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INDEPENDENT PLANNING COMMISSION

MEETING WITH DEPARTMENT OF PLANNING, INDUSTRY AND ENVIRONMENT

RE: DENDROBIUM EXTENSION PROJECT

PANEL:	**STEVE O'CONNOR** **JOHN HANN**
ASSISTING PANEL:	**STEPHEN BARRY** **JULIAN ARDAS**
DEPARTMENT OF PLANNING, INDUSTRY AND ENVIRONMENT:	**MIKE YOUNG** **STEVE O'DONOGHUE** **HOWARD REED**
LOCATION:	**ZOOM MEETING**
DATE:	**9.03 AM, MONDAY, 16 NOVEMBER 2020**

MR O'CONNOR: Welcome to this stakeholder meeting preceding the Independent Planning Commission's 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 ably assisted by Stephen Barry and by Julian Ardas. Before we begin, I would like to acknowledge the traditional custodians of the lands – of the various lands on which we variously meet today and pay my respects to their elders, past, present and emerging, and to the elders from other communities who may be participating today.

South32 Limited, the applicant, owns and operates the Dendrobium Mine, an underground coal mine located eight kilometres west of Wollongong in the southern coalfields of New South Wales. The mine produces metallurgical coal for steel making in Australia 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, areas 5 and 6, and to extend the life of the mine until the 31st of December 2048. The application has come to the Commission for a determination because it received more than 50 unique public objections.

I note the Department of Planning, Industry and Environment has provided its assessment report and has recommended approval for the application. 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 and produced in response to the ongoing COVID-19 pandemic, this meeting will be conducted online. A full transcript of this meeting will be published within the next few days on the Commission's website. Thank you.

Now, to assist the transcribing, I might just go around the virtual room and just ask everyone to introduce themselves. And the first time they speak, they might just introduce themselves as well, so it just assists. So I might start with John. Can you introduce yourself, please.

MR HANN: John Hann. Commissioner, Independent Planning Commissioner.

MR O'CONNOR: Thank you. Steve, can you introduce yourself.

MR O'DONOGHUE: Yes. Steve O'Donoghue with Resource Assessments at the Department of Planning, Industry and Environment.

MR O'CONNOR: Thank you. And Mike, can you introduce yourself, please.

MR YOUNG: 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, Mike. And Howard, please.

MR REED: Yes. My name is Howard Reed. I used to work for the Department, but I've retired and now I'm working as a contractor for the Department. I've prepared the assessment report.

MR O'CONNOR: Thank you, Howard. We're also being assisted today, as I mentioned, by Stephen Barry. Steve, can you just introduce yourself.

MR BARRY: Yes. I'm the Planning Director at the Office of the Independent Planning Commissioner.

MR O'CONNOR: Thank you. And Julian Ardas, can you introduce yourself, for the recording.

MR ARDAS: Yes. I'm Julian Ardas. I'm a Consultant Planner, assisting the Independent Planning Commission.

MR O'CONNOR: Okay. I think that covers everyone. We might therefore, given we've got a number of questions we'd like to put to the Department. Let's start it. I'll start with a few questions. Then I'll hand over to John to ask some questions. I'll start with a question around the concerns that are raised by WaterNSW. We've looked at their correspondence dated the 17th of September 2020 and it appears they're still objecting to the project. The question I'd like the Department to answer is: is the Department satisfied that the agency's concerns have been rigorously addressed and appropriately commissioned?

MR YOUNG: Well, I'll kick off. It's Mike Young speaking. Yes, WaterNSW, as a State-owned corporation, it has a job to obviously manage and protect Sydney's drinking water catchment, among other corporate objectives. And for a number of years now, WaterNSW has raised concerns about the ongoing operations of coal mining projects within Sydney's drinking water catchment; in particular, the special areas of the catchment. And the correspondence most recently and through this process has, I guess, retained or sustained those concerns and objections to the ongoing operations of coal mining.

I would hasten to add that many of the coal mines in the area existed well before the establishment of the Sydney Catchment Authority and its – and also WaterNSW and – but as part of that objection or the raising of those concerns in the correspondence, it has obviously raised a number of technical and policy concerns in its correspondence. I mean, we can go through that in detail, if it would benefit the Commission now, but clearly we've sought to, in our report, articulate and attach those submissions and address those submissions either directly or indirectly through our assessment report. But possibly Howard might like to add some more detail on some of the key issues raised by WaterNSW.

MR REED: I'll just add a little bit, Mike. WaterNSW has a policy position which opposes coal mining within the special areas. It calls for negligible impact from mining and that really cannot be achieved when you get down to it. So they've set a standard for themselves, rather than for the Government, which is a very, very high standard and – so that policy position really constrains the advice that can be prepared and submitted on behalf of WaterNSW. Beyond that, I think it's fair to say that WaterNSW has been deeply involved in discussions regarding the nature of the project and the future of the project and water licensing and offsetting provisions, which I'm sure we'll get to later.

MR O'CONNOR: Thank you. That's good, just as an overview of that concern. I might move to a second question which we'll drill down a little further in to some of the conditions and I guess now we've just referenced, just get us a little bit deeper in to it. We note that annual contributions are being proposed by the applicant to compensate for service water taken for the water quality issues. That's documented in Appendix 5 the draft planning agreement contained within the draft approval conditions. We've got a couple of questions about that document. What are the legal implications of this approach? I don't think either myself or John have seen this sort of approach before. Is the Department satisfied that contributions can be used effectively elsewhere within the catchment to offset those water losses? Is WaterNSW satisfied with the draft planning agreement? And has anything similar been done previously? So I know there's a bunch of questions in there. I can repeat them if you want, or just deal with them one at a time.

MR YOUNG: So Steve, yes, I think it's all related and you can remind us, I suppose, if we forget to respond. But I'll kick off again and maybe Howard can provide some detail. It's fair to say that in the special areas of the catchment, the vast majority of water licences are held by WaterNSW under the relevant water sharing plans and hence, there has been an ongoing gap, I suppose, in the ability of ongoing operations in the catchment associated with underground mining and any induced surface water take. This doesn't apply to ground water. This applies to surface water in particular. There has been an ongoing issue of mining companies obtaining water access licences for surface water take as a result of a regime that was brought over the top of those areas some years ago now.

So in order to address that matter, both in an ongoing sense for current operations, but indeed for potential expansions, being obviously the Dendrobium Expansion that we're talking about today, the Government has acted to enable mining companies to obtain water access licences under the relevant water sharing plans. This is a new decision that's been made by the Government to address both ongoing issues about licensing and if expansions are receiving planning approval, an ability to have those operations licensed. So that's the first thing in regard to licensing and so that's a matter not for WaterNSW. That's a matter for DPIE Water and Minister Pavey under the Water Management Act and the relevant water sharing plans.

It also involves a – the ability for WaterNSW to trade or allocate those licences that it holds for the purposes of the mining activities for the duration of those activities and beyond mining, if there's continuing water take. So that is a new regime that addresses a legacy issue associated with licensing in the catchment. That's number 1. Number 2, in regard to offsetting, clearly one of the key issues for this project is the potential impacts on the special areas and the induced surface water losses associated with underground mining and whether those losses are likely to have a significant impact on Sydney’s drinking water supply, and we can go in to the detail and numbers associated with the nature and scope of that impact.

And clearly that’s one of the key concerns of WaterNSW, being an agency responsible for conserving and protecting Sydney’s drinking water catchment, particularly the special areas. So as a result of those concerns and in accordance with one of the key recommendations of the Independent Expert Panel on Mining in the Catchment– had two reports, but its final report was late last year, the Government – and this was announced by Minister Stokes late last year or early this year – accepted all those recommendations, including the recommendation that any surface water losses ought to be offset to ensure – or to reduce or minimise or compensate for any impacts on the supply of water to Sydney’s drinking water catchment.

So as a result of that acceptance of those recommendations, the Government has acted to create a regime that allows mining companies, such as South32, to contribute towards an offset regime to offset those surface water losses for mining projects. This relates to prospective, you know, mining projects, as opposed to existing operations and the Government has established a regime, and there’s an offer on the table from the company, and the mechanism to achieve these offsets will be through a planning agreement with, I believe, the Minister for Water, Minister Pavey, and I believe the Planning Secretary, under the recommended conditions.

And there was an approach taken by Government, in terms of how those offsets would be calculated and, in summary, the approach taken to arrive at the $103 million over the life of the project that needs to be contributed under that planning agreement was essentially using the retail water price, the IPART water price, for calculating and based on the modelled impacts over the life of the project and indeed beyond the mining, for many years post-mining, while the repressurisation of the relevant aquifers occurs and so that it considers the total water loss of the project, both during operations and post-mining. And based on that price and the modelled results on an annual basis, that $103 million was calculated, but it was also recognised that the Government – it was appropriate that there be an up-front payment from South32 to enable projects that may be proposed by the New South Wales Government to address or enhance Sydney’s drinking water supply.

That $16.7 million, I think it was, was proposed as an up-front contribution to be used by Government to quickly bring online projects that may be used to assist or address or compensate for surface water losses. It’s fair to say that Minister Stokes, in his acceptance of the 50 recommendations from the catchment panel, considered that there ought to be a net gain in the – a net benefit to Sydney’s drinking water supply and hence, that is one of the reasons why the much higher rates – retail price of water that may be lost from the system was used in the calculations, to arrive at the $103 million, as opposed to, say, the wholesale or raw water cost, which is actually the water that is likely to be lost associated with the underground mining operations.

So in terms of the benefits then and the way in which that money would be used, that is a matter for Government and the Minister for Water and DPIE Water to determine over time. And obviously there are a number of projects that could be used or implemented over time to address or enhance or improve or reduce losses associated with Sydney's drinking water supply. So for example, you could augment Sydney water infrastructure to reduce surface water loss – water losses, canals. You could look at evaporative losses. You could even look at enhanced desalinisation facilities, etcetera. So there are a number of options that the Government will need to turn its mind to about how it proposes to use those offsetting provisions.

I think in addition to that, there is the ability still for South32, in time, to use some of the water that may be discharged from the site also to be supplying that water to industrial facilities, say, in the Illawarra, and then negating the need for those facilities to potentially use potable water from Sydney water, so to speak. So there are other options as well, in addition to that direct payment. But Howard may have some further detail or clarification on that summary.

MR REED: And I thought that was very good, Mike. It covers nearly everything. I'd just emphasise that this is a new policy scheme that the Government has – well, that first of all was initiated by the Independent Expert Panel and the Government adopted and Cabinet – it's public that Cabinet said that there should be an inter-agency taskforce. It was set up to develop the licensing scheme which has been done, largely in the background, but it's been done in parallel with the assessment of this project. I'd also add that the company's proposals regarding offsets have changed quite a lot since exhibit of the EIS, so an intrinsic part of the proposal at that stage was to, in time, build a small desalination plant down at Port Kembla at their projected cost of 34 million, to deal with waste water from the project; up to five megalitres per day only, and then to supply that water to an industrial user at Port Kembla.

The Government has thought that there's a more efficient way – if you like, a better, whole of society way to deal with this and rather than a small desalination plant that – you know, the questions that are associated with it – well, who runs it and, you know, a bunch of questions really, going forward – the Government has decided that the better way to do it would be to put that money at the disposal of the Government, with a particular purpose in mind, which is enhancement of Sydney's metropolitan water supplies, whether it's front of system or further through the system, in terms of pipe leakages and so on. So that's the underpinning framework. The number is a big number and I think it's fair to draw attention to that.

MR YOUNG: Howard, would it be also worth touching on the land-based contribution to the catchment area as well, as I understand that's part of the - - -

MR REED: Well, that's - - -

MR YOUNG: A small part of a proposal that - - -

MR REED: Well, that's part of the company's water quality offsets package, as against water quantity. So the loss of surface water from the catchment, if the water goes down through cracks in the ground, in to the mine, it obviously doesn't go in to a dam, so that's a water quantity loss. But if there is any potential for water quality impacts, the company has proposed to offset those through a package of measures, the principal one of which is transfer of, I believe, twenty-eight and a half hectares of land which it owns within the catchment to WaterNSW.

MR O'CONNOR: How does that address water quality issues, Howard?

MR REED: Well, it addresses it through the ability of WaterNSW to have a more integrated process for land management to reduce catchment risks, whether they be through bushfire or through sedimentation. The other measures that the company is proposing are related, in terms of fire trail maintenance and that kind of thing; the same kind of activities that WaterNSW currently spends money on, to reduce catchment risks. Particularly for sedimentation and bushfires, the company is proposing to, I think – I believe it's right to put forward essentially the same annual budget as WaterNSW currently expends.

MR O'CONNOR: Okay. And just in terms of how that figure of $103 million that Mike referred to was calculated, can you tell us where we go looking for that information?

MR REED: Mike?

MR YOUNG: Yes. So some work was done by DPIE Water to calculate what would be the appropriate figures for us. I guess what I've indicated is that the retail IPART figure for both wet years and dry years – so it does factor in climate variation – was used and the models used in the EIS for predicted, which are conservative – and I – we can go in to those – over the life of the project and then beyond the life of the project, I think for, you know, many decades post-mining. So that's an offer on the table. In terms of the calculations that went into that, we can provide further information on that. Ultimately though, it is – whilst it is related matter, it is a matter obviously that is an offer from the company to Government and would be administered or the mechanism of those payments would be made through what's called a voluntary planning agreement.

And so in essence, I guess, there's a level of – you know, that's what's been proposed by the company and the indications that we've had from Government is that that's an acceptable amount, based on those calculations. So look, we can provide some further information on that but, in some respects, it is, I guess, you know, an offer from the company that Government has accepted, at this stage. But clearly, some further information that sits behind that, we're happy to provide that separately.

MR O'CONNOR: Thank you. I think it would be useful just to understand how those water losses are potentially – over many, many decades or even centuries, how that's been factored in to coming up with a number. That's what we're discussing, in particular.

MR YOUNG: Yes, that's fine.

MR HANN: Steve – it's John Hann here. Steve, I just had a question. Just in relation to – Howard or Mike, just in terms of the water quality and, in particular, the neutral or beneficial effect, WaterNSW had some concerns around that. Is the offsetting to deal with that?

MR REED: Well, how can I put this?

MR HANN: Is there authority - - -

MR REED: I think it's best answered in terms of belts and braces. So the company's view is that it doesn't breach the NorBE Test. The Department has come to a similar view. I'm not quite sure whether our reasoning is the same as the company's, but the Department's reasoning is set out clearly in the report. So we don't believe that the company has breached the NorBE Test at all; that the project can be approved without a breach of the Drinking Water SEPP. But the company nonetheless has put forward a proposed offset package, in terms of potential water quality impacts. Neither WaterNSW nor the Department thinks it's a good idea to refuse that particular offer. We're quite happy to endorse that offer and I believe that WaterNSW has not objected to receiving it at all either.

MR O'CONNOR: Thanks, Howard.

MR YOUNG: So Howard, would it be worth explaining why we consider that it's consistent with the NorBE Test?

MR REED: Well, t this is a place where you could get lost or a place where you could make it really quite simple. So I think it's better to take the simple route, which is what is set out in the assessment report. There was a change to the Drinking Water SEPP in 2017 which added clarification to how the NorBE Test was to be interpreted or satisfied in the case of what it termed a continuing operation, I believe, or a continuing development. And that test essentially is that if you've got a current development with an existing development consent and it applies for an extension or an expansion – so extension in time, generally speaking, or an extension in area, or expansion of operations intensification – that the NorBE Test will be satisfied if the same suite of management conditions are applied to control water quality as existed for the original project.

So the assessment report goes through in some detail as to whether it's appropriate to consider this extension project as an extension to a continuing development, whether it falls within those new provisions in the SEPP. And I think it's incontrovertible really that this is an extension within the terms of the Drinking Water SEPP. And from there, the question becomes, well, what are the existing water quality control conditions and are they continued or increased under the newly proposed consent because they only have to be continued. That's a critical test. They don't – they cannot be diminished. If there were fewer water quality control provisions in effect, that would be a breach of the SEPP. But they need to be continued or increased and the assessment report goes through in some detail as to what the existing water quality control conditions are and how they will either be continued or increased.

MR YOUNG: And in broad terms, Howard, if you were to do a comparison of those provisions, we would certainly argue that we're proposing that they be substantially increased, in many respects.

MR REED: Well, the critical one, in terms of impacts on water quality reporting to the two reservoirs or measured at a particular point in the Cordeaux River, which is at the confluence with Wongawilli Creek. And the standard that is in the existing consent is that there is a negligible reduction in water quality in the reservoirs and at that other measurement point. Those conditions are continued and beyond that, there was an offset package in the original consent, in terms of water quality. Well, there's an offset package in this consent, in terms of water quality. There's no difference in character in the nature of those offset packages, so we would say that at the very least, water management – the water quality management conditions are continued. And in terms of the monitoring regime, I would say in that area they're increased.

MR O'CONNOR: Okay. Thank you.

MR HANN: Thank you, Howard. Thanks.

MR O'CONNOR: That might leave water for the moment and if we can go on to greenhouse gas emissions. Just a question around greenhouse gas emissions. We understand that the levels of methane are very low and there's some doubt about whether that methane can be captured and flared, as opposed to just being released to the atmosphere. So I note there is a draft condition 14 where the Department requires the company to undertake a further study. Can you just take us through how you see that working?

MR YOUNG: Howard, I'll let you do that.

MR REED: Okay. Well, I think the approach here was safety first, Steve. So there are existing conditions in the current Dendrobium consent about flaring of methane where practicable, which really boils down to what the amount of methane in the coal seams is. But - - -

MR O'CONNOR: And how – just to interrupt for a second. How has that worked out in practice for the existing mine..?

MR REED: Well, I was about to say, there's been no flaring infrastructure installed, although that provision has been there since at least 2008 and potentially earlier. So – and the proof of the pudding there really, in terms of how much methane is in the mine, is that the mine hasn't had to apply to construct any post-mine drainage gas wells or any pre-mining gas wells. All the gas drainage that is done at Dendrobium at the moment is underground: underground drilling and that gas is vented through the mine ventilation air. So there's no point at which flaring has been required at the existing mine. That being said, areas 5 and 6 are deeper.

The Bulli seam in particular has more gas – more methane in it. In – certainly in the area at Appin, the Appin mines do have pre-mining gas drainage and post-mining gas drainage. So there is a real possibility of gas drainage in the – under the project. Nonetheless, in my view, the EIS took a rather – how can I say – bold view regarding gas drainage that, you know, it waved a flag over proposed gas drainage and said that we will flare – you know, put on their socially responsible hat. But I guess my view was that that optimism that was there wasn't necessarily matched by the circumstances that would be met in the mine. So my view, which I think the Department has accepted, is that there was a need for a further study post-approval to really scope this out and see what the real likelihood was of gas drainage and then to start to prepare to do it, should the requirement be there.

MR O'CONNOR: And if the requirement – if the study concludes that it's just not practical or viable to flare, then they'd just be venting the small quantities of methane?

MR REED: We – the Department has never forced companies to construct flaring infrastructure that can't be used. Some companies have sought approval to construct different flaring infrastructure that they haven't developed in time. I think there's a mine up near Lake Macquarie that's in that category. I think it's Mandalong that has approval to construct flaring stacks, gas engines and so on that has not yet done so.

MR O'CONNOR: Thank you.

MR YOUNG: So I think from – my perspective, Steve, is that obviously safety comes first. So if there's a need to collect the gas and flare and so forth, that's going to be the main driver. The secondary driver will obviously be those sort of greenhouse gas type of issues and clearly there are examples around New South Wales where the nature and quantity of that and reliability of that gas does mean that, you know, some kind of energy generation or something like that can be implemented. But I guess our view, based on historical context and so forth, is that, you know, whilst it ought to be looked in to as further information is gathered on those seams and so forth and seriously investigated, the evidence suggests that it's probably less likely than more likely, given the geology.

MR O'DONOGHUE: Well, it's Steve here. Tahmoor North does have a gas collection and generation system at that mine there. That's one example where it is being successfully applied.

MR REED: And that's in the Bulli seam. And the other one that's – so there are four mines in the Bulli seam in the southern coal field. There's Appin and

Metropolitan and Tahmoor and Russell Vale. They're all extracting from the Bulli seam. So Steve has spoken about Tahmoor North. In respect of Appin, that's the location of the largest gas to electricity generating facility, I believe, in the country from an underground coal mine. So I – there's something like 94 megawatts of installed capacity at Appin and Appin West. It's not run by BHP, but it uses drained methane from the Appin mine, from the Bulli seam. So as I said earlier, Area 5 in the Bulli seam is the one that's most likely to potentially require gas drainage and therefore provide the opportunity for flaring or electricity generation.

MR YOUNG: And I think, Steve and Howard, it would be fair to say that there's often a financial incentive to capture and then often third parties come in and use that gas for beneficial purposes and it becomes not just a safety and environmental issue, but an economic benefit too.

MR REED: Well, we've hinted at that in the report. There's nothing that we can say that's clear-cut, but we've hinted at the capacity for the company to get money from the Government's coal innovation fund.

MR YOUNG: Yes.

MR O'DONOGHUE: And that's the case at Tahmoor mine, Mike, where there's a third party has set up to put electricity back in the grid and feed it back to the mine as well.

MR O'CONNOR: So Howard mentioned both Metropolitan and Russell Vale, as well as Tahmoor and Appin. Can you just tell us what happens at Metropolitan or Russell Vale, or what's proposed in regards to the same issue?

MR REED: Well, Russell Vale is pretty much on its beam ends and it doesn't have money to even obtain an approval, much – or hasn't had, over the last three years, much less construct facilities like these. At Metropolitan, there's no gas drainage. I've never heard of methane being a particular issue at Metropolitan.

MR O'DONOGHUE: I think for Metropolitan, it's predominantly CO2 drainage. There's very little methane at that location.

MR REED: I've never been able to work out exactly what makes one part of one seam high in CO2 and another part of the same seam, high in methane, but that is a characteristic of underground coal mining.

MR O'CONNOR: And did the Department give any thought to whether the studies that, you know, might be undertaken, if they prove it's only uneconomic or unviable to try and capture and vent that methane, whether it should be offset it any way?

MR YOUNG: Well, that – there's no Government policy that would support that, Steve. Clearly, whatever the development of the mine requires in terms of fugitive emissions, that will occur regardless whether that's low or insufficient quantities to capture and flare for safety purposes and/or use for economic purposes. So you know, those are one of the scope 1 type emissions from coal mining projects that are clearly part and parcel of extracting the coal. Clearly the – by far and away, the biggest impact on, in terms of greenhouse gas emissions, is the scope 3 emissions associated with that. So the Government's policy in regard to those fugitive scope 1 emissions is to minimise as far as practicable and obviously treat safely and beneficially use, if the quantity and nature and so forth is possible to do that. But there's no requirement at this stage for greenhouse gas offsets for coal mining projects.

MR O'CONNOR: Thank you. And just a final question. Reading – in relation to greenhouse gas emissions, reading the documentation, there's quite a bit of talk about scope 1. I couldn't see much mention of scope 2 emissions. Can you tell us anything about the scope 2 emissions?

MR REED: Well, scope 2 is really bought in electricity here. So it comes from the grid. In that respect, there's very little that can be done about it, in that they're emissions associated with someone else's activities. But beyond that, there's a high economic incentive in any business to reduce its own energy costs, whether that's through going to a different supplier or adopting energy-efficiency measures within the business or, for that matter, making use of an available onsite energy source such as methane and constructing a small number of gas engines to provide electricity to run the operation, as against for export to the grid; you know, much the same as people put solar panels on their roof to defray their own energy costs.

MR O'CONNOR: So I would have thought scope 2 would also cover the cost of – sorry, the power that might be required to take the coal from site 2 to the port or to the steelworks, etcetera. But I take it that's a very short distance, so there's probably – it's probably not a huge factor.

MR REED: I believe it's all covered in the air quality assessment, all the – that's the EIS's air quality assessment – all the sources of scope 1 and scope 2 emissions were addressed.

MR O'CONNOR: Okay. We might move on then to a question around the – there's reference in the Department's assessment report to the eventual need, if this project is approved, for other development consents to be aligned, be consistent with this approval. We'd just like to hear a bit more about what that means and what other consents might have to be aligned and how they might be aligned.

MR YOUNG: So it's – yes, it's Mike Young speaking, Steve. I'll just start off and then Howard can go through the detail. Clearly, there's an existing development consent from 2001 under which the current operations operate and the proposed interaction or going forward with the expansion is that there would be a separate and severable development consent associated with that, which is generally not the approach that the Department takes to these operations. Usually you've got a continuation of an existing mining operation and within the first couple of years of the new operations, if it's approved, the Government is generally keen to see old consents surrender so that the entire site can be managed and operated under a single development approval. However, that's not what South32 is proposing in this case and obviously that does introduce – it's not an unreasonable approach, but it does introduce some complexity that Howard maybe can touch on, if he doesn't mind.

MR REED: Of course. There are two associated development consents, other than the one that's proposed. The first one is a very old Council consent – Wollongong Council consent, I think – for the Cordeaux Pit Top. And I can't quite recollect at the moment, but I think that the draft consent proposes for the relinquishment of that old consent as being, if you like, vestigial and just untidy to have around. But the principal matter is the interaction of the proposed new consent with the existing Dendrobium consent, that one that Mike referred to. And if I can put it this way: the company's proposal is really to hollow out the existing consent, to take everything out of the old consent other than management of its existing underground mining areas.

So if you look carefully, in terms of the project description, all the surface facilities and the coal preparation plant and the Kemira Valley coal loader and the rail line, all those things are to be taken out and put in the new consent. And that is – that would be a complete consent, if you like, in the future when mining is complete in the areas that are still to be completed in the old consent. So just to refresh, Area 1 is – in the old consent, is complete. Area 2 is complete. Area 3A, there is one small longwall panel to go. Area 3B is two-thirds done and area 3C has been deferred because of the gas problem that they've got there; the CO2 gas problem.

So the company didn't put in a modification application for the old consent in conjunction with this new development application and if it had done so, then the Department would have been in a position to strip out all the extraneous provisions in the old consent so that they would solely be in the proposed new consent. But the company, in its wisdom, didn't do that. So we don't have the opportunity to do that at this time. But the company has clearly flagged that that is its intention to do so, that it will lodge a modification application for the old consent, rather than have this duplicated set of requirements. As it stands, it will have to prepare two sets of management plans, for example, to produce two annual reviews, to run compliance and regulatory review for every provision of both consents. So it is in its interests to lodge that modification application.

It hasn't told us when, but my expectation would be that that would be in the second half of next year. My reason for saying that is that the company has quite clearly said that it wants to get on its bike and start running quickly with any new consent that might be granted. It needs to do the construction upgrades at the – Pit Top. It wants to get underway with developing the ventilation shaft 5A and – as well because that's on the critical path for development of Area 5, given that long set of main headings that it has to construct and provide adequate mine ventilation for. So my expectation is that the company is going to be very busy with paperwork and planning, at least in the first half of 2021, and therefore I would expect this modification application to follow that.

MR YOUNG: So it's fair to say though, Commissioners, it's quite important to point out that whilst it may be an administrative convenience, it's all perfectly legal, so to speak, under the planning regime and it's not atypical that you've got overlapping consents and potentially overlapping obligations, even if they're slightly different. So the incentive is there. Clearly the company has a different strategy, but we're not in a position to, I guess, not assess or change the approach that's been taken because it's allowable under planning legislation.

MR O'CONNOR: I think we understand that. And if I can just take the gist of what Howard said. So you've constructed the draft conditions so that they basically take care of obviously Areas 5 and 6 – underground mining in Areas 5 and 6 and all the surface facilities associated – and transportation processing associated with all underground coal, no matter where it comes from within the complex. And so the only thing we don't cover is the underground mining in – is it 3B and 3C which are still potentially, I think - - -

MR REED: And one panel in 3A. And the associated monitoring in the other old areas, so areas 1, 2, 3A – all the previous mining – will need to continue to be monitored. So all of that, at the moment, stands within the old consent. I would point out that the mine closure plan condition, we've put a certain amount of cleverness in the wording there and instead of using the terminology for the development, we've talked about the Dendrobium mine, as such. So the mine closure plan condition with the requirements for various studies and assessments and planning, that does relate to the entire mine.

MR O'CONNOR: I will move on then to another question and then I'll hand over to John and he'll have a couple of questions as well for you. This next question relates to, I guess, draft condition A17 which pertains to contributions required and there's a commentary in the Department's assessment report about continuing the current regime. I just wasn't exactly clear what the current regime was and so if you could just go over for us how that works in practice.

MR YOUNG: Howard.

MR REED: Sure. I don't have the paperwork in front of me, Steve, but there is an existing condition in the existing consent regarding a contribution to the Wollongong Council, based on a per tonne – a cents per tonne rate, which I believe – it might be something around 0.3 cents per tonne.

MR O'DONOGHUE: It's about 0.041. Yes.

MR REED: Okay. Well, that's in the new consent.

MR O'DONOGHUE: In the – yes, in the new one. Yes.

MR REED: But it’s 0.3 something in the old consent, but that’s a 2002 figure which was subject to CPI during the life of that consent and still is.

MR O’CONNOR: Yes.

MR REED: So we’ve updated and continued that condition, but rather than put it in terms of 0.3 in 2002 dollars, I got the company to update that current figure to today’s dollars which is 0.417. Is that correct, Steve?

MR O’DONOGHUE: Under A17, it’s 0.041 dollars per – yes.

MR REED: 04 – yes. So that’s basically the old figure updated.

MR O’CONNOR: Yes.

MR REED: The company is quite happy to continue to make those payments to Wollongong Council and seeing as Wollongong Council didn’t ask for anything in particular, either for local roads or for other development contributions, it seemed quite fair and reasonable to just continue the existing requirements.

MR O’CONNOR: And do you know what has been funded under that existing one? Is it totally administered by Wollongong Council, the allocation of those funds, etcetera?

MR REED: Well, I don’t have these facts sort of close at hand, but my understanding is that that – it funds a program called the Community Enhancement Program. And the Council, I believe, used to administer the trust fund, but I think now it’s the – it’s basically administered by a committee that is set up specifically for that purpose, that Council has representation on. I think the – that’s the story but, to be honest, I haven’t looked into the way that program runs for a long time.

MR YOUNG: I mean, the – obviously put that – I’d suggest putting that question to the company. They’ll be closer to the detail of how those funds are administered, but the other thing to mention is if it is, it’s not part of a – it’s not subject to the planning agreement provisions. It’s just a direct contribution that’s obviously been in place even pre – you know, since 2002 or thereabouts. So it’s a long-standing program that we’ve updated.

MR REED: There is a little bit of information about that – those – that Community Enhancement Program within the EIS. If Steve Barry should go searching for it, I’m sure he’ll find it.

MR O’CONNOR: And the fact that Areas 5 and Area 6 are in Wingecarribee and Wongawilli – sorry, and - - -

MR REED: Wollondilly.

MR O'CONNOR: - - - Wollondilly – thank you – local Government areas, that doesn't alter the fact that the funds will still go to Wollongong City Council and the whole of Ministry, or - - -

MR REED: Well, in the end, the community that is impacted by the mine is the community that's close to the Dendrobium Pit Top. That's where nearly all the staffing will be. It's certainly where all the staffing is at the moment. That's where all the traffic impacts are. That's where most of the workers live. They live either in the – down on the coast, with a few living up around Appin – the Appin area, but most of them live on the coastal strip.

MR YOUNG: And Howard, it's my understanding that those other Councils haven't specifically requested developer contributions.

MR REED: No. No one did.

MR O'CONNOR: Okay. I might leave that there and then hand over to John for a couple of questions from John.

MR HANN: Thank you. It's John Hann. The report mentions that BlueScope sources 88, I think, per cent of its coking coal from the southern coal fields. And I think 68 per cent comes from the current Dendrobium operation. If Dendrobium were to cease supply, what's the impact on BlueScope, in terms of can it source its supply from existing approved southern coal field sources, or what are the other alternatives?

MR YOUNG: So I'll kick off with that, John – it's Mike Young here – and then hand over to Howard. Clearly that was one of the key issues that we looked at, in terms of the logistics and connectivity and integration of Dendrobium with other operations in the Illawarra and other mining operations, BlueScope and also the Port Kembla coal terminal. My understanding is that you're right, it's about 88 per cent locally sourced and I understand BlueScope does import some coal from elsewhere. I think that's probably mostly from Queensland, but Howard probably could correct me if that's not the case. I think it's 60 per cent or thereabouts from Dendrobium itself.

But the key thing to understand in that area is that – is the interdependence of all of those operations with each other, to some extent, and also with the Port Kembla coal terminal. So for example, the analysis clearly shows that Dendrobium is, you know, a relatively low- cost but high-production mine compared to, say, the nearby Appin mine which is a relatively high-cost but low-production mine. And the coal that's supplied to BlueScope is a blended product of both Dendrobium and Appin coal. So the indication is – both from South32, but also the independent analysis that we received, is that if Dendrobium was to cease operating, it would be very difficult for Appin to continue to operate, going forward.

And so you may – there is a high risk that if Dendrobium ceases, Appin would also cease which obviously then means that there's a significant diminution of the coal supply to both BlueScope, but also to the Port Kembla coal terminal which I think, at this stage, 70 per cent of the through-put from – through the coal terminal is from South32. Now, my understanding is that if you then don't have Dendrobium coal and you don't have Appin coal, you're then left with – essentially, at this stage, you've only got one operating mine. Russell Vale is on care and maintenance and has a very minor expansion with the IPC at the moment for continued operations.

Wongawilli is also on care and maintenance which means you've got Metropolitan. You've got Tahmoor which is also proposing an expansion through the IPC, but Tahmoor only supplies a very small amount to BlueScope and mostly exports or it provides a small amount to Whyalla as well. So you could have a situation where the economic viability of the coal terminal itself is threatened because there's very limited through-put through the coal terminal. You'd then also be in a situation where BlueScope, which is currently looking at a new refurbishment of its – a blast furnace, you would then potentially have to factor in different coal from different locations, but also then seek to import almost all of its coal from elsewhere at substantial additional cost, and I'm sure Howard can tell me what the premium on imported coal is. And, secondly, it would have to build or augment any unloading infrastructure there, which I think Howard could probably also touch on in terms of the additional cost, but I think it's in the order of 100 and 150 million dollars just to upgrade that unloading facilities for BlueScope Steel.

So I've probably done a very poor job there, John, of articulating the interconnectivity with those operations, but – and I think that we did some analysis that under a worse case scenario where if Dendrobium ceased to operate, Appin ceased to operate, the coal terminal ceased to operate, and BlueScope ceased to operate as a result because of the additional costs associated with that, that the implications for the New South Wales economy would be profound in the order of northwards of 10 billion dollars per year in lost GDP. So – but I'm sure Howard can probably either correct me or add some colour to some of those numbers. But one of the key things I wanted to get across today is that the claims of South32 about the interconnectivity and reliance of that whole logistics and Illawarra economy associated with the coal chain and the steelworks, those claims certainly seem to have been born out by the analysis that we've done independently on that interdependence. So, Howard.

MR REED: No, I thought that was good, Mike. We're – going back to John's question about whether BlueScope could get coal from elsewhere in the Southern Coalfield. I think the paragraph that you've referred to indicates the size of the contracts at the moment with Metropolitan and Tahmoor. Tahmoor is a very small contract. I don't know the terms of it, but it would seem to me that that may just reflect a desire to have an operating contract that could be ramped up if the circumstances required. It's hard to see why it would want 100,000 tonness of coal from a mine otherwise. So the other two are the South32 mines, which Mike has already addressed, and Metropolitan which is at 600,000 tonnes per annum at the moment, I think.

So the question really becomes, well, if there's no Dendrobium coal, that is, no Wongawilli Seam coal, what can BlueScope do about it? And there's – as I indicated before, there's no currently operating mine in the Southern Coalfield that extracts from the Wongawilli Seam other than Dendrobium, and none as prospective, with the possible exception of Hume which is aiming to extract the bottom proportion of the Wongawilli Seam in much the same way that Dendrobium does. So, in a sense, it's a different and more difficult question: what would BlueScope do if it was forced to use coal that didn't contain a Wongawilli Seam component?

Now, I'm not exactly sure. BlueScope were reasonably open with the Department in the discussions that we had, but they didn't, you know, tell us all their secrets. And so I don't know whether their choice would be to run the current blast furnace using Bulli Seam coal at a lower level of efficiency, or whether some adjustment can be made using the pulverised coal injection component – I don't know whether that would increase the volatiles in the blast furnace – or whether they would have to import from Queensland which Mike was talking about the costs. I believe it's about $40 a tonne margin both in terms of a margin for the coal from Queensland itself. About $20 a tonne plus additional shipping and handling costs, and that, I don't think, takes into account any work that – excuse me – BlueScope would need to do on its on berthing facilities.

So it's all a bit – it's a bit of a grey area, but I think that the Department has done a lot of the necessary work here even if we haven't closed out every possible permutation. In the end, it's a very great difficulty for BlueScope if Dendrobium doesn't get approved. That being said, they've got an issue down the track in any case – it's proper to be straight forward about this – insofar as Area 5 is Bulli Seam. So there is a projected period of time in the operations both when Area 5 is operating and then when area – well, mainly when area 5 is operating. When there will be no Wongawilli Seam coal. There will be a little bit from Area 3C, but that gets closed out. And so down the track, what, eight years of so, BlueScope is going to have to find a way to operate without a significant supply of Wongawilli Seam coal.

MR HANN: Howard, will you envisage that that would then be required to be sourced from Metropolitan or Tahmoor?

MR REED: Well, they can't get Wongawilli Seam coal from another mine in the Southern Coalfield unless Hume is operating by then.

MR HANN: Okay. Understood.

MR REED: So that's – right? So I don't know, but my guess is that these issues will be addressed by BlueScope during its – the relining process for the blast furnace. I think one of the constraints is blast furnace design as against simply the coal input. So this is not something I'm certain about, but BlueScope are not jumping up and down about the number of years in the project future when there will be no Wongawilli Seam coal, so I think they've got something - - -

MR YOUNG: No. BlueScope - - -

MR REED: - - - in their back pocket. Yes.

MR YOUNG: BlueScope is well aware of the geology and all the mines and its feedstock, etcetera, and is obviously planning for that accordingly. Obviously the seam and the specifications for its input into the blast furnace is important, but, clearly, the actual supply and cost of the coal per unit is also of equal or greater importance. And I think it's – this sort of leads onto the other alternative which is, I guess, the Green Steel type issue and the future of steelmaking generally. And, I mean, obviously the commission may seek direct input from BlueScope and/or South32 on this matter, but, clearly, there's a lot of – there's recent announcements by the New South Wales Government and elsewhere about the future of Green Steel and the use of hydrogen and even a hydrogen hub in the Port Kembla area and indeed some funding to BlueScope to develop those sort of technologies. And I think that's the operative word is "to develop".

My understanding of the use of Green Steel worldwide is that it's – in terms of significant commercial quantities, it's got a long way to go. There are some examples where it is being used as part of a broader operation at Pilot scale or somewhat greater than Pilot scale. But BlueScope needs to plan with certainty into the future, and it's my understanding that the proposed refurbishment or relining of the new blast furnace number 6 at Port Kembla, whilst it may – it could be retrofitted with Green Steel technology over time, that essentially it is being designed to be a coalfired operation. And the lifespan of those blast furnaces is in the order of 17 years.

So you are – if you factor in some time develop and build that, add on the 17 years, you're in the kind of sorts of timeframes that align broadly with the future of Dendrobium, should it be approved. That's not to say that over time the technology may improve, and I'm sure BlueScope would be quite keen to assure the commission and the community that it is investigating these things seriously and obviously will move towards those things over time. But, I guess, to answer the question of those who say, yes, there is an alternative, yes, it's Green Steel, this shouldn't be approved as a result of that, I don't think that we've had any evidence to indicate that that's going to be the case for many, many years to come.

MR HANN: Okay. Look, thanks very much, Mike, and thanks, Howard.

MR REED: And if I could just add one last thing.

MR HANN: Yes, Howard.

MR REED: Yes. The other thing that we need to think about is the capacity of the other mines. So Metropolitan is a much smaller operation than either Dendrobium or the Appin operation. So while Appin struggled for a couple of years and was only running one longwall, it's intended to run two in Area 7 and Area 9, and a total capacity, I think, of 10.5 million tonnes per annum which is twice Dendrobium. Now, as I said, it hasn't been able to operate at that level, but it's much bigger than Metropolitan which I've just looked up is 2.8 million tonnes, and instead of 300-metre wide longwalls, the void at Metropolitan is 163 metres, so a much lower rate of production. I'm sure there are existing export contracts. I'm sure that Metropolitan would be quite happy to sell more coal to BlueScope if the price was right and better than its export prices, but, other than that, I can't add. And with Tahmoor, the coal comes by train quite a long way. It has to go up to Campbelltown, I believe, Steve, before it then comes down to the Illawarra and the export terminal. And I've forgotten the capacity of Tahmoor.

MR O'DONOGHUE: It's currently four, Howard.

MR REED: Four.

MR O'DONOGHUE: Yes.

MR REED: So there is the capacity both at Tahmoor and Metropolitan to supply more Bulli Seam coal, but that's all I can add.

MR HANN: Right. But not the Wongawilli.

MR YOUNG: I think it's important to add that Tahmoor is about to exhaust its existing operations - - -

MR HANN: Yes.

MR YOUNG: - - - and is proposing an extension which is yet to be approved.

MR HANN: Okay. No, I'm aware of that. Thanks, Mike. If I could turn to subsidence, in particular, and the impacts related to longwall – associated with longwall mining methods and then compare that to bord-and-pillar. We'd appreciate if you could comment on what work you've done in assessing whether bord-and-pillar is more suitable from a management of subsidence than the longwall and what discussions you've had in that regard with the applicant.

MR YOUNG: Howard, I'll let you - - -

MR REED: Sure.

MR YOUNG: I think you've looked into this.

MR REED: Well, the first thing to say is that we have to assess the development application that is before us, and the DA involves longwall mining and doesn't propose bord-and-pillar. There's no existing bord-and-pillar mining at the Dendrobium mine nor the Appin mine nor the Tahmoor mine nor the Metropolitan mine. As a desperation measure, I think Wollongong Coal has put forward bord-and-pillar mining to be re-undertaken at its Russell Vale mine. But that being said, bord-and-pillar mining is an out of date coal production method except in particular circumstances where longwall mining simply cannot be undertaken.

So one of those is beneath water bodies. Most people would not think that mining under the ocean, as used to happen up at Newcastle 100 years ago, or mining under large lakes by longwall methods is a good idea because it's just too dangerous for the mine workers. That being said, even with Lake Macquarie there are now mini walls underneath those lakes which is essentially a narrow longwall. No one around the world will undertake bord-and-pillar mining where the coal seams are such and the surface environment is such that they can undertake longwall mining. It's just vastly more economically efficient. So I – we did not explore this with South32, partly because we have to assess the DA that's before us, but also because we had a pretty fair idea of what their response would be, and, really, they would say, "We have no project here. We can't make it work. We won't do it". So that would be in effect mine closure.

MR YOUNG: I think the – I mean, obviously there's some comparisons about the nature of the – the proportion of the resource that's recoverable between the two different mining methods, and maybe Steve can do some fancy footwork in the background – that is, Steve O'Donoghue – to work out maybe the extraction proportions. But as Howard has indicated, it's vastly different. You know, I think in the bord-and-pillar you're talking about 30 or 40 per cent of the resource being recovered, and I think in longwall mining it must be, you know, more like in the 80 per cent or something along those lines.

MR O'DONOGHUE: Mike, that was the case for Russell Vale, you know, for the bord-and-pillar their proposing it was about 30 to 40 per cent recovery.

MR YOUNG: So when you're talking about the existing contracts, the workforce, the necessary investment that would be required to develop the mine both in terms of equipment, but also in terms of the nature and extent of the environmental constraints and requirements and offsets and so forth associated with the operations, I don't think – the view I would have is that clearly that's an uneconomic proposal on the scale that we're talking about. I'm sure it's a matter you could put to South32 and they could probably quite quickly give you some economic comparisons.

But, I guess, you know, I would agree with Howard, is that if you're talking about any major element of bord-and-pillar associated with the operations, you don't have a project. They wouldn't have put that forward. And, look, there are – obviously Russel Value is putting forward that. That is a revised proposal that is only going to provide five years' worth of mining at a very low rate of production and is clearly at a different scale compared to what South32's Dendrobium operation is and its interconnection and production that supplies BlueScope and the export market. So, you know, we're required to look at alternatives, obviously, under the Act. I guess I would leave it to the commission to determine whether that requirement of alternative analysis would go as far as exploring bord-and-pillar mining as part of that process, but certainly it's not something we've done in any detail in our assessment.

MR HANN: Okay. Look, thanks, Mike. Thank you, Howard. Just turning to the groundwater model and the confidence level. I think the IESC raised some concerns earlier on around the confidence level of the groundwater model. Would you like to just explain the basis for accepting the model predictions with the groundwater model as it currently stands.

MR YOUNG: Howard.

MR REED: John, it really wasn't easy when we had three groups of experts essentially saying different things about the groundwater model. They all had concerns, but they were all saying different things, and the focus of their concerns were varied, and I've tried to give some flavour of that in the assessment report. In the end, DPIE Water, as far as I know, did not consider the IESC comments before finalising its own. And, likewise, with the IESC, they were their own views and coming from their own perspective. But the Independent Advisory Panel on Underground Mining did consider those other submissions, and – those other advices, I should say, and it had its own highly qualified groundwater expert within the panel, Professor Rae Mackay, who runs the – I think it's the Centre for Mined Land Reclamation in Victoria for the State Government down there.

And so I will be honest in saying that I had great regard to what the Independent Advisory Panel had to say about the groundwater model and noticed that they did not pursue some of the concerns that had been raised elsewhere. That being said, the assessment report sets out in some detail the approach that we took. And it's – because groundwater modelling is still very much a developing science – not because the fundamentals are still in dispute, but because computer capacity and computer modelling continues to grow at pace – because it's still a developing science with alternate methods to deal with particular issues, it seemed to me, to the department, that we had to look at what was really important about the groundwater model rather than to say, well, you could have done it this way rather than that way, or I prefer this approach rather than that approach, or this approach has certain downside as well as an upside.

Yes, that's all accepted, but, essentially, their matters to do with model inputs and model processes as against model outputs. And it struck me after a while that there was very little criticism of the model outputs as to their reasonableness or their conservatism, and so it seemed that the critical question for the department was an assessment-related one, rather than one posed by or for theoretical modellers. So the question is does the model work for assessment purposes? That's it in a nutshell. Is it well designed? Does it address the real risks? Does it take into account existing data? Are its assumptions and its outputs conservative? And the answer to those questions for me was, yes, it is acceptable and reliable – sufficiently reliable for assessment purposes. And so from our perspective it provided realistic and conservative assessments about what the loss of surface water would be, which is the critical issue for the project.

MR YOUNG: Yes. And I think it's important in this context to flag that essentially we are talking about a continuation of an existing operation into new areas, but areas that are similar to the areas that have already been mined with essentially the same mine geometry in terms of widths of longwalls and so forth. And so the nature and extent of the impacts that we've seen to date at the existing operations, I guess we can expect in broad terms to continue – apart from some additional measures that we've talked about in terms of offsets and/or some setbacks from particular infrastructure and/or surface features, we would expect the nature and extent of those impacts, broadly speaking, to continue.

The other thing to say is that there has been a huge amount of debate about the height of fracturing, you know, the level of connectivity between the surface and the mine workings. And, clearly, that has been a debate amongst technical experts from a number of years now, and it's been investigated both by government and various agencies and also mining companies, various experts. And South32 in its EIS took a very conservative approach and assumed, essentially, that there would be surface to seam cracking across the entire area, which has not actually been borne out by evidence in terms of the existing operations. But to put it beyond doubt, so to speak, and to undertake a worse case assessment impact envelope, and also then to calculate things like surface water offsets, one might argue that, okay, you could look at this model or that model or assume that the cracking actually doesn't occur that high, you know, and so forth.

But at the end of the day, what, I guess, South32 has put to government is here's a worse case scenario, here's an envelope of impacts that in all likelihood – and I think the panel would agree with that, the mining panel – a lot of those impacts may well not eventuate, particularly in some parts of the mine plan where the risks of surface to seam cracking are far lower. And, yet, I guess, what South32 saying is if these impacts are acceptable and can be offset, then we'd prefer that to be the approach to any approval and conditioning as opposed to endless debate about, you know, the height of fracturing and those sorts of things. So, you know, it's not an unreasonable approach to an impact assessment and the decision-making framework that they've put to government.

MR REED: One of the critical things about the model is, as Mike has eluded to, how does it compare with existing water make in Dendrobium 3B and so on. And when the model is applied to the existing mine water measurement within area 3B, the model predicts 20 per cent more than the actuality in Area 3B which is in the Wongawilli Seam and at 305 metres. So that to me was an important fact. The other key fact is, as Mike has already set out, that the company has overestimated or overallowed for surface water take through the model. So my view is that the model was more than accurate enough for assessment purposes and based on conservative assumptions. But that wasn't to say that the model couldn't be improved and shouldn't be improved.

Again, being straight forward, those three agencies or sets of advices coming from somewhat different perspectives, it seemed to me that the best way to capture whatever value was in each of those submissions, whether it was DPIE Water or the IESC or the Independent Advisory Panel, was to require that all their advice be taken into account by the company and its hydrologists as they update the model, and that gives a standard the department can review that updated model against. Model would have to be updated in consultation with both DPIE Water and WaterNSW for separate purposes, and all that would take place before the first longwall mining.

MR YOUNG: And I think just – I'm conscious of time. I'm not sure when we're due to finish, whether it's now or in half an hour. But I think it's also important to say that the whole approach that government takes to underground mining operations is an adaptive management approach, so – through the extraction plan process. So it's not just updating models and so forth for academic interest, it's actually got a real purpose and a real regulatory hook, so to speak, that government can respond and act and address potentially unforeseen or significant impacts that may not have been predicted and so forth. So there are regulatory levers that this is not a point in time that can't then be addressed as the mine progresses if necessary.

MR REED: And the most important of those is in terms of measurement of surface water take which is to be assessed using the model rather than men with sticks or something. It's to be assessed using the model. So the improvement of the model has got great value for both the government and South32.

MR HANN: Okay. Thanks, Howard, and thank you, Mike. Steve, just confirming our timing.

MR O'CONNOR: Yes. Well, I was going say in relation to Mike's comment that we were looking to wrap up about now. So unless you've got any more questions, John, I might just make a few final points.

MR HANN: Look, I think we've covered the key ones, Steve, from my point of view, and so, look, I appreciate very much the responses. Thank you.

MR O'CONNOR: Okay. I might just quickly ask whether Stephen Barry or Julian Ardas have anything they would like us to raise.

MR BARRY: Nothing further from me at this point.

MR ARDAS: Nothing further from me either, Steve. Thank you.

MR O'CONNOR: Okay. Well, in that case, we might just recap – I think there was only one matter that the department undertook to provide some further information to us on arising from those various questions. That relates to the calculation of the compensatory payments that are all wound up in that voluntary planning agreement. Just a bit more background information about how those calculations were done, etcetera. Apart from that, we may well have further questions of the department after we've been through the public hearing process, and of course we'll be seeing you all again on that occasion in a couple of weeks' time. We thank you very much for your time and the detailed answers you were able to provide. It's much appreciated. Certainly helps John and I in the task we've got of determining this application. And having said that, I will draw this session to an end. This will be the end of the transcribing. Thank you very much.

RECORDING CONCLUDED **[10.34 am]**