New South Wales Government
Independent Planning Commission

**TRANSCRIPT OF PROCEEDINGS**

RE: MOUNT PLEASANT OPTIMISATION PROJECT (SSD-10418)

**DEPARTMENT MEETING**

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| COMMISSION PANEL: | PROFESSOR ALICE CLARK (Chair)<br>PROFESSOR CHRIS FELL AO<br>TERRY BAILEY |
| OFFICE OF THE IPC: | STEPHEN BARRY<br>BRAD JAMES<br>PHOEBE JARVIS |
| DPE REPRESENTATIVES: | CLAY PRESHAW<br>STEVE O'DONOGHUE<br>JOE FITTELL |

LOCATION: VIA VIDEO CONFERENCE

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**TRANSCRIBED AND RECORDED BY APT TRANSCRIPTIONS**

PROF. CLARK: Good morning and welcome. Before we begin I'd like to acknowledge the traditional owners of the land from which we virtually meet today and pay my respects to their Elders past, present and emerging. Welcome to the meeting today. We are here to discuss the Mount Pleasant Optimisation Project SSD-10418 which is currently the Commission for determination. My name is Professor Alice Clark. I'm the Chair of this Commission Panel and I'm joined today by my fellow Commissioners Professor Chris Fell and Terry Bailey. We're also joined by Steve Barry, Brad James and Phoebe Jarvis from the Office of the Independent Planning Commission.

In the interests of openness and transparency and to ensure the full capture of information today's meeting is being recorded and a complete transcript will be made available on the Commission's website. I request that all members here today introduce themselves before speaking for the first time and for all members to please ensure that they do not speak over the top of each other for the accuracy of the transcript. We'll now begin and I would like to hand over to the Department.

MR PRESHAW: Thanks, Alice. So I'll just start with a few brief introductions. Firstly, I'm Clay Preshaw, Executive Director of the Department's Energy, Resources and Industry Assessments Branch and just to thank you for the opportunity to speak with you today. I'm also joined here today with Steve O'Donoghue who is the Director of the Resource Assessment Team and Joe Fittell who is the Team Leader of that team. Steve and Joe - Joe, in particular, have been closely involved in all aspects of the assessment of this project and I should also say that our assessment has definitely involved many more people that are not present in the meeting today and as you would know, you know, the assessment of large scale mining projects like this are very complex and cut across multiple disciplines that require a great deal of work and resources to assess.

Now, just as an opening comment, I will say that if we don't have the answers to all your questions at hand during the meeting then we may have to take some questions on notice and we can get back to you in writing later. I'd also like to make a few comments about the assessment report itself just to highlight to the Commission as we have on other recent projects before the Commission. The fundamental difficulty of the task of preparing a report like this, and as I often say in these forums, it's important to note that our report is not meant to be a full compilation of all the information and all the data et cetera, that has been presented to us throughout the assessment process. Of course, all our information is publicly available and can be accessed if necessary.

So what is our assessment report then? Well, it's actually a distillation of all that material and its key purpose is to give the decision-maker enough information to make an informed determination and while we have obviously prepared a lot of these reports over the years it's always hard to know exactly what the Commission or any decision-maker is looking for and for that reason we're more than happy to provide additional information of particular issues if that will assist the Commission in its considerations and on that point I'll state again on the record that we won't be put off by those types of requests, we won't be offended if the Commission wants more information on

certain aspects as, you know, at the end of the day we believe it strengthens the whole decision-making process.

So with those general comments out of the way I'll make a few opening comments about the Mount Pleasant mine itself and the project. As a brownfields project I thought it might be useful to give some context around the history of the mine and its approvals including the approved disturbance areas, the biodiversity offsets, in particular, as these affect the understanding of assessment of the project. Mount Pleasant was originally approved by the Planning Minister way back in December 1999 and was physically commenced at the time. However, the owner of the mine at the time Coal & Allied, which is a Rio Tinto company, didn't commence mining operations as it focused on other mines in the valley.

One opening comment I will make is that when you look back at that original assessment and approval process I must say there were some very significant impacts on the community for what were then a greenfield mine project in relatively close proximity to the town. The level of amenity impacts both noise and air quality, in particular, that would've needed to be assessed at that time is really not something that we have to deal with regularly these days as we often have brownfield extensions and I will say it was especially eye-opening to me that the usual approval included such a large number of properties with acquisition rights, again a factor related to a greenfield mine.

So anyway, in 2012 some 13 years after the original approval Coal & Allied subsequently obtained approval for the mine under the Commonwealth EPBC Act and the Commonwealth approval was later varied in June 2020. The Commonwealth approval included some disturbance areas in addition to the disturbance areas under the New South Wales approval. So if I can ask Steve or Joe to bring up a figure, to share a figure that shows these areas that would be helpful. Can everybody see that?

PROF. FELL: Yes.

MR PRESHAW: Yes. Seeing some nodding.

PROF. CLARK: Yes.

MR PRESHAW: Essentially disturbance area under the New South Wales approval includes all the light yellow, beige coloured areas as well as this hashed area in the north-western part of the project, the relinquish area. The Commonwealth approval includes all these areas as well as the bright yellow coloured areas with the exception of the Northern Link Road option areas up here which we'll come to a bit later. MACH Energy purchased Mount Pleasant in 2016 and commenced mining in the areas approved under the New South Wales approval in 2018. The existing approval allows MACH to extract up to 10 and a half million tonnes per annum of ROM coal until just 22nd of December, 2026 and as we know MACH is now proposing to optimise mining operations at the mine. This would include extracting an additional 247 million tonnes of coal through infill mining in some of the disturbance areas

approved under the Commonwealth approval and by deepening the pits by approximately 85 metres to extract lower coal seams.

The mining areas would be rationalised into three contiguous pits from the four under the existing approval and the optimised one would include two out-of-pit emplacements down from the original three. It would also include just a single final void down from the three under the existing approval. The project would increase coal production from 10 and a half to 21 million tonnes per year and would extend the life of the mine by an additional 22 years until 2048.

In terms of disturbance areas the additional disturbance area, those bright yellow areas comprise approximately 500 hectares; however, MACH is also proposing to relinquish a similar area of about 500 hectares in the north-western of the mine which would longer be disturbed under this project. This so-called relinquishment area shown on the figure as the hashed area was approved for out-of-pit emplacement. So look, that background provides a bit of context for the consideration of some of the key issues associated with the project and I hope was useful. At this point I'm going to pass over to Steve and then to Joe to discuss this and some of the agenda items. So over to you, Steve.

MR O'DONOGHUE: Sorry, just unmuting. I'm just going to go through agenda items 2 and 4 first which are both related to greenhouse gas aspects of the project. So the first item was adequacy of drill core information used for developing the mine plan and GHG mitigation plan and agenda item 4 is the long term economic feasibility of the project should the emissions requirements be tightened over the life of the project but before I get specifically into them I just wanted to make some general comments about the greenhouse gas emissions, just some background before we get into the specifics for agenda items 2 and 4.

In this regard there's a couple of things to note in relation to the direct GHG emissions, that is scope 1 and scope 2 emissions from the project. Firstly, the project has an average scope 1 and 2 emissions intensity over the life of the project of approximately 0.04 tonnes CO2 equivalent per tonne of ROM coal of which about half of this is from fugitive emissions which is an important issue for both open-cut and underground mines where there's an estimate of about 0.021 tonnes of CO2 emissions per tonne of ROM coal based on the revised estimates that were provided later in the assessment process.

Those emissions intensities are at the lower end of the scale compared to other open-cut coal mining operations in New South Wales. Noting also that the Commonwealth emission factors under the reporting, the default emission factors fugitive emissions from open-cut for New South Wales is 0.061 tonnes of CO2 equivalent per tonne of ROM coal. This compares to the estimate for this project of 0.021 tonnes CO2 per tonne of ROM coal. Partly the lower overall emissions intensity reflects the relatively low strip rations of the mine and also, I guess, the lower cost of production as a result of using existing infrastructure and using established mining areas and the other aspect too is that it's a relatively lower gas content of the coal which I'll come into later.

In relation to the gas content which is an important issue here, MACH, through the assessment process, did provide additional information indicating that the gas content is low due to the shallow coal seams in particular, that are being targeted and also depressurisation from existing mining operations in the area but it does increase - the gas content increase with depth and as the project is targeting deeper coal seams to the north which wasn't part of the original project that's one key change in they project that's relevant for greenhouse has omissions and I'll just put up - this is a figure - in the additional information that was provided there's a couple of figures here about gas content and also methane content with depth and particularly in targeting the lower coal seam.

So in moving further to the north-west of the project and, in particular, where we're targeting deep seams both the gas content is going up and the methane content is going up and that's sort of mirrors, I guess, the predictions of annual CO2 emissions through the life of the project, particularly increasing more in the 2030s up to the, you know, early 2040s for that period there. So that's an important aspect of the project, I think, in terms of timing of when that might happen and opportunities to - you know, for mitigation prior to getting into those deeper coal seams in particular. So that's sort of just some aspects of the greenhouse gas emissions component and how it changes through time.

As outlined in our assessment report, you know, MACH was required during the assessment process to further investigate scope 1 and 2 greenhouse gas mitigation measures including the feasibility of reducing emissions by pre-draining the coal seams. That was an important aspect that we did ask MACH to look at and that was following, you know, further consultation with our climate and atmospheric science branch within the department who have expertise in this area in terms of looking at the work they've done and seeking further information about that.

MACH's sort of response to that and it's available in the, you know, additional information on our website and we've got links to that to assist you, is that pre-draining will not provide any - based on the information at hand at the moment it would not provide any significant benefit given the relatively low gas content and saturation of the gas. This means that pre-draining would require a significant amount of stimulation, for example, de-watering and fracking to get gas flow happening. Would also require a significant number of drainage vaults to be developed over the mine site to do that as well.

Given the low gas contents it also means that there would still be a significant proportion of gas that would remain in the coal metrics regardless because you can only get the gas content down to a certain level and for these reasons, you know, MACH provided through the assessment that pre-draining would be unlikely to significantly reduce greenhouse gas emissions from the project. We also recognise that scope 1 and 2 emissions do represent like a small proportion of New South Wales annual greenhouse gas emissions at around 0.5 per cent and they have been accounted for in New South Wales Net Zero Plan which we sort of document in the assessment report.

The scope 3 emissions, in particular, I won't say too much about this but it was considered through the process and was considered in terms of the light of the Paris Agreement and accounting rules under Australian legislation about how that's dealt with. That's sort of documented in our report. Overall we consider that the project is consistent with the objectives of Australia's Long Term Emissions Reduction Plan and New South Wales Government Strategic Statement on Coal Exploration and Mining. So what we have put in the conditions in general in relation to minimising greenhouse gas emissions and also encourage continual improvement in performance we have recommended that MACH limit the scope 1 emissions and diesel-use emissions to no greater than predicted in the assessments, minimise scope 2 emissions by using renewable or net zero electricity sources, undertake regular three-yearly reviews to investigate and further reduce the emissions over time, implement a greenhouse gas monitoring and management plan and offset greenhouse emissions where the performance measures are exceeded, also with the potential to, as stated there, to ramp down on those targets over time depending on, you know, what mitigation measures may become available.

Also keeping in mind at the Commonwealth level there's the safeguard mechanism which does allow for the potential to ramp down emissions from the baseline level set at the moment over the life of the mine. Just to go back onto the specific questions about the drill core information. MACH's original estimate of the greenhouse gas emissions was updated in response to advice from our climate and atmospheric science branch in consideration of changes of global warming potential of methane and, you know, use of site-specific drill data which is consistent with the method to approach in terms of estimating fugitive emissions at the Commonwealth level. The approach is consistent with the assessment of contemporary mining projects as outlined in the guidelines for implementation of the Energy ER meth 2 and 3 for open-cut coal mine fugitive GHG emissions reporting.

So there's documentation all about processes, on how to estimate that both in the Commonwealth requirements but also ACARP documents that are referenced in the Commonwealth requirements as well in terms of methodologies. So I think the additional information that was provided was more a re-evaluation of existing data and borehole drill data to update the - I guess the modelled emissions and just going back to the figures on the screen at the moment. This was the data - the data on the screen was the data used to update the greenhouse gas emissions from fugitive emissions in terms of the - this was the modelling done by CoalBed Energy Consultants who were commissioned to re-evaluate the method 2 emissions.

In the EIS a method 2 emissions factor was used but it was based on earlier predictions that Rio Tinto used in terms of emission estimates so this was essentially a re-evaluation of that data and to come up with a more refined or updated contemporary calculation of the emissions, you know, through the life of the mine and particularly going to the deeper coal seams to the north. In terms of the actual drilling program and the data used behind that, we're happy to get more information from MACH about, you know, the actual locations or information that fed into the refinement to the model. There is a report by CoalBed Energy Consultants that is referenced in the additional information that we're happy to get that from the company and provide

more information about the drilling data that was used to refine the model. That's probably - just on the first agenda item - unless you've got anymore questions about that, I can move onto the economic aspects.

PROF. CLARK: Thanks, Steve. Chris, did you want to wait till we get through or would you like to ask a question now? You're on mute. Sorry, Chris, you're on mute.

PROF. FELL: Am I live?

PROF. CLARK: Yes.

PROF. FELL: Steve, thanks, that's a very comprehensive explanation of the situation. You know, when we looked at it the fugitive emissions go up by a factor of three in the second decade and we've got those graphs, as you said. (LOSS OF AUDIO) would be helpful to know the seams that were being addressed in the second decade and also the depth and thickness so that we have a bit of a feel for whether anything is likely to be able to be done in terms of drainage or anything. So that's something we may well ask the applicant to provide or you may ask the applicant to provide. Thankyou.

MR O'DONOGHUE: Thanks, Commissioner. Yes, look, either way we're happy to go to the proponent and get more information or either you can go directly. One thing, I guess, getting advice back from the company too just on the thickness of the seams and that, one of the constraints is the multi-seam sort of nature of the - and the ability to pre-drain multi-seams and particularly depending on thickness. So it's an important there too, Commissioner, and we're happy to get more information about that.

PROF. FELL: Thank you.

PROF. CLARK: Thanks, Steve. If there's nothing else there I think we'll press on to the economics side of things but we may loop back later.

MR O'DONOGHUE: Okay. Thanks, Commissioner. So just agenda item 4 which is about the economic feasibility of the project should the requirements for scope 1 and 2 emissions be tightened over time. During the assessment the Department - we did require MACH to provide additional cost benefit analysis of greenhouse gas-related matters including a sensitivity analysis for a range of carbon prices to sort of look at that. That was more targeted at like net benefits to New South Wales in terms of an economic evaluation. The additional information - the original economic evaluation but also the updated valuation based on the revised greenhouse gas estimates considered a number of European, US and Australian carbon prices applicable, you know, as at April 2022 when that sort of revision was done and included revised calculations of net benefits for the project to New South Wales based on these carbon prices.

So just looking at the sensitivity. It included ranges from $119 per tonne CO2 equivalent in 2023 up to $327 by 2053 and that was based on the data on the European Union Emissions Trading Scheme forecasts as of that time. So that one scenario - a

carbon prices scenario that was done. Was also - and it applied to net present value, so pricing went up but it was an MPV, you know, approach through that period in terms of getting to the net benefits. The sensitivity was also based on carbon prices from Australian Treasury, Clean Energy Future Policy which ranged from $44 to 186 and also the US social cost of carbon which ranged from 79 to 126. So probably the European Union estimates had probably the wider range and the highest sort of prices in terms of looking at sensitivity.

The findings are summarised, I'll put up a table here as well which is in the report that was done by Analite Econ. The findings still show that net benefit would accrue to New South Wales, particularly under two sort of scenarios in terms of how the greenhouse gas emission costs were distributed. One based on New South Wales share of global GDP and one based on New South Wales share of the Australian population of how the net benefits would be changed through that process and that's sort of detailed in our report.

With regard to, I guess, the financial feasibility or economic feasibility as opposed to the net benefits to New South Wales we can't comment on this too much as it would be subject to MACH's commercial and financial position, you know, based on in the offsetting requirements depending on the safeguard mechanism, for example, where that lands or, you know, any sort of conditions of consent, sort of performance measures on that and offsetting requirements above that. At the moment, you know, we have recommended performance measures based on that and offsetting requirements above those performance measures. The safeguard mechanism for the current Mount Pleasant project is lower than the peak currently estimated later in the life project so I think it's around 0.6 - I think it's a lower sort of level than currently in terms of the annual emissions that they're estimating at the moment, it's about 800-plus kilotons per year. So that's something that will depend on where the safeguard mechanism goes as well in terms of that.

We do note that the scope 1, 2 emissions only make up a minor proportion of the overall emissions associated with the project and, you know, compared to scope 3 and consistent with or less than other coalmines in New South Wales. Just the final note is that all mining projects in New South Wales are subject to comprehensive rehab and bond requirements under the Mining Act and these regulations can be sure that mine rehab be able to be completed even if in the event that, you know, a mine runs into financial difficulties. Just wanted to make that point as well. So that's probably - unless you've got some questions on that sort of aspect, Commissioners, happy to move on to the next agenda item about amenity impacts.

PROF. CLARK: Go ahead, Chris.

PROF. FELL: Steve, I note that the MPV calculation is based on a seven per cent discount factor and, in fact, they (not transcribable) (9.28.46) as well but a seven per cent discount factor means that whatever's happening 25 years from now is fairly unimportant in the calculation.

MR O'DONOGHUE: Yes.

PROF. FELL: And I wonder about the situation say in the second half of the operation when you're dealing with just the (LOSS OF AUDIO) cashflows if, in fact, there is significant increase in the offset cost. Do you have any comment on that?

MR O'DONOGHUE: Look, again, I guess, gets down to financial aspects for the company to consider but I agree it will depend on, you know, future policy settings, you know, set by both the Commonwealth and State as well but also any performance measures set in the conditions and any offsetting requirements above what's predicted. So look, certainly the price of carbon in the future and offsetting requirements, you know, there's predictions about that. It's been incorporated into that sort of net benefit process. I probably can't comment much more that, Commissioner.

PROF. FELL: Thank you.

PROF. CLARK: Thank you, Steve. It doesn't look like there's any other questions there for the moment on that. All right. Where would the department like to address next?

MR O'DONOGHUE: Look, I'll hand this over to Joe who's going to make some comment about the amenity aspects.

PROF. CLARK: Thanks, Joe.

MR FITTELL: Sorry. Thanks, Steve. Joe Fittell here, I'm the team leader in the Resource Assessments team. I was just actually going to firstly address the historic heritage agenda item, so agenda item number 5. So, Steve, do you mind flicking down a couple of figures there. The agenda item is just in relation to impacts at Kayuga Cemetery. So if you keep going down a couple of more figures, Steve. One more. Thanks. If we just zoom into the top - sorry, Steve, just back up one. Yes, if we just zoom into the top right-hand corner of that figure. So the Kayuga Cemetery is located approximately one and a half kilometres north of the project area. So it's that small purple dot MP53 right up in the top right-hand corner of that figure. Just north of Kayuga Cemetery. Yes, there it is there.

So the cemetery is located within the mining tenements for the Dartbrook mine. So during the public exhibition period Muswellbrook Council raised some concerns about potential blasting impacts on the cemetery. So in response to these comments MACH undertook some additional targeted assessments of predicted blasting impacts. So those additional assessments is provided independent of the submissions report. So the submission - sorry, the assessment confirmed the air blast overpressure in ground vibration levels from the project would comply with conservative criteria and typically apply to historic heritage sites in New South Wales.

So these conservative criteria is what we have applied or what the department has applied and adopted in table 2 of the recommended conditions. So our assessment also took into consideration - Steve, if you could just scroll up another figure, there's just a receiver's figure a bit further up. Just one more. So again those purple dots up

in the top right-hand corner just north of the project area, so they're privately owned receivers north of the project area which are located between the project and the Kayuga Cemetery. So these residences would be subject to more stringent criteria which are designed for human comfort relative to the criteria for the cemetery. So for comparison the air blast overpressure criteria applied to ensure human comfort is 115 decibels compared to 130 decibels for historic heritage sites while the ground vibration criteria for human comfort is five millimetres per second rather than 10 millimetres per second applied to the heritage sites.

So the requirement to reduce blast impacts in order to maintain compliance with these human comfort criteria at the closer residences also provides further assurance that there would be no significant impacts at this cemetery. So I'm not sure whether you guys - sorry, whether the Commissioners would have anymore questions in relation to potential blasting impacts at that cemetery in particular.

PROF. CLARK: Joe, not necessarily. My question isn't just around the cemetery, it's a general question around if you have blasting going on in other mines, be that open-cut or underground in the area and the management plan that the applicant might be required or the department might have around those sort of cumulative impacts.

MR FITTELL: So I think we would have to look, in particular - I guess the only other mine - the next closest mine would be Dartbrook which is an underground operation just to the north of Mount Pleasant. We would have to have a look at what requirements they have in relation to that cemetery but from what I understand they have a requirement to prepare a management plan specifically for that cemetery and in consideration of blasting impacts at that cemetery. Not sure, Steve, as to whether you'd have anymore comments in relation to cumulative blast impacts at that site or whether the criteria we've put forward would - - -

PROF. CLARK: Or a simultaneous blast, that sort of thing.

MR O'DONOGHUE: Yes. The mines generally coordinate - they're aware of when the others are blasting so there is coordination between mines about blast events and that. It would be highly unlikely for mines to be simultaneously blasting, you know, to cause like a peak sort of overpressure event, for example, so that would occur. It would be fairly unheard of for that to happen, I think, in adjoining mines. They generally, you know, stay in pretty close contact about blast schedules and that and mines are required - they put their blast schedules out in the public anyway so there is that service coordination there so people are aware of when the blasts are occurring particularly, you know, with public roads nearby or notification requirements to receiver and that. So there is sort of established sort of processes there that it would be highly unlikely that that would occur.

PROF. CLARK: Thanks, Steve.

MR O'DONOGHUE: I'll move onto the agenda item 3, the amenity impacts unless there's anymore questions for Joe. So this was queries here about air quality targets noting that the increase in coal production and overburden handling and operational

measures to reduce noise impacts and also visual impacts. So I'll just start by just some general sort of background. So the mine it's located on the outskirts of Muswellbrook with the town approximately three kilometres to the south-east of the mine so it's in reasonable close proximity to a fairly large population centre, you know, with, you know, rural receivers, you know, on the outskirts of Muswellbrook and around the mine.

The smaller village of Aberdeen is about five kilometres to the north as well. As Clay sort of mentioned earlier the existing mine, you know, approval at that time there was a large number of sensitive receives that had acquisitional or mitigation rights, you know, as part of that original approval. So certainly, you know, noise, air quality and visual amenity has always been a key issue for the mine in terms of both regulation of the, you know, existing operations but also certainly for the assessment of this extension of the project.

At the time of the original approval in 1999 there was some 32 privately-owned residences in the acquisition for the mine. This has been reduced to some degree through acquisitions, you know, since the approval but based on the revised modelling that's been done for the extension project there are still 16 privately-owned residence or land in the mines voluntary acquisition area and just coming back to the figure, I'll just bring up - here's sort of - I'll just reduce the size so you can see it. Here's a summary in our table of the effect of receivers and changes from the approved project to the proposed project.

So in terms of significantly affected in applying the VLAMP it's 32 in the approved project and that's 16 for the proposed project. In terms of moderately affected with mitigation rights there was 20 in the approved project and 14 in the proposed project. So in both instances it's come down from about 50 in that sort of significantly moderately affected to around 30 and there's still a number in sort of minor affected which is two decibels above the criteria in that one. The affected properties are generally located in rural residential areas to the north-east, east and south, east of the mine on the western side of the New England Highway and just going back to the figure that we had up earlier, the purple dots are the privately-owned rural receivers with a significant impacts in terms of acquisition rights.

So again it's in that Kayuga area and down - and to the north, you know, near the cemetery that we discussed earlier but also between - rural residential between Muswellbrook and the mine itself and also down - you know, it impacts on Racecourse Road in terms of mitigation rights as well. Just mining at Mount Pleasant commenced in the south-east corner of the mine which is closer to the majority of the affected receivers and the mine's progressing to the north, into the west away from these receivers but moving up towards the receivers at Kayuga, in particular, that sort of cluster of receivers up there.

A key component of the mine is the development of the eastern emplacement between the mine and Muswellbrook which provides noise and visual shielding between the mine and Muswellbrook but also those receivers, the rural and residential receivers between Muswellbrook and the mine. I'll just bring up just to show this, this figure. It

shows - the area in green is the eastern out-of-pit emplacement so that's where - there has been an increase in the height of that which will provide additional shielding from a noise attenuation point of view once that's in place and also as the mine, you know, progresses to the north which is one of the key reasons about changes in predicted noise impacts for the receivers.

One other change was the removal of a conveyor as well which reduces noise impacts, you know, compared to the approved project. MACH also implements a range of other measures to mitigate noise and air quality emissions, so acoustic attenuation of plant as well as use of real time predictive air and noise management systems. So these essentially are systems that are monitoring 24/7 and provide alerts back to the mine in terms of, you know, varying operating to ensure that they're complying with conditions and with these measures the existing mine generally complies with the existing noise and air quality criteria for those receivers outside the acquisition area predicted.

With regard to noise, the EIS and the more recent monitoring reports indicate compliance with applicable criteria since November 2017 with the exception of a small number of exceedances to the east but these are generally associated with privately-owned receivers who have acquisition rights and not receivers outside that area. The proposed project includes a number of additional mitigation measures to reduce amenity impacts and some I've touched on. It's staging the increase in production, so ramping up, you know, above currently approved 10 until it moves further away from Muswellbrook. It's increasing the height of the eastern emplacement by 40 metres to provide that additional noise and visual shielding of the pit itself and also constructing a noise barrier along state 2 rail spurline to the southern side of the project which reduces noise emissions and also, you know, operational measure just to relocation of plant, you know, when there are adverse conditions as well.

So in applying these measures this is where - apart from acquisition of some of the - this is where it's moved down from 32 receivers down to 16 under acquisitional rights for the project and the moderately affected reducing from 20 to 14. Just in terms of - importantly the ones with acquisition rights all but three - and acquisition rights, all but three of the affected receivers already have voluntary mitigation or acquisition rights under the existing approval. Of the new receivers, one's been constructed since the original approval, so that's an additional receiver and that's up near receiver 154B which is up near Kayuga, so there's an additional residence up there and the other two are located on one property to the south-east of the mine where it has mitigation rights which didn't have previously.

So overall, I guess, in consultation with the EPA we're satisfied that MACH has implemented reasonable and feasible measures for the project and would generally result in an improvement of amenity of surrounding areas compared to the approved mine despite the proposed production increase. We've recommended inclusion of comprehensive noise and air quality operating conditions, you know, should the consent be granted which is provided in our recommended conditions to the Commission.

Just one thing to note on too that MACH's environment protection licence which is the existing one which is regulated by the EPA also includes additional conditions requiring dust-generating activities to cease under specific combination of adverse weather conditions and also monitored PM10 levels at - monitors associated with the Upper Hunter Air Quality Monitoring Network, so that's quite a stringent and unique condition put on an EPL for Mount Pleasant which is not on other mines in the valley and it partly reflects its proximity to Muswellbrook in terms of regulating impacts.

In terms of - I'll just touch on the query about visual amenity outcomes and processes there. You know, there is a condition we recommended to provide visual mitigation for residents within one kilometre of the mine. It's condition B79. We do have standard condition C5 which is about landowner notification. To remove any ambiguity, the Commission could consider including a specific requirement for MACH to notify landowners and incorporate that into that standard condition. That's there for where people have rights for air and noise mitigation that they're required to be notified. It could easily be extended to include, you know, notification where people have rights under the visual mitigation as well. So I just want to make a point on that. Is there any questions around any aspects there, Commissioners?

PROF. CLARK: Yes, thanks, Steve. Chris, do want to go first and then I'll follow up?

PROF. FELL: Certainly. Steve, with respect to noise the EPA came out with what they said was a final condition and the department, you know, its assessment has largely followed that but I notice that four properties were missing from the department's listing. Without going into the detail here, I think, would you mind if we queried why they're missing and perhaps offline you could advise us.

MR O'DONOGHUE: That's all right. Look, we can, yes, provide you advice around that but I guess the key principle, I guess, that touched on, certainly the reasons why there was like reduction in - we did consider carefully whether it was a change in policy that led to people not being included in acquisition rights, for example, or mitigation rights or whether it was due to changes to the project itself where there was valid noise reductions prediction. So I guess that's the overarching principle we applied in terms of whether people should retain acquisition rights or not but we're happy to sort of provide additional information on each of the specific ones.

PROF. FELL: Thank you very much. The second part of the question had to do air quality and, of course, the NEPM is tightening PM2.5. I'm conscious in winter the primary wind is from the north-west which, of course, would suggest an impact on Muswellbrook until quite a long period ahead in the mine's development. I notice the condition talks in the 24-hour level measurement of a figure and that figure is for both background and also with the mine. I just wonder if, in fact, under those conditions the residents of Muswellbrook could be subject to really quite high 24-hour impact and really one has to consider what the total impact will be.

MR O'DONOGHUE: Look, the air quality monitoring that was done does incorporate both incremental, like project alone plus cumulative impacts for PM10 and the PM2.5. So there was quite a comprehensive analysis of that and the predictions associated with that which did incorporate, you know, the wind directions and that. Overall it was predicted that's the incremental sort of cumulative addition from the Mount Pleasant mine, like that didn't trigger - were relatively low in terms of the contribution to cumulative impacts surrounding receivers. So that's - happy to pull out more information about that too, Commissioner, and provide that but that's probably - there was a comprehensive assessment done and we did get a peer review done of that as well to ensure that it was a robust assessment.

PROF. FELL: Okay. Thank you. Obviously we've got background data from present operation of the mine can give us guidance in that direction. We're simply (not transcribable) (9.50.35).

MR O'DONOGHUE: That's right. And, I mean, the background data is used in the modelling in terms of the cumulative predictions. So in terms of the modelling that's added onto, you know, the incremental one to look at that PM10 24-hour cumulative impact so it is incorporated in the assessment.

PROF. FELL: Thank you.

PROF. CLARK: Thanks, Steve. My question is sorting of leading more along the same lines of dust and I'm interested to know what the department's view has been on this. I know that certain mines are covering their train wagons and getting the doubling of production and a significant increase in the number of wagons that would be on that line. Is that something that was considered for this project?

MR O'DONOGHUE: Look, I'd have to take that on notice, Commission, in terms of the details that were done in the assessment but certainly there's been a lot of work done by the EPA, in particular, in dust emissions from wagons and they've had studies over the last decade looking at that issue because it does come up quite frequently in terms of the potential dust emissions down from Gunnedah, you know, from the Mudgee mines as well. So there has been a lot of work done on, you know, mitigation measures that can be done in terms of coatings put on over the coal, for example, and trials have been done on that but also, you know, moisture content of coal and that and potential but we're happy to, you know, provide more information on that but it's generally - assessments are done on that but I'd have to go back to the details of what was specifically done here but happy to provide more information about the EPA studies as well.

PROF. CLARK: Thank you. Any other questions, Chris or Terry? No? All right. Yes, let's keep going.

MR FITTELL: I'll take over from there if you want, Steve. So just going to put down to the next agenda item which is agenda 6 in relation to bushfire and New South Wales RFS recommendations for asset protection zones.

PROF. CLARK: Thank you.

MR FITTELL: So the department has recommended conditions in consideration of the advice from New South Wales RFS which was received on the 24th of Feb, 2021. So in relation to the recommendation for asset protection zones we've recommended condition B83 which requires MACH to ensure the development provides asset protection in accordance with the requirements of the RFS's planning for bushfire protection guideline. So this guideline includes consideration of asset protection zones around critical assets and infrastructure and MACH has also stated in its EIS that these asset protection zones would be reviewed and maintained in order to minimise bushfire risk associated with the project.

On top of this we have also recommended condition B84 which requires MACH to prepare a bushfire management plan in consultation with the RFS. So during development of this plan RFS will be able to provide comment on the draft documentation and provide any detailed comments on the proposed mitigation measures including consideration of asset protection zones before the plan's provided to the department for assessment and approval. So unless there's any other specific questions about asset protection zones or bushfire management I might get Steve to move back onto the next agenda item.

PROF. CLARK: Terry?

MR BAILEY: Thanks, Joe. My only follow-up question would be how you're reflecting and working with RFS on risk of escape from the site to other areas and what that looks like and my sense would be that it's not necessarily picked up as clearly from the RFS submission into the conditions that you've outlined.

MR FITTELL: Yes. So that would mostly be undertaken during, I guess, the detailed consultation that will be undertaken as part of that bushfire management plan with RFS. So we would have - MACH and ourselves would have consultation with the RFS in preparation of that plan in relation to any sort of escape from - escape of fire from the site. Does that answer your question?

MR BAILEY: Look, it might be something I'll just come back and have another look across but it's just the level of detail that might be captured in the conditions, that's all.

MR FITTELL: Okay. Sure. Thank you.

PROF. CLARK: Thanks, Joe.

MR O'DONOGHUE: Happy to move onto the - so general item 7 was water, final void and biodiversity. So compensatory water aspects, filling the final void and I can just talk generally about biodiversity, there wasn't a specific sort of query there but I can go - like just follow-up on what Clay sort of discussed earlier about some of the background in the biodiversity and offsetting in particular. Just on the compensatory water, we've got - we've recommended conditions that are largely consistent with department standard conditions for compensatory water supplies for mining projects.

They provide a procedure for the investigation and compensation of any impacts on privately-owned water supplies which includes impacts beyond the minimal impact considerations under the New South Wales Aquifer Interference Policy.

For example, if a landowner does consider that their bore is impacted, you know, they can raise that with the company and the department to look at whether compensatory water provisions would be triggered but there is modelling that has been done to identify, you know, the bores that are likely to be - predicted to be impacted and there's one bore has been identified that's in use that could be potentially impacted under the modelling that's been done. The conditions also provide for a temporary supply of compensatory water while detailed investigations are underway. Probably the main difference between the Mount Pleasant and other mining projects is that there is only one bore currently in operation on the Belgrade property that's exceeded the minimal harm provisions under the Aquifer Interference Policy which is exceeding at, you know, greater then two metre drawdown at a bore. So as part of the condition we have recommended specific monitoring at this bore to be undertaken, you know, through the life of the project.

As outlined in our report the Belgrade bore does tap into the less productive Permian groundwater source so it does have elevated salinity, you know, ranging from 5,000 to 12 and a half thousand micro siemens per centimetre. So in terms of, you know, productive bore for agricultural use it's not the best quality water there. It's also been historically affected by the Dartbrook mine as well when that was operating and as such the project-related impact's not expected to significantly impact the groundwater user and nevertheless, the conditions do allow the owner to require MACH to provide compensatory water if the predictions do eventuate in the location and certainly monitoring would be required and the compensatory water conditions do set a process for how that would work. So I'm not sure if there's any questions particularly on that one, Commissioners?

PROF. CLARK: I did have one around the water bores and it's a general question, Steve. It's a question where reading the information that was provided there are a number of bores that aren't being used at the moment, they're agricultural bores but they might be used in the future for whatever reasons that agricultural people may wish to start a bore up that they haven't previously used. Where do those fall in terms of - - -

MR O'DONOGHUE: Yes. Look, thanks, Commissioner. Look, those - the conditions still apply to them. So if a bore isn't being used but it's a water supply works, they've got a licence to use that bore even if it's non-operational, if they wanted to get it going again the condition would still apply, you know, so if they - if there's an impact on the productivity of that bore, you know, in terms of how they want to use that validly under any licence they have then that's - it would still apply in that instance. So even though, I guess, in terms of discussions the company's had with those owners in terms of how they're using at the moment, if there's potential to use in the future it would still apply if it's a valid water supply works.

PROF. CLARK: Okay. So in terms of baseline, they don't have to go and get all their bores going now to find out what the impact is in the future? How does that work?

MR O'DONOGHUE: It will probably depend on whether there's - you know, if there is an operating pump in there and they can actually take - gauge production rates and that, then there might be some historical data that the landowner has about the performance of the bore that could be used but I guess if there's no pumping equipment in there even though they've got a licence to do it the question would be whether the landowner would want to do - you know, want to go down that path to get some updated data on the productivity of the bore.

PROF. CLARK: Okay. Were there any other questions around biodiversity there? Terry has one.

MR BAILEY: Sorry, there is, Alice. This is a bit of a curiosity question, particularly around looking across the individual species, in particular, and so there's significant level of detail around a number of species but the one that's probably interesting and I'd like to know your thoughts just on - it's not included particularly in the assessment report other than to note two lots of species credits is the squirrel glider and I'll put this in a little bit of context that, you know, reviewing the documents in the last couple of days again there's no particular reference in the assessment report to squirrel glider, there is to a range of other species but the curiosity for me on this is that we've got known occurrences of squirrel glider on site, it's a listed Biodiversity Conservation Act species and the only reference in the assessment report around its management that I could find were the two captures of the species credit pieces. Went through a whole series of other species, striped legless lizard, grey-headed flying fox, tiger orchard, a range of species, there's a much more extensive coverage. So I just wondered what you knew and understood and what that assessment piece might be in around the squirrel glider work that you've been doing.

MR O'DONOGHUE: Commissioner, look, I might have to take that on notice in terms of just the details on that.

MR BAILEY: And I should apologise, it was a piece that I picked up over the weekend and some additional reading since. We sent the note through last week so I apologise in that sense but would really like some more detail on what your assessment around the squirrel glider looks like because I couldn't find an actual assessment other than the species credit allocations in the assessment report.

MR O'DONOGHUE: Sure. Joe, is there anything you can add there?

MR FITTELL: Yes. I think probably the main reason is that most of those other species are also Commonwealth-listed, the squirrel glider is not so there's a number of, I guess, additional assessment requirements for the bilateral agreement that need to be - - -

MR BAILEY: Well, there's a couple of additionals, certainly the striped legless lizard but if you have a look at that it's only Manuka and it says three and six kilometres

from site. So the interesting bit for me was the squirrel glider is recorded on site, it's a Biodiversity Conservation Act listed species so I wouldn't mind some additional analysis around where you've landed on that because the other species with the exception of the tiger orchard and the ecological communities they're, in fact, not on site, they don't occur on site. There's significant assessment of Regent Honeyeater, Swift Parrots, et cetera, so I get that under EPBC but I'd be curious on squirrel glider given it says state-listed species and occurs on site.

MR FITTELL: Okay. Yes, as Steve said, maybe we can take that one on notice and have a bit more of a look at it and get back to you.

PROF. CLARK: Thanks, Joe. I have a question around - sorry, Terry, does that address your question? Terry?

MR BAILEY: Yes. Well, we'll take it on notice.

PROF. CLARK: On notice and get back. Did you have any other - I want to talk about the final void so did you have any others there around - - -

MR BAILEY: Final void's a really important one and then if we get time we might just come back to managing biodiversity and potential conflicts with Aboriginal heritage.

PROF. CLARK: Okay.

MR BAILEY: So I have a curiosity on that because it's in the conditions, in the draft conditions but let's do the void, I think that's more important than anything else.

PROF. CLARK: So I think in terms of the final void I had a couple of questions there. Just some information or reasoning behind the justification for not filling it and I also have a question around - there's a table in there that speaks to water take at the end of extending beyond the end of the pit and I didn't quite understand what that water take was and also around the salinity levels in that final void which will be there enduring and what are the sort of likely, you know, long term impacts of a large void with highly saline water in it and its potential for interactions above and below surface. Steve?

MR O'DONOGHUE: Yes. So just on the - I guess just on the final void. We did engage Mr Middlemiss to provide advice around that, in particular. So we did interrogate it quite comprehensively, I guess, and required MACH and their experts including, you know, their peer reviewers to provide information around that as well. So I guess in looking at that, it's reasonably consistent with other mines in the Hunter is that filling the final void, the cost in terms of the rehabilitation in doing that would be additional in the order of $1 billion documented by MACH in terms of whether it would be a reasonable feasible option. They put a lot of work into final land form design, you know, geofluvial and, you know, micro relief patterns together to get quite a contemporary design in the land form but certainly the final void is a consistent issue in the Hunter Valley and other areas and the ability to fill that and the cost in doing it.

Part of it too is looking at the issues to look at is the potential for additional environment risk in filling the void. So apart from the cost of doing it in the timeframe to do it in terms of extended rehab it's the potential that in filling it, the seepage of poor quality water outside the pit shell towards the Hunter River and impacts on, you know, adjoining aquifers. So it is designed consistent with the current approved Mount Pleasant to be a green water sink which is one of the reasons, Commissioner, why - like over time you do get that increase in salinity over time because of the evaporative effects over time will cause that to occur.

Now, the issue is that you won't - it's pretty clear, you know, based on the additional work done is that you won't get migration of that outside the pit. So the issue does come down to increase poor quality water over time in that pit depending on how you might use that pit in the long term as well which is an aspect to it. One of the things that MACH did do in terms of configuring the design, they did fill - they did include backfilling about 1.5 kilometres of the northern part of the pit to get an improved design and, you know, geomorphic design as well in terms of stability of the final void to ensure that it was long term stable with the void, particularly around the void itself and I guess overall the conclusion about the economic viability of filling the void is consistent with other mining projects in the valley and the department has sort of accepted that backfilling is not a viable option and may result in, you know, adverse environment consequences outside that might migrate outside of the pit shell but we have recommended conditions consistent with the best practice to require MACH to - you know, through the life of the mine to further minimise the size in the catchment of the final void as the mine progresses, keeping in mind that they have done a lot of work upfront, you know, for quite a comprehensive design incorporating, you know, a lot of those geofluvial principles already but nonetheless it's still an ongoing requirement through the life of any mine to consistently review that and look at what opportunities there are for the use of the final void, you know, towards the end of the mine life as well.

PROF. CLARK: And so in terms of the stability of that final void over the long term, how long is it predicted currently to be able to stand up?

MR O'DONOGHUE: The modelling is quite - some of the more contemporary modelling of that, like the Siberian model and others are looking at - I'll have to, you know, take that on notice in terms of the timeframes of how far those models run but certainly the work they've done is quite comprehensive and probably best practice in terms of input and advice from resources regulator as well who oversees the mine - the rehabilitation but certainly the work they've done in terms of that fluvial design and the long term stability has been quite thorough but happy to get back to you in terms of, you know, more detail on the modelling that was used to inform that.

PROF. CLARK: Yes. We'd be interested in the modelling that's used to inform it and also how long it is, what was the conclusion of that and how long it can stand up. I'll just throw now to Terry, he had some follow-up questions on biodiversity, I think.

MR BAILEY: Yes. So it's a likely quirky one, Alice, and again it's a pick-up. So I'm actually looking at condition 62, so it was just to get a little bit of clarity. It's condition 62H and there's a little bit of a numbering problem and just to give you, page 24.

MR O'DONOGHUE: I'll just bring it up on the screen.

MR BAILEY: Yes. So if we just scroll down you'll see under H. What I just wanted to touch on was this construct around - and it's - if we stop there, it's manage any potential conflicts with Aboriginal heritage values. So what I just wanted to test was why that might be in the biodiversity management plan but it's not particularly captured in the reverse in the Aboriginal cultural heritage side and so just a little - I was just curious if you had any background on that because if you go to 68, I think it's condition 58, there's an Aboriginal cultural heritage management plan and it's got relative silence in that sense and I was just looking to look a little bit further at that and how the two might come together.

MR O'DONOGHUE: The condition in the - I'll just go back to the - - -

MR BAILEY: 62, yes.

MR O'DONOGHUE: - - - biodiversity. So that's really - partly that's because - systems actions here to be implemented on the site and this is - again this is back on the mine site to manage these aspects it's really in undertaking any of these - you know, for example, managing bushfire hazards, controlling feral pests,, et cetera, that it does consider where artefacts are located and in terms of protecting artefacts that, you know, haven't been identified to be damaged. So, I mean, there is a linkage to the cultural heritage management plan in some respect in that, you know, they're required under that to, you know, protect artefacts that have been identified not to be impacted and also salvage, you know, artefacts in accordance with the cultural heritage management plan. So this is sort of reinforcing that the biodiversity management plan in terms of how they're managing biodiversity on site has to be mindful of potential impacts on Aboriginal heritage values as well.

MR BAILEY: Complex question, sorry, Steve, complex question. Which takes precedence?

MR O'DONOGHUE: Well, for any site - for example, any site that's been identified through the assessment that - not to be impacted that takes precedence in terms of to be, you know, generally consistent with - generally in accordance with the approval. So the approval, you know, will identify which sites over the life of the project can - you know, can be salvaged and impacted and which sites within the site can't be. You know, even in undertaking the biodiversity management measures under there they can't impact, you know, any of those sites except as in accordance with the Aboriginal cultural heritage management plan.

MR BAILEY: Yes, I think I'm hearing your view on the Aboriginal cultural heritage management plan. So again it might just be a wording piece that clarifies between two

documents that could have - which is the point of that condition that they could be competing moments or conflicting moments which one has precedence.

MR O'DONOGHUE: I mean, I guess the bottom line, they can't - under the approval they can't damage any site that's been identified to be retained so that takes - that does take precedence.

MR BAILEY: Yes. And that will be known sites as distinct from things that might be found during the life which the Aboriginal cultural heritage management plan would look to address and that's - - -

MR O'DONOGHUE: That's right.

MR BAILEY: - - - where you've got the potential for conflict arising between the two documents.

MR O'DONOGHUE: Yes. Well, it will partly depend on whether it's in the - like the other aspect is the site within the disturbance footprint or not so if they do find sites within the disturbance footprint, you know, additional sites as they do, you know, pre-clearance surveys, for example, then that aspect needs to be like considered as well. So partly it will be is it within the disturbance footprint or outside the disturbance footprint of the mine.

PROF. CLARK: Thanks, Steve. I guess if we've got any more follow-up on that, Terry, we can put that in a question for a taking on notice but, yes, an important point when you've got conflict between two which one might take precedence there. There was one question that I asked about further that I wouldn't mind just going back to given we've still got a little bit of time here and that was about the post-mining water takes and what those were. You may need to take that one offline and get back but there is a table in there that lists post-mining water takes and I couldn't work out what those were for.

MR O'DONOGHUE: Look, the post-mining water take is really the continual - from what I imagine would be the continual inflow into the final void. It would still be taking water, you know, through that process. So there's two aspects, there'd be water running - it would also be taking surface water to some extent running into the final void as well. So there's a couple of components in terms of take of water. So you still need to - so for any ongoing, you know, water - ground water, you know, going to the final void and any induced take from other water sources there'd still be requirement for that component to be licenced.

PROF. CLARK: And so that's an enduring licence, is it, it goes on forever?

MR O'DONOGHUE: It does, in effect, in that - but the mechanism to do it if it's in perpetuity take would be to retire that sort of water out of the - you know, the water sharing plan essentially. So at some point like the mining company will want to relinquish the mining lease and surrender project approvals, for example, but there'd still be some take of water and induced take. One of the mechanisms under the Water

Management Act is to - is for retirement of entitlement, that's a sort of pathway to do that.

PROF. CLARK: Okay. Terry, did you have any other questions there and, Chris, I see your hand up there. I've got one also around housing. So, Chris. You're on mute, Chris.

PROF. FELL: Thank you, Chair. It was really to do with water again and we're all pretty uncertain about climate impacts and I'd really just like to ask you, are you reasonably confident that have talked about climate but given the extremes we've seen of late that the surface water situation will hold together and it won't lead to pollution of the Hunter River, in other words, sedimentation, et cetera?

MR O'DONOGHUE: In terms of - I guess there's two aspects there, Commissioner. One is - there's a couple of - in terms of releases from the mine site, there's really two ways, there's the release, you know, through the Hunter River trading scheme, you know, which is more saline water when there's higher flows in the Hunter River and that's regulated by the EPA. The other aspect is, as you sort of mentioned in terms of sediment, sediment runoff, you know, from disturbed areas, you know, prior to - and particularly the - it's more talking about the outer slopes of waste rock and placements, there are fairly substantive dams around the base of those emplacements that collect the water.

It's designed, you know, currently to the requirements in environment protection licence, for example, and it does come down to the blue book, you know, capture, you know, of runoff but it's designed at the moment - there's quite a lot of capacity in those dams. I haven't seen any, you know, revision of the blue book in terms of just, you know, alluding to changes and I haven't seen any revisions for the blue book where it defines the - you know, the five-day runoff volumes that need to be collected but that's something we can speak to the EPA about, about any sort of, you know, revisions to those sort of requirements but at the moment that's sort of the storage-sized capture that's defined, you know, in the blue book requirements.

PROF. FELL: Thank you.

PROF. CLARK: Thank you. Terry, anything else there?

MR BAILEY: No, not yet? Okay. I've got a question around housing and the supply of housing and the social impacts that happen when, you know, mines of this size and the number of people - employment expect to come out of this and the security of housing around Muswellbrook and the region. Was this considered and what sort of comment can you make around that?

MR O'DONOGHUE: Look, certainly in terms of the - like the social impact assessment, like housing accommodation was looked at. I guess for - this is an existing mine with an existing workforce. It is doubling - you know, despite that, you know, there's a doubling of both the operational workforce and the construction work and approximate doubling, you know, over the life of the project. I guess one aspect is

that looking at the - like the Hunter Valley as whole there are mines that are, you know, coming down in terms of production rates and I think there's some information in the EIS about overall production rates within the Hunter Valley mines, in particular, which shows a peak.

So I think partly it will be - there's a Hunter Valley workforce working in the mines, some mines are coming down in production, some more recently, you know, we've got, you know, some extension projects, like Glendell's still going through the assessment process. So I think it needs to be seen in that light as well in terms of, you know, existing workforce as an overall, you know, production rates across the valley in terms of impacts on housing but we can probably - we can provide more - you know if you want more sort of analysis of that or information we can provide that, Commissioner.

PROF. CLARK: I was just trying to find the exact trait you were referring to there and my memory was that the production rates drop off considerably but that's after a number of years when this mine's production rate has already reached peak capacity so in my mind there's an overlap there and I would like some more information around that and, you know, what's the social impact of that in the assessment done so far. I didn't have any other commentary. There's one last dot point there on our agenda around the department's assessment report and recommended conditions of consent which we've covered quite a bit of through this, however, Chris, I notice that you're off mute, have you got some other questions that you would like to refer back to and, Terry, then after that I'll ask you the same. Chris?

PROF. FELL: Thanks. No, I'm quite happy with what's been given and thank you for the detailed information you've provided.

PROF. CLARK: Thanks, Chris. Terry, do you have any other questions that you would like to put to the department?

MR BAILEY: No, thanks. Nothing additional to the discussions we've had, thank you.

PROF. CLARK: Okay. I don't have any others either. We have raised a number of questions there on notice. Clay, any comments there?

MR PRESHAW: No, no further comments. We'll take those questions on notice and provide further information in due course.

PROF. CLARK: Okay. Thank you. Brad, I might hand over to you, is there any final things that we need to do before we close this meeting?

MR JAMES: Nothing from me, Alice, I think you've covered all key points. So back to you.

PROF. CLARK: Okay. Look, I'd like to thank everybody for your time and the effort that you've put in to prepare for the meeting today. Thanks for the department and we'll call the meeting to a close.

MEETING CONCLUDED