New South Wales Government
Independent Planning Commission

TRANSCRIPT OF PROCEEDINGS

RE: MOUNT PLEASANT OPTIMISATION PROJECT (SSD10418)

PUBLIC HEARING DAY 2

COMMISSION PANEL:	PROFESSOR ALICE CLARK (Chair) PROFESSOR CHRIS FELL TERRY BAILEY
COUNSEL ASSISTING THE COMMISSION:	SCOTT ROBERTSON
LOCATION:	VIA VIDEO CONFERENCE
DATE:	9.00AM, FRIDAY, 8 JULY 2022

TRANSCRIBED AND RECORDED BY APT TRANSCRIPTIONS

TABLE OF CONTENTS

PROF. CLARK: Good morning and welcome to day 2 of the Independent Planning Commission's electronic public hearing into the State Significant Development application for the Mount Pleasant Optimisation Project (SSD10418). Before I begin, I would like to acknowledge the traditional owners and custodians of the lands on which we meet and to the Wonnarua People as the traditional custodians of the land on which the project is located. I pay my respects to their Elders past, present and those that did not make Elder status and to the First Nations People joining us today.

I'm Professor Alice Clark, I'm the Chair of this Commission Panel. Joining me are my fellow Commissioners, Professor Chris Fell and Terry Bailey. We also have Scott Robertson as Counsel Assisting the Commission at this public hearing. The Commission is the consent authority for this State Significant Development Application because more than 50 public objections were received. I note the Department of Planning and Environment in its assessment report has recommended that the application is approvable subject to conditions. The Minister for Planning has directed the Commission to hold a public hearing into the application. He asks that the Commission make its determination within 12 weeks of receiving the final whole-of-government assessment report from the department.

This public hearing is online with registered speakers provided the opportunity to present to the panel via video conference and telephone. In the interests of openness and transparency we're live-streaming proceedings on the Commission's website. A full transcript of the two-day hearing will also be published on the Commission's website in the next few days. Counsel Assisting Scott Robertson will introduce each speaker when it's their turn to present to the panel. Everyone has been advised in advance of how long they have to speak. A bell will sound when a speaker has one minute remaining. A second bell will sound when a speaker's time has expired.

We will enforce timekeeping rules but I reserve the right to allow additional time as required to hear new information. If you have a copy of your speaking notes or any additional material to support your presentation, it would be appreciated if you could provide a copy to the Commission. My fellow Commissioners and I may ask you questions regarding your submission, as might Mr Robertson. However, the public hearing is primarily a listening exercise for the panel so that we can hear what you have to say. If we ask you a question and you're not in a position to answer it today, you are welcome to respond in writing by 5.00pm Australian Eastern Standard Time on Friday, the 15th of July, 2022. Please note, any information given to us may be made public. The Commission's privacy statement governs our approach to managing your information which you can review on our website. Thank you. It's now time to call our first speaker.

MR ROBERTSON: Commissioners, this morning we'll first start with some speakers organised by the Environmental Defenders Office. The first of those is Professor Sackett. Professor Penny Sackett, can you hear us?

PROF. SACKETT: I can. Can you hear me?

MR ROBERTSON: Please go ahead. We can hear you loud and clear. Please go ahead. 15 minutes has been allocated to you.

PROF. SACKETT: Thank you so much. I'm sharing my screen now. Can you see?

MR ROBERTSON: We can, thank you.

<PROF. PENNY SACKETT, ENVIRONMENTAL DEFENDERS OFFICE

PROF. SACKETT: Thank you. So thank you for the opportunity to speak to you today about the greenhouse gas and climate implications of the Mount Pleasant project. I speak to you today from Ngunnawal and Ngambri land. I have occasion to speak to the IPC every few months and it seems that every few months I have a few more photos to indicate how to indicate how climate change is affecting New South Wales and so here are a couple more that you will certainly recognise as the flooding that New South Wales is currently experiencing. My written report, which will be about a hundred pages, I'll send that along next week, will cover many points that are not currently in this video presentation including why the effects of the methane emissions from this project are underestimated, how the project will make Australia's and New South Wales' emissions targets more difficult to meet, and why the social cost of project greenhouse gases have been dramatically underestimated by factors of 500 to over a thousand compared to what you would find in the scientific literature. But today I want to focus on climate change and greenhouse gases from this project specifically.

Climate change has arrived, it's going to get worse and how much worse depends on decisions that we make today. The fraction of New South Wales that has experienced maximum annual temperatures in the top 10 per cent of all records since 1910 is shown in this part, and clearly the years since 2000 have been dramatically different than anything previous. Certainly the hottest years on record for the globe have been the past seven years, the hottest 20 years on record, 19 of which have all occurred since the year 2000 and this global heating drives extreme weather. For example, the extreme rainfall that Sydney is now experiencing, cumulative you see that dark line, it's from January up until July 5th, it's far above the historical maximum going all the way back to 1859, and that's why regions of New South Wales have seen three to four

major flood events in four months. This is not the kind of warning that those of us over 40 grew up in, and the more we know the more we realise how dangerous even a small amount of warming can be.

What you see here are risk assessments from the latest report from the UN Intergovernmental Panel on Climate Change, IPCC. The risk assessments for threatened ecosystems, for extreme weather and for tipping points, those earth system elements that may flip into a completely new state because of global warming. The bottom arrow shows we are now at 1.2 degrees, the top arrow at what the threat would be like, the risks at two degrees and you can see that the colour changes dramatically from 1.2 to two degrees indicating that that amount of warming increases risks in these areas substantially.

Now, this knowledge has been accumulated over 20 years in different IPCC reports, and as you can see, those previous reports indicated that the risks were less than we now know they are today. Another way to say this is again, the more we know, the more we study, the more dangerous even a small amount of warming is, and not only are these changes happening, many of them are irreversible. And when I say irreversible I mean even if future technology allows carbon drawdown from the atmosphere, these changes will continue. Those changes being ocean temperature acidification and deoxygenation, irreversible on hundreds to thousands of years. Glacier melt, irreversible from decades to centuries. The release of permafrost carbon, irreversible for centuries and sea level will continue to rise irreversibly for hundreds to thousands of years.

What does that mean for New South Wales? Well, we've had record drought followed by record fires, followed by record floods in three years. 47 per cent of all local extinctions in the world are now caused by climate change, that's at 1.2 degrees of warming. At 1.5 only 0.3 degrees Celsius more which is virtually inevitable by the late 2030s. What used to be once-in-30-year heatwaves will occur every three years and that very hot summer of 2019/2020 will be an average summer. At two degrees, should we reach that, you can expect 50-degree summer days in Sydney, essentially all of the world's coral reefs will be destroyed, and 13 per cent of the earth's surface will undergo a complete ecosystem transformation. And if we should possibly reach three degrees or more, which I only mention because that is where world and Australian inaction is taking us now, the New South Wales run-off water that feeds agriculture and streams will be reduced by 45 to 60 per cent in many areas. Most world ecosystems will be destroyed or heavily damaged. Large areas of the world will be uninhabitable and the entire global economy will be damaged.

What's causing this? We know. It's fossil carbon and fossil methane. Yes, land use change makes a small contribution but overwhelmingly it's fossil carbon and fossil methane that's driving these changes. But what about the Paris Agreement, you say? Well, if we want to hold warming to 1.5 degrees or two and avoid those terrible consequences of warming above that, then what we need is a 30 per cent reduction on world emissions by 2030 or 55 per cent reduction to hold it to 1.5 and, yet, nations have only committed to a 7.5 per cent reduction by 2030. In fact, based on current policies as opposed to promises, global heating could go as high as 3.6 degrees by 2100. That's why the International Energy Agency's net zero road map for the global energy systems has said that there should be no new or extended coal projects beginning in 2021.

Now, regardless of when net zero is reached the world has a carbon budget, a limited carbon budget, a fixed carbon budget for limiting global heating to a given value, and if that value is set at 1.5 degrees, then only eight years remain at current emission levels before we exhaust that carbon budget. And that's one reason why what we do now, now and up until 2030, is so important.

So I want to talk to you about the fossil fuel gap because it is the carbon budget analysis that allows scientists to estimate how much fossil fuel you must decline between now and 2030 and now and 2040 in order to hold warming to 1.5 degrees, which is shown in lavender, or at least to two degrees, which is shown in that light turquoise colour there. And you can see that coal, oil and gas all must decline simultaneously, but coal the fastest of all, in order to meet these global heating targets. Global promises and policies are not all up to this task which means that there's more that we have to do.

So the question is what will happen to New South Wales coal production? The trend now is rising to plateauing as you can see here of New South Wales coal production from 1962 to 2020 for which data were available and that increasing trend must reverse now if we're going to be consistent with holding heating to 1.5 or two degrees Celsius. The greenhouse gas emissions from the combustion of New South Wales coal, sometimes we call scope 3 emissions, is three times the emissions, all of the direct emissions of New South Wales combined. That's the effect it has on the climate, that's the effect it has on New South Wales climate, three times more than all of the direct emissions from all of the activities in the state of New South Wales.

So my question for you today is will New South Wales close its fossil fuel production gap? Will it begin to decrease coal production in New South Wales to protect New South Wales environment? Let's go back to that plot again. Suppose New South Wales was to do that. Suppose coal production was begin to decline following either

that lavender trajectory at 1.5 degrees or the turquoise trajectory to hold heating to two degrees, what would that mean? Well, clearly every year New South Wales would have to produce less coal than the year before, dramatically so up until 2030, and then less so from 2030 on. Reductions would be needed. And here's a plot of what those reductions would look like for New South Wales. In the lavender colour the reductions that are needed to be consistent with 1.5 degrees and in the more turquoise colour the reductions - we need it year on year on year to be consistent with holding global warming to two degrees.

Now, let's see what the Mount Pleasant project would do. It would be adding the amount shown in the orange bar year on year on year and I hasten to add that this is just the coal production, I'm not talking about scope 1, scope 2, I'm just talking about the amount of coal production in New South Wales by this project alone, the Mount Pleasant Extension Project. And you can see that this project alone, the addition of this project alone would mean that New South Wales could not close its production gap but, of course, there isn't just this project alone, there are many projects that have been approved and are currently proposed to extract coal in the Hunter Valley alone of New South Wales.

This plot is provided from the environmental impact statement of the project in its appendix X - S, I'm sorry, and as I said, shows the approved and proposed coal projects whether they be extensions or new projects in the Hunter Valley. What's shown on the vertical scale is the amount of coal in megatonnes that would be extracted by each project and, of course, they add up one upon the other, upon the other extending all the way out to 2049. Now, what I have taken the liberty of doing is saying, okay, previous decisions pre-2020, pre-2022 are behind us so let's just look at the amount of coal in the Hunter Valley forward from 2022 out to 2049 or 2050.

I have calculated roughly what the emissions would be from that coal. Once it's combusted those scope 3 emissions, which are very, very large, indeed, and to try and give you an idea of how impactful Hunter Valley coal is on climate change. Just that coal from the Hunter Valley 2022 forward if all these projects are approved would equal 2 per cent of the world's remaining carbon budget to hold global heating to 1.5 degrees C. Another way to say it is that the emissions from the combustion of this coal would equal all of Australia's direct emissions from all sources over the whole period from 2022 to 2050, just the emissions from the Hunter Valley coal once it's combusted.

That's why every decision that this committee makes is so important. At least it's important now. I say now because as the world continues to heat the earth is in increasing danger of crossing tipping points, irreversible tipping points. Science now

shows that nine of 15 of these have been identified or are already beginning to move toward their tipping points. We do not know if they will cross them but nine out of 15 are moving and those include permafrost, Greenland ice sheet, circulation in the ocean and so forth. If this happens the world will convert into one that has not been seen since the Stone Age and climate future will be out of our hands. That's why what the IPC does, the decision it makes on this project is so vital. Thank you.

MR ROBERTSON: Thank you very much for that contribution, Professor Sackett. If you wouldn't mind providing those slides to the Commission, that may be of assistance to it during the course of its deliberations, and I appreciate you said that you're also going to provide a written submission as well so we're grateful for that as well.

PROF. SACKETT: Thank you. Thank you for this opportunity.

MR ROBERTSON: The next speaker, Commissioners, is Dr Liam Phelan. Dr Phelan, are you there?

DR PHELAN: Sure am. Thanks so much.

MR ROBERTSON: I apologise if I haven't managed to pronounce your surname correctly.

DR PHELAN: It's how you're feelin'. That's good.

MR ROBERTSON: Please go ahead. 15 minutes has been allocated to you.

<DR LIAM PHELAN, ENVIRONMENTAL DEFENDERS OFFICE

DR PHELAN: Yeah, look, thanks so much. I've been engaged by the Environmental Defenders Office to provide independent expert advice and so that's what I'm doing today. I'm a senior lecturer in the School of Environmental and Life Sciences at the University of New South Wales and I research climate change and uncertainty and the relationships between climate change and finance. So I live in Newcastle and I'm joining the session today from Awabakal country and I pay my respects to Elders past and emerging and present too, of course. The other thing to note for today is I'm recovering from a round of Covid and so I apologise in advance for coughing from time to time.

I want to talk about just transitions because in policy and in practice the world is shifting away from fossil fuels towards renewable energy and it's important that that

process, that fundamentally transformational process, happens in a way that doesn't leave workers and communities that have depended directly on fossil fuels for jobs, that that process doesn't leave them high and dry, and so this is where the concept of just transitions comes in. It's something that's been discussed for a number of decades now so it's not a new idea but it's an incredibly important idea, it's been taken up in the 2015 Paris Agreement, for example, which notes the imperative of a just transition for affected workers, workforces with the creation of decent work and quality jobs.

So thinking about workers and what work looks like for those folks who are involved directly in fossil fuel industries as we shift away from fossil fuel. So in this case thinking about shifting away from coal. And so a just transition is one where workers and communities that have been strongly dependent on fossil fuel exploitation aren't left behind. It's that simple really. As we're thinking about the Hunter, the practical shape, if you like, of just transitions is a live consideration. So last year researchers from Hunter Renewal and Hunter Jobs Alliance sought to understand community views on transition. So what is it that local communities are thinking about just transition to the move away from coal.

So more than 300 local residents were involved and there were consultation workshops right across the region and, you know, survey and all that sort of stuff as well. The Hunter is a diverse community and as you might imagine there's a diversity of views across the valley about just transitions. However, what researchers heard from folks is that they want to see active responses. So active, proactive responses to the change that's coming. There's uncertainty about how that change will roll out. So what's it going to look like practically speaking for folks who are working in the coal industry now. So there's uncertainty about how that change will roll out and there's some questions around the timing as well but there's absolutely widespread understanding that that change is coming, that it's happening.

The State Government also recognises that this change is coming and in recent months has announced $25 million a year for its Royalties for Rejuvenation Fund. So the fund's meant to ensure coalmining communities have the support that they need to develop other industries to fill that space when coal is taken out of that space, and it's worth noting that three priorities across the Hunter were identified by communities here as being key to that just transition. The first is the need for a local coordinating authority. The second is funding for flagship job creation project, so that would be a prominent and large project around which other smaller activities could coalesce. And then the third priority is more resources for technical and vocational education.

Now, I share these with you to illustrate where community thinking is on what the Hunter's future looks like. The other really key point is that this vision contrasts

markedly with the intent of the Mount Pleasant proposal. So the first priority is to have a local coordinating authority and that would be, you know, to ensure that the solutions that come through are reflecting the community's needs, skills and opportunities. So that means that those who work for the authority know the region are in touch with stakeholders from industry and government and so on.

A local authority can also coordinate with other authorities to ensure that fossil fuel communities aren't competing against each other by pursuing the same - you know, job creation in the same new areas. It's worth recognising that even though - I mean, the Hunter Valley is going through a transition but it's not the only community in Australia, let alone the planet that's doing this, it's a global transition that we're talking about.

The Latrobe Valley established in 2016 provides a good example and so in Victoria the State Government there set up the Latrobe Valley Authority and that followed the unexpected announcement of the closure of the Hazelwood Power Station there. So that's an example of what that looks like. The second priority around funding flagship job creation projects, this one's really important because our flagship projects give tangible direction to transition and they also create hope for the future. So a flagship project provides an anchor point or a fulcrum point, if you like, around which other industries and businesses can coalesce and so an example of that would be Colliecrete, which has come out of Collie in Western Australia and so that's a project that involved industry and government and university researchers working together. Something like that could also work in the Hunter Valley. Colliecrete is one way to use fly ash waste from power stations. So it's that kind of thinking, I guess, that's in play here.

The third priority is to expand vocational training and so a 2020 report from the Clean Energy Council found shortages of skilled and experienced staff hampering development in the development of renewable energy industries and so the report - their report recommended the entire vocational education system needs reviewing because existing training systems are not meeting industry needs and that's absolutely the case in the Hunter Region where, in fact, we're affected by TAFE closures at a time when they should be expanding capacity.

So socio-economic transition, you know, it's a fundamental thing, it's a move away from fossil fuels and it's upon us now. The transition is late and I say that given the extent to which we've already changed the climate and Professor Sackett was speaking about that just now. But it's welcome all the same because there's no plausible scenario in which we persist in burning fossil fuels and life as we know it continues, and by life as we know it I mean a planet whose basic functioning and natural systems continue in ways that are both familiar to us and relatively stable.

So climate change is threatening the stability of planetary systems and one example is increases in the frequency and magnitude of extreme weather events. Climate change is more than extreme weather events, that extreme weather is an easy impact to perceive and conceptualise and so that's why I'm mentioning it now. And so that's the paradox really that continuity of life as we know it, familiar and relatively stable, is at stake and that continuity can only be achieved through a profound change in the way that we organise ourselves socio-economically.

So we're at a point now where more of the same isn't helpful for employment in the Hunter, it's not helpful for workers in the Hunter and it's not helpful for their communities, and this is evident in multiple spheres as the various contexts for the project have changed markedly and rapidly, and I'm talking about market contexts, for example. So coal is in terminal decline, the Mount Arthur mine which is just over the way from the Mount Pleasant mine, has in response to changing market conditions been devalued in a very short time from a multibillion-dollar asset to something measured in hundreds of million dollars and then more recently again BHP has chosen to simply wind up that operation, allocating around a billion dollars towards closure.

In terms of the policy context for the project, again the key is rapid and marked change. So in that same recent period Australia's gone from significant clashes at the Commonwealth level on climate policy to bipartisan support for carbon reduction targets through the Paris Agreement, and now with the new government and with strong industry support ratcheting up Australia's commitments under the Paris Agreement from cuts of 26 to 28 per cent on 2005 levels by 2030 to 43 per cent by 2030. 2030 is less than eight years away so we're not talking about some long-term off in the future thing, this isn't a situation where there's the opportunity to kick the can down the road, we're talking about the immediate future.

So the State Government's also recognising that the policy context is unstable and rapidly changing. Recently its strategic statement on coal exploration and mining in New South Wales was put out. The intent of the strategic statement was to set out some clarity, some certainty, if you like, around a future for, you know, such as it may be for coalmining. In fact, all of the work in that report is really undone by the last sentence in the report which reads as follows, and I'll quote, "This statement is subject to change at any time." And in my opinion that's not a weakness of this statement, it's actually a strength because it's reflecting a clear-eyed appraisal of reality, and we need to apply that same clear-eyed appraisal of reality for workers at Mount Pleasant as well and the communities that are surrounding that area.

At the global scale Professor Sackett also mentioned the International Energy Agency's pathway. There's no scope in their pathway for any expansion of any coalmines, not here, not elsewhere in Australia and not elsewhere on the planet, beginning last year. So Mount Pleasant's proposed expansion is strongly at odds, it's fundamentally at odds actually, with a transition away from fossil fuels, and that's a transition that workers and communities in the Hunter Valley need to happen in a way that's just and orderly, and that's a transition that they're already engaging with. What we would see, in fact, if Mount Pleasant's expansion was to go ahead, would be a perverse outcome. So the, part of the rationale for the expansion is around employment. In fact, what we would have is a situation where if the project was approved, the project can't offer anything in terms of ongoing employment, it's all short term, it's limited numbers, and by proceeding down that path in fact what we do is we take away focus and we take away energy from that broader transition that this region really needs. So we need a, more of a forward-looking approach now, not the one that's being proposed here.

I also want to raise a broader consideration about the proposal's impact on jobs. So in my view, the proposal's approach is unhelpfully one-sided. It only talks about proposal as though it will create some limited number of limited-term jobs. And while that might be true, if the proposal was to go ahead, it would also be undermining employment in other sectors locally and nationally. And what I'm talking about there is the extent to which climate change will impact on employment creation in other industries and elsewhere, and this is something that's been, the monetary value I guess is, for this is something that's been calculated previously in court cases relating to - sorry, in relation to a court case about the expansion of another mine. So we're talking about climate change leading to children today forgoing hundreds of thousands of dollars of lost income through their working lives because the conditions under which they're working are less amenable for being productive. An example of that is when it's really hot people need to take more breaks. That, that's really what I'm talking about there. So I might just leave it there, actually, and see if folks have questions.

MR ROBERTSON: Thank you very much for that contribution, Dr Phelan. I don't think there's any questions from the panel, so we'll move to the next speaker, which is Hedda Askland. Dr Hedda Askland, can you hear us?

DR ASKLAND: Yes, I can hear you. Can you hear me all right?

MR ROBERTSON: Yes, we can. Please go ahead and 15 minutes has been allocated to you.

<DR HEDDA ASKLAND, ENVIRONMENTAL DEFENDERS OFFICE

DR ASKLAND: Thank you. I want to share my screen to show a few slides whilst I speak.

MR ROBERTSON: We can see that, thank you.

DR ASKLAND: All right. You can see this? Okay, thanks. All right. So first of all I want to thank you for the opportunity to speak at this hearing. I also want, before I begin, to acknowledge the traditional custodians of the country from which I join you on this Zoom, the Wonnarua people, and I wish to extend my, this acknowledgement in respect of all traditional owners and custodians of the land on which I work, live and play, and pay my respects to Indigenous Elders past, present and emerging.

So I've conducted an expert review of the social impacts of the proposed Mount Pleasant Optimisation Project, which I will refer to as "the project", which is the subject of this hearing. Now, I want to refer the Commission to my written report, which will be submitted next week and which contains all the details supporting the assessment and the arguments that I present in this presentation. I'm a qualified social researcher and have been working with local coal-affected communities in New South Wales and the Hunter Valley since 2015. I work as a social, I work as a senior lecturer in anthropology at the University of Newcastle. I want to reiterate that I don't act as an advocate for any party in this hearing, and my opinion is expressed - the opinion that I express is based on my professional training, knowledge and experience. One of the - the presentation is based upon a review of the documents that you can see on the screen at the moment. Analysing these documents has - I have conducted an analysis of these documents in the context of the body of scientific literature and the topic of social impact assessment and social and cultural impact assessment, as well as social science scholarship on mine-use change, mine-use conflict, mining development, identity, belonging, place, place attachment, climate change-induced displacement and development-induced displacement and resettlement.

Now, I want to begin at the end, eventually, with the conclusion of my review, which states that in light of the evidence presented in the documents that I have reviewed, I contend that the social impacts of the proposed project are significant and that the mitigation strategies that are proposed are ineffective. My conclusion about the mitigation strategies comes from a review of the social baseline study, which includes a consideration and an assessment of the existing impact of the Mount Pleasant operation. The key issues that are at stake is the proximity between the proposed mine and private residents, and the towns of Muswellbrook and Aberdeen, and particularly the impact that the mine will have on people's health and wellbeing, culture, community and sense of place.

The social impact that relates to amenity, particularly noise and dust, as well as visual impacts, are significant. And I want to draw the Commission's attention here to the Rocky Hill judgment in the Land and Environment Court, where Judge Preston, Brian Preston, identifies how these impacts - of dust and noise particularly - may stay within the accepted limits, industrial limits, but they are nonetheless constituting significant, often severe social impacts, and I do explain that more in my report. But I think the importance to consider here is the fact that social impacts are closely connected to environmental impacts, and the importance, indeed the very strong impetus that has been placed upon reading the environmental impacts in the context and in relation to social impacts. Environmental impacts are lived and experienced, and we, that's what I've been trying to do in my report is to indicate how particularly the impact on amenity and the visual impact has to be seen as social as much as also an environmental impact.

Further key issues is around the depopulation of the neighbourhood and rural villages surrounding the mine, the impact on landscape and heritage, and I have significant concerns about the traditional (not transcribable). The SIA that's been conducted for the project confirms that the local community are already enduring significant negative impacts from the Mount Pleasant operation. These impacts will continue and possibly be exceeded should this project be approved, with likely further displacement of the smaller rural communities surrounding the mine, decreased social cohesion and tensions within and potential rupture of the local community. Opportunities to move forward on a pathway to a post-mining future and (not transcribable) transition will be further delayed and potentially lost, which is what we just heard from the, from the former speaker.

The mitigation strategies that have been put forward to deal with the adverse impacts are inadequate. The failures of these strategies to address the harm done to local residents and communities are evident by the social baseline of the social impact assessment which, as I said, offers an evaluation of the social impacts of the current operation at Mount Pleasant. Now, whilst the mitigation strategies that address economic impact as it relates to employment, training and community contributions, they go some way in addressing some of the impacts that mitigation, the mitigation strategies that are proposed for impacts related to place-based variables are in position. The arguments that are proposed about reducing impact through scaffold and construction of so-called natural rehabilitation designs are contentious, and the SIA indicates a significant lack of trust in the mine's final mine, in the mine's final mine design and the environmental mitigation. Rather than mitigating impacts some of these strategies, including the proposal eastern out-of-pit emplacement, may in themselves

be an intrusion and they do not offer a solution that incorporates people's lived experience and connection to Muswellbrook and the Upper Hunter as a place.

The project presents distinct moral concerns regarding the weighing of social, economic and environmental impacts which requires evaluation of social, economic and environmental impacts and benefits as they manifest in different locations. There is a distinct inequity that is embedded in this project and it exposes - the project will expose some parts of the population - landholders in the rural villages next to the mine, women, Aboriginal people and people on low income households in particular - to distinct impacts which are not adequately accounted for in the EIS.

Economic benefits and adverse socio-economic impacts are inexorably distributed across the population and these can have a further social impact by fuelling existing inequity and tension in the region and in Muswellbrook specifically. What is really important, and I really want to draw the Commission's attention to it, is how this inequity, whilst it is mentioned in the SIA, it is undermined throughout the EIS, in the broader EIS and also in the department's assessment report. Through the multiple layers of reporting of social impacts in the overall SDIS there was a muting of adverse impacts and it comes across as the economic - the positive socio-economic impacts related to employment and potential community contribution are equal to the adverse impacts that will be enjoyed by those who are not employed by MACH.

So there is this serious disconnect between the SIA and the broader EIS in how it is reporting social impacts. Although the SIA, the social impact assessment, are actually at quite a high standard, the recognised impacts in the SIA are not captured in the EIS. So the overarching environmental impact statement treats the social impacts as separate to environmental impacts of the project and the changes that the mine will present, both short and long-term, to the landscape. The details in the social impact assessment about the social impact and the significant risks that are identified, particularly in relation to place attachment, livelihood, community and wellbeing, are undermined in the general presentation and in the summary of social impacts. That is both the SIA and in broader EIS.

Now, the implications of this is very concerning because what we see happening is a failure in the department's assessment of social impact assessment, and in the department's assessment report it fails to recognise the significant adverse impacts. It has not appropriately assessed the SIA that is conducted from, by the proponent, and despite the significant social impacts the project will have, the department places these social impacts within the category of "other" and dismisses the severe adverse impact that the project will have. It places the proponent's economic consideration higher than the social, environmental and economic considerations of the community. This

consequently results in a severe omission in the draft development consent where there is no requirement for social impact management and also no legacy acquisition or mitigation rights awarded to the most severely affected landholders close to the mine.

This is a really, really concerning outcome by the department's assessment report and something I'd encourage and urge the Commission to look at, and it's all explained in my report. In terms of the SIA, my evaluation of the SIA is that overall it is a comprehensive and vigorous analysis of the existing social impact of the approved mine and the proposed impact of the project and it is done in line with the current - with the 2017 SIA guidelines for State Significant Mining, Petroleum Production and Extractive Industries development, which is the preceding guidelines for the current guidelines that was in place for the SIA that was conducted.

So my main concern here is not about the SIA in itself but between the lack of correspondence between the identification prediction and assessment of the SIA and the presentation of social impacts in the EIS in the department's report. There are, however, some shortcomings in the SIA and I want to draw your attention to this. One of them is the no-development scenario which defends an either/or analysis and fails to take into account the spectrum of possibilities for growth in other industries and alternative projects. There is a clear overemphasis in this scenario of the economic projection and it is based upon what I claim is an invalid baseline estimate on my assessment. And the invalid baseline returns to what the previous speaker spoke about in relation to the process currently underway in moving to a just position of the communities in the Hunter Valley.

The other thing that is a shortcoming of the report - of the SIA is (not transcribable) this is a brownfield development application and that skews the social baseline. The (not transcribable) scenario where the negative social impacts are presented as a continuation of impact and subsequently their severity is not presented as severe as I believe they should be, whereas the positive economic benefits are presented as new benefits, although these are also, in fact, continuation. So there is a skewed social baseline in how social impacts, the negative impacts and the positive impacts (not transcribable) a continuation of current operation is assessed.

Furthermore, the SIA does not adequately (not transcribable) temporal and (not transcribable) dimensions of the project. They did not adequately (not transcribable) distribution or inequity of the project. It does not adequately address issues related to climate change and the likelihood for increased extraordinary events which enhance adverse impacts, particularly in relation to dust. It does not analyse the full impact of social locality. So the issues for the communities around the rail line particularly such as, for example, the communities in Newcastle, which is included in the social locality

of the project, are not considered despite the fact that the project will result in a continued transportation of coal and a doubling of transportation of coal from the Mount Pleasant operation alone for 22 years.

So the temporal implications of the project, the fact that the project is going to continue for 22 years, is really significant and it is not taken into account. This is a whole generation of people that will be affected negatively by this, this proposal. They did also not identify or predict (not transcribable) or identify and predict and assess the risk associated with (not transcribable) to the MPD signal. I'm going to send my slides, which outline all the different types of predicted impacts, negative and positive. But I will come to my conclusion, which is that overall the negative impacts of this project that override and are much more severe and significant than what, than the positive impacts in terms of their impact on particular vulnerable groups in the community.

There are many - positive impacts are largely related to impacts - I would say all of them are related to the economic part of the project and employment, whereas all the impacts related to health and wellbeing, culture and community, that are related to notions of community, culture and surroundings are negative. So it is particularly important to note the severe negative impacts on health and wellbeing and the reduced quality of life that the local people are going to endure, and these concerns must be taken into account. I want to thank you for the opportunity to speak.

MR ROBERTSON: Thank you very much for that assistance. Can I invite you to provide those slides to the Commission so they have the benefit of that in their consideration and including, in particular, the slides that you didn't have an opportunity to go through in any detail.

DR ASKLAND: I will do so. Thank you.

MR ROBERTSON: Our next speaker is Dr Gabriel da Silva. Dr da Silva, can you hear us?

DR DA SILVA: Yes, I can. Can you hear me?

MR ROBERTSON: Yes, we can. Please go ahead. You've got 15 minutes allocated.

<DR GABRIEL DA SILVA, ENVIRONMENTAL DEFENDERS OFFICE

DR DA SILVA: All right. Well, thank you for giving me this opportunity to speak. I'll just bring up some slides that'll help guide us through this. So hopefully you can see those there.

MR ROBERTSON: We can see those, thank you.

DR DA SILVA: Okay, so I've been asked to come here and talk about air quality matters relating from this expansion. Now, I will pass through my slide deck and there's some I guess details about my qualifications, which I won't go into too much, but I'm an associate professor, my training is in chemical engineering, and most of this was at the University of Newcastle with a focus on mining and coalmining and the like. And my undergraduate and PhD research relates to this, as well as post-doctoral training, and I grew up on the Central Coast of New South Wales, so another coalmining and burning district nearby. So I'm here to give you independent, some expert advice on the air quality matters that have come out of the expansion and the environmental impact statement relating to that. And just so I get to it, I thought I'd put up front my summary of opinions, and then I'll talk through how we arrived at this point.

So my opinion is that expanding activities at Mount Pleasant, and I'll show you this will inevitably result in increased air pollution in the Hunter, and in particular I'm going to talk about the fine particulate pollution PM2.5, which is what we're very concerned about in terms of air quality, and we can see that this is going to affect significant population centres. And as an example we'll take Muswellbrook (not transcribable). If you look at Muswellbrook as an example, it already experiences significant exceedances of the standards that we set as the country for PM2.5. It does this on a daily basis and it does this on an annual basis. Any additional large PM2.5 pollution sources, and indeed any new sources or any action that's not reducing PM2.5 pollution in this area is going to push these exceedances to higher levels that are more harmful, and it's going to make these exceedances of our standards that we set more frequent. On top of this I'm going to show you that this comes at the same time as we're learning and there's emerging science that's telling us that PM2.5 is actually more harmful than we once understood, and it's more harmful than what you would have heard at many of the, in many of the approval processes for the majority of coalmines and coalmining activity that exists in the Hunter. So there's information that we have available today that we didn't have even a year or two ago. And because of all of this, it's my expert opinion that the mine shouldn't be allowed to expand.

And if you look at the data that's provided in the environmental impact statement and the air quality report that's commissioned there, it's very similar to what I am relying on here, but it's used to tell a different story. And if you look at that report, there's a

big focus on PM10, which is a pollutant nowadays that we're less concerned with than PM2.5, and it's concerned with or focused on this PM10 affecting the sensitive receivers, the handful of people in the very near vicinity of the mine. And these are properties that may be able to be acquired or there may be actions that can be implemented to mitigate their exposure, but there's less focus on measures to deal with more harmful PM2.5 at population centres with many more people. And I suspect the reason is because if you brought those measures in, the mine would never be operating. It would be operating maybe a few weeks in a year.

Air quality and air pollutants that we're talking about, so air pollution kills many millions of people around the world every year, many thousands of people in Australia every year, and air doesn't have to look dirty to be unhealthy. So even if the air looks clean, there may still be levels of harmful pollutants there that can affect you. And unhealthy air is a cumulative effect, so there are multiple pollutants in any polluted air stream or plume, unless you're, you know, near one specific toxic air pollutant source, and all of these pollutants have a cumulative effect on your body that builds up. And there's another way in which this air pollution accumulates, and that's when multiple pollutants meet, they can react in the atmosphere to form new pollutants that may be worse than the ones that we started with. And this is why we really need to - and apologies to Tolstoy here - understand the specific environmental situation and the specific set of pollutants we find in each environment.

So, and this is addressing a question from Professor Fell yesterday. So we set national standards for the level of emissions of different pollutants we're happy with, but this is only for the individual pollutants, and it doesn't tell us when they switch on and when off of being harmful. It's a risk that we're currently as a society willing to accept. And the risk we're willing to accept from air pollution is becoming less and less.

Fine particulate matter, so here's an image I took from the US EPA showing just how small PM2.5 is. It's not what I would call dust. It certainly doesn't appear as dust. It's more like a haze or a smoke, as opposed to the larger PM10 particles. And the reason we're so concerned with PM2.5 is twofold, and it's because of its very fine size. So it's so small that it will stay airborne for very long periods of time. It can be transported long distances. We see it moving not only between towns but between cities, between countries, between continents, across oceans. Or if you have a stagnant air mass, it can start to accumulate, so under one of those inversion layers. For instance, unless you have rain come through to push it out, it may stay there for a very long time. The other problem with it being very small is that it penetrates very deep into our bodies, so all the way into your lungs, cross over into the bloodstream. This mean we see, this means that we see impacts on almost every part of our body, the lungs, the heart, the brain, most of our other organs.

And we heard a few times yesterday that the latest studies are showing we can't actually work out where a safe limit for exposure to PM2.5 is. There's no known safe exposure level. It appears like it's a pollutant that has no threshold. And I'll take a second to explain what that means. So a toxicologist might look at a dose response S-curve like this. So this is a random one I took from the literature. It's for mice exposed to VX nerve agent. And if you give them a low dose, they're okay. If you give them a high dose, they die of course. But there's a threshold for which this turns on. Here's a modern PM2.5 dose response curve. This is published in 2019 and it's for a North American/Canadian context. You see it looks very different to that other curve, and as you reduce the concentration of PM2.5, the risk ratio keeps reducing but it doesn't reach a parity with, you know, other risks or a non-polluted risk until this pollution gets to zero. So this doesn't switch on at 5 or 10 or 15 micrograms per metre cubed, which is the concentration units I'll use. As you keep reducing it, the health risks keep reducing themselves, or as you add more and more PM2.5, the health effects get larger and larger, which makes it very challenging to set limits for PM2.5. And because we've only, we're only really appreciating what's happening down the bottom of this curve over the last handful of years, we started to reduce some of these limits.

So I'll give you a quick history of some of these. So in 2005 the World Health Organization had a yearly mean PM2.5 limit of 10 micrograms per metre cubed. In Australia we had an advisory standard for PM2.5 in 2003, but it wasn't until 2016 that this was installed as an enforceable performance standard. And these are quite strong standards. 8 microgram per metre cubed is a yearly average, and 25 micrograms per metre cubed is a daily average. At the end of the last year, the WHO halved their PM2.5 recommendation, an almost unprecedented step in cutting it from 10 to 5 micrograms per metre cubed because of the kind of results I just showed you. And we have our own goals to revise down PM2.5 standards, so aiming for 2025 which certainly overlaps with most of the production we'd see from this mine. A small cut in the mean yearly value from 8 to 7, but a big cut from 25 to 20 micrograms per metre cubed for the daily average.

What are the sources of PM2.5 at Mount Pleasant? We know that open-pit coalmining makes PM2.5 particles. When you blast, crush, grind coal, when you wash it, dry it, handle it, move it, you're releasing very fine pulverised pieces of rock from mining and coal in the handling. These are PM2.5 particles. There is also a lot of diesel fuel that's consumed on these mines in the open. This creates PM2.5. It also creates a lot of NOx. And importantly, a lot of this diesel in this context is used on non-road diesel trucks, and these are not required under Australian regulation to have any emission control measures. They produce even more PM2.5 than a truck on the road. There's

also a concern with secondary particle formation. So these are not particles that come directly from the mine but from other emissions. So if the mine is emitting NOx and volatile organic compounds, they could mix with other pollutants coming from other polluted air masses, so ammonia perhaps from agriculture, SOx from coal-fired power station, and these can make new particles like sulphates and nitrates. Other PM2.5 sources across the Hunter Valley, well, other coal operations have similar pollutants to the ones I just talked about. We have coal-fired power stations. There's Bayswater and now there's Liddell. They make PM2.5 on their own from combustion. They also have SOx and NOx. And there's wood fire places, and these produce soot particles, again combustion fine particles in their smoke. And as I mentioned, there's agriculture in the region as well, and from fertilisers and from other agricultural activities you get ammonia emissions. This means that PM2.5 in Muswellbrook is a significant air pollution problem as we stand. So this is taken from the environmental impact statement, the air quality impact assessment. It shows PM2.5 over a number of years from the Upper Hunter Air Quality Management Network. And you can see that there are days where the average exceeds the current limit of 25. There are many days which exceed our future target of 20 micrograms per metre cubed. And if you look at the baseline even in some of the lower polluting times up here, it's well in this range that we're trying to target to get healthy air of 5, 7 or 8 micrograms per metre cubed. This is unacceptable air quality for the health of these people.

It's very challenging to predict PM2.5 formation, but there are some, you know, a lot of work has gone into the Todoroski Air Sciences report to try and do this. But actually doing this accurately is probably one of the great challenges in, you know, my field of atmospheric chemistry. This report seems to use conventional tools. Maybe some of the estimates they've used, as pointed out in peer review, are quite low. As far as I can tell, the modelling doesn't contain secondary aerosol chemistry or complex chemistry that can make additional pollutants. But even having said that, when this model's run, it doesn't capture all of the current pollution that they have in the region, particularly these excursions up into that kind of 15 to 20 microgram per metre cubed area that add to the average, you know, the yearly average of PM2.5. But even having said all that and even noting that these predictions are probably on the low side, the modelling routinely predicts that the Mount Pleasant expansion could add 5 or even 10 micrograms per metre cubed of PM2.5 in Muswellbrook's air on any given day. And we know from the latest science that this is a large burden on its own to the health of the, for those people that live there, the many people that live there.

And you can see this, though, this is some yearly predictions of PM2.5, so not real data, but calculations to try and get to that. From the background in blue and the yellow increment from these projects that it would add, you can see on this scale - remembering that we want to be in this kind of 5 to 10 microgram per metre cubed

range - the yellow bars are providing enough on many days to give us unhealthy air. And you can see we don't have quite as many excursions into this kind of 15 to 20 microgram per metre cubed region in the model, so in practice I believe that this will be higher. But if you add on even these low predictions of the increment for this project, they're going to push unhealthy air to be even more unhealthy.

What's the outlook in the Hunter Region? Well, there's substantial existing PM2.5 sources in the vicinity of Muswellbrook that are not going to go away, and these include future industries, so things that will be around after 2050 when coal is gone, like agriculture. Some of these other pollutants are going to enhance PM2.5 formation. There's wood-fired heating. As much as I'd like to try and phase this out, it is a cheap source of fuel for many socio-economically disadvantaged people. They might be able to grow, forage, scavenge wood. Hard to do that with gas or electricity. We also know climate change is exacerbating this problem. This is not climate change that's caused by Mount Pleasant. It's the existing environment we find ourselves in. There's more droughts that are producing dust and there are more fires producing soot.

So to wrap up, this is the environment that MACH Energy comes to with this particular proposal. They're asking to expand this mine so significantly in depth and duration so there will be a significant increase in intensity and duration of PM2.5-forming activities over more years. There's already existing poor air quality in the region. We know that we're tightening government standards. We have a better understanding of the risks of PM2.5, so we can make different decisions today than we have in previous years. And we know that there are going to be local pollution sources, things like ammonia and SOx, that are going to react with the mine site emissions to create even more aerosol pollution, on top of these increased extreme weather events from climate change that bring in their own PM2.5 sources, like dust and smoke.

So MACH Energy's not responsible for this set of circumstances, but we can't ignore it. So this is the environment they come to. This is the information that we have with us today. And we can't overlook this. And this doesn't mean that MACH are a, you know, bad corporate citizen or a bad member of the community. But this is where we find ourselves and that's how I've reached this opinion here (not transcribable)

MR ROBERTSON: Thank you. Thank you, Doctor. Thank you, Dr da Silva. If you can just pause there, Professor Fell has a question and I want to make sure he has an opportunity to ask you that question and for you to give a response given your time has now expired. Professor Fell.

PROF. FELL: Thank you. Mr da Silva, thank you for your presentation. I'm interested in if you could brief the panel on the level of PM2.5 from wood-burning fires. I understand it's a very high contribution in this particular area.

DR DA SILVA: Yes. It is, it is a very high contribution, particularly in winter. But you can see from the results I showed you, even outside of winter there are PM2.5 levels that approach the average yearly PM2.5 burden that we want to see. So certainly reducing woodfire burning in the region would help with PM2.5, obviously of course in winter, but it's not able to solve the problem. And it's also an existing pollution source that we have. So adding a pollution source on top of that - as we see the dose response curve - is only going to make the air more unhealthy and provide a greater risk to people in the region.

MR ROBERTSON: Dr da Silva, can I also ask you this. You would have seen that the department has recommended to the Commission that in the event that it approves the current proposal, that certain air quality criteria be imposed. That's at condition B28. That suggests PM2.5 air quality criteria of 8 micrograms per cubic metre as a total impact on an annual basis, and 25 micrograms per cubic metre on a 24-hour basis as an incremental impact. Do you have any comments as to the adequacy of that proposed condition in the event that the Commission were otherwise minded to approve the proposal that's before it?

DR DA SILVA: I, I don't, I don't see how, I don't see the actions that they would take to meet that. So if you look at the data I showed you, it might mean they would have to shut down all through winter to not exacerbate this problem, and if the yearly mean has already been, is on track to be exceeded, perhaps the mine would have to stay shut through until the start of the next year.

MR ROBERTSON: So does it follow from that that you're not, you're not raising a particular concern with the formulation of that condition, but rather whether or not the applicant would be in a position to meet it. Is that a fair summary?

DR DA SILVA: Yeah, I see, I see no way with the applicant without shutting down the mine. And there's, there's, you know, reactive measures that they can take to limit exposure of PM10 at the sensitive receivers, but I don't see those proposals to reduce more harmful PM2.5 at the more population-dense centres like Muswellbrook. And as I said, I think to do that they would have to be closed for such extended periods of time.

MR ROBERTSON: Thanks very much for that assistance. I note that you didn't get through all of your slides. It would - - -

DR DA SILVA: Oh, no, that was, that was the end. But I will send them.

MR ROBERTSON: But in any event, if you wouldn't mind providing those slides to the Commission so they have the benefit of that for their deliberations. And if there's anything else you want to say in relation to either the question that I asked you or the question that Professor Fell asked you, you're of course welcome to do that by the 15th of July, 2022, 5.00pm. Thanks for your assistance.

DR DA SILVA: If you could provide those questions in writing as well, that would be - - -

MR ROBERTSON: The transcript will become available within the next day or so, and so if you want the formulation of that question that will be on the Commission's website.

DR DA SILVA: Thank you.

MR ROBERTSON: The next speaker is Dr Steve Phillips. Dr Phillips, can you hear us?

DR PHILLIPS: Yes, I can. Can you hear me okay?

MR ROBERTSON: Yes, we can. Please go ahead. 15 minutes has been allocated to you.

<DR STEVE PHILLIPS, BIOLINK

DR PHILLIPS: Thanks for your time and the opportunity to speak. I've also been briefed by EDO to provide independent advice on ecological aspects of this proposal. By way of a brief background I'm a research scientist, consulting ecologist with a lot of experience in natural area managed land and threatened species assessment. For the last 20 years I've been Managing Director/Principal Ecologist of Biolink Ecological Consultants. In 2020 I handed that business over to my senior staff and I continue to work with them as an adviser.

For my part I focus now on quite specialised work writing to assessment or threatened ecological entities. I guess the scope of experience resulted in 2018, 2019, I received a contract from New South Wales DPI to design and delivery a three-day intensive course on threatened entity management with a focus on matters of occupancy, detection probability, survey design and monitoring. So the purpose of this

submission is to communicate some concerns regarding ecological aspects of the proposal, and given my background it specifically relates to the extent to which this proposal has been adequately informed by what we call the BDAR, the biodiversity development assessment report.

So I'll probably start at the beginning, as most sort of BDARs do, and talk about the plant communities first up, and it's not my intention to look at the veracity of the vegetation mapping, but I feel inclined - I have to say I'm very weary of reading about serious and irreversible impact-themed assessments that start to go to this matter of further losses of critically endangered communities such as the box gum woodlands that may occur as a consequence of development are inconsequential, because this happens because the potential loss is invariably discounted by using broader distributional scales, which tends to diminish, you know, the importance of the CECC at those sort of scales. And unfortunately again it's been my experience that this sort of flawed logic is repeated in BDAR after BDAR, and each planning decision that consequently approves further reductions of extent, being convinced by this logic, simply pushes the conservation status of the qualifying TECs closer to the extinction end of that conservational spectrum and it's the classic death by a thousand cuts scenario, compounded probably by government failure to set the thresholds of decision-makers dealing with this notion of SA biocompounds, or it's compounded when the further clearing of the qualifying entities are actually permitted when, in fact - because they're already critically-endangered so it would be my view that that's the line on which no one should cross and you shouldn't really be enabling further clearing.

So given that background, which sounds reasonably negative, I suppose, there is some merit in this proposal because it sees a reduction or proposes a reduction in the amount of TEC that will potentially be cleared, which in the case of the box gum woodland appears to be substantive and, therefore, it's a positive outcome. But it's not the only biodiversity matter that warrants a careful evaluation and nor, in my opinion, should it necessarily be given greater weight in the overall assessment process, and sometimes things are not necessarily the way that we think they are.

There are 96 vegetation plots detailed in the BDAR and unfortunately it's not possible to make a direct comparison or, indeed, compare vegetation integrity between the relinquishment and extension areas. This is because of the biased nature of site selection that the BAM, or the biodiversity assessment method, enables. Regardless of that bias and excluding things like the plantation assessments that are included, it's nonetheless possible to demonstrate mathematically, and that's presuming that the vegetation integrity plots are distributed equitably, using the data that's in appendix 4 that the relative proportions of derived native grassland, that's both forms, and the

woodland areas, both forms, do not differ significantly between the relinquishment and the extension areas, and it's also apparent from those integrity plots that it is the extension areas that contain the greater diversity of plant community types when compared to the relinquishment area.

So this outcome, even though it's simple, in form directly challenges the BDAR's assertion, or play on words as I've seen it, that the relinquishment area presents as a large contiguous area of native vegetation. And while it certainly presents as the single and relatively large parcel within that overall assessment area, it's hardly contiguous, and while the native vegetation it alludes to is predominantly a derived grassland that has resulted from extensive tree removal and a long history of habitant modification.

So moving onto the fauna. The simples things but ultimately are important in the context of occupancy and the robustness of assessments we'd see in the BDAR this comment about how their study area was stratified and how they worked their sites. Now, the SEARs, or the Secretary's Environmental Assessment Requirements, required assessment of the land that was proposed for relinquishment. However, survey of this overall assessment area over time has certainly not been systematic, and I'm going to continue to come back to that, while in the relinquishment area it remains mostly peripheral and restricted to tracks and roadside verges located predominantly along the western edge of the relinquishment area.

The BDAR states that 11 sites were initially selected for survey but not how they were selected, and it then adds a further 13 sites but doesn't explain either the basis for that number, the rationale around the site selection or, indeed, why they were even required and, of course, they also re-surveyed a number of sites which had been done previously by other workers but didn't explain why it needed to do that. So lots of uncertainty in that and certainly makes it difficult in a scientific sense to go and replicate work when it's undertaken like that.

In terms of the threatened species on the site, I'm not going to go to the orchids, they've been effectively covered by Dr Bell, but one of the interesting things about the BAM and the BDAR is that it petitions threatened species assessments into these ecosystem credit species and species credit species. Now, the former only requires some notion of presence which is then considered in terms of surrogacy. So is the habitat there or is it not? The second, the species credit species require some form of field survey, typically a robust field survey to identify an appropriate occupancy polygon, and that's the area in which the species lives.

So to this end, survey has confirmed the presence of two species credit species or their assessment process confirmed the presence of two species credit species, which are the striped legless lizard and the squirrel glider, and I'm just going to talk a little bit about both of those on the site. So going to the BDAR, figure 9 identifies the presence of two localised populations of the striped legless lizard. One is these is located outside the assessment area and the other is within the largest of the proposed extension areas. Again and in common with that undertaking for the squirrel glider, which I'm going to talk about in a minute, the survey work for this species has been ad hoc rather than systematic.

So despite only one specimen of striped legless lizard being opportunistically detected by field survey, the BDAR proposes or extrapolates a 400-hectare species credit polygon. Now, remember that's defined, that's the polygon within which the species is presumed to occur and it's the extent of that species credit polygon, greater than 400 hectares, which is then used to imply a negligible impact on the species within the assessment area. Now, this claim is entirely based on an assumption that this species is distributed homogeneously in areas that have been identified as the species credit polygon, when this in fact will not be the case. Moreover, it is very poor scientific practice to extrapolate presence across such a large area in the absence of any support from survey or indeed from historical record. So our knowledge of striped legless lizards in the assessment area is thus limited to a single individual from a single location towards the northern boundary of the largest of the proposed extension areas. Hence it's quite arguable, from my perspective, that approval of that proposal in its current form will result in the loss of the only known population of this species that occurs within the assessment area.

Squirrel gliders were the other species, credit species. And you can see from figure 13 of the BDAR it's talking or it implies one or two, maybe, local subpopulations of squirrel gliders have been present within the assessment area over time, one of which, or part of which, has already been lost to mining activity, with the remaining one more centrally located. And it was quite possible that these two were once linked within the assessment area, in an area that will arguably be impacted by the proximity of the largest of the proposed extension areas directly to the east. And it's also important here to be aware that nowhere, nowhere in any of the assessment documents is there any information regarding the extent of habitat being occupied by this population, the size of the population onsite or its capacity to absorb impact and maintain long-term viability. These are fundamentally important matters requiring assessment because they affect the survival of populations of threatened species such as this and yet they haven't been addressed. The scale of impact arising from the proximity of the extension area to the population is not possible to predict with accuracy because of the ad hoc nature of survey effort over time. Neither, and perhaps more importantly,

there's no data to indicate the presence of another subpopulation within the relinquishment area. Again, the extent to which this outcome reflects the poor survey design and effort over time is unknown.

Anyway, so, so why is the potential for negative impact on the squirrel glider so important? Pages 90 to 91 of the BDAR go to this matter of considering cumulative impact of the proposal on biodiversity. And I quote, "The project would not result in a change to the nature or intensity of impacts on biodiversity values associated with the already approved Mount Pleasant operation as or because these areas are already approved to be cleared, and all additional clearance is assessed in the BDAR." I disagree.

Figures 13 and 14 of the BDAR imply the presence within the assessment area of two species of threatened forest owl. So all of a sudden two species are appearing, and (not transcribable) a little bit, both of which are known predators of arboreal mammals such as squirrel gliders. That these are only database records doesn't discount the matter of presence on this site because there's been no systematic survey of either of them, and rather they have been surveyed historically on an ad hoc basis and now they're effectively or their presence is effectively discounted as ecosystem credit species by the BAM approach, so hence no need for, you know, more comprehensive survey audit. Maintaining the presence of these large forest predators in an area is very contingent on maintaining the populations of their prey, and in contrast to the owls, the squirrel glider has been assessed as a species, credit species by the BDAR, and what this does is creates an ecological disconnect of a very important trophic relationship.

Given that the remaining squirrel glider population will be impacted if this development proceeds and that there is no evidence to indicate the presence of another squirrel glider population within the assessment area that is not already lost, much less the relinquishment area, then it's not unreasonable to argue that a cumulative impact is quite likely that has not been considered, and specifically the flow-on impact on two species of threatened forest owls that will have lost a key food resource in the form of the squirrel glider population.

So I'll wrap up. The application before the IPC, before you ladies and gentlemen, proposes exchanging some land parcels that we arguably know something about for another parcel that we know very little about. Based on information that's contained in the BDAR, there's no evidence to sustain any argument that offering up the relinquishment area in favour of the expansion area offers a superior ecological outcome for the site. While the relinquishment area offers a large spatial extent and reduces the amount of box gum woodland that might otherwise be removed, I'm

certainly not convinced that this alone should be the primary consideration in any approval.

The proposal, if approved, will effect further impacts on the remaining squirrel glider population and the loss of the only locality in the assessment area where the striped legless lizard has been recorded. Mindful of the existing approvals, I can only suggest that further consideration be given to adjusting the boundaries of both the relinquishment and expansion areas, if this is going to be approved, to better reflect the ecological knowledge and the uncertainties, while also ensuring onsite long-term security for the populations of threatened species that are known to occur. Thanks.

MR ROBERTSON: Thanks very much for that assistance, Dr Phillips. During the course of that contribution there was a reference regularly to the BDAR. That's the biodiversity development assessment report. That's at appendix E of the environmental impact statement by the applicant, which is available on the department's website, and there's a link to the department's website on the Commission's website. Just for the assistance of anyone following on who wants to see that document. The next speaker is Mr David Moir. Are you there, sir? We can't hear you so far. You may be on mute.

MR MOIR: Yes. Can you hear me now?

MR ROBERTSON: We can hear you loud and clear. 15 minutes has been allocated to you. Please go ahead.

<DAVID MOIR, ENVIRONMENTAL DEFENDERS OFFICE

MR MOIR: Thank you. So I'd like to, to draw the IPC's attention to some of the concerns that are around the visual impact assessment of the proposal, and that's particularly in relation to the methodologies of assessment and the reliance on those methodologies to draw conclusions. And also on the heavy reliance on the success of the rehabilitation to mitigate those impacts that are determined in the visual impact assessment. On review of the visual impact assessment and it's, it's clear that a methodology to quantitatively analyse the impact relies on a 60-degree field of view, which is an accepted method as a central measure of view. However, in the process of, provided, or the methodology in assessing the viewpoints, there's actually no methodology provided in regards to the capture of images, of focal length used, camera used, et cetera, for them to be determined how or what the extent of each viewpoint or photograph provided in the visual impact assessment, what the field of view or the degrees of view that would be visible in each image. A percentage is then

provided of the occupation of the development in the view, but it's not clear how that's determined.

So I guess the question around this is that in an assessment such as this, ideally the methodology would be provided that any practitioner with similar equipment should be able to go out and replicate the process of gathering this baseline data so that they can replicate the outcomes, perform a baseline from which an opinion can be made, and that's not provided in the report. And there's a risk that the low percentages presented in these field of views actually understate the extent of impacts that, or the presence of the proposal in the views. So I think from these conclusions as well that are provided in the, the report, I, the, it's, it's played down in the sense of the percentage of the presence of the view.

The other thing that is a key concern within the assessment is the reliance on the rehabilitation to mitigate any impacts. The assessment draws the conclusion that the impacts of the proposal, particularly the waste rock emplacement will be high from all areas, particularly from the east. So this is the central area. The development of that particularly is exceeding the existing horizon line from a lot of these viewpoints. So the proposal waste rock emplacement will extend and modify the existing horizon line from these viewpoints.

This will continue for some decades. This had been cleared and the movement of rocks, so that's an active process that will be visible from these viewpoints and then post 2041 and there is the rehabilitation of the site. So between 2026 and 2041 there will be this placement of overburdening within the view. Now, there's no time frame provided in regards to the rehabilitation implementation in the visual impact assessment or on the expected time frame for establishment of that.

Now, I think the long-term - this is where the long-term impacts are significantly understated, I think, because there is significant risk of failure with these types of remediations and I think particularly in the context of our changing climate. Generally the rehabilitation is installed into fairly shallow top soils and also minimal subsoils on top of compacted rock. So to expect that a similar landscape can be reinstated on that without the reinstatement of a water table or those deeper soil sections or even sufficient areas for those trees to anchor is, I think, optimistic at best.

I think the reality is that there is a risk of significant failure with this rehabilitation and I think that even if there is success with it, what you often do is you will not actually achieve the structure of the existing vegetated landscape that's there and you tend to end up with fairly homogenous and featureless sort of landscapes for that reason and I

think that's a consistent impact that hasn't really been, I think, accurately addressed in the visual impact assessment.

The other aspect that I felt is not thoroughly addressed is the cumulative impacts of development in the context particularly with some of the views to the north and north-east where the Bengalla mine operations and Mount Arthur mine operations are also visible. The visual impact assessment addressed the percentage of the view of the proposal but does not consider actually the extent of all mining operations within those views. So I think that actually again underestimates the actual impact upon these residents and the presence of this is a dominant element within the landscape and defining the character of those views, and one of the key defining elements identified in the visual impact assessment is the vegetated ridgelines, the views to distant vegetated ridgelines, and they will be significantly impacted on by the increase in height of the - proposed increase in height of the overburden.

So in summary, I think the visual impact assessment, I think, understates the impact but also relies overly heavily on the rehabilitation to actually mitigate any impacts, the shift from high to low impacts and low long-term impacts are consistently reliant on this rehabilitation to achieve and I think there is considerable risk in that. The assessment by the department also states that the increased height of the overburden will be not really discernible from most areas, and I think too this is quite a dismissive comment and I think actually is contradiction to the findings of the visual impact assessment where it's quite clear in the viewpoints provided that the change in height of the overburden in the context of the existing landscape will actually have a significant impact on those residences with views towards the development but also from the public domain, the roadways and open space areas that also have views to those locations.

So in summary, they are the key concerns of the proposal. I think in general the conclusions of the visual impact assessment of which the assessment relies upon are optimistic at best in the outcomes for these areas. This is important too because this is what is changing the character and setting the landscape character of this area of the Hunter Valley in perpetuity. So this change is not temporary, it is something that is permanent, and from my opinion that that prevents a considerable risk to the long-term landscape character of this section of the Hunter Valley. So thank you, that's all I have to present.

MR ROBERTSON: Thank you very much for that assistance. Commissioners, I'll ask the next speaker to speak at 11.00am.

SHORT ADJOURNMENT **[10.36am]**

MR ROBERTSON: Commissioners, the next speaker is Dr Steven Pells. Dr Pells, can you hear us?

DR PELLS: I can hear you. Can you hear me?

MR ROBERTSON: We can, loud and clear. Please go ahead. 15 minutes has been allocated for your presentation.

DR PELLS: Good. I trust you can see my screen with my presentation. Is that correct?

MR ROBERTSON: We can, thank you.

<DR STEVEN PELLS, ENVIRONMENTAL DEFENDERS OFFICE

DR PELLS: Good. Okay. Just jumping straight into it. I'm talking about groundwater and, and water quality and a bit about the, the tailings dam. So firstly the aquifer interference policy has different requirements whether a groundwater resource is highly, considered highly productive or less productive. And when we look at this site, sorry, and look, the key thing to note, as always, is that the proponent undertakes the studies to examine these impacts, which, which I always think is a little bit problematic. But here we have the site here, and next to the site we have a highly productive groundwater system, so not just the dark brown but the, the whole alluvial system next to though Hunter River. And when you look at - and this, I hope I'm just not cynical, but this happens almost every mine I look at - when you look at the predicted impacts of drawdown, they're mostly conveniently sort of over the mine and they don't impact on the highly productive groundwater resources. You can see towards the north there is a little bit of impact but mostly it's kept away. If you include the cumulative impacts being presented in the EIS, then it's more dire for, for neighbouring mines but, but not for this mine.

So why is this the case? So, look, it could be that this is the case but why is it? My, my view is that it's all about how the model is conceptualised. So this is taken from the, the groundwater study showing an exaggerated vertical scale. This is the groundwater system on the right here, the Hunter water, and this red dotted line is the excavation for the mine. And the reason, in my view, that there's no, there's very little drawdown towards the east is because of the way they've conceptualised the layer of geology underneath the, the mine. So they've given it a very low hydraulic conductivity. So it's basically causing it to act a bit more like a sheet of plastic. Now, that - so you don't need to run a groundwater model to know that if you assign such

values to that mine, there's just not going to be that much drawdown in that direction. So the question is is whether those hydraulic conductivity values are warranted. Now, I, I think it's problematic what they've chosen. And the reasons, firstly, they, they apply the model where they assumed that the hydraulic conductivity decreased with depth. And they've got some data that supports that. And that, that leads them to apply lower values down here of depth. But because it gets applied to a whole layer, that, that value logically gets applied even at this layer when it actually daylights into the, into land. So the question is, if you're going to adopt a model with depth, then really these shallow areas should have a higher hydraulic conductivity.

Second thing is, and this came up in another mine by the same consultant, but a different part of the world. Have, it relied mostly on packer test data. And the packer test data, I've done packer tests before and, and the general understanding, to the best of my knowledge and to, and in undertaking analysis is that it's very difficult to use packer tests to measure anything below about 1×10^{-7} metres per second, and that's about 9 by 10, almost 3 metres per day. So they use metres per day. So basically everything below this 1×10^{-3} is not only very difficult to measure, I would argue it's impossible. I don't know how you could use a packer test to get such low values. And to me it's got to be an error. You need either incredibly high pressures and/or very high monitoring of, of water discharge rates. It's just not happening. I asked the question on the last line. I haven't got the answer yet. I just don't know how they could get them and it seems erroneous to me as to how you could get something that low.

I also note, generally speaking in hydrogeology, pumping tests, where you pump water out of a well and you monitor over time, are considered to be more reliable estimates of hydraulic conductivity and of the aquifer properties, and from what I can see none have been done here. And, you know, I question whether that's a reasonable basis to proceed on, on, firstly packer tests that we don't, that seem dubious to me, and no pumping tests. I would also comment that, in my view, and I'm not the only one alone on this, using core tests, core data, really provides a lower estimate of hydraulic conductivity because the way water moves is actually dominated by fractures, not by the actual substance. That's another discussion.

So, in my view, look, the reason that there's very little impact (not transcribable) is because of the way it's been conceptualised. I also have other concerns with the way they've conceptualised, at least how they've drawn in this model. You can see this, this model, this picture from the EIS is kind of showing, supposed to show before and after, and this line here, as I understand it, is supposed to be the groundwater level before mining. Now, that line sitting at around 170, flat over the whole area, it does not accord with what they've measured elsewhere in bores. It kind of follows the

topography. It's much higher. And if there is baseflow to these creeks as shown, then you'd expect - I know it can be complex and unsaturated there, but you'd expect the groundwater level to be intersected into there. And the inference then is if this is the case, and we'll get to the, the closure plan later, they're actually going to reverse the system of flow or reduce the bas flow towards the river, which supplies the perennial streams. If it gets reversed, then it's actually taking water away from it. It will result in a, you know, a much lower flow frequency, and that will be a situation that's in perpetuity according to the mine plan. So that's not really brought out, they do calculate loss to baseflow but it's not really brought out in the studies, and it's certainly not shown in this conceptual model. I think it's a bit misleading what's shown here. That's regarding groundwater.

Now, the next concern that I want to raise is about the pit lake. So the closure plan includes on the right here that they just basically walk away, the mine, and leave an open pit that will fill with water. Now, it's nice to walk away. It's a lot cheaper as I understand it. In fact, the EIS even argues that if they're not allowed to do that, then the mine is not viable, they can't afford to fill it in. The problem with - this is called a pit lake and there's lots of studies done into them, and they've been trialled in Western Australia to various degrees of success and, and I would say, well, the problem is, certainly in this system there is no through flow from a surface water system. So it's a, it's almost like, it's the same process that why the Dead Sea is dead. Salts come into this through groundwater and the salt doesn't get evaporated, whereas the water does. And according to the calculations, and the, you know, the measured salinity of the groundwater, you're getting around three tonnes of salt per day by my calculations - I don't think that's wrong - are seeping into this system and, or is it, that's per year, sorry. I can present these calculations. But they, they're doing them in the study anyway. But you've got a system where salt is always seeping in in perpetuity and the water's evaporating off and it's just becoming more and more saline over time. And this is the plot taken from the EIS that shows this thing, which is their water level over time, which they have a, in this plot says to 80 metres. In the EIS it says 90 metres. But the salinity level, which is on this axis, is just going up in perpetuity, and to put this into perspective, once salinity gets over about - according to the ANZECC guidelines, I think it's around 4,000 microsiemens per centimetre, it's no longer useful for irrigation. So that's after about, you know, two of ten years or so. Once it gets around 9,000, it's not even useful for watering stock, so that's, like, 50 sort of years, and seawater is around, you know, a bit more than 50,000, and up at 70,000, it's what we call a brine, so if you had a desalination plant where you take freshwater out and you stick the brine to sea, that's the sort of quantity of salt you're getting. And this is in perpetuity.

So they don't have a solution for this problem. It's just something that we would hand on as a heritage to, you know, future generations. I don't see personally how this is a - you know, how this is possible if all aboard, or - you know, it's not my decision to make, but it seems like this is not permissible, this is not tenable. They also don't present other water quality indicators. They just do salts. So there's obviously questions about pH in some other mines, where they've had pit lakes, the pH has plummeted, and there's obviously other metals that are seeping in. The other assumption is that - in the EIS, is that this increasingly saline or almost, I would say, toxic water body is locked away from the environment, because it's always - groundwater is always flowing into it. I don't think, in my view, looking at it, there's much risk of this thing flooding and spilling, but I think it's not correct to think that this is somehow independent from the environment. It's exposed to all sorts of animals and creatures, and the environment in general. It's not just a - you know, I just don't think it's been put in the box and the lid closed, and you can walk away like that. And as I said before, we're simulating it's around 90 metres elevation, and the groundwater is around 140 of this area - you've got 50 metres of elevation difference over a distance of a couple of kilometres. That drives baseflow from the river to the pit and in perpetuity, is the closure for that. So I just want to make that clear - this is stated in the EIS, but I can't see how this is a good heritage sort of legacy to hand on to future generations.

The last problem I'd like to raise is with the TSF or the tailings storage facility. Now, I have to concede - well, this is in my area of expertise, but I haven't been through this in detail, other than to look at these photos and get a little bit scared. But the design has got a rockfill over clay, which is a strange thing to do, but the whole assumption - and this is an assumption made on many mines - is that you've graded this at 0.5 per cent, so that run-off - you know, fresh run-off, if you get a storm, is always sort of ponding in this area, and you can take it away, and that this embankment doesn't become saturated. The problem is, like Cadia and Orange, if you have an event or - the way the mine is managed over time is that these lifts are supposed to happen in time, but things are always changing and the mine sequence changes, and the owners change, and it often doesn't get done, or it's a risk item. But if it's not raised in time and you get a flood level, this thing can get saturated, and this is partly why we've had so many tailings dams failures over history. Now, I haven't reviewed their design. I couldn't actually see if much design was done, and I'd like to have a look at it when I prepare a report for this. But this is just - I should also point out, this is a very significant structure. It's about 60 metres. On the scheme of tailings storage facilities, it's large. So it's a big risk item.

So my summary, in raising the concerns about this design, are as follows. The impact to the alluvium, I think, is only as a function of how they've conceptualised the model,

and I can't see that there's a good basis for that. I want to highlight that the extent of the drawdown that they've predicted on this is a very significant factor, and it's showing a baseflow reversal that will occur in perpetuity, to my understanding.

On the pit lake, as I said, is the situation of this hyper-salinity that just goes on over time. In the EIS they kind of namedrop these things - "Oh, we can use it as a pump hydro or a" - you know, other things might happen, but I can't see how they're feasible, or they're just sort of ideas without any basis, and there's just no other water quality measures, and I just don't know - it's not my call to make, but I don't know if this is an acceptable legacy.

And lastly, as I said, the TSF, it's a large structure, it's a tenuous design, and I'd like to have a bit more of a look at it in my submission. That is my presentation. Thank you.

MR ROBERTSON: Thank you very much that contribution. In terms of any further submissions you wish to make, 15th of July 2022, 5pm, you're welcome to make further submissions to the Commission. I'd also invite you to provide the slides to the Commission so they have the benefit of that during their deliberations.

DR PELLS: I'm happy to do that.

MR ROBERTSON: There's a question, I think, from Professor Fell.

PROF. FELL: Dr Pells, I'm just interested in the pit lake contents, and, really, they're a source of water if you use membrane processes. And while the concentration is still low enough, it's entirely possible to get decent water from that during drought times. Could you comment on that?

DR PELLS: You mean through a desalination plant?

PROF. FELL: Sorry?

DR PELLS: Do you mean by putting in a desalinisation plant?

PROF. FELL: Yes. It doesn't have to be a high-pressure desal plant, when you're talking about, you know, salt contents. We're talking nanofiltration.

DR PELLS: O.K. Look, I'm not an expert on water treatment. I don't know if they've presented that in the EIS as an option or if it's been scoped, but, look, if it works, then put it forward, yes.

PROF. FELL: Thank you.

MR ROBERTSON: Thank you. The next speaker is Nicki Hutley. Ms Hutley, can you hear us? You may be on mute.

MS HUTLEY: Whoops. I'll try that again.

MR ROBERTSON: We can now hear you loud and clear. 15 minutes has been allocated. Please go ahead.

<NICKI HUTLEY, ENVIRONMENTAL DEFENDERS OFFICE

MS HUTLEY: Thank you very much. Hi, my name is Nicki Hutley. I am an independent economist. I am also an economic advisor the Climate Council. I have over 30 years' experience as an economist in financial markets and as a consultant specialising in areas such as cost-benefit analysis, policy advice, specific to climate economics and environmental economics, and it's in that context that I'm presenting today. I've been asked by the Environmental Defenders office to assess, or, you know, review the economic assessment that was undertaken by Analyticon, and to understand, you know, what - how well that's been undertaken.

My first point would be to say that there are two components to the economic analysis. The first is the cost-benefit analysis, and the second is a local economic analysis, or local area impacts. I have focused my analysis around the cost-benefits. This is because you get to see both sides of the equation, and you get to balance what those, you know, costs versus benefits are. With the local area analysis, I actually have some considerable problems. They have taken some liberties with the guidelines which they haven't done in the CBA, but - and for that reason, I'm ignoring that. It is far more relevant to look at the costs versus the benefits, and that's where some of my concerns arise.

In fact, it's my opinion that there's a major flaw in the calculation of the economic costs of the project's greenhouse gas emissions that results in a gross underestimation of the cost of climate impacts, and therefore the net benefits of the project. Now, this is in part due to a lack of clarity in the current government guidelines for an appropriate methodology. This is an area that is evolving rapidly over time as our understanding of and modelling capabilities for climate economics change, and I think, you know, we are already seeing, in the analyses that I've undertaken in the last few years, there has certainly been a lot of sensitivity testing done using different types of methodologies, particularly the indicators used for a carbon price.

And there's two aspects, I guess, that I have wanted for you to consider. One is the actual price of carbon that's been used, and the second is the appropriateness of the apportioning of New South Wales component, and not that the concept of a New South Wales portion is problematic, it's not, but it's the manner in which it's been done in this cost-benefit analysis. There is a paper that will be presented after this with all of the details and the workings that I've undertaken, but I'll just talk you through how I came to my conclusions and the methodologies.

So the purpose of the CBA, of course, is to understand all the benefits and costs borne by New South Wales associated with the project, which is the mine expansion, in comparison with the reference case, which is no expansion. The benefits for the project have been identified as royalty payments, and a portion of the company's tax profits, which are paid to the Commonwealth Government and then redistributed back to the NSW Government. Now, the value of these in the EIS was originally put at 856 million. That amount was subsequently lowered because, due to a more conservative approach after the initial analysis, the Department of Planning, Industry and Environment asked Analyticon to go back and correct their methodology. There's also a more conservative estimate of royalties that was provided by Mining, Exploration and Geoscience, and I've given sensitivities in my analysis looking at both of those, but the MEG estimates were 14 per cent lower or about 100 million less in terms of net benefits than the Analyticon estimates, which have taken, I would say, the upside optimistic assumptions for many of their inputs.

There, look, there are lots of things that are, that are identified in a discussion of the cost-benefit analysis but the only one that has actually been calculated for which there is assumed to be a tangible value is the greenhouse gas emissions, and that's why that's the focus. But it is also - well, from my analysis. But it's also very relevant to note that there are numerous other types of costs, environmental and social costs. You've been hearing from other experts about those today and yesterday, things like particulates and air quality, things like noise, biodiversity species, all of these things, which are much harder to create tangible values for to include in the cost-benefit analysis. And that means that you're going to need a buffer in your net value, your net present value, of the benefits of the project to make sure that you are allowing for those intangibles to be, to be covered, and I'd suggest that even in our most conservative estimates here that that doesn't occur.

So in terms of the treatment of greenhouse gas emissions, in the estimates for scope 1 and scope 2 emissions, so those directly related with the project itself, including the transport of the goods, so the extraction and transport of the goods, those are considered to be 16 megatonnes, that's the department's official estimate. If we take

into account scope 3 emissions, which is those emissions that arise as a result of the extracted coal being consumed in different forms, whether that's production of steel or mainly energy as I understand it, then the lifetime scope 3 emissions are some 860 megatonnes of CO2e. Now, the scope 3 emissions were excluded from this analysis to avoid double counting. That's the reason given in the EIS. Now, that is a relevant consideration when you are talking about reporting of greenhouse gases in a global context. So we wouldn't say that Australia produced 860 megatonnes and then let's say all of this went to Japan, they burnt it to produce steel or energy, and they also accounted for 860 megatonnes. That would be patently ridiculous and would be double counting. However, the exclusion here, when we're talking about the impacts of climate change and the impacts of those emissions on raising global temperatures, we need to account for them because those rising global temperatures will affect Australia. We can't isolate those impacts. And so we need to account for those scope 3 emissions somewhere.

Now, if we exclude them here, the assumption is that they've been included somewhere else in the cost-benefit analysis, and that is clearly untrue because there is no other inclusion. So when you're accounting, rather than trying to say these are the emissions that arise in Australia and will take, which then the Analyticon adjusted for 1 per cent of the global, you know, the global population, so you're adjusting an Australian context of emissions by our share of the world population or GDP, which is completely irrational and illogical. You can only adjust for our share of the global impact if you take that global impact into account. Otherwise you'd be saying it's, you know, the New South Wales share of Australian emissions. And in fact that's one of the corrections that the, that the DPIE requested Analyticon to make when they used the NSW Treasury price.

But there's a reason why I think that's not right, and when we - if I can just take you back to, to the choice of the carbon price. There are two things we can do, and the New South Wales guidelines acknowledge this. One is, this one is a market price, and one is a social cost of carbon or a so-called damages price. And the Treasury guidelines for cost-benefit analysis say that the preference is for a market price, but if there's a reason to believe that that market price might be not accurate, for example due to market design features such as excessive free permits, then perhaps you are better to use - or not "perhaps", you are better off using a social cost of carbon, and they have recommended the US Environment Protection Agency's social cost of carbon for that sensitivity test. And again, that was used, including in the revised cost-benefit analysis with more relevant and up-to-date figures, but it was the choice for the social cost of carbon that was used, was in my view not the correct one.

If I can just go revisit why the market price isn't the, the correct one. So the two, the two market prices, well, the, the EUAs, the European Union Emissions Trading Scheme, and also the Australian Treasury forecast, which isn't, which is a sort of quasi-estimate of what a market price might be. Neither of those are holistic - you know, they don't include the total cost of adjustment that an emission anywhere in the world has. They don't include, in the case of the EUAs, the European emissions prices, they don't include what the rest of the world has to do, it's only for that particular part of the world. So again the adjustment factor would need to take that into consideration. So, you know, Australia's portion or Australia's sort of pro-ratas as are relevant to the, to the size of the European Union countries that are signatories to the, to the ETS there.

So none of these things are holistic or complete, and nor are they considered to be accurate. So the IPCC has said that to get to 1.5 degrees or even significantly below 2 degrees, as per the Paris Agreement, there is no current market price in the world that reflects, that, that would currently get us to that position. So we know that all of those market prices, even the highest that exist today, are insufficient to get us to the point where we are. So that leads us to the alternative pricing, which is around a social cost of carbon. And this is the, the measure that's preferred by economists. It's also used by numerous governments around the world. The US, Canada, France, Germany all use a social cost of carbon. Japan's recently implemented one as well. And that tries to capture all of the economic, social and environmental impacts of climate change using what are called integrated assessment models.

Now, there is no controversy about the idea of a social cost of carbon but there is certainly a lot of discussion around how that is calculated. And there are, those controversial, those discussions are less around the precise methodology. I think there is widespread agreement that most of the methodologies will be underestimates because we can't account for every single consequence of climate change. Some of the things are too difficult. Some of the things are only being upgraded and we need to keep upgrading our models, and this takes, these are extremely complex models that even Australia's own NARCliM climate model takes, you know, all of the university supercomputing power to, to run different scenarios. These things are massively complex and timely to run. But we know that there are lots of things that aren't included, particularly things like health where we're only just starting to understand what the true health impacts of burning of fossil fuels, not just from climate change but the, but the burning of the fuels themselves with estimates of around a trillion dollars a year just in the US alone. So, but probably more contentious is the rate of discount, the discount rate that is used in, to, to calculate those social costs of carbon. Most economists in a survey of nearly 200 economists in the last couple of years suggested that an average rate or rate somewhere between 1 per cent and 3 per cent,

with an average rate of just over 2 per cent, is, is considered reasonable. Others have said that, that no rate of - that the discount rate should basically be zero because the discount rate is basically saying, "We value these impacts in the future less than we do today," which is essentially saying the same thing as, "We don't care as much about the impact on children and grandchildren and we do on us today."

Now, that's clearly not a necessarily reasonable or ethical assumption to make, and in fact the German Government has recently changed its forecast for the social costs of carbon, or the price that it uses, and it has two sensitivities - one at 0 per cent and one at 1 per cent for a discount rate. And this is really important, because the numbers do vary, as you'll see from the calculations that I am about to present, and I think that's probably the main thing. So what I have done is to take the scope 1, 2 and 3 emissions, as I indicated that's an appropriate factor, I've applied a range of social costs of carbon to see your different sensitivities, and then I've apportioned the Australian - or the New South Wales, rather, population around 1 per cent across the total impacts to get that apportionment, and I'll just quickly share my slide with you so that you can see, because I don't want you to just have numbers read at you, and hopefully that's clear now and you can see that.

So you can see that on - I did include, just so you can get an example of the EUA's calculation as well, there is nothing that's been provided by Analyticon to actually understand how they've done this. There's not, you know, an annual emissions, there's only average and total, so my numbers are fairly close to theirs for the updated EUA figure, and you can see, in the first column, that is the current cost of the lifetime greenhouse gas emissions, using a 7 per cent discount rate, as is the guidelines for the New South Wales cost-benefit analysis central case scenario. There are sensitivities down at 4 and 10, but that obviously affects both sides of the equation, both the benefits and the cost, so I'm happy to leave it at this point, at the 7 per cent.

You can see, I've compared both the Analyticon estimates for the mining royalties and the lower figure from the meg estimates for those royalties. You can see that under the EUAs, that just from greenhouse gas emissions alone, at these different sensitivities, for the EUAs we get a net benefit of 197 million for the life of the project, or only 93 if you use the meg figures. The largest increase is using the EPA's 2.5 per cent, which was the last figure that they officially used - that's under review at the moment. It was abandoned by the Trump Administration, and has now been reinstated by the Biden Administration and is being updated as we speak, but as I said, it takes a while. If we look, though, at the higher range of estimates, which includes the 95th percentile for the US EPA, even that at a 3 per cent discount rate, or the current German figures that you have, you can see you get large negatives for all of those outcomes.

So in summary, what I would say is that we need to be very careful. I think a closer review of the net benefits needs to be undertaken and understood. I think a closer understanding of some of the other considerations that are in there that haven't been included in the cost-benefit analysis, particularly around biodiversity values and particulate values, if they can't be offset, water quality, et cetera, those don't allow - you know, what is the margin of error that we can allow for, but you can see that it - you know, there is not that - that margin of error comes down very considerably just on that basis. Thank you very much.

MR ROBERTSON: Thank you very much for that submission, Ms Hutley. We would be grateful if you provide those slides as part of the submission that I think you were proposing to prepare by the 15th of July. The next speaker, Commissioners, is Lauren Sims. Are you there, Ms Sims?

MS SIMS: I am.

MR ROBERTSON: Five minutes has been allocated for you. Please go ahead.

<LAUREN SIMS, BARRISTER

MS SIMS: Thank you. I've been briefed by the Environmental Defenders Office, on behalf of DAMS HEG, to assist the Commission in relation to certain aspects of the statutory decision-making framework that confronts the Commission. Within the time allocated, I'm going to address one important point, and I'll supplement that with a more comprehensive written submission by next Friday.

The department's assessment report proceeds on the basis of a comparison between what it calls the approved project and the proposed project, and that's evident in the assessment report at page 4, where there's a table, table 1, setting out a comparison between the approved project and the proposed project. It's also reflected at paragraph 115 and at various other points in the assessment, where what the department is doing is comparing the impacts of the approved project with the impacts of the proposed project.

Why do they do that? Under section 4.15 of the EP&A Act, as you'll be aware, one of the important aspects that the Commission is required to consider is the likely impacts of the proposed development. When we're talking about a brownfields project, there's the complication of distinguishing the environmental impacts of the proposed development versus the impacts of what would otherwise occur, even if this approval

wasn't granted - that is, there's a need to identify what would - and that draws with it the requirement to identify what would otherwise occur without the approval.

In the usual case, and particularly this is frequently done for mining expansions, the comparator - that is, what would occur otherwise - is usually represented by what's been approved previously. In this particular circumstance, that's not an apt point of comparison, and this is an important point. The reason for that is in the year 2000, when this mine was approved, mining was approved to 2020. That was then subsequently extended to 2026. The mining was approved at a rate of 10.5 megatonnes per annum of ROM coal, with a total production over the life of the mine - that is, the 26-year life of the mine - of 197 megatonnes in total. As we know from the assessment report and the other information that has been provided, mining on this project did not start until 2018, and the consequence of that is that the total mining that will occur under the approval is eight years of mining compared with the 26 that would otherwise be approved, and if we assume that during those eight years the maximum production rate of 10.5 megatonnes occurs, the total resource recovered is 84 megatonnes, so that's 84 compared to the 197 that was originally approved. That means less than half of the mining under the approval will actually occur before mining must cease under that consent.

I'm going to share just a couple of images with you. The image on the left is taken from the existing approval for the mine - that is, the 2000 development consent as modified by modification 5. It's a drawing that shows the provisional general arrangement at 2025. This document was prepared in about 2018 in support of Mod 3. It shows the extent of mining that will actually occur under the approval, and you can see from this that large areas to the north will not be touched before 2026, and I'm also going to show you a comparison of the final voids - again, the image on the left is taken from the existing approval, and it shows what the final landform and rehabilitation will be at 2026 on the basis of the current approval, and you can see again, that northern part of the mining lease is not touched. It doesn't require rehabilitation, so we can assume that it's not going to be touched.

And this point of comparison hasn't been made in the environmental assessment or in the assessment report, and this is the basis upon which we should be comparing. The image on the left represents what will occur if the IPC does not approve this approval, and on the right is the image taken from the environmental assessment, demonstrating what will occur if the IPC does.

So this is the comparison the IPC should make. What was approved in 2000 is pretty irrelevant, because it doesn't represent the reality of what mining will occur under that approval. Thank you.

MR ROBERTSON: Thank you very much for that, Ms Sims. Just to confirm, is your submission in a nutshell that when the Commission is considering the base case and comparing that against what might occur in the event that the application is approved, one doesn't look at the existing approval in a sense of what it overall would allow but, rather, what would occur in the real world in the event that the current application was refused. Is that in a nutshell the submission that you've been advancing?

MS SIMS: Yes, that's right.

MR ROBERTSON: Thank you. The next speaker is Ross Cole. Mr Cole, are you there?

MR COLE: Yes, thank you.

MR ROBERTSON: 10 minutes has been allocated for you. Please go ahead.

<ROSS COLE, GODOLPHIN AUSTRALIA

MR COLE: Thank you, Commissioners. I pay my respects to the traditional owners of the land on which we meet, to Elders past, present and emerging. My name is Ross Cole, I'm a Director of Corporate Services for Godolphin Australia. Godolphin is part of the world's largest integrated breeding and racing operation. We also operate in America, Ireland, Japan, UAE and the United Kingdom. Godolphin established its commercial breeding operation in the Hunter Valley in 2001 in recognition of the growing force in the international thoroughbred breeding and racing. That reputation of Australia has continued to grow.

Our operating business model in Australia is that of free to race and race to breed, that is, we breed thoroughbred horses from the highest bloodlines in our stock, build a reputation and credentials on the racetrack and those which are elite retire as stallions or mares for renewal of our broodmare band. The key profit driver is the stallion service operation. In Australia we have six main operating sites, three stud farms and three training facilities. These include two stud farms in New South Wales located in the Hunter Valley. Woodlands which is located between Jerrys Plains and Denman and Kelvinside at Aberdeen.

Kelvinside has been developed into a world-class facility with capacity to stand 17 stallions. It has comprehensive mare, racehorse spelling and rehabilitation yearling facilities and education and training operations. Those two properties alone span over 9,000 acres and operate as one integrated operation in the Hunter Valley. The

thoroughbred breeding rules are strict and require breeding to occur by the physical and natural service by a stallion. Therefore, our mares, which are based at Woodlands, travel from Woodlands for service by our stallions to Kelvinside and returned. So do mares owned by third parties and those too travel to our stallions and return to their breeding farms in the Hunter Valley and beyond. As a result, we are an important user of the route between Jerrys Plains, through Muswellbrook, down to Aberdeen and return. So too do other owners of mares and the visitors, clients and investors in our stallions and their progeny. Our young horses also begin their education at Kelvinside which requires their movement between Woodlands, Kelvinside and our Sydney racing sites. Those matters, including the industry requirements for physical service, are fundamental to an understanding of the functioning of our industry and its CIC which centres around the stallion operations in the Hunter Valley.

Without a true understanding, which has not been exhibited by the department or the proponent, and without any assessment of this proposal's impact on the equine CIC cluster, approval would be unprecedented. It beggars belief that the department has failed to make any assessment of the impacts on this project on the equine CIC. It's also contrary to the SEARs guidelines and common sense. The department's assessment report simply notes that no significant impacts on the CIC are expected. Previous planning assessment commissions have concluded that open-cut mining and thoroughbred breeding operations in close proximity are incapable land uses.

The thoroughbred breeding industry is particularly vulnerable to the threats of mining and that one coalmine should not threaten or place at risk a pivotal player or an entire industry. Godolphin employs some 300 people across Australia with about half of those located in the Hunter Valley across a broad range of occupations both in direct horse-related and administrative functions. Our farms are also homes to many of our employees and their families. They are communities of people living and working on site. Godolphin owns in excess of 700 horses. Our properties in the Hunter also run some 1,700 cattle. The value of our bloodstock is in the order of $183 million with over $113 million of that located in the Hunter Valley. This season our stallions in the Hunter will service some 1,800 mares.

At our peak we host some 4,000 clients and businesses annually to our stud farms at Kelvinside and Woodlands and Godolphin is a substantial contributor to its local communities. To date this year alone we have made some 50 individual donations through our annual donations program. Godolphin is a major global brand, where and how we operate matters, the environment in which we operate matters, our reputation matters, our operations are influenced by both local and global investment perceptions and decisions.

If approved, this open-cut coalmine will only be some five kilometres from Kelvinside and its impacts visible and felt to us, our staff, visitors, investors and clients visiting our farms, our stallions and their progeny. It will impact prospective investor perceptions and our brand and reputation. The department's assessment represents that Mount Pleasant's located in a longstanding coalmining precinct. That may be the case for the present southern pit, which is close to Muswellbrook, but the proposed extension moves essentially to the north and directly towards the town of Aberdeen into the agricultural surrounds to the south of that town, creating new and significant environmental and social impacts. This is not acknowledged by the department or the proponent.

The visual impacts of this mine proposal are enormous. It will irreversibly alter the Upper Hunter scenic agricultural landscape forever. The creation of a six kilometre long, 316 metre high overburden dump is a serious incursion into the apparently unaffected agricultural landscape of the area in close proximity to Aberdeen and in open view to all those who reside close to the mine or travel on the Hunter's New England Highway. The proposed mine is completely inconsistent with the current surrounding landscape. It will represent the closest open-cut mine to our operations in the Hunter Valley with current impacts not felt north beyond Muswellbrook.

The department finds that social impacts of the project would be similar to those associated with the existing mine. This is difficult to comprehend, not only is this an extension proposed for 22 additional years but the significant move towards the area surrounding Aberdeen is a complete shift with all of those changes creating new and significant negative environmental and social impacts. The department also, in its assessment, seems to assert that the benefits claimed, as benefits claimed overall reductions in noise and air quality impacts as output increases while mining moves away from Muswellbrook. This is not only factually incorrect, it ignores the increase impacts on Aberdeen and its surrounds.

Noise blasting, dust disposition and air exceeds are serious concerns for us, our operations, the health and wellbeing of our staff and their families and our valuable bloodstock. Noise, dust and poor air quality are all damaging to our operations. The heart of the river flows through both Kelvinside and Woodlands properties and is a vital water source for us both, or both those properties as it is for those - and most of the thoroughbred farms in the Upper Hunter. The lack of appropriate surface and groundwater analysis and the lack of comprehensive cumulative assessment of mining-related water impacts in the Hunter is of grave concern for us.

The department makes a virtue of the concept that this proposal will rationalise the mining into three pits, two outer placements and single void. I note others, including

Michael White, have made strong points in that regard of which we support. Producing a final void that will take a thousand years to fill and reach equilibrium and which will increase salinity in the meantime is not a virtue in our view, not a situation we should impart on current generations or legacy on which to leave for future generations.

In our view, this is and should properly be treated as a new mine with serious environmental and social impacts. It should not be allowed to expand and create environmental and social hardship for a further 22 years, irreversible damage to the scenic landscape and leave a lasting legacy for future generations. The current approvals expire in 2026 and the community following those approvals were left with the expectation that this would be the end of it. If we are left alone to run our operations in the pristine environment we currently enjoy and without further incursions of open-cut mining and the destruction of the landscape close to those operations, we can be part of the transition away from coal. We have a sustainable long-term business, as do all the breeders in the currently world-renowned Hunter breeding area. In our view, this proposal is not in keeping with the principles of ecologically sustainable development and not in the public interest. We respectfully request the Commission to apply the precautionary principle and refuse it. Thank you and I'll submit a further paper to the Commissioners.

MR ROBERTSON: Thank you very much, Mr Cole, for that submission. 15th of July, 2022, 5.00pm is the time for that further submission. The next speaker is Dr Cameron Collins. Dr Collins, please go ahead, you've got 10 minutes allocated.

<DR CAMERON COLLINS, HUNTER THOROUGHBRED BREEDERS ASSOCIATION

DR COLLINS: Good morning, Commissioners, and counsel assisting. I'd like to pay my respects to the traditional owners of the land on which we meet and to their leaders past, present and emerging. My name is Cameron Collins. I'm a veterinarian with 30 years' experience in equine reproductive practice in the Hunter Valley and internationally. I'm the Managing Director of the Scone Equine Hospital, a member of the Australian and New Zealand College of Veterinary Scientists in equine medicine, and the President of the Hunter Thoroughbred Breeders Association. It is as the President of the Hunter Thoroughbred Breeders that I speak to you today. I would like to explain who we are, why we matter and why we are so concerned about this proposal.

So who we are. The HTBA represents some 200 organisations and many individuals who make their living from breeding horses and the associated activities in the valley.

We have a 200-year history of sustainable farming in the Hunter. Our business is producing the world's best equine athletes. Our members have been doing it for generations and we are recognised around the country and around the world for what we do. We have many of the best horse farms in Australia. Studs such as Arrowfield, Newgate, Vinery, Segenhoe and Yarraman Park are central to the history, culture and economy of the region. They are recognised as world class for the horses they produce and they will be directly affected by this proposal. Godolphin is one of the largest and most successful horse breeders in the world. They own stud farms in Europe, America, the Middle East and Japan. Their presence in the Hunter Valley is clear evidence that this is one of the best environments in Australia to breed horses. They will be directly affected by this proposal.

So why do we matter? Our industry has been recognised by the NSW Government as a strategically important agricultural industry. It's been mapped as a critical industry cluster, protected from coal seam gas mining, and the NSW Government has repeatedly committed to protect it. Our industry is world recognised and world renowned. It is internationally connected, vertically integrated and concentrated in a critical mass in this area. It has the people, infrastructure, horses and the environment necessary for a critical industry cluster, and has been so recognised and declared by the NSW State Government.

The Hunter's breeding industry is the largest in Australia and the second largest in the world. Also, the Hunter is considered one of three centres of excellence of thoroughbred breeding alongside Kentucky in the US and Newmarket in the United Kingdom. One in every two thoroughbreds born in Australia are bred in the Upper Hunter. 80 to 90 per cent of the horses auctioned at yearling sales around the country every year are the progeny of Hunter stallions. 80 to 90 per cent of the, of Australia's thoroughbred exports are the progeny of Hunter stallions. 50 per cent of the races along the entire eastern seaboard on any day of the week contain the progeny of Hunter stallions. We are Australia's largest producer, supplier and exporter of thoroughbreds.

Our industry makes an annual contribution to the Hunter Region of $565 million, to the state of 2.6 billion, and to the national economy of over 5 billion. We are the largest agricultural employer in the region, with over 5,000 direct jobs. The industry contributes 53,000 jobs across the state and around 250,000 across the nation. Racing is one of Australia's oldest sports and is a part of the fabric of urban and regional communities across the country. It is the second most popular sport in Australia, with over 2 million attendances every year. In New South Wales alone, there are 140, 130 (not transcribable) race clubs across the state. The thoroughbred industry is a substantial agricultural industry. Its contribution to the economy of this region is

twice the value of irrigated agriculture, four and a half times the value of dairy, and 10 times the value of beef cattle. We are not a niche industry. We are, we are a central component of this region and the state's economy.

Previous planning assessment commissions have recognised that coalmining and international-scale horse breeding operations are incompatible land uses and cannot coexist in close proximity. Previous commissions have actually stopped other open-cut operations such as Bickham and Drayton South from being developed in this sort of close proximity to the stud farms, and they have recommended buffers and preservation zones be implemented to protect the industry.

Commissioners, it's not an accident that the horses, the farms, the expertise and the people are concentrated here. We have the perfect environment to breed and rear horses. It is an agricultural landscape with the climate, topography, soil and water that we need. This is not hyperbole. Its veracity is demonstrated by a 200-year history of producing some of the best horses in the world. However, to continue to produce the best requires that we have all of these factors, and the environment and the surrounding landscape are central to our success and our reputation. Evidence on the threats of this project, evidence on the threats that this project poses to the environment and the landscape in which we operate will be provided to you by our experts. It is worth noting that similar, similar evidence from other projects has been recognised by previous Commissions as an existential threat to our industry.

So why are we concerned about the Mount Pleasant project? We're worried because our industry is so sensitive to the threats of open-cut mining, both operationally and reputationally. Impacts on the industry's reputation affect our business. They affect future investment and they affect the jobs of our industry. This is a fact that has been recognised by five previous planning assessment commissions and two previous Gateway panels. We're worried because this project is proposed to encroach so close to our operations that its impacts will be visible from both Godolphin and Newgate. It will be visible to the clients and potential investors who travel along the New England Highway to visit our farms and to make the decisions on where their mares and foals should live. It will be visible to the stallion owners deciding where to locate these horses. We're worried because this encroachment onto previous undisturbed land, in closer proximity to our operations than the town of Aberdeen, will impair the reputation of our industry. It will hinder investment and job creation. We are already losing investment that would previously have come to the Hunter and is now going to other regions in Australia due to the impacts, perceptions and uncertainty caused by open-cut mining in the region.

We're worried because the proponent has no understanding of our industry, is misinformed about where our farms are located, and is not concerned about the environmental consequences of this, of their operations, which will directly affect us and cannot be contained within their property boundary. We're worried because its air quality impacts will worsen an already bad air quality situation that will cause harm to our people, communities and horses. We're worried because this project will irreversibly damage the amenity of our environment and a landscape which is central to our reputation. We're worried because the landscape at the entrance to the Upper Hunter's equine precinct will be substantially and permanently altered, with serious questions remaining about the successful rehabilitation of the land for agricultural use post-mining. We're worried because after 18 years of inactivity under the previous owners, no holistic cumulative impact assessments have been done to assess the impacts of this proposal on our critical industry cluster, on air quality, on surface and groundwater or on climate change. We're worried because this proposal presents incomplete information, ignores the immediate environmental and social damage, is silent about the long-term costs of the project and asks us to accept the degraded landscape and environment as its legacy for future generations.

Commissioners, we understand the historical role that mining has played in the economic development of the Hunter Region, but times have changed. The future of this region lies in a diverse economy and in it being home to a range of sustainable industries. Agricultural industries such as ours are part of the future of the region. Destructive, polluting and irreparable projects such as this one, with significant disadvantages to the environment, the neighbours and the community, do not have a long-term future and should not be approved at the expense of sustainable industries. Commissioners, given that no assessment of the impacts of this proposal on our industry has been made, we encourage you to come and see some of our operations that will be directly affected for yourself before you reach your determination. The HTBA opposes this proposal and asks you to refuse it. Thank you for your time.

MR ROBERTSON: Thank you for that submission, Dr Collins. The next speaker is Helen Georgopoulos, also from the Hunter Thoroughbreds Breeders Association.

MS GEORGOPOULOS: Thank you, Commissioners. Can you see me?

MR ROBERTSON: We can see you and we can hear you loud and clear. 10 minutes has been allocated to you.

<HELLEN GEORGOPOULOS, HUNTER THOROUGHBRED BREEDERS ASSOCIATION

MS GEORGOPOULOS: Excellent. Thank you, Mr Robertson. Good afternoon and thank you for the opportunity of addressing you today. I pay my respects to the traditional owners of the lands on which we meet. I've been the Director of Policy and Public Affairs for the Hunter Thoroughbred Breeders for the past 10 years. I'd like to share some slides with you that put this proposal and our industry into context. And just bear with me. Can you see these slides? I'm just putting them on full screen if it will work for me.

MR ROBERTSON: We can now see them.

MS GEORGOPOULOS: Are you able to see them?

MR ROBERTSON: We can now see that, thank you.

MS GEORGOPOULOS: Perfect. Okay. So this is a map of the thoroughbred breeding industry in the Upper Hunter, which shows its proximity to exploration licences and operating mines. This is - if you can see my cursor, this is a slightly blown-up version of the same map just for ease of reference and visibility. My cursor here, if you can see it, is on the Mount Pleasant proposal. To the north of that is the Dartbrook underground mine, which the government has made clear in its policy statements that it is opposed, it doesn't support open-cut. This is West Muswellbrook here, which is an exploration licence - nothing is happening there. So as you can see, the Mount Pleasant proposal is the first and the closest that is incurring coming into the north, and closer to the town of Aberdeen. At the moment mining is just at this side of the Mount Pleasant proposal, so it's sort of moving northwards towards the town.

My next slide is (not transcribable) asked for on what is currently approved. I'm trying to compares apples with apples here. So you'll see that in the 2018 Mod 3 conditions of consent, the layout plans, the mine consent and the tailings dams are what is actually approved for the operation until 2026. In the 22 recommended conditions of consent, figure 7, which shows the layout in 2047, you will see that the tailings dam has significantly increased. It now has a 70-metre wall or dam wall next to it, and you will see that mining is moving right across the site and into the north-eastern - up to the north-eastern boundary, which is currently not the subject of - not approved under the current consent.

I will also just show you, and I think Ms Sims showed this same picture, but I want to point out is the level of rehabilitation that's required. So you can see here, this is the tailings dam as currently approved. This is what is being required here in those dotted lines with the darker green showing where the 70-metre dam wall will be. This

particular size of tailings rehabilitation is comparable to the size of the town of Aberdeen. I just want to point out also that this little kidney-shaped form is the current void that is approved. This is the void that will be left in perpetuity.

Thank you. I'll just go back to my presentation now. I'll stop sharing. My apologies. Okay. So as you saw from those slides, any discussion of what was approved in 1999, when Rio Tinto subsidiary Coal & Allied owned this mine, is irrelevant and a distraction to this assessment. No mining took place under Rio's ownership. There was nothing more onsite other than a dam and pull road. No benefits during their 18-year hiatus were delivered to the government or the local community. And contrary to the department's assertion that this was because Rio was concentrating on other mines in the area, whereas public statements clearly attributed labour rates, exchange rates, capital costs and government taxes as their reason for not commencing this mine and looking to disinvest their other Australian coal assets.

Mining commenced in 2018, two years after MACH Energy purchased the mine from Rio, and under the 2018 Mod 3 consent that I just showed you. At that time, the 1999 approval was superseded by the 2018 Mod 3 modification. This is what MACH has permission for, until 2026, and any comparison with the 1999 approval is therefore spurious and misleading.

Okay. So you've heard from our president regarding our economic and strategic importance, and the vulnerability of our industry to the threats of mining, and you've heard from two of our key players, who are in close proximity to this mine and will be directly impacted by it. The impacts of this proposal will also affect other thoroughbred operations here in the Upper Hunter, and it will introduce new direct and indirect impacts into an area that is currently untouched by mining. The lack of any assessment of the impacts of this project on the equine cluster by the department is, in our view, a very serious deficiency.

I will touch briefly on the merits of the project, which our experts will talk to in detail. Due to the unavoidable prior commitments, our economist and noise expert are unable to address you today, but their reports will be submitted separately. I'll do my best to reflect our understanding of their concerns.

In our view, the economic cost-benefit analysis for this project is deficient because it does not assess the impact of the proposal on our industry and the equine cluster. It suffers from optimism bias by underestimating the costs and overestimating the benefits in favour of the project. It either underestimates or does not assess at all the externality impacts. It does not estimate greenhouse gas emissions to reflect the full cost of the mine, and it presents no assessment of the legacy impact of the mine on

water, heritage or the NSW Government's ability to meet its greenhouse gas reduction targets, and it is contrary to the NSW Government policy on greenhouse gases because it externalises nearly all of the costs of greenhouse gas emissions. This mine is not business as usual. It is a proposal for a significant new mine, one of the largest in New South Wales, which will have significant and sustained adverse impacts.

As you've heard, air quality is critical to our industry's operation and reputation, the health and wellbeing of our people and horses. It is no secret that the Upper Hunter now has the worst air quality in New South Wales and for this reason we are very concerned about adding to the state of the Hunter's poor air quality. This project will do just that. Background concentrations are already too high, and exceedances of PM2.5 and PM10 are becoming more frequent and problematic. The limited data sets presented as part of this proposal by the proponent do not fill us with confidence. We remain concerned about the project alone approach taken to assess air quality impacts in the Hunter, and that no serious effort is made to assess cumulative impacts of mining, especially around Muswellbrook and now Aberdeen. We are very troubled by the proponent's admission that annual fugitive emissions in 2043 alone will be close to 1 million tonnes of CO_2 equivalent. MACH has said that these emissions are unavoidable and cannot be mitigated. This is at a time running up to 2050 when we can least afford to have significant unrestrained CO_2 equivalent, let alone meet the government's zero emissions policy target. To suggest, as the department does, that this will be managed and addressed by future unknown and unproven technologies is at best naïve.

Throughout this assessment process we have consistently raised concerns about the use of outdated data, unvalidated water modelling, and the lack of risk analysis. Why is this important? Because water is the lifeblood of our industry and the productive future of our region. We are very concerned about the legacy issues of this mine and the fact that the analysis has not sought to identify whether the mine can safely operate in an era of increased climate variability. At one extreme the mine could produce too much contaminated water, and at the other extreme, not have enough water for dust suppression, or, as anticipated, be forced to cease operations for at least two years. We're left to wonder about the risks for the worker, also the community and the environment.

I want to touch on the visual aspects, because I think that's really important. The department says that the visual impacts will not be significantly discernible for most receivers. The height of the bund that is currently, or the dump that is currently being proposed is 110 metres over what is currently approved. It is going to be 360 metres high, 6 kilometres in length, and the size of 12 Harbour Bridges side by side and stacked on top of each other. It will be discernible from our studs, discernible to

everyone along the Hunter River, along the Hunter and New England Highway, I'm sorry, from recreational areas, discernible to the 14,000 residents and towns of Aberdeen, and discernible to tourists, clients and investors.

MR ROBERTSON: I'm sorry, Ms Georgopoulos, I'll need to cut you across now, because your time has expired, and I want to make sure there is sufficient time for some questions from the panel. I think Professor Clark has a question for you.

MS GEORGOPOULOS: Certainly.

PROF. CLARK: Thank you. Thank you for your submission. My question relates to the increase in mining in the area since probably 2018.

MS GEORGOPOULOS: Yes.

PROF. CLARK: And the observable impacts that you've seen during that time, since mining has increased, and the indications that investment is moving away from the area as a result of that, can you expand on that?

MS GEORGOPOULOS: I can, and in fact, Professor Clark, I can actually put that in our submissions. There are investments that have been made by very large US and Middle Eastern investors and Asian investors that would otherwise have come to the Hunter in the normal course of events. We have considered the Centre of Excellence. This is where the whole of the Australian industry or the majority of the Australian industry is clustered.

However, and I can provide you with evidence of this in our submission, many investors in the last five years have flown over the top, seen the impacts of mining, are uncomfortable about the uncertainty and the mining creep that is associated with the mines that have been approved, and have chosen to locate their investments, quite substantial investments, creating jobs and growth in either Queensland, Victoria or South Australia, and in some cases have even entertained New Zealand as an option.

So the perceptions are real. We are at a very delicate point. What we need is certainty and protection. Anything to do with air quality, noise and blasting, and including the kinds of blasts that occurred in 2020, and for which MACH was fined, these things, in close proximity, have real impacts to the perceptions of investors wanting to develop international scale operations, to grow what is the equivalent of Olympic athletes in a clean, green, serene environment. Clearly, that's incompatible with mining.

I would argue you would not locate the Australian Institute of Sport next to a mine, and in effect that's what we are. We grow and train and breed young athletes for, you know, Olympic gold medal championships.

PROF. FELL: Thank you. Thank you very much, Ms Georgopoulos. Could you give the panel guidance on the air quality requirements of the equine industry as compared, sorry, with the national environmental protection measures that are set up for the human population.

MS GEORGOPOULOS: Yes. Professor Fell, you asked that yesterday, I think, of Mr Nugent - - -

PROF. FELL: Yes, I did. I'm relying on your expertise.

MS GEORGOPOULOS: - - - and the Scone Equine Hospital. Look, we have in the past, and we will get this information included in our submission, had equine experts look at this, and it's my understanding that there are no standards and there is no safe level. But rather than rely on me, I am not an equine expert in this area, we will get that information to you and provide that to you in our submission.

PROF. FELL: Thank you very much. It will be very helpful.

MR ROBERTSON: Thank you very much for your time. The next speaker is Peter Stephenson. Mr Stephenson, are you there?

MR STEPHENSON: Yes.

MR ROBERTSON: Ten minutes has been allocated to you, and we can hear you now, loud and clear.

MR STEPHENSON: Okey-doke. Thank you very much. Thank you, Commissioners, for the opportunity to - here we go - share with you - - -

MR ROBERTSON: We can see that slide. Thank you.

<PETER STEPHENSON, STEPHENSON ENVIRONMENTAL MANAGEMENT AUSTRALIA

MR STEPHENSON: Terrific. Good afternoon, Commissioners and counsel assisting Mr Robertson. Thank you for the opportunity to present. My name is Peter Stephenson and I have been commissioned by the Hunter Thoroughbred Breeders

Association to present to this Commission. I have 30 years' experience in emissions and air quality measurement and control. I wish to look at a number of issues that relate to the Mount Pleasant Optimisation Project, which relate to my area of expertise. In the first issue is ambient air quality. We're looking background particulate, PM10 and PM2.5. You've heard substantial pieces of information about these, and they are too high. They're already too high. The summer peaks of PM10 are not caused by wood fires. There's plenty of talk about the winter peaks of PM2.5, and the annual limit of 8 micrograms per cubic metre for all receptors, all mines, all stations of monitoring, and all year is 8 micrograms per cubic metre, and currently the Hunter, particularly Muswellbrook, sits right on that number.

You've also heard - you can see this slide, you've seen the slide before - that you can see that the 24-hour criterion of 50 micrograms per cubic metre and the annual criterion of about - there's 8 at the moment, and is planned to be reduced, is well and truly in the almost full department.

Similarly, this is the PM2.5 - the previous slide was PM10 - and you can see that that same issue is there. There is a substantial amount of fine particulate already in the Muswellbrook area, and in moving towards the Aberdeen area, which is where the Mount Pleasant operation is planned to be.

The second issue relates to the ambient air quality monitoring, and the Mount Pleasant project has relied on the Upper Hunter Air Quality Monitoring Network for data, and their site-specific data is minimal. The peer reviewers, Katestone Scientific and Zephyr Environmental, have also made mention of the fact of a very short availability of site-specific data, and there is nothing with 2020 and '21 data.

This slide shows that there is an increase in amount of ambient PM10 dust, and particularly since 2018 when Mount Pleasant came online. This slide shows the table, which you've already got, which shows annual and maximum 24-hour average, and leaving aside bushfire and dust, there is still an ongoing increase.

Issue number 3 relates to the Mount Pleasant Optimisation Project dust emissions and mitigation. The plan is to increase the number of ROM tonnes by a factor of 2, and that will increase the TSP, the total suspended particle, emission similarly by a factor of 2. At the moment, Mount Pleasant is not mitigating at less than 4 kilotons of particulate per year, and therefore their system is inadequate - their mitigation system is inadequate or ineffectual at the moment, and we move on to doubling that, so there is no plan to increase the mitigation methods and the air quality is diminishing after the reopening of Mount Pleasant Mine. So the 2021 data is most relevant for mitigation decision-making.

There's a table, 6.6 in the appendix B of the EIS, which outlines the dust mitigation management measures, and water is the primary dust suppression, and there's no real justification that this is actual best practice. The only comment that has been made from Mount Pleasant, MACH, is that a stop-work under adverse MET conditions is their mitigation measure. But it's a matter of how that would be monitored. So basically your annual average PM10, compared with other mines, is in that table. You've seen that, and that in terms of voluntarily land acquisition, mitigation of dust using the voluntary land acquisition is not what we would call mitigation.

Issue number 5 relates to the cumulative air quality. Cumulative emissions and the impact of those emissions is inadequately assessed and underestimated, in particular with the Dartbrook coal-handling plant, which is closest to Aberdeen, and that has not been included in the cumulative calculations. The earlier version of Dartbrook was, but the modification has not. The total project will generate and produce dust from 407 million ROM tonnes over the life of the exercise. The cumulative air quality impacts of production of this level is not reducing as this plant develops, so the Muswellbrook air quality is diminishing, and the background is increasing. So the cumulative air quality is getting worse.

We move on to greenhouse. Greenhouse gas, the scope 1 greenhouse gases have been underestimated. There's two major components of greenhouse gas scope 1. One's fugitive and the other's diesel. The fugitive emission factor was amended from 0.012 in the original EIS to 0.0201, but that's still way less than the National Greenhouse Accounts Factor of 0.061 tonnes of CO_2 equivalent per ROM tonne. Similarly, with the diesel use, there appears to be a disparity between the amount of diesel nominated for use compared with the number of ROM tonnes produced. It may be that this has been allocated to other parties. That's to be investigated.

Figure 2 shows the fugitive emissions that are generated the deeper we go into a mine. This data is provided by MACH Energy and was originated from CoalBed in a report. Now, that report the Commissioners have but we don't have access to due to commercial confidence. The scope 1 emissions in that last 12 years of the project, 2036 to 2048, can be seen in this slide, and you can see that the deeper you go the more methane is released, and methane is 25 times CO_2 equivalents. So you can see that we're releasing, closer we get to 2050, the more methane. This is counterintuitive and counter to the net targets of 2050. Fugitive emissions factor that is used, 0.0201, appears to have been averaged over the 25 years of the project to flatten out that increase.

The MACH and the department have proposed a condition of consent which refers to future mitigation technology, and that does not appear to mitigate actual fugitive greenhouse emissions. This condition of consent has a cycle of every three years in the 25 years of the project to explore future technologies at the time of day in that year, that the coal industry considers may be available but at the moment would say not available or not economic to pursue. So that condition is not a mitigator. It does not mitigate fugitive emissions. And yesterday both MACH and the department said they have no idea how to manage this particular issue as we go forward. At the moment it's considered too difficult to mine and dig out that gas and release that gas, and it's all about pressure.

This is possibly when the precautionary principle becomes absolutely relevant. Finally issue 8 is to do with scope 3 greenhouse gases. 98 per cent of the greenhouse gases from Mount Pleasant have been allocated to scope 3 and to offshore end users and are deemed not the responsibility of either MACH or the Mount Pleasant operation or their international ownership. However, they do contribute to the global emission greenhouse gas count. This conundrum requires a most creative regulatory global policy rethink, and that's right now. Thank you, Commissioners and Senior Counsel, for the opportunity to present.

MR ROBERTSON: Thank you very much, Mr Stephenson. During the course of your presentation you referred to a document which I think you said you don't have access to. I'm told that document would be made available through the Commission's website, and so if there's anything you want to say with respect to that document, you're welcome to do so by the 15th of July, 2022, 5.00pm in any written submissions that you prepare.

MR STEPHENSON: Thank you.

PROF. CLARK: And also if we could get a copy of your presentation, of course.

MR STEPHENSON: Of course.

PROF. CLARK: Thank you.

MR ROBERTSON: Just one other thing, Mr Stephenson, would you be able to just give a very brief summary of your training and experience? That might just assist the Commissioners in understanding the contribution that you've made and the background that you bring to that. Just a very brief summary if you wouldn't mind.

MR STEPHENSON: Righto. My background in, my original qualifications are in, in applied science and in both organic chemistry and biochemistry and later in applied science in, part of the chemical engineering. I've been working in air quality and emissions monitoring since 1976, so I started a business in 1983 and have been working continuously in monitoring, analysing, controlling. I'm the current President of the Australian Air Pollution Control Equipment Manufacturers Association and have been involved in emissions control and organic components of emissions over the last 30 or 40 years.

MR ROBERTSON: And just one further question. In your presentation you referred to one of the conditions that's been recommended by the department, B34. You'll also note that the department has made a recommendation about recommendation B28, which identifies certain air quality criteria. Do you have any comments as to whether that is a sufficient or appropriate condition or any other comments on that particular condition?

MR STEPHENSON: B38. Can you refresh - - -

MR ROBERTSON: B, Bravo, 28.

MR STEPHENSON: B28.

MR ROBERTSON: Which requires the applicant to ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particular matter emissions generated by the development do not cause exceedances of certain criteria. And the PM2.5 criteria for that purpose is 8 micrograms per cubic metre on a total impact basis on an annual basis, and on a 24-hour basis 25 cubic metres, sorry, 25 micrograms per cubic metres, as an incremental impact. Do you have any comment on that? And you're welcome to take that on notice and deal with that in any written submissions that you wish to make.

MR STEPHENSON: I'll take it on notice but I'll also make the comment that if the department is able to enforce that, then Mount Pleasant and MACH Energy have a serious problem. But I'll take it on notice and complete a written response.

MR ROBERTSON: Commissioners, I propose to call the next speaker at about 10 minutes past 1.00.

LUNCHEON ADJOURNMENT [12.27pm]

MR ROBERTSON: Commissioners, first, can I clarify something I said just before the luncheon adjournment during the course of Mr Stephenson's presentation. Mr Stephenson referred to a figure described as figure 2. I think I indicated that that document was going to be uploaded to the Commission's website. That wasn't correct. It has been on the website since the 4th of July 2022. It's part of the applicant's submission to the Commission dated the 28th of June 2022, and it's figure 2 on page 4.

There was also some reference in Mr Stephenson's preparation to some commercial in-confidence material proffered by the applicant. That's the subject of a letter from this Commission dated the 1st of July 2022. That letter is also available on the Commission's website, and it observes that the applicant proffered certain commercial in-confidence material to the Commission.

The Commission responded by saying that it was of the Commission's view that the material before the decision-maker - that is to say, the panel - should be available to the public to scrutinise, and in the face of that, the view that the Commission took was that it would not keep that information confidential, because instead the Commission was of the view that the material - at least, generally speaking - that the Commission is going to consider should be the subject of public review, criticism and comment, as thought appropriate.

Instead, the Commission asked a series of what are described as "targeted questions". Those questions are set out in the 1 July 2022 letter, which is available on the Commission's website, and the response to those questions is on the website as well, but I thought I should just make that clarification.

The next witness is Mr Owen Droop. Mr Droop, can you hear us?

MR DROOP: I can, yes.

MR ROBERTSON: Can you hear us, Mr Droop?

MR DROOP: I can, yes, can you hear me.

MR ROBERTSON: Yes, we can now. Ten minutes has been allocated for your presentation. Please proceed.

MR DROOP: Thanks. I'll just share my screen.

MR ROBERTSON: We can see that. Thank you, Mr Droop.

<OWEN DROOP, OD HYDROLOGY

MR DROOP: So good afternoon, Commissioners. My name is Owen Droop. I am a hydrologist and water resources engineer with 30 years of experience in hydrological assessment, including basin and catchment scale water resource planning, water supply and water management with power and resource industry clients, strategic planning and on an increasing basis, the development and application of modelling frameworks for the assessment of climate change and its implications for water resources across a wide range of projects. Of direct relevance to this project, I've undertaken a wide range of assessments which integrate mine water management systems within catchment scale models, including within the Hunter catchment.

I was commissioned by the Hunter Thoroughbred Breeders Association to undertake independent review of the Mount Pleasant project surface water assessment and provide advice regarding the approach, assumptions, predictions and conclusions. Specifically I was asked to comment on whether the information is scientifically robust and can be relied upon as a true indication of what we could expect if the project goes ahead as planned.

In effect, as also put to the Independent Expert Scientific Committee, can decision-makers have confidence in the predictions offered by the proponent? As a way of summarising and presenting my findings today, I will effectively address the same questions as shown here.

Question 1, has an appropriate water balance model been selected and used by the applicant, and are the assumptions used in that model reasonable? In terms of modelling tools and modelling software, yes, GoldSim and AW BEM are both appropriate. There's a range of different softwares that can be used here, but both of these are appropriate for water balance and rainfall run-off.

But what I would say is it's the second part of this question that's really the key. It's the inputs and assumptions, the model set-up and configuration that really determines whether the results it gives can actually be relied upon to any degree. And confidence in the model comes from a demonstrated calibration against good quality recorded data over as long a period as possible, and that's how you provide evidence that your model works for a specific project that you are aiming to assess. In short, does the model show good agreement with the recorded real world behaviour and does this good agreement hold for all climatic conditions across wet, dry and anywhere in between? So in answer to the question, are the assumptions and inputs reasonable in this case? In short, it's not really possible to say because for the assumptions to be

shown to be reasonable and appropriate, there needs to be evidence that they are actually simulating real world behaviours. And as noted by the IESC, there is more data and information needed. At present, any decision would simply be based on trust.

Question 2 refers to whether the model had been validated with sufficient monitoring data and including worst-case impacts on surface water resources. The model has not been calibrated or validated, and similar advice was provided back to the government agencies by the IESC. In response to why that calibration or validation hadn't been undertaken, the proponent effectively gave two reasons. Put simply, the project site was changing over time and that there were drought conditions over this, over this period. And I, as a hydrologist, I find this justification a bit concerning for a couple of reasons, and I, the first of which is that all mining projects evolve and change over time. The water storages, the catchments, the voids, the waste dumps, the tailings, they, they are all changing fundamentally continuously over their full lives, and a mine water balance should be able to represent this fundamental requirement. The second one is noting the reference to worst-case conditions in the department's questions above, the understanding of local hydrological characteristics and potential future water balance requirements is greatly enhanced through gathering and validation of information over dry periods. There should be five-plus years of site specific data available to MACH since they've taken ownership of the project, and I simply don't agree that experiencing a dry period is a valid reason to neglect testing whether the model is realistic or not.

Has an appropriate sensitivity analysis been undertaken, including consideration of the potential impacts of climate change? The answer to this question is simply no. The project water balance does not consider climate change in any way. In fact, there is no mention or recognition of climate change within the surface water assessment apart from a relative sensitivity test of the final water levels in the proposed post-mining final void. Further than that, the climate inputs used for the entire assessment are limited to the period 1895 to 2012, which is effectively missing or ignoring the most recent 10 years of climate and hydrologic data, which I would argue are perhaps the most relevant and important conditions to include if we are to limit our assessment to historic climate only.

In short, by using only pre-2012 historical climate data, the design of the project water management and water supply system is based on a climate that is assumed to be unchanged from that time and unchanging into the future. And on this basis, the reported predictions of risks and inputs are just not sufficient to predict and understand what the project will or might actually experience. As a very brief example, this table summarises projected climate futures for 2050, which is effectively at the end of the project life, under what is basically a fairly optimistic assumption about future CO_2

emissions, and what this shows is there is still significant uncertainty around what could be experienced. However, within that uncertainty there's a stronger likelihood of much drier conditions and large increases in frequency and durations of drought. This type of climate change, which has been projected with increasing certainty represents a highly significant risk for a project water supply and water management system, which will be forced to operate under conditions quite unlike those experienced historically. Without recognising and accounting for these changing conditions over the life of the project, what has been assessed simply doesn't represent the likely reality. The climate and hydrology that has been assessed and reported is almost certainly not what the project water management system will be required to manage, nor the conditions under which it will need to find a secure water supply. This in itself, for mine, represents a major deficiency in the assessment and does not allow for well-informed conclusions regarding the actual risks and impacts that are likely into the, over the life of the project.

So why does this matter? Why not just accept the predictions, trust that the reported risks and impacts are realistic and move on and deal with it as they occur? Well, there are, there are so many reasons, but in the interests of time, let me touch briefly on just one as an example, why confidence in the prediction of droughts and water supply risk matters, not just in the context of environmental impacts and the implications for approvals, et cetera, but in terms of whether the project is actually sustainable, which affects the proponent, the local community, the state, the environment, et cetera.

Drought is something that is critical to a range of issues, not least of which is that water-reliant environments are at their most stressed and easily impacted under drought conditions. Further, operationally, any business which relies on water can be heavily impacted by water shortages during drought, and mining in particular is ultimately reliant on a highly secure supply of water to be operationally sustainable. It must be secure even under extended drought conditions for the project to continue to operate and produce. Accepting the model, the reported model predictions as they are for a moment, even under the limited climate conditions assessed, the project water supply system is predicted to fail, with an estimate period of about three months on average and up to about two years of supply failure. Noting again that this is under climatic conditions pre-2012. Consider this in the context of a changing climate with a strong likelihood of lower rainfall, higher evaporative losses, more time in droughts, and these reported risks are almost certainly underestimated, potentially by quite a large margin. Have these risks been accounted for in project planning and assessment? The economic reporting in the EIS shows an uninterrupted production schedule over the full proposed life of the project. So are the costs of shut down accounted for in cost-benefit analysis? What are the social and employment impacts of a shutdown? Et cetera.

Equally, have they been accounted for in environmental impact assessment? Assessment generally describes impacts as a per cent of pre-2012 flows. For example, a 5.3 per cent decrease in average Sandy Creek flows from the simulated flows in 1895 to 2012. As temps and evaporations increase, about which there is high certainty, catchments will be generally drier, less overall flows and - certainly and critically - less baseflow. Equally, mine water demands will increase with increased evaporative losses from storages, less local run-off and likely reduced availability under the general security licences supplied from Glenbawn Dam. Are these impacts on, for example, Sandy Creek realised under this higher demand, reduced flow climate? Without a clearly validated model and the appropriate understanding and inclusion of climate change as it will affect the project, we simply can't know.

In conclusion, and put simply, we still don't know what the real impact would be. The lack of an appropriately calibrated or validated model means that we're being asked to take the predictions and associated conclusions on trust. The climate and hydrologic data upon which the water management system has been designed are almost certainly less variable and more benign than would be the case over the project life. The predictions more likely show an operation under a best-case scenario rather than a best projection of climate with insights into worst-case.

MR ROBERTSON: Thanks very much for that contribution, Mr Droop. If you wouldn't mind providing those slides to the Commission to assist them in their deliberations, that would be appreciated. The next speaker is Mr Sean Murphy. Mr Murphy, 10 minutes have been set aside for you. Please go ahead.

MR MURPHY: Okay, thank you. I'll just share my screen. Can you hear me okay.

MR ROBERTSON: We can, loud and clear, and we can now see your screen as well. Thank you.

<SEAN MURPHY, GROUNDWATER ASSESSMENT SOLUTIONS

MR MURPHY: Wonderful. Thank you. Good afternoon, Commissioners. My name is Sean Murphy and I'm a hydrogeologist of 28 years' experience in mining, water resource management and environmental fields. I've conducted a review of the Mount Pleasant Optimisation Project groundwater assessments on behalf of the New South Wales Thoroughbred Breeders Association. The main issues that I'd like to address today are as follows: the groundwater impacts and quality of the mine proposal, mine water dams and tailings, base water flows and groundwater dependent ecosystems, the mine final void, and the model data and conceptualisation.

The groundwater impacts within the area of Mount Pleasant are longstanding and short-sighted. The final void will remain a permanent groundwater sink and maintain a depleted groundwater resource in the area. This, combined with the residual effects of the numerous adjacent mines, will mean that a large area of depleted groundwater resource in perpetuity.

What is the effect on future mining and alternative uses in the area post-mining? Why aren't these mine developments viewed in a more inclusive view on all the combined impacts? There is a predicted drawdown in excess of 10 metres in the alluvials and regolith associated with the Hunter River, and associated with the subprop of the Pierceville seam. This was a significant reason of concern in the Dartbrook Mod 7 approval process, and limitations of impacts in the Hunter alluvium in the case of Mount Pleasant are completely dependent on the conceptualised hydrologic parameters assigned to the vein subgroup. The hydraulic parameters are relatively arbitrary, and they're not assigned based on testing. There is a point that Professor Pells made this morning and I'm in agreement with.

It has been identified that the groundwater assessment, that the continued development of the fines and placement area and the waste rock dumps would affect groundwater quality. MACH have identified metals contaminants, including aluminium, lithium and manganese in the mine water dam. The current assessment of seepage is limited to particle tracking of the fines emplacement area, but not other waste dumps or water impoundment onsite. The environmental and sediment dams have been identified as having potential to spill to the environment, but no analysis of discharge to groundwater or potential seepage oxide has been undertaken. The current study contends that all seepage is to the void, despite enlargement of both placements. While no overflows are predicted from the mine water dams, there still remain potential source of contamination to groundwater and potentially to the Hunter River alluvium.

The groundwater assessment model does not address the potential impact pathways from mine water structures such as mine water dams 1, 2 and 3, the environmental dam as mentioned, and numerous other small dams and storages. In 1997, PPK found that, in their water management study, predicted seepage to the surrounding natural groundwater system, including seepage from the fines emplacement area to the Sandy Creek alluvium, and seepage from the outer pit emplacement, which is eastward of the current pit, to the adjacent Hunter River alluvium. There is a proposed doubling of the fines emplacement area to 36 million cubic metres, yet the current assessment now states that all seepage is to the pit.

Monitoring of the alluvial and regolith layer indicates there is flow to the Hunter River and Sandy Creek alluvials. It cannot be both ways. There is either potential seepage or loss from the site or all flow is to the pit. These flow directions would mean that surface spills and leakage from empowerments are likely to travel towards the Hunter River or Sandy Creek, unless identified and remediated.

The groundwater model predicts losses overflow to the Hunter River, Dartbrook and Sandy Creek, to which the IESC notes that these losses will have potential detrimental effects on the groundwater-dependent ecosystem, including the forest redgum grassy open woodland and stygofauna associated with those streams.

The impact to the groundwater-dependent ecosystems will be difficult to verify, especially on the aquatic biota and riparian vegetation. Changes to the flow regimes in ephemeral creeks can have major repercussions for biodiversity and composition of their aquatic and riparian communities. MACH proposes to manage base growth through the acquisition of water licences and reliance on water-sharing plans, and future monitoring. This is not an appropriate management strategy to ensure negligible impacts to groundwater-dependent ecosystems.

The investigation of the final void quality is limited to salinities and has not addressed potential impacts such as metal, sulphides, pH and biological impacts. The potential for surficial contaminant inflows from across the site, tailings, dams and other water structures is real, particularly post-mining. There is a disparity between the groundwater assessment and the response to comments in post-mining board water levels and water quality. The choice of laboratory analysis over real-world measurement in this case is perplexing.

As previously modelled, the total groundwater inflow to the final void with an estimated electrical conductivity of 5,500 microsiemens, based on the average of EC records from the project open pits up September 2020. EC reported that the salinity level to the void water would increase to approximately 70,000 microsiemens per centimetre at 1,000 years post-mining. RGS involved environmental consultants in their technical memorandum to MACH, have used laboratory analysis to rock samples to undertake static and kinetic testing to determine the salinities to between 600 and 900 microsiemens per centimetre. The void water salinities were estimated to reach 25,000 microsiemens per centimetre in 1,000 years post-mining.

Laboratory tests are generally used to provide an indication of potential results. The results of these tests are highly dependent on several variables, including random sample selection. Did they take samples from the pyritic areas of the Wynne seam material, which is present onsite? Laboratory tests are relatively short periods of time.

Samples are not exposed to overall conditions of real-world environment. They were a guide and the results should always be monitored in the field.

The salinity values measured in the actual pit mine water are the result of actual processes within the environment. The measured value of 5,500 microsiemens per centimetre correlates to approximately 20 years on the HECS graph. This does not occur until approximately 220 years on the RGS assessment graph. This fact alone should raise significant doubt as to the results of the amended study.

Mine data of the conceptual and numerical models of the Mount Pleasant lease have included Dartbrook and Bengalla Mines. There is a need for the inclusion of other adjacent mines, such as Mount Arthur, Muswellbrook, West Muswellbrook and providers Maxwell Underground and Mangoola Mines within the whole catchment-style model. The assessment of individual mines along the Hunter River Valley is redundant. There is a specific need to assess the cumulative effect of this conglomeration of mines. The current approach of accepting numerous so-called minor effects neglects the overall impact of all mining in the area. The cumulative impacts of the mine cluster are contributing to significant long-term impacts on the Hunter River and the environment, and this is a point that Professor Pells made also this morning.

I've neglected to move my screens through, I apologise for that.

So what is the legacy of this mine? It's a potential degradation of the surrounding groundwater environment, together with the other mines around it. A thousand years plus of groundwater impacts for future landholders. 500 years before water levels reach an equilibrium under current climate conditions. The final void will remain as a permanent groundwater sink, and maintain a depleted groundwater resource in the area. The final void water will continue to increase in salinity, and other contaminants, into the future. A 5-kilometre pit lake of saline, likely acidic, and metals-contaminated water, which is not viable for human recreation or other uses, and extremely likely to be detrimental to local birdlife and other wildlife. There will be continued baseflow losses to Sandy Creek and the Hunter River, and there's a risk of survival of the groundwater-dependent ecosystems that will be impacted.

I'd just like to thank you for the opportunity to present this afternoon.

MR ROBERTSON: Thank you very much for that, Mr Murphy. Professor Clark has a question for you.

MR MURPHY: Yes.

PROF. CLARK: Thank you, Mr Murphy, for your presentation. It's more just a confirmation of what you said as opposed to a question, if I may - - -

MR MURPHY: Yes.

PROF. CLARK: - - - and I'm interested in - I think, just to make sure I've understood you correctly, I believe you said that the water discharge analysis from the waste dumps and tailings emplacements may not have been undertaken, the analysis may not have been undertaken, in the context that there is potential for these to report to the Hunter River and groundwater. Have I captured that correctly there?

MR MURPHY: That's my understanding. From what I get from the assessment, I don't see that there's a significant study of any of those, whether the water from those water impoundments onsite is or isn't reporting to the Hunter River.

PROF. CLARK: Thank you.

MR MURPHY: So, yeah, I'm not saying that they're definitely going there. I'm saying I can't determine whether they've looked at that or not.

PROF. CLARK: Thank you.

MR ROBERTSON: Thank you, Mr Murphy. The next speaker is Mr Michael Wright. Are you there, Mr Wright?

MR WRIGHT: Yes, I am.

MR ROBERTSON: Please proceed. 10 minutes have been allocated for you.

MR WRIGHT: Thank you very much. I'll just share my screen. Can you see my screen now?

MR ROBERTSON: We can, thank you.

MR WRIGHT: Great. Okay, I'll just put it onto the slideshow and hope that you can see that better. Is that clear for everybody?

MR ROBERTSON: Yes, it is. Thank you.

<MICHAEL WRIGHT, LANDSCAPE ARCHITECT

MR WRIGHT: Great. Good afternoon, Commissioners. Michael Wright is my name. I am a registered landscape architect and - it seems to be jumping into slideshow mode. I have done a review of this proposal on behalf of the Hunter Valley Thoroughbred Association and I'm going to just run through some of my comments based on the review of the visual impact assessment undertaken for the EIS and the response from the department in their SSD report. The location of this proposed mine extension is in relative close proximity to the Upper Hunter and Segenhoe Valleys, which are highly scenic and rural areas without any coalmining activities. Mount Pleasant is the most northerly open-cut coalmine in the Hunter. The proposed additional mining activities at Mount Pleasant extends this mine's impacts into these highly scenic and valuable landscapes. These landscapes have been identified as important in the Upper Hunter Strategic Land Use Plan. They have also been identified by the National Trust and these are well documented so I won't dwell on these, only to say that you can see the site is surrounded by these strategic land uses and the equine and viticulture critical industry clusters.

As an example of this valuable landscape, which the National Trust of Australia has identified as being of landscape conservation value and part of an area, this is a view from Castlerock Road looking south towards the Wollemi National Park, and this is a view of part of the south-east, south-western corner of the mine lease area, and it shows the character of this landscape and why the National Trust would see it in this way. The second image is looking east from a similar location on Castlerock Road and it shows the views out over the Hunter River Valley towards the hills to the east, and you can see in the red-dotted line the approximate location of the MLA eastern boundary. So everything between that line and the foreground of this image will be mined and completely altered in its visual character.

The visual landscape assessment done for the EIS identified a primary visual catchment. This is a standard procedure, but we have done a detailed viewshed analysis which has indicated in green all of the areas that in fact will be able to see the mine activities. Particular concern are those areas that are identified where there are sensitive receivers, and those are indicated in the purple dots around Castle Rock and again to the north-east of Aberdeen around the Kelvinside Stud yearling barn facility, which contains four resident cottages plus some accommodation for workers. This is clearly a very different picture when you look at the blue line, which is our projected viewshed as a primary visual catchment, compared to the yellow line.

The sensitive receivers, as I said, are identified in individual purple dots, but also worth noting is the extensive area of Aberdeen and Muswellbrook, which is inside this visual catchment area, and these areas all have potential of seeing the mine activities

in one way or another. But particularly a lot of the houses which are on the slopes facing west, which is for a large number of them in both Aberdeen and Muswellbrook, they will be directly exposed. And Muswellbrook, the nearest houses are approximately two kilometres from the boundary of this mine site and five kilometres for Aberdeen. There are some 14,000 people living in these two towns, and the visual impact assessment has not accurately or satisfactorily assessed the impacts on these urban areas or the areas that I've identified at the Kelvinside Stud and Castle Rock.

This is an indication of a detail of both Aberdeen and Muswellbrook and it shows public recreation areas. And public domain is a very important part of any visual impact assessment, and these have not been satisfactorily covered. There are 25 of them in the Muswellbrook and Aberdeen areas, and they have quite substantial views across the valley onto these mines and will be directly affected. The original approved overburden landform shown here is - this comes from the 1999 approved plan. Shows the bulk of the burden landform in the northern and central section of the site to an elevation of around 300 metres AHD, with two voids in the north-western and central southern parts, with a low bund along the eastern boundary.

So there is also a more recent approval, which is dated the 29th of June, 2022, and this is demonstrating the final conceptual landform. As it says, this comes from the notice of determination on page 38, and it shows a much reduced footprint of this, of this particular activity, with a smaller void in the, in the southern-eastern section and a, and a smaller section of overburden along the eastern boundary. So this clearly indicates that there's some uncertainty about what in fact is approved in my mind for this particular mine. And when you then go to look at the current proposed overburden landform as shown in the pink here next to the large void, you can see by contrast this is a substantially different mine operation. It extends from the southern boundary to the north up at Kayuga. It is much higher than the original heights of around the maximum of 300. It now goes up to 360. But particularly what is most compelling is the fact that most of it is now in the south-eastern quarter of the site directly opposite Muswellbrook, where there's a large population and many people will have direct views straight onto this large wall of overburden, which is proposed, which would be around six kilometres long, and that's really going to impact on the character of this valley and the effects on people.

I'm sorry about the sunlight coming onto my video screen. Hopefully you can't see that. So basically the natural landform that we had in this area prior to mining looked like this. It was a series of ridges and gullies forming fingers which run down into the river valley, and that is completely going to be altered by the new proposal, which will disconnect the people of Muswellbrook from the landscape of Castle Rock, and this will truncate the views that the people of Muswellbrook have currently of some 20-

plus kilometres to the west down to about two to four kilometres, depending on the position of the viewer. And that is a substantial change to the way that these people enjoy their environment, and this will be a monolithic construction which, when combined with the Bengalla overburden dump, which is to the south, will have almost nine kilometres in length. This is a view taken from the EIS, which indicates the extent of this overburden, and as you can see, six kilometres is equivalent to 12 Sydney Harbour Bridges. In some cases it's up to two Harbour Bridges high.

The other issue that I have concern with is the original approved tailings dam in 1997, comprised of a multiple series of terraced storages with staged rehabilitation. It has been progressively changed to a single storage and now increased up to 70 metres at the wall, and it's going to be nearly 200 hectares of almost completely flat land, and that is, you know, with a slope of about 1 per cent. When you overlay that over the towns of Aberdeen and Muswellbrook, this is how much area it covers, it completely obliterates most of Aberdeen.

The other issue is the indicative slope map they provided, and this is - clearly shows a lot of steeper slopes than we've had before, and this is an issue when it comes to rehabilitating the site. This site has a very optimistic vegetation coverage, particularly on these many steep slopes, and the tailings dam is also optimistically perceived to be suitable for agricultural land of intensive use.

The final thing that I want to say is that the direct and indirect dynamic impacts from clouds of dust and gas from fugitive blasts are a big issue, and these are four examples of different types that have occurred in recent years, and MACH have recently received a penalty notice for an offence of blasts and fumes.

So in conclusion, I would say that the assessment report relies on the, the information provided. However, that is not accurate, as I've demonstrated, and the use of the 1999 benchmark for this proposal is not appropriate. And the current landforms will totally block views from the Muswellbrook and the adjoining areas, and the tailings - - -

MR ROBERTSON: I'm sorry, Mr Wright, I'm going to have to cut you off, cut you off there.

MR WRIGHT: That's okay.

MR ROBERTSON: But if you wouldn't mind providing those slides to the Commission.

MR WRIGHT: Yep.

MR ROBERTSON: And they'll have the benefit of that conclusion that you were just seeking to summarise.

MR WRIGHT: Yep, okay.

MR ROBERTSON: As well as the other material that you've said.

MR WRIGHT: That's all I have to say. Thank you very much.

MR ROBERTSON: Thanks very much, Mr Wright. The next speaker is Dr Sarah Pritchard of Senior Counsel. Are you there, Dr Pritchard?

DR PRITCHARD: Yes, I am, Counsel Assisting. Thank you.

MR ROBERTSON: Are you briefed to appear for the Hunter Thoroughbred Breeders Association?

DR PRITCHARD: Correct.

MR ROBERTSON: Please go ahead. 15 minutes has been allocated for you.

<DR SARAH PRITCHARD, SC

DR PRITCHARD: Thank you. Commissioners, the HTBA submits that the project is not in the public interest and should be refused. Its costs and risks are borne by the local community in the Upper Hunter Valley and by the public more broadly, both current and future generations. The principles of ecologically sustainable development - in particular the principles of intra- and inter-generational equity as explained by Preston CJ, the Chief Judge of the Land and Environment Court in the Rocky Hill case - dictate the application for development consent should be refused.

The first issue I wish to address is the significant long-term and irreversible environmental and social impacts of the project. It won't have escaped the Commission that each of the department and proponent has used different base cases, and inconsistently so, to describe the impacts of the project. It's important to recall what the Commission has been asked to approve. The application is for what may become New South Wales' largest open-cut coalmine. It contemplates extraction of 406 million tonnes of ROM coal to produce 322 tonnes of thermal product coal for export until 2048, variously described by the department, the proponent and the proponent's experts as 22 years, 23 years, 25 years and 26 years, and it contemplates

operations including blasting, open-cut mining, coal processing and rail transport, 24 hours a day, seven days a week, until the end of 2048.

The environmental and social impacts, as I've said, of the project are significant, long-term and irreversible. As the Commission has just heard from Mr Wright, it proposes a construction about 169 hectare mountain, six kilometres long, one to two kilometres wide, approximately 200 metres above the valley floor on the outskirts of Muswellbrook that would block views for Muswellbrook to the mountains to the west. Local residents would be exposed to the noise and dust impacts of the open-cut mine for 25 years until 2048. There would be perpetual alteration of surface water and groundwater flows, the creation of a three-kilometre long pit lake of saline, likely acidic and metals-contaminated water which is not viable for human recreation or birds or other wildlife, as the Commission has heard today from Mr Murphy and Dr Pells as well. There would be 1,000-plus years of groundwater impacts for future landholders. As the Commission has heard from Mr Murphy, it would be 500 years before water levels reached an equilibrium under current climate conditions. There would be over 876 million tonnes of CO_2 equivalent in scope 1, 2 and 3 emissions, and there would be a permanent loss of cultural heritage, and as the Commission has heard just now from Mr Wright, scenic landscape values.

The second point we wish to make is that the Commission is required to assess the likely impacts of this proposal as required by section 4.15 of the Environmental Planning and Assessment Act. This duty is not discharged by following the approach which has been adopted by the department, and encouraged by the proponent, of comparing the likely impacts of one of two hypothetical scenarios. The first is what could hypothetically be the case had mining commenced in 1999 under the current consent and continued for 21 years, rather than what has occurred here, commenced in 2018. This was addressed this morning by my learned colleague Ms Sims. The second hypothetical scenario which appears in the department's materials is what could hypothetically be the case with the current consent as modified, Mod 3 August 2018, the five-year extension of the term to 2026 were it to be extended from 2026 for another 12 years.

It is significant to recall that the project is, or the development application is for a new project. It's relevant to note that the current consent expires on 22 December, 2026. After the end of this year, that is 2022, a maximum of 42 million tonnes of ROM coal could be extracted under the current consent, provides for 10.5 million tonnes of ROM coal to be extracted in a calendar year. After 2026, December 2026, mining operations are to cease and the area to be rehabilitated consistent with appendix 2, figure 4, Conceptual Final Landform of the Consent. So even if the proponent were to surrender its existing consent, the Commission would not be relieved of its obligation

to fully assess the impacts of the current proposal. Unpicking the future impacts permitted under the current consent from the impacts of the proposal would at best be difficult, and in my submission impossible, based on the information currently provided to the Commission. It would require analysis of the plans approved under the current consent, which restrict the scale and area of activity for each calendar year.

And finally, just as the proponent would not be entitled to seek to minimise the impacts of the development by comparing them to the impacts of existing unlawful works, nor is the proponent entitled to seek to minimise the significant impacts of its proposal for an open-cut mine by referring to future works that could not be undertaken under the current consent. In our submission, seeking to minimise the impacts of the proposal by reference to hypothetical scenarios is apt to mislead and is an incorrect application of section 4.15 of the Environmental Planning and Assessment Act.

The third point is that significant impacts of the proposal have been underestimated or unassessed by the proponent and its experts.

Firstly, as the Commission heard today from Mr Murphy and Dr Pells, the legacy impacts of the final void and tailing emplacement are significant, and the impact of perpetual losses to base loads in the Hunter River, Dartbrook and Sandy Creek have not been given the consideration they warrant. The essential of potential impacts on groundwater-dependent ecosystems is problematic, and the drawdown impact in excess of 10 metres on the Hunter River alluvium northeast of the mine appears to have been ignored.

The operational water model has not been calibrated with real-world data so as to demonstrate a real-world application. As the Commission has just heard from Mr Droop, it is based on historic climate data that is over 10 years old and fails to take into account the climate variability that is likely to prevail in decades to come. The result is that the risk of contaminating spills and discharges is underestimated, as is the risk of water shortages. Even accepting such an inappropriately narrow climate-risk framework, the surface-water assessment raises serious potential for climate conditions to be such that the mine would have insufficient water to operate for two years of its 26 years of operations.

The proponent's cumulative noise assessment has failed to have regard to the Maxwell Underground consent of 2020, and the Dartbrook consent of 2022, which approved the operation of coal-handling and processing plants and rail-loading facilities on the outskirts of Muswellbrook and Aberdeen, to which process over 10 million tonnes of coal per annum 24 hours a day, seven days a week.

Likewise, there is a paucity of data provided with the air quality assessment, which doesn't give confidence in its predictions, and the cumulative impact of the relevant recently approved operation of the Dartbrook coal-handling and processing plant just outside Aberdeen has not been incorporated in the assessment, as the Commission heard today from Mr Stephenson.

The economic assessment assumes that all adverse environmental and social impacts are wholly mitigated and have no cost, and it makes optimistic assumptions regarding coal price, continuous production rates and current and future carbon price, as addressed this morning by Dr Hutley.

The fourth point we seek to make is that made by numerous of the witnesses, who appeared previously before the Commission, is that the cumulative impacts of the proposal have been underestimated. Of course, as the Commission appreciates, the Secretary's environmental assessment requirements require a detailed assessment of cumulative impacts, and as the Commission has heard from numerous witnesses, residents including Ms Beverley Atkinson, Ms Wendy Wales, and Dr Bob Vickers, the Hunter Valley is currently experiencing significant cumulative impacts from mining in relation to landscape, social heritage, sense of place, biodiversity, air quality, noise and water. The majority of mines now operating in the region were first approved 20 to 30 years - for example, Mount Arthur, Bengalla, Mangoola, Hunter Valley operations - many of these have many years to run, and have incrementally expanded both in mine footprint and mine life since they were originally approved. It's uncontroversial that there has been a steady encroachment of mining on what has been traditionally agricultural land, with specialist equine and viticulture uses in the Hunter Valley.

The experts of the HTBA have advised that the assessment of cumulative impacts by the proponent is inadequate. As noted, the recently approved projects Maxwell and Dartbrook appear to have been excluded. There's a mismatch between data from air quality indicators in the Upper Hunter, and nine cumulative impacts predicted by mine operators, the subject of evidence from Mr Stephenson, upon which he will elaborate in the report provided to the Commission.

The apportionment of responsibility for impacts between proximate mine operations is a vexed issue. This will be elaborated upon in our written submission, and the revolving nature of land ownership may not be accounted for in the assessment of cumulative impacts, for example, almost all of the land identified in the assessment materials as Dartbrook control is no longer owned by that mine - again, we'll address this in our written submissions.

It's also unclear how the cumulative impact assessment undertaken by the proponent and its experts has accounted for the significant variations between a mine's predicted yearly output, its permitted maximum output, and its actual annual output.

There have been a number of submissions - or there were a number of submissions yesterday which raised the possible impact of the closure of the Mount Arthur Mine. For the record, the Mount Arthur Mine currently has approval to operate until 2026, is currently seeking an extension until 2030, with 15 years of rehabilitation to follow, thus being a major employer until 2045, on current predictions.

Commissioners, the environmental implications of the existing approved mines in the Upper Hunter Valley and the associated cumulative impacts will be experienced for decades to come, create permanent changes in landform, and in the availability and quality of water resources, and in the approval of this mine, are likewise implications into the future.

We will address in our written submission the issue of the calculation of greenhouse gas emissions by the proponent, who hasn't provided the CoalBed energy consultant's technical report, nor has its greenhouse gas expert prepared a standalone updated estimate which details estimated emissions through the life of the project.

Significantly, Mr Stephenson has raised concerns about the reliability and completeness of the assessment information provided by the proponent. By digging deeper into the gaseous seams exponentially, the proposal increases - - -

MR ROBERTSON: Sorry, continue that thought, Dr Pritchard.

DR PRITCHARD: If I may, and I'll summarise, if I may, in one minute, or less than one minute, the remainder of - high-level overview of our written submission.

MR ROBERTSON: Don't worry. We won't apply High Court special leave rules. You can finish that point.

DR PRITCHARD: Thank you, and thank you, Counsel Assisting. The proposal actually increases the scope of fugitive emissions of the mine, and so it seems to us that the project is designed not to minimise emissions to the greatest extent practicable, as required by clause 2.21C of the Resources SEPP; rather, it actually appears to be designed to maximise them. And likewise, maximum fugitive emissions occur in the later stages of the mine life, at a time when the capacity to offset these

emissions will be limited, and the predicted economic costs of carbon will be at its highest, as was noted yesterday by Justin Field MLC.

We will elaborate in our closing or in our written submission on the need for close scrutiny of the proponent's economic assessment, the draft recommend conditions proposed by the department.

In conclusion, the HTBA submits that the proposal for a vast environmentally destructive open-cut coalmine is not in the public interest. As a number of submissions yesterday made the point, the Muswellbrook and Aberdeen area is passing a tipping point. Once coalmining is finished, it will not have the environmental capacity or social structures to rebuild. There must be a point, Commissioners, at which the environmental, social and economic impacts and costs of any open-cut coalmining, and in particular on such a scale as here proposed, outweigh any suggested and hypothetical economic benefits which have not been and cannot be demonstrated to the satisfaction of the Commission.

MR ROBERTSON: Thank you, Dr Pritchard. Professor Fell has a question for you.

PROF. FELL: Dr Pritchard, thank you for that presentation. I just wonder, for the help of the panel, you've raised quite a few issues. I wonder if you could indicate what in your view the top few are that should be given great attention?

DR PRITCHARD: Well, thank you for the question, Commissioner. Obviously air quality issues have loomed especially large in the submissions and also the expert presentations which have been made to the Commission, and Commissioner has, you've asked, in our respectful submissions, some very penetrating questions in relation to air quality impacts. The landscape values is a significant issue and then obviously water impacts, groundwater and surface water.

PROF. FELL: Thank you very much.

DR PRITCHARD: And I say that not, well, as instructed. That is responsive from the bar table, so to speak, to - - -

MR ROBERTSON: Dr Pritchard, could I just make sure I understand your second point. Do I understand it correctly that you're essentially in common cause with the submissions that Ms Sims made earlier today to the effect that the base case that this Commission should consider is what would be likely to occur in the real world in the event that this application is refused, as distinct from what theoretically could have happened under the existing approval if, for example, mining commenced under it,

starting in say 1999 or 2000? Do I have that right in a nutshell? Is that at least the nub of the submission on point 2?

DR PRITCHARD: Yes, that's correct, Counsel Assisting.

MR ROBERTSON: Thank you, Dr Pritchard. The next speaker is Mr Adam Beeson from the Australian Conservation Foundation. Mr Beeson, are you there?

MR BEESON: Yes, can you hear me okay?

MR ROBERTSON: We can hear you loud and clear. Five minutes has been set aside for you, please go ahead.

<ADAM BEESON, AUSTRALIAN CONSERVATION FOUNDATION

MR BEESON: Commissioners, my name is Adam Beeson. I am General Counsel of the Australian Conservation Foundation. Thank you for this opportunity. I'm currently on the country of Mouhenneener people and pay my respects to them. ACF is a national environmental organisation which began in 1964, and since that time it has worked consistently to protect the Australian environment and that's why we're appearing here today. This mine proposal should not be approved due to its climate impacts, as well as the more localised impacts the IPC has heard about in this hearing.

Earlier this year, ACF made detailed submissions to the Commission in relation to the Narrabri Stage 3 Extension. Those submissions set out why, as a matter of law, the impact on New South Wales of greenhouse gas emissions resulting from that project were required to be considered. In that matter, like this, there is no evidence before the Commission of the impact of the project's greenhouse gas emissions on New South Wales. The Commission's statement of reasons in relation to Narrabri did not provide a response to ACF's legal submissions on that point. The Narrabri decision is of course now with the Land and Environment Court.

The project before you today also has a significant emissions profile almost twice that of Narrabri. The emissions from removing this coal from the ground will impact on New South Wales wherever they ultimately arise. The department's approach to this is seen in the assessment report at page Roman (iii). I quote, "Under the Paris Agreement accounting rules and Australian legislation, scope 3 emissions are not included in project emission reporting to avoid double counting." At paragraph 209 of the assessment report is the remark, "The department considers that the residual greenhouse gas impacts of the project are acceptable." However, and critically, there is no evidence in relation to the impacts of the greenhouse gas emissions upon which

to reach this conclusion. The EIS is similarly silent on this. And so I ask you rhetorically how can this be good enough in a warming world? That approach is not acceptable, quite rightly, in relation to, for instance, noise impacts and air quality. Evidence is required to quantify the consequences and determine impacts on receptors, but apparently not for, in particular, scope 3 emissions, which form the majority of the profile here. Here we only have a figure for those emissions. No information is provided to the Commission to enable a weighing of the consequences of those emissions against the other consequences of the mine. There is also no evidence of how a warming world would alter the environment and hence the management of those localised impacts such as noise and air quality and water balance, a matter that's been raised today and was raised yesterday by Professor Fell.

The question here is whether to put a further 870 million tonnes of carbon dioxide equivalent into the atmosphere, and that question should be assessed by reference to evidence. There was also no attempt in the EIS or in the assessment report to put the emissions profile into context, nothing to enable the Commissioners to consider whether in a carbon-constrained world this project should be given preference to other high-emitting activities. ACF's written submissions will set out the legal reasoning as to why global warming impacts on New South Wales must be considered. In brief, however, it arises most directly from section 4.15(1)(a)(i) of the EPA Act, which requires consideration of the mining step, which in turn requires the IPC to consider an assessment of the greenhouse gas emissions, including downstream emissions.

There are three other legal reasons why emissions need to be considered. Firstly, in evaluating the application, the IPC is required to have regard to the public interest, which ACF submits includes the impacts of climate change on people and the environment in New South Wales. Secondly, the (not transcribable) including environmental impacts, which include (not transcribable) under 4.15(1)(b) and (not transcribable) of the Act requires full (not transcribable). It is submitted by ACF (not transcribable)

MR ROBERTSON: Sorry, Mr Beeson, if you just pause for a moment, we're having difficulty hearing the content of what you've just had to say. We'll just see if the connection improves if we pause briefly. Could I ask you to go back to your second point? We heard your first point, your first numbered point loud and clear. The second and third points were a bit harder to hear.

MR BEESON: The second point relates to 4.15 of the EPA Act, 4.15(1)(b), and the requirement to take into consideration environmental impacts, including indirect impacts, which we say includes scope 3 emissions. The third point is the requirement

consistent with the objects of the EPA Act to do a full assessment of emissions. As I say, they'll be set out in more detail in our written submissions.

In conclusion, ACF's submission is that the Commission should require the proponent to undertake a proper assessment of the global warming consequences for New South Wales. The department should consider that and the public be provided an opportunity to comment. At this time, in the absence of that, there is no evidence to undertake the necessary weighing exercise and the project must be refused. ACF's position is that it is inconceivable that the global warming impacts on New South Wales from this thermal coal for export project could be acceptable, and Professor Sackett's evidence was clear as to why that is the case, and accordingly ACF urges the Commission to find the impacts of this project are unacceptable and to refuse it. Thank you.

MR ROBERTSON: Thank you, Mr Beeson. The next speaker is Kirsty O'Connell. Ms O'Connell, can you hear us?

MS O'CONNELL: Yes, I can, and thank you for allowing me to speak today rather than yesterday. I have been in and out of hospital over the past week and, yeah, yesterday was just too unwell to speak at all, I'm sorry.

MR ROBERTSON: No problems at all. Please proceed. Five minutes has been set aside for you.

<KIRSTY O'CONNELL, FRIENDS OF THE UPPER HUNTER INC

MS O'CONNELL: Thank you. Commissioners, I come to you today as a fifth generation member of the Upper Hunter community, as a farmer, a mother, a community engagement professional who has led the development of more than $20 billion worth of State Significant infrastructure projects, and as a committee member of Friends of the Upper Hunter, which was formed in response to what we see as a growing imbalance between the interests of the mining industry and our community. Friends of the Upper Hunter undertook an incredibly detailed piece of consultation with the Upper Hunter community. Throughout 2018 we spoke to 400 people and we documented this meticulous piece of work and provided it to the Commission.

The comments that I make today are with all of those hats on, and in full knowledge of the feedback that we received from the Upper Hunter community during that process, and wearing every one of those hats, I say to you that I cannot believe we are even contemplating approving this particular project, yet another coalmine extension in the Upper Hunter, which is so clearly not in the public interest.

Now, for decades our community has campaigned to protect our local air quality, and as the NSW Government and the Independent Planning Commission approved some 50 million tonnes of annual coal extraction around the Muswellbrook community, we were told, "Don't worry, we will look after air quality." Yet here we sit, with the worst air quality in the state, as demonstrated by the government's own air quality monitoring network.

And in my hand, I am holding the Hunter-New England health report on this very proposal, which so clearly says there is no evidence of a threshold below which exposure to particulate matter is not associated with health impacts. Therefore it is important that all reasonable and feasible measures are taken to minimise human exposure. Even where assessment criteria are met, they clearly state, as we know so well as residents, that we cannot stay below any PM guidelines for particulate matter in Muswellbrook. And they say, "While it is understood there are multiple sources contributing to the PM levels in Muswellbrook, this is not an acceptable reason to allow further increases that may impact on the health of residents." That to us is very clear. The health of the 50,000-odd residents of the wider Upper Hunter should actually trump several hundred jobs.

And let's not forget the context in which we are having this discussion. Local residents, including me, can wait more than four weeks typically for a GP appointment, and the level of respiratory issues in the area is so significant that Hunter-New England health have recently had to open special respiratory clinics at local hospitals to deal with this load, and yet here we sit, contemplating making air quality even worse.

Now, for decades we have also campaigned to protect our beloved Hunter River and its tributaries, and again we were told, "Don't worry, the IPC and the NSW Government will ensure that water quality is protected." Yet when the government's own scientists produce this, the most comprehensive analysis of the Hunter River catchment in history, the Hunter Bioregional Assessment, by the government's very own scientists, they clearly and unequivocally said, "Reductions in water availability in the Hunter River will exceed 5 gigalitres per year and up to 12 gigalitres per year as a direct result of mining." And we have some 1,879 square kilometres of cumulative groundwater impacts as a result of baseline and additional coal resource developments.

And I can tell you that this extension was not part of the additional project contemplated in the bioregional assessment, yet here we sit, contemplating making that situation even worse. This very year, Water NSW came to irrigators, including myself, who irrigate in the Hunter unregulated system, who irrigate out of the

Dartbrook catchment, which this mine proposes to access, and they explained that our system is under such extreme stress that there can never be a new licence issued on this system, and indeed they need to include new emergency cease-to-pump measures with the new Hunter water-sharing plan which will prevent us from irrigating and prevent us from producing fodder during droughts, because our system is so stressed. Yet here we sit contemplating making that situation worse. I find that unfathomable.

We have previously wasted our money commission experts, including Professor Will Steffen, who has provided his expert opinion, to be ignored by the IPC. If I may have an extra minute, I'm quite close to my finish, and I will also provide a detailed response - a detailed submission on this.

MR ROBERTSON: The Chair has granted you an additional minute, but if you can keep it to that period of time. Thank you.

MS O'CONNELL: Professor Steffen said in the Dartbrook matter, and it applies to this matter, "To me, the upper temperature goal of the Paris Agreement, the majority of the world's existing coal reserves must be left in the ground unburned. This project is inconsistent with the Paris climate agreement, to which Australia is a signatory."

Commissioners, if I sound angry, cynical and thoroughly fed up, it's because I am, and so are the wider community. More than 20,000 objections since 2008, evidence from world-leading scientists of the damage to our catchment, our air shed and our planet, and the dangers to our health, and yet the mining assessment team at DPI has never recommended the refusal of a single coalmining proposal around Muswellbrook and Singleton since 2008, and the IPC hasn't made a habit of saying no either.

Please do not interpret the wider silence and growing silence of our community as anything but resignation and disgust. This project does not have a social licence, and it should not be approved. Thank you.

MR ROBERTSON: Thanks very much for that contribution and that assistance. Commissioners, I will next ask the representatives from the Department of Planning and Environment to return, but I propose to do that not before 2.45pm.

SHORT ADJOURNMENT **[2.26pm]**

MR ROBERTSON: Commissioners, I'm now going to invite Mr Preshaw and Mr O'Donoghue back to speak. Are you both there, Mr Preshaw and Mr O'Donoghue? Mr Preshaw first.

MR PRESHAW: I'm here.

MR ROBERTSON: And Mr O'Donoghue?

MR O'DONOGHUE: I'm here as well, Counsel.

<CLAY PRESHAW & STEVE O'DONOGHUE, DEPARTMENT OF PLANNING AND ENVIRONMENT

MR ROBERTSON: I have some questions and so does the panel, which we're going to deal with first, and then we'll invite you to say anything else you wish to say arising out of what's happened in the public hearing so far. My first question relates to what I'm going to describe as the appropriate base case for consideration. You may have heard during the course of today's material from speakers there's been some criticism of the department's assessment report in relation to the base case that it considered, in particular the question of whether the appropriate analysis for the department and for this Commission is to consider what is permitted under the current proposal and comparing that against to what is likely to occur under the new approval in the event that this Commission approves the application. So that's one possibility, whether that's the correct approach. The alternative approach that has been advanced by at least two of the speakers is that the appropriate analysis is to compare what is likely to occur in the real world in the event that the present application is refused and compare that against the likely situation in the event that the application is successful. Relevant to that, of course, is that, as you know, under the current approval there's restrictions on the amount of mining that's permitted to occur from year to year. You'll also know that under the existing approval mining didn't commence when it was originally authorised to commence. Do you have any comments, either of you, on that question of criticism, and in particular whether the department has assessed the appropriate base case by way of assistance in the Commission's functions?

MR O'DONOGHUE: I can respond to that, Counsel. I think there's been some referral, I guess, to the current approval in terms of I think 2026 final landform figure in the consent, in the existing, in the existing consent. I'm just going to share my screen, if that's okay, just to bring up this figure. So I don't know if you can see that, Counsel, but - - -

MR ROBERTSON: We can, but can you just identify where you've taken that from? Is that from the current consent?

MR O'DONOGHUE: This is from the current consent. This is figure 3 in the current consent. It's referenced in the appendices. So essentially this is the approved

disturbance area that came with that, the last modification, that approval, under Mod 3, I think. So this is, it defines what the disturbance area is in the sort of greyer, greyer, lighter grey colour. So that's in the, within the consent as defining what the surface area is. It will also define what the - as part of that mod, there was a relinquishment area, so there was an area that was relinquished as part of that modification. That's in that hatched area here with the, with the, the white, the white boundary here in terms of what was sought to be relinquished from, from any, any disturbance. So that the full disturbance area is still, it wasn't removed from the last mod. It still, it was still open to the, you know, proponent in terms of that, but it would, it would be subject to further extension in time to, you know, to, under the current consent to, for further mining.

MR ROBERTSON: But does that mean that your analysis has principally been based on assessing on the one hand what the current approval permits and, on the other hand, what the proposed new approval would permit? Is that the comparison of base case versus alternative case that you've done?

MR O'DONOGHUE: Look, depends on what base case you're looking at in terms of - certainly for air quality modelling and noise modelling, that the, sort of the new disturbance footprint is what was assessed, so that was a, you know, cumulative impact from the, from the new disturbance area as you're looking at the noise impacts and the air quality impacts. I guess from a biodiversity point of view, the additional disturbance areas were, on top of, you know, what was, what we included in the Commonwealth consent in the main, were, were looked at and included in the, like, for example, the BDAR in terms of the incremental impacts.

MR ROBERTSON: But that's really what I'm asking you to focus on is what is that increment? Is the increment the difference between what is approved under the current approval and what would be permitted under the new approval in the event that it's granted, is that the increment that you're now referring to or is it some other increment?

MR O'DONOGHUE: Well, in terms of the biodiversity, it's the increment is, it's just those, those additional areas of, of disturbance that, that weren't approved. That's the incremental area.

MR ROBERTSON: So just to be clear, then, in terms of biodiversity, the comparator that has underlined your analysis, or at least the department's analysis, is the difference between the disturbance area under the current approval and the disturbance area that would be in place in the event that the new approval is granted. Do I have that right?

MR O'DONOGHUE: It's in excess of the approved disturbance area. There is that relinquishment area that's been taken out which is - which was considered in the biodiversity assessment as a comparison, but in terms of the biodiversity impacts, it was just that area that hadn't been previously assessed by the department.

MR ROBERTSON: Yes. I think - don't let me put words in your mouth. I think the answer to my question is, yes, at least into biodiversity, what you've sought to compare is the disturbance level or the disturbance area under the existing approval as distinct from the total disturbance area in the event that the new approval is granted. Do I have that right, do you think?

MR O'DONOGHUE: I'd have - I'll just skip to my own words on that, by way of advice.

MR ROBERTSON: I'm just trying to understand those. I'm not - - -

MR PRESHAW: If I can answer that question, in writing - I'm also a bit confused by the question. I think what we're saying, Steve, if I understand correctly, is, we've assessed the new area of disturbance, because that's what we're required to assess.

MR O'DONOGHUE: That's correct. Yes.

MR ROBERTSON: And just to understand, by "new", the new is the additional but, or at least the net additional bit that would be allowed to be disturbed in the event that the current application was approved. Have I got that right?

MR PRESHAW: Yes, the "new" being the area proposed under this project.

MR ROBERTSON: I think Mr Bailey has a question on this issue.

MR PRESHAW: There was a print that wasn't previously assessed and approved.

MR O'DONOGHUE: Which, on the figure here, is the dark yellow components.

MR ROBERTSON: I understand. I think Mr Bailey has a follow-up question on that topic, and I then want to come back to the base case question.

MR BAILEY: Thank you. So this is - stepping back, I need to understand the comparison that's been used for the biodiversity assessment. So I'm bringing this down to, there is a current approval, the 1999 approval, that has a spatial area, and the

spatial area for that approval, including biodiversity disturbance, will be lesser than the actual biodiversity disturbance that will occur, before the conclusion - before 2026, so that there's - so what I'm then interested in is to know, the area that's actually been assessed as part of this, including whether any - to understand whether it includes the areas that were approved in 1999, that won't be disturbed by 2026, so that is there an overlap of the biodiversity assessment for the project.

MR O'DONOGHUE: No - no, there's no overlap. It's the - the areas in yellow are the - you know, the additional incremental impacts over the - what is the approved disturbance area of the project.

MR BAILEY: The disturbance that will happen between 2026 and the exploration of the current approval is significantly less than that.

MR O'DONOGHUE: That's the - that's not the exploration of the approval, that's the date that's currently approved to mining. But the approved disturbance area as identified in the consent is the larger area that's defined on this map, and as documented in here, so the revised approved surface disturbance area is what's defined in the consent, which is on the figure here.

MR ROBERTSON: So we've been discussing biodiversity. Can I just broaden the question out in relation to what I've described as the base case issue. To the extent that the volume of coal being mined was relevant to your analysis for things like greenhouse gas emissions, dust and the like, again, was the base case that you were considering the total amount that was permitted to be mined under the existing approval? Was that the base case, and then comparing that against what would be permitted under the new approval? Is that how your analysis worked?

MR O'DONOGHUE: In terms of what - yes, in terms of what was the approved resource to be extracted under the current approval, within that approved pit area, yes.

MR ROBERTSON: Now, are you able to comment on why that's the appropriate framework of analysis, as opposed to seeking to assess, on the one hand, what is likely to happen in the real world under the existing approval, in the event that the current application was refused - in other words, for example, what would be likely to happen between now and 2026, when the existing approval comes to an end - that's the first integer, as compared with what would be likely to occur in the event that the current application was approved. Do you understand the question? Do you understand the question that I've driving at?

MR O'DONOGHUE: I understand the question.

MR ROBERTSON: Would you just comment upon why that alternative approach, which you would have heard was the subject of some submissions today, why that isn't the preferable approach for the Commission to take?

MR O'DONOGHUE: Because I guess we're going on the approved surface area, as set - as sort of set out and embedded in the consent itself. We're happy to take that on notice too and provide a more detailed response.

MR ROBERTSON: And so just to be clear, in terms of your base case, you're focused on the approved disturbance area and the approved, what I'll describe as, quantity of coalmining, as distinct from any assessment as to what is likely to occur under the existing approval in the real word, as it were.

MR O'DONOGHUE: In saying that, though, we have looked at the entirety of the - if the consent is approved, the new one, we have looked at the - you know, the entire extraction and greenhouse gas emissions through that period. So we have assessed the full impacts of new approval from when it commences.

MR ROBERTSON: I appreciate that. I'm more focusing on what you're comparing that to, and as I understand what you're saying, you're focused on comparing it against what has been approved under the existing approval. Do I have that right?

MR O'DONOGHUE: Yes, in the case of greenhouse gas emissions, we've assessed that full - the full impact from - you know, we haven't taken out the greenhouse gas emissions from the approved footprint, for example.

MR ROBERTSON: I appreciate that, but you've focused on the approved level of emissions as distinct from, for example, considering whether or not, under the existing approval, all of the - the maximum amount that have been approved for mining, you haven't considered - I'll withdraw that. I'll start that again. In terms of that comparator base case, you've focused on the maximum amount of mining that was approved under the current approval as distinct from assessing what might happen in the event that the current application is refused. Do I have that right?

MR O'DONOGHUE: Certainly that was - that's the comparison, but like I said, for all the elements, we looked at the full impact, you know, from greenhouse gas emissions, if this project were to be approved; you know, noise impacts, cumulative; air impacts, cumulative, for the project as put forward.

MR ROBERTSON: I'm going to move on to another topic, Commissioners.

PROF. CLARK: Yes, thank you.

MR PRESHAW: If I could just ask for perhaps some more detailed questions in writing, in relation to your questions about what we're referring to as the real-world scenario. I think it would be important for us to understand the questions in relation to each of the impacts, in terms of what the real-world scenario is, as opposed to, I think, the difference you're referring to, the maximum approved, so the real-world versus the maximum approved, in relation to each of the relevant issues that you're interested in, because the impacts are different for each of those issues.

MR ROBERTSON: Can I try and assist you this way. What I'm trying to put to the departmental representatives for their comment, and this is simply to explore some of the issues that have been the subject of submission during the course of the public hearing, is that there were some submissions made both by Ms Sims and also Dr Pritchard of Senior Counsel, which challenged, in effect, the framework of analysis that the department undertook, and I'm seeking, on behalf of the Commission, a response to that question of framework, which is a matter the Commission is going to have to consider, but, obviously enough, don't take my questions as any indication at all of any view, provision or otherwise by anyone on the panel or by the Commission generally as to whether or not that's correct. The Commission is simply seeking your and the department's assistance as to anything they wish to say in response to, in particular, what Ms Sims and Dr Pritchard submitted. But it may be that the Commission can firm that up further, in particular by reference to the transcript and what's occurred today.

PROF. CLARK: Thank you, Mr Robertson. We'll follow up with written questions.

MR ROBERTSON: Can I - I asked both of you gentlemen to bring up condition B, for Bravo, 28, the proposed condition that's come from the department. You would have heard that very considerable concerns have been raised by community members and from some experts as to the potential air quality consequences of the present application being approved, with a particular focus on a concern about PM2.5.

At proposed condition B28, the department suggests that there should be a condition, or recommends that there should be a condition, to the effect that the applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so as to meet certain air quality criteria that's set out in a table forming part of B28. Are either of you gentlemen in a position to assist the Commission as to the department's level of confidence that there are in fact reasonable and feasible

avoidance and mitigation measures available to the applicant so as to achieve the air quality criteria in table 3 of proposed condition B28?

MR O'DONOGHUE: Certainly outlined in some extent in our report, and also in the document in the EIS and response to submissions documents, for example, about the sort of measures, both reactive and proactive, that can be undertaken to minimise dust emissions, there's - you know, this sequence, for example - you know, water controls, continuing to attenuation, moving equipment around under adverse conditions and the like, a large part of it too is an extensive monitoring network in real time, in actually monitoring dust levels, which would be PM2.5 and PM10 in particular. Basically continuous monitoring using TEOMs and feeding back directly to the mine site, if levels are approaching certain triggers, you know, coming towards those criterion.

So I think there's a lot - there's been a lot of work done around the mines, of extensive monitoring put up to show that these sort of symptoms can be effective in managing that, and also through the environment protection licence and requirements under that, in particular for Mount Pleasant, where there are specific requirements for ceasing operations or moving operations based on triggers in the Upper Hunter Air Quality Monitoring Network.

So, yes, there is confidence about the ability of the mine to manage dust emissions from - or its contribution of dust emissions from its site, and in relation to, you know, triggers, both visual and also the monitoring data.

MR ROBERTSON: What I'm particularly drawing your attention to is the fact that the proposed condition, B28, doesn't require in terms the applicant to meet certain air quality criteria; rather, it requires or proposes to require the applicant to take all reasonable feasible avoidance and mitigation measures, and I'm just asking you to comment - and you've commented on it in part, and it's also in your report, but I'm asking you to comment as to, really, the level of the department's confidence that if all reasonable feasible avoidance and mitigation measures are adopted by the applicant, that air quality criteria of the kind that appears in table 3 will be mostly met or mostly exceeded. Is there anything you want to add to that comment?

MR O'DONOGHUE: The only thing I'd add is that some of the targets are incremental targets, so that's your mine alone, in terms of its contribution. Some are cumulative targets, so it's background and other sources as well, so for example, the ability to, you know, meet a target as a result of where there's high other background sources out of the project's control is limited, but they were a contribution in terms of what they can do to minimise emissions, you know, during those sort of adverse events in relation to cumulative goals.

MR ROBERTSON: Professor Fell has a follow-up question on this topic.

PROF. FELL: Mr O'Donoghue, the table 3 figure for 24 hours, it's indicated that is from the current - - -

MR O'DONOGHUE: Sorry, it's a bit hard to hear the - - -

PROF. FELL: I'm sorry. Mr O'Donoghue, table 3, the 24-hour figure, it indicates that it's from the project alone.

MR O'DONOGHUE: Mm-hmm.

PROF. FELL: Will the monitoring allow the differentiation between the total PM2.5 and the PM2.5 from the project on consideration alone to be determined?

MR O'DONOGHUE: Well, the mines in the valley, and, you know, in Mount Pleasant, in one of them at the moment, essentially they're using the continuous monitors like the TEOM or BAM monitors set up around the mine to look at upwind levels and downwind levels to inform, you know, the contribution of the mine site, so depending on wind direction, for example, and where the dust source is from. So there are protocols and systems set up in the valley to feed back to the individual mine in terms of how they've set up their monitoring systems to inform them in terms of their contribution, based on the real-time monitoring results.

PROF. FELL: Just a separate entry on that, does that mean that receivers in a 24-hour period could experience more than any PM value if other mines are emitting significant amount of PM2.5?

MR O'DONOGHUE: If - it's potential in a 24-hour period, and I guess that's partly in the assessment - the air quality assessment does include a, you know, cumulative impact PM 24-hour, in terms of predicting the additional days of exceedance of contribution from different mines, for example, in that. So, certainly, there can be contributions, you know, from a number of mines in terms of contributing to the PM10 24-hour criteria.

MR ROBERTSON: Mr O'Donoghue, also on dust, as the panel understands it, there is a suggestion that the National Environment Protection Measures are likely to be tightened in the relatively near future, perhaps as early as 2025. Is that a matter was taken into account in framing the recommended conditions from the department? If so, how? If not, why not?

MR O'DONOGHUE: Look, I guess the - certainly, just looking at the background, I guess, to the Commonwealth National Environment Protection Measure, or NEPM, for ambient air quality, it was varied in 2015, which did set, at that point, the new targets for PM2.5, 24-hour of 25, and eight as the annual average. These have previously been advisory targets, but they were set out in a table in one of the 2015 NEPM variation. It did include an additional table, table 2, which identified goals for - a goal for particles, for PM2.5, by 2025, which did include reducing it down to 20 micrograms per cubic metre for the 24-hour, and 7 for the annual average. But if you look at, certainly the explanatory notes make it clear in that - and clarifies and explains that they're not standards, but they're what they call their "ambitious ten-year goals to achieve continued and further reductions in maximum concentration."

So it's not - there's still a review that needs to be undertaken between now and 2025 about whether they are set, as new standards in that. I guess in terms of what we look at, we're driven, I guess, by the approved methods for modelling and assessment of air pollutants in New South Wales, which were varied following the NEPM variation in 2015 - the approved methods document was updated in 2016 to reflect the updated NEPM figures PM 2.5, and there's certainly - that's, I guess, from a NSW Government policy perspective, that's the document that all developments in New South Wales - not just coalmines, but all developments - use - follow the approved methods, which was only recently updated to reflect the NEPM variation in 2015. So that's the document that, I guess, is followed, and endorsed by the EPA as the lead regulator for air in New South Wales.

MR ROBERTSON: Professor Fell has a follow-up question on that topic.

PROF. FELL: Mr O'Donoghue, the equine industry have indicated they're very concerned air quality, and I wonder if in fact the NEPM really takes into account the impact on horses as well as humans.

MR O'DONOGHUE: Commissioner, I mean, it's a health-based standard, the NEPM. It's for - it's based on human health research and information from overseas, so it's not designed for equine industry. However, there was a lot of work done through the Maxwell Underground Coalmine on this, and we can - if - we can provide more information about, I guess, some of the findings there and some of the expertise that was put in that in relation to the equine industry.

But probably one thing of relevance, I guess - I guess the epicentre of the thoroughbred breeding industry is some 20 kays south of the project, with Coolmore

and Godolphin studs, so it's a fair distance from the project, and there's other mines in between.

The closest privately owned studs operating in the vicinity of the project are at about 5 kays to the north-east of the project, and largely located out of the predicted area of the influence of the project, based on the air quality monitoring. Like, as an example, the predictions in terms of PM2.5, you know, towards those studs, whether the (not transcribable) - can you hear me?

MR ROBERTSON: We can. You dropped out for about three or four words, but we can hear you now.

MR O'DONOGHUE: I was going to say, the air quality assessment that was done close to Aberdeen, some receptors there, there's no specific provision for the studs, because they're - because of the distance, but the levels of 24-hour PM2.5 was at 1 microgram per cubic metre predicted. From the - about 2 kays from the students in Aberdeen, and the annual average - there's no increase in the annual average PM2.5 levels as a result of the project, so I guess that's the outcomes of the (not transcribable)

PROF. FELL: Thank you. That's most helpful.

MR ROBERTSON: Mr O'Donoghue, just to be clear, table 3, which is subjoined to proposed condition B28, I take it that's based, at least in general terms, on the present NEPM values as distinct from the way in which they might appear in the future, depending on ongoing reviews and the like. Is that a fair summary?

MR O'DONOGHUE: That's correct. I mean, that is a - I guess that's the process - the EPA is involved in that process, and they review NEPM changes and bring them - you know, do updates to what we - well, we use to assess which is the approved methods document.

MR ROBERTSON: Thank you.

MR O'DONOGHUE: So, for example, following that, in 2016, that was updated to reflect that NEPM change.

MR ROBERTSON: Thank you.

MR PRESHAW: If I could just add, in relation to proposed condition B28 at table 3, I would add that both EPA and our independent expert on air quality reviewed the proposed mitigation measures for air quality and the air quality monitoring system for

the project, and we're satisfied that they are sufficient to ensure that the criteria in table 3 will be met. And I think, to our knowledge, the proposed monitoring and management measures at the mine are considered, you know, best practice, and are currently - and the criteria is currently met at the mine. So I just wanted to add that this has been put through both the EPA and our independent air quality expert.

MR ROBERTSON: And so does it follow from what you just said that, at least so far as you're concerned, the department has a reasonably high level of confidence that on the conditions that it proposes, both B28 and the other ones that are associated with it under the heading "Air quality and greenhouse gas emissions", that the criteria that appear in table 3 is likely to be achieved - is that a fair summary of what you've just said?

MR PRESHAW: Yes, based on the best expert available science we have, both EPA and our own experts.

MR ROBERTSON: And could I ask you both to turn up proposed condition B, for Bravo, 62.

MR PRESHAW: I will have to - sorry, I'll just excuse myself. I did let the Commission staff know, I've had to move things around, but unfortunately I must leave you. I'll leave you in the capable hands of Steve and Joe.

MR ROBERTSON: Thank you. Thank you for your assistance. I appreciate we've kept you longer than what the Commission otherwise intended, but thank you for your assistance. Mr O'Donoghue, do you have condition B62 there?

MR O'DONOGHUE: I do, Counsel, yes.

MR ROBERTSON: And if you just have a look at (g)(v) - this was talking a biodiversity management plan, and one of the matters is, "Manage the collection and propagation of seed."

MR O'DONOGHUE: Yes.

MR ROBERTSON: As the Commission understands it, the applicant is considering a seed collection program involving seed collection from, amongst other places, Queensland and Victoria, with a view to building resilience and mitigating climate change risks as part of its rehabilitation program. Are you able to assist the Commission at all as to any risks that might be associated with taking such an approach?

MR O'DONOGHUE: I can probably say the following things. I'd need to get expert advice in relation to any risks about bringing seed - like, seed in from alternative places. Certainly what I can say, it's sort of not something that's been identified in the EIS information to date, and I understand that was - came up out of - following the Commission's site visit and discussions with MACH Energy and Thiess onsite.

But certainly in the rehabilitation mine closure addendum provided - attachment 8 to the EIS - it does state that "rehabilitation of project would continue to focus on flora species endemic to the local area. But if seed supply becomes a limiting factor, other appropriate native species that have performed well in the region would also be considered." So to my mind, that's more about getting seed, you know, as locally - as far locally as you can, rather than drawing on too far away from the region and trying to target endemic species.

It's probably - it's probably worth just noting that the current approved biodiversity management plan requires that any seed being sought from commercial suppliers has to - will rely on endemic native species, so that's currently what's happening at the site in terms of rehab.

And I'd probably just point out, just in terms of the recommended condition made into rehab, I'd just - one of the things - with rehab objectives in table 9 in the consent do require MACH Energy to establish local plant and community types. There's also a requirement in condition B88 which requires MACH to prepare rehab management strategy, "including details of target vegetation communities and species to be established within the rehab areas."

And condition B91 requires "the development of a detailed rehab management plan, consistent with the mining reforms currently underway with the Resources Regulator, with the mining regulation reforms." And this document would detail, as part of the operating requirements in terms of local plant community types, to target and re-establish on the final landform. There is some commitments in the EIS about the types of plant community types that MACH would be looking at, in terms of plant community types, grey box, white box, grassy woodland, and seed collection for that, and other PCTs sort of endemic to the area.

So I guess the expectation is to get the seed bank for those PCTs, that they would be rehab'ing back to. A lot of that would be - the detail of that would be that the rehab management plan in terms of how that's done and the collection of seed and those aspects.

MR ROBERTSON: So is your short point, this issue we're now discussing in terms of risks and the like, you at least have in mind that being dealt with in the context of the preparation approval of the rehabilitation strategy report itself? Is that fair?

MR O'DONOGHUE: In the rehab strategy and the rehab management plan in terms of, like, target woodlands, plant community types - like, certainly, currently, like I said, in - the rehab objective is to rehab back to, you know, endemic species from the area, which is - which the outcome in terms of getting the consistent habitat for the former species in particular that - for the area.

MR ROBERTSON: Mr Bailey has a follow-up question on this topic.

MR BAILEY: Thank you. Mr O'Donoghue, so just to detail a little step further, the panel was advised during the field trip that the seed collection is occurring from Victoria and from Queensland, particularly around Corymbia maculata, so spotted gum, to supplement, and part of the logic here was to build the resistance to mitigate climate change as part of the rehab plan.

So, understanding that, there are some other significant risks, though, that occur. So while classified as an endemic species, their genotypes vary significantly, and there are then become a series of other risks that are associated with that. So the level of understanding, I wouldn't mind a little bit further on, or - and that would be provision in documentation - is, what guidance is given around those rehabilitation plans to look at potentially genotypes that are being utilised so that you don't get outbreeding depressions in intraspecific crosses? And this is second and third generation, so there's some new rehabilitation philosophies coming through. I think they're actually exciting and should be looked at, but they come with risks, and we need to balance those components up.

MR O'DONOGHUE: Thanks, Commissioner. I understand that. I think that certainly - like, worthy for incorporation into the rehabilitation process. Like I say, we've set, you know, particular rehab objectives, you know, promoting that, you know, specific PCTs, which are a specific mix of shrub and, you know, understorey and tree requirements.

MR BAILEY: Yes. And just to recognise, the practice wouldn't be inconsistent with obtaining those PCTs, but the genotypes might well be varied. So there are complexities that sit, so it would be handy if you've got any guidance material that, in effect, would be provided to the proponent on that rehabilitation that you could send through.

MR O'DONOGHUE: Yes. That would be fine. We can follow that up. If we can put something in in writing, we can, you know, provide some advice on that.

MR ROBERTSON: Mr O'Donoghue, yesterday the panel received a submission from Mr Michael White, who suggested that having a number of smaller fines emplacement areas would have less of an impact than a single fines emplacement area. Is that something that you or the department generally can provide assistance with respect to?

MR O'DONOGHUE: I can provide some comment on that, Counsel, and take questions as well. I just wanted to start with, I guess, some context relating to the fines emplacement area historically. So it was described in the original 1997 EIS, and consistent of a larger and a smaller storages in two separate sort of valleys or creek lines. As part of that 1997 EIS process, in total, the disturbance area associated with the two storage catchments was about 168 hectares in clearing, and it allowed for storage of about 17.7 million cubic metres of reject material at that time. It also identified that there would be some seepage from those fines towards the Sandy Creek alluvium as part of that original assessment.

So the fines emplacement area described in the EIS, the larger one, is already largely constructed and operational onsite, and I believe you may have visited it, visited the site, and it's consistent with a revised fines emplacement strategy that was put forward by MACH in Mod 3 of the existing consent, which was approved in August 2018.

So this included a fines emplacement strategy which has been implemented, and it's changed from a - to a single-storage with staged downstream lifts and upstream clean-water diversions. I guess the change in design reduced the area of clean water captured in the water management systems, and put it back down to the downstream environment.

The fines emplacement areas proposed, with additional lifts, would provide for double the amount of fines material, so up to 36 million cubic metres, so that compares to 17.7 cubic metres of fine reject area, but we've given that additional height in embankments. In terms of what was originally approved for fines storage, there was a 2-hectare reduction in terms of the area needed for fines.

So there are some benefits in the way it's been designed compared to smaller storages. There would be certainly more disturbance area associated with putting it over different catchments, as opposed to having, like, a higher storage with more capacity.

MR ROBERTSON: So is the upshot of that answer, your and the department's advice is that the single fines emplacement area proposed as set out in the applicant's

proposal is the more appropriate cause, as distinct from a series of smaller fines emplacement areas? Is that the upshot of what you just said?

MR O'DONOGHUE: That's correct, because the - like I say, the area has largely been constructed, so a lot of the disturbance has already happened. There are benefits in retaining the fines in that area rather than opening up, sort of, new catchments to contain the fines. So disturbance would be less for the volume of fines you have by putting it into the one facility.

MR ROBERTSON: Can I then just ask about the void. There was some suggestion in some of the speakers in particular yesterday as to whether the more desirable course would be to backfill the void. The Commission appreciates that this is something that the department has commented on in its report, in particular at paragraphs 256 and following. Is there anything that the department would seek to add to those observations, or is that a sufficient treatment of the topic, so far as the department is concerned?

MR O'DONOGHUE: It's probably - I mean, I can touch on some aspects, but it's probably, you know, well documented in the assessment report. So I'd probably just be repeating what's in the assessment report.

MR ROBERTSON: Don't worry about repeating what's in the assessment report. The Commission has already had regard to that and is very grateful for that assistance. One further question - in the proposed conditions prepared by the department, it's suggested that a series of things described as "management plans" be prepared by the applicant, and to be the subject of approval by the Planning Secretary. On my count, there's 12 management plans on matters as diverse as biodiversity, noise, road closures, Aboriginal and cultural heritage, cultural heritage, visual impact, rehabilitation management, and the like.

Can you just assist the Commission as to the philosophy as to what has been put in the conditions in terms of actual hardwired requirements in the various areas that appear in the conditions themselves, as opposed to a condition that says to the applicant, "Please go away and prepare a further management plan, which will then be the subject of perhaps discussion, but, in any event, approval, by the Planning Secretary." Can you just assist to that level of philosophy as to what the - what, in the conditions were put in the first category, hardwired conditions, as distinct from management plans and the like, further work to be done, subject to approval of the Planning Secretary?

MR O'DONOGHUE: If I can understand your question correctly, it's really about the satisfaction of the Planning Secretary in the requirements, rather than just having a management plan - - -

MR ROBERTSON: No, no, what I'm trying to understand is, in some areas the details of what the applicant might ultimately be required to do doesn't appear in terms in the proposed conditions; rather, what the condition says is, "Go away and prepare a management plan that will be the subject of further approval by the Planning Secretary." I'm just asking for your assistance as to where the department drew the line between matters that are considered to be so important that they should appear in terms in the conditions - "You must do X, Y, Z" - as opposed to, "You need to have," for example, "a rehabilitation strategy that achieves certain objectives, but the details of that we won't put in the conditions, that will be the subject of further discussion and approval." I'm just asking for your assistance in advising the Commission as to how the department chose what should be in the proposed conditions of approval itself, as opposed to the subject of a further process with the Planning Secretary.

MR O'DONOGHUE: I guess the management plans - I guess in some of the biodiversity, air and noise, for example, there is a link between operating conditions, for example, in noise and air, and ensuring that the measures and practices are put in place to demonstrate, you know, the processes you do to comply with the specific operating conditions. So that - I guess that's the key basis on - so for noise and air, for example.

So in some cases, we have operating conditions - there's a requirement just to tie them into, you know, putting forward the reasonable and feasible management practices and tarps, for example, to show you're going to comply with those operating criteria, for example.

MR ROBERTSON: And then just relatedly, do you have anything to say in response to Dr Askland's suggestion earlier today than one of the management reports that the applicant should be required to prepare is what he described as a social impact management report?

MR O'DONOGHUE: In this instance, it's a existing mining operation. Certainly that's - social impact management plans, we do put in for greenfield mine developments in particular, when there's a significant change in new workforce coming through, so a lot of the, you know, minimal mines in greenfield locations, where there's workforce issues, for example, around that, that it's - - -

MR ROBERTSON: I'm sorry to cut you off, but I'm mindful that we've already kept you for longer than what the Commission intended. Is the short point, that's a management plan that might be required in relation to a completely new project, but the department took the view that it's not necessary in relation to this particular application?

MR O'DONOGHUE: In large, that's correct, yes, in terms of - - -

MR ROBERTSON: In other words, it was something that was considered, but the department decided not to put that forward as a recommendation to this Commission, is that fair?

MR O'DONOGHUE: That's correct.

MR ROBERTSON: I think Professor Fell has a question.

PROF. FELL: Very briefly, Mr O'Donoghue, we've had a couple of presentations over the last day which draw into question the hydrology modelling, and in fact indicate that it may have impacts on the Hunter River alluvium. I think perhaps we'll be asking you to make a comment on the points that have been raised. Would you be happy to do that perhaps in writing subsequently?

MR O'DONOGHUE: Look, that would be fine, Commissioner, without knowing, like, the detail of the issues raised. We would - if you'd provide something in writing. I mean, we did - as you'd be aware, and I - and we did engage Dr Hugh Middlemiss from HydroGeoLogic - - -

PROF. FELL: Indeed.

MR O'DONOGHUE: - - - to provide expert advice to the department, you know, particularly in the final - which was a key issue in that in terms of final void design and potential for throughflow, for example, issues related to water quality on the alluvium was a - was one of the critical issues in terms of what Mr Middlemiss was looking at.

PROF. FELL: Thank you. That would be most helpful.

MR ROBERTSON: But in short, is this right - the department is sufficiently satisfied as to the robustness of that report in light of the peer review that the department procured?

MR O'DONOGHUE: That's correct, yes. That's correct, Counsel, and we're happy to make - take any questions about that on notice, and happy to get Mr Middlemiss involved as well.

MR ROBERTSON: And now, Mr O'Donoghue, we've kept you for longer than what the Commission originally intended, and we apologise for that, and thank you for your assistance. So can I thank you on behalf of the Commission. Is there anything else that you would like to add orally in light of the material that's been provided to the Commission over the course of the last couple of days?

MR O'DONOGHUE: Not at this time, Counsel. I'll probably leave it there.

MR ROBERTSON: If there is, can I invite you to provide that as soon as possible. As you'll appreciate, the Commission is on a tight time frame. In particular, we would ask that that be provided, and I'm sorry to give you a short deadline, but by the end of Monday. You'll appreciate the Minister has given a direction as to a very short time frame under which the Commission is to operate.

MR O'DONOGHUE: Thanks, Counsel, I'm mindful of that. But if there's any follow-up questions, we'll get - try and get a response to you as quickly as we can.

MR ROBERTSON: Thank you very much for your assistance, Mr O'Donoghue. Commissioners, I propose to call the next witness not before 4.10pm, if that's convenient. Can I apologise to Mr Lauritzen, who I appreciate I'm asking to come back much later on a Friday afternoon than intended, but as I'm sure he'll appreciate, and the Commission will appreciate, there's been very considerable information provided to the Commission over the course of last couple of days, so not before 4.10pm is my suggestion.

SHORT ADJOURNMENT **[3.56pm]**

MR ROBERTSON: Commissioners, the final speaker for this public hearing is Mr Chris Lauritzen again. Are you there, Mr Lauritzen?

MR LAURITZEN: Yes, Counsel, I'm here.

<CHRIS LAURITZEN, MACH ENERGY AUSTRALIA (APPLICANT)

MR ROBERTSON: Can I firstly apologise that I'm asking you to speak again so late on a Friday afternoon and later than what we originally had in mind. As you'll appreciate, the Commission has received many submissions over recent days and is

considering them and asking various questions. I have a few questions, as does the panel, and then I'll give you an opportunity after that to say anything else orally that you want to say before the public hearing comes to an end.

The first question concerns the question of air quality and you would've heard over the course of both today and yesterday very considerable concerns have been expressed by both members of the community and some experts concerning the potential air quality impacts of the application being approved. You would've observed that condition B28 of the conditions that are proposed by the department involves your company being required to ensure that all reasonable and feasible avoidance of mitigation measures are employed so that particular matter emissions generated by the development do you not cause exceedances of certain criteria listed in table 3 of that document. Are you in a position to comment as to your level of confidence, or at least the applicant's level of confidence in being able to meet the air quality criteria set out in table 3 through the use of the kind of measures that proposed condition B28 has in mind?

MR LAURITZEN: Yes, Counsel, I am in a general sense so if you do need more, I guess, detailed information we're very happy to put that forward on notice in writing. I guess the first thing that I would say is that MACH also is very concerned about air quality, it's one of our primary management objectives to ensure that our air quality compliance is not only just complying with the letter of the consent but also that our management measures anticipate and control our level of emissions before we get to those limits and, I guess, the Commission would've seen the system that we have on site where - during the site visit where we are measuring on an online basis the dust levels in the atmosphere and, indeed, the noise levels and there is a series of trigger action and response points well before we get to the point of, I think it's 44 micrograms per cubic metre which is the shutdown criterion.

So when we get that shutdown criterion which is measured by the EPA's monitor to the east of the project we have to shut the entire site down. We're the only mine in the Hunter Valley that has to do that. So obviously it's very much in our interest to make sure that we are managing those levels in advance so that we have, if you like, the speedometer showing how we're going and that we take action to reduce our dust emissions before we get to that shutdown point.

MR ROBERTSON: So as a fair summary of what you've just said, that MACH is quite confident that it will be able to meet the air quality criteria of the kind that the proposed conditions from the department have in mind?

MR LAURITZEN: Indeed. And if you look at our track record, you know, through some very difficult atmospheric conditions throughout 2019 and up to the present time we have been quiet successful in staying within the current limits. When we did Modification 3 everything was - all our conditions were contemporised so although some people suggest our consent is old, in fact, the conditions that we operate under DA9297 are contemporary conditions.

MR ROBERTSON: I think Professor Fell has a follow-up question on that topic.

PROF. FELL: Mr Robertson, thanks. Can you tell which are your emissions and which are emissions from other mines? In other words, background emissions, particularly for the PM2.5?

MR LAURITZEN: You can certainly draw a reasonable inference because there are a number of monitors, we know which direction the wind is blowing and we know in real time what the numbers are telling us. So clearly if we had a monitor immediately to the east of our project and the wind was blowing from the west we could have a reasonable view that, you know, the source of those levels of that particular monitor were coming from our site. However, there have been circumstances in the past, for example, when there were large bushfires in western New South Wales which were generating smoke and during the drought where a lot of dust and smoke was blowing right over the top of us and triggering our monitor, and in those circumstances we shut our site down completely.

PROF. FELL: Wow. Thank you.

MR ROBERTSON: Mr Lauritzen, you would've heard that there was some criticism from some of the speakers as to the groundwater analysis that has been performed, in particular, on the question of permeability. Are you in a position to make any comment in relation to that criticism? In particular, I think, both Dr Pells and Mr Murphy may have made some comments on that topic. Are you able to assist the Commission on that topic?

MR LAURITZEN: Can you be more specific about permeability because it's a broad topic?

MR ROBERTSON: Well, I might ask Professor Clark to, as it were, drill down on the particular aspect of that.

PROF. CLARK: As I recall in their submission earlier today there were questions about the robustness of the packer testing that was done and, I guess, following on

from that, questions about the permeability extrapolations that were made from that data. I'm not sure if you were online during that submission, if not though, we can certainly provide that question in writing.

MR LAURITZEN: I think I'd be best to take that on notice because it does sound quite technical.

MR ROBERTSON: Mr Lauritzen, can I just ask a question about the void and, in particular, the question of whether one backfills it or not. Are you able to assist in whether in the event that the void is not backfilled and remains, as it were, open whether there are any potential beneficial uses of that area at least once mining has come to an end in that area?

MR LAURITZEN: We have, I guess, at a conceptual level considered beneficial uses of the void. I won't pretend that we've done any feasibility level study of that but certainly, I guess, the void presents an opportunity to be used for renewable energy projects because you could use it essentially for pumped hydro if you could site, you know, a suitable high level water storage above it but we haven't put that forward in this particular proposal because that would involve, you know, more disturbance to construct the appropriate dam to pump that water to.

We've also had pilot projects under consideration on the site for floating solar where we'd utilise some of the water storages on site for floating solar panels. Again, these are just conceptual level proposals, internal proposals and certainly the final void would be a suitable, I think, receptacle for floating solar and perhaps, you know, solar panels on suitable north-facing surfaces. So, you know, there are - I guess, there are a lot of options to turn what many perceive to be a negative legacy into a positive legacy and certainly these are the sort of things that we could look at over the life of the project.

MR ROBERTSON: Thank you. I think Professor Fell has a question.

PROF. FELL: Sorry, Mr Lauritzen. Just on that, I just wonder, in the first 50 years the salinity is not that high, it will be entirely possible using membrane process to actually get quality water from it in the event of drought. I wonder if that's been a consideration?

MR LAURITZEN: Well, I mean, there are many ideas that you could put forward for the void. I guess, that's the point, there is potential there. Clearly we haven't included those ideas in the EIS in addition to, you know, using membrane technology to produce fresh water. You could - you know, you could put more fresh water into the

void and use it as a storage facility in time, you know, where water was plentiful and use it as a water source during drought, you know. I guess the sky's the limit to ideas that one could put forward and again, you know, I guess to be optimistic that's - you know, they're the sort of ideas that we can work on. We have had a workshop where we got a number of experts in the room together to do a brain-storming session but that's the limit of the analysis that's been done. We've got a list.

PROF. FELL: Thank you.

MR ROBERTSON: Thank you for that, Mr Lauritzen. Is there anything that you would like to contribute to the panel's consideration during the course of this public hearing before the public hearing comes to an end?

MR LAURITZEN: Yes, I have a little slideshow that I'd like to go through, if you don't mind.

MR ROBERTSON: Please.

MR LAURITZEN: Yes, thank you. So let's just share the screen. Okay. Can you all see that first slide?

MR ROBERTSON: We can, thank you.

MR LAURITZEN: Okay. Good. All right. So, I guess, I do want to thank you, Commissioners and Counsel, and, I guess, we started with the questions but we always like to acknowledge the traditional owners of the land on which we meet today and pay our respects to Elders past and present. So I just want to provide some comment on some of the matters that have been raised over the last two days and, I guess, we've heard many views, particularly today, from groups that are philosophically opposed to the industry and in many cases opposed to the NSW Government's current policy settings.

So, however, it's not our role as the proponent to debate NSW Government policy matters. Our role is to put forward a project that's consistent with NSW Government policy and we've designed the project with that objective. Again, you know, I don't want to be too repetitive but, you know, the current approval was approved in 1999 and is a major operating opencut coal operation and it's within a recognised mining precinct. That original approval had multiple opencut pits, three out-of-pit waste rock emplacements and multiple final voids.

The project is a consolidation and optimisation of the current approved mine and MACH Energy takes a data-driven approach to both planning, design and assessment and operation of our project. Some presenters have attempted to represent the project as if it was a new greenfield proposition; however, it is, in fact, an optimisation of the approved Mount Pleasant operation that's currently operating. We prepared a comprehensive EIS that's been reviewed by NSW Government regulators against the requirements of NSW Government policies and requirements specified by the department for our EIS and a comprehensive set of consent conditions have been proposed by DPE, prepared in consultation with New South Wales regulators and agencies.

So, I guess, mining and agricultural industries currently co-exist and thrive in the Hunter and we've heard from many presenters over the last two days about how these differing industries thrive in current co-existence and our project is designed to maintain this co-existence and we believe that these differing industries would continue to thrive and co-exist over the life of the project as they have historically. We had a question yesterday from the panel regarding how much of the rehabilitation would occur over the life of the operation as opposed to at the end and I've just got a - I'll just step quickly through a series of project snapshots or stage plans, we call them, that illustrate how that general arrangement of the mine develops of the life of the project. So this is 2026. This is straight out of the EIS but it's helpful when you see it animated because you get a much better feel for, I guess, how the mine advances.

So in 2016 and then 2028. Now, did you all see how that jumped forward, I trust - - -

MR ROBERTSON: Yes, we can.

MR LAURITZEN: (not transcribable)

MR ROBERTSON: Yes we can, thank you.

MR LAURITZEN: Okay. So that's the first year that the mine would step up from the current level of production up to 15.75 or let's say 16 million tonnes in round numbers of ROM coal under the project and, I guess, once the mine's achieved its full stride length from north to south it effectively has the rehabilitation moving in lockstep with the mine advance to minimise amenity impacts. So this is 2028 and if we step forward now to 2031. That's where we are and, of course, that's the first year after Mount Arthur is proposed to close.

I'd also make the point that, you know, Mount Arthur - and I'm not privy to Mount Arthur's plans and I don't want to speak for them but logically they would have to

ramp down before 2030. So there will be a ramp-down period from, I guess, 2026 to 2030 so that they can achieve, you know, certain in points and wall design criteria. So don't take 2030 as the time that Mount Arthur starts that ramp-down, you know, it's logically earlier than that. And again, now we're at 2034 which is the first year that the mine would produce, under our proposal, 21 million tonnes per annum of ROM and as you can see, the mine's advanced a long way westwards and the Eastern Emplacement and the associated rehabilitation is well established and again, here's 2041, further advance and here's 2044 and finally 2047.

So again, mine rehabilitation would be very well advanced by the time we get to 2047, which is one year before the project ceases mining and, in fact, in 2048 I think we only mined 800,000 tonnes of coal so our mine plan fully incorporates closure and ramps down, you know, in the years prior to 2048. I guess the other point I wanted to make about ramp-down is if you look at the old images from the EIS, I think we saw one presenter put up some old images from the EIS, back in the 1990s the software did not exist to properly do dump design. You know, there was good mine planning software in those days so you could design the extraction part of the mine but dump designs were always done as an afterthought and they were very much "artist's impressions".

So when you look at the images in the old EIS they were actually drawn in CorelDRAW which is an artist package. What we've got here, and the reason why our landform is so much more detailed is the software that we use effectively accounts for every single truckload that comes out of the mine and gets placed in that final landform and only the final GeoFluv overlay is done outside that software. So, you know, there was a history of mines, you know, in the past having to come back and ask for, you know, approvals to make their dumps higher and ask for another 10 or 20 metres. We've designed this dump so, using this software - and it is a fully integrated design with the entire mine plan and that's why our plans are so much more detailed and, I guess - and I would argue much more robust.

So, I guess, in conclusion we've designed this brownfield optimisation project to be consistent with the various NSW Government policy requirements and we agree with the department's assessment that it's in the public interest to be approved. Project staging and design has been undertaken to minimise local amenity impacts while increasing production as other mines deplete their economic reserves and our mine moves west. The project's consistent with the NSW Government strategic statement on coal exploration and mining in New South Wales which recognises the ongoing demand for coal in our region.

The project's a long life, low cost project that's resilient to global coal price fluctuations because of its competitive position on the global cost curve. We're

thankful for the opportunity to participate in the IPC process. We've heard a range of opinions over the two days and we thank the many presenters who have taken the time to present and provide written submissions. We're particularly grateful for the members of the public who've indicated their support for the project including the more than 400 supportive written submissions to the IPC so far. So thank you all.

MR ROBERTSON: Thank you very much, Mr Lauritzen. I assume that you'll provide those slides to the Commission for its assistance in its deliberations?

MR LAURITZEN: Yes, we will, and I don't think I've provided the initial presentation slides so I'll provide them as well.

MR ROBERTSON: I'd be grateful if you'd provide that as well. Thank you very much for your time and for your assistance and again, apologies that you were called again at a later time than intended.

MR LAURITZEN: You're welcome, Counsel, and thank you, Commissioners.

MR ROBERTSON: Commissioners, that completes the program of speakers for this public inquiry. Public hearing, I should say.

PROF. CLARK: So thank you. I'll just make my closing statements. This brings us to the end of the public hearing into the Mount Pleasant Optimisation Project (SSD10418). I want to extend my thanks to everyone who has participated in this important process. Professor Fell, Terry Bailey and I have all appreciated your input. In the interests of openness and transparency we will be making a full transcript of this public hearing available on our website in the next few days. Just a reminder that it is not too late to have your say on this application. In terms of the next steps, following the public hearing we will endeavour to determine the development application as soon as possible, noting that there may be a delay if we find that additional information is needed.

Written submissions on this matter will be accepted by the Commission up to 5.00pm Australian Eastern Standard Time on Friday, 15 July, 2022. You can make a submission using the Have Your Say portal on our website or by email or by post. Finally, a quick thank you to my fellow Commissioners Chris Fell and Terry Bailey and also to our Counsel Assisting Scott Robertson. Thank you for watching. From all of us here at the Commission enjoy the rest of your day and good evening.

CONCLUDED **[4.31pm]**