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INDEPENDENT PLANNING COMMISSION

MEETING WITH INDEPENDENT EXPERTS ENGAGED BY ENVIRONMENTAL DEFENDERS OFFICE NSW ON BEHALF OF HUNTER ENVIRONMENT LOBBY

RE: UNITED WAMBO OPEN CUT COAL MINE PROJECT

PANEL:	**TONY PEARSON** **ROBYN KRUK** **DR PETER WILLIAMS**
ASSISTING PANEL:	**ALANA JELFS**
ENVIRONMENTAL DEFENDERS OFFICE:	**RODERICK CAMPBELL** **STEPHEN GAULD** **DAVID PAULL** **DR MATTHEW CURRELL** **DR MEGAN KESSLER** **MATT FLORO**
LOCATION:	**IPC OFFICE** **LEVEL 3, 201 ELIZABETH STREET** **SYDNEY, NEW SOUTH WALES**
DATE:	**1.38 PM, TUESDAY, 5 FEBRUARY 2019**

MR T. PEARSON: Good morning and welcome. Before we begin I would like to acknowledge the traditional owners of the land on which we meet, the Gadigal people. I would also like to pay my respects to their elders past and present and to the elders from other communities who may be here today. Welcome to the meeting today. United Collieries Proprietary Limited, the applicant, is seeking to expand open cut mining operations at the existing Wambo Coal Mine and United Colliery to allow for the extraction of an additional 150 million tonnes of run of mine coal over a period of 23 years.

My name is Tony Pearson. I am the chair of this IPC panel. Joining me are my fellow commissioners, Robyn Kruk and Dr Peter Williams. Other attendees at the meeting are Alana Jelfs from the IPC secretariat. We have here representing The Hunter Environment Lobby Dr Megan Kessler, Dr Stephen Gauld, Dr – Mr David Paull, Mr Roderick Campbell and Dr Matthew Currell. Have I missed anyone?

MR S. GAULD: If you could just remove - - -

MS A. JELFS: And - - -

MR GAULD: - - - the doctor from Stephen Gauld.

MR PEARSON: Okay. Right. Mr Stephen Gauld.

MS JELFS: Yes. Sorry about that.

MR PEARSON: Okay.

MS JELFS: Matt Floro is also in attendance from the EDO.

MR PEARSON: Okay. And Matt Floro as well from the EDO. In the interests of openness and transparency and to ensure the full capture of information today's meeting is being recorded and a full transcript will be produced and made available on the commission's website. This meeting is one part of the commission's decision-making process and will form one of several sources of information upon which the commission will base its decision. Those present would be aware that on 12 December the commission postponed the public meeting as a result of the Commissioner identifying a perceived conflict of interest and withdrawing from the panel.

On 18 December Robyn Kruk was appointed to the panel. The commission acknowledges the inconvenience that the postponement of the public meeting caused. Before we hear from our first speaker I would like to lay some ground rules that we expect everyone taking part in today's meeting to follow. Today's focus is on public consultation. Our panel is here to listen, not to comment. We may ask questions for clarification. It will be most beneficial if your presentation is focused on issues of

concern to you. It is important that everyone registered to speak receives a fair share of time. I will therefore enforce time-keeping rules.

As chair, I reserve the right to allow additional time for provision of further technical materials. A warning bell will sound one minute before each speaker's allotted time is up and again when it runs out. Please, I do ask you to respect these time limits. If there are issues you are unable to address or you feel that you do not – you could not completely address in the allocated time, we would encourage you to provide a written submission to the commission. Written submissions should be made to – made within seven days of this meeting. If you would like to project something onto the screen, please give it to Alana before your presentation. If you have a copy of your presentation, it would be appreciated if you could provide a copy to the secretariat after you speak.

Please note any information given to us may be made public. The commission's privacy statement governs our approach to your information. If you would like a copy of our privacy statement, you can obtain one from the secretariat or visit our website. Notes made throughout the meeting on issues raised will be summarised in our determination report. Finally, I would like to ask everyone to turn their mobile phones to silent. We had a mobile phone interruption this morning. So with that I would like to thank you, and I would call the first speaker, Mr Roderick Campbell.

MS JELFS: And there won't be a warning bell. We will just let you know that it's a minute to go.

MR PEARSON: Yes.

MS JELFS: Yes.

MR PEARSON: Okay.

MR R. CAMPBELL: That's all right.

MR PEARSON: So, Roderick – yes.

MR CAMPBELL: Thanks, Tony. Thanks, Commissioners. It's nice to be back at a commission hearing in person. I've done the last few by phone. Unfortunately, I have to run to a senate inquiry hearing, so I will be very brief. I think it's really important that we look at any proposals to expand coal production in New South Wales in the context of the wider coal market and Australian and New South Wales policy on that. In April 2016, Australia signed on to The Paris Agreement, and – which obviously has emissions reduction targets. This has huge implications for coal production and consumption, and according to estimates by the International Energy Agency – and this is the key table from their World Energy Outlook – the – their modelled scenario, which is broadly in line with The Paris Agreement, is the green line in that global coal demand chart.

This is all covered in my written presentation, which you've already got. As you can see, global coal demand needs to decline by two thirds by 2040 to be in line with Australia's commitments supported by the New South Wales government and supported by the vast majority of the Australian public, according to Australia Institute polling. It's not just production and consumption. The coal trade similarly declines, and I've got the numbers in my written presentation.

MR PEARSON: Does that include export coal or is that just domestic - - -

MR CAMPBELL: That's global coal - - -

MR PEARSON: That's the global graph, is it?

MR CAMPBELL: - - - demand.

MR PEARSON: Okay.

MR CAMPBELL: So in Australia – and this is a graph that was included in some of our earlier submissions on this project. As you can see, this is approved coal production from mines that were already operating in 2014 in New South Wales and Queensland. This is certainly a chart that could do with an update, and a New South Wales focused chart would be very useful, I think, for decision-makers in considering how much new coal can New South Wales handle before the industry starts to eat itself, before inter-mine competition is really destroying any real benefit economic or otherwise. So, if nothing else, I would really urge the commission to call for this analysis to be done by government agencies, not by The Australia Institute cobbling it together from available public sources.

We need to know how much coal capacity has been approved, how much of it's approved in existing mines so that planners can actually start to plan for the decline in world coal use that is Australian and New South Wales government policy. I'm delighted that transcripts are now available from these meetings. It has been very useful, and here's what the proponents had to say when the panel asked if they've updated any of their economic assessment. They said it was assessed on the numbers of the day. You know, markets are constantly changing. At what point do you continue to update?

Well, I would argue that in the case of this project we're well past time for an update. The economic assessment that was conducted by Deloitte for the original EIS was based on 2016 forecasts by the Department of Industry. In 2016 a couple – in March 2016. March 2016 predated some pretty important things in the – for the New South Wales coal industry. It predated Australia signing The Paris Agreement, and, perhaps of more local concern, it well and truly predated the abandonment of the terminal 4 coal terminal in Newcastle, and there's no – there's very little mention of the abandonment of T4 in recent coal planning documents I've seen, but its significance can't be overstated, I think.

It's an acknowledgment by industry that this industry isn't getting any bigger, that the volumes of coal that are currently being exported from New South Wales are not going to increase significantly. That's dollars and cents saying that. It's not The Australia Institute. It's not the Department of Industry. That's major investors in the coal industry conceding that the days of coal expansion are well and truly over, and that's something that the 2016 documents that this project's assessment was based on didn't consider. This is what I like to call a porcupine graph because it's kind of spikey with a, like, nice long nose there. The spikes are the forecasts of Australian thermal coal exports by the Department of Industry.

As you can see, through 2012, 2013 they foresaw the continued expansion of thermal coal exports from Australia up to – so we should have been exporting 303 million tonnes a year, a full 50 per cent higher than what we actually did in the last financial year. The United Wambo project's assessment is based on the dotted green line there, the 2016 chart that still saw steady growth in coal exports. The Department of Industry and this publication has, as you can see, a long history of overestimating the strength of Australian coal exports. They failed to see the end of the coal boom, and now it looks like and I hope they've failed to see the start of significant declines in the world coal market.

In terms of going back to that first graph we looked at, that declining green line, we need to see the black line start to head south pretty fast to be in line with our policy commitments and a world that avoids dangerous climate change. New South Wales coal production peaked in the year to March 2014 at – I think it's a tick under 200 million tonnes and it stayed under that ever since so this is a good thing, it's part of the abandonment of T4 and the reason why any further new coal projects are really competing against existing coal projects and I would argue the best way to ensure a just transition for coal communities in New South Wales is to stop approving new coal projects and allow the export demand for New South Wales coal to be met by existing mines.

I will rush through onto the other matter that I really wanted to raise, which is the cost of filling in voids. In your meeting with the proponents, they confirmed in absolutely equivocal term – unequivocal terms that filling either one or ..... voids would result in a project being unlikely to proceed, yes, Mr Williams said; I find this concerning. I find it concerning that any project's financial viability is dependent on the extent to which it's required to remediate its site ..... provides a perverse incentive to cut corners and to push for laxer standards and that's something we've seen happen in the mining industry in Australia for arguably 200 years.

I am sympathetic to mining companies who say, when discussing rehabilitation, particularly in relation to historical sites, that, well, we rehabilitated in line with community expectations. I – I think that is a fair argument but current community expectations are this – and there's more in my written submission and in the links to it – this is from some polling that The Australia Institute did: less than one per cent of people felt that it was acceptable for:

Pits to remain and to fill with saline or acidic groundwater, dirt and rock piles and remain in a fenced off area.

Essentially, less than one per cent of poll respondents felt that leaving major final voids was acceptable. Now, admittedly, this is the general public and not people who have a detailed understanding of the costs and benefits of the mining industry but in terms of general public acceptance, the demand for filling in voids and better quality rehabilitation, I think, is very, very high. I'm very concerned about the discussion that I've read in the documents talking about this idea that it costs $777 million to fill in these voids and somehow that makes it uneconomic.

I was particularly concerned at – maybe I've got the quote here, no, I don't, perhaps – about ideas that this is somehow a discrete project that should therefore be discounted at a lower value because it was all about social benefit. This is in no way a discrete project, it's entirely related to whether or not the voids are created in the first place. So discounting – so discounting these costs somehow differently to other costs related to rehabilitation and decommissioning, which are included in Deloitte's assessment there, using a different discount rate, I would argue it's very inappropriate – it's particularly inappropriate when you're not going to consider the benefits of filling in the voids in either a quantitative or even in a serious qualitative way.

I go into detail in writing on why the argument that the price of land is low and the cost of filling in the hole is high and why that's an inappropriate comparison but I might leave that for you to read. All I would draw your attention to is that if discounted in line with other project costs – and that's the point of discounting: you apply a discount rate to allow future benefits and costs to be compared in even terms – if you compare that cost on even terms to Deloitte's assessment of producer surplus or a loose measure of profit, you see that net producer surplus is about $268 million – so that's what's accruing to the proponents – and the extra cost of filling in the voids on their own numbers would be $129 million, leaving $139 million surplus for the proponents.

So there's only – this leaves only two possibilities: either they're not being entirely straight about whether or not they can afford to fill in – fill in these voids or the numbers are wrong and the assessment is wrong and either way, I think, that's of great concern and they're the two areas I really wanted to talk about and with that I might wind it up and – unless there are any questions ..... to the senate inquiry.

MS R. KRUK: Have you given us some additional material other than in your earlier submission that you referred to just then?

MR CAMPBELL: So I've completed a document that has just been provided to you there in - - -

MS M. KESSLER: There's a folder we've provided today.

MS KRUK: Lovely.

MS KESSLER: That has got the hard copies and electronic .....

MS KRUK: Good, good, good. I thought I haven't read it, that's what I was – yeah.

MR PEARSON: Yeah.

MS KRUK: Thank you for that.

MR CAMPBELL: All right.

MR PEARSON: Thanks. We will let you go.

MR CAMPBELL: Fabulous. Thank you very much.

MR PEARSON: That's all right.

MS KRUK: Thank you for taking the time. We weren't aware of the fact you had a senate inquiry to go to as well, so - - -

MR CAMPBELL: My timing at it got changed yesterday.

MS KRUK: Okay.

MR GAULD: No worries.

MR CAMPBELL: So it's a little unfortunate.

MR GAULD: Good luck.

MS KRUK: Good luck.

MR GAULD: Thank you for .....

MR PEARSON: All right. Thank you.

MS KRUK: Are we talking state or national?

MR CAMPBELL: No, federal – federal inquiry into the proposal to be able to break up electricity companies.

MR PEARSON: Right.

MS KRUK: Something non-controversial.

MR CAMPBELL: Yeah.

MS KRUK: Thank you very much.

MR CAMPBELL: Thank you.

MR PEARSON: Thanks, Roderick. Are there other time pressures now or – okay.

MS KRUK: Have you worked out a sequence?

MR GAULD: Just going to work down the line, I think.

MR PEARSON: Just work down the line, yeah. If it's all right with you, we actually might wait for Alana to come back then if there's no time pressure to – the next speaker is Stephen Gauld and I think you've asked for 15 minutes.

MR GAULD: Yes, that's right.

MR PEARSON: Okay.

MR GAULD: So my area of expertise is noise and noise impact and, really, I only have one point that I want to explain to you and I will tell you the point straight up and then I will explain that and the point is that in my view the applicant hasn't demonstrated consideration of all the mitigation measures that are possible and so that's – and so I will explain why I think they've done it. In any noise assessment, the process is very clear. There's a policy, which is called the industrial noise policy, which has been around for – since the year 2000. And it outlines what an applicant must do in assessing a new noise producing proposal.

It has recently been updated or amended by the noise policy for industry. And so in the last couple of years there has been a bit of a transition and people haven't really understood which policy they should use. There has been a general movement towards the noise policy for industry. This assessment was completed under the industrial noise policy, the old one. And I notice IPC have called for the new one to be used and assessment. That has been done. And the applicant had basically said, look, they're very similar. There's not a lot of change.

And I'm not sure, but I suspect they're happy to go under the noise policy for industry, because the amount of change is very small. And the point I'm raising is in both. So it doesn't matter, regardless of which policy we use. So I will just take a step back and run through the process. And there's only five or six steps. The first step is to determine your background noise levels and your noise triggers. So how much noise are you allowed to make. That's in both. And then you look at your assessment, how much noise will be produced by machinery, mobile machinery, fixed plant, all the noise sources on the site. And you predict a level. You look at topography, you look at barriers, you look at everything. Then there's two cases.

One is your predicted levels are below the criteria and everybody is happy and we go forward. That doesn't often happen. And so most of the time the predicted levels

are above the criteria. And so then what the policy calls for is to look at the range of mitigation measures that you could employ to bring that predicted noise level back down. Right. So we're above, they say, "You know, we've – here are our noise sources and here is the environment and we're above the level, so how do we bring that predicted level back to the criteria." Now, that's where I think there's a problem. What has happened is they have said that there's only a certain number of things we can do and we can get close, but we can't meet the level. But what the policy says is you must tell us what you need to do to meet the level, even if it's unreasonable. And then you must argue that it's unreasonable. Okay. And I will explain specifically from some documents, so we've got some points of reference. The industrial noise policy in section 6.3 says:

> *The noise impact of the development can be determined by comparing the predicted noise level at the receiver with project-specific noise levels that have been derived for that particular location. The development is considered to cause a noise impact if the predicted noise level at the receiver exceeds the project-specific noise level – exceeds the criteria. The extent of noise impact from the development is defined by the extent the predicted noise level exceeds –*

so how much it's above, yes. Very simple. So that's in the industrial noise policy. A similar paragraph in the noise policy for industry. Well, in figure 2 in the noise policy for industry shows that – the path of assessment. So the question is what do you do. And the answer is, well, you mitigate the noise. And there's a whole – you can always meet the criteria. You can have one piece of equipment; if that's what it takes to meet it, well, that's what you need to meet it. You could have a hundred metre noise barrier; if that's what it takes, well, that's what you save. And so that's the step that I think hasn't been done. The applicant says that they've done it. It has been part of the design process. They've done it behind closed doors and said, "We've considered all the mitigation measures", but they haven't demonstrated that. They haven't told us what they considered and why they were unreasonable. And some snippets from the project, which I can read for you, in the executive summary of the noise impact assessment by the applicant:

> *Potential noise impacts were a key consideration throughout the design of the project. Predictive noise modelling was undertaken on an iterative basis throughout the design phase, so that as far as practicable, noise impacts associated with the project were minimised. This process sought to quantify the noise impacts associated with different operating scenarios, to minimise the extent of potential noise affection on private property and residences and to enable consideration of reasonable and feasible noise measures early in the project and optimisation process.*

Now, the industrial noise policy I think has been amplified where the – sorry, the noise policy for industry, the new one, has had that area amplified. And so it, I think, recognises that applicants weren't doing this. They would just say, "Here are the reasonable measures and this is what we're going to do and we are still above the

criteria, so then we will go into acquisition and mitigation." In the noise policy for industry – let me have a look at this one – there's a couple of snippets, which are in my written submissions. It says in section 3.4 of the noise policy for industry:

> *When determining whether noise mitigation is feasible and reasonable, the starting point is identifying mitigation measures that would result in achieving the relevant project noise triggers levels, and then identifying why particular measures may not be either feasible or reasonable.*

So you say, "This is a mitigation measure, but we don't - - -

MR PEARSON: Sorry. What section was that again, sorry?

MR GAULD: Section 3.4 of the NPI, the new one.

MR PEARSON: Yes.

MR GAULD: And then it's even more explicit in the same policy. There's a fact sheet, F, which talks about reasonable and feasible mitigation. So it's guiding applicants through the process. Table 3.1 is example of feasible and reasonable mitigation decision-making matrix for inclusion within an environmental impact assessment. So it assumes that this will be in the impact assessment. The tables are mitigation option, feasible test, reasonable test and justification. So is it feasible, is it reasonable, do we – why aren't we doing this? And so it's very clear, but the only thing the applicant has done is says they've considered it and disregarded it. I think it's for the adjudicator, for the decision-maker to make that decision.

Is running a mine site at night with half the equipment reasonable; is building a barrier wall out of your overburden 40 metres high reasonable. Perhaps it is. We are not told what mitigation measures were disregarded. And so that's a key deficiency. The applicant make commitments in their responses to IPC recommendations. They continually make the commitment that they will meet the predicted noise levels. The noise policy for industry doesn't require you to meet the predicted noise levels; it requires you to meet the criteria, the project-specific noise levels. And I think those two terms have been interchanged, without people really understanding what they mean.

The outcome, of course, is in table 2 of the responses to the IPC recommendations and in their own assessment is 37 dwellings are affected. We've got six dwellings negligibly affected, zero to two dB; we have 22 dwellings – what's the next one – marginally affected, which require voluntary mitigation rights. And nine dwellings are significantly affected. And they are afforded acquisition rights. So the impact of not meeting the project-specific noise level is we have 37 projects affected – sorry, 37 residences affected. If we were to know what recommendations were discounted that other people might think are reasonable, there would be less dwellings affected. And so that information is just not provided.

So I've provided that in summary in my presentation complete with the references to the sources that I've used, which is in the folder, and I will note that what the applicant have done is not unusual. It's a common thing to do what they have done. It's just not common to be picked up, and so what I'm hoping to educate, to identify – that this is a problem and you should be asking those questions. What – where are the mitigation measures that will work or be unreasonable and not feasible? Thank you.

MR PEARSON: Okay. Thank you.

MS KRUK: Thank you very much for that.

MR PEARSON: Yes. David, you're up next, I guess.

MR D. PAULL: Dive straight in.

MR PEARSON: Yes. Dive straight in.

MR PAULL: Sure.

MR PEARSON: So David Paull is our next speaker, and David has requested 15 minutes.

MR PAULL: Yes. Thank you. I just wanted to highlight maybe two, maybe three issues that I think are really, really important to this project and its impact on biodiversity and the environment. First one is the impact that this mine is going to have, really, on one of the last largest remnants of a particularly critically endangered ecological community in the Hunter Valley. It's called Central Hunter Valley eucalypt forest and woodland, and it was listed in 2013, I think, and, basically, what we really have to think about when we think about this community is that it's critically endangered, and it's critically endangered because it is a highly fragmented community.

Now, when I looked at the determination for this one it didn't go into as much specifics about the distribution and the size of the remnants. It does say that the average size now of the remnants for this community is 1.7 hectares. 1.7. Not very big. There was an earlier listing by the State Government in about 2008, and it's called the Central Hunter Grey Box Ironbark grassy woodland community. Now, it was – at that time it was said that there are only 20 remnants bigger than 100 hectares left. Now, that was then. That was quite a while ago, and I have to tell you in that time that there has been a significant amount of that community cleared.

Now, this Grey Box Ironbark woodland is actually the most significant of the types of the Commonwealth listing. It's the most important one that forms the basis of that listing, and it's the most endangered. Now, the state listing is only endangered, whereas the Commonwealth listing is – encompasses more different communities, yet it's critically endangered, and you might ask, well, how did that happen? Well, if

the Central Hunter – if the state listing was tried again, it probably would meet the requirements for being critically endangered. There's no doubt about that, and the Commonwealth listing also took a slightly different approach in that the main threat to that was increasing land clearing and fragmentation, particularly from mining was what was probably the main land use at the moment which is threatening that community.

So I was asked to look at this community and just determine whether or not this particular patch – and we're talking about a patch. It's nearly a 200 hectare patch – is actually critical for the survival of that community as determined under the listing criteria, and I have to say that it is. It meets all the thresholds. It's actually in relatively good condition, considering that there is a mine adjacent to it. There's another mine on the other – the northern side of the Golden Highway, both of which are reaching the end of their lives. Now, admittedly, this remnant is receiving – it does receive probably a lot of dust impact from the surrounding mines, but these are mines that are winding down, hence the new proposal to keep the life going.

So what the assessment doesn't really fully take into account is the particular importance of this particular area in the landscape for connectivity and for just – particularly for wildlife. This is a high nutrient soil type of community, and that is where most of the development of the Hunter Valley historically has occurred, through agriculture, and now it has got the double whammy of dealing with mining. I would suggest to you that this remnant is irreplaceable, and it really does raise the question of at what point do we say, "Okay. Well, enough is enough." How much of a community can we keep continuing to remove before it's sort of past its, really – its life, our future as a community, and I would say that this, looking at the aerial photograph – and I haven't done the analysis, but it would have to be one of the last two significant areas of remnant vegetation for this critically endangered community left in the Valley.

So it's – it is quite important. Now, these kind of level of issues EIS doesn't generally deal with adequately. Why? Because since 2008 we've gone from using expert scientific opinion to using a black box, which is the BioBanking Methodology. Okay. Now, it's supposed to be scientific. You – you're putting numbers in. That looks like science. Does it adequately take into account all the factors that we need to be considering here? And I'm saying it doesn't, for there's a couple of problems with the BioBanking Methodology, which now is in its third incarnation, I think. Key to that is – now, the indirect impacts are not quantified. Okay.

So the indirect impacts are a qualitative assessment, and that's difficult to put into context. If you've got one part of the assessment which is numbers based and then another part which is qualitative, it's very hard to sort of work out the significance, and I put it to you that in a mining development such as this we have indirect impacts out of proportionately more significant than just about any other kind of development. I'm talking about dust. I'm talking about noise. Light pollution is

very significant. When you reduce remnants you make them more vulnerable to penetration for weeds and feral predators. This is all documented science. Okay.

The other thing is cumulative impact. Very poorly dealt with, and landscape connectivity. Very poorly dealt with in the black box because it's very hard when you have a standardised format to deal with particularities of each location, and in this location it's – the importance of the remnant for its connectivity is probably much more significant than a lot of other projects, if you understand what I'm saying. Now, the black box – I'm calling it that because I just like saying that – does look at connectivity within certain narrow confines, and one is riparian zones. So it's significant if you're impacting on a riparian zone, and then this other thing called state significant corridors, which was set up as a category when the first biometric method was developed, and here we are 10 years later, and the State Government still has not identified one single state significant corridor.

I would argue that this fits into that category. Also, there's a few more issues with the way this has been done in that the species credits are very poorly dealt with. You have a species credit – you have ecosystem credits and species credits now, and what's a species credit? That's something – a threatened species which whose distribution you cannot predict by vegetation type. So it's something that likes particular things like waterholes or swamps or some other special type of thing which can't be predicted just by looking at vegetation communities, but in practice that's exactly what they're doing. So for this what I call a fishing bat – okay. Because it actually comes and flies above the water and picks things out of the water to eat.

It needs a particular foraging environment, and it also needs a particular roosting requirements, and they're generally hollows or bridges or caves and things like that. Now, when they're offsetting this for this species, all they've done was say, "In 10 years time we're going to protect a little bit of swamp forest over here. And that's going to offset the loss for that species created in this area." And it's just poor, you know. And they do the same thing also for the regent honeyeater as well. So in this case they did not identify the regent honeyeater as being a species credit, but I would argue that it has a significant impact on this. If we go through the old seven-part test, it would fail the seven-part test. And that's where the problem is with the methodologies.

When one part we have the seven-part test was still alive and well in the EP&A Act – the reason they got rid of it in the Threatened Species Act – and now we have this new regime of this other methodology, which sits next to the other one, so which one – which basically says that any impact is acceptable, if you can find an offset. Now, the consensus basically in the scientific community – and I have been doing a bit of surveying with other scientists through LinkedIn and getting their ideas on whether they think that this whole New South Wales offset policy is an above-board policy. And the general consensus is no, it's not. It's not scientifically meritorious. And there has been quite a lot of papers published about this, like where conversation meets offsets.

And the feeling is basically scientists think that the offset policy, rather than creating maintainable and improved outcomes – this is what it's supposed to be doing – what it has done is only just made the development of sensitive ecosystems acceptable. That's all it has done. And I would argue now that I cannot think of any offset arrangement undertaken and agreed to be the State Government that has led to a maintainable or improved outcome. So we really do need to start moving away from that system, particularly now with climate change really affecting vegetation condition. You know, this is real. It's happening. Every single tree, in a sense, is valuable now. We need to be increasing vegetation cover. These kind of issues, of course, an EIS can't deal with. But these are the sorts of issues that we're now confronting, I think. How's my time?

MR PEARSON: You've got four minutes – three and a half minutes.

MR PAULL: And I think I've covered just about everything, really. I've got a lot more detail in my written submission, but I'm happy to answer any questions.

MR PEARSON: Okay. Thank you. Do you have any questions?

MS KRUK: Just more a question: in your submission you talked about it being quite a unique lot of land, 200 hectares. Have you got any other material about what else is in that region? You obviously know the area very well, both scientifically and I probably think personally too.

MR PAULL: Yes.

MS KRUK: Yes.

MR PAULL: Yes. I've spent a lot of time – I spent quite a long time as an environmental consultant, doing a lot of work with mining companies in the Hunter Valley. And then I was working at OEH as a regulator, regulating the same people, which has made it all very interesting.

MS KRUK: Thank you very much for taking the time to put in such a detailed submission. I look forward to reading it.

MR PAULL: But I think it is important – hopefully my submission will cover all those things. For threatened species – the other thing I just wanted to say is for the significant test, it is my – when I went through the seven-part test, I got 11 species as having a significant impact.

MR PEARSON: Thanks.

MS KRUK: Thank you.

MR PEARSON: All right. Thank you. Peter, are you okay?

DR WILLIAMS: No, I'm fine. Thank you.

MR PEARSON: Okay. All right. So I think next up, Dr Matthew Currell.

DR M. CURRELL: Hi.

MR PEARSON: So I think you've nominated 15 minutes.

DR CURRELL: Yes.

MR PEARSON: So we will finish off with you.

DR CURRELL: Good. Okay.

MR PEARSON: Great.

DR CURRELL: Yes. And I will try and get through these slides as we go. So my expertise is in groundwater. I'm a hydrogeologist. And I work at RMIT University. And I've had a look at the material provided in the EIS and the response to submissions on groundwater. And also because of the linkages between groundwater and surface water, I've had a look at the area of ground surface water interaction as well. Let me try this. Okay. There we go. So the main potential impacts on groundwater and surface water of this mining project – and these are all acknowledged as potential issues in the EIS – are number (1) changes to groundwater and surface water interaction.

So that means where mining causes reduction in groundwater levels in the mine pit, that then translate into a change in pressure in the near stream environment and causes rivers to start to change the way they interact with groundwater. So ultimately this can mean through a groundwater pathway you get less flow of water into surface water body, because more of that surface water starts leaking into groundwater or less groundwater is able to discharge into the rivers. And so there's a couple of alluvial aquifers in the area of the mine, associated with the Hunter River and Wollombi Brook that potentially are impacted by changes to groundwater and surface water interaction.

There are also groundwater quality impacts. And this is then again linked to surface water. Because the groundwater system actually provides some of the flow to these rivers or to these streams, if there are changes to groundwater quality, that has implications for surface water quality as well. And then, lastly, there's the impact on groundwater dependent ecosystems, due to both of those types of changes. So if the water quality changes ecological effects, if the amount of water or the water levels change, potential impact on groundwater-dependent ecosystems.

MR PEARSON: And you're sort of reflections, particularly I guess in the first dot point, incorporate the fact that there is already an approved impact and there's an additional impact, if you like, that you've considered here. Is that right?

DR CURRELL: That's correct.

MR PEARSON: Okay.

DR CURRELL: Yes. So the nature of the modelling that was done to look at groundwater and surface water impacts was, sort of, using a – taking base case, including current mining activity, and then trying to model the additional impact of just this resource activity.

MR PEARSON: Okay.

DR CURRELL: And there has been some discussion in the analysis of the work regarding, you know, cumulative impacts of other mining projects - - -

MR PEARSON: Yeah.

DR CURRELL: - - - that also are at play there.

MR PEARSON: Yeah.

MS KRUK: Matt, did you also have regard for the IESC submission as well or - - -

DR CURRELL: Absolutely. Yep.

MS KRUK: Good on you. That's right. Yeah.

DR CURRELL: We'll get to that in a minute.

MS KRUK: All right. Thank you.

DR CURRELL: Yep, yep. So one of the issues here is that the type of model that's been used to model the coal mine, which is a typical large-scale fully saturated groundwater flow model, is well known to be not particularly good at actually simulating the details of groundwater, surface water interactions. They're great for doing things like saying if we dig a huge mine pit in the middle of an aquifer, how much is the groundwater level going to change in the aquifers, great for doing things like how much water is going to flow into my mine pit.

Not good at simulating what happens to rivers that might be connected to those aquifers as a result of mining, especially at the, sort of, local scale where some of the impacts for ecological communities might be important. So this was something I raised in the first report that I – that I, sort of, put in in 2016, second report and the third report, the most recent submission that you've got there. And there are field methods available to complement, you don't have to, sort of, start from scratch again to look at groundwater, surface water interaction issues.

You can use – yes, you can use your big, you know, model that's designed for the mine and looking at groundwater impacts around the mine and then you can supplement that with local scale modelling and with field studies that better inform those interactions between the groundwater and surface water system because, remember, the – the thickness of the surface water bodies is so small compared to the depth and the thickness of these mine pits that the scales are out of sync when you're doing a model of this kind. I'll just try and get this going – sorry, a bit of time lag here in the - - -

MR PEARSON: I think if you actually – do you – do you want to move that black bag and then if you – there's – if you hover – hover the arrow over there and the bottom left - - -

DR CURRELL: Beautiful.

MR PEARSON: - - - and you'll see - - -

MS JELFS: Use the arrow on the .....

MR PEARSON: Yeah. No, and take the arrow to the right.

DR CURRELL: Yeah.

MR PEARSON: And – too far, that's - - -

DR CURRELL: That's the one, isn't it.

MR PEARSON: Yeah, go back, go back. Yep, that one.

MS KRUK: Yeah, I just saw that one, yeah.

DR CURRELL: Good.

MS JELFS: The arrow on the keyboard will certainly work .....

DR CURRELL: Yeah, I - - -

MS JELFS: Yes.

DR CURRELL: Let's see.

MS JELFS: Yeah.

MR PEARSON: Okay.

DR CURRELL: Okay. So, as I've said, those estimates are the changes to the amount of groundwater inflow to the Hunter River and Wollombi Brook, they're

based on results from a regional scale groundwater flow model, which may not be the best way to actually simulate those impacts and that's documented there in the – in the scientific literature. A second issue: there's fairly little investigation and little understanding of some important geochemical and water quality related issues, particularly what's happening on the site under current conditions.

MR PEARSON: Could I go back to that, though. So if – if the water impacts – surface water – groundwater impacts were modelled in the way that – in an alternative way that you suggest is more appropriate, what – what would that show?

DR CURRELL: Well, it would - - -

MR PEARSON: Have you done that work?

DR CURRELL: No.

MR PEARSON: Okay.

DR CURRELL: No. So at the moment it's probably – I could speculate - - -

MR PEARSON: Right.

DR CURRELL: - - - so what would we find. The practical outcome is the changes to the amount of, say, base flow – so base flow is a term we use for groundwater that discharges into a stream and sustains the stream's flow during, particularly, periods of low rainfall. So there are base flow estimates in the environmental impact statement so those estimates may be significantly changed or revised if we did more local scale modelling. And the other thing is, particularly with that issue of the scale of the modelling, you may find – so you've got – in the EIS, there are total numbers for how much this amount of base flow – that's groundwater sustaining the stream – will change; that's basically a single number for each of those major streams.

What may be rather significant and fairly important is how it's changing in this section of the river versus this section of the river. If it's having a big impact in one section of the river, that could have much more of an impact on, you know, an ecosystem that depends upon those flows or, you know, a water user in that area so it's improving resolution, improving – potentially improving accuracy of those estimates.

So looking at water quality there are a couple of sort of big red flags that jumped out at me initially when I was reading the EIS, and this is to do with the impacts of existing mining in the area on both groundwater and surface water quality. We see some fairly periodic exceedances of guideline values for elements such as aluminium and manganese and some really seriously elevated levels. Very little discussion of why that is originally. The proponent sort of takes the approach that, "Well, we have these, and, you know, that's an impact. We're just going to monitor, you know, our surface water and groundwater quality and try and mitigate impacts as they come."

There's no attempt to actually look at the underlying process. Why do we have this? And the importance of this is, presumably, you know, there's a fairly high chance it's due to some mining-related impact that's already occurring within the nearby region. So if you want to actually mitigate against impacts like this, you know, high aluminium concentrations, which are not good for river and groundwater-dependent eco systems, you do a lot better by actually understanding what's driving that, and then you're in a position to say, "If we expand the scale of mining, this is likely to have an X, you know, percentage increase or certain amount of, you know, exacerbating that existing impact, and we can adjust our activities in a way that actually addresses that underlying cause."

So a couple of times it has sort of been discussed, but, again, the presentation of both groundwater and surface water quality data is very stagnant. It's just here's the data. Here's the criteria level. Yes, there are some impacts. Nothing about what actually drives those impacts, which is the key to actually mitigating those sorts of impacts. Okay. Yes. So the IESC put out some advice on this project looking at groundwater and surface water impacts. That was in 2016. They raised a number of issues, quite similar issues to the ones that I've just brought up. They had a couple of additional areas that are sort of falling outside of my expertise, and there are a couple of things that I've sort of pointed out that perhaps weren't looked at, you know, in as much depth by this committee as well, but, broadly speaking, there's a lot of overlap in, you know, my analysis of these groundwater and surface water impacts and the IESC.

Now, the – so a couple of key things that they put in this advice. You know, water quality data in the assessment was limited in spatial and temporal representation, preventing clear identification of baseline conditions and potential off-site impacts. As a result the proponent's conclusions regarding lack of downstream impacts could not be substantiated. Geochemical assessment was not included. Further, numerical modelling and analysis presented in the assessment did not provide reasonable estimates of the likely impacts of the project on water resources and, specifically within that, combined effects on GDEs – groundwater-dependent ecosystems – due to groundwater drawdown and reduction in surface water flows.

Now, the mining company did some work looking at these issues in its response to submissions, and I had a look at that and wrote a second report sort of analysing that, and to me there was a fairly – you know, fairly superficial attempt to address the comments from the IESC. Here's just another map sort of illustrating that point about groundwater, surface water interaction. In the original EIS we had some mapping of the surface water bodies in the area. So Hunter River and Wollombi Brook, and there was some attempt to look at where these rivers are receiving a contribution of groundwater. So where the aquifers are actually sustaining the discharge there. Now - - -

MR PEARSON: Could I ask what is the light blue and what is the yellow or the tan?

DR CURRELL: I believe it's areas where the aquifers are providing streamflow - - -

MR PEARSON: Okay.

DR CURRELL: - - - in the orange. In the grey it will be areas where the stream is recharging into the aquifer.

MR PEARSON: Okay.

DR CURRELL: So – yes. That's – now, it was acknowledged at the time that it's sort of based on these interpolated water levels. So a limited number of actual monitoring points that tell you what the water table depth actually is along the course of those streams, and a regional topographic surface. So even in the EIS it's acknowledging the losing and gaining segments, meaning the areas being sustained by groundwater versus the areas where the river is leaking into the aquifers, very much an indicative sort of map, and this is what all the impact assessment is based on.

Now, the – in response to myself and the IESC pointing these issues out I can see almost no additional attempt to actually improve the resolution of this sort of mapping by going out and doing field surveys measuring water levels, you know, close to the stream, comparing that to river level, see how that changes over time and really updating the science which in the EIS was acknowledged by the applicant itself to be, you know, fairly indicative only.

So, you know, really, the potential impacts on, you know, your GDEs and also on surface water quality in these two rivers can't really be definitively resolved, I don't think, unless, you know, there's some real better understanding of what's driving both groundwater quality changes and the nature of groundwater, surface water quality interactions, and, really, the only way to do that is through additional site work, collection of data from the actual site itself rather than these sort of big scale models that, you know, work at fairly coarse resolution. So, in my view, I had a look at the proponent's response – or the applicant's response to the IESCs comments.

My view was that there wasn't really very – a substantial body of work to address those comments. So for, you know, additional water quality data. There was a little bit there, a couple of extra tables and so on but not really substantial enough to address the underlying problem, and so I think, you know, I was pleased to see in the commission's recommendations recommendation 43 was that, you know, this is something that can be assessed by the IESC.

There's no reason the committee can't be asked to refer an updated version of the – you know, of the EIS, have a look at the response to submissions and decide for itself whether those original concerns have actually been addressed. So I would strongly agree that, you know, a further assessment by the IESC to look carefully at these

issues would be a great thing. I've got my view on this, and, you know – but it would be, you know, good to hear it also from the IESC.

MR PEARSON: Thanks. Can I ask you one question. We – and it will appear on the transcript. We put a question to the applicant this morning in relation to backfilling the Wambo Void. Are you familiar with the site layout?

DR CURRELL: Yes. Yes.

MR PEARSON: Okay.

DR CURRELL: The two – yes.

MR PEARSON: So the Wambo Void is in the north, north-west of the site.

DR CURRELL: Yes.

MR PEARSON: And their response will be uploaded to our website as well, but, essentially, it went along the lines of the absence of an evaporative body, essentially, being the void, would mean that water would then seep – flow back into the alluvium. Conceptually, does that fit with kind of your understanding of the topography and - - -

DR CURRELL: So in a broad sense, yes, to a degree. So if you leave a mine pit open as a void, it's inevitable that groundwater is going to keep flowing into that void, because it's going to be a big, you know, low point in the landscape. All the groundwater is going to seep into the pit. If you backfill that void with, you know, waste rock, loose material, there's at least some probability that it will cause enhanced recharge back into the aquifer, because it's going to be a highly permeable material, so more water will naturally flow towards it. And then you will get a rebound of the groundwater or the water table at that filled-in void, which could then cause flow back out towards the river. But, again, that's something that's unfortunately not really simple and easy to model. There would be a few different, you know, parameters that you would have to carefully look at before you could say one way or the other. But conceptually that idea makes sense.

MR PEARSON: Okay.

DR CURRELL: Yes.

MS KRUK: You may have – if you do elect to have a look at what the proponent put this morning, if you have another view on it, please, we would welcome any further comment.

DR CURRELL: Absolutely. Sure.

MS KRUK: And I fully understand it's within the limitations of your own time.

DR CURRELL: Yes.

MS KRUK: But, again, you've clearly looked at this area very closely. You understand the technology. You've gone through the EIS submission process.

DR CURRELL: Yes. Yes, no problem.

MS KRUK: Thank you.

MR PEARSON: Peter, did you - - -

DR WILLIAMS: Could I go back to ask David a question, please.

MR PEARSON: Of course, yes.

DR WILLIAMS: I was sort of, sorry, formulating it at the end and it wasn't clear in my mind and, so I didn't want to delay. But, no, thanks very much.

MS KRUK: David or Matt, would you - - -

DR WILLIAMS: David.

MS KRUK: David. David.

DR WILLIAMS: Is that all right, if I go back?

MS KRUK: See, you thought you had finished, David.

MS JELFS: Has Matt finished? He hasn't finished.

DR WILLIAMS: No. Thanks for all that. That was really helpful.

MS JELFS: Has he finished?

MR PEARSON: It has, yes.

MS JELFS: Has it?

MR PEARSON: Yes. Matt, your presentation is finished, hasn't it?

MS JELFS: I don't think so.

DR CURRELL: Maybe 30 seconds more.

DR WILLIAMS: Sorry.

MR PEARSON: Okay. Let's let him wrap up.

DR WILLIAMS: Yes, please.

MS KRUK: Yes. Yes.

MR PEARSON: Yes. And then we will come back to the question. Yes. Sorry.

DR CURRELL: So monitoring program, ultimately how do we check if there's a groundwater impact or a groundwater surface water-related impact: it's through monitoring bores. So my reading is there's fairly limited spatial coverage of the monitoring bore network, to actually observe whether these impacts are happening. And one of the issues in groundwater is that impacts may not be rapidly reversible. So if we suddenly start seeing changes in groundwater levels and impacts on streams, if you take remedial action like, you know, halting excavation to a certain level, that doesn't necessarily mean that the impact just reverses. So that's a really important aspect.

And just looking at the layout of the monitoring bores, just to illustrate – this can be my last slide here – those areas in orange up there are two areas where the modelling done to date predicts that there will be some impact from the mining on the near stream aquifers, and therefore some change to what happens in the streams. So obviously there are two key areas that would need to be very closely monitored.

And I'm just noting on the right here, really pretty much an absence of groundwater monitoring bores in those locations where impacts are being predicted. So to me there needs to be a really, you know, serious effort put into new monitoring infrastructure, to look particularly in those areas where you're saying there's likely to be an impact on the near-stream aquifer and then possibly the stream as well. Yes. So I think we will just leave it there for now.

MR PEARSON: Okay. Well, thank you very much. That's very thorough. So I might go back to your question now.

DR WILLIAMS: Yes. I apologise, Matt, for that.

DR CURRELL: No, not at all.

DR WILLIAMS: Sorry. I thought you had finished, so – sorry, yes, David, the CEC – critical endangered ecological community – on the site, you said roughly about 200 hectares.

MR PAULL: Yes.

DR WILLIAMS: Just from memory, I thought you said that there was – perhaps it was only one of the two last sites like that in the valley, for that particular CEC.

MR PAULL: Of that particular size, yes.

DR WILLIAMS: Size, okay. Okay. So in terms – this is all getting back to the application of policy and the New South Wales BioBanking offsetting scheme and the assessment methodology and that, in terms of the improve and maintain test, in applying that test, given what you've said, what sort of offset ratios would you think would be required to – if it was to proceed. I mean, I'm just trying to think, given the significance of that site, if you were trying to say, look, can we implement the improve and maintain test and how could that be done, in terms of what sort of offset ratios would be required?

MR PAULL: You know, it varies. I think for Commonwealth requirements, you're tending to look at – say for an offset ratio of about eight to 10 to one. That's certainly the ballpark for another community I know, a white box, yellow box, red gum one. It's much more critically endangered, in terms of overall percentage that has been cleared.

DR WILLIAMS: Right.

MR PAULL: In this case, they have said they have got a few little offsets. And they're small – they're scattered up and down the valley a little bit. And it's arguable. And, you know, from talking to my own colleagues and the people who are – there's a group of us looking at this and we hopefully will say something about it soon. But it would be very difficult to offset this, just because of the loss of the connectivity and the size of it. You would have to basically go to Singleton Army Base, basically, and buy that whole lot. You know, if it was a real, fair-dinkum offset, in terms of – because an offset isn't just a matter of buying an existing block of land, which already exists anyway, right. An offset is what management can you apply to that site to increase the value of that offset site. And so you would really want to be thinking about an offset that was substantial in size, to offset the loss of this one. So, as I said, they're very hard to find.

DR WILLIAMS: Okay.

MR PAULL: That's why I suggested that we're reaching that point where it can't be – it's serious and irreversible.

MR PEARSON: Okay.

DR WILLIAMS: Okay. Thanks, David.

MS KRUK: If I may – just to follow that, because I had a similar question: if the other area – what's the tenure of the other area in the Hunter? Is that the defence land that you were referring to?

MR PAULL: That's Singleton Army Base I mentioned, yes.

MS KRUK: So that has got a similar .....

MR PAULL: It does have quite a bit of that community on there, yes. I'm not exactly sure how much.

MS KRUK: Yes. That's why I was interested in - - -

MR PAULL: About the similar sort of order of magnitude, certainly.

MS KRUK: Yes.

MR PAULL: And it's very good condition. Because that's because the Army has got it and - - -

MS KRUK: As at Jervis Bay.

MR PAULL: And when I used to do bird surveys there and I was just always amazed at the number of kangaroos there. It's just incredible. They're quite happy to live there with a few guns going off, you know. So the animals there – wildlife there is quite well-protected. And, really, you would have to say, well, what can they do to this site to increase its value, to offset the complete loss of this other one. There you go. That's the problem with offsets.

MS KRUK: Okay. No. No. And we've certainly heard your concerns about the policy as well too, so thank you again.

MR PEARSON: Okay. All right. Well, I might draw the meeting to a close there. But I just want to thank you for making the time to come in today.

MS KRUK: Yes, collectively.

MR PEARSON: The presentations are very thoughtful and thorough and have given us a lot to think about. And we will obviously take those away and digest them in detail as well. So we do read all the submissions. And they are taken into account in the process. So thank you again, and I will draw the meeting to a close.

RECORDING CONCLUDED **[2.43 pm]**