Comments on the Hansen Bailey report for Coalpac 'Response to PAC Review Report', with a special focus on the 'Significant Pagoda Landform'

By Dr Haydn Washington, environmental scientist, lead author of Washington and Wray (2011), peer-reviewed paper on pagodas, and Hon. Sec. of the Colo Committee, (h.washington@unsw.edu.au)

These comments are on behalf of the Colo Committee, a community group with a 30 year involvement with pagodas and coal mining in the Western Coalfields. However they are also from myself as an environmental scientist and author of a paper on the geomorphology of the pagodas, that has been misquoted and misinterpreted by Cumberland Ecology and the Hansen Bailey report. I am an environmental scientist who has been visiting pagoda rock formations near Lithgow for over 30 years, carrying out botanical study and examining the unique geodiversity of these formations. With my co-author, geomorphologist Robert Wray of the University of Wollongong, I published the only paper on pagoda geomorphology and geoheritage (we are aware of) on 'The Geoheritage and Geomorphology of the Sandstone Pagodas of the North-western Blue Mountains Region (NSW)' (Washington and Wray, 2011). I have commented previously on behalf of the community group, the Colo Committee (of which I am the Hon. Sec) on the Coalpac project, and the fact that the environmental science in its reports has been sub-standard. In the recent report of Coalpac it states that their consultant Cumberland Ecology defined 'Significant Pagoda Landform' (SPL) as:

> *"A complex that creates a continuous landform over a substantial area (typically greater than 10 hectares), comprising (as a minimum):*
> o *Large, substantial in height (typically up to 60m but may be higher), towering pagodas (either platy or smooth), that are generally prominent rock formations with associated cliff faces and deeply dissected gullies, characterised by banded ironstone and associated rock structures containing numerous overhangs and crevices, with;*
> o *Associated deeply dissected wet gullies between the pagoda formations that contain a complex of habitat types for both flora and fauna, some species of which are rarely found elsewhere (e.g. Pagoda Daisy)."*

It then makes clear that anything lower than 10 metres was deemed to be only a 'rock outcrop'. They had this definition reviewed by a fluvial (river) geomorphologist in Appendix F with no demonstrated experience of sandstone landforms, certainly not in the Blue Mountains. There are serious problems with the Cumberland Ecology SPL definition above, which seems designed to minimise areas recognised for pagoda geodiversity. Firstly, it states that pagodas must be 'substantial in height' suggesting 60 metres and above 10 metres. Most pagodas are much smaller than this. Some well developed pagodas are only 2-10 metres in height, but are definitely pagoda formations of significance. I am not the only scholar to note this, Wilkinson et al (2003) note 'Gross slope morphology is also influenced by *sandstone towers 2-15 m high, known locally as 'pagodas'*, which are generally restricted to distal spur areas' (my emphasis). Similarly, Young, Wray and Young (2009) in their book 'Sandstone Landforms' in figure 4.5 on p. 96 show a typical pagoda which is less than 10 metres high. Also Benson and Keith (1990) in their paper 'The natural vegetation of the Wallerawang 1:100,000 map sheet' show community 21D 'Pagoda Rock Complex' as extending extensively on the ridge *north* of Cullen Bullen (though Cumberland Ecology does not mention this).

Secondly, the Hansen Bailey report acknowledges that Washington and Wray (2011) define *both* platy and smooth pagodas, yet the SPL definition defines pagodas as 'characterised by banded ironstone'. Smooth pagodas are *not* characterised by banded ironstone, which is why they are *smooth*, as clearly stated in Washington and Wray (2011), which p. 22 of the Coalpac Hansen Bailey report says was used to develop this definition of SPL. In addition it states that SPL must be greater than 10 ha in area. This is a purely arbitrary figure, one set quite high (as noted by their own consultant Stephen Bell of East Coast Flora in the Hansen Bailey report). There are excellent pagodas on areas ***far smaller than 10 ha***. There is no reason to stipulate such a large area except to artificially *minimise* the area of SPL and exclude this from the northern part of the project area. Pagodas can often be isolated structures, many of which are not 10 ha in size. Nevertheless such smaller areas can have very high geodiversity and biodiversity value. Such a high figure in fact would exclude a large part of highly significant pagodas, as it does here (which seems to be the aim).

P. 44 of the Hansen Bailey report states:

> *'In their review of pagoda landforms present within the Project Boundary, Cumberland Ecology has adopted the definition used by Washington and Wray to map the extent of SPL and other Sandstone Outcrop features …'*

This is simply ***incorrect***, and is a mis-statement of our work. As the lead author of the Washington and Wray (2011) paper I do not accept the Cumberland definition of SPL as an acceptable definition of significant pagoda landform. It is in fact not based on our paper at all. It is clearly biased to minimise the area that would be classified as SPL. Essentially, the report states that there is no SPL north of the Cullen Bullen township. Now I have visited the area in the south but not the north personally. However, even on Google Earth it is apparent that there are many pagodas in the northern part of the area, as the photos below show by those who have visited them. The above inadequate definition of Cumberland Ecology is thus being used to cut out recognition of SPL over a large part of the Coalpac project area. ***I do not believe this is accurate or scientific.***

‘Kings Chair’ pagoda complex north of Cullen Bullen. This is clearly a platy pagoda and shows that significant pagoda landform is not restricted to the south of the Coalpac project area. (Photo Chris Jonkers)

Platy pagodas east of Cullen Bullen cemetery (Photo Chris Jonkers)

Pagoda in the northern part of Coalpac project area, which the Hansen Bailey report defines as just a 'rock outcrop' (Photo: Ian Brown)

I have shown the above photos in the north of the Coalpac proposal to my co-author of Washington and Wray (2011), geomorphologist Dr Robert Wray of the University of Wollongong. He agrees definitively that *these are pagodas*. Pagoda formations such as 'The Kings Chair' and similar features close by, are clearly visible from, the Castlereagh Highway, and thus well-known local landmarks. The fact that Coalpac's consultants have defined pagodas out of existence in this area suggests that Coalpac's consultants have operated *without local knowledge*. It is also important to recognise that the attempt to focus only on SPL (and define it narrowly) ignores the many natural values of the superb escarpments and non-pagoda formations also found in this area. There is a great deal of geodiversity in this area other than pagodas that also deserves protection.

The response to the PAC report by Hansen Bailey for Coalpac also essentially ignores the PAC recommendation for a 300 metre buffer zone from pagodas and escarpment. The PAC's recommendation makes excellent sense from both geodiversity and biodiversity angles. Coalpac makes a tiny concession by excluding a *mere 9 ha* or 1% of the proposed open cut area near their already limited definition of SPL. Coalpac is thus unwilling to make any real concession to the significance of pagoda landform. They are clearly unwilling to make any significant changes in the light of the detailed and thorough PAC assessment report. To suggest that not mining 9 ha of the proposed open cut would somehow mean:

> *'The contraction in the open cut mining footprint results in a 1.5 km, or 25 %, reduction in disturbance'* (p. 23 Hansen Bailey report)

is irrational. On what basis? This statement is bizarre. The map clearly shows that there is almost no expansion of a buffer zone next to pagodas. The claim of a 25% reduction in

disturbance is thus a furphy without any scientific basis. I hope that DPI will not be influenced by statements that *sound* positive but are essentially PR spin rather than fact.

p. 25 of the report states

> *'To provide greater certainty in environmental outcomes, and in response to community and PAC concerns, highwall mining has been removed from the mine plan under pagodas complexes and clifflines in the SPL'.*

P. 81 says 'No highwall mining will be carried out under the significant rock features within the SPL (see Section 3.5)'. .However, figure 7B shows that this is *incorrect*. It shows that in three places the SPL identified and mapped by Coalpac will be highwalled. I have walked close to those areas and they are indeed pagodas and qualify as 'significant'. The supposed highwall concessions are thus again PR spin rather than real. Very little has changed in this report from previous unsatisfactory reports, though this report seeks to make out that Coalpac has made substantial concessions. It has not, it has made almost no concessions in the face of the independent detailed assessment by the PAC.

p. 25 further states:

> *'On the basis of further expert advice and peer review, no changes to highwall mining design or methods to those described in the EA are warranted in the remaining areas where highwall mining is to occur to protect any sensitive features. In these areas no noticeable impact to any surface feature will occur. This has been confirmed by further peer review, and the inclusion of additional Project Commitments as part of the Contracted Project.'*

Coalpac is thus again ignoring totally the evidence provided in the PAC report and by submissions. It is also ignoring the long history of subsidence causing damage to surface features in the western coalfields. Coalpac has thus made very little change to its open cut proposals and in fact as p. 25 shows plans to ***expand*** **its highwall proposals** further. Both threaten pagodas and high conservation bushland are at risk. Coalpac has thus in reality treated the thorough and professional PAC assessment report with contempt.

p. 55 of the Hansen Bailey report refers to impacts on pagoda landform ecology. The stated figure of SPL is a non-peer-reviewed estimate by one of their consultants. It may indeed be possible that 0.5% of pagoda landform occurs in this one project area, or it may be double that. This in fact is quite a considerable amount to be present in *just one project area*. Given that the DPI has stated it is aware of the problem of cumulative impact, suggesting that impact on 0.5-1.0% of pagoda landform is acceptable does not follow. Many other projects impact on pagodas or still seek to. The statement that follows the above however is even more illogical. This is that the project 'will not disturb the area of SPL mapped within the Project Boundary and will not disturb other areas of sandstone cliffs, caves and rock outcrops'. This again is PR spin and not fact, and the history of damage to pagodas on the western coalfields has shown that there is no evidence for such a definitive statement. Quite the contrary.

As an environmental scientist (originally a plant ecologist) I have commented previously on the poor standard to flora assessment in the Coalpac EA, which missed around 100 plant species, including the threatened *Persoonia marginata* (which had to be found by a local

botanist who found many other species not located by Coalpac or its consultants). Despite agreeing not to destroy an area of the *Persoonia* in this report, there is no sign that Coalpac has improved its approach to the biodiversity protection and ecological integrity of the project site. However, I will leave it to the local botanists to comment on this failure more fully. There is also an attempt to suggest that the Broad-Headed Snake may not exist on site, when this was photographed by experienced photographer Ian Brown, and the photo has been used in submissions (as Coalpac is aware), and the location was noted.

My penultimate comment is in regard to the supposed *economic benefits*. The Hansen Bailey report makes clear that these are based on the neo-classical approach of cost-benefit analysis (though they reverse it to benefit-cost analysis). This approach has rightly been questioned by the Institute of Sustainable Futures. It is not even best practice environmental economics, and certainly it is light years away from ecological economics that considers all values of nature. Cost benefit analysis always fails to account for natural values that are difficult to cost, such as ecosystem services, a fact acknowledged by UNEP in their report 'The Economics of Ecosystems and Biodiversity' (Kumar, 2010). Cost benefit analysis totally fails to account for intangible values such as beauty and sense of place which the community values highly. Whether the Treasury uses cost benefit analysis or not (they may not have moved with the times), it is increasingly being recognised by economists working on environmental issues that cost benefit analysis is a ***flawed tool*** and inadequate to assess all values of a site. The Institute of Sustainable Futures was thus correct to point out that economic valuation based the flawed cost benefit analysis doctrine is inadequate. The DPI should thus consider whether it wishes to blindly follow the cost benefit analysis path (strongly questioned by environmental scientists and ecological economists) or whether it should take the broader view suggested by the ISF. On the basis of the latter, the Coalpac economic assessments are highly inadequate.

My final comment is in regard to the attempt by Coalpac to maintain that the PAC exceeded its mandate. P. 9 of the Hansen Bailey report states the PAC assessment review was:

> *'misguided as to the basis on which it was required to be conducted under the EP&A Act, resulting in the unwarranted conclusion as to the 'merit' of the Exhibited Project.'*

It then lists several points where Coalpac states the PAC assessment was 'in error'. This seems to be nothing less than a failure to accept the judgment of the independent body that thoroughly assessed an inadequate (and often factually incorrect) EA. Speaking as an environmental scientist of 38 years experience, the PAC assessment report was the best and most thorough I have read, and the PAC should be *commended on its thoroughness and professionalism*. Given that Coalpac during the EA and at the Public Hearing was shown to have been wrong and to have ignored or twisted evidence, it is quite ironical that Coalpac is seriously maintaining here that the PAC was in error! I hope the DPI will take this into consideration in its assessment of 'Coalpac Consolidation Project: Response to the PAC review report'.

Conclusion

The Coalpac project has been an exercise in how ***not*** to carry out an environmentally responsible project. Its environmental assessment of the area was woefully inadequate, it mis-stated or twisted environmental science, it refused to correct blatant mistakes when pointed

out by scientists and the community, it sought to make almost no concessions in the face of overwhelming community opposition. The Hansen Bailey report continues this trend. It makes a tiny concession of removing a mere 9 ha from the open cut, and then proposes an expansion of highwall mining to make up for this! It uses a totally erroneous and unscientific definition of 'significant pagoda landform' to seek to deny that pagodas exist in the northern part of the project area. To justify this it seeks to use the peer-reviewed scientific paper on pagoda geomorphology that I was lead author of. To be absolutely clear, neither the paper by Washington and Wray (2011) or the paper by Wilkinson et al (2003) support the definition of SPL used in this report. This has clearly been defined to seek to minimise recognition of important pagoda habitat. Coalpac similarly ignores the outstanding recommendation by the PAC for a 300 metre habitat buffer next to pagodas and escarpments. It even fails to suggest a compromise habitat buffer. Finally, it seeks to suggest that the PAC was in error and claims that their excellent assessment was 'misguided'. In fact the PAC assessment was outstanding and of best practice standard. The Coalpac project by contrast is not best practice, is poorly based in environmental science, and ignores community opinion and opposition. It also shows almost no real attempt at compromise. It is an example of an extremely poor planning proposal that is environmentally and socially irresponsible. As the PAC concluded, for this proposal the negatives far outweigh the positives. I hope that the DPI will support the PAC determination and thus refuse the application in its entirety.

References

Benson, D. and Keith, D. (1990) 'The natural vegetation of the Wallerawang 1:100,000 map sheet, *Cunninghamia* Volume 2, Number 2

Kumar, P. (2010) *The Economics of Ecosystems and Biodiversity: Ecological and Economic Foundations*, London: Earthscan.

Washington, H. and Wray, R. (2011) 'The Geoheritage and Geomorphology of the Sandstone Pagodas of the North-western Blue Mountains Region (NSW)', Proc. Linn. Soc. NSW, 132, 131-143

Wilkinson, M.T., Humphreys, G.S., Chappell, J., Fifield, K. and Smith, B. (2003) Estimates of soil production in the Blue Mountains, Australia, using cosmogenic BE.In: Advances in Regolith Roach, I.C. (Ed) pp. 441-443.

Young, R., Wray, R and Young, A (2009) Sandstone Landforms, Cambridge University Press, Cambridge