

Largely because of the cliff-edge instability demonstrated by the simulations both before and subsequent to open-cut mining (see S2F.5.2-4), the final highwall position will be located a minimum of 50 m from pagodas and escarpments (S8.1.3 p107).

3.2.3 BMCS comments

- The empirical data (S3.2.1), as further refined by the modelling (S3.2.2), demonstrate that, **subject to the utilized assumptions being correct**, highwall mining with an FoS of 1.3 and the identified pillar geometry will have long-term stability and induce less than 20 mm of subsidence.

- The value of these predictions is **reduced** by the frequent reference to the need for additional plans within a Mining, Rehabilitation and Environmental Management Plan[15] (S8.1.5 p108) to be developed in consultation with DTIRIS-MR[16] - this process will inevitably exclude input from NGOs.

- Concerns continue to be the lack of detailed knowledge of the structural geology, and uncertainty regarding the state of saturation of the Lithgow-Lidsdale Seam and its impact on highwall extraction.

- The highwall step-back of 50 m from pagodas and escarpments, **providing that the step-back is from the spur points and does not enter the intervening valleys,** may protect these landforms from being undercut by highwall instability, **but it is insufficient –** there will still be visual, noise and general proximity impacts from the viewpoints of human amenity and that of other fauna – **pagoda-topped cliff-defined spurs will overlook open-cut devastation.**

- The above step-back still means that highwall mining will extend for some 250 m beneath pagodas and escarpments, **and subject them to up to 20 mm of subsidence** – 20 mm is **NOT** a magic number such that 19 mm is harmless whereas 21 mm is catastrophic – **S2F.5.2 clearly demonstrates the type of pre-mining instability which could be prone to subsidence-induced collapse – BMCS believes that the step-back should be at least the full distance of horizontal mining**

- **All this for just 1.9 Mt of coal –** CCP v1 S4.2.2 p36 states that the area can't be economically mined by underground methods because of *"…reduced seam-thickness, limited reserve size, sensitive overlying topography (including the presence of pagodas and publicly-visible sandstone cliffs), poorer coal quality and other contributory factors…"* – **this sounds like an excellent argument for leaving it in the ground in deference to the superb environmental and scenic values.**

[15] This is to supersede what we previously called Subsidence Management Plans in the context of LW mining – the details of how this new type of planning will operate place emphasis on flexibility – see http://www.dpi.nsw.gov.au/minerals/environment/mining#Mining-Rehabilitation-and-Environmental-Management-Process-%28MREMP%29 – this does not fill me with confidence.

[16] One of the principal deficiencies of the SMP process was its control by Mineral Resources and the effective facilitation of ongoing mining through compliant consultants' reports in the face of obvious mining-induced damage.

3.3 CCP v1 S8.2 Slope stability
CCP v2F Geonet stability and subsidence assessment

3.3.1 Step-back and risk-review buffer zone

CCP v1 Exec Summary (pix) emphasises the 50 m step-back as discussed above. It also refers to a 100 m monitoring zone adjacent to sandstone cliffs and pagodas. This is further developed in S8.2.3 p109 and termed a 100 m risk-review buffer zone. Coalpac claims that experience at Cullen Valley mine justifies this risk-review/risk-management approach.

3.3.2 BMCS comments

- The essential point is that although highwall mining is stepped back 50 m it can continue to undermine cliffs and pagodas by about 250 m; yet advocating a 100 m risk-management 'buffer' effectively suggests the open-cut highwall should be stepped back by 100 m from cliffs and pagodas.

- BMCS believes that neither of these distances is adequate: highwall mining should in no way be permitted beneath cliffs and pagodas so a **minimum step-back of 310 m is essential**; the 100 m risk-management 'buffer' (but not the monitoring over the 310 m) then becomes an irrelevance.

- The risk-management concept is unacceptable because the company is **envisaging the possibility of damage within the 100 m buffer zone** – the risk is therefore carried by the environment (slopes and cliffs). The company could push the envelope until damage eventuates. The extent of the damage is then monitored to see whether it worsens or can be classed as minor or negligible, and whether remediation is a viable option – rarely is mining stopped unless the damage is truly catastrophic.

3.4 CCP v1 S8.3 Air quality
CCP v2G Air quality impact assessment

3.4.1 S8.3.2 Methodology
S8.3.3 Impact Assessment
S2G.4-8 Criteria, Emission estimates and Impact assessment

The methodology follows that specified by OEH (S8.3.2 p110). The particulate matter criteria used consist of TSP (annual mean), PM_{10} (24-hr average and annual mean), and Deposited dust (annual mean); $PM_{2.5}$ data were collected but not used to assess impacts against the advisory standard. Further details are available in S2G.4 pp5-7.

To evaluate the impacts of the CCP, it is necessary to determine the existing 'background' dust concentration and deposition levels. This must necessarily include the existing Cullen Valley and Invincible operations. In terms of the four measures of the **'background' air quality**, all fall below the stipulated OEH criteria (S8.3.2 p111).

Dispersion modelling was used to examine the CCP impacts on properties and the cumulative impacts from other collieries, although the latter were largely discounted on the basis of wind directions and distance. **Classical reductionism is used to identify specific non-mine owned properties which will experience exceedances (S8.3.2 p112-115).**

Management of problems largely comes down to buying up affected properties, using detailed meteorological data to aid keeping impacts below the stipulated OEH criteria, and numerous statements of intention which conveniently fit with limiting operational costs.

3.4.2 BMCS comments

- The Society is appalled at the failure to properly acknowledge the health and environmental risks associated with $PM_{2.5}$ particle sizes[17], even when the data were collected (S2g.4 p7). The response will no doubt be that this is not required by OEH, but all this shows is that OEH is out of date or is deliberately loading the dice in favour of coal exploitation. It

[17] See http://www.epa.gov/ord/ca/quick-finder/particulate-matter.htm, http://www.epa.gov/pmdesignations/faq.htm, http://wag.org.au/documents/doc-119-dvs-coaldust-rev.pdf,

also shows that Coalpac, despite its attempts to convince the inhabitants of Cullen Bullen (and the workforce at the mine) that they truly care about their health, is found wanting in this regard.

- Modelling predictions are precisely that, irrespective of whether they happen to be 'best practice' as specified by OEH (2005) – no property owner is given a guarantee, and nothing prevents inhaling particulates when moving about the general area. Frankly, irrespective of the OEH criteria, fine dust will affect a far greater area than implied by the exceedances, and this will be to the detriment of the inhabitants' and miners' qualities-of-life, and the potential for sustainable tourism

- The emphasis on the wind directions which help Coalpac to argue against cumulative impacts from other collieries to the south, also have other implications as the principal wind directions are from the SW and NE according to the time of year (S2G.4 pp12-17): Portland lies about 6 km to the SW and the Wolgan Valley and the Emirates Resort is about 15 km NE. Apart from coating the BBSF with dust, strong winds will carry very fine particulates to the washing lines of Portland and even the guests at the Resort might wake up to a fine-dust haze. An indication of this dispersion is seen in S2G.4 Figs 8.1-8.21.

- Lithgow Council has currently done a back-flip to the extent that it now supports the proposal subject to conditions which include mining not taking place within **500 km** of the Cullen Bullen village, the cemetery, and residents outside the village but in the vicinity[18]. **This is a pathetic outcome** bearing in mind that the West Australian EPA recommends a separation distance of **1000-2000 m** between open-cut coal mines and sensitive land uses such as for schools[19], and the Nationals want a **5 km** buffer for future open-cut mines and a **5 km buffer around villages**[20].

- The Cullen Bullen School is located within about **1000 m** of dust-generating activities and is perfectly located to experience dust-laden winds from the NE – **this is totally unacceptable**[21]**.**

- The Pine Dale Stage 2 proposal was not available when the EA was produced. It was nevertheless imminent. The close proximity of Pine Dale Stage 2 (and even Stage 3 if the Government doesn't act) will adversely affect the air quality between Blackman's Flat and Cullen Bullen and heavily degrade the quality-of life of those overtaken by rampant coal exploitation.

3.5 CCP v1 S8.5 Greenhouse gas
CCP v2G.12 Greenhouse gas assessment

3.5.1 Coalpac's claims

Coalpac believes (S8.5.3 p119) that the supply of its coal to the Mt Piper Power Station (MPPS) is vital to *"…the operation of this facility to assist meeting Australia's energy demands for at least the next 21 years"*; should Coalpac's resource not be used, *"…Coal would still need to be sourced by MPPS from other suppliers and as such the project does not directly contribute to scope 3 emissions"*; alternative sources of coal would need to be transported over a greater difference, thereby providing a poorer (more GGE) environmental outcome; and alternative sources of energy are either not financially viable or are insufficiently certain to supply base-load electricity.

Coalpac's emissions are estimated at ~7 Mt of CO_2-e per annum or ~147 Mt over 21 years (S2G.12.4 Table 12.8). Coalpac concludes that the CCP will have negligible impact on GGE and global warming.

3.5.2 BMCS comments

3.5.2.1 Broader considerations

- ***Carbon pricing:*** a price on carbon is imminent. NSW and Australia will struggle to meet GGE targets. 'Clean coal with geosequestration' continues to be experimentally feasible, but is far from being a practicable solution to coal-fired power

[18] LCC ordinary meeting - Item-4 Enviro - 14/05/12 - Coalpac Consolidation Project Cullen Bullen - Resolution
[19] Guidance for the Assessment of Environmental factors – Separation distances between industrial and sensitive land uses – June 2005; http://www.epa.wa.gov.au/docs/1840_GS3.pdf
[20] Christine Ferguson and Mike Blake, Central Council Natural Resources & Energy Policy Committee - The Nationals NSW, Submission to Director, Strategic Regional Policy, NSW DP&I, 24 April 2012
[21] *Council decision on Coalpac unwelcomed*, Lynn Pinkerton, Lithgow Mercury, Saturday 19 May 2012 – refer to http://www.lithgowmercury.com.au/news/local/news/general/council-decision-on-coalpac-unwelcomed/2561354.aspx

production. At best, the technology (when/if finally developed on a commercial basis) will be applied on a limited scale in Queensland, but costs will generally be prohibitive and render it uncompetitive with renewable energy sources. The alternative, government (=taxpayer) subsidisation of the coal-fired power industry, is even more outrageous and might attract the attention of the Australian Consumer and Competition Commission[22]. Once coal is brought to account in terms of its GGE, LPG, CSG and SBG (shale bed gas) will become the fuels of choice as Australia moves towards a 'renewables' future.

- ***The dollar-value of environmental assets:*** there is need to better quantify the interaction between traditional economic values and environmental costs, even though putting a dollar value on environmental assets remains contentious[23]. Nevertheless, due to a clearer understanding of the economic and social value of the environment at regional and local scales, it is no longer acceptable for coal mining to be approved regardless of consequences. Irrespective of the $millions flowing to the company and its shareholders, it was once sufficient to provide (say) 30 jobs with flow-on effects, sponsor local events, mention 'community' benefits, and emphasise royalty payments to gain approval,. Now, it would seem that the environmental and social costs may be of similar or even greater magnitude than the coal-profits foregone, as conveyed by the following excerpts from the report by the NSW Planning Assessment Commission (PAC) on the Bulli Seam Operations (BSO), July 2010, Parts 1 and 5[24].

  BSO Part 1 piv: *"The Panel is of the view that it is no longer a viable proposition for mining to cause more than negligible damage to pristine or near-pristine waterways in drinking water catchments or where these waterways are elements of significant conservation areas or significant river systems."*

  PAC BSO Part 1 pv: *"…the benefits of protecting significant natural features…are likely to be of a similar magnitude to the mining profits that would have to be given up to ensure that protection. So while protection of the significant natural features would involve lower mine profitability, it is likely that society as a whole would gain more from the environmental protection recommended than it would lose in terms of foregone profits."*

- ***A renewables future:*** the claims Coalpac (and many others with vested interests) makes about base-load power and the unreliability of renewable energy sources (including hydro-power) have been extensively challenged in published peer-reviewed papers. The principal finding is that renewable energy has the capacity to be the basis of Australia's energy system by providing 24-hr base-load power[25].

3.5.2.2 Specific issues

- The incorrect use of data in reaching the conclusion that the CCP will have negligible impact on GGE and global warming (CCP v1 px) is referred to in Section 2.2.3(ii) and footnotes 12 and 13 – the approach is used as a classical example of minimization – the actual values are **0.02%** of global anthropogenic annual emissions and **1.26%** of Australia's carbon footprint at ~546 Mt $C0_2$-e – **these are far from negligible.**

- The expanded MPPS will have the capacity to change to gas-power, so coal may not be its *"**21-year future**"*; conversely, the statement regarding ***"at least 21 years"*** raises the question of whether the company envisages additional expansion and if so where? Could the company envisage

- Coalpac implies that other sources of 'local' coal would involve more transport and increase the GGE. This may partly be the case (depending on how the term locally is applied), but it would be marginal at best. Centennial had the previous contract to supply coal from its various mines and could no doubt fill any vacancy arising from rejection of the CCP. There have been suggestions that coal could be brought in by rail from one of the larger open-cut mines in the Mudgee or even the Upper Hunter regions at 'negligible' extra cost.

3.6 CCP v1 S8.6 and 8.7, Noise and Blasting
CCP v2H.12 Acoustic impact assessment

[22] Brian Robins, *Coalmine subsidy will harm competition…*, SMH Dec 22 2010, News p6.
[23] Gareth Hutchens, *Environment slowly finds its way into economics*, SMH 12-13 May 2012, Weekend Business, p12.
[24] *http://www.pac.nsw.gov.au/tabid/60/ctl/viewreview/mid/376/pac/44/Default.aspx*
[25] Mark Diesendorf, *One hundred percent renewable electricity for Australia*, Hut News, No 291, April 2012 p7; Ben Elliston, Mark Diesendorf, Iain MacGill, *Simulations of scenarios with 100% renewable electricity in the Australian National Electricity Market*, Energy Policy 45, June 2012 606-613.

3.6.1 The approach adopted
S8.6.1-3 Background, Methodology and Impact assessment
2H.1-3 Introduction, Existing environment and Criteria

The consultant has correctly applied the various policies and procedures as specified by DECCW (now OEH) to the extent of establishing the existing conditions and developing criteria for the spectrum of noise-types. Therefore, the deficiencies which will be presented in section 3.6.2 largely (but not entirely) relate to the limitations of the methodology embodied in the DECCW specifications.

3.6.2 BMCS comments

3.6.2.1 Noise

- The whole approach involves reductionism to the extent that mining (operational) noise is separated from other types of noise and blasting effects[26].

- The Adopted Intrusive Criteria (AIC) deal with operational noise and the Amenity Criteria (AC) are said to reflect the amenity of a rural setting and cover all industrial and other mining developments (2H p16). However, an examination of Tables 8-12 (2H pp9-12) and the data plots in Appendix D (2H pp98-128) show the astounding variability masked by the finally selected criteria. **It seems irrational that the noise-level amenity of a rural community should be set significantly higher level than the existing** (so-called background) **noise profile[27].**

- Cumulative considerations are minimal: the AIC deal with operational noise and the AC are said to encompass the possibility of cumulative impacts (S8.6.2 Table 25 asterisked footnote). S8.6.3 p126 indicates that *"Cumulative noise impacts would potentially be caused by simultaneous operation of the Project and other nearby industrial developments"*, and this leads to the limited notion that cumulative impacts arise solely from compounding the impact at a given time. This is not so! **Cumulative impacts can arise simply by extending the time over which a particular level of noise continues or increasing the number of times a given noise-level is recorded on a data plot such as in 2H Appendix D p9.**

- The combination of the high AC, and the limited appreciation of cumulative impacts [including those arising from blasting which could be up to 40 blasts per week or 10 per day for limited periods (2H p39), despite the statements in S8.7.4 dot-point 3 p131] require that **these parts of the EA be re-assessed.**

- The noise-impacts on households using the AIC are derived from modelling the noise distribution – tough if your house is just outside the critical contour. The critical deficiencies are that: the modelling may be the best available program but it should not be considered absolute; householders outside the contour will still be affected – the contour is not sound-proof; people are not confined to their houses and will experience noise-impacts while engaged in daily activities – that is the impacts on individuals are more widely distributed than the reductionist approach suggests; and recreational visitors to the BBSF and the resident fauna will be affected.

- Peoples' reaction to noise is inconsistent: an individual will be affected as a function of his/her general and mental health, financial pressures, and a range of other circumstances all of which are effectively neglected in the acutely statistical approach – one size does not fit all!

- The CCP's approach is of course to buy out people at a level of 'peanuts'[28] which is insulting to families who have grown up in the region and are facing its destruction.

3.6.2.2 Blasting

S8.7.3 p129: *"All of the private residences identified* [in Table 30] *as being the closest receivers to blast locations have also been predicted to be impacted by noise levels greater than the relevant noise criteria…"* This is the double whammy, despite

[26] This is best appreciated through examining 2H Table of contents pp1-2, and is also apparent from S8.6.2 pp120-122. In fact the EA Main Report entirely separates Blasting impacts from the consideration of Noise.
[27] This is because it is clear from the data plots (2H Appendix D pp98-128) that the various graphical constructs are all expressions of pre-CCP noise levels.
[28] Even if offered a sum above market price, it is still peanuts when measured against the anticipated profits and the company's capacity to internalize such expenditure; the loss and inconvenience experienced by the 'few' is very minor collateral damage in the face of economic avarice.

assurances that: there is *"…an extremely low likelihood of superficial or cosmetic damage to any privately owned residence…"*; *"…ground vibration and overpressure levels* [are] *below relevant amenity criteria…provided that the MIC*[29] *is controlled for potentially sensitive locations…"*

- Concerns remain about the certainty of interpreting statistical data, particularly in the context of the variable strength likely for some of the dwellings.

- As indicated under 3.6.2.1, individual perceptions of noise and blasting will vary – one size does not fit all.

- Prior to blasting within 200 m of pagodas and cliffs, a specialist geotechnical examination will be implemented – this should be cross referenced with Section 3.3.2 (above) **where BMCS advocates a 310 m step-back for the highwall.**

3.7 CCP v1 S8.8 Visual and Lighting
CCP v2I Visual impact assessment

3.7.1 Pertinent-report content

S8.8.2 p135: the visual impact is based on a matrix of visual effect[30] versus visual sensitivity[31], whereas the lighting impact is based on the CCP's proposed floodlit night-time operations. The latter has two components, the first being lighting which is directly visible and the second being the CCP's contribution to the 'glow' effect in the dark night sky.

2I.4.2 p24: open-cut mining creates a high visual effect which can't be reduced until the landform has been 'recreated' and vegetatively rehabilitated[32]. Highwall mining operations will not result in visual effects and impacts additional to those resulting from the open-cut process[33].

S8.8.3 p148: travellers moving both north and south along the Castlereagh Highway will experience high visual impacts from the elevated open-cut mining areas.

S8.8.3 p151: the direct lighting impacts are principally from vehicles, trains and active mining areas – the significance of these is variable in terms of the mobility of the sources and, for that matter, of potential recipients. In relation to the 'glow', this will generally be insignificant although it could have significance from time to time!

2I.6.7 pp82-83: the cumulative visual impact is most obvious along the Castlereagh Highway to the extent that the CCP will add to the plethora of existing mines and power stations between Springvale, Blackmans flat and Cullen Bullen.

3.7.2 BMCS comments

- Appendix I is long and turgid in that it attempts to quantify a range of effects partly from set viewing locations (S8.8.2 pp133-135). As many of the effects are subjective, much of the analysis is qualitative. The overall result is inconclusive beyond identifying aspects for mitigation, management and offset treatments (S8.8.4 pp151-152).

- The obvious findings are that: open cuts, bunds and general mining and transporting infrastructure are an eyesore if the viewer can see them; direct lighting impacts are variable; and diffuse 'glow' effects are most obvious on dark nights. It is obvious that anyone in the region as a tourist would find the glow annoying in terms of the reduced visibility of the night sky.

- **The report is largely silent in relation to the destructive impacts visible from the high cliff and pagoda country to the east in BBSF, yet this is a major concern relative to low-impact recreation and tourism.**

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[29] MIC is the Maximum Instantaneous Charge for the blast event.
[30] The level of visual contrast with the pre-existing landscape
[31] How the change to the landscape is viewed by local people with varied interests in the community
[32] There is a major difference between cosmetic plantings and the development of mature and old growth forests with appropriate understoreys which may take anything between 30-100 years – the point being that although the visual contrast is slightly reduced, the visual scar remains for tens of years and the development of floral and faunal habitat takes much longer.
[33] This is very debatable to the extent that HW mining involves high visibility machinery, maintaining the HW for a longer period, and creating the potential for partial collapse of the HW and rockslides on undermined cliffs and pagodas.

3.7 CCP v1 S8.9 Surface water
CCP v4N Surface water impact assessment

The Society deplores the separation of surface water from groundwater in these reports but follows the practice as a matter of expedience.

3.7.1 Pertinent-report content

The Preliminary EA recognised that surface water management carries a high environmental risk, while the geochemistry of water discharged from the workings and treatment facilities presents a significant risk. In v1 Appendix E pp5-6, the levels of risk associated with all matters of water management have been revised down (the risk is lower).

BMCS originally raised concerns about impacts to: (i) drainage paths and catchment yields, (ii) surface water quality from the saline Coal Measures stratigraphy, and (iii) surface water quality arising form soluble oils, diesel and other chemicals associated with the mining and treatment processes. Other potential impacts are identified in S8.9.3 and 4N5.1 as (iv) shortfalls in meeting CCP water requirements, and (v) erosion gullies in highwalls and flooding during major storm events.

4N5.5.1: the percentages of the catchments affected by mining developments vary according to the year (4N Table 5.4 pp60-61). Cullen Creek varies from about 20-24.4%, Dulhuntys Creek (including Cullen Creek) from 6-8%, and Jews Creek from 0.8-1.7%; but in terms of the Turon River with a catchment of 6500 km^2, the total loss of catchment per annum is negligible at <0.1%.

Water demand for the CCP varies, but will be in the range 869-926 ML/yr (4N5.2 Table 5.1 p51). The intention is to meet the demand with mine water and dirty water captured on site, supplemented when necessary by water extracted from the abandoned underground workings (4N8 p97).

Water quality monitoring suggests that the existing dams [Invincible Colliery Main Colliery Dam (ICMCD) and Cullen valley Main Dam (CVMD) and Dam 4] contain water suitable for release under the existing EPL release criteria (S8.9.3 p158; 4N8 p97).

The water management system is designed to avoid uncontrolled/untreated releases of water, so there is little likelihood of water quality impacts on Cullen, Dulhuntys, and Jews Creeks (4N8 p97).

The large volumes of water in the Invincible Colliery (~5550 ML) and Old Tyldesley (~706 ML) underground workings provide an ample supply of water to cover the deficits between operational demands and mine storage (4N5.2.4)

3.7.2 BMCS comments

- The water management system (S8.9.4 pp159-160) ensures that substantial amounts of the operational water are recycled, or, if surplus to needs, are sent to the old underground workings. **This means that for the duration of mining (21 years) the three main creeks (Cullen, Dulhuntys, and Jews) will have reduced flows. This in turn could influence the local watertable, the conservation of aqueous and riparian communities, and the water levels in agricultural or domestic water bores.**

- Waters discharged to the environment (the local creek system) are said to meet the EPL release criteria and not compromise the water quality of the receiving system. However, the data mainly cited comprise TSS, pH and oil & grease, so this raises the question of whether the EPL criteria are able to ensure that the chemistry of the discharge waters is akin to that of the receiving waters. **Until the qualities of the discharge and receiving waters are more fully evaluated, the possibility of an adverse impact must remain[34]!**

- **As is the case with CCP,** companies are required to test for an insufficient number of contaminants. The testing stipulated by the EPA tends to permit inappropriately high average limits over long periods thereby allowing excessive peaks. **There is need to re-examine and improve the whole process of ensuring that mine-related waters meet acceptable water quality standards which ideally reflect the environmental significance of the region and the receiver water courses.**

[34] BMCS acknowledges the data in 5O7.5.2 Table 9 which shows some of the details seemingly disregarded when examining the water quality in later sections.

- **The limitations** on the claims that discharge waters from Cullen Valley LD001 and LD004 are *"…typically suitable for release, despite coal crushing and active mining occurring in the catchment of Dam 4 and Dam 1 over the water quality monitoring period"* (4N5.4.3 p57) are highlighted by the accompanying statement that ***"…the EPL 10341 discharge criteria are exceeded…less than 20% of the time…"*** (4N5.4.3 p57)[35]. **This says much about Coalpac's deficient past practices; will they improve under the CCP or is the EA just 'window dressing'?**

- Invincible **LD001**[36]**,** which discharges to Long Swamp Gully and thence to the Coxs River, has not been used since June 2008 (4N3.1.4). It seems to have no role in future planning beyond the general statement that surface water from the Project boundary will occur through *"…existing licence discharge points at Invincible Colliery and Cullen Valley Mine"* (4N5.4.1 p57). **In the interests of protecting Long Swamp and the Upper Coxs river system this discharge point should and must be relinquished.**

3.8 CCP v1 S8.10 Groundwater
CCP v5O Groundwater impact assessment

3.8.1 Pertinent-report content

The Preliminary EA recognised that groundwater management carries a significant environmental risk. In v1 Appendix E pp5-6, the levels of risk associated with groundwater management have been revised downward to moderate or low.

In relation to the PEA, BMCS raised concerns about: (i) contamination of the groundwater regime and/or lowering of the watertable to the west of the mining regions could affect riparian ecosystems, impact on stock watering and have adverse social consequences; (ii) depressurising the various aquifers impacting 'undisturbed' stands of Box Gum Woodland and floristic species listed under State or Federal legislation – also, any floristic impact potential affects the viability of fauna within the destabilised ecosystem; (iii) supplementing operational water supplies by pumping from the underground mines potentially exacerbates contamination of groundwater and surface water; and (iv) pumping from the old workings could lead to instability.

5O10.4 pp52-53: seepage from coal-seam 'aquifers' to the open cut. Where the coal seam has a representative hydraulic conductivity of 0.09 m/day the gross seepage would be 0.019 m^3/day/m or, taking evaporation into account, the net seepage would be 0.006 m^3/day/m. The latter is deemed of little significance from the viewpoint of impeding mining.

5O10.5 pp52-55: seepage to the open pit from flooded workings. The proposed Cullen Valley and East Tyldesley mining open cuts will be down the hydraulic gradient from the flooded Tyldesley Colliery. A **50 m coal barrier** will be left to limit the rate of seepage which, for a representative hydraulic conductivity of 0.09 m/day, would gross 0.03 m^3/day/m or net ~0.03 m^3/day/m. This is acceptable from a mining viewpoint.

S8.10.3 p167: seepage into HW areas. A HW single drive (2.5*3.0*300 m = 2.250 m^3) in a seam with representative hydraulic conductivity of 0.09 m/day will receive inflow at 6.5 m^3/day and fill in ~1 year. This fill-rate will be reduced by development of adjacent drives as the seam becomes depressurised between them. So taking a 1000 m long HW with a drive-separation of 3 m there is potential for 167 drives – at the same representative hydraulic conductivity, the collective voids (~375,000 m^3) will fill at ~12 m^3/day and take ~86 years (or half a year for each drive). The scenarios are end-members and neither is problematical from a mining viewpoint.

5O11.1-2 pp59-61: *"The impact of the Project on the groundwater levels is expected to be localised…" "Groundwater levels to the east of the Project Boundary have been…significantly drawn down by the Baal Bone Colliery."* There will be potential for cumulative impacts, but *"…owing to the long history of mining within the immediate area, the proposed Project will not produce any further significant impact…".*

S8.10.3 p168: there is unlikely to be any impact on bores which access water from beneath the Marrangaroo Formation.

3.8.2 BMCS comments

[35] The Society appreciates that the exceedances were due to either high TSS or low pH and that such exceedances can be counteracted by remediation options, or transferring the water to the Old Tyldesley underground workings (4N5.4.3 p58), but the facts are that two out of three discharge criteria were subject to exceedances, so what would happen under a more rigorously controlled system?

[36] To avoid confusion, please note that this is totally different from Cullen Valley LD001.

- Of the issues raised above (section 3.8.1 para 2), items (i) and (iii) are only partially answered by the EA, and consideration of item (ii) is restricted to swamp-related Groundwater Dependent Ecosystems.

- In relation to items (i) and (iii), contamination of the groundwater regime remains a possibility because of the interaction envisaged between groundwater and surface water within the water management plan, and the limited nature of testing of the various types of water (refer to section 3.7.2 above)[37].

- In item (i), lowering of the watertable to the west of the mining region is discounted because the **'Permian'** aquifers crop out along the western portion of the Project Boundary (5O11.1 p60). This is an oversimplification, perhaps stemming from a lack of stratigraphic knowledge. Drawing 6 (a map on which the Narrabeen Group is called Hawkesbury sandstone – 5O p79) shows: (a) the **Permian** Illawarra Coal Measures extending west of the CCP boundary towards Pine View and marginally beyond the CCP boundary in the northwest area; (b) the **Permian** Shoalhaven and Nile sequences, which probably source the water resources tapped by the deeper boreholes, extend well west of the CCP boundary; and (c) flow-lines, following the regional hydraulic gradient, loosely follow stratigraphic layering and trend north-eastward, but they deviate laterally and can cross layering towards depressurised zones in the Lithgow Seam and the Marrangaroo Formation within open cuts, and within underground workings partially depressurised by groundwater extraction for operational purposes – the resulting drawdown of the watertable in the recharge areas to the west of the CCP boundary could induce the impacts envisaged in item (ii).

- With item (ii), depressurization reflects seepage into the open cuts and the HW-drive complexes (see section 3.8.1 above). This locally affects the watertable thereby impacting threatened flora and fauna.

- Under item (iv), mine-site water deficits require extraction of several hundred ML/year of underground water from the old workings (4N Table 5.2 p54). Such extractions exceed inflows by varying amounts throughout much of the CCP life (4N Table 5.3 p55). The resulting fluctuations in water level, although not necessarily large in terms of the total underground water present, could create instabilities.

3.9 CCP v1 S8.14 Ecology
CCP v3J Ecological impact assessment

3.9.1 Pertinent-report content

The Preliminary Environmental Assessment (PEA) determined that the ecological risk was high and the rating was moderate but certain. This is downgraded in the current Environmental Assessment (EA) to a moderate risk with a moderate but remote rating. The change would seem to be based on impact mitigation measures (3J5) and a biodiversity offset strategy (3J6).

Based on the PEA, in conjunction with submissions to and investigations by DSEWPC it was decided that the development should be a controlled action based on aspects of the area's biodiversity. The resulting EA reflects the DSEWPC decision and the EA requirements of the Director General, Department of Planning & Infrastructure.

S8.14 pp181-197 and 3JExecutive Summary (ES) ppS3-S10 provide summaries of: what has been done to identify the vegetation communities [including those listed under the *TSC Act* (State) and *EPBC Act* (Commonwealth)]; an impact assessment; and mitigation and management actions and proposals.

3.9.2 BMCS intentions and comments

BMCS does not intend to examine the detailed content in terms of species' specific locations, distributions and omissions for reasons outlined in section 3.9.3 below.

- Despite a decade of ecological work (S8.14.2 p183) associated with industry-related EAs and existing Coalpac investigations, Table 42 shows that the majority of the surveys were undertaken prior to the PEA. This point is made because the Society in its submission to DSEWPC[38] criticised many aspects of the PEA and was particularly concerned

[37] The vast majority of the data results from testing required to monitor the EPL criteria – the possibility of other contaminants, such as salinity, Fe, Mn, Al and Zn, is not an EPL requirement and has largely been disregarded.

[38] Forwarded by email as a separate document for DP&I's convenience and identified as ***BMCS Submission re Coalpac Consolidation Proposal, EPBC Act Referral Reference Number: 2010/5776*** – the document is also available from the BMCS Admin Officer bmcs@bluemountains.org.au as ***CoalpacCons'tion2010-5776_BMCSSubmission_101227.pdf***

about deficiencies in the ecological data. It is perhaps not surprising that ecological deficiencies remain a significant basis for rejecting the CCP.

- The threatened species and vegetation communities are fully detailed (S8.14, Tables 43, 44, 45) – there is no dispute about their presence – there is no dispute as to why the CCP is a Controlled Action under the *EPBC Act* – there is no dispute over why OEH should be acting in the interests of its 'threatened species' constituency under the *TSC Act*.

- Coalpac fully recognises the damaging implications of the CCP in terms of the destruction of significant portions of vegetation communities (S8.14 Table 46) and in its statement that (S8.14.3 p192): *"In addition to the removal of these native vegetation communities, the Project will also negatively affect vegetation that will remain by additional vegetation and isolation impacts." "In anticipation of such impacts, the Proponent has proposed an Offsets Package…"*[39]

- Coalpac further registers its understanding of the range of indirect impacts affecting fauna by listing the following (S8.14.3 p193): degradation of habitat in areas peripheral to the CCP area; competition for increasingly scarce habitat resources; noise from the mining and related operations; night-lighting disturbing susceptible species; dust affecting vegetation and various insect species; habitat modification by changes to erosion and drainage patterns; and proliferation of weeds, feral animals and invasive native species.

- Coalpac emphasises impacts on biodiversity values due to vegetation clearance and faunal habitat destruction because the CCP results in actions deemed Key Threatening Processes by OEH. Examples cited from the NSW Scientific Committee include (S8.14.3 p193): Clearing of native Vegetation, Loss of Hollow-bearing Trees, Removal of Dead Wood and Dead trees, Bushrock Removal, and the Alteration to the Natural Flow Regimes of Rivers, Streams, Floodplains and Wetlands. Coalpac additionally points out that the scale of woodland removal will impact on common woodland-dependant birds.

- S8.14.3 p194: the interaction of the CCP with other nearby mines results in a cumulative impact on BBSF. Coalpac suggests that large portions of the south-western region of BBSF will be subject to mining activities within the next two to three decades. Coalpac then minimises the significance by stating that mining "…will cease as coal reserves are depleted; thus the cumulative effects are finite and known, and will dissipate with the cessation of mining in the area." BMCS does not subscribe to this view and considers that the environmental values would be destroyed and replaced by a cosmetic veneer on which any resemblance to mature and old growth habitat[40] would need 25-100 years to evolve.

- S8.14.3 pp194-195: the CCP occupies the western edge of the Sydney Basin Bioregion (SBB). Coalpac suggests that the ecosystems destroyed by the CCP are well represented in State Forests and National Parks and then engages in minimisation by emphasising that State Forests occupy 4.91% of the SBB and the CCP is only 0.4% of the State Forests. BMCS asserts that the threatened species and vegetation communities are NOT abundant within State Forests; otherwise why would they be threatened? And once that is recognised, **the area of the CCP is only relevant in the context of it obliterating threatened populations.**

- S8.14.3 p195: Coalpac points out that the CCP occupies only 1.3% of the GoS2 Proposal, the implication of this minimisation being that the values of the GoS2 region would not be compromised by such an excision. Yet Coalpac acknowledges the other mines and mine proposals in the region in terms of the cumulative impact. **BMCS asks whether companies and DP&I still see the reductionist argument, whereby each development is evaluated in isolation, as worth pursuing.** BMCS could alternatively ask why Coalpac wants to exploit a small area disproportionately endowed with threatened species and vegetation communities.

- S8.14.3 p195: Coalpac similarly uses minimisation in percentage terms to suggest that the CCP will destroy negligible amounts of various types of 'similar' woodland when considered on the scales of the Central West Catchment and State-wide. **BMCS rejects such an approach on the grounds that: (i) it shows negligible understanding of the integrated nature of ecosystems; (ii) seems incapable of distinguishing between 'similar' and 'identical'; and (iii) fails to appreciate that listing things as threatened is to ensure preservation.**

3.9.3 The LEG (Lithgow Environment Group) submission

In Section 2.1 (above) the Society requested that the three submissions (Colong, LEG and BMCS) be treated **both collectively and individually** because different types and levels of expertise exist in and are available to these organizations.

[39] The matter of the Offset Package will be addressed in Section 3.10
[40] Not necessarily the same habitat and ecosystems that once occupied those areas.

This request is now repeated in the context of the ecology of the region covered by the CCP; it specifically relates to the pertinent section(s) in the LEG submission which is fully endorsed by BMCS.

The Lithgow Environment Group, through Chris Jonkers and Julie Favell, has exceptional 'on-the-ground' appreciation of the region, and acknowledged expertise in relation to its ecology and biodiversity. Their volunteer-work involving extensive field investigations is expressed in a detailed factual appreciation of species in terms of initial identification, location and distribution, identification and formal confirmation, and official recording of the data through OEH. This level of expertise and capacity to undertake the field investigation is not directly available to BMCS[41].

Documentation of the material for the purposes of making a submission is voluminous. To make it part of the BMCS submission, **other than by the process of general citation as adopted in Section 2.1 and the first paragraph above**, would involve including it as a substantial appendix, or pasting it within the present section. In either case it would involve substantial and unnecessary (in BMCS' opinion) duplication.

For the reasons articulated, BMCS sincerely hopes that DP&I will accommodate the approach adopted.

3.10 CCP v1 S8.15 Offset Strategy
CCP v3J6 Biodiversity offset strategy (BOS)

BMCS will not discuss the detail of this package but will highlight issues which cause much concern.

3J6.1 p6.1: *"…the Project will take place on land classified as Zone No 1(f) Rural (Forestry) which permits the development of extractive industries (mining). Notwithstanding, Coalpac has developed a BOS with the objective of offsetting the residual impacts on biodiversity, particularly on threatened ecological communities and habitat for threatened species."*

- BMCS notes that mining may or may not be permitted depending on the assessment of competing uses. The SRLUP approach is an attempt by government to deal with different demands over areas of land. **There is no such thing as a god-given right!**

- BMCS contends that any attempt to offset threatened ecological communities and species is unacceptable. A declaration of critically endangered or endangered or vulnerable is saying that the threats are real in the context of existing communities and/or species. **This most certainly does NOT imply that it is acceptable to trash one set of existing viable occurrences in exchange for 'offering' lands which have the potential to support 'similar' communities and species.**

- **BMCS questions the legality of a BOS which only rests on a Draft Policy Statement in the case of DSEWPC.**

S8.15.1 p198: *"Discussions with DP&I, OEH…and SEWPaC…confirmed its significance and the need to develop a carefully planned and comprehensive Biodiversity Offset Strategy…"*

- BMCS is most concerned about the nature of these discussions. It is appropriate for government departments to provide guidance regarding the serious environmental impacts of a proposal. It would be far less appropriate for government to provide guidance on how the company can overcome the intentions of legislation designed to protect threatened species and communities. **It would be totally inappropriate for government to provide assurances or make any commitments as to the outcome of a company offering a BOS.**

S8.15.5 p214: *"…Coalpac will develop a BMP[42] for the Project. As a component of the BMP, Coalpac will also prepare a BOMP[41] that…" "The BOMP will…guide restoration and management of the biodiversity offset properties…" "The BMP and BOMP will prescribe the management of existing vegetation within the Project Boundary…"*

- BMCS regards the linking of the BMP and BOMP activities as a clear indication that the Offset purchases and management costs will be internalised as a charge against future profits.

[41] It is readily acknowledged that Chris and Julie work closely with BMCS and are members of the Society's subcommittees looking after environmental issues relating to the western Blue Mountains and its escarpment..
[42] BMP = Biodiversity Management Plan and BOMP = Biodiversity Offset Management Plan.

- It is disconcerting that a company might be given approval to destroy the environmental values of public lands in exchange for a BOS; and then the public purse, as a consequence of taxation concessions, subsidises the BOS to as much as 30%.

S8.15.5 p215: *"…Coalpac will support the progressive establishment of GoS2 and to this end provide a monetary contribution of $0.015 per tonne of coal sold (approximately $1,000,000) to OEH (or other relevant body) to assist in the development, implementation and management of the GoS2. If required by OEH, rehabilitated areas of the Project Disturbance Boundary and biodiversity offset properties will also be progressively released into conservation in GoS2." "Mechanisms being considered by Coalpac to permanently secure the Project offset properties for conservation include…"*

- BMCS questions the legality of the proposal which could conceivably be seen as a form of bribery.

- BMCS again wonders whether such a payment would be set against profits and effectively cost the public purse about $0.004 per tonne.

- BMCS finally emphasises that Coalpac has ownership of only one of the four Offset properties, the other three being subject to various negotiations.

3.11 Miscellaneous aspects

The Society has elected not to examine all aspects of this enormous EA because it is intensely time-consuming and the reports from LEG and the Colong Foundation may cover some of the gaps. Nevertheless, in the ensuing dot-points some of the omissions are flagged.

- **S8.16 Traffic and transport**
  5Q Traffic and transport impact assessment
  This is likely to be covered in the LEG and/or Colong submissions – there are implications for road and rail traffic in terms of the number of trucking movements (including those for sand) and accessing rail for exporting 'excess' coal – the principal findings of the assessment effectively disregarded the amenity of the inhabitants of Cullen Bullen and Blackman's Flat. The actual findings focused more on mitigation than on the potential impacts. If mitigation is to be the answer to everything, the ultimate mitigation would be to leave the coal in the ground!

- **S8.21 Social matters:** there are many diverse social issues, but the principal adverse impact is on the amenity of the inhabitants of Cullen Bullen. The Society has spent much time working with the local people to help them find a voice. It is likely that the LEG and/or Colong submissions will look at this issue.

- **S8.22 Economics:** the economic argument for proceeding with the CCP is very strong; particularly so if one subscribes to the views that: (i) impacts on rural communities are 'collateral damage' and of no consequence in economic terms; (ii) Coalpac and its shareholders are entitled to make their profits from exploiting remnants of low grade thermal coal; (iii) coal-fired power generation in NSW and particularly in this region will continue unabated by any government spin about conversion to gas-fired power; and (iv) the reported positions of TRUenergy and Delta Electricity in 5T pp14-15 are **NOT** totally self-serving.

  In the simple economic terms adopted in 5T pp1-26, any other finding would require: (a) Coalpac to have totally misread the opportunity to make a 'killing'[43]; (b) a major collapse in the price of thermal coal, and/or a real commitment by government to switch from coal-fired power to gas-fired power and/or renewables (what a joke!); (c) a completely different way of placing a price on environmental values and the amenity of small communities; (d) an unfailing belief in the enforcement by government of Coalpac's enormous program of mitigation and management; and (e) a total inability to see that rehabilitation is a cosmetic practice designed to justify permanent damage to the hydrologic regime and the area's irreplaceable biodiversity.

4. Conclusions

- The EA is a comprehensive, beautifully produced body of work. It is testimony to the determination of Coalpac to gain approval in the face of numerous impacts on the environment, the amenity of the region's inhabitants, government

[43] Or at least make sufficient commitments to mitigate impacts so as to gain approval and thereby have a truly marketable asset.

legislation pertinent to threatened species, and Commonwealth and State commitments to reduce greenhouse gas emissions by curtailing coal-fired power generation and moving to transitional gas-fired and then renewable power generation. It is testimony to the driving power of anticipated profits. It is inevitably testimony to aspects of the practices of reductionism, minimisation and inadequate consideration of cumulative impacts as outlined in Section 2.2 below.

- The dot-points in Section 1.2 and the additional dot-points relating to the EA, as developed in Sections 2 and 3, collectively comprise a basis for rejecting Coalpac's EA, despite all the sums committed to mitigation, management and rehabilitation as bases for alleviating impacts, and despite consultants' reports which, perhaps in the context of what was asked, commonly identified and/or accepted assurances of such practices as a basis for endorsing the Coalpac Consolidation Project (CCP).

- The impacts of the CCP on plant and animal species listed under Commonwealth and/or State legislation should be a more than adequate reason for the CCP to be rejected.

- The CCP relies heavily on its potential dollar-value to sway the determinations of government and the local council and invokes the practice of a biodiversity offsets package enhance its case for approval. The Society insists that such a package is ethically, morally and scientifically unconscionable. Species and communities are listed as threatened (critically endangered, endangered, vulnerable) to prevent further declines in the populations and/or the type of habitat. Destroying threatened species and communities in exchange for other areas which may/may not have those species or communities, may/may not require rehabilitation, and may/may not be available would be a farce. In simple terms, if you have 10 occurrences and destroy 2 you have only 8 left!

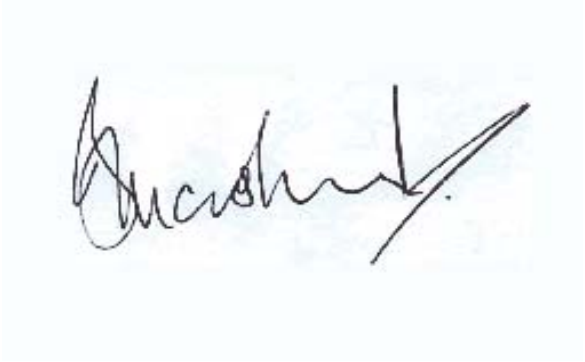
- The potential risks from the open-cut and highwall mining of 7 coal seams for cliff and pagoda collapses and their consequent impacts on flora and fauna are slightly reduced but not removed by the proposed mitigating step-backs and monitoring; much more is needed.

- The risks to groundwater and surface water, as identified in response to the Preliminary Environmental Assessment, largely remain, despite the level of risk being lowered.

- Air quality assessment leaves much to be desired. The buffer zone around the Cullen Bullen village and its school is woefully inadequate and MUST be reconsidered in the event of any approval being granted.

- The assessments of noise, blasting and lighting impacts are ridiculously statistical. They ignore the facts that the recipients are human and one-size does not fit all. It is regrettable that reducing opposition by buying people out will hasten the decline of the village. Arguments to the contrary which rest on employment and the injection of funds largely disregard the facts that many of the village's inhabitants will lack the skills to be employed and after 21 years the company will leave behind a ghost village.

- The CCP would seem to be a grab for resources when coal prices are high. Approval would presumably inflate Coalpac's market value and provide a handsome return to its shareholders.



Dr Brian Marshall,
For the Management Committee ***26 May 2012***

Appendix I: Rehabilitation deficiencies

- Open cut mining creates an enormous hole to obtain an economic commodity. In doing so, it destroys a landform and its ecosystems which depend on a vegetation- and soil-covered stratified[44] rock-sequence with different vertical and horizontal hydraulic conductances, and the surface flows, watertable and groundwater components of the hydrologic regime. All of these have evolved over (at least) thousands of years and are integral to the interplay between rock, soil, climate, flora and fauna.
- The surface water and groundwater distributions reflect balances between precipitation (rainfall), surface run-off, infiltration, evaporation and transpiration, in turn linked to the interaction of topography, soil structure and soil-horizon developments, and rock chemistry, structure and stratification.
- Rehabilitation involves placing largely disordered fill in a hole, sculpting it, covering it with soil and planting it. Much is said about harvesting the original topsoil and its seed-bank and then replacing it after mining – this is spin. The structure[45] of the topsoil is lost, its gradational connectivity to the deeper soil horizons and rock substrate is lost, again affecting infiltration and soil development, and even the seed-bank (if fully viable after sitting in soil dumps over the intervening years) could be ill-suited to the 'rehabilitated' conditions.
- Even if the topographic form with drainage channels is recreated (rather than just 'tastefully contoured' to an approximation of what was once there) the destruction of the substrate precludes meaningful **redevelopment** of the hydrologic regime. Digging out a 3d body of rock, soil, and its contained hydrologic regime of surface water and groundwater, and then claiming to rehabilitate it by filling the hole with disordered rubble and expecting the hydrologic regime to be the same as before is nonsense[46]!
- Recreating the original ecosystems is not possible. Plantings of various types and the distribution of additional seed by helicopter after years of open-cut mining (at the commencement of which the plants, shrubs and trees were removed, and the fauna necessarily packed its bags and migrated elsewhere) may take many years (5-10 plus) to create scrubby habitat and up to 10 times as long to create mature habitat, let alone old growth habitat. Yes, some fauna will return and ultimately some forms of ecosystem will be established, but they may be very different from what was once there.
- 'Rehabilitation' involves creating a cosmetic veneer over a deeply compromised region. At best it constitutes superficial damage reduction and at worst remains an environmental scar, a testimony to corporate greed. It is rather like applying pancake make up to an older person; it covers the damage but will never restore what was once underneath!

[44] This at least applies in the coalfields of the Sydney Basin but would, for example, be different for and open-cut porphyry copper mine.
[45] All soils have a structure/texture which is fundamental to their aeration, capacity to accept and partly retain infiltration of rainwater, and support plant growth and a range of subsurface and above-ground fauna.
[46] Rock-sequences have stratification and fracturing (= structure). Returning rock rubble to the hole doesn't simulate the original stratification, structure and hydraulic properties. The disordered fill will have different permeabilities and groundwater flow-paths so a different watertable will eventuate. Even with recreated drainage lines there is little likelihood of a stream's base flow being recreated because of the changed watertable