

Australian Coal Alliance Inc.



PRESENTATION TO PAC HEARING

WALLARAH 2 COAL PROJECT

SSD- 4974

10 APRIL 2017

INTRODUCTION

The Australian Coal Alliance, community representative group, object to the Wallarah 2 mine development because of a real probability that there will be a gross negative impact on the Central Coast's town water supply and that the nine-story, partially enclosed coal loader, and partially enclosed conveyor belt system, located in the largest urban development and growth area in the Region, will cause adverse health outcomes from coal dust exposure. Wallarah 2 cannot guarantee the security of the Central Coast's major drinking water supply area and cannot guarantee continuing good health from those people living in close proximity to their proposed coal loading facility.

This is the third time that the community has had to present to the PAC. But, how much does the Central Coast need to endure when it comes to being used and abused environmentally, health put at risk, and drinking water being put in jeopardy, and then having to live with the impacts for decades, if not generations later, by a mining company, whose only concern is getting a license to mine, no matter what the cost to the community?

Blatant misrepresentation and plain old-fashion skullduggery has become the everyday tools of trade of Wallarah 2. The community has, for more than a decade, had to persevere with their trickery and machinations. They have clearly demonstrated that they don't care that the major and largest drinking water resource for some 330,000 people will be put at risk by their coalmining project.

WATER CATCHMENT

The water catchment valleys were proclaimed as a water catchment district in 1950, gazette number 153 of the Local Government Act 1919. Today, the catchment is managed by the Central Coast Water Corporation and ratified in their “Water Plan 2050” – designed to *“ensure a sustainable and secure water system for the Central Coast until the year 2050 and maintaining a balance between providing sustainable water services for the growing community while protecting the health of the rivers, coastal lakes and estuaries...”*

Longwall coal mining and riverine systems cannot co exist. Throughout NSW more than 39 riverine systems have been completely destroyed, or their integrity so badly compromised that they no longer provide unpolluted water, as a result of longwall coal mining beneath them. Just a little north of the proposed Wallarah 2 mine, Diega Creek in Lake Macquarie LGA is a classic example of the destruction of a creek system as a result of longwall coal mining. A Hunter-Central Rivers Management Authority report on Diega Creek (Diega Creek Rivercare Plan, October 2003) revealed that subsidence from longwall coal mining cracked the creek bed, leaving a permanently dry riverbed incapable of holding water. This situation hasn't changed.

Despite shallow guarantees by the Wallarah 2 coal project, the scientific evidence, that is contained in the proponents EIS, and from independent scientific analysis, validates that this coal extraction process will have a negative impact upon the Central Coast Region's water catchment district. Yet, in a twist of rational foresight, a report

on Jilliby Jilliby Creek, which flows the entire length of the proposed extraction area, prepared in 2004 by River Care, in association with Hunter-Central Rivers Catchment Management Authority, National Heritage Trust and the Department of Planning and Infrastructure, declared this water system as one of the most pristine in New South Wales. This report also raised concerns about the potential damage that may be caused by longwall coal mining directly beneath the creek system and within the catchment area.

All science and every experience in groundwater flow, down to depths of at least 500-metres, demonstrates that it is fracture permeability that matters and not core permeability. There are many references to support this contention with many being cited in the following recent publication:

- *A method of estimating potential permeability in fractured-rock aquifers using field-derived fracture data and type curves*, **Mandala, Mabee, Boutt and Cooke, Hydrology Journal, Volume 21 Number 2, March 2013.**

Foremost hydrology expert Professor Philip Pells also found that the Mackie Report, prepared for Wallarah 2, assumes the absence of fractures within the bulk of the Narrabeen sequence is in contradiction to findings by Cooke (2009), which are as follows:

“The bores intersected Terrigal Formation with a preserved thickness of up to 145m in the LGA. Extensive geological and geophysical bore logging delineated aquifers and enabled stratigraphic correlation within and between borefield..... Aggregate yields greater than 15 L/s were recorded from multi-layered aquifers in several bores.

Networks of nested multi-level hardrock and alluvial monitoring bores installed in the borefields revealed direct and indirect hydraulic connection between multi-layered hardrock aquifers with varying degrees of artificially induced vertical leakage from the overlying valley-fill systems during pumping.”

Mackie also assumes that a thick layer of very low permeability strata exists even after mining is completed. This assumption dictates the Wallarah 2 model. These findings are contradicted in calculations given in the MSEC/SCT Report in Appendix F of the Wallarah 2 E.I.S. The calculations show some disruption of these strata throughout the 350-metre profile above the level of extraction, which makes this a MAJOR conflict of expert evidence. The computed mine inflow rates are substantially on the low side. If Mackie had adopted the parameters recommended in the previous chapter of the same E.I.S. then depressurisation would occur much faster and greater.

There is no information in the EIS and in particular Appendix G that sets out what assumptions have been made in the model in respect to permeability reduction in the desaturated zone in the goaf. Therefore, it is impossible for a measured review to be made of the model results. It would have been proper for the assumptions to be validated against field data from Mandalong Colliery, where there has been substantial depressurisation above the extracted longwalls. The Mandalong Mine Longwall report for Longwall 12 of August 2012 states that:

“Mining of the longwall panel has however resulted in depressurisation of the deeper overburden. The Great Northern Seam to the south of Mandalong Mine may have been depressurised as a result of mining.”

PREVIOUS PAC DETERMINATION

In 2014, the PAC determined, from the information contained within the proponents EIS, that there would be a negative impact on the water supply catchment, and therefore the majority of the PAC’s principle findings and recommendations related to subsidence and water-related impacts. In relation to water it was said, *“The project predicts risk of reduced availability of water for the Central Coast Water Supply”* and wherein the PAC *“recommended there should be no net impact on potential catchment yield”*. The Central Coast water catchment supply in the Wyong valleys is at real risk of destruction due to subsidence, predicted to be from 1.8 metres to 2.6 metres across the valley floor, and a loss of potable water to the mine area below. This is substantially evidenced by the mine proponent’s own admissions in their EIS and the implied admission by DPI in the recommended draft conditions of consent, wherein the proponents must enter into a Central Coast Compensatory Water Agreement for the water measures lost to the town water supply. This water agreement certainly suggests that DPI have genuine concerns that the town water supply will be compromised. But where will the water come from?

BLATANT MISREPRESENTATION

Over the past eleven years Wallarah 2 have repeatedly and blatantly misrepresented the impact that the proposed mine would have upon

the Central Coast's major water catchment district. The proponent claims that the proposed mine would not endanger the water supply *"because we are not mining under Mardi Dam or Mangrove Dam"*

No one has ever suggested that the mine would extend beneath these two critical storage areas. This claim deflects from the fact that the total area that the proposed mine would occupy is the most critical. The mine area is at the confluence of the two main creek systems and directly beneath the major flow-through of the aquifers. Sixty-eight percent of the water recharge into Wyong Creek comes from the aquifers that flow beneath the Dooralong Valley. This figure was calculated by the then Wyong Council by measuring the flow of water through the gauges on the main riverine system and then comparing this with the actual volume of water available at the Mardi Dam pump pool. It clearly showed that there was 68% more water available than was what was coming from the upper streams of both valleys

Apart from the fact that the proponents Environmental Impact Statement says that their mining project will have a negative impact on the water catchment area, it also states that the hydrology will take 500 years to recover.

According to the Proponent, the Amended DA, the reason for this PAC Hearing, only involves changes to the proposed coal transportation infrastructure and the realignment of a sewer connection. All other aspects of the Project will remain as previously proposed. The Amended DA documents do not include amended Appendices in relation to subsidence, groundwater or surface water. The Amended

DA does not propose to change the number, depth or location of the longwall panels

LOSS OF WATER & BIO DIVERSITY

The Office of Environment and Heritage, in their report to DPI in June 2013, expressed great concern about the longwall panels beneath the catchment area. They said:

“In order to prevent permanent damage to sensitive groundwater aquifers, surface water systems, threatened ecological communities and the habitat of threatened species, the proponent redesign the longwall layout so as to prevent longwalls being extracted directly under Little Jilliby Jilliby Creek, Myrtle Creek, Armstrong Creek and Jilliby Jilliby Creek or within their angle of draw.” (Appendix A, attached)

The panels to which OEH refer sit directly beneath the floor of the Dooralong Valley and occupy what could be arguably a major portion, if not the greatest portion, of the coal extraction area. There is no evidence that Wallarah 2 have made any changes. Even their current conceptual mine layout map reflects this – the only change in the panels is beneath the Jilliby State Conservation Area, which show a cross-hatching. This area, as insisted by OEH, was to be excised from the mine area. Despite this, Wallarah 2 continues to claim this as potential future mining.

SUBSIDENCE

Walarah 2, in response to the PAC in 2014, acknowledged the uncertainty of the impact that mine subsidence will have on the

water catchment district. They said:

“The subsidence modelling study indicates that the predicted levels of subsidence for the Project are one and half to two times higher than the predicated levels of subsidence in Newcastle and South Coast Regions. This is a combined result of the relatively weak strata immediately above and below the seam, the deeper depths of cover, the lack of massive strata within the overburden, the relatively large extracted seam thickness and the known instability of chain pillars at this depth.”

Prior to the 2011 rejection of this mine application, I was a member of the Community Liaison Committee. The matter of subsidence and its impact on the water regime of the water catchment was continually raised. This also included the fact that subsidence predictions would be greater than those in the southern and Newcastle regions. This information first appeared in Wallarah 2’s submission to the Chikarvoski Inquiry. This fact was of enormous concern to the community members of the Committee, because it was well known that subsidence in the southern and northern regions had caused horrific damage and permanent loss of riverine systems.

When challenged about the information in regards to subsidence predictions in the Wallarah 2 documents, Wallarah 2 would simply dismiss the question and refused to answer it. Even when directed, by the Chairperson Milton Morris, to provide full and extensive details in regards to subsidence in the proposed mine area, they

refused to do so.

However, the DPI committee representative, Graham Cowan, was more forthcoming when asked to quantify the probable subsidence depths likely in the valley floor following mining, which was minuted by the committee (June 2006) and remains a permanent record of his comments. He said, *“Until it is mined you won’t know. Things will be changed and they will be dealt with.”*

ECOLOGICALLY SUSTAINABLE DEVELOPMENT

In 2002, when Kores, the now majority shareholder of Wyong Coal Pty Ltd, was only a minor stakeholder, Anna Kachka, from Mitchell McCotter, the then water consultants for the project, gave a presentation on Ecologically Sustainable Development - meeting the needs of the present without compromising the ability of future generations to meet their needs. The key principles of this lecture were:

- Precautionary Principle;
- Inter & Intra generational equity; and
- Conservation of biological diversity and ecological integrity.

Yet the current mine proponents have ignored these values to satisfy their own expectations from coal extraction.

The Wallarah 2 mine proposal is within the Hue Hue Mine Subsidence District. The Mine Subsidence Board in Newcastle voiced serious concerns about coal extraction in this area and was of the belief that the Precautionary Principle must apply. Their view was that mining should only be carried out in accordance with Ministerial

policy that was determined for this district in 1988 and the recommendations made by the Department of Mineral Resources. In the Mine Subsidence Board minute paper, dated 15 May 1995 and signed by Chief Executive Officer G J Clark, they adopted the reiterated recommendations by the Department of Mineral Resources. The advice from the Department of Mineral Resources and signed by the manager Coal Resources Administration Branch, Mr. A Ramsland, and the departments subsidence engineer, Dr. Holla, to the Minister for Mineral and Energy, made three recommendations, which were adopted. They were:

1. The Minister directed that only partial extraction take place.
2. Partial extraction only applies to the proclaimed Hue Hue Mine Subsidence District and precincts 6, 7 and 8.
3. Partial extraction will have the following ground movement parameters: Maximum ground strain 3 mm/m and maximum ground tilt 4mm/m.

(Appendix B, attached)

Accordingly, the Mine Subsidence Board emphasised that designated areas for mining should be designed so as to accommodate these parameters. Among other things, they were also concerned about the instability and unpredictable nature of the Awaba Tuff, the weak sandy, clay stone conglomerate, directly beneath the coal seam. As previously stated, Wallarah 2 have acknowledged the nature of this material in their response to the PAC on 2 May 2014. Yet they have never considered partial extraction, but have instead pushed forward with total extraction (longwall coal mining), because it is far more economical for them and yields a far greater financial benefit. They

have continued to have a total lack of regard for the principles of Ecologically Sustainable Development and the need for maintaining intergenerational equity.

WATER SUPPLY AT RISK

The Central Coast cannot afford to put at risk its major water supply. The draft consent conditions, as recommended by DPI, do not satisfy the Precautionary Principle. Requiring a Central Coast Compensatory Water Supply Agreement again raises the question: Where will the water come from? No one, not even the mining company can predict how much water that might be. We don't have the luxury of having a standby water catchment supply area, and the cost to the community to pipe it from elsewhere, if that was possible and available, would impose an unrealistic financial burden upon them. This is not in the public interest.

The PAC, after the 2014 hearing, said:

"...that if improved strategies to avoid, mitigate or manage the predicated impacts could not be adopted in full or only in part then they would more than likely change their opinion and project not proceed."

The majority of the draft recommended conditions of consent are dependent upon the mining company's performance once mining has commenced, and therefore it is unknown whether or not they are achievable. We say that these license conditions are not achievable. Since it cannot be guaranteed that these conditions can be met in full

prior to the commencement of mining, then the PAC must refuse any consideration for approval. This is consistent with the PAC's previous determination.

FLOODING

Flooding is a major concern to the local community because:

- Local creeks flood rapidly
- There is generally poor or no access for residents in the area of proposed extraction.
- Increased flooding for many properties due to subsidence and some homes being pushed into the 1 in 100 flooding zone. Since 1981 there has been the equivalent of six 1 in 100 floods in the Dooralong Valley.

The PAC expressed major concern over this issue in Dr. Neil Shepherd's letter to Wallarah 2 on 14 April 2014. (Appendix C, attached)

The current draft conditions of consent require secondary access routes for those properties that could potentially be adversely impacted by 1% AEP flood events. It is impossible to provide such access to these properties and also other properties further along the valley. Flooding of this nature, which would also occur as you come into the Dooralong Valley, would isolate all those homes beyond. This would preclude access by emergency vehicles until floodwaters subsided. This is an unacceptable risk to the local community and could put lives in jeopardy.

HUMAN RISK

Walarah 2, in the Executive Summary of their 2014 EIS, in regards to

human risk assessment as a result of air pollution, state that:

“The increase in risk of daily mortality on the worst day in the life of the Project is estimated to be approximately 1 in 100,000 and as such represents a small risk”.

Is this acceptable? I say it's not and so would any other reasonable person. Is it appropriate that one person's life is taken from them, considered to be irrelevant just because that death is deemed to be acceptable collateral damage? What sort of society would justify this outcome? Not the one that I live in. Korea Resource Corporation, who own Kores Australia, the major shareholder of Wyong Coal, have an appalling history when it comes to the environment and people's lives and basic rights. In Rapu Rapu Albay, in Luzon Province in the Philippines, the Kores mine destroyed the fishing grounds and water supply of the indigenous residents. They set family against family resulting in the death of some of the islanders and their attitude toward this, as reported in the media, was “We don't care.” It's this same “We don't care” attitude that the Central Coast community has had to abide. Our society puts a high value on human life, as should the proponents of this project. At no stage have they obtained a social license to mine. At no stage have they engaged in a public meeting to discuss the impact of this project and how it will affect the community, in particular those impacted by subsidence and those exposed to debilitating health problems from coal dust exposure, constant noise and to discuss the loss of drinking water.

The Mining Act is very clear that a project must be assessed on the

basis “Is it in the public interest?” This project has never been assessed objectively by DPI. Instead, it has been a subjective approach, “how can we make this happen for the mining company?” This is evidenced by the 78 draft conditions of consent, which recognise that there will be major subsidence problems and the real probability of the loss of the drinking water supply. Yet, instead of applying the precautionary principle and rejecting the application, DPI has again sought to appease Wallarah 2 and find a way forward for their mining license to be granted. This is despite overwhelming public opposition, including opposition from Central Coast Water Corporation, Central Coast Council and our local, state and federal elected officials.

The Hon. Tony Kelly, Minister for Planning in 2011, rightly rejected this mine application because it was not in the public interest. One of the pertinent reasons for his decision was that:

“...the project does not adequately address potential water quality impacts, resulting in uncertainty around the ability of the project to meet acceptable water quality outcomes... the project is not considered consistent with the principles of ecologically sustainable development, including the precautionary principle, and as a consequence is not considered to be in the public interest.”

The Korean Times published in June 2016 that the project’s parent company, South Korean Government-owned Korea Resource Corporation, would quit its overseas resources development operations. KORES’s debt ratio stands at a staggering 6,905%.

According to the Korean Board of Audit and Inspection, a total of 35.8 trillion Won was invested in overseas resources development, with little gains so far.

This is a major strategic shift by the South Korean Government and puts in doubt the ability of the proponents of the Wyong Coal Project to sufficiently carry out any remedial work or rehabilitation, in particular within the water catchment area where a high degree of subsidence is forecast.

Remedial work and rehabilitation as set out in the draft conditions of consent could well be unrealised because the proponents, Wyong Coal Pty Ltd, only have a paid-up capital of \$400. Therefore, the total liability of the shareholders of this company is limited to the total amount of its paid-up capital. They could simply walk away and leave the Central Coast community and the State Government having to bear the burden of cost. What minimal bonds they may be required to lodge could well fall short of the final cost to remediate the damage caused to community assets, people's homes, the environment and water loss.

CONCLUSION

The Wallarah 2 Coal Project never has been and never will be in the public interest. It is quite clear that the draft conditions of consent, even if of a tacit nature, concede that the probability of unacceptable environmental damage from subsidence is real and that there will be an unknown loss of the Central Coast's town water supply. How do you replace or remediate loss of bio diversity, the destruction of a

unique area and loss of water - and where does the water come from to replace what is no longer there? Offsets simply cannot do this. You only have to look at the history of longwall coal mining – it's a destructive process where the environment, water, health and people's homes take second place. The legacy of the Wallarah 2 mine will not be any different. The PAC must, in the interest of the Central Coast Community, take a positive stand and follow the lead as determined by the previous Labor Government - apply the precautionary principle and reject this project once and for all. The ACA calls upon the PAC to do this and refuse the Wallarah 2 application to mine as it was previously refused, by the then Minister, in 2011. The community doesn't want this mine approved because it is extremely concerned that:

- *It puts the Central Coast's town waters supply at risk;*
- *It puts community health at risk from serious respiratory ailments from the coal loading facility being situated within an urban development region;*
- *It puts a local valley community at risk from the inability to provide secondary access during flooding; and*
- *It is not, as previously stated, not in the public interest.*

I'm often asked why I persevere in this fight to protect the Central Coast's water supply. The answer is very simple. Each time that I look into my granddaughter's eyes I know the answer.

Alan Hayes OAM

Australian Coal Alliance Inc

Appendices A, B & C

Submission to PAC Hearing

10 April 2017

Wallarrah 2 Coal Project

SSD - 4974

Appendix A



Office of Environment & Heritage

Your reference: 11/18834
Our reference: DOC13/17728; FIL12/10400
Contact: David Paull, 4908 6837

Mr Clay Preshaw
Acting Team Leader, Mining Projects
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Attention: Carl Dumbleton

Dear Mr Preshaw

RE: OEH SUBMISSION FOR THE WALLARAH 2 COAL PROJECT (SSD_4974)

I refer to your letter dated 22 April 2013 seeking comment by the Office of Environment and Heritage (OEH) on the Wallarah 2 Coal Project, a proposed State Significant Development (SSD_4974). OEH notes that this project has been determined a 'Controlled Action' (EPBC 2012/6388) under the Australian Government *Environmental Protection and Biodiversity Conservation Act 1999* and that matters identified under the supplementary Director General Requirements are to be assessed pursuant to the *Environmental Planning and Assessment Act 1979* (EP&A Act).

OEH notes that the proposal will include the following features; an underground longwall mine, coal handling and storage facilities, rail loop and loading infrastructure, an underground entry and ventilation shafts, gas and water management facilities, maintenance facilities and administration buildings. OEH provides advice in relation to threatened biodiversity, heritage, flooding and surface water management and environmental impacts resulting from subsidence.

OEH has previously provided an adequacy review (31 October 2012) to the Department of Planning and Infrastructure prior to exhibition of the Environmental Impact Statement (EIS) and notes that many of the issues raised at this stage of the assessment process have not been adequately resolved in the exhibited EIS. Detailed comments on the exhibited EIS are provided in **Attachment 1**. Recommendations for additional information that is required for this project to be fully assessed are provided below:

1. In order to prevent permanent damage to sensitive groundwater aquifers, surface water systems threatened ecological communities and the habitat of threatened species, the proponent redesign the longwall layout so as to preventing longwalls being extracted directly under Little Jilliby Creek, Myrtle Creek, Armstrong Creek and Jilliby Creek or within their angle of draw.
2. The detailed Biodiversity Management Plan be provided to OEH prior to development approval, outlining the final details of the mitigating actions.
3. A finalised Biodiversity Offset Package final offset strategy detailing the amount of biodiversity credits to be retired, the quantum of the proposed offset package and the conservation mechanism to be implemented prior to development approval.
4. The extent of impact in the PMF needs to be included in the assessment so that appropriate management measures for this residual risk are included as part of the assessment process prior to development approval.

5. The proponent work with Wyong Shire Council to identify the properties and update controls in areas impacted by the proposed development prior to development approval.
6. The results of the Wyong River Catchment Flood Study should be compared to the Wallarah 2 flood study for consistency in results, as Wallarah 2 falls fully within the boundary of the Wyong River Catchment Flood Study.

OEH will reconsider the development proposal in the light of the above concerns being addressed, and if appropriate, provide recommend conditions of approval.

If you require any further information regarding this matter please contact David Paull, Regional Biodiversity Conservation Officer, on 4908 6837.

Yours sincerely



26 JUN 2013

RICHARD BATH
Head - Hunter Planning Unit
Regional Operations

Enclosure: Attachment 1

Appendix B

Mine Subsidence Board

6.55 GCC:JR

NEWCASTLE

Minute Paper

MI 2717 V. C. N., Blight, Government Printer

APERS:—

SUBJECT:—

Policy for Partial Extraction in the Warnervale/Wadalba Area and Hue Hue Mine Subsidence District

Ministerial policy for the above areas of the Swansea-North Entrance and Hue Hue Mine Subsidence Districts was determined in 1988.

As the desire to develop these areas is increasing, it is appropriate for clarity of guidelines, that the detail of the Ministerial policy is reiterated. Attached for reference are:

- (i) A submission from the Department of Mineral Resources and signed by the Manager Coal Resources Administration Branch, Mr A Ramsland, and the Subsidence Engineer, Dr Holla, to the then Minister for Minerals and Energy dated 23rd September 1988. The memorandum makes three recommendations.
- (ii) A memo from the Assistant Secretary (Coal), Mr J N Cramsie, and dated 10th October 1988, the then Minister for Minerals and Energy submitting the details contained in Item (i) to the Minister for approval. This memorandum was stamped and approved by the Minister on 31st October 1988.

The important directions are therefore contained in the initial memorandum dated 23rd September 1988 and signed by Mr Ramsland and Dr Holla.

In summary:

- (i) The Minister directed that only partial extraction take place
- (ii) Partial extraction only applies to the proclaimed Hue Hue Mine Subsidence District and Precincts 6, 7 and 8 (excluding 6(iii) and 6(iv))

Appendix B

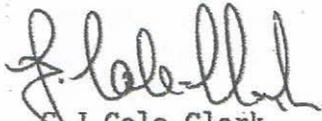
- 2 -

(iii) Partial extraction shall have the definition as proposed in Dr Holla's report attached as an appendix to the Ministerial Committee report, which will have the following ground movement parameters:

- Maximum ground strain - 3 mm/m
- Maximum ground tilt - 4 mm

These figures are highlighted on Paged 6 and 7 of that report.

Accordingly, surface development in the designated areas should be designed to accommodate subsidence parameters of 3 mm/m strain and 4 mm/m tilt. Should you require any further information regarding this matter, please do not hesitate to contact me.



G. J. Cole-Clark
Chief Executive Officer

15th May 1995

Distribution:

District Supervisor Wyong
Subsidence Risk Engineer
Manager Finance and Administration - For information only

Noted of 25-5-95

Appendix C



Planning
Assessment
Commission

14 April 2014

Mr In-sik Kim
Wyong Areas Coal Joint Venture
PO Box 3039
TUGGERAH NSW 2259

Dear Mr Kim,

Wallarah 2 Coal Project

Following the meeting on 1 April between the Commission and WACJV, the Commission has had the benefit of input from the Public Hearing and has received additional information from other sources. As indicated at the meeting, the Commission has identified a number of concerns that it considers significant. The purpose of this letter is to outline those concerns and give WACJV, as Proponent, an opportunity to address them. The Commission expects that it will receive responses in writing, but is also prepared to meet with the Proponent and any relevant experts on either 28 April or 29 April 2014. Written responses will be received up until COB 2 May 2014.

1. Water Supply

The Commission considers that the most controversial aspect of this project is its potential impact on Central Coast water supplies.

Most of the information available to the Commission regarding water and subsidence is strongly contested. In broad terms the Commission needs to be confident that it has identified: the possible sources of impact; the quantum of impact from each possible source; when each impact might commence; and the likely duration of each impact. At this point the Commission is aware of three possible sources of impact: operational requirements of the mine; subsidence impacts on the alluvial aquifers leading to loss of baseflow to the streams; and (possibly) loss of baseflow to streams as a result of mine-induced groundwater depressurisation. These are discussed further below along with a series of questions in relation to Central Coast water supplies.

Wyong Council and multiple presenters at the Public Hearing raised major concerns about the risk of any loss of water from the Gosford-Wyong Water Supply System (GWWSS). The principal reasons given were the history of severe water restrictions in the Central Coast (in 2007 only 10% supply remaining with doubts about the accessibility of the last 4% of this), the fact that the long-term records show far worse droughts than 2007, and the substantial increases in population forecasts for the area to be supplied by GWWSS (up to 27%).

There are two 'subsidence-related' impacts. The first is the impact on the alluvial aquifers and the second is on the deeper aquifers that contribute to mine-water make and the filling of the goaf voids.

Appendix C

Dealing with the first of these, the Department of Planning & Infrastructure's Preliminary Assessment Report (PAR) states that, as a result of subsidence impacts, 270ML/y will be lost from the Jiliby Jiliby Creek source and 30ML/y from the Central Coast Unregulated Water Source (see p.33). The Department's PAR does not indicate the likely duration of this subsidence-related impact.

The Proponent contends that the impact of 270ML/y on the Jiliby Jiliby Creek source is the maximum impact and that it occurs in year 10 of mining. It states that in other years the impact will be less, that re-charge of the alluvial aquifer will occur rapidly and implies that there will be no further impact once this occurs. Presumably this can only be correct if there is no connection between the alluvium and the zone of depressurisation caused by extraction of the coal. This is a contested issue and will be discussed further below.

The proposed solution in the PAR to this water loss is the purchase by the Proponent of water licences ('probably for irrigation or some other farming purpose') and NOW is stated to have confirmed that sufficient transferable licences exist to cover the deficit. However, Wyong Council and many other submitters have asserted that the purchase of licences as a solution fails to address three issues:

- (i) the subsidence-induced loss is not controllable (i.e. it can't be turned off);
- (ii) some of the licences available for purchase will not have been in use (i.e. 'non-active') and therefore there will be a loss in real terms from the system; and
- (iii) that in dry times there is insufficient water in the system to meet the needs of the existing population (i.e. water restrictions come into force).

The Proponent's response on the water loss¹ can be summarised as:

- (i) the Water Sharing Plans (WSP) are designed to ensure that all licensed users can take their maximum allowance and still maintain ecosystem health (but far less definitive phrases are also used, i.e. 'satisfy basic landholder rights'. 'generally consistent with extraction limits', etc.²);
- (ii) that the distinction between active and non-active licences is immaterial and that it would in fact be detrimental to remove active licences from the system;
- (iii) a long-term extraction limit of 36,750ML/y applies to the GWWSS and the availability of water for town supply is therefore governed by the WSP, not the quantity of water in the dams; and
- (iv) the subsidence impact on water flow in Jiliby Jiliby Creek would be temporary with the exception of some small areas where flow would be redirected.

At this stage of the review the Commission is not convinced that the purchase of water licences will offset the impacts of the mine on water supply under drought conditions.

The second issue is the deeper groundwater impact associated with voids in the goaf, at least some of which manifests itself as mine-water make (i.e. water predicted to be pumped from the mine daily). This amounts to 2.5ML/d plus possibly another 0.5ML/d from the fractured zone.

The Department's PAR at p.25 suggests that there would be no direct connection (i.e. no connective cracking) between the surface and the mine and that any indirect connection would not be significant 'in terms of overall drawdown, groundwater inflow and (most importantly) surface water

¹ Response from Hansen Bailey to DP&I Issues, dated 18 March 2014. This arose from the Commission seeking further information from the Department on a number of issues arising from the Commission's initial review of the Department's Preliminary Assessment Report.

² Emphasis added

Appendix C

resources'. This is a strongly contested issue. At the public hearing on 2 April 2014 Professor Pells³ made the following points:

- (i) the predicted 2.5ML/d inflow to the mine includes 0.04ML/d from the hard rock aquifer, but the source for the rest of the 2.5ML/d is unstated. It must come from somewhere and that 'somewhere' must be in equilibrium with natural recharge and therefore must ultimately affect river flow;
- (ii) there will be substantial changes in the groundwater regimes caused by the post-mining zone of depressurisation with substantial drops in bore levels. These changes to groundwater will cause a decrease in base flow to Jilliby Jilliby Creek;
- (iii) flows in Jilliby Jilliby Creek vary substantially with seasonal conditions. In dry times the flows are consistently below 1ML/d for long periods and for the time since 1972 the flows for 20% of the time have been below 0.74ML/d.

In relation to potential impacts from the zone of depressurisation there are three issues for the Commission:

- whether there is, in fact, a connection between baseflow to Jilliby Jilliby Creek and the zone of depressurisation;
- what the quantum of that impact might be; and
- when the impact might occur and its duration.

The mine will have a variable operational water requirement (approximately 20ML/y average). The Commission understands that this will be drawn directly from the catchment rather than from the GWSS. Presumably the Proponent has a water licence for the amount under the WSP.

The Commission has directed a number of questions to other parties concerning the above material. The Commission is also prepared to receive input from the Proponent on any aspect of this material. However, responses to the following specific questions would be appreciated:

1. If the duration of impact on baseflow to the streams depends in part on the effective sealing of fractures beneath the alluvium, what robust evidence does the Proponent have that would convince the Commission that there would not be a continuing impact?
2. In the context of the possible impacts of the zone of depressurisation on groundwater, can the Proponent indicate whether it accepts the drawdown figures indicated on Professor Pell's diagrams showing hypothetical bores at year 0 and year 20 of mining? If not, why not?
3. Does the Proponent accept that there will be an impact of the zone of depressurisation of the mine on the baseflow to the streams supplying the GWSS (a) during mining or (b) at any time in the future? If the answer to either (a) or (b) is positive, can the Proponent please provide details of the likely impact and when it might occur?
4. In relation to the operational requirement of 20ML/y, does the Proponent consider that it will be able to draw this water under licence from the catchment under severe drought conditions? If not, how does the Proponent propose to access water for the project under these conditions?

The Commission is inclined at this stage to recommend a nil impact on the water available to GWSS as a condition of consent. This will involve consideration of all the issues discussed above. It will also involve consideration of possible mechanisms to augment the supply at the Proponent's cost consistent with any impacts it cannot avoid.

³ Professor Pells was the Wyong Shire Council expert on water issues. The presentation at the public hearing was as a representative of the Australian Coal Alliance. The relevant slides from his presentation are included as Annexure 1.

Appendix C

The only possible solution to the risk of impacts on supply that the Commission can identify at this stage is to have the Proponent treat the mine water to an acceptable standard for return to the catchment rather than the currently proposed discharge of treated water to Wallarah Creek. The water for discharge to Wallarah Creek will be processed through a Reverse Osmosis plant and will already be required to meet the water quality guidelines applicable to that creek. Conceptually it should be possible to increase the level of treatment to meet any further requirements of raw water supply. Theoretically there should be 2.5ML/d available if required (i.e. more than enough to offset the predicted losses to GWWSS). The options would be to discharge the treated water to the impacted stream(s) or to discharge the water in close proximity to the weir. Does the Proponent have any views as to whether the return of treated water to the catchment would be feasible and whether either of the discharge options suggested could work? If not, what other options could be pursued?

2. Impacts on Jilliby Jilliby Creek and Little Jilliby Jilliby Creek

The Department's Preliminary Assessment Report suggests that the subsidence impacts on these streams will be limited to 'negligible' impacts over 80% of the stream length and 'minor' over 20%. This is unenforceable and, although it has been used in some previous approvals, cannot be supported by the Commission in this case.

The Commission considers that applying a single classification of 'negligible impact' to the whole stream length would not be consistent with the predictions and compliance could not be achieved. However, the Commission is not prepared to relax the performance measure to 'minor impact' over the whole stream either, since this would allow an unacceptable level of impact without the need for action by the Proponent to prevent or repair avoidable damage.

What is required is a performance measure (or measures) that require the predictions not to be exceeded at all points along the streams and then require the Proponent to prevent adverse consequences (i.e. headcuts, bank erosion, etc.) in the areas of risk. In this context the Commission notes that changes in gradient as individual longwalls impact the stream will be much greater than the average change in gradient along the stream once subsidence stabilises.

For water quality impacts, the Commission considers that, given the highly variable nature of flows in the streams and the other non-mine related influences on water quality, a system of assessing mine-related impacts will need to be developed including contemporaneous sampling above and below areas of current mining impact.

The Commission is prepared to consider further submissions from the Proponent on these issues. The Commission recognises that with the mine progressing up-catchment, project-specific solutions may be achievable.

3 Flooding

The Commission has four concerns:

- (i) that uncertainties associated with use of a yielding pillar mine design in the Project Area geology may mean that surface deformation is not as predicted (either in extent or timeframe). What flood studies have been done that incorporate potential variations in surface topography resulting from possible variations in pillar behaviour? What are the potential consequences compared to those predicted?
- (ii) While compensation, modifications, etc., are proposed for potential impacts on existing residences, etc., what is proposed for situations where there is increased risk of flooding on land that would have been suitable for development (e.g. subdivision)? How many properties are in this category (details please)?

Appendix C

- (iii) What proposals exist for assessment and compensation for impacts on enterprises such as the turf farm? In this context the Commission notes that impacts may be direct (i.e. loss of production) or indirect (e.g. loss of markets due to failure to supply).
- (iv) The Commission notes that there are some 15 roads and bridges that are predicted to have an increased risk of flooding from the project. Has the potential impact on emergency vehicle access been considered and, if so, can the Proponent supply details?

4. Subsidence

The Commission has a number of residual concerns:

- (i) The yielding pillar approach in this mine design has not been attempted in this area previously. The Commission accepts that it is conceptually attractive as a means of achieving a relatively uniform topographical outcome while maximising resource recovery. However, the Commission wishes to understand the potential consequences if pillars do not behave as expected in either the short or long term. Relevant issues include:
- Potential impacts on stream morphology and flow characteristics arising from changes in gradient greater or less than those predicted;
 - Potential impacts on built infrastructure; and
 - Timeframes for reaching surface stability.
- (ii) The expected period from initial impact on a feature or built infrastructure to final stability may be affected by the yielding pillar design. Can the Proponent provide estimates of this period of impact for the proposed mining method including the upper bounds.
- (iii) Buttonderry WMF. Council has advised this is valued at \$1.3bn and will be very difficult to repair/remediate if it is impacted by subsidence. The Commission considers that a nil/negligible impact performance measure may be appropriate combined with a pre-mining dilapidation report and appropriate monitoring thereafter. Does the Proponent wish to comment on this?

The Commission's report is due mid-May so written responses would be needed by 2 May 2014. Please call Mrs Paula Poon on (02) 9383 2101, if you have any questions in relation to this request.

Yours sincerely



Dr Neil Shepherd AM
Chair, Wallarah 2 Coal Project Review