THE COLONG FOUNDATION FOR WILDERNESS LTD.

Tuesday April 28th, 2020

Ms Genevieve Lucas
Senior Environmental Assessment Officer
Mining and Industry Projects
NSW Department of Planning, Infrastructure and Environment
Locked Bag 5022
Parramatta NSW 2124

Dear Ms Lucas,

Objection to State Significant Project – Angus Place Mine Extension SSD 5602 - Amendment Exhibition

Relationship of the Colong Foundation for Wilderness to this proposal

The Colong Foundation is a community conservation organisation that campaigns for the protection and management of wilderness, national parks and other large natural areas. The organisation was founded in 1968 (as the Colong Committee) and has played a major role in many important conservation achievements over the past 52 years in NSW. Many of these achievements are highly valued by the community. Yet they were only achieved by sustained and vigorous public action supported by forward-looking governments and government agencies. These achievements include the expansion of the national park system in the Blue Mountains and its culmination in the World Heritage listing of the million-hectare Greater Blue Mountains Area in 2000.

For over thirty years the Colong Foundation has worked towards the reservation of a 39,000 hectare Gardens of Stone State Conservation Area over state forests near Lithgow. The tourism value of this proposal area lies in its scenic “pagoda” landscapes of stone pinnacles, slot canyons, waterfalls and extensive cliff lines that are associated with highly diverse plateau and tableland forests, rare plants, nationally endangered swamps and windblown sand dunes from the last Ice Age. These significant natural features make up a complex and stimulating natural wonderland just two hours from Sydney and readily accessible by vehicle.

Pagoda landscapes have a unique cachet, as an outstanding, must-see scenic attraction. Given appropriate visitor management, presentation and marketing as *Destination Pagoda*, this attraction will bring new visitors to Lithgow. No other resource value in the Lithgow region has this cachet or a significant power to attract tourists.

These scenic pagoda landform values are only offered in the Lithgow region and nowhere else in the world, they are internationally significant values. With appropriate management by the NSW National Parks and Wildlife Service this region shall become a major tourism designation that can significantly benefit the regional economy. If the proposed new reserve is well planned and presented it will easily attract 200,000 new visitors a year who would generate $28 million spend, at least half of which can be readily captured by Lithgow.

The Gardens of Stone Alliance commissioned last March an independent tourism economist, Jo Mackellar of Destination Research, to verify the conservative estimates of value in terms of employment and economic returns for Lithgow done by our experienced reserve management consultants for the new Gardens of Stone reserve proposal. This report is expected to be delivered in May.

Protection and effective management of the many natural heritage values in and around Lithgow will provide long term employment benefits for the next generation, encouraging them to stay in Lithgow. The rehabilitation of the Gardens of Stone and establishment of the reserve will provide medium term employment to those who find themselves unemployed. It will also contribute to Lithgow's lifestyle attractions and encourage new residents.

A Gardens of Stone Conservation Area can allow both coal mining and protection of national and internationally significant heritage upon which future tourism industry jobs depend.

Centennial Coal support for this reserve proposal includes in the Angus Place extension proposal a financial 'offset' for some elements of its mine damage to nationally endangered swamps that would enable millions of dollars in compensation to be coupled with conservation management. The Colong Foundation believes that while biodiversity offsets, including financial offsets, are legal- the original idea of biodiversity offsets was 'like for like' to protect similar areas, not just a financial payment. Such payment cannot consider impacts on pagoda landscapes, let alone provide the full protection for their unique natural heritage.

Financial compensation offsets do not necessarily protect the impacted heritage values. Offsets, and particularly financial offsets, pale when compared to what is needed, substantial environment protection (i.e. avoidance of heritage value damage) or effective mitigation of environmental impacts. Mitigation, if it can be adequately applied, can

produce a better outcome than financial offsets as mitigation helps to protect the important heritage values in situ.

Avoidance and mitigation mechanisms are part of NSW and Federal Government offset policies. Consideration of avoidance and mitigation are required before like-for-like offsets or, as a last resort, financial offsets are considered. For this mine extension proposal these former mechanisms were not adequately considered, but rather were dismissed as not viable despite being applied in nearby coal mines and financial offsets applied.

The Colong Foundation believes a more thorough examination of the case for protection and mitigation of damage is warranted by the Department of Planning, Infrastructure and Environment (DPIE), given current mine management and development control practices in the region.

Purpose of this submission

This submission examines the avoidance and mitigation of damage to the threatened heritage values by Centennial Coal at its Springvale and Airly mines, in the same market, for the same power plant. It is suggested that these measures are appropriate to be applied to this mine extension proposal.

This submission justifies the measures as necessary by providing a body of evidence to demonstrate that the unavoidable consequence of the proposed financial offsets shall be to accelerate the extinction of nationally endangered swamps on Newnes Plateau. This is done by examining the evidence of past damage where avoidance and mitigation were not applied. Impacts to streams and geodiversity are also examined. The submission also reminds decision makers that of previous decisions that recognised the international significance pagoda landforms of special significance as warranting full protection.

By reducing the proposal consent period to an appropriate length of time consistent with the economic life of the Mt Piper Power Plant, it is suggested that a revised mine plan for the Angus Place mine extension can then further avoid and mitigate swamp, stream and geodiversity impacts. This can be achieved with the proportion of coal retained in-situ by making the consent period shorter for the mine area. A more appropriate consent period will also marry better with climate change policy and efforts to restructure and diversify the economy of the Lithgow region.

Other factors relevant to flexibility in and adaptation of development controls are also examined as part of the above general argument.

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Grounds for objection

The Colong Foundation objects to the proposed Angus Place Mine Extension (APMEP), which would see an *increase in intensity of longwall mining* operations at the Angus Place Colliery relative to the proposal described in the 2014 EIS report. This new proposal shall increase damage in the mined area in the Gardens of Stone region. This increased damage is at odds with the company's stated support for this reserve proposal, when a more appropriate expression of support would be to reduce mining intensity.

This mine expansion application seeks to permit mining of 4.5 million tonnes per annum of Run of Mine (ROM) coal and grandfather the planning consent until 2053.

The long consent period requested, and increase in intensity of mining in the subject area relative to the original development application, are totally at odds with the global approach to climate change mitigation, the declining international appetite for coal, as well as the protection of heritage values in the Gardens of Stone region. The proposal has come forward as if neither climate change existed, nor that the national and international heritage values of the Gardens of Stone reserve proposal should be protected.

Local impacts

This proposed mining in the extension area shall cause:

- Significant loss for flow in the Wolgan River and to other streams on the Newnes Plateau in and near the proposed mining area;
- Destruction or severe loss of nationally endangered swamps and other swamps;
- Significant damage to the Birds Rock Flora Reserve, particularly to the rock itself;
- Pollution of pristine Carne Creek and further pollution impacts to the Wolgan River, both of which flow through the Greater Blue Mountains World Heritage Area just downstream and also the nearby six-star Emirates Wolgan Eco-resort; and
- Significant damage to the spectacularly unique geomorphology of the 'pagoda country' within and near to the area proposed to be mined.

None of the above impacts are adequately addressed in the amended environmental impact statement or the original 2014 EIS.

The proposed mine extension must be subject to major review to reduce the intensity and extent of the proposed mining operation so that the likely significant environmental impacts are avoided and where that is not possible, moderated.

Reduce mining intensity and further heritage value avoidance

The outstanding national and international heritage values of the Gardens of Stone region must not be further impaired. The Colong Foundation believes that enhanced protection, similar to that at the Airly Mine in the Capertee Valley where damage is to some extent *mitigated* by a reduction in longwall width to mini-longwall size (50m width)[1].

Alternatively, the methods previously applied at Springvale mine of splitting and shortening the length of certain longwalls, as well as the abandonment of some others entirely (after 2015 consent) would be effective in avoiding mining damage to heritage values. Such mine plan revisions would greatly reduce the irreversible damage that the current proposed mining will otherwise cause to this geomorphologically unique and ecologically significant area (see below - swamp impact mitigation measures section).

Shorten the period of development consent

If the DPIE were to determine that the proposal should be granted approval, following a major review and public inquiry, then the Colong Foundation recommends a staged approval process be adopted. The primary consent should also be shorted by at least eleven or as much as twenty years. The mine proposal should face critical review every 5 years, given the environmental sensitivity of the region and its likely reservation as a state conservation area, so that consent conditions can be adapted when necessary to meet these circumstances.

Further, a set of triggers are required, which if exceeded would result in an immediate review of consent conditions, including environmental offset compensation (i.e. impose an effective TARP processes), should environmental impacts be observed in the environmental matters of national, international significance, further loss of flows in or pollution of the Wolgan River and Carne Creek.

Far-field impacts must not extend beyond the coal extraction area. There must be no more losses of heritage values beyond approved mine areas of Newnes Plateau, such as waterfalls ceasing to flow (e.g. two Gang Gang waterfalls were lost without any consideration in the Springvale EIS), pollution events in streams and damage to geodiversity.

[1] The Colong Foundation would prefer that Centennial Coal had kept its promise for the Airly Mine to protect half of the surface terrain but is now mining two thirds of the area, and using mini-longwall methods, rather than less intensive bord and pillar methods it said it would use. That said, the mini-longwall methods are far less damaging than the more intensive longwall mining proposed for Airly Mine in 1991 by Novacoal.

There has been much controversy arising from many unexpected adverse impacts associated with the operations of both Angus Place and its sister underground mine, Springvale. For DPIE to make a recommendation for a 32- year development consent as requested by the applicant is not appropriate when outcomes for significant heritage values are uncertain. This period is out of kilter with the typical 21- year period of a mining lease, regulatory responses past damage, the significance of heritage values on the subject land and to climate change.

The Australian Energy Market Operator expects closure of the Mt Piper Power Plant to be in 2042, at which time the plant shall be fifty years old. Operation beyond fifty years will be associated with markedly increased operational costs due to maintenance. This power plant is unlikely to be in economic operation beyond 2042, and to justify consent for this mine till 2053 solely on the basis that this plant shall be in operation at that time is a poor argument.

Coal mining consents are often for shorter time periods than that proposed in these circumstances. It is now common a practice to issue short periods of consent and staged reviews where a mine is controversial, for example the Dendrobium Mine consent in the Southern Coalfield.

The DPIE should note that recent rail transport capabilities at Mt Piper enable additional coal supply flexibility for power generation, in the unlikely event, further protection measures at Angus Place Mine creates a supply shortfall towards the end of a shortened development consent period. Shortfall issues that may arise with the proposed 5 yearly consent reviews can also be addressed by other suppliers. The Lidsdale Coal Unloader now supplies coal by rail from Centennial's Airly Mine to Mount Piper Power Station. By using backfilled coal trains returning from the coast Centennial's Clarence Colliery could also supply coal to the power plant, instead of by road as it has sometimes done during recent supply emergencies. Mount Piper Power Station also has an approved Coal Unloader at Pipers Flat, that if built can enable coal delivery by rail from north of Rylstone or other areas via the Sydney-West, Parkes, or Wallerawang-Gwabegar rail networks, should a need emerge in the mid-term of the proposed consent.

The consent period should be till 2030 to avoid locking in 9 per cent of Australia's greenhouse gas emissions that the mine generates through the Mt Piper Power Plant it supplies. A consent until 2053 will place our Paris Agreement reduction target at risk and prevent future government intervention to curb emissions from this source.

An adjusted consent period enables more adequate avoidance and mitigation of impacts

Once a consent period is reduced to a period consistent with past precedents and power plant design life, then more than a third, and perhaps up to two thirds, of the resource in the proposed mine area shall be available for more adequate heritage protection by avoidance and mitigation, rather than financial offsets.

Impacts to heritage features like Birds Rock, Cathedral Cave, and Tristar and Twin Gully swamps should be *avoided* and thereby protected.

The intensity of mining must also be reduced overall (i.e. *mitigated*), so that the chance of retaining other swamps, and flows in the Wolgan River, its swamps as well as over Wolgan Falls is significantly improved.

POTENTIAL IMPACTS OF MINE EXTENSION PROPOSAL

- **Impacts on Indigenous Cultural heritage**

In addition to the nine Aboriginal Cultural Heritage sites identified by Centennial within the 600m boundary of APMEP, independent sources have found three more sites. These cultural values must be considered within the assessment- including ground truthing and consultation with local Indigenous groups. The sites include a shelter with deposit and a shelter with a grinding stone.

See separate confidential submission by Yuri Bolotin for detail on these sensitive matters.

- **Water impacts**

General: Mining-related rock fracturing impacts on stream flow

The following generic description of the groundwater impacts associated with longwall coal mining is the Colong Foundation's understanding of the mining-related damage to streams and swamps in the Gardens of Stone.

Firstly "Groundwater levels drop as confined aquifers become rapidly unconfined (depressurisation).

Second, topographically high or perched aquifers drain to lower aquifers and zones through aquitards fractured by subsidence.

Third, increased fracture permeability over the panel decreases hydraulic gradients, lowering heads up-gradient.

Fourth, drawdown spreads out around and ahead of the primary head drop in the subsided area, to an extent varying with transmissivity" [2]. If overlying rock aquifers above a mined coal seam become hydraulically connected with surface waters, then the stream may lose its permanent base flows, particularly if associated near-surface aquifers are compromised by rock fracturing.

To these can now be added a fifth point, when mining operations intersect a geological lineament, there is rapid and significant groundwater depressurisation. These impacts extend for 1600 metre (as at Carnes West Swamp and waterfall, for example) causing loss of stream flows and soil moisture in swamps[3].

"A reduction in streamflow may not only be the result of fracturing streambeds and rockbars in the mainstream overlying an active longwall mine; mining-induced fracturing *can extend across the catchment* and its tributaries, generally bounded by the limit of subsidence. Whereas the primary head drop from increased fracture porosity occurs in the subsidence trough defined by the angle of draw, the extent of the transmitted drawdown itself defines the vaguer angle of dewatering influence" (Booth, C., 2009 - my emphasis).

"Increased fracturing allows rainfall to infiltrate and recharge fractured aquifers, reducing runoff available for recharging streams. Although rainfall recharge to the shallow aquifers can increase, groundwater levels can also decline due to the mining-induced fracturing of the rock mass, causing the dewatering of shallow aquifers and reducing base flow discharge"[4].

The mining under Newnes Plateau has caused cracking of the Wolgan River's headwater catchments and increased the downwards permeability in the near-surface aquifers across large areas. This cracking of a catchment greatly reduces the capacity of near-surface groundwater to support stream flow, such as in the case of Junction Swamp (see figure on the following page) and across the headwaters of Kangaroo Creek on Newnes Plateau.

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[2] Booth, C. J., 2009, 'Keynote Address – Hydrogeological Mechanisms and Impacts of Longwall Mining', in International Association of Hydrogeologists, Australian National Chapter, New South Wales Branch, *Groundwater in the Sydney Basin Symposium*, W.A.Milne-Home (Ed), IAH NSW, Sydney.

[3] Page 15, Centennial Coal, Springvale Mine Longwall 419 Extraction Plan 22/7/2016, Part 2 of Preamble Evolution of the Understanding of the Interactions of Groundwater Behaviour and Mine Subsidence at Springvale Mine

[4] Jankowskia, J., 2009, 'Keynote Paper – Hydrological Changes due to Longwall Mining in the Southern Coalfield, New South Wales, Australia', in International Association of Hydrogeologists, *Australian National Chapter, New South Wales Branch, Groundwater in the Sydney Basin Symposium*, W.A.Milne-Home (Ed), IAH NSW, Sydney.

Centennial Coal has previously claimed that much of the water disappearing from fractured streambeds may re- emerge further downstream. East Wolgan Swamp presented evidence to the contrary. In any case re- emergent surface water is often heavily contaminated with groundwater polluted with salt and metals. Any downstream sensitive instream environments and riparian environments, such as some shrub swamps and the Greater Blue Mountains World Heritage Area, could be impacted by eco-toxic groundwater effluent.

Junction Swamp - gully erosion of peat soil caused made worse during recent post-fire storms

Carne Creek-Wolgan River junction, showing a plume of iron and manganese precipitate from Centennial Coal's previous mining operations on Newnes Plateau.

The connection of longwall mining with reduced stream flows that are associated with bright orange sediments is a common occurrence. It has happened at Waratah Rivulet and elsewhere in the Southern Coalfields, such as at Native Dog Creek. Such staining also accompanied discharges to the Wolgan River, as shown above.

Past loss of stream flow in Kangaroo Creek and the Wolgan River by Angus Place Colliery

The flow of Kangaroo Creek has been much reduced since May 1996 when longwall operations commenced under a swamp in its headwaters. Very low flows from the headwaters of Kangaroo Creek have continued ever since. A small dam located on Kangaroo Creek downstream of the mined area has never been full since 1997. The bed of the dam is now vegetated. Aerial photography from the 1980s shows the dam full. Since mining by Springvale Colliery, upper Kangaroo Creek only flows very rarely after heavy rain and usually has no flow at all (Centennial Angus Place, June 2009)[5]. These flow patterns appear abnormal. An unmined headwater swamp should store water from heavy rainfall events and afterwards provide at least some persistence of downstream flows. Since mining, no persistent stream flow has been observed. An area of Leptospermum dieback

[5] Centennial Angus Place Pty Ltd, June 2009, *Subsidence Management Status Report – four monthly update*, Figure 10: Kangaroo Creek weir KCW2 flow data (zero flow for period 5/11/2008 to 288/3/2009, page 28); emergent Eucalpyts page 42.

has been noted (Centennial Angus Place, Dec. 2009)[6], suggestive of a permanent ecological change in downstream riparian conditions.

Downstream of the abovementioned small dam, western ends of longwalls 930 to 980 of Angus Place Colliery pass under Kangaroo Creek with a depth of cover of 260 metres above the coal seam. On 16 April 2007, stream flow monitoring on Kangaroo Creek downstream of the SMP showed a loss of flow (Centennial Angus Place, 28 August 2008)[7]. The groundwater monitoring site on Kangaroo Creek Swamp then indicated a sharp fall in groundwater levels on 17 June 2008 with the passage of longwall 940 under the swamp. The fall was attributed to subsidence cracking and the creek stopped flowing at that point (Centennial Angus Place, August 2008). Creek flows above longwall 940 were reported to occur "through fractures in the underlying rock" (Centennial Angus Place, August 2008). Subsequent monitoring has revealed continued low water flows in the creek (Centennial Angus Place, Dec. 2009).

The natural Wolgan River flows are reduced and were in 2009 associated with a bright orange sediment in the reach that passes through the Emirates Wolgan Valley Resort. Relative to the river's pristine eastern tributary, Carne Creek, the main Wolgan River is in a poor condition within the resort property (Joost Heymeijer, 2009, pers. comm. and Lithgow Mercury, 23 Jan. 2010[8]). These impacts can now be expected on both streams, yet Centennial has denied any likely impact - see **Table 8.8** in the amended APMEP that states that no significant impacts on Carne Creek or the Wolgan River are expected.

Desiccation of Swamps

Nationally endangered swamps have experienced significant irreversible impacts from previous Angus Place longwall operations, and include the East and West Wolgan Swamps, as well as Narrow Swamp.

McHugh (2013) stated that: The Burralow Formation is crucial in the development and maintenance of both the Newnes Plateau Shrub Swamps (NPSS) and, in particular, the Newnes Plateau Hanging Swamps (NPHS)[9]. The presence of the aquitards in the Burralow sequence perform a vital function in the presence and persistence of the Newnes Plateau

[6] Centennial Angus Place, Dec. 2009, *Subsidence Management Status Report – four monthly update*, discrepancy in flow volumes page 11; Kangaroo Creek water levels, page 33 leptospermum die back, page 41.

[7] Centennial Angus Place Pty Ltd, August 2008, *Subsidence Management Status Report – four monthly update*, page 8; discrepancy in flow volumes, pages 11 and 26.

[8] Lithgow Mercury 23rd Jan, 2010, Researchers Left "gobsmacked".

[9] McHugh, E. 2013. *The Geology of the Shrub Swamps within Angus Place/Springvale Collieries*.

Shrub Swamps (McHugh 2011, 2013[10], 2014). Destroying or depressurising these aquifers will potentially lead directly to loss of NPSS/NPHS/THPSS swamps because their main source of water, the thing that led to their evolution in that spot in the first place, shall dry up. Connective fracturing from the mine to the surface is likely over much of the mine plans, according to the Tammetta equation. This is another way the Burralow aquifers that feed the swamps shall be lost. Groundwater assessments wrongly predict a mere 5-10m groundwater drawdown for the swamps directly affected by the proposal.

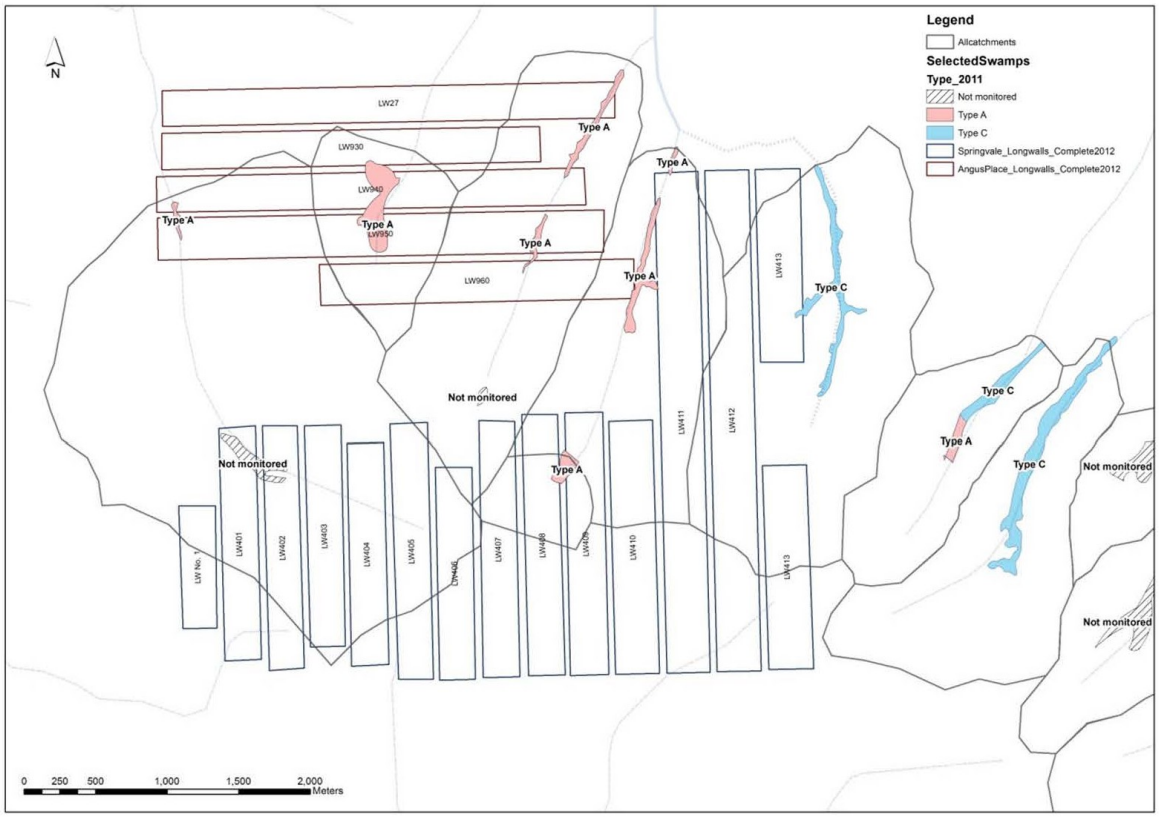


Figure 21 – Swamp types, after Aurecon (2011), showing correlation between swamp type and undermining of catchment in 2012

Pells Consulting (2015) described the characterisation of Type A intermittently wet and Type C perennially wet swamps as perhaps a documentation of mining impacts, not baseline conditions as claimed[11]. The above figure comes from a report by a consultant for Centennial Coal indicates this relationship.

Further to this, East Wolgan Swamp, a nationally listed Endangered Ecological Community, is one of the Type A swamps shown above and has been destroyed due to nearby longwall mining by Angus Place and Springvale mines. It saw the total loss of groundwater as well

[10] McHugh, E. 2013. *The Geology of the Shrub Swamps within Angus Place/Springvale Collieries*. Prepared for Springvale Coal Pty Ltd, July 2013.

[11] Pells Consulting, Dec 2015, Impacts from Coal mining at Springvale Colliery on Temperate Highland Peat Swamps of the Newnes Plateau, for Colong Foundation and Blue Mtns Con. Soc.

as the drying out, collapse and cracking of the peat. The devastation to this swamp was far greater than predicted by Centennial.

East Wolgan Swamp - no peat soil left - so much for attempts at rehabilitation using coir logs

West Wolgan Swamp which is entirely above the Angus Place Colliery, had already shown an increase in abundance of Eucalypt species (Centennial Angus Place, June 2009, page 42) indicating that this swamp has dried out. It similarly has faced a drop in groundwater levels. There has now been a serious loss of water in and peat soil damage to Kangaroo Creek, Junction, West Wolgan, Narrow, East Wolgan, Sunnyside East, Carne West, Gang Gang East and West and Carne Central swamps. Aquifer drainage has occurred in parts of Sunnyside Swamp, Nine Mile Swamp, Pine Swamp and Paddys swamp. Upper piezometers in the Sunnyside Swamps now report a complete loss of water associated with the Deanes Creek lineament that drained Gang Gang East swamp at the same time.

The Gospers Mountain fire of 2019/2020 burnt all the swamps on Newnes Plateau, and those swamps that had been mined under also burnt their peat/organic soils that were extremely flammable and tinder dry peat following the long drought. Subsequent heavy rain then caused significant gully erosion, compounding the already severe damage. Paddys Swamp, for example, has been dry since longwall mining in 2019 passed through a

connecting geological lineament, and regrowth since the 2020 fire is minimal. An erosion channel has developed in this swamp during the heavy storms of last summer making any chance of swamp recovery doubtful.

The peat/organic soils in Carne West and the Gang Gang Swamps have been turned to ash that was reportedly calf-high in places after the fires. These undermined, desiccated and now burnt swamps are probably no longer peat-forming swamp communities, especially since they no longer have a perched aquifer. This will lead to the loss of the Blue Mountains Water Skink and Giant dragonfly populations in those swamps. Monitoring of populations in Carne West, Gang Gang swamps, Sunnyside, Happy Valley and Broad Swamp as part of the Save Our Swamps program had shown a significant decline were mined under by Centennial and desiccated, and now that the swamps have been burnt. We believe these animals face a grim outlook in the mine proposal area as the experience in the above swamps will likely be repeated there.

Carne West Swamp - post fire and mining by Springvale

Due to earlier impacts to sub-catchments associated with Junction Swamp, East Wolgan and Narrow Swamp, the only real source of flow to the Upper Wolgan River on Newnes Plateau is from the proposed mining area.

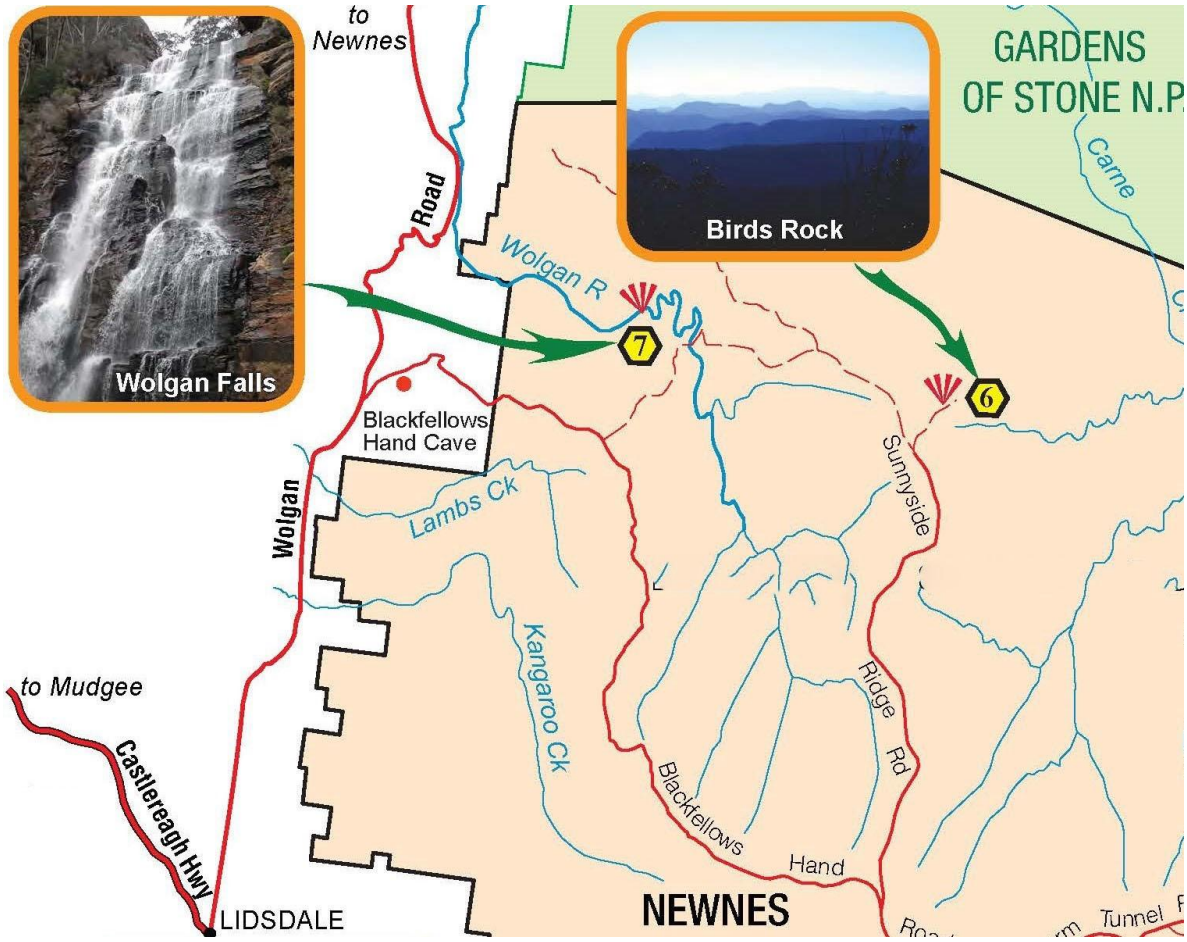
Groundwater loss shall also occur in the Wolgan River swamps. The groundwater model also predicts groundwater drawdown inside the World Heritage Area, especially in the Carne Creek catchment and also below the Wolgan River. The flow impacts of the proposed mining on this spectacular reach of the Wolgan River on Newnes Plateau and Wolgan Falls are dire. There is a likelihood that there will be no flow to the Wolgan River from upstream and over Wolgan Falls.

Twin Gully swamp - recovering post fire, but proposed mining by Angus Place is likely to wreck it.

Apart from loss of water from upstream due to groundwater impacts, the other way the Wolgan River swamps are likely to be impacted is by mining interacting with the major lineament field underlying the Wolgan River on Newnes Plateau. Of significance here is the Type 2 lineament underlying Tri Star Swamp which connects to the Wolgan Lineament (see MSEC's subsidence diagrams MSEC1046-07). Given these two causes of hydrological impact, the Wolgan River will be entirely drained by this proposal, contrary to the assertions made in **Table 8.8** of the Environmental Assessment.

This loss of stream flow will quite obviously impact downstream swamps, like Wolgan River Upper Swamp and Wolgan River Swamp.

Wolgan Falls is likely to cease to flow due to desiccation of its catchment.



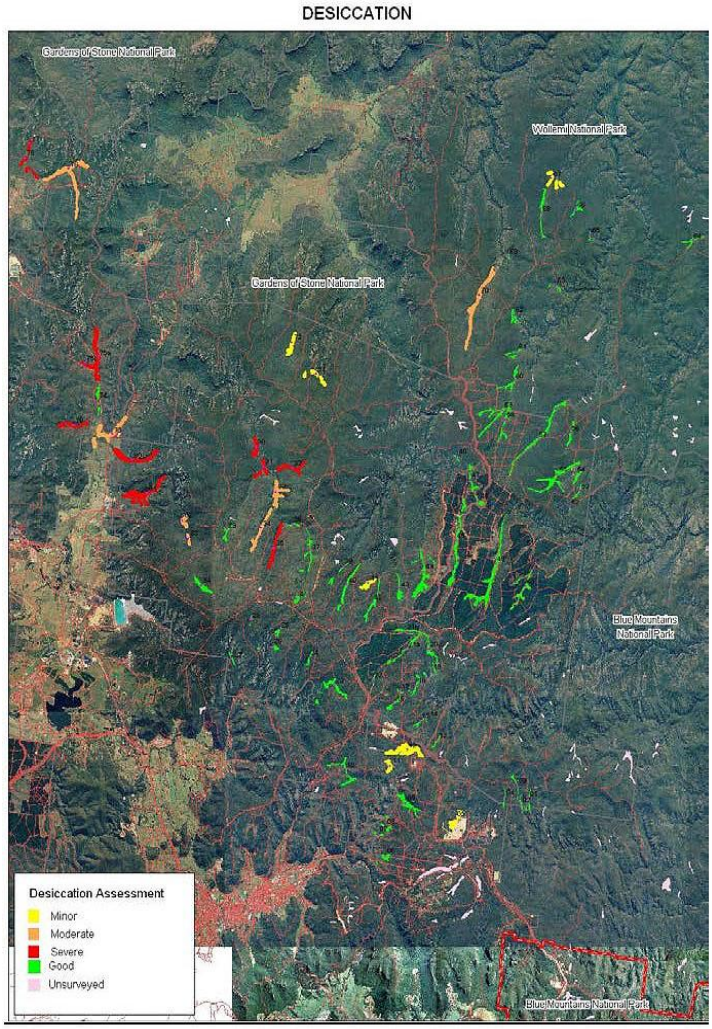
Location of Wolgan Falls from Short Walks on Newnes Plateau, 2009

In 2010 Michael Hensen, for the Save Our Swamps project, undertook an aerial survey of Newnes Plateau swamps and found severe to moderate cases of desiccation was clustered in the western areas of the Newnes Plateau associated with coal mining impacts[12].

Swamp channelisation was also observed to be associated with severe swamp desiccation.

[12] Hichael Hensen, 2010, Newnes Plateau Shrub Swamp Aerial Condition Assessment Project, for Save our Swamps.

In 2010 Henson identified severe swamp desiccation associated with coal mining – these impacts have greatly expanded in the last 10 years.



Swamp impact avoidance and mitigation measures

To protect some Newnes Plateau Shrub Swamps and Newnes Plateau Hanging Swamps from far-field impacts, the Springvale mine extension was required to manage its mine design since consent was issued in 2015.

So far, the adaptive management mine plan has:

- Shortened longwalls 421, 422, 424, 426 and 427; and
- In any event will not mine due to other reasons 422, 423 and 424.

Avoidance of swamp impacts is a procedure not considered feasible for the Angus Place mine extension proposals, despite the above experience.

Mitigation of swamp impacts by narrowing longwall panel widths to 'mini-longwall' intensity was not considered at all (see - section below - environmental impacts poorly offset).

- **Additional Flora impacts**

Surveys previously conducted for the APMEP EIS have omitted a number of threatened species that have been recently found in the area to be undermined. A range of State and Nationally listed Threatened species in Newnes State Forest have been recorded by Lithgow Environment Group, but not listed on Bionet. These include:

- Cambadge Kunzea (*Kunzea cambagei)*
- Smooth Bush-pea (*Pultenaea glabra*)
- Parris' Bush-pea (*Pultenaea parrisiae*)
- Klaphakes Sedge (*Carex klaphakei*)
- Dwarf Kerrawang (*Commersonia prostrata*)
- Swamp Everlasting (*Xerochrysum palustre)*
- *Leucopogon fletcheri*

Many, if not all, of these species could occur within the APMEP zone (and have not been found by the proponents survey).

The incredibly rare *Corunastylis reflexa*, an orchid not seen in 130 years since its first recording in 1885 near Jamberoo Mountain, has been recorded at 3 separate sites by LEG in 2020. Such significant discovery must warrant immediate action to protect a rare species with so little known about its population and where it occurs.

A new population of Swamp Everlasting, a species listed as Vulnerable by the EPBC Act, has been discovered at Lambs Creek. Given that this population falls within the area of the Angus Place lease, further assessments must be undertaken to determine its distribution more precisely to understand the possible threats it faces from APMEP.

These various discrepancies highlight major flaws in Centennials assessment and their understanding of the impacts likely for endangered Flora of the proposal zone. The inadequacy of the Flora assessments conducted by Centennial Coal must be addressed to ensure that all impacts are understood as completely as possible.

- **Additional fauna impacts**

The recent EIS and APMEP environmental assessment barely mentioned fauna, but the Forests NSW website for Birds Rock Flora Reserve states that the threatened species recorded in or near the Reserve include the Gang Gang Cockatoo (*Callocephalon fimbriatum*), Koala (*Phascoarctos cinereus*), Large Eared Pied Bat (*Chalinolobus dwyeri*), Squirrel Glider (*Petaurus norfolcensis*), Blue Mountains Water Skink (*Eulamprus euraensis*) , Eastern Bent-wing Bat (*Miniopterus schreibersii oceanensis*), Brush tailed Rock Wallaby (*Petrogale penicillata*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)[13].

Stygofauna face a threat from changes to groundwater that will occur as a result of undermining. The APMEP assessment states:

"aquifers that provide habitat for stygofauna are expected to be impacted by reductions in groundwater levels following mining induced groundwater depressurisation. The potential impact on the perched swamp aquifers present the greatest threat to stygofauna, as the swamp area could dry as the water table drops from underground mining activities."[14]

There is a significant lack of understanding regarding the stygofauna that occur throughout this area. Subsequently, a comprehensive, systematic pre-mining stygofauna survey should be implemented across the project area with finer resolution taxonomic identification of stygofauna, to ensure that the diversity of stygofauna is properly assessed and potential risks determined.

Following the unprecedented bushfires of 2019/2020, the distribution of species, as well as the threatened species registry, will be radically changed since this APMEP was lodged. As a result, the EIS and associated BIA addressing impacts on fauna, are outdated. Species

[13] https://www.forestrycorporation.com.au/__data/assets/pdf_file/0006/669885/bathurst-ma-birds-rock-flora-reserve-working-plan.pdf
[14] ERM, Angus Place Amendment Report (2019) p. 87

that occur in the region to be impacted by APMEP could include a number of additional threatened species, and could potentially include species rarely recorded in the region as a result of such wide-spread bushfire impacts.

- **Impacts on World Heritage**

The World Heritage Area will be impacted by toxic groundwater discharges flowing into Carne Creek and the Wolgan River, and by a predicted loss of groundwater. The Wolgan River in the World Heritage Area shall suffer a significant loss of flows and to a lesser extent so will Carne Creek. These stream flow losses reflect the regional drawdown of groundwater, that is now exported to the Mt Piper Water Treatment Plant at a rate of up to 32ML/day.

- **Loss of additional scenic values**

Unmapped pagoda's and other unique, striking geomorphological features, such as an ancient forested wind-formed dune, are found within the impact zone of APMEP causing further loss for the scenic value of this region. Newnes Plateau, and the slot canyons, streams, caves, cliffs and pagodas found here, are popular with a variety of recreational users.

Centennial has not considered this loss of scenic values within its environmental assessment, even of the sites that have been acknowledged to be damaged, like Birds Rock. Important scenic values need to be assessed and incorporated in the consideration of offsets.

Isolated pagodas scattered through biodiverse montane heathlands are remarkably beautiful, as the following image demonstrates.

View south along upper Wolgan Valley in Study Area

- **Geomorphology**: Pagoda landscapes

The Pagoda landscape that occurs in this area has been designated as being internationally and nationally significant[15]. Previous decisions within the 2012 Planning Assessment Commission's [PAC's] Review of the Coalpac Consolidation Project, which was proposed for part of Ben Bullen State Forest near Mt Piper Power Plant, found that the pagodas are "a unique landform on a world scale..."; have limited distribution, "provide critical habitat for some flora species and key habitat features for threatened fauna" and "the pagoda landform should be afforded *special significance status* and the highest possible protection". The 'pagoda landform' was given scope beyond being pagodas rock

[15] Pagodas are both nationally (smooth) and internationally (platy) significant as unique geomorphological landforms. Washington, H. G. and Wray, R. A. L. (2011). The geoheritage and geomorphology of the sandstone pagodas of the North-western Blue Mountains Region (NSW). Proceedings of the Linnean Society of New South Wales, 132 131-143
https://ro.uow.edu.au/cgi/viewcontent.cgi?referer=http://scholar.google.com.au/&httpsredir=1&article=6405&context=scipapers

formations, the determination finding "pagodas cannot be considered as structures in isolation. ... they are part of a landform".

The DPIE in 2013 **agreed** that "PAC's classification of the pagoda landform as a natural feature of *special significance* is appropriate and agrees that these features warrant the highest level of protection". The assignation of international and national significance for Pagoda rocks and surrounding ecosystems/landforms must be considered in the APMEP, and by relevant Departments and decision makers.

As with previous assessments that rock pagodas near to the site form an internationally significant landscape, these sites in APMEP also warrant the highest level of protection from mining.

It is important for the DPIE to be consistent and apply:

- An appropriate definition for the pagoda landform complex found within APMEP area; and
- The Commission's previous recommendations that prevent mining impacts on the full suite of pagoda landscapes.

The PAC recommended that "…the pagodas and associated escarpments be considered natural features of special significance and that they be fully protected from any mine-induced impacts" and "the Ben Bullen State Forest contains the … 'Pagoda land system' … the landscape in its totality is unique and needs to be considered this way[16]". Pagoda landforms associated with nationally endangered swamps and wet gully forests should also be afforded special significance, particularly those with iconic stands of Blue Mountains Ash (*E. oreades*).

The damage that APMEP is likely to cause this internationally significant landscape must be considered and addressed as such.

Assessments by Centennial Coal and its consultants have also failed to properly record all significant geomorphological features within the proposed APMEP area and the 600m buffer zone. Many pagodas have not been considered in the EIS and 2020 environmental assessment for APMEP, giving an incorrect understanding of the scenic values of the impacted area. Pagodas were dismissed if they were isolated, which is not an adequate justification for non-assessment.

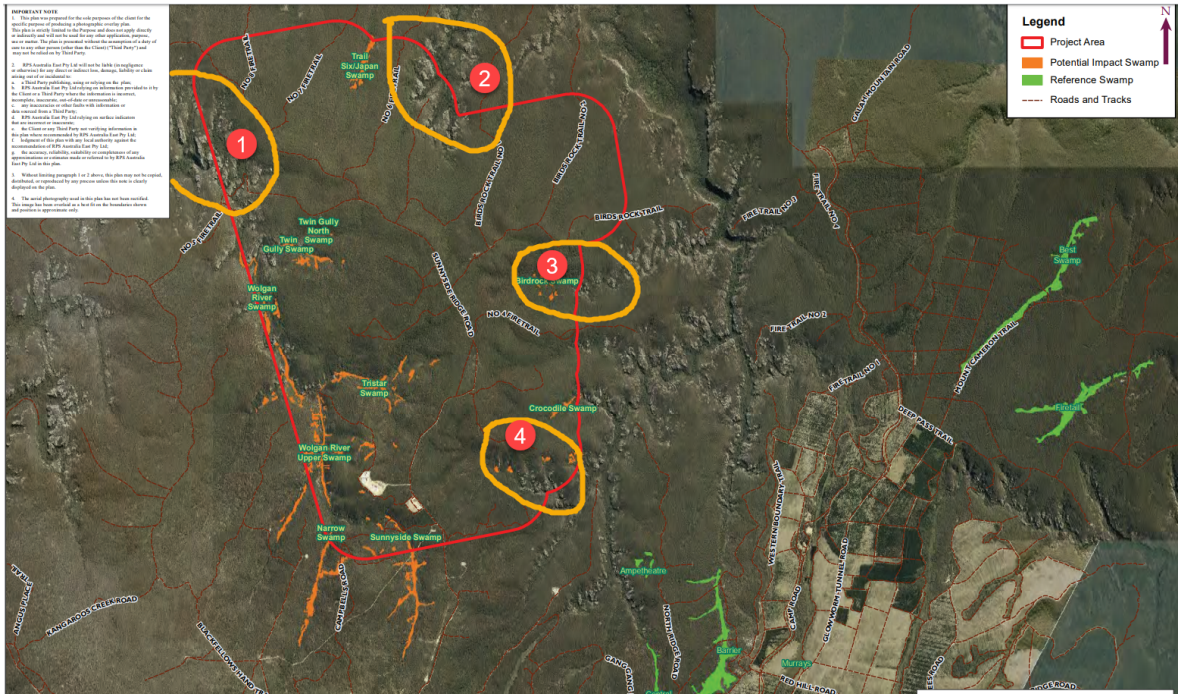
[16] PAC Review 2012 Recommendations at pp.4 & 73-4 of Coalpac project.

Preventing damage to Pagoda landforms

Protection options include *avoidance*, by removal, splitting or shortening of certain longwalls which have the highest risk for damaging Pagoda landscapes, including those associated with swamps and dramatic Bald Rock lookout.

Protection of pagoda landscapes was not addressed in the EIS or the amendment reports. Longwalls in the north-east section (LW1014, 1013, 1012) of the area to be mined, and those of the south-east section (LW 1002) face the highest likelihood of causing damage to pagoda landforms. LW1008 also has pagoda landforms directly above the proposed longwall, which will almost certainly cause significant damage.

Birds Rock, the listed swamps and the areas 1 to 4 listed below are of special significance and should be afforded the highest level of protection.



Stark beauty of the pagodas above Twin Gully Swamp is revealed after the 2020 fire - pagodas were inadequately reported by Centennial, Photo I. Brown

Birds Rock Creek, cave, located in area marked 3 in figure above, Photo: Brian Fox

Cathedral Cave in area marked 2, in figure above - perhaps vulnerable to mine subsidence

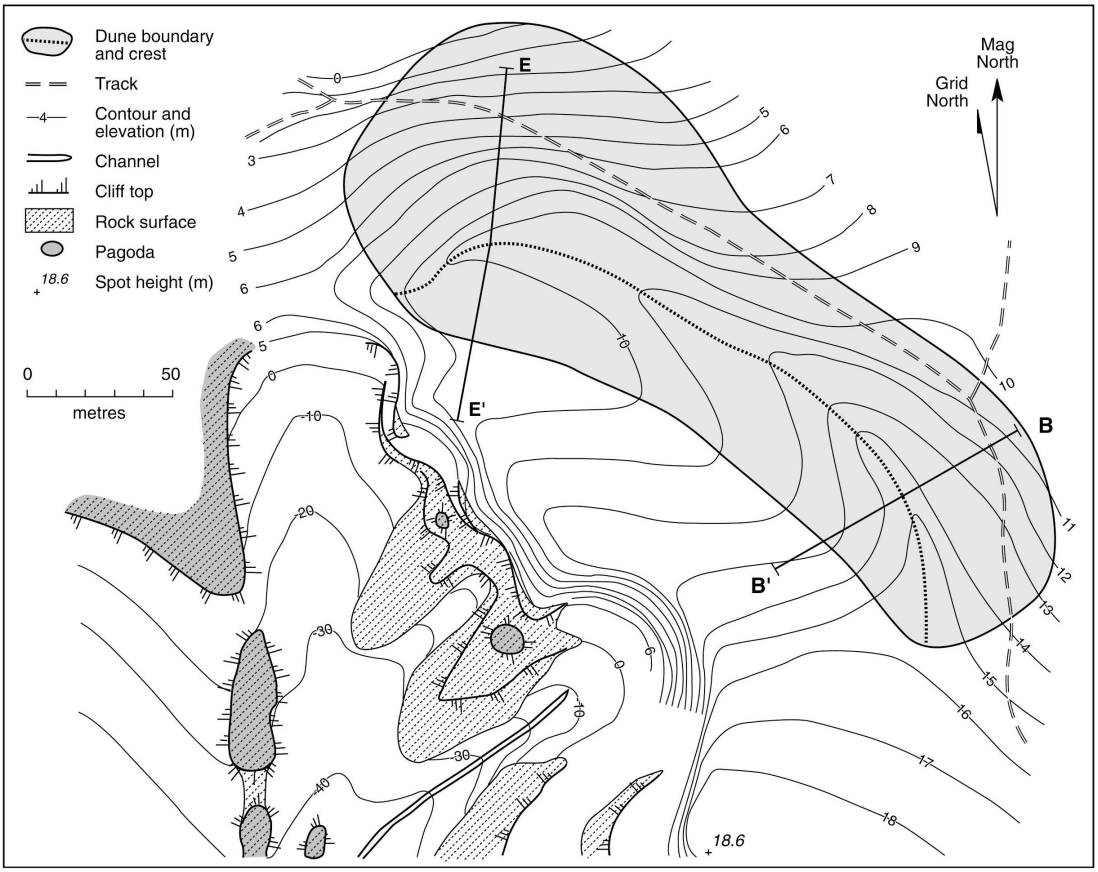
- **Geomorphology**: ancient wind deposited dunes (15,000 to 30,000 bp)

Above Wolgan River beside Sunnyside Road about two kilometres north-east of Birds Rock is an inactive aeolian (wind formed) sand dune that was active during the Last Glacial Maximum[17]. This geo-heritage feature is in the north east corner of the project area (LW 1014 and 1015) but *was not reported* on in the EIS or addendum environmental assessment. The dune is a landform unique to Newnes Plateau covered with a shrubby woodland with numbers of grass-trees *Xanthorrhoea resinifera* that is absent in the surrounding vegetation.

Sand stripped by wind from local soils was deposited as dunes in the lee of cliff-lines, 15–30 thousand years ago. To allow wind erosion, the Plateau must have been above the tree line due not only to the climate being 8–9°C colder and more arid, but also because atmospheric carbon dioxide was less abundant. The relatively large number of relict heath plant species found on the Plateau also must have survived these very harsh conditions.

The Sunnyside Dune is a classic crescent-shaped body of sand, 280m long, 70–110m wide, up to 4.6m thick and thinning at the edges, with an estimated volume of 50 000m3.

[17] Hesse, et al, 2003, Later Quaternary aeolian dunes on the presently humid Blue Mountains, Eastern Australia. *Quaternary International*, 108: 13-32.



Sunnyside dune: Contours of elevation relative to an arbitrary datum.

- **Impacts on the Flora Reserve are incompatible with its reserve classification**

The mining proposal will fracture surface rocks across 2000 hectares, including Birds Rock rock formation and lookout in a "protected" Flora Reserve. The Birds Rock Flora Resource covers 415 hectares and is located south and east of the Birds Rock Trig Station (1179m). The reserve's working plan lists those attributes that are to be protected. It 'Contains the 'Birds Rock' rock formation and lookout' and 'Provides a reference stand for the purposes of assessing the impacts of land use practices on similar sites nearby[18].' This working plan implements the purpose of Flora Reserves that are dedicated under the Forestry Act 2012 'for the preservation of native flora'.

[18] Forests NSW, Working Plan for Birds Rock Flora Reserve Macquarie Region, F2011/01307, Oct 2011, p2

Enjoying the view north from Bald Rock, Photo: Geoff Derney

The purpose of this reserve shall be in large part defeated by the proposed coal mining that will fracture Birds Rock and lower surface groundwater levels across the reserve, and in consequence alter groundwater dependent swamps and stands of moisture-loving forest eucalypts, such as the iconic stands of Blue Mountains Ash.

To quote current NSW Government administration 'The flora reserve category offers protection similar to reserves established under the National Parks and Wildlife Act 1974. They meet nature reserve standard under the International Union for Conservation of Nature (IUCN) Protected Areas Categories System and are included in the Commonwealth's definition of the National Reserve System[19].' The nature reserve equivalence of the reserve is further demonstrated by the sixteen flora reserves that are part of the Central Eastern Rainforest World Heritage Area.

The Birds Rock Flora Reserve (are shown in Drawing Nos. MSEC593-01 and MSEC593-02 of the original EIS) is considered by the subsidence consultant to be a 'significant natural feature' that is located within the Angus Place Extension Area. The potential impacts on this site include changes in surface water drainage, surface cracking, and fracturing and spalling of the exposed rock formations (Angus Place EIS, Vol 2, App D, pg 89).

The proposed construction of two de-watering bore facilities will require clearing on the northern side of the reserve. This proposed facility placement indicates a lack of considered regard and due consolidation by the proponent in the development of its surface infrastructure placement. One proposed location is visually sensitive, overlooking scenic Birds Rock Creek.

[19] https://www.environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/establishing-new-parks-and-protected-areas/new-parks-and-changes-to-parks/new-areas-for-conservation-in-nsw, 8 Nov 2019

In the recent opinion of the current NSW Government, as recently demonstrated in its recent reserve decisions, and long-term by other governments by World Heritage listing of Flora Reserves, these reserves are considered equivalent to a nature reserve in protected area status. This administration since 2014 has created sixteen new flora reserves[20]. If the reservation of the Flora Reserves and the standing of NSW Government on the environment are to remain credible then Birds Rock Flora Resource must be excised from the mining proposal.

Looking west up Bird Rock Creek towards Birds Rock on the skyline, right of centre.

- **Environmental impacts poorly offset by the amended mining proposal**

The APMEP does not include several types geological features when assessing its offsets. It has not considered cliff falls or damage to pagodas and to the internationally unique and significant geomorphology of 'pagoda country'.

Geomorphological features that have not been identified in the amendment report should be assessed and given consideration regarding protection from potential impacts. These values are of the highest significance, and yet have not been adequately assess and protected.

The Colong Foundation is pleased that the proponent acknowledges the damage it causes to the nationally endangered swamps on Newnes Plateau in the Amendment report. The

[20] Op. cit. 8 Nov 2019

impacted nationally endangered Shrub Swamps (NPSS) contain threatened species that include: Blue Mountains Water Skink (*Eulamprus leuraensis*; BC Act = Endangered; EPBC Act = Endangered); Giant Dragonfly (*Petalura gigantea*; BC Act = Endangered; EPBC Act = Not Listed); Deane's Boronia (*Boronia deanei*; BC Act = Vulnerable; EPBC Act = Vulnerable); Red Crowned Toadlet (*Pseudophryne australis*; BC Act = Vulnerable); *Xerochrysum palustre* (Swamp Everlasting; EPBC Act = Vulnerable): and *Carex klaphakei* (Klaphake's Sedge; BC Act = Endangered).

The purpose of offsetting damage to heritage is generally to lower the overall extinction risk to the identified plants and animals. The further damage by Angus Place mine is proposed to be financially offset. Justification for this kind offset for these rare swamps is erroneous as half the Newnes Plateau Shrub Swamps have been destroyed by coal mining, and it is now impossible to adequately and appropriately compensate further swamp losses when the proposed mining will facilitate extinctions in the remaining half. In this circumstance at least, financial compensation will lead to poor conservation outcomes contrary to the extinction-prevention purpose of the offset policy.

The area of nationally endangered swamp estate on Newnes Plateau was 650 hectares while now considering that roughly 300 hectares have been ruined, any further swamp offsets are no longer a mitigation process as most of them will be damaged if the current proposal is approved unchanged. The Environmental Offsets Policy under the EPBC Act must deliver "overall conservation outcomes that *improves or maintains the viability of the protected matter".* It is not possible to improve or maintain these swamps by an intensity of coal mining that is the primary cause for the destruction of the remaining half of this endangered ecological community.

The current financial offset approach only accelerates swamp destruction and is ignoring other natural heritage assets in the APMEP by ignoring the need to protect cliffs, caves, waterfalls, streams, pagoda landforms.

The measures for offsets must first *avoid* impacts on swamps, as achieved at Springvale mine. Substantial reduction in the intensity of mining must be considered as a *mitigation* measure. The national and international significance of the heritage values of the affected pagoda landforms of the Gardens of Stone region have not been adequately assessed by the proponent, despite acknowledging these values in its offset assessment.

The Environmental Offsets Policy requirements under the EPBC Act *are not satisfied* by a proposed staged transfer into a state conservation area as part of the offset package[21]. Many natural values are not offset (e.g. pagoda landscapes), the Newnes Plateau swamps

[21] Centennial Coal Swamp Offset Strategy, July 2019, pg v, support for a staged transfer of land into a state conservation area.

are likely to become extinct by the proposed mining, and viable actions to mitigate impacts and avoid impacts (such as at Springvale) are not proposed here.

Further, the proposed staging of the state conservation area defers effective conservation action now by delay in reserving the area. Centennial's offset proposals work to defeat the purposes of the state and federal offset policies by delay, and the omission of avoidance and mitigation processes.

- **Adverse socio-economic impacts**

Lithgow has been a 'mining town' since the 19th century and the region's economic reliance upon extractive industries, specifically coal, now places Lithgow in a difficult position in this century. The world shall continue to move towards more renewable energy and phase out reliance on coal power generation. Communities that depend on coal mining, in Australia and elsewhere, have responded through increased production and creation of new mines putting further downward pressure on export prices. These actions limit the options for Lithgow where mining is by underground methods and so unit costs are higher. Further, its coal reserves are becoming exhausted so that there are few, if any, options for major capital investment in new mines. Capital investment in mining shall move elsewhere.

In this context, the planned intensive expansion at Angus Place is acting against the regional medium-term future of Lithgow and with global energy production trends. Communities like Lithgow will be hardest hit as the world accelerates its necessary, and when it comes rapid, transition to a low-carbon emissions future, especially if caught unprepared. It must diversify its economy now. One of its best opportunities is tourism, and for that reason the region should adopt *Destination Pagoda*[22], and work toward becoming a new tourist mecca, like Katoomba.

Providing a 32-year consent for Angus Place will lock Lithgow into not only reliance on a very destructive coal mining proposal but also generates a mindset reluctant to change. The mine proposal creates a further barrier to a transition for Lithgow's regional economy and its workforce. The grandfathering of this mine will act contrary to the goal that "the Lithgow City Council (LCC) has recognised [the] need for diversification of industries away from mining, to support the town in the long term".

Centennial Coal has claimed that "the APMEP project life presents a realistic timeframe for LCC to target for economic diversification". This is a misleading ambit claim inconsistent

[22] Ian Brown and Elizabeth Dudley-Bestow, 2019, *Destination Pagoda - a grand new tourism attraction for Lithgow*, The Gardens of Stone Alliance.

with current energy market trends. Renewables contribution to the east coast energy grid has grown exponentially for the last decade, whilst coal's contribution to power generation (globally and in Australia), has seen a steady decline.

Table 2.2: Australian energy consumption, by fuel type

	2017–18		Average annual growth	
	PJ	share (per cent)	2017–18 (per cent)	10 years (per cent)
Oil	2,387.8	38.7	3.2	2.0
Coal	1,847.2	29.9	-4.3	-2.6
Gas	1,554.6	25.2	3.8	2.4
Renewables	382.1	6.2	0.9	5.3
Total	**6,171.7**	**100.0**	**0.9**	**0.6**

Source: Department of the Environment and Energy (2019) *Australian Energy Statistics*, Table C

The price of coal, and its demand, has been wavering in the past few years, and given the changing market has in the future an overall downward trajectory. It is currently being propped up by interventionist world leaders, supporting the industry because they are a major employer and exporter. Its price/demand is inflated and not representative of the focus shifting increasingly to renewables, the global movement to mitigate climate change or of the science surrounding the economic havoc that will be caused by the unfolding climate catastrophe[23]. Price collapse/shocks for coal are likely over the coming years, leaving hundreds of workers in mines like Angus Place, and throughout the Lithgow region, exposed.

A report by the World Bank on commodity prices states that "coal consumption has fallen rapidly in advanced economies, as part of an ongoing shift to reduce emissions… Low natural gas prices have encouraged an acceleration of the transition from coal to natural gas in electricity generation, and have therefore weighed on coal prices… Price forecasts for both commodities have been revised down for 2020… coal prices will decline"[24].

A separate World Bank report entitled "Coal Mine Closure: Achieving a Just Transition for All" highlights that in the last 50 years "across Europe, and more recently in the United States and China, 4 million coal workers [have lost] their job[25]".

[23] IPCC (2018) *Global Warming of 1.5° C – Summary for Policymakers*, Intergovernmental Panel on Climate Change. (accessed 2 December 2018 at https://www.ipcc.ch/sr15/chapter/summary-for-policy-makers/).
[24] World Bank Commodity Markets outlook p.24
[25] http://documents.worldbank.org/curated/en/484541544643269894/pdf/130659-REVISED-PUBLIC-Managing-Coal-Mine-Closure-Achieving-a-Just-Transition-for-All-November-2018-final.pdf p. 9

The need to act decisively to future-proof Lithgow's economic future must occur immediately, prior to crisis. The resulting impacts of ignoring the future reality of the coal industry means that "decades later after a mine has shut down, many coal-dependent regions [can] continue to lag socially and economically... Planning and preparing for coal mine closure are essential to lessen the shock to coal-dependent communities and facilitate new employment possibilities for redundant workers…Considerations regarding regional economic diversification and rejuvenation to foster job creation beyond coal mining are also of importance"[26].

Similarly, doubts should be cast on Centennials claims regarding the on-going increased staffing arrangements proposed for APMEP to absorb current workers from the Springvale mine. Innovations regarding mechanisation and automation of the coal mine workforce will continue to impact upon the socio-economic benefits that this mine could provide to the local Lithgow community. The 450 full-time positions it claims will be there for the duration of the mine's life will likely be fully or partially automated before the 2050's. Additionally, collapse in demand and price, and potential policies (e.g. future implementation of a carbon tax) will further erode profitability for this mine. Subsequently, the long-term benefits slated for the Lithgow community from this proposal cannot be guaranteed for thirty years[27].

Ultimately the economic uncertainty of the coal industry reaffirms that the consent period for this mine must be overhauled. A three-decade approval for a coal mine in today's radically shifting commodity environment is unwise. Contrary to Centennials claim that this coal mine will maintain Lithgow's economic reliance on coal mining, it will instead restrict urgent diversification of their regional economy.

There are a number of examples of traditional 'mining towns' engaging with the shift/transition to a low-carbon future. These provide a framework for Lithgow to follow. In the 'coal belt' of America, the Appalachian region of Virginia has seen a number of towns undergo a transformation to shift away from coal. St. Paul, Virginia is a historic coal mining community which has recently made the intentional shift out of the dying coal industry. The shift has been towards tourism, specifically utilising the towns natural scenic beauty and capacity to become a tourist destination. Local governments have built upon this and are successfully transforming and diversifying the town's economy. Some of the focus has been on outdoor recreation such as fly-fishing, and increasing the services the

[26] https://thewest.com.au/business/mining/the-local-heroes-battling-to-steady-collies-wobbles-as-town-transitions-to-new-future-ng-b881128240z

[27] http://documents.worldbank.org/curated/en/484541544643269894/pdf/130659-REVISED-PUBLIC-Managing-Coal-Mine-Closure-Achieving-a-Just-Transition-for-All-November-2018-final.pdf p. 9

town can provide to tourists, like boutique hotels, restaurants and breweries[28].

In West Australia, in the South West town of Collie, they have been seeking to take a proactive stance on ensuring a 'just transition' away from the town's main economic driver, coal mining. Mick Murray, MLA for Collie stated he "wants to see a "tapering" of coal-related employment over time with new businesses picking up the slack...accounting for a reducing share of an expanding South West energy grid as the use of renewable energy grows. Realistically he outlined "our transition is not in the next year, it's in the next five, 10 or 15 years."

Centennial Coal's expectation that it will maintain a coal mine for the next 30 years currently works against the need to begin this transition. Diversification of Lithgow's economy is not an issue that should be dealt with as crises in the industry unfold. Centennial Coal and Lithgow City Council have a responsibility to future-proof this community which has given so much to this company and industry. As this proposed extension amendment stands, it is not occurring, further marrying the economic prosperity and livelihoods of Lithgownian's firmly to the dying coal industry.

The APMEP could have adverse impacts on the community it purportedly is serving. By furthering linking Lithgow's economic fate to the coal industry, the region is condemned to future economic hardship as coal is progressively phased out. A 5-year consent period must be implemented for APMEP, to ensure that long-term promises of economic stability for Lithgow being made by Centennial, are assessed periodically.

- **Climate Change**

The world is facing an unprecedented, and undeniable, threat from human induced climate change[29]. The 2015 Paris Agreement is the global response to the mitigation of climate change, which aims to limit the warming of the world to 1.5 degrees celcius, ensuring the worst impacts of global warming do not come to light. The IPCC 2018 is now urging an end of thermal coal power generation by 2040[30].

Continuing to export coal and use the ROM coal from an expanded Angus Place to Mt Piper Power Plant, is incongruent with a low-carbon future (which is the current trajectory). As electricity grids around the world, including Australia, bolster their renewables capacity there will be less of a role for coal in powering local power stations.

[28] https://www.greenbiz.com/article/across-appalachia-historic-coal-towns-are-looking-outdoor-economy-their-next-act

[29] IPCC (2018) *Global Warming of 1.5° C – Summary for Policymakers*, Intergovernmental Panel on Climate Change. (accessed 2 December 2018 at https://www.ipcc.ch/sr15/chapter/summary-for-policy-makers/).

[30] Ibid.

The composition of NSW's electricity grid will look far different in a decade's time. In three decades time, it will be unrecognisable- and the role played by coal may be non-existent.

Angus Place will supply Mount Piper Power Station with coal, that is the primary driver of climate change. Appendix K of the Amendment report considers the emissions from the burning the coal, called downstream emissions or "scope 3 emissions".

Centennial reports the scope 3 emissions as 364,500 tonnes. Surely the actual scope 3 emissions from burning the product of 4.5 million tonnes of ROM coal produced are around 10 million tonnes CO2e, or 9% of NSW annual emissions. So Centennial has understated its scope 3 emissions by a factor of 30.

Centennial Coal has produced a misleading greenhouse emission estimate, and given the impacts of these emissions, DIPE should recommend refusal of the current proposal as the significance of its climate change impacts have been so underestimated as to mislead decision makers. Angus Place Mine is a major source of NSW carbon emissions.

- **Traffic impacts on Newnes Plateau**

The following state forest roads are essential access points for recreational users of Newnes Plateau and its surround national parks and state forest areas: Old Bells Line of Road, State Mine Gully Road, Wolgan Road, Glowworm Tunnel Road, Blackfellows Hand (Maiyingu Marragu) Trail , and Sunnyside Ridge Road. The proposal fails to explain if these roads will be closed for an extended period during mine operations.

The DPIE should require clarification regarding the following matters:

- Will roads be closed to permit bore pump and downcast shaft construction?
- Maintenance and work on these roads is welcomed, but given quarterly upkeep for the forest roads utilised for this proposal, will this work result in road closures?
- The "*commitment by Centennial Angus Place to restore the road surface to its pre-construction condition at the completion of construction*" (Appendix N p.35-36) offers no reassurance as these roads are currently of a poor standard. Centennial should endeavour to ensure they are maintained and then left in a condition suitable for use by 2WD vehicles.

Conclusions

Centennial Coal's proposal fails to adequately assess, determine, protect where possible, and then adequately compensate where it does not, the mining area's heritage values.

This submission by the Colong Foundation explains that a 32-year consent over such a valuable heritage region, with no adaptation of mining operations to avoid or mitigate damage, cannot be justified by financial offset payments for a subset of the area's outstanding heritage value, particularly its swamps. All the values must be assessed, including scenery and geodiversity, and protected as much as possible.

Centennial Coal has failed to adequately consider the first steps of the offset process; the avoidance and mitigation of potential damage, where their Springvale and Airly mines illustrate how that has been done in this coal market. While more avoidance protection should have been provided by Springvale for impacted swamps, at least steps were taken after the 2015 consent that have limited damage by curtailing longwall mining where far-field impacts were likely. Given these steps to avoid impact avoidance, it is now appropriate to apply this kind of protection to swamps at Angus Place.

There are also administrative failures to protect natural heritage, as Federal and State offset policies can only apply to native plants and animals, and cannot be applied to geodiversity.

The development consent must be shortened at least by at least eleven years to a typical 21-year development consent period, but preferably by twenty years to enable agility in climate change adaptation, and be subjected to 5 yearly reviews. Recent rail transport capabilities at Mt Piper Power Plant now enable additional coal supply flexibility for power generation in the unlikely event that further protection measures at Angus Place Mine create a supply shortfall. Furthermore, the Mt Piper Power Plant shall not be running in 2053, as in 2042 it will be fifty years old and reached the end of its design life.

Centennial Coal has incorrectly calculated its scope 3 carbon emissions by a factor of 30.

Given Centennial Coal's failures and omissions the Department of Industry, Planning and Environment cannot recommend the issue of consent for APMEP as proposed. The Colong Foundation believes that APMEP requires substantial revision and amendment along the lines recommended on the following page.

Recommendations

This state significant development proposal that potentially damages 2,000 hectares of the Gardens of Stone reserve proposal **must be determined by an Independent Planning Commission** as there has been significant opposition from the community to it.

The DIPE must recommend against consent until controversy of this state significant development has been reduced by further damage avoidance and mitigation so as to satisfy the overall object of both the NSW and Federal offset policies - to prevent the extinction of nationally endangered swamps on Newnes Plateau. This is best achieved by further environmental assessment and then an independent determination following a public hearing.

A further environmental assessment is required for this mine extension to correctly estimate climate change impacts, and report on omitted heritage values - forested ancient aeolian sand dunes that explain our past climate, the area's rare and other plants, its fauna, the internationally significant pagodas and other geodiversity - its clifflines, Wolgan Falls and Cathedral Cave known to the area but not reported in the environmental assessment.

To mitigate and further avoid heritage natural and cultural damage, DIPE must recommend the mine plan be revised using mini-longwall panels, like those at the Airly Mine and/or by shortening and removal of longwall mine panels from the mine plan (as done at the Springvale Mine on several occasions).

The DIPE should recommend that the mine proposal be subject to critical review every five years, given the environmental sensitivity of the region and its likely reservation as a state conservation area (that the proponent anticipates) so that consent conditions can be adapted when necessary.

To prevent greenhouse gas emissions, the DIPE should recommend that the consent be limited to 2030, otherwise this mine will place Australia's commitments under the Paris Agreement at risk through the emissions it generates at the Mt Piper plant.

All Aboriginal heritage must be assessed and protected.

Tristar and Twin Gully swamps should be placed in mining protection zones to protect these swamps and reduce risk of mining intersecting with secondary geological lineaments associated with the Wolgan River Lineament Field. Trail Six, Birds Rock and Crocodile swamps should also be placed in protection zones that prevent mining related impacts, such as far-field mine impacts.

The swamps on the Wolgan River and Wolgan Falls must be further protected, as they are at high risk of losing water due to secondary lineaments associated with the Wolgan Lineament Field and regional groundwater drawdown arising from the proposed mining.

Cathedral Cave, Birds Rock and Birds Rock Flora Reserve must be protected from mining.

All pagodas must be mapped and photographed, including isolated pagodas and small groups of pagodas.

Pagoda landforms must continue to be afforded *special significance status* and granted the highest possible protection, particularly pagodas associated with swamps and pagodas associated with gully forests, such as those containing stands of Blue Mountains Ash.

Targeted flora and fauna surveys are required post fire to find threatened species and species not identified on BioNet but known to the area from NSW Herbarium AVH database, and the Atlas of Living Australia, and iNaturalist databases.

The Greater Blue Mountains World Heritage Area must be protected from toxic groundwater pollution and loss of water flows. Any water pollution damage should result in cessation of mining and revision of the mine plan to prevent further damage.

The DIPE must recommend an effective TARP process for where environmental impacts have not been assessed or when unexpected impacts are observed (e.g. to Wolgan swamps, pagodas, caves). This is particularly important for environmental heritage of national, international significance, or where further loss of flows in or pollution of the Wolgan River or Carne Creek. When such impacts occur, protection by mine avoidance must be required as a penalty for not identifying such key impacts. In addition, a financial penalty of ten times the swamp offset must be imposed for loss of flows over Wolgan Falls or to Wolgan River swamps given that the proponent claims these values will not be damaged. Denial of damage when there is a likelihood of it must carry substantial penalties.

The DIPE must ensure that far-field impacts beyond the coal extraction area do not occur without serious consequences. Any such impacts also should require immediate avoidance action to areas/heritage values sensitive to such impacts, as has been required at the Springvale mine.

Consistent with *Destination Pagoda* Centennial Coal must ensure that Maiyingu Marragu Road, State Mine Gully Road and Sunnyside Ridge Road as far as Birds Rock are maintained as two-wheel drive standard public access roads during and as part of mine rehabilitation.

Should DIPE decide to recommend financial offsets, despite this accelerating swamp extinction on Newnes Plateau, then these funds must go to conservation management of the new Gardens of Stone State Conservation Area as this will deliver a local conservation outcome.

Reservation of the new Gardens of Stone State Conservation Area is part of the proponent'compensation proposal associated with this mine extension, but the proponent's reserve proposal needs to be adapted to ensure the future reserve's benefits are delivered quickly, given that it has been long delayed. **DIPE should recommend reservation of the new Gardens of Stone State Conservation Area as soon as possible to facilitate timely diversification of Lithgow's regional economy and establishment of its unique cachet under *Destination Pagoda.***

Thank you for this opportunity to comment.

Yours sincerely,

Wilson Harris
Natural Areas Campaigner
The Colong Foundation for Wilderness Ltd