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TRANSCRIPT OF PROCEEDINGS

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INDEPENDENT PLANNING COMMISSION

PANEL MEETING WITH WATERNSW

RE: DENDROBIUM

PANEL:	**STEPHEN O'CONNOR (Chair)** **JOHN HANN (Commissioner)** **STEPHEN BARRY** **JULIAN ARDAS**
WATERNSW:	**FIONA SMITH** **CLAY PRESHAW** **JESSIE EVANS**
DEPARTMENT:	**MIKE YOUNG** **STEVE O'DONOGHUE** **HOWARD REED**
LOCATION:	**VIDEOCONFERENCE**
DATE:	**9.07 AM, THURSDAY, 26 NOVEMBER 2020**

THIS PROCEEDING WAS CONDUCTED BY VIDEO CONFERENCE

MR S. O'CONNOR: Welcome, this is the stakeholder meeting preceding the Independent Planning Commission Electronic Public Hearing into the State Significant Development Application for the Dendrobium Extension Project. I'm Steve O'Connor and I'm the Chair of this Panel. Joining me is my fellow Commissioner, John Hann. John and I are being assisted ably by Stephen Barry and Julian Ardas.

Before we begin, I would like to acknowledge the traditional custodians of the lands on which we variously meet and pay my respects to their elders past, present, and emerging, and to the elders from any other communities who may be participating today.

South32 Limited, the applicant, owns and operates the Dendrobium Mine, an underground coalmine located approximate 8 kilometres west of Wollongong on the Southern Coalfields of New South Wales. The mine produces metallurgical coal for steelmaking in Australian and overseas. The applicant is seeking development consent to allow the extraction of an additional 78 million tonnes of run-of-mine coal from two new mining areas, Area 5 and Area 6, to extend the life of the project until 31 December 2048.

The application has come to the Commission for determination because it received more than 50 unique public objections. I note that the Department of Planning, Industry and Environment has provided its assessment report and has recommended approval for the project. The Minister for Planning and Public Spaces has directed the Commission to hold a public hearing into the application. He has also asked the Commission to determine the application within 12 weeks of the date of the referral from the Department.

In line with regulations introduced in response to the ongoing COVID-19 pandemic, this meeting will be conducted online. A full transcript of the meeting will also be published in the next few days.

Thanks, that's the introductory comments. Just to assist with the transcribing, I might ask each of the people present just to introduce themselves and say where they're from. That will help later on, when the transcribing process is underway. So I might start with you, John.

MR J. HANN: John Hann, Commissioner, IPC.

MR O'CONNOR: And then Steve O'Donoghue.

MR S. O'DONOGHUE: Yes. Steve O'Donoghue, Director Resource Assessments, Department of Planning, Industry, and Environment.

MR O'CONNOR: Thank you. Mike Young.

MR M. YOUNG: Yes. Mike Young. I'm the Executive Director of Energy, Industry, and Compliance, at the Department of Planning, Industry, and Environment.

MR O'CONNOR: Thank you. And Howard, you've joined us.

MR H. REED: Yes. Howard Reed, I'm an independent environmental contractor working for Mike and Steve.

MR O'CONNOR: Thank you. Steve Barry.

MR S. BARRY: Steve Barry, Planning Director at the Office of the IPC.

MR O'CONNOR: And over to you, Clay.

MR C. PRESHAW: Clay Preshaw, I'm Manager of Catchment Protection at WaterNSW.

MR O'CONNOR: And Jessie.

MS J. EVANS: Jessie Evans, Mining Manager, WaterNSW.

MR O'CONNOR: And last, but not least, Fiona.

MS F. SMITH: So Fiona Smith, Executive Manager Water and Catchment Protection with WaterNSW.

MR O'CONNOR: Thank you. I take it I've got everybody?

MR J. ARDAS: And Julian Ardas, I am a Planning Consultant working for the Independent Planning Commission.

MR O'CONNOR: My apologies, Julian. Thank you.

MR ARDAS: That's fine.

MR O'CONNOR: So we might start by just asking WaterNSW, via Clay, to make any initial comments or begin your presentation.

MR PRESHAW: Sure. So I'm just sharing my screen. Please let me know if that's working for you all? Is that, can people see that?

MR O'CONNOR: Certainly can.

MR HANN: Yes. Thanks, Clay.

MR PRESHAW: So we've prepared a relatively short slide deck that outlines our residual concerns and questions. It's intended to serve as talking points with enough detail to express our concerns and pose a range of questions. There are some references to statements and different documents including from the expert panel and mining in the catchment, and the new advisory panel, and various other experts. There are also some figures and maps to help illustrate our points.

But beyond that, we are hoping that they will lead to further questions and comments from the Commission. So I'm more than happy to keep it sort of open-ended, an open dialogue, rather than simply just talk at you and add more information to the volumes, and volumes, I'm sure you've already got on this project.

So the structure of the slides is, essentially, firstly, a relatively short contextual background on WaterNSW' role in the catchment, and in relation to mining, and in relation to the project in particular. That background should hopefully set the scene for the types of concerns we have and also scope the concerns. And secondly, we will do a longer discussion based around what we're calling, "eight residual questions" which we believe need to be considered before and determination on the project is made. And those questions cover four broad areas: water quantity, water quality, stream impacts, and swamps. And as we work through those questions, it should become quite clear what our position is, in response to them, and we will certainly provide justification for those positions.

I've also included, just on the right of that slide, a snapshot of the proposed mine layout. It will become apparent throughout our slides that the precise nature of that layout is at the heart of many of our concerns. So we've got bigger versions of that plan and other relevant ones, in the rest of the slides.

So what is WaterNSW, and what is our role in this particular project? Well, WaterNSW actually has Statewide responsibilities in supply bulk water to customers and managing a range of water assets, and dams, and pipelines, and the like. We're, essentially, a combination of the old State Water and the old Sydney Catchment Authority, plus some other parts of the Department.

But in relation to Metropolitan Sydney, we have an important role in protecting the catchments that supply water to about 5 million people. So and under our Act, the Water NSW Act, there is formerly a declared catchment around Sydney. It extends from Lithgow in the west, down through the Southern Highlands, all the way down to Braidwood in the south. And within my team, which is the Catchment Protection Team, this declared catchment is our primary responsibility. And the Water NSW Act emphasises the importance of protecting the catchment in both the Objectives, and the Functions of the Act.

So the principal – one of the principal objectives of our Act is to ensure that Declared Catchment Areas are managed and protected so as to promote water quality and the protection of the environment. And one of our listed functions, as an organisation is

to protect and enhance the quality and quantity of water in the Declared Catchment Areas.

On top of that, while the Declared Catchment is about 16,000 square kilometres, within that catchment, there are about 3,700 square kilometres known as Special Areas, which surround the main reservoirs. And these are largely pristine areas of bushland where public access is restricted. These special areas are vital buffers to protect the drinking water, and they've been legislated in a range of Acts over time. In fact, the concept of Special Areas and buffers around the reservoir has been around for over a century since the construction of the dams south of Sydney. And there's a particular reference in our Act to:

> *Maintaining the ecological integrity of the special areas*

So the Act provides responsibilities in relation to water quality, water quantity, and ecology. And aside from our Act, there's also the State Environmental Planning Policy for the Drinking Water Catchment that also informs our work. And now, that includes the NorBE test, the Neutral or Beneficial Effect Test on Water Quality, which is a precondition for and development in the Declared Catchment. It commenced in 2011, but various iterations of NorBE have been around since the late 90s, originally, in response to the Sydney Water Crisis and the McClellan Inquiry following that, which was one of the main recommendations of that Inquiry.

Interestingly, this project is the first new DA within the Special Areas where the NorBE test under this version of the steps will be applied. Some of the projects – some other projects were assessed under the now repealed Part 3A of the EP&A Act which didn't require the NorBE test to be applied in the same way. The Dendrobium Mine and some other mines have also gone through a range of modifications. However, the NorBE test doesn't apply strictly to modifications, either.

Now, the previous slide was about catchment protection in general. But what is our role in relation to – I think, I've skipped a couple. So let me go back, if I can. What is our role in relation to mining, as opposed to just in the catchment generally? And if you can read what it says on the right-hand side of that slide, which you may not be able to?

MR O'CONNOR: I can't.

MR PRESHAW:

> *We clearly acknowledge that WaterNSW has no legislative powers to control or stop mining in the declared catchment. But we are, obviously, very concerned about mining in the catchment, particularly, in the special areas of the catchment. And we continue to advocate and seek to influence decision in that regard.*

It's been said in various places that Sydney is the only major city in the world to allow coalmining this close to its drinking water storages. And as far as I'm aware, you know, there's never been evidence to refute that.

MR O'CONNOR: Okay.

MR PRESHAW: So coalmining and catchment protection are fundamentally different land uses to reconcile. For that reason, WaterNSW and its predecessor the Sydney Catchment Authority, have sought to establish their own Mining Principles. Now, importantly, we have recently updated our Mining Principles to reflect the best available science, and in particular, to reflect the developments in understanding over the last five years that were captured in the Independent Expert Mining Panel's final reports. So they draw heavily from that final report which we considered to be the most comprehensive review of all those improvements in the science.

So the principle, these principles cover the four areas that you can see there. In terms of water supply and infrastructure, we say, mining must not result in the integrity of the infrastructure being compromised. In terms of water quantity, we've drawn a lot from the Independent Expert Panel. And we've said:

> *Leakage from reservoirs as a result of mining must be avoided. And regional depressurisation and diversion of surface water flows must be avoided and minimised by adopting a precautionary approach to mine design.*

Now, those words are directly from the Independent Expert Panel. In relation to water quality, we've stuck very closely to the provisions of the SEPP, so:

> *All mining activities must have a Neutral of Beneficial Effect on Water Quality.*

And in relation to ecological integrity, we've referred directly to our Act. So:

> *The ecological integrity of the Special Areas must be maintained and protected.*

So what is our role in particular to this project? Well, it's fair to say, we've taken a very keen interest and sought to be heavily involved in this assessment process. And from the outset, we've identified that this project was likely to have unprecedented impacts on the catchment. We've made three formal submissions on the project so far, all of which have strongly objected to the project, as it's currently proposed. And you will see I our submissions that we often sue the phrase as currently proposed. It is important because it indicates that we're not simply putting a blanked objection to the project, and that's consistent with our new mining principles which do not include that type of blanket opposition to mining.

However, we do like to draw attention to other mines and other mining proposals in the catchment which have adopted mine plans that result in considerably less environmental impact in the catchment. As an example, the Metropolitan Mine which extracts much narrower longwalls and it has, to date, has not recorded and

signicant surface water losses. And there's also the currently under consideration Russell Vale proposal which is seeking to only undertake first workings.

And to be honest, I am surprised by South32' approach to this project and the predicted level of environmental impacts in the catchment. While some of these other mines are generally seeking to amend their operations to reduce the catchment impacts, we see South32 as essentially seeking to do more of the same or even, arguably, more than before. And that's in spite of what is a better understanding of the level of impacts from the existing mine.

So I would say that generally bullish approach from South32 has continued throughout the assessment process, with very little compromise. And the issues that we have remained in our three submissions have, therefore, remained very consistent. And you can see them on the slide there. They cover the key areas of our responsibility. I can quickly run through the highlights, or the lowlights, in our view.

In relation to water quantity. In our prediction of up to 3.3 gigalitres of catchment water loss. During a drought period, that could lead to a 3.9, 2.9 per cent reduction I some key catchments. Extensive stream fracturing. In terms of swamps, major impacts to endangered swamps. In our view, South32 hasn't sufficiently considered alternative mine designs that would reduce the height of fracturing. And in relation to subsidence, these figures are higher than any other mine in the Southern Coalfield.

And as background to our general points there, it is important to say, both the policy settings and the scientific understanding of mining activities have changed in the last decade since a major mine of this nature was approved in the catchment. In particular, the need for surface water licences, the Aquifer Interference Policy, and the Water Sharing Plans have been established. The NorBE test, as it currently is under the SEPP and its application to State Significant Developments. Protection of swamps and listing of upland swamps and the Offset Policy in the Biodiversity Conservation Act, itself.

And in terms of the scientific understanding, we've now got a much better way, much better methods of predicting the height of fracturing. We understand the potential for the height of fracturing to extend to the surface and to cause water losses, surface water losses. We now understand the increased likelihood of swamp impacts that are overlying longwall mining, and the difficulty of remediating mining damage to swamps and water courses. And we also have a better understanding of the extent of non-conventional subsidence impacts, in particular valley closure, which is relevant to this proposal.

So that gives you, I guess, the contextual background of our role in the catchment and our position on the project. I guess, it's now time to jump into the key residual questions that we consider need further consideration. There are eight, in total. And they are structured, mostly, in order of a logical progression, but vaguely, in an order of priority, as well. We have tried to whittle it down to just eight. So really, we consider all eight to be of high importance for any robust merits assessment.

And so at this point of the slides, I would expect that things might become a bit less us talking to you, and maybe, a bit more interactive. So please, fell free, as we move through the questions, to interject with questions or comments. So question 1 is, are the predicted catchment water losses accurate and reliable? Our view is that there are still outstanding questions about whether the groundwater model which provides the predictions of surface water losses actually provides accurate worst case predictions and, in particular, in relation to the proportion of surface water in predicted inflows.

And the reason we are raising this concern and we have consistently through the assessment process is, in 2016, Dr Col Mackie who provided advice to the Department, calculated the proportion of surface water in Dendrobium's inflows over a five year period was about 44 per cent. Now, following that, the Independent Expert Panel calculated in its calculations of existing water losses at Dendrobium, somewhere in the order of 40 to 50 per cent of the inflows were from surface water.

South32, there is a discrepancy with South32's predictions. Theirs is what they considered to be a conservative 25 up to 35 per cent which is still significantly less in terms of the proportion of surface water in the inflows. Which would, if you were to adopt either Col Mackie's or the Independent Expert Panel's calculations, yes, substantially increase the surface water losses predicted by the project. That is our key concern.

MR O'CONNOR: And can I just stop you there?

MR PRESHAW: Sure.

MR O'CONNOR: Just so I understand what's meant by, say, in the case of Dr Col Mackie's comments there, "That the water losses or the inflows were approximately 44 per cent." 44 per cent of what? Is that 44 per cent of the surface flows in a particular stream? I just don't quite follow what that means.

MR PRESHAW: What – yes, so what it, what it means is all underground mines experience inflows into the workings. Now, that water can come from – it comes from above. But it can come from what is, I guess, considered to be "groundwater" or it can come from what is considered to be "surface water", or a combination of both. Now, in an environment where there's what we call "connective fracturing", there'll be a component of surface water and there will be a component of ground water. In Dr Col Mackie's calculations, you know, 44 per cent which is a large percentage of the water, is actually coming directly from surface water, and the other water is from ground water.

MR O'CONNOR: So that's the - - -

MR PRESHAW: Yes.

MR O'CONNOR: - - - 44 per cent of the water flowing into the mine?

MR PRESHAW: Correct.

MR O'CONNOR: Thank you.

MR PRESHAW: Yes. Now, there are a range of other concerns that have been raised about the accuracy of the groundwater model and its ability to predict, accurately, surface water flows – surface, mine water inflows and the percentage of surface water in those inflows. In fact, DPIE Water has requested a range of preapproval information on some more conservative model runs. I haven't seen any of that information, if it has, in fact, been provided. And the Independent Advisory Panel did actually make some comments about the accuracy of the groundwater model. It said:

> *It is not comfortable at this stage to be comfortable that the worst case losses from the surface water regime have been identified.*

So we believe, again, that there are some outstanding questions about whether the groundwater model accurately predicts accurate worst case predictions, in terms of surface water losses.

One final point I would make is that, in a historical context – and I've been dealing with this mine for a long period – South32's model about inflows and about the proportion of surface water in the inflows has substantially increased, changed, and increased over time. So when the mine was approved, it was expected that next to no water would be coming from the surface. By 2014, we're talking 272 megalitres a year, 330 in 2016, 683 in 2018. I think, we're up in the range of 1.4 gigalitres from existing losses. But there still appears to be a discrepancy between what South32 considers to be surface water losses from existing mining and what the Independent Expert Panel considers to be losses from existing mining. So there is that historical context of the amount of surface water of the amount of surface water that is believed to be lost. It has been increasing over time, as they change their groundwater model predictions.

If there's no more questions, I will go to the next slide. So what are the water losses post-mining? Is our second question. Now, this is, essentially, a new, but major issue that the independent advisory panel has ranged in its most recent advice to the Department. And it's about whether the mine can, in fact, be sealed and fully recharged, which is assumed, currently assumed by South32 in its assessment and, hence, whether surface water losses will eventually cease. So if it's assumed that the mine can be sealed, post-mining, in a hydrological sense, then, the water will essentially recharge to the surface. And you, eventually, will not have surface water losses occurring in the catchment.

Now, if it can't be sealed, which is what the IEP is raising as a concern, in our view, that creates two main concerns. One is that you may have a permanent loss of catchment water. So you will continue to experience surface water losses perpetually which would be unacceptable to us. And in terms of the proposed offsets for water,

for surface water, the current package that's being proposed, the compensation package would not be, cannot be sufficient, would have to be recalculated. And as far as we can see in the Conditions, there's no ability in the Conditions to scale up the amount of compensation that South32 is required to provide in terms of surface water losses.

So just quoting the Independent Advisory Panel:

> *Based on the Panel's review of the IS and the discussions with the proponent, these types of issues are yet to be fully investigated and assessed, therefore, the Panel can't form a view on the impacts and consequences associated with both the option to seal and flood Dendrobium Mine and the option to allow water to continue to discharge fully to the mine at seam-level.*

So we consider that further information is required from South32. If the answer is, yes, the mine can be sealed, then, that allows the acceptability of the currently predicted losses and the appropriateness of any offsets to be properly assessed. If the answer is, no, the mine can't be sealed, then, we would consider the further assessment of the total losses and a recalculation of the offset package is required. I will move to the next - - -

MR YOUNG: Clay, it's Mike Young here. Would it be worth pointing out that, obviously, this is an existing issue regardless of whether the proposed extension is approved?

MR PRESHAW: I mean, from our perspective, that is a concern for us because it's an existing issue, especially, at Dendrobium Mine. But it's particularly important in relation to this new project because we believe that it is an issue that needs to be assessed and dealt with before the project can be approved. Whereas, the existing mine has an approval, so it's a lot more difficult to control what the future losses from the existing mining, approved mining is.

MR YOUNG: So in other words, if it's an existing problem, you don't want to exacerbate it by creating an additional existing problem?

MR PRESHAW: Absolutely.

MR YOUNG: Yes.

MR PRESHAW: I will move onto the next one because it's really, I think it's a nice segue ..... questions. The next question is, are the likely catchment water losses considered acceptable? Now, WaterNSW has provided, as you know from the Department's Assessment Reports, in principle support for offsets, water offsets. But that's based on the basic hierarchy of avoid, minimise, offset. So we would like the company to do everything reasonably practicable to avoid or minimise water losses, before you get to providing offsets. Ultimately, WaterNSW would prefer that

there is no water loss or as little water loss as possible over any separate compensation.

So we consider the project losses, again, as currently proposed from the catchment, to be unacceptable. And we believe that they could be avoided or minimised. So in, you know, more specifically, predicted losses of up to 3.3 gigalitres a year on top of the existing losses from the mine, we don't consider that to be an acceptable amount of catchment water loss.

Now, I mentioned before in drought, that's a particular concern to us, particularly, in the context of climate change, where you may see a 3.9 per cent reduction in the Avon Reservoir Catchment, a 2.9 per cent reduction in the Pheasant's Nest Catchment. If you look at what the IEP has said in relation to that, they said:

> *The significance of losses in extreme drought conditions that are relevant to the security ..... is not considered in this report.*

So while they've generally found that there are no significant losses in the catchment, they have highlighted the concern about what would happen during a drought period. And, in fact, the IESC in its advice also provides some comments to that effect, so saying:

> *While the estimated losses are small relative to the volume of reservoir inflows, under median ..... conditions, it is likely that these losses are proportionately more significant under tenth percentile dry rainfall conditions.*

And they said:

> *This requires further discussion, considering most of the sub-catchments within Area 5 are predicted to cease flowing under those dry conditions.*

The other thing that's worth pointing out is we think it's necessary to view the predicted losses in the context of historical and cumulative losses. So in a cumulative impact sense. The project was, originally, approved on the basis, so the Dendrobium, the existing Dendrobium Project was originally approved on the basis of virtually no losses. We now know from the IEP that the current losses at Dendrobium are in the order of 5 megalitres a day, at least. And that is in the context of about eight megalitres a day of water loss across all mines in the special areas.

Now, this project is predicted to double, or just over double, the amount of losses from the – that are already occurring from the existing mine. That would mean that you're talking about, you know, a total of about 13 megalitres a day of water loss from mining in the special areas of which Dendrobium would account 10 of those 13, over three quarters of all mining related losses in the special areas. So again, that's justification as to why we consider the predicted losses from this project to be unacceptable and that we think that they could be avoided or minimised.

MR YOUNG: Clay, would it be helpful for the Commission just to set that 10 to 13 megalitres a day losses with total catchment flows and inputs? Is there any context around that? Because, obviously, that may be germane to the consideration of acceptability.

MR PRESHAW: I'd be happy for you guys to outline what's in, I can't remember exactly what's in your assessment report, but there were some figures in there.

MR YOUNG: Well, I think, the Commission has access to that. But, clearly, I guess, you know, we've sought to put the losses that are associated with the existing mining and the proposed mining in the context of total catchment yield. But, obviously, as the catchment managers, you know, that's matter for you to, I guess, WaterNSW to consider, as to the proportion and the acceptability of those losses. But I don't have the figures to hand. I don't know whether Howard has those, off the top of his head.

But my understanding is it's a very small proportion of losses associated with other things like evaporation from dams, leakage from pipes associated with the infrastructure, Sydney Water infrastructure and so forth. So I think, it is important to put that in context, as opposed to just looking at those numbers in isolation.

MR REED: The only thing I would add to that is not to quote the report, but just to draw attention to the fact that the IEPMC also contextualised those figures and, by reference to some of the things that Mike is talking about, evaporation, environmental flows, and pipe losses.

MR YOUNG: Yes. And it's the Chief Scientist's Catchment Panel, yes, did comment on that in its final report, as I recall.

MR O'CONNOR: Thanks Clay, you can proceed.

MR PRESHAW: I will go ahead. Question 4 is, can catchment water losses be minimised? Now, the answer is yes, water losses can be avoided or minimised. And, essentially, that's through narrower longwalls and/or lower mining height, which would prevent connective cracking, which would have the following benefits. So it, firstly, would reduce catchment water losses. It would reduce the intensity of stream impacts, and it would improve the chance of remediation success.

So it's relevant to look at what the IEP had to say in relation to that. It says:

> *While the same type of impact due to conventional subsidence may occur as longwall panels with become narrower.*

That's in relation to surface cracking:

> *The intensity of the impacts, which is fracturing with, frequency and depth can be expected to reduce. This may have important implications for the volume of*

surface water that can be diverted into the subsurface and into the mine through connective fractures.

So that is now an established concept, that if you can reduce the level of connective fracturing, then, you will likely reduce the amount of surface water losses. So we agree with the company and the Department's conclusion that surface cracking is likely to occur, even with narrow longwalls. But it's important to draw a distinction between surface cracking and, you know, what is kind of generally called, "connective cracking". We would say that there is still an opportunity to reduce the height of free drainage or connective cracking and establish, you know, what some people call a "constrained zone" between the surface cracking zone at the surface and the fractured zone above the coal seam. And as I've said before, there are likely some signicant benefits to streams and potential remediation of streams on top of that.

But while we accept that surface cracking will occur with narrower longwalls, we still think there's benefit in doing that, in terms of reducing surface water losses through a reduction in the height of fracturing.

MR O'CONNOR: Do you have a view as to how much the longwall should be reduced in width by?

MR PRESHAW: That's the next question that we will get to. So maybe I will move along. It is, again, I would just refer to the Independent Expert Panels final report which says:

A considerable reduction in short-term and long-term environmental effects may be realised by preventing the height of free drainage in the special areas from intersecting the surface either directly or indirectly by interaction with surface fracture networks.

So we've drawn this view based on the science. The Panel considers that it would be wise to adopt a precautionary approach and base mine design on preventing the height of free draining in the Special Areas from connecting to the surface. So that's exactly where we've got our mining principles from. There's just a plan here that I can probably come back to. But that's just describing the constrained zone between the fracture zone and the surface cracking zone. So ultimately, that's what you're trying to create, if you're trying to reduce surface water losses.

So the fifth question, I think, goes to your question, Steve, which is, is there a viable mine plan with reduced catchment impacts? This is an extremely difficult question to answer and starts to go outside the realms of what WaterNSW's responsibility is. But it's fair to say, a key assumption underlying the potential economic impacts is that there's no other viable mine plan. We would question, is there, in fact, a viable mine plan with narrower panels and/or a lower mining height that prevents connective cracking?

Now, South32 has steadfastly refused to go there, to present, or assess, alternative mine plans with narrower panels. In their most recent response, they have said:

> *There is no definitive method to estimate surface water losses at alternative panel width. Estimating surface water losses less than three or five will be inherently uncertain.*

I mean, we disagree with that conceptually. Because all environmental impact assessments for major projects like this are based on models which are inherently uncertain. But that doesn't stop them making all sorts of predictions about other things. And that's just an accepted part of doing an environmental assessment for these types of projects. Now, to your question, Steve, without going into any detail at all, if you do a basic analysis of the Tammetta formula, it indicates that a constrained zone of 50 metres plus, which is the very minimum that you would be looking for, that can be retained with variable longwalls wearing from 200 to 275 metres in width.

So if you're just going for the bare minimum of 50 metres of constrained zone between surface cracking zone and fracture zone, then, you could have approximately have approximately half the longwalls at somewhere between 250 and 275, and the other half at 200 and 250. Now, the key question there is, what benefit does that give you in terms of surface water losses? We haven't done those numbers. They're difficult to do without having all the data that the company holds. And, in fact, just doing that basic analysis of the Tammetta formula is, really, only for a very indicative idea of what types of longwall width might give a benefit in terms of connective cracking and surface water losses.

So I just want to put that caveat. But I knew the question would come up as to, you know, what sort of widths are you talking about? We think that, you know, 200 to 275 would, at least, create that constrained zone. Which, theoretically, means that you wouldn't have connective cracking through to the surface. Does it mean that you wouldn't have surface water losses? I'm not sure. As comparison, Metropolitan Mine which is, you know, probably, a very good example of creating a big constrained zone has, typically, in the order of 150 to 200 metres of constrained zone. But that's considerably more than what I'm talking about there.

Now, just in relation to South32's approach to project design and presenting alternatives. It is, I think, informative to look at what the IEP said. They said that they:

> *Have serious reservations as to whether the mine layout put forward as the maximum case by South32 constitutes a realistic point of reference.*

So South32 have argued that, "We have considered alternative mine designs, including this maximum case." The Panel is saying, "Well, we're not sure that that's realistic."

The base case

Which is the one that they did choose:

> *may be more realistic of the upper bound, today, for a mine layout in the Sydney catchment than of an economically viable layout that takes ecological and mine closure implications into account.*

And then the minimum case, they say:

> *Is not particularly helpful, as it is not based on objective or agreed environmental targets.*

And that was, essentially, I think, you know, really narrowing the longwalls to the extreme. So that just goes to our argument that we, really, don't consider that South32 has engaged in a real assessment and consideration of alternative project designs.

MR HANN: Clay, it's John Hann here, if I could just ask a question. Would you like to comment on the work done by MineCraft in respect to viability and the various parameters around extraction height and panel width, since we're on that particular topic?

MR PRESHAW: I might like to comment on that. I've read it, certainly, and I have my own opinion. But, I think, for the purposes of what WaterNSW's responsibility is, we've intentionally, I guess, shied away from the specifics around economics. Now, I understand that MineCraft generally concluded that for every 25 metre longwall width reduction across the whole mine plan, that would cost in the order of $100 million in net present value. But looking at those sort of basic analysis of the Tammetta formula I can, yes, you can probably make some estimations as to what that might mean for the potential net present value losses from a reduction in longwall width. But I probably won't go into that in great detail because I think that's stepping outside the bounds of what WaterNSW's role and responsibility is - - -

MR HANN: I understood that it meant that - - -

MR PRESHAW: Certainly, certainly, we think that's what - - -

MR HANN: - - - they're trying to comply to this viable mine plan. So obviously, that brings into play the work that MineCraft did.

MR PRESHAW: It's absolutely relevant. And that's why, I think, if you were to run a real assessment of other mine plans, and then, use some of the MineCraft plan or data, well, in fact, I understand that the company has got a similar set of expertise from a different company. I assume they would be able to run, you know, some sort

of economic analysis based on the theoretical mine planning information I'm giving you today.

MR HANN: Okay. Thanks. Thanks, Clay.

MR PRESHAW: So the only other thing I'd say is that the Independent Advisory Panel says that:

> *The assumption of full connection of fractures to surface above the mine over all panels is stated to be "conservative, it represents, in principle, a worst case for groundwater inflows." This may be true, but it doesn't allow for sensitivity of mine inflows to mine geometry, longwall width and extraction height to be explored.*

So that's, the general approach they've taken of just assuming full connection through the surface means that they just, are refusing to explore other options in terms of mine geometry.

I have included some plans here. I'm ..... go to them, in the interests of time. So I will just skip through to the sixth question, so that we can at least get through the questions we've got listed. And then we will maybe, circle back to those plans. So number 6 is, what are the post-mining impacts on water quality. So water quality, as opposed to water quantity. In our view, there's residual uncertainty about post-mining groundwater re-pressurisation and potential discharge of contaminated groundwater after closure of the mine. Therefore, we consider, and we've made this quite clear along the assessment process, that NorBE has not yet been adequately demonstrated.

Now, this raises a whole range of legal questions about the application of clause 11A, which is this special clause for continuing development. In my opinion, our opinion, were' not questioning whether this project fits the definition of continuing development. It's all about, how you do you interpret what the clause says? In particular there are some issues there, like, what are similar conditions for continuing development?

Noting that the original approval was granted on the basis of virtually no impacts, should the existing conditions simply be transferred across or can additional similar conditions be inserted for a new mining area? For example, could you add similar defined points to what's already been added to the Conditions, so when they approve the mine as it is now, they included a condition for a particular point at the confluence of Wongawilli, and Wongawilli Creek and Cordeaux River. Should a similar, you know, defined point b added somewhere else, in relation to this particular geographical area of mining?

Is the drafting of similar Conditions sufficient in itself? So once you've put the similar Conditions into a consent, does that mean you don't have to do any assessment of actual water quality to meet the continuing development NorBE test?

So I've had discussions with Howard about this. And, I think, it's fair to say we're not in agreement in terms of the interpretation of that. I would probably argue that in an assessment of whether these conditions that you've moved across into the new consent can actually be met. So you actually have to consider whether the water quality, predicted water quality, meets the Conditions that you're setting.

Even if that isn't the test, that would be my, you know, I guess reading up of the Set Provision. But even if it's, you read it down, and you just had to pull the Conditions across, I would say that from an assessment point of view, you need to consider, for any issue, whether the impacts are actually going to meet the Conditions that you're requested or you've implemented.

So there is still a factual question about whether the Project's additional post-mining outflows may be tipping point for a Negligible Impact test in the reservoir? Noting that there is already a negligible requirement in the Avon and Cordeaux Reservoirs and at the confluence of those two watercourses. So that we believe there's still a factual question as to whether the additional outflows from this whole new mining area would mean that they couldn't meet the negligible impact test.

MR O'CONNOR: Clay, could I just get you to - - -

MR PRESHAW: Sorry.

MR O'CONNOR: - - - expand on that first point - - -

MR PRESHAW: Yes, I will.

MR O'CONNOR: - - - around the re - - -

MR PRESHAW: The first point, sorry? On the legal question, or?

MR O'CONNOR: Yes. The first point. Just so I understand that issue around the re-pressurisation and the contamination of groundwater.

MR PRESHAW: Yes. Yes. So if the mine can be sealed, which is what the EIS has currently assumed, then, that means that the water will, the water will essentially re-pressurise to the surface. And that will mean that, over time, post mining, water will start to re-emerge at the surface. And what you may experience, and you typically experienced in a highly fractured environment post-mining, is that, in those fractured areas, you'll have mobilisation of metals and you'll also have the upward movement of whatever's in the groundwater emerging at the surface.

And what we've seen during mining is you get iron staining. So certain types of metals will, including iron, re-emerge at the surface. And what we're saying is there hasn't been an adequate assessment of what would happen, assuming the mine can be sealed, in relation to all of those outflows from the re-pressurised environment in the context of a highly fractured network.

MR HANN: Is this the point – John Hann here, Clay – would you proffer a view as to what's preferred from WaterNSW's point of view? In other words, sealing versus not sealing? In other words, one, you're asserting would have, if sealing is effective, then, you've got the re-pressurisation and the upward flow, potentially, of contaminants, and therefore, a water quality issue. If it can't be sealed, then, you've got ongoing leakage and loss of the catchment.

MR PRESHAW: It's a great question, John. And, I think, I will take that one on notice. It's, certainly, something that we are, ourselves, considering. Because, I think, what you end up with is a question of the priority of water quality and water quantity. Now, again, I would make the point, and this part I'm happy to say, if you can create a mine plan that doesn't have that connectivity between the surface and the fractured zone, that should help on both fronts. That's, probably, all I will say for now, because we are considering that very question and, I think, we will probably provide some commentary on that in our written submission.

MR O'CONNOR: Thank you, thank you, Clay.

MR YOUNG: Clay, it's - - -

MR O'CONNOR: No, we look forward to it.

MR YOUNG: So Clay, it's Mike Young here. I was just wondering whether you could comment on the nature and the extent of the existing impacts associated with water quality, and iron staining, and those sorts of things, and the implications of that on WaterNSW's ability to supply appropriately, appropriate rural water to water, to Sydney Water, etcetera. I guess, putting that into context as to the nature and extent of that issue, in terms of potential impacts on water quality?

MR PRESHAW: Yes. I mean, I will, again, I will take that one on notice. But I will make a few comments. Prefaced, you know, a caveat, that we need to consider this in more detail. I think, it's fair to say that, as far as we've seen so far, and this is reflected in the IEPs advice, and the IAPs advice, I believe, there has been no measurable change that affects our ability to deliver water from the reservoirs to Sydney Water from the existing mines. But that question, that is an open question, for WaterNSW. We have a monitoring team who are looking at that question, actively. So that's why I'm taking it on notice because I can't give you a definitive answer.

Now, there is a point on the slide there that says, the contribution of the project, at the moment – sorry:

> *The contribution of the existing mine is predicted to be around eight and a half megalitres of outflow a day.*

And the – and:

it's predicted by the proponent that the new project would add another seven megalitres.

And that's why we're talking about, you know, where is the tipping point? At what point – if we assume that, currently, the mine is not causing any issues for WaterNSW in terms of water quality, at what point does it become a problem? Is it that we just haven't seen it yet from the existing mine? Is it that we won't, from the existing mine? Is it that we won't from the existing mine, and the Project? Or is there a point somewhere along that continuum at which WaterNSW says, "Whoa, this is a lot of outflow occurring, and that's going to be a problem for us in delivering the requisite quality of water." So again, I will take the question on notice, it's a very difficult one, and we will get back to you.

One final point on the water quality is the company, South32, has proposed water quality offsets. I will just say again, as we have in our submission, they're not like-for-like, and we don't believe they're commensurate with potential impacts. So you can refer to our submission on that. I'm conscious of time, and I would like to get to the final two questions, if I can.

So question 7 is, what streams should be considered significant? We believe, further consideration of the special significance based on the IAPs risk assessment approach is warranted. We don't agree with the view that, because a stream is unnamed it necessarily means it's not significant. A lot of these watercourses, if they were not in the Catchment, in a Special Area which is protected from access, would probably be named, if people walked them all the time. In particular, of the four unnamed third-order streams, DC8, AR19, AR31, and LA13, we had previously suggested further protection for three of those, in particular, shifting some of the longwalls east, west, south, to try and avoid impacts to those third order streams which we consider to be of importance.

We do understand that the IPC, and I think, the Independent Advisory Panel, are doing an aerial helicopter assessmen.t That would be greatly useful in any assessment. We haven't had the benefit of that. I don't have a helicopter at my disposal. But that would very much help assess and was, has been helpful in the past, what is a significant stream? By, you know, flying over it and looking at it in its context.

I also just note there, that DEPI Water had recommended pre-approval or commitment to complete further watercourse assessments. So you know, both the IAP and DEPI Water had raised issues about whether all of the relevant, the most significant streams had been considered as such. Again, conscious of time, I'm just going to skip through to the final question - - -

MR YOUNG: Clay, can I just quickly ask, it's Mike Young, sorry, just quickly on that one, if those setbacks are implemented, is that from a stream setback point of view, would that be an acceptable outcome for WaterNSW in terms of protecting streams? Or would you be looking for something further than that?

MR PRESHAW: Based on our, I guess, desktop review, and also trying to take, as you know I do, Mike, a pragmatic approach, that would be more acceptable, certainly, than what they've currently proposed. We would prefer that all, all third order courses are just protected, holus-bolus. But, you know, we understand the difficulties in actually putting forward a viable Mine Plan, in that regard. So we've put what we think is a practical shortening of various longwalls without completely affecting the entire Mine Plan.

MR HANN: It's John Hann here - - -

MR REED: It's Howard Reed. Sorry, John.

MR HANN: Sorry, Mike. No. No. Please proceed.

MR O'CONNOR: No. Sorry, Howard. Howard, let John go, please.

MR REED: Yes.

MR HANN: Look, just since Mike had mentioned setbacks, I did want to ask, Clay, what your view is of the proposed setbacks by the proponent and the way those setbacks have been developed, if you like, in terms of, and particularly, in light of the Independent Mining Panel?'

MR PRESHAW: Yes. That's a good question, John. And I probably should have acknowledge somewhere along the way that we recognise that the company has taken efforts in this regard, from the outset, and probably not since, and in any meaningful change, to avoid surface cracking of the most major watercourses. And that reflects what we've, you know, what we've phrased, "the old paradigm" of avoiding surface impacts to watercourses and environmental features. It doesn't address what we consider to be "the new paradigm" of preventing height of cracking from reaching the surface.

But yes, we do recognise that the company has tried to avoid, you know, the really major streams, fifth order, fourth order, and some of the third order. Yes, we think that's, that's a basic requirement these days, of a contemporary mine application. But in the context of this mine that is, at least, a plus. Having said that, as I've made clear before, I think, there's some further setbacks that would have significant benefits to some of the major streams.

MR REED: May I just make a brief point? One of the setbacks that Clay was talking about was for longwall panel 516. Well, on this particular plan, longwall 516 is the third from, the third most southerly panel in area 5. Now, that's already been set back 290 metres. So I think, that outcome has been achieved already.

MR PRESHAW: The fourth from the bottom, yes.

MR REED: Yes. The fourth from the bottom. My apologies, yes.

MR PRESHAW: I will have to take that one on notice, as well.

MR REED: Well, this is an old plan. Tis is the plan from July 2019. So 516 has been set back an extra 290 metres towards the east.

MR PRESHAW: Okay. We will have to, again, we will have take that one on notice. Thanks, Howard. So the final question, what is the worst case scenario for swamps? As I mentioned before, WaterNSW has a role in maintaining ecological integrity at special areas. Now, we are concerned that 25 swamps will likely experience serious or irreversible damage from the project due to the fracturing in the bedrock beneath the swamps. And, in particular, in combination with potential fire risk.

So South32, in our view, has not calculated the worst case scenario of predicted impacts, which should account for increased bushfire risk. Now, it's clear from the Independent Expert Panel and the Independent Advisory Panel, that swamps that are damaged by mining are more fire-prone, in general. And WaterNSW considers the potential impacts of fire should be factored into the, "maximum potential impact" which is the worst case scenario, as required by the Offsets Policy.

Now, BCD doesn't agree with the swamp impact calculation or, in fact, the proposed offsets, either. So I think, we're reflecting similar concerns to them. Now, Metropolitan Special Areas, we note, has avoided major burns in recent times. And that, you know, I would say, is partly due to our strong efforts in fire management. But if you've been following what happened in last year's major bushfires, you know, 90 per cent of Warragamba Special Areas were burnt. And really, Metropolitan Special Area was pretty close to experiencing some pretty serious issues.

The recent Independent Bushfire Inquiry has highlighted that and, in fact, the increased risk of fire due to climate change. And we, you know, we just note that the Advisory Panel didn't comment on the estimate of maximum potential impact, even though there is a swamp expert on there. So we're certainly interested in what their view on the potential impacts, the maximum potential impacts of mining on the swamps.

So in summary, that's the list of what we consider to be residual questions. What I've done is highlighted where I think South32, perhaps, should be providing more information in red, around catchment losses post-mining, around what is a potential viable Mine Plan with reduced impacts, and in relation to water quality post-mining. And, you know, whether it's the Independent Advisory Panel or some other expert, we believe that there's scope to provide some advice on some of the other questions, particularly, around if other predicted catchment water loss is accurate and reliable, to try and put to bed the concerns that we've raised and other people have raised. Can catchment water losses be avoided or minimised? What streams should be considered significant? And what is the worst case scenario for swamps?

So I've just, sort of, colour-coded, you know, what actually might be appropriate moving forward, trying to get to a determination. I don't want WaterNSW to be viewed as just being obstructionist and raising all sorts of concerns without a possible way to move forward. I do believe that these questions can be answered, and should be answered, prior to determination. And that may be either through getting information from the proponent, or through seeking some additional independent advice.

Sorry, I'm a little bit over time. But that's it for the slides. It didn't leave much time for your questions, happy to field whatever questions you have. So - - -

MR O'CONNOR: Yes. I think, your presentation has answered a lot of the questions. So I don't feel like it's, you know, caused a problem at this stage. I do have a question just around the compensation that's being offered via the planning agreement. What's WaterNSW's view about the adequacy of that package? You know, and is it using the right sort of formula? Yes. Could you just expand on your concerns or questions you still have about that compensatory package?

MR PRESHAW: I think, we will take that one on notice, if we may, unless Fiona wanted to make a comment, if she's still there?

MS SMITH: I think, that as an initial comment, we would be of the view that if all other considerations have been taken into account and all other steps that were, you know, practicable, reasonable, and practicable, to minimise those water losses had been taken into account and implemented, then, we would, you know, with an open mind, have a look at what that compensation package was.

MR O'CONNOR: So that means you haven't really looked at it closely, at this stage, because you still think there's a lot of work to be done in terms of minimising the losses?

MS SMITH: We think there are some further items that could be considered to reduce water losses, the predicted water losses from the proposal.

MR O'CONNOR: ..... quite clear from that presentation. But yes, if you could turn your mind to if the water losses are minimised then, whether you think the package, as set out, provides, you know, an appropriate way to calculate what the compensation in for the water losses that can't mitigated - - -

MR YOUNG: It's Mike, it's Mike Young here. I guess, Clay, would you be prepared to comment in regard to, assuming based on the current Mine Plan, and I know that's not what you're saying, that you're looking for further changes to further minimise water losses. But assuming the water losses are what they are based on the current Mine Plan, would you comment on the acceptability of the offset package, in that context?

MR PRESHAW: I think, we would need to take that on notice and provide comments later.

MR O'CONNOR: That's fine. I've got no problem with that. And then the second question, just to understand the relationship between how that package would operate and the requirement for licensing. Can you explain how you think WaterNSW would address that? Is licensing still required if a compensation package has been agreed to? Or does that do away with the need for licensing for the water taken?

MR PRESHAW: I will leave that answer in – the full answer to that to be answered by the Department. But the simple answer is, even with the compensation package, surface water licenses are required. But the Department can probably give you much more details around the specifics of that.

MR YOUNG: Yes. Steve, it's Mike Young here. Yes. WaterNSW is the holder of the licence, but not the regulatory of the licences under the Water Management Act. So that's a matter for DEPI Water. And so as we've indicated in our assessment, the company will need to, in accordance with the Water Sharing Plans, and the Water Management Act, obtain the relevant licences for both ground water and surface water, noting that, I think, it has sufficient groundwater licences already. And that the compensation package for the predicted water losses is a matter that would be regulated or the mechanism for achieving that would be through a planning agreement with the Planning Secretary and the Minister for Water, Minister Pavey.

So yes, WaterNSW is not directly involved with the licensing. Other than, there would need to be a be a dealing with South32 to, I'm not sure what the word is, Clay, whether it's "transfer" or "trade" those licences to the mining company to authorise the take of that surface water.

MR O'CONNOR: Okay. That's fine. I follow that. John, do you have any questions, in addition to the ones already asked?

MR HANN: No. No further questions from me. They have been answered, my queries, along the course of the presentation. So thank you, Clay.

MR O'CONNOR: Can I go just - - -

MR ARDAS: One thing I should say, that you will come back to us where you've suggested that there will be or confirmed there would be, you would take that on notice.

MR PRESHAW: Certainly.

MR O'CONNOR: And can I just as Steve Barry if there's anything he would like to ask?

MR BARRY: Nothing further from me, thank you.

MR O'CONNOR: Thank you. And likewise, Julian, anything that you would need an answer to?

MR ARDAS: No further questions from me, thanks, Steve.

MR O'CONNOR: Yes. Well, on that basis, I think, we've taken up our allocated time and got to the end of the presentation and the questions we wanted to ask. So thank you, everyone, for your participation in the session this morning, it's been very helpful. We will confirm in writing what we think's still outstanding that we're waiting for a response from WaterNSW. And if you could provide that response promptly, that would be very much appreciated - - -

MR BARRY: Can I - - -

MR O'CONNOR: I will withdraw – sorry?

MR BARRY: Sorry, it's Steve Barry here. Clay, would you mind sending a copy of that presentation to us? That'd be useful.

MR PRESHAW: Sure.

MR O'CONNOR: And has Clay handed back control of the session to you, Steve Barry? Yes. Great. Okay. I'm, thanks very much, again, for your participation this morning. I'll call and end to transcribing, and good morning to everyone.

MR REED: Thank you, Steve.

MR PRESHAW: Thank you.

MS EVANS: Thank you.

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