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TRANSCRIPT OF PROCEEDINGS

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INDEPENDENT PLANNING COMMISSION

PUBLIC HEARING

RE: DENDROBIUM MINE EXTENSION PROJECT

COMMISSION: **STEPHEN O'CONNOR (CHAIR)**
JOHN HANN

COUNSEL ASSISTING: **RICHARD BEASLEY SC**

LOCATION: **THIS PUBLIC HEARING WAS CONDUCTED BY VIDEO AND WAS BROADCAST LIVE ON www.ipcn.nsw.gov.au/livestream AND 1800 093 431**

DATE: **10.00 AM, WEDNESDAY, 2 DECEMBER 2020**

MR S. O'CONNOR: Good morning, and welcome to day 1 of the Independent Planning Commission's electronic public hearing into the state significant development application for the Dendrobium Mine Extension Project. I'm Steve O'Connor. I am the chair of this panel. Joining me is deputy chair of the Commission and a fellow commissioner, John Hann, on my left. We are also fortunate to have Richard Beasley SC as counsel assisting the Commission at this public hearing on my right. 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 other communities who may be participating today.

The state significant development application has been lodged by Illawarra Coal Holdings Proprietary Limited, a subsidiary of South32, the applicant. South32 owns and operates the Dendrobium Mine, an underground coal mine located eight kilometres west of Wollongong. The mine produces metallurgical coal for steelmaking in Australia and overseas. South32 is seeking planning approval to extend the current mine operations to allow the extraction of an additional 78 million tonnes of run of mine coal from two new mining areas identified as area 5 and area 6. The proposal is also seeking to extend the life of the mine from 2030, as it's currently approved, to December 2048.

I note the Department of Planning, Industry and Environment in its assessment report 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 asked the Commission to determine the project within 12 weeks from receiving the whole of government assessment from the department. In line with regulations introduced in response to the ongoing COVID-19 pandemic, we have moved this public hearing online, and registered speakers are being provided with the opportunity to present to the panel via either telephone or a video conference. In the interests of openness and transparency, we are livestreaming the proceedings on the Commission's website. A full transcript of the three day hearing will also be published on the Commission's website in the next few days.

I would like to now discuss the role of the Commission in this determination process. The Commission was established by the New South Wales Government on the 1st of March 2018 as a standalone statutory body operating independently of the department and other government agencies. The Commission plays an important role in strengthening transparency and independence in the decision-making process for major development and land use planning in New South Wales. The functions of the Commission include determining state significant development applications, conducting public hearings for development applications and other matters, and providing independent expert advice on any other planning and development-related matter when the secretary or the Minister request.

The Commission is the consent authority for this state significant application because more than 50 unique public objections were received. It's important to note that the Commission is not involved in the department's assessment of this state significant development application, nor in the preparation of the department's assessment report. Commissioners make an annual declaration of interest identifying potential conflicts with regard to their appointed role. For the record, no conflicts of interest have been identified in relation to our determination of this development application. You can find additional information on the way we manage potential conflicts on the Commission's website.

So where are we at in the process? The public hearing forms one important part of the Commission's process. We have met with the department, the applicant, Wollondilly Shire Council, Wingecarribee Shire Council and Water New South Wales. Transcripts of these meetings have been published on the Commission's website. The Commission also extended an invitation to meet with Wollongong City Council, which was declined. The panel attended a site inspection on the 24th of November, and notes from this inspection are also available on the Commission's website. After the public hearing, we may convene with relevant stakeholders if clarification or additional information is required on matters which are raised.

So the next steps. Following the public hearing, we will endeavour to determine the application as soon as possible, noting that there may be a delay if we find that additional information is required. Written submissions on this matter can be accepted by the Commission up until 5 pm on Tuesday the 15th of December 2020, and you can make a submission using the Have your say portal on the Commission's website or by sending them in via email or post.

I would now like to explain the purpose of this hearing. We invited interested individuals and groups to make any submissions they consider appropriate during the hearing. However, the Commission is particularly assisted by submissions that are responsive to the department's assessment report and the recommended conditions of development consent. All submissions made to the department during the exhibition of the environmental impact statement have been made available to the Commission. As such, today's speakers are encouraged to avoid repeating or restating their previous submissions in relation to this application. The Commission must emphasise that there are certain matters that by law it is not permitted to take into account when making its determination, and, therefore, submissions on such matters cannot be considered. These factors include the reputation of the applicant and the past planning law breaches that the applicant may have committed.

Now to how the public hearing will run. Before we get underway, I would like to outline how our public hearing will operate today. First, we will hear from the department on the findings of its whole of government assessment of the application currently before the Commission. We will then hear from the applicant. We will then proceed to hear from all the registered speakers. While we will endeavour to stick to our published schedule, this will be dependent on registered speakers being ready to present at their allocated time. Counsel assisting, Richard Beasley, will

introduce each speaker when it's their turn to present to the panel. Everyone has been advised in advance of how long they will be permitted to speak. A bell will sound when a speaker has one minute remaining. A second bell will sound when the speaker's time has expired. To ensure everyone receives a fair share of the time, I will enforce these timekeeping rules. I do reserve the right, however, to allow additional time as required to hear new information.

If you have a copy of your speaking notes or any additional material to support your presentation, it would be appreciated if you would provide a copy to the Commission. Please note any information that is given to us may be uploaded to our website and become publicly available. The Commission's privacy statement governs our approach to making information available. Once again, our private statement is available on the Commission's website. Thank you. I now will ask if our first speaker can be called, please.

MR R. BEASLEY SC: The first speakers are Mike Young and Steve O'Donoghue from the Department of Planning, Industry and Environment. Are you there, Mr Young?

MR M. YOUNG: Yes. Can you hear me, commissioners?

MR O'CONNOR: Certainly can.

MR YOUNG: Can you hear me?

MR BEASLEY: Can hear and see you.

MR YOUNG: Excellent. Thank you, commissioners. Thank you, Richard. Yes. Thank you for the opportunity to present this morning. My name is Mike Young. I'm the executive director involved in the assessment of major mining proposals in New South Wales. I'm assisted today by Mr Steve O'Donoghue, who's the director of resource assessments in my team with the Department of Planning, Industry and Environment, and also in particular Howard Reed, who is an independent contractor assisting with the assessment of the project as well, who formerly was a director within the department in the assessment area, looking at mining projects.

And I will be undertaking the first parts of the presentation today, and then, secondly, Howard will present the details of our findings of the assessments. And today, commissioners, we were not proposing to go over in detail every aspect of the assessment or the assessment process, but were looking to focus on the key issues that are likely to be of concern and determinative in the consideration of the application by the Commission. So if I could ask for the first slide, please. That would be helpful.

MR O'CONNOR: Yes .....

MR BEASLEY: Yes. It's up there on the screen.

MR YOUNG: It's up there, is it? Sorry.

MR BEASLEY: It is. Yes.

MR YOUNG: I can't actually see it arm.

MR BEASLEY: Okay. It's headed Approvals and Licences.

MR YOUNG: Okay. I will revert to my one that I've got here. Yes. Approvals and Licences. So, look, I don't propose - - -

MR M. REED: Can that screen be shared?

MR YOUNG: - - - .....to go over - - -

MR REED: There it is.

MR YOUNG: Okay. I think I can see it now. Let's have a look. Okay. So as I had indicated, I don't propose to go over too much of the details of the assessment process, suffice it to say that it has been a long and comprehensive assessment process. As you can see there, there are a number of key approvals required before the Dendrobium Extension can proceed, firstly, the planning approval and, obviously, the Independent Planning Commission's consent authority under the New South Wales planning legislation. But subsequent to any planning approval at the state level from the Independent Planning Commission, there is also a requirement for the Minister for the Environment at the Commonwealth or Federal level under the EPBC Act to also grant approval because the application is a controlled action under that legislation, and the Department of Planning, Industry and Environment and the New South Wales assessment process has been accredited for the purposes of the assessment under the Commonwealth legislation under the bilateral agreement between the state and the Commonwealth.

And, of course, as with any other mining project, there are a range of subsidiary approvals that are required to be obtained after any planning approval is granted, in particular the mining lease under the Mining Act, environment protection licence from the EPA under the PEO Act and water access licences under the Water Management Act for groundwater and surface water take associated with the mine. In this case, obviously, there's some particular complexities around the fact that the mine is located in special areas of Sydney's drinking water catchment.

Next slide, please. So in terms of the existing Dendrobium operations, the mine was approved almost 20 years ago now. It's an underground longwall mining project, and that was approved in 2002 following a commission of inquiry. The consent allows the company to extract just over 5 million tonnes a year of coal from a particular seam called the Wongawilli Seam, and that's to produce coking coal for iron and steelmaking. That coal from the Dendrobium Mine, importantly, is blended with coal from the nearby Appin Mine to produce a particular blend of premium hard

coking coal. And much of that coal is provided to BlueScope's Port Kembla Steelworks but also there is a significant proportion that's exported either internally to Whyalla in South Australia, the steelworks there, and to international customers for iron and steelmaking overseas.

The mine currently employs around 400 people, but together with the Appin Mine it employs a significantly greater number of people, and, obviously, there are a number of economic connections between those operations and other businesses in the Illawarra in particular. And if we move to the next slide, we can see where the mine is currently up to. There should be a map on the next slide. That's it. Thank you. And here we can see the outline of the current mining operations. In particular, the larger red area around the edge is the entire operations of the various aspects of the Dendrobium mine. The areas in purple you can see hopefully on the slides is area 1, 2, 3A, 3B and 3C. Those areas were approved, as I said, almost 20 years ago.

The mining at the moment is currently being undertaken in area 3B, and there is some further mining to be undertaken in area 3C, although there are some issues around gas drainage within that particular area that would need to be addressed by the mine before that coal can be extracted. You can also see to the southwest into Port Kembla the various surface facilities and the rail connection into the port. So it's an important thing to say there is that it's a very – there's a number of existing facilities and coal logistics chain very close to the port that supplies it directly to customers and also to export. You can also see there that the new areas, areas 5 and area 6, are those proposed under this particular application, and essentially it's a continuation of the existing longwall operations that have been occurring for the last 18 years or so, and it's looking for a further 18 years from when the current consent lapses, which, I think, is in 2030, so that takes it to 2048. As I said, two new major areas of mining, area 5 and area 6, and those are targeting both the Wongawilli and the Bulli Seam.

In terms of the additional coking coal that would be potentially extracted, it is up to around 77 million tonnes, but importantly it's at the same rate as the current operations. So essentially, really, you're looking more of the same for another 18 years or so into two new different areas from similar sites or seams and at a similar rate to what's currently being undertaken and, as I said, relying primarily on existing surface facilities, but there are some additional requirements associated with the new areas that would need to be constructed as part of the project. A very significant project both in terms of investment and jobs, additional capital expenditure in the order of $1 billion in order to develop those new areas and the continuation of employment and increase of employment both operational and also during construction, with the employment of around 500 people for operations and 200 additional jobs during the construction phase.

Next slide, please. So in terms of the assessment process, as with any development application, the department exhibited the environmental impact statement for the project for approximately double the minimum statutory time, almost two months, in 2019. We did get a large number of submissions, over 750 submissions.

Importantly, however, whilst there certainly are some strong concerns and strong objections to the project, particularly regarding environmental issues and potential impacts on Sydney's water supply within the catchment areas, almost 80 per cent or over 600 submissions were in support of the project, citing those economic and social benefits associated with the project and the continuation of those economic benefits into the future.

We also consulted – or received advice from a range of state government agencies and councils. Water New South Wales as the manager of the catchment areas and the special areas did formally object to the project and have raised a number of concerns, and many of the matters we will be presenting today relate to those concerns. There are three councils whose areas overlie the proposed project or parts of it, Wollongong, Wingecarribee and Wollondilly. Wollondilly did object to the project. The other councils, however, didn't object to the project. All the key agencies raised recommendations or made recommendations, and we've sought to adopt those in the – or consider those in our assessment and adopt those recommendations in the conditions where relevant and consulted with all those agencies in finalising the recommended conditions to the Independent Planning Commission.

Next slide, please. Importantly, our assessment was also based on a range of expert advice both from independent experts and also relevant government agencies and expert panels both at the state and Commonwealth level. Particularly in regard to water resources, we received advice from the IESC, the Commonwealth Independent Expert Scientific Committee. We also received advice from the Advisory Panel on Underground Mining, which is a panel that's recently been established by the New South Wales Government in accordance with the recommendations made by the catchment panel that was orchestrated by the New South Wales Chief Scientist & Engineer's Office, and one of its recommendations in its final report last year was to establish an ongoing advisory technical panel to provide advice on these sorts of projects, and the advice from that panel is attached to the department's assessment.

We also engaged some consultants to help us provide advice in regard to looking at different mine designs, so MineCraft Consulting in that regard, looking at the costs of alternative mine design layouts and particularly longwall widths, which we will touch on later, a review of the economic assessment by BAEconomics, and in particular a review of the particularly connectivity and interrelationship and interdependence of the Dendrobium Mine and other related entities, such as the BlueScope Steelworks, in the Wollongong region was also provided by BAEconomics. And, of course, we received detailed advice from a range of key government agencies, Water New South Wales, the Dam Safety Committee, importantly, as there are reservoirs there that are prescribed dams under its legislation, BCD and the water group within the broader department, Resources Regulator, Subsidence Advisory New South Wales and the MEG, the Minerals, Energy Resources and Geoscience arm, within regional New South Wales and EPA, Heritage Council, New South Wales Health, RMS or Transport for New South Wales and the Rural Fire Service.

Next slide, please. So in terms of – I think it's important before we get into the detailed assessment matters and the matters that we're particularly wanting to focus on today to articulate that the project that was put forward by South32 had already considered a range of matters or built into its mine design and project design to avoid or minimise impacts on surface and sensitive features and to minimise impacts on surface – water supply infrastructure and those sorts of things. So it is important to ensure that we take into consideration those matters in considering the merits of the final proposal that was put forward by South32 for determination.

So in regard to some of those key avoidance measures, there is an area between area 3 and area 4 – area 5 – sorry – which is area 4, and that was an area in particular that had a high concentration of sensitive surface features, particularly upland swamps, in proximity to Lake Cordeaux and, obviously, contained large volumes of potential resource. However, South32 made the decision that that's an area that ought to be undeveloped to avoid impacts on those features. There was also minimum setbacks of a kilometre from key dams, being the Avon and Cordeaux dams, 300 metre setbacks from the full supply level of the edges of those reservoirs, or Lake Avon and Lake Cordeaux. There's also minimising impacts on key stream features, because clearly in those areas there are a number of streams of various sizes, in order to protect those. The company has put forward a range of setbacks between 50 and 100 metres from those key stream features and in particular looking at ponds and waterfalls in those areas as well to minimise potential subsidence impacts on those features.

Importantly, though, it's recognised that any underground mining in those areas is likely to have a range of residual impacts, and to compensate or offset those residual impacts, the company has offered to offset or compensate for the loss of surface water associated with water losses within the catchment as a result of mine subsidence, to also offset and compensate for water quality impacts, to offset the residual impacts on coastal upland swamps in accordance with the Biodiversity Conversation Act and the swamp offset policy, and also offsetting potential impacts on threatened fauna, endangered ecosystems and other native vegetation as a result of mine subsidence or some of the clearing that is required for some of the surface infrastructure, particularly the ventilation shafts, again, in accordance with the biodiversity offset scheme under the Biodiversity Conversation Act.

So I thought it was important just to flag the fact that this is not a project in isolation. It is the subject of an iterative design process whereby the company has looked to address, avoid or minimise or compensate for the potential impacts of the project. So that's really all introductory and strategic background, commissioners, but with your permission, I will hand over to Howard Reed to take us through some of the key assessment issues and the findings of our assessment. Thank you, Howard.

MR REED: Thank you. Before I start, may I just ask how long I have?

MR O'CONNOR: There is 28 minutes remaining in the time allocated to the department, so I don't know internally how you've decided to share that time.

MR REED: That's fine. Thanks very much, sir. Well, the department's task is, in a sense, very straightforward and, in a sense, very difficult. The first thing to do is to work out whether the project as proposed is acceptable, and the second thing to do is to work out whether it can be tweaked or changed in some way to improve it and to substantially reduce the environmental impacts, and that's the approach that the department regularly takes, particularly when it comes to assessing major difficult mine projects, such as this one. So what I want to do in this part of the presentation is to take you through that process, the process of thinking, if you like, that took place during the assessment as we wrestled with the various key issues that are associated with this project and came to the bottom line, which is pretty much to propose approval of the project as South32 put it forward. So, really, that's an admission on our part that we can't find any obvious problems with the project design or any obvious areas whereby it must be improved or can be improved.

So on that basis, the four key issues that we had to look at – and these are, really, in order of priority, I think – first of all, the mine design, which is built around quite wide longwall widths, 305 metre void width. That's not the widest in New South Wales, which I believe is something around 410, but it is certainly wider than many longwall widths. And the mine is located in a sensitive – very sensitive area, so this was our key focus of consideration. Number 2, looking at what water losses would occur in the drinking watch catchment. This is, really, the critical impact issue for the department. Number 3, whether there was any residual risk that needed further management in respect of the dam infrastructure, the dam walls for the two major reservoirs. Number 4, the benefits of the project, looking at the likely economic and social costs if the project does not proceed, so looking beyond the boundary, if you like, of the mining lease that Mike pointed to earlier, looking at the industrial complex in Port Kembla and the overall coal mining complex in the Illawarra region.

Next slide, please. So the first of these which we considered really to be a threshold issue is – is the width of – of the mine longwalls, and it – I think it's fair to say that – that many people, but particularly people in the public, think that by narrowing longwall width there is an automatic reduction in surface subsidence impacts. The general perception is that the narrower the longwall the better, but this is not correct. It's something that we really had to dig into during the assessment process because it's not straightforward. It's counterintuitive. And the reason that it's not straightforward is because there are two mechanisms that are driving subsidence impacts at the surface.

The first of these are generally termed conventional subsidence effects, which lead to compressive and tensile strains on the surface as the surface subsides above the longwall void. And the second are called non-conventional subsidence effects, and setting aside some that we don't need to consider now, for present – the present case the key ones are compressive strains associated with valley closure which may also lead to accidents. Now, conventional subsidence effects are expressed in a regular pattern above a succession of longwall voids side by side, and they're relatively straightforward to predict and – and they certainly reflect quite accurately the – the

longwall void width, but that's not the case as soon as you begin to consider any precise surface.

As soon as you've got significant valleys and slopes – it doesn't have to be a – a very steep valley. It can be a – a broad valley, but as soon as you've got a – a surface with – with valleys across it then you begin to get this second subsidence mechanism expressing itself, valley closure, and that leads to – again to compressive strains which in turn leads to cracks in the land surface. And can I have the next slide, please. Well, the bottom line from this is that all watercourses across the two mining areas would be cracked, even with very narrow longwall widths. That is, the – the valley closure effects will be expressed in the watercourses.

We must remember that many swamps are sitting within those watercourses, whether they're valley infill swamps right at the – the base of the valley or headwater swamps draped across the valley sides. So even though narrowing longwall width can reduce the conventional subsidence effects and reduce that – that expression of – of surface cracking across the landscape, it doesn't react in a proportional way in respect of valley closure. The bottom line is that every watercourse across the site and every swamp would be significantly cracked, even with quite narrow longwall widths. And if – if people are unconvinced by that on the basis of what I've just said, then I simply turn to Metropolitan Mine which is in a similar environment, although it's even deeper than Dendrobium, and it's extracting in the Bulli Seam, whereas part of Dendrobium would be a higher level extraction in the Wongawilli Seam.

And with a void width of just 163 metres at Metropolitan Mine, there is significant cracking in the watercourses and – and in the swamps as well. So this is what could be expected with the narrowing of – of longwall width at Dendrobium. And the bottom line from all of that is that the true environmental benefit of reducing longwall width is not insignificantly reducing the surface effects. Instead it is in reducing the height of cracking extending upwards from the coal seam and this, in turn, would lead to a constrained zone of solid rock between the mine and the surface. So the surface cracking zone is still serious and significant, particularly in the watercourses, but there's a constrained zone of solid rock below that surface cracking zone.

And that constrained zone would prevent migration of surface water and ground water down to the seam, but it doesn't prevent that surface cracking and drainage impacts at the surface. Surface waters would still drain from the waterways, but mostly to a depth of 10 to 30 metres rather than all the way down to the mine. Next slide, please. Therefore, the department's assessment to this critical threshold issue was that reducing longwall width would not greatly reduce surface impacts, particularly in the watercourses and swamps, which are the standout features of the environment. So once that was clear, we – the – the – the order of thought, if you like, was then to consider the other side of that coin, what are the economic impacts of narrowing longwall void width.

The department sought assistance from MineCraft Consulting, as Mike indicated before. And MineCraft provided costings for every part of the longwall development and extraction process at Dendrobium. These costs vary quite significantly according to the longwall layout. The basic reason for this is that there is more development work required for narrow longwalls than there is for wide longwalls. So two longwalls at 150 metres will require twice the gate roads, at least, as one at 300 metres, and all that underground tunnelling, whether it's in the mains or in the gate roads, or any surface activity done in support of the mine – all of that is – is done at a loss.

A longwall mine only makes money when it's actually extracting the longwalls, so from a – a mine's perspective a long longwall and a wide longwall is a profitable longwall, and a short longwall or a narrow longwall is – that's where it – it becomes a bit dicey from an economic perspective. Can I have the next slide, please. So these are – this – this figure comes from our assessment report. I've reduced it for the sake of it being on the slide to – to – to contain less data, but all these figures are in the department's assessment report, and really what it does is if you look at the right-hand column compared with the left-hand column it sets out the net present value of the overall Dendrobium project – the whole project that we're considering today – based on a 300 longwall width down to – in 25 metre increments down to 150 metres longwall width.

And you can see from the right-hand column that there's a loss of about $100 million in NPV for each 25 metre reduction in – in longwall width, and, in fact, that $100 million steepens from below 225 metres – so it's $124 million further loss at 200 metres and then $217 million loss going down to 175 metres, and at 150 metres the project is NPV negative. Now, my lay interpretation of these – oh, I should add that South32 was given the opportunity to comment on the MineCraft report and had no detailed criticisms or concerns. They did say – or they didn't sign up to these figures being exact or precise. They said that the difference between them was more significant than the figures themselves.

But with that caveat, my lay interpretation of these figures, particularly given South32s relaxed response to them, was that really no board would support a project on these figures with a longwall width of 175 metres, much less 150, and would be unlikely to support it even at 200 metres width because there's a good chance it could invest its better return elsewhere or a lesser risk of a return. Can we have the next slide, please. So the bottom line from this assessment was that reducing longwall panel width comes at a very significant economic cost, but the question is whether that – that economic cost is worth the environmental benefit that would result.

But that's where I turn back to the previous part of this assessment, the surface impacts would be largely similar, and the only major change in the project that were environmental change in the project that would result from narrower longwall widths would be that the catchment losses would be prevented. So the surface would be cracked up, but, nonetheless, more water would run off, and even if it did percolate

down into the surface cracking zone that water would eventually report to a watercourse further downstream or potentially report straight into the – the storage reservoirs as a – a subsurface groundwater seep. So that's the key benefit that we're looking at, at the cost of $100 million or so for each 25 metre reduction.

But South32 is committed to pay compensation for any loss of surface waters. This is the next, if you like, relevant critical fact, and the current value of the – of South32s compensation proposal is $103 million. So the question becomes is – is the – is the $103 million a good price – a fair price – a generous price for the water that would not be reporting to the catchment, and can that money be put to offset the catchment loss and – and, in fact, preserve or increase Sydney's water supply? So put another way, South32 has absorbed the cost of a 25 metre reduction in panel width and is proposing to pay that money to the Government. Nonetheless, it would maintain its 300 metre panel width.

Next slide, please. So that brings us to the question of, well, how has the – the surface water loss been estimated and is that fair and reasonable? Is it a good assessment and is the pricing of that loss fair? Well, most of the estimates of surface water losses were based on the groundwater assessment, but the groundwater assessment – rather than getting into the messy area of saying, "Well, this much surface water will stay on the surface and this much surface water will leak halfway down, and this much surface water will go to the mine", with very precise modelling that could be challenged, rather than do that the groundwater assessment took a much more conservative approach and applied a series of – of conservative worse case assumptions.

So I've set out the key ones here. This groundwater assessment assumes surface to seam cracking wherever the longwall width is 305 metres, regardless of what the extraction height was or the depth of cover. Now, there are 2.5 longwalls that would not be 305 metres. Half of one is 215 metres and the others are, I believe, 280 and 285, and in those cases the groundwater assessment applied what's generally considered to be the most conservative mathematical equation to estimate height of fracturing above an extracted mine seam for – to estimate how high the height of fracturing would go and where it would connect with the surface fracture zone.

The groundwater assessment all modelled – sorry – modelled all surface drainage lines as constantly flowing, whether they were ephemeral or – or not. Therefore, the – well, that was a conservative approach. It didn't try and take into account when – when streams became intermittent or ephemeral. And there was no allowance at all for horizontal flow in the surface cracking zone and later re-emergence downstream. So really the groundwater assessment, in my opinion, bent over backwards to – to maximise the amount of surface water that was modelled as reporting down to the mine seam and then put forward a valuation for that maximum amount of water. Next slide, please.

So the maximum at any time during the project life of surface water that is considered to report to the mine is 5.3 megalitres a day. So before longwall

extraction begins it would be basically zero. With a couple of longwalls it might be half or one megalitre a day, but at the maximum during the project life it's 5.3 megalitres a day is the modelled estimate, and an Olympic – a – a proper Olympic swimming pool is 2.5 megs, 50 metres wide, 100 – 50 metres long and – and two and a half metres deep. And that amount, 1935 megalitres a year, is a small amount with possible exception of during drought times, but during normal times it's a – it's a very small amount of the overall annual inflows that are managed through Pheasant's Nest Weir, which is a water supply management weir that Water New South Wales operates and actually receives water from three - - -

MR BEASLEY: Can I – can I just ask you, Mr – Mr Reed, can I just ask, what do you mean by "normal times"?

MR REED: Through non-drought times. So the estimate is – is made of one drought year in 10, and the – and the 0.7 relates to average annual inflows.

MR BEASLEY: Was that – was that - - -

MR REED: And in - - -

MR BEASLEY: One – one year in 10, was that based on historical climate records or does that factor in projected climate change?

MR REED: Well, to be honest, I'm not sure I can answer that question. I'd need to take that one on notice - - -

MR BEASLEY: That's fine.

MR REED: - - - and go back to find that – how the one year in 10 was derived.

MR BEASLEY: All right.

MR YOUNG: Commissioners, it's Mike Young here. I – I can confirm that that's IPARTs approach to taking into account the fluctuations in climate and so they have particular prices for dry and wet years and the frequency of the dry years is – in terms of the – the financial calculations is one in 10. So it's consistent with IPARTs recommendation.

MR BEASLEY: Right. That – that sounds like it's based on historical records.

MR YOUNG: Yes. I guess, though, it's – it's - - -

MR BEASLEY: In other words, the past.

MR YOUNG: I guess we're – yes. Well, you would have to ask IPART and we can certainly provide - - -

MR BEASLEY: Right.

MR YOUNG: We can confirm that separately and take that on notice, but it's consistent with IPARTs current approach to pricing.

MR BEASLEY: Right. Thank you. Sorry, Mr Reed. I interrupted you.

MR REED: I believe – no, no. That's fine. Thank you. So that takes us to water pricing and IPART. IPART sets water prices for both Water New South Wales when they sell to Sydney Water and Sydney Water when they sell to customers like yourselves and – and – and us. And Water New South Wales' wholesale price to Sydney Water varies between – well, close to 70 and – and 110 dollars depending on whether it's a drought year, as Mike was mentioning, and also depending on whether the – the – the reverse osmosis plant is – is – is running. But in normal times it's – it's 69 or 72 dollars a megalitre. But Sydney Water's retail prices that you and I pay are $2300 a megalitre or $2.30 a – a kilolitre in normal years and – and $3.12 a kilolitre in – in the drought years.

Well, the water offset package that South32 has put forward is based on the retail prices. And it's on that basis that the total comes to one hundred and – or current calculations are that it comes to $103 million. And Mike will want to talk more about that later, but I'll skip forward in order to get through what I need to say. So basically the department is quite comfortable with the offset package that's been put forward by South32. $103 million is – is a substantial sum. And the minute – this would be covered in a planning agreement between the department's secretary and the Minister for Water and South32.

And the purpose of that planning agreement would be that the Minister for Water could – excuse me – use those offset payments to provide a net benefit to Sydney's water supply. That would be the purpose to which the money was put. It wouldn't go into CR. It would be put to either support new water supply options – whether that's a – a new water filtration plant – offsetting the costs of a new water filtration plant or potentially reducing surface or water losses from the distribution network, which I might point out dwarf the losses that would be associated with this project. The – the losses from leakages in Sydney's distribution network are many, many, many times higher than what is projected to result from this project.

Next slide, please. Nonetheless, Water New South Wales has continued its objections to the project throughout the assessment process and has recommended that narrower longwall widths be considered and has recently put forward the possibility of variable longwall widths between 200 and 275 metres. So that would – the purpose of those – those narrower longwalls would be to lead to a – a substantial constrained zone, notwithstanding that there would not be a great reduction in surface impacts. And the constrained zone would definitely reduce the catchment losses, but if this option is pursued then it follows that there would be no significant water offset package because the purpose of the constrained zone is to keep the surface water at the surface.

On that basis, the design, at least, of – of a constrained zone would be that there would be no loss of surface water. It might go down into the surface cracking zone and re-emerge further downstream but it wouldn't report to the mine. So as the department sees things, the basis for the offset package would be stripped away and it would be presumably a basis of – of a zero figure that would then need to be quantified on an annual basis to see whether the constrained zone was working as required with the modelling complexities associated with that and the – the – the proofing complexities, if you like, and then an agreement reached, perhaps after dispute, on what the actual water quantity offset payment should be. Now, the department does not see this as a better option or that it should be pursued.

Next slide, please. Well, turning from those – the – the key issues of – of longwall width and – and the applicable offset package, then other key issues related to the proposed mine layout – not just the longwall width but the mine layout – are upland swamps, the watercourses, stored waters within the reservoirs, the dam walls and Aboriginal heritage. And the only way to protect any of these features are once the question of longwall width is settled is – is by way of a setback of the longwall from those features, and the setback is of variable width depending on the sensitivity of the feature and the selected level of risk avoidance. Next slide, please.

So in terms of swamps, South32 has not proposed any setbacks. There would be 25 upland swamps affected, although it has avoided impacts on the much larger swamps in Area – Areas 4(a), (b) and (c). Instead, South32 has proposed to offset its projected impacts on swamps principally through retiring ecosystem credits via a recently purchased property in the same general environment as the project. It's further to the north-east on part of Illawarra-Woronora Plateau called Maddens Plains, and – and that new property only purchased during or following exhibition of the EIS contains 51.3 hectares of upland swamps.

MR O'CONNOR: Howard, that's the end of the time we've allocated there. Are you able to just wrap up now or - - -

MR REED: Well, that's - - -

MR O'CONNOR: We have a number of submissions we'd like – like to get through.

MR REED: That – yes. Well, I'm a bit caught between. I – I should say – well, I should ask whether you're able to consider the rest of the – the slides if I don't speak to them.

MR O'CONNOR: Well, we certainly will. You can provide that to us and we'll take onboard the remaining slides there so - - -

MR REED: Well, perhaps if I just cut to the conclusion. I'm sorry that we haven't had enough time to get through it, but if I can cut – cut to the last two slides. Mike, do you want to speak to these or are you happy for me to?

MR O'CONNOR: We've got the final slide up now.

MR REED: Okay. Well - - -

MR YOUNG: I'm happy for you to do that, Howard. Sorry.

MR REED: Okay.

MR YOUNG: My internet connection's causing problems so I'll let you speak.

MR REED: Okay. Well, the bottom line is that the department could not readily find any easy way to improve the – the – the project. We are always looking to improve mining projects when – when they're put forward. Sometimes that's easier than on other occasions. I can remember one project that came in with seven open cuts and got approved with one open cut and two undergrounds. But in the end, South32 put forward a – a significant set of avoidance measures and mitigation measures and the department, whether it came to upland swamps or watercourses, or Aboriginal heritage could find no ready way to improve that. I might just add something that isn't in the slides in respect of watercourses.

MR O'CONNOR: You'll have to be quick.

MR REED: So there are - - -

MR O'CONNOR: Thank you - - -

MR REED: I will.

MR O'CONNOR: - - - Howard.

MR REED: There are five third order watercourses that are quite small that are affected by the project and there are two outside of it, being Donalds Castle Creek and Wongawilli Creek. But third order is not – it's a very coarse means of measuring stream significance. So the five third order streams within the mining areas vary between 1.7 and 3.9 square kilometres in catchment and between - - -

MR O'CONNOR: You're getting down to a fair bit of detail, Howard. We might stop you there - - -

MR REED: Yes.

MR O'CONNOR: - - - because, as I said, we have got a number of - - -

MR REED: Okay.

MR O'CONNOR: - - - questions we'd – we'd like to ask.

MR REED: Okay.

MR O'CONNOR: So I might start with just a question. You've explained how the water compensation package will operate. That – that requires, you know, estimating the water losses – surface water losses over the life of the mine and, in fact, post the mining finishing, and that's all dependent on being able to seal the mine so that water, you know, losses won't continue. Can you just explain what evidence you've got to demonstrate that you think that's practical, particularly given that the Independent Mining Panel just raised serious concerns about whether it would be possible to seal the mine?

MR YOUNG: I'll touch on that initially, Howard, if you can – and then maybe hand over to you. I – I think it's important to – and it goes back to the idea to some extent about the longwall width issue. The – the groundwater modelling that was undertaken in the EIS and the predictions made therein don't actually rely necessarily on the ability to seal the mine and in terms of the repressurisation and minimising the loss of water – surface waters in perpetuity. So I think it's important and certainly the – the South32s experts or South32 may be able to provide more of the details on this, but the – the mine adits that would be – that are in existence now, they're generally well above the level of the underground workings.

And so you do – regardless of whether you seal or don't seal the – those adits, two things. One is that, you know, the – you would get significant repressurisation or collection of water and recharging of those aquifers regardless because of the different levels, and, secondly, you would still have those mine sealing issues regardless of whether the project's approved or not because obviously there's a lot of historical workings in there, and whilst the project may exacerbate that or increase that – that issue in terms of a management matter, it's going to be a management matter for both government and South32 and, indeed, other operators in the catchment areas in – in – in the longer term.

And that's why one of the recommendations of the Chief Scientist Catchment Panel was that government needs to look at this in consultation with the industry as a longer term issue. The other thing that's important to show or to mention is that evidence in Area 3(b) and, indeed, in the modelling undertaken in the assessment indicates that the – it's – it's not like there's free flow drainage from the surface to the mine workings that you do over time get patchy recharge and repressurisation of the aquifers in the area in the Hawkesbury sandstone that is above those geological units that lie above the coal seams. And so, again, you – it's not a, sort of – a – a simple system where you've got, you know, surface waters draining from the – from the catchment through the – through the geology into the mine workings and then out a hole in the escarpment.

So that's the first thing to say. The second thing to say is that – so the first thing is to say is that the project is not – and the modelling is not reliant on the sealing of the mine, but the sealing of the mine is something that does – that – that we consider is feasible and the company has put forward in – some information in its EIS, but what

we didn't touch on in the slides was that one of the key recommendations of the panel post any determination was to prepare a relevant management plan and details and options about sealing or partial sealing of both the current operations but also some of the legacy issues that are existing already, regardless of whether the project's approved. But I don't know whether, Howard, you wanted to touch on any of the technical things on that.

MR O'CONNOR: Look, I've got another – other questions we want to ask so I might just take - - -

MR YOUNG: Yes.

MR O'CONNOR: - - - the advice you've given me there and handover to John to ask a question.

MR HANN: Thank – thank you. Mr Young, just in regards to – you mentioned earlier or Mr Reed mentioned earlier the economic assessment by MineCraft of the impacts on different panel widths. We – we would be interested to know your comment in regard to why there wasn't a comparable assessment on the environmental impacts associated with different panel widths, given particularly that the Independent Advisory Panel on Underground Mining in – on page 8 did – did conclude that the intensity of the impacts would reduce with narrower panels and that would particularly have an impact of the effectiveness of any remediation and also, of course, on a reduction in the surface water. Would you like to comment on that, please?

MR YOUNG: So, Howard, are you okay to comment on that?

MR REED: Sure. My understanding of the comment by the Independent Advisory Panel is that it primarily relates to conventional subsidence impacts rather than to valley closure impacts. There was information put forward by South32 that was prepared by its subsidence consultant MSEC that – that looked in detail at – at subsidence cracking or – or tensile strains and – and compressive strains related to compressive – to – to conventional and non-conventional subsidence. That was what the department focused on in that part of the assessment.

MR HANN: Okay. Thank you. Just in regard to the Independent Advisory Panel for Underground Mining, look, overall they – they did have some serious concerns in – in their conclusions particularly. We've already talked about around the sealing of the mine as proposed. Can the department provide some advice in regard to the sort of weight you put on the conclusions that the Independent Panel's advice provided to you and how you factored these into your assessment.

MR YOUNG: Well, I'll comment on that initially and then hand over to Howard to respond in detail but clearly it's said the establishment of the panel was a key recommendation of the Chief Scientist's Catchment Panel that reported last year. You know, the – this project was the first serious advice that had been provided by

that panel, and we certainly took it, you know, entirely seriously and – and sought to address each of the matters raised by the panel and, indeed, incorporate all of the recommendations in regard to regulating the project should it be approved and sought to replicate or adopt those in our recommended conditions of consent to the Commission, but, Howard, I don't know whether you wanted to comment on any other aspect.

MR REED: Look, I – I would just add that the department accepted the conclusions of – of the panel. There was nothing there that we – that we took exception to, but in terms of the report, rather than discussing the conclusions the – the – the department's report focused on the Mining Panel's recommendations. Some of those recommendations were focused on closing out the assessment, matters to do with – with the project assessment, others on project approval conditions and others on the management of residual risks going forward and the department sought to reflect all of those recommendations both in its report and in the conditions and in the proposed management regime for the project.

MR HANN: Thank you, Mr Reed.

MR O'CONNOR: Thank you. I might ask Richard if he has any questions.

MR BEASLEY: Yes. This is not directed to anyone in particular, so feel free to – for either of you to answer, but the Commissioners have been discussing the Sydney drinking water catchment set which is referred to in parts of the assessment report. I just want to ask you, firstly, about the issue of considering the project passing the test of – that it's continuing development in that it was probable or likely to be the subject of future applications for consent. In the assessment report at 6.3.118 you've said that you consider the project passes the likelihood test because – well, what's put forward is the department notes that the mining lease – the current mining lease is very much larger than the area for which there's a development consent. I'm just wondering whether there's anything more that the department relied on for reaching the view this is continuing development.

MR YOUNG: All right. Howard, I'll let you answer that, if you don't mind.

MR REED: Sure. Well, the mining lease predates the existing development consent by a long period of time and – and dates to the period when no development consent was required for mining but that probably doesn't answer your question, Mr Beasley. The – the – the – South32 has had – the department's understanding is that South32 has had a – an intention to mine these areas for – for – for decades – for decades and that they - - -

MR BEASLEY: We're – we're – we're – the – the – the Commissioners are going to have to form a view about this, so where would they find that information out?

MR REED: Well, I think the first place to start would be at South32. The - - -

MR BEASLEY: Well, I – I'm – I'm not quite understanding then why the department took the view that it's likely if you don't seem to be placing much weight on what the report actually says about the mining lease area not marrying up with the project area.

MR REED: No, no, no, no. I'm – I'm – you asked me if there was anything additional.

MR BEASLEY: Yes, yes. I did.

MR REED: So – and – but I'm – I'm – I'm not sure that I can answer your question, Mr Beasley, beyond the existence of the mining lease - - -

MR BEASLEY: Well, how – how – how would the Commissioners - - -

MR REED: - - - and the existence of - - -

MR BEASLEY: How are the Commissioners going to grapple with this then, sir?

MR REED: Well, South32 has held these mining leases for something close to 100 years. Now, it – it doesn't hold a mining lease without the intention of – of – of operating under it. The – the way that the development consent process works - - -

MR BEASLEY: No. I accept that but this is – this is about whether it's going to seek an extension or an expansion, whether that's likely.

MR REED: Whether it's likely, yes.

MR BEASLEY: Yes. Probable.

MR REED: Whether it's likely.

MR BEASLEY: Yes.

MR REED: Well, likely or on the balance of probabilities, that was the assessment that the department came to.

MR BEASLEY: All right.

MR REED: That it was more than likely – more than – on the balance of the probabilities, the existence of the mining lease - - -

MR BEASLEY: Yes.

MR REED: - - - was sufficient to demonstrate that South32 - - -

MR BEASLEY: I see.

MR REED: - - - had an intention to undertaking mining in that area.

MR BEASLEY: All right. Thank you.

MR YOUNG: Look, I mean, to – to - - -

MR BEASLEY: Yes.

MR YOUNG: Mr Beasley, I'll just add to that. Mike Young here. Certainly it's something you can obviously – in terms of any, sort of, documentation etcetera put to the company, but in terms of our – our consideration - - -

MR BEASLEY: Yes.

MR YOUNG: - - - it's – Howard's correct in the sense of there – there was clearly a – a resource there that's been allocated by the government for potential extraction – not exploration but, indeed, extraction through a mining lease allocation. Those plans – the planning and requirement to enter – to obtain planning approvals etcetera in those areas only came in in – around 10 years ago or so. The fact that there's 500 or four or five hundred people there that, you know, are – and the mine, the – the – the available resources are coming to their conclusion and clearly there's a connection between the supply of – of that coal the meet the blending of it with the Appin Mine which employs a large number of people as well and the supply and reliance on that coal - - -

MR BEASLEY: Sorry. Just stopping you there because part – part of the reasoning is that - - -

MR YOUNG: - - - on the Dendrobium coal.

MR BEASLEY: Sorry. Is part of the reasoning that there's still a resource there that hasn't been – that hasn't been won yet?

MR YOUNG: There's still a resource there that's been recognised by government.

MR BEASLEY: Yes.

MR YOUNG: That hasn't been won yet and it's, indeed, not just under an exploration title but, indeed, under a mining lease - - -

MR BEASLEY: Right.

MR YOUNG: - - - which is obviously a, you know, a clearer indication of the fact that it's been dedicated by the – the people of New South Wales, by the State Government for a future extraction.

MR BEASLEY: All right. Can I also ask you – and it's always considered a problem to ask non-lawyers to construe a statute, but the department does put forward a – it's – what it understands to be the proper construction of clause 11(a)(iii) in subparas 6.3.119 and onwards of – of the assessment report regarding NorBE which seems to be that – and please tell me if I'm wrong – that if the conditions of consent for the proposed development are the same as the conditions of the continuing development then the – the NorBE test is satisfied. One of the things that's said in the – in the assessment report is there's no evidence provided by any agency to suggest that the proposed extraction would lead to different or greater water quality impacts than those associated with the existing mine.

Pausing there, now, depending on your construction of clause 11(a)(iii), that actually might be a problem, but the department's view seems to be – and this is in one – 122 – 6.3.122 – even if that were the case, the test required by the drinking water set is not the nature, scale or extent of the water quality impacts but, rather, that the conditions of consent which apply to the existing mine must be at least maintained for the expansion or extension. Now, I have to say, on one view of reading clause 11(a)(iii) there does have to be – read in a certain way there does have to be a comparison about – of whether there's going to be the same or lesser adverse impacts on water quality between the continuing development, if it was expanded under similar conditions, and the proposed development. My – my question really is this. Rather – rather than asking you for a legal opinion, did – did the department get advice on – on the construction of – of 11(a)(iii)?

MR REED: The answer to that is that - - -

MR YOUNG: So I'll – I'll answer that, Howard. I mean, we've put forward the department's interpretation - - -

MR BEASLEY: Yes.

MR YOUNG: - - - of that condition. Clearly it – it has a history in terms of the reason for the introduction of that provision - - -

MR BEASLEY: Yes.

MR YOUNG: - - - recognising that there are a number of types of developments, not just mining developments, throughout the catchment area which is a very large part of, you know, south, you know, the greater area around the special areas but also the Blue Mountains and – and – and towards Bowral and so forth, and so there are a large number of developments that are existing in those areas and the – that particular construction was put in place to ensure that expansions and continuations of existing operations could be considered, provided there was appropriate mechanisms in place to protect water quality. So I – I guess what I would say is - - -

MR BEASLEY: Without – without – without at first asking you to disclose the opinion what I – what I was really asking was did the department receive legal advice on the construction of 11(a)(iii)?

MR YOUNG: Well, what I was going to say was that - - -

MR BEASLEY: Yes.

MR YOUNG: - - - to the extent that the consent authority is the IPC for this project I'd recommend that the Commission obtains its own legal advice on the matter because obviously - - -

MR BEASLEY: I was trying to shortcut it by saying - - -

MR YOUNG: - - - it's a prerequisite for the determination whereas - - -

MR BEASLEY: - - - if you've already got an advice you could perhaps provide it to the Commissioners, but - - -

MR YOUNG: Well, I'm not – I'm not sure that it's – I'm not sure that it's appropriate to discuss that in – in the current forum, Mr Beasley - - -

MR BEASLEY: All right.

MR YOUNG: - - - so I'm happy to take that offline and - - -

MR BEASLEY: Sure.

MR YOUNG: - - - we can talk about that separately.

MR BEASLEY: All right.

MR REED: But I – I think it's fair to say though that the department obtained legal advice during development of that clause when it was – when it was being framed and put together with the purposes in mind that Mike has talked about, then clearly that was based on legal input from the department.

MR BEASLEY: All right. Well, that – that – that - - -

MR REED: Whether it was – was external advice is a different question.

MR BEASLEY: That can be explored by the Commissioners. Just – could you just pause – hang on for one second.

MR O'CONNOR: We might bring questions to an end. Thank you very much, Howard and Mike, for your presentations and taking our questions. We'll now move

on to our next speaker who comes on behalf of the applicant. Can you please introduce our next speaker, Richard.

MR BEASLEY: Yes. Next speaker is Jason Economidis from South32. Are you there, sir?

MR ECONOMIDIS: I am, Richard.

MR BEASLEY: Please go ahead.

MR ECONOMIDIS: So, good morning. Let me start by acknowledging the traditional owners and custodians of the land on which we're all meeting today and acknowledge their connection to those lands and the land on which the Dendrobium Mine Extension Project is located. I pay my respects to elders past, present and emerging and I acknowledge the ongoing contribution of the Aboriginal and Torres Strait Islander people to the resources sector. I would also like to acknowledge Commissioners Steve O'Connor and John Hann and thank them for providing us with the opportunity to present. I'd equally recognise all of the individuals and groups who have registered to participate in and contribute to this process.

Thank you for supporting the health and safety of all participants by moving this process online. This year has been like no other and our priority right across South32 has been to protect our people, support the communities we work with, and ensure the resilience of our business. I'm Jason Economidis, chief operating officer for South32s Australian operations. I commenced this role in July of this year after my previous position with the company as vice-president of operations for the Illawarra Metallurgical Coal business or IMC as it's known. My family and I recently moved after two and a half years living in the Illawarra Region.

It's a special location for me with my youngest son being born at the Wollongong Hospital and both of my younger children spending the first years of their lives in the Illawarra. With these experiences, I understand the environmental, social and sustainability priorities of the people who live in the region. I've been fortunate to build a long career in the mining sector, having worked predominantly in the resources industry for the past 33 years. During that time I've seen firsthand the value that our industry delivers, opportunities for people to learn and grow, support for communities to develop new ideas and solve challenges, and long term employment and business opportunities.

In the Illawarra especially, we know from the overwhelmingly supportive submissions we have received for this project that our contribution is valued. IMCs parent company, South32, is a globally diversified mining and metals company producing bauxite, alumina, aluminium, energy and metallurgical coal, manganese, nickel, silver, lead and zinc in Australia, South Africa and South America, but it is much more than that. South32 is a progressive company with a solid balance sheet and a proven track record of working in partnership with communities, governments

and our people to deliver on our purpose, to make a difference by developing natural resources to improve people's lives now and for generations to come.

In the Illawarra IMC has both a long history and a strong future. While we've proudly been part of the fabric of the region and the community for over 85 years, it's the future that I want to talk to you about today. This is not a new project. It is the extension of mining at Dendrobium within our existing and approved mining lease. If approved, it's the continuation of 500 jobs in operations and a further 200 jobs in construction. It's continued jobs in the surrounding community. It's around $300 million spent with local businesses. It's confirmed supply of IMC product to the BlueScope Steelworks and it's the continued expert export of coal through the Port Kembla Coal Terminal.

All of this is what we describe as the interdependent ecosystem of the Illawarra region. Coal mining and steelmaking in the Southern Coalfields provides five and a half thousand direct jobs and an estimated 25,000 direct and indirect jobs across Australia. Importantly, as we look to post COVID recovery, studies show those industries deliver around $10.7 billion annually to the Australian economy, as outlined in the New South Wales Government's independent economic analysis and included in their assessment report. That contribution is significant and critical and what it comes down to is real jobs for people who work underground in the operation, who process that coal and transport it to the port, who use it to make steel, who supply safety gear to the sites, who work in finance, human resources and environmental management, and so many other direct and indirect supporting activities.

It's about the continuation of royalties for the New South Wales Government to fund schools and hospitals, and it's about South32s commitment to support communities where we operate. At IMC we produce world class high quality metallurgical coal for steelmaking and we ship our product around Australia and the world. I've mentioned the strong link between coal mining and steelmaking in the area. In fact, the BlueScope Steelworks was originally constructed in its current location because of the local coal supply and the port. BlueScope Steelworks, who you will hear from later in this hearing, operate the largest steelmaking facility in Australia.

While the steelworks has evolved over time and taken advantage of the latest in technology and innovation, there is currently no economically viable alternative to the use of metallurgical coal in their blast furnace method of steelmaking. The coal that would be produced through the extension of mining at Dendrobium is key to ensuring IMCs supply of product to the steelworks. At IMC we are proud of our long term partnership with BlueScope and the benefits our combined contribution brings to our local region. During my time in the Illawarra and since, I've been closely involved in the Dendrobium Extension Project and I'm pleased to present today on the past four and a half years of collaborative work by the IMC team and their experts.

This process has involved the completion of impact studies, engagement with community representatives and the development of mitigation and management strategies. In addition, the Department of Planning, Industry and Environment, or DPIE, has conducted its own whole of government assessment of the project. Representatives of the Government presented at this hearing earlier and outlined why the project can be approved subject – subject to conditions of approval. We agree with the conclusions of the whole of government assessment. Again, I would like to acknowledge all of the work that has been completed to date and all of the feedback we have received from the community about the extension of operations at Dendrobium.

As locals, our people are committed to the highest standards of safety, performance, environmental management and engagement. They have worked hard to ensure we have the right operational plans in place and, in consultation with the New South Wales Government, make sure that we are managing any impacts. Our approach to environmental management is to deliver on our overarching commitment to ensure the project is a positive contributor. While this is particularly relevant to our commitment on water, it is also relevant across all aspects of our environment, social and economic performance.

In terms of social contribution, I'm especially proud of the support we provide to young people in the Illawarra through our apprenticeship program and through scholarships and mentoring partnerships with the University of Wollongong and the University of New South Wales. IMC has supported a wide range of community programs and for the past 17 years has contributed 3 cents per saleable tonne of Dendrobium coal to the Dendrobium Community Enhancement Program. To date, this has totalled around $2.2 million to this program which is administered by a group of local residents surrounding the – surrounding the Dendrobium operation and this contribution will increase in line with CPI to maintain our commitment for the life of the project.

This program is part of South32s broader community commitments which has seen over $5 million injected into the Illawarra region to support community projects. Economically we must be profitable, ensuring that we can deliver benefits for our shareholders, our communities, and all of our stakeholders. We operate a sustainable business that manages the health and safety of our people and communities. Our economic viability and that of the interdependent ecosystem requires us to draw on our lengthy experience mining in the Illawarra and – and apply that experience to this project.

In terms of environmental management, our approach to mine design and planning for operations is to, where possible, avoid negative impacts, understand and mitigate those impacts and, if necessary, fully offset those impacts. Our consultation over the past four and a half years with community members, neighbours and registered Aboriginal parties, along with our work with DPIE, has informed our approach and there are some key areas I would like to highlight. Firstly, water. IMC recognises the importance of this area to the water supply system and availability of water

resources. When considering the location and design of our mining operations we are focused on avoidance of impacts and we have committed to voluntary setbacks from dams, named watercourses and key stream features to – to minimise potential surface water losses.

To offset predicted surface water impacts, South32 has committed to enter into a planning agreement with the New South Wales Government. The government can use this funding to invest in water supply infrastructure and initiatives that will have intergenerational benefits and provide a positive contribution to the metropolitan water supply. We believe a collaborative approach is the most effective and this outcome provides a long term security and flexibility for New South Wales Government and all water users. We will also continue to collaborate on protection of Aboriginal cultural heritage. It is important for cultural heritage and mining to – mining to coexist and we are committed to working with Aboriginal and Torres Strait Islander peoples, government and industry to achieve the best outcomes.

We have consulted extensively with the registered Aboriginal parties throughout this process and we'll continue to do so. South32 has committed to net zero emissions across its operations by 2050 in line with the Paris Agreement. This commitment is also consistent with the New South Wales Government's target and the commitment made by the Wollongong City Council. To reach this commitment we're investing in projects across the business. At our Appin Mine our gas drainage and capture network enables the reuse of waste coal mine gas that is produced in underground mining to generate power. In 2019 the gas captured was enough to generate equivalent – equivalent electricity for around 52,000 homes or roughly 45 per cent of all homes in Wollongong.

This is just one example of our practical approach to meeting the overall commitment. The conditions of approval recommended by DPIE reflect our commitments and we agree with the findings of the whole of government assessment report and accept the recommended conditions of approval. Over the past 85 years our approach to mining has evolved and changed as – as we've relied on the experience and advice of experts, we have embraced technology and we have listened and responded to feedback from employees, communities and regulators. We have continued to assure – ensure our approach is informed by leading research and adaptive management, a fact that was recognised when IMC was awarded New South Wales' Mining Operation of the Year earlier this year.

We are committed to this project and the future of the Illawarra. The Dendrobium Extension Project will allow us to continue delivering benefits for our people, our partners and communities long into the future. For our people at Dendrobium and across IMC more broadly and their families and communities this is about much more than a job. They're proud of their contribution to the region and the role they play in making sure we're a positive contributor. I would like to leave you with one message. We have learnt a lot over the years. We've listened to our stakeholders and experts and we know – and we know what we need to do to meet and exceed our environmental obligations and meet community expectations. We are committed to

continuing to work with our stakeholders so that we can create value for all of them as part of the local industrial ecosystem. Our future is the Illawarra's future. Again, thank you for providing me with this opportunity to outline our commitments and our credentials.

MR O'CONNOR: Thank you, Jason and thank you for finishing a little ahead of time. That gives us a bit of a chance to catch up because we ran a little over time, so we're sorry to keep you waiting. Look, I don't know if you heard the – the questions that we put to the department but one question that I asked related to the confidence that the department had that the mine could be sealed at the end of the project and, therefore, the surface water losses would eventually decline to zero. How does the – the company feel? How confident are you? What – what evidence have you got that you can actually seal this mine at the end of the project?

MR ECONOMIDIS: Thank you, Steve. I – I think the most important thing for us to acknowledge, Steve, is that there's a lot that goes into answering that question and I think a more appropriate way to address that would be to provide something after the hearing. I think – I think it's a – it's a – a large surface area and I – I would prefer to be able to provide you with a more detailed account.

MR O'CONNOR: That's fine. And – and whatever you provide us, just be aware we – we will place that on our website. I might ask John if he has any questions.

MR HANN: Oh, look, thank you. Mr Economidis, quite a lot of importance has been put on the mine plan and in particular setbacks from key stream features as they're referred to. In particular, 50 metres if the longwall panels are on one side and 100 metres if they're on both sides. The – the Mining Panel – the Independent Mining Advisory Panel had some concerns about the basis for those setbacks, particularly in their conclusions, number 19 and number 58.

MR ECONOMIDIS: I'm sorry. John, I just – I'm sorry, John. I missed the, sort of, middle part of that question.

MR HANN: Look, the question is what is the basis for the setback distances that are set out for the key stream features? Because the mining - - -

MR ECONOMIDIS: I think, again, John - - -

MR HANN: The Independent Mining Panel had some concerns and asked this question so I think it's appropriate that you're able to provide us with a response.

MR ECONOMIDIS: Yes. And, again, John, not having my experts with me today and – and, again, having provided this information previously what I'll do is I'll get my people to put that together, acknowledging that it will be made public for – for everyone, following this hearing.

MR HANN: Thank you, Mr Economidis.

MR O'CONNOR: No further questions, John? Richard, have you any questions?

MR BEASLEY: No.

MR O'CONNOR: No.

MR BEASLEY: No. I don't. Sorry.

MR O'CONNOR: Okay. Look, I think we might leave it there. Thank you for your time this – well, this morning, Jason, and no doubt you'll watch the rest of the proceedings with interest. We – we might finish there. We're due to recommence at midday when we'll hear from additional speakers, so we'll sign off now and return at 12 noon. Thank you.

ADJOURNED **[11.31 am]**

RESUMED **[12.00 pm]**

MR O'CONNOR: Welcome back. We'll have our next speaker, please.

MR BEASLEY: We have councillor Cath Blakey from the Wollongong Council. You there, Councillor Blakey?

MS BLAKEY: I am, yes.

MR BEASLEY: Please go ahead.

MS BLAKEY: Thank you, Commissioners. As – sorry, I can hear some of that music.

MR BEASLEY: Just – I've just been asked to check whether you've got your livestream on, because you might be on delay and therefore hearing the music. Can you hear me, Councillor?

MS BLAKEY: I can, and I've just - - -

MR BEASLEY: You're just fixing the problem.

MS BLAKEY: Yes.

MR BEASLEY: Okay.

MS BLAKEY: Thank you very much.

MR BEASLEY: All right. Go ahead.

MS BLAKEY: And can – you can see my PowerPoint?

MR BEASLEY: If it's a picture of a lovely landscape with a mountain in the background we can.

MS BLAKEY: That's great. That's Mount Kembla.

MR BEASLEY: All right.

MS BLAKEY: So I'll start by acknowledging the traditional owners of the Illawarra and Mount Kembla and the land where I am in Conisten at the moment from Dharawal Land. As you said, my name's Cath Blakey. I'm a city councillor for Wollongong representing ward 2, the central part of Wollongong, and that includes the top and the Pit Top and the Kemira Valley mine working area and the tributaries that flow down across our city. I was elected in 2017. I've got a background in environmental science, having studied at Wollongong Uni and worked in ecological restoration, environmental education and sustainability. I was born and raised in Wollongong. I – like Jason Economidis said, my daughter was also born at Wollongong Hospital, as was I, and my parents, mum was a TAFE teacher and dad worked at the steelworks all his working life at Port Kembla, briefly in New Zealand at Glenbrook when BHP were at New Zealand still and then in BlueScope until – when it was voted off, as such, until his retirement.

I think it's interesting that the commissioners have interest in that issue of the mining lease and the continuation of rights with it. I think, noting that 100 years of mining and no longer using pit ponies to do it and where it used to be an integrated business all owned by BHP, it has – it was demerged in the early 2000s. As a city councillor we had a briefly from the proponent, from Jason and Ben, but, unfortunately ..... New South Wales haven't been available to meet with councillors. So I'm going to just talk about some of the strategic issues that council is concerned about and, of course, jobs is one of them. We've got an economic development strategy that was approved pre-COVID, that sought to create 10,000 jobs in the Illawarra. We've also got the sustainable development goals, which are seeking those win-wins when it comes to employment, when it comes to clean water, when it comes top health, welfare and education.

And the economic development strategy has highlighted that mining and manufacturing has been declining in Wollongong in recent years, but there has been great growth in health, in education and associated services, and I note this is pertinent today because we've heard this morning that Peabody, due to an over supply and lack of demand has – is going into a two month idle, and that's got big – an impact on the workforce there. Wollongong Council also has a sustainability strategy it recently passed, and community feedback highlighted that water, security and resilience were really important, and they're things that our community is concerned about and we're also concerned about in operations. Council, just like

South32, is – has a net zero emissions target for the city for 2050 and for our own operations by 2030 where a signatory of the Global Covenant of Mayors on Climate and Energy, and just in – then just recently, a few months ago, approved this new climate mitigation plan, which is a $32 million investment in reducing emissions by 25 per cent. That's about 300,000 tonnes of CO2 equivalent emissions.

So when – I think when you look at the economic input from this mine and the carbon emissions it is a great concern that the scope 1 emissions dwarf what council can achieve to reduce emissions, and that's a particular concern for the health of our community and the environment, and as we've seen with the last bushfire season, our economy, as well. I am concerned. I have read South32's climate strategy and to me it seems a bit of a dystopia where water issues are dealt with – you know, we have water loss and we just deal with them by pursuit of, really, energy intensive water treatment processes. I don't think we can equate a pure, you know, solar – like, sun-powered natural water system with reverse osmosis or any other treatment system.

So there's the mine and down at the bottom is the tip, which is council's greatest source of emissions, and we are capturing the methane emissions from there, oxidising them to CO2 and creating energy, just as we heard Jason describe at Appin, and I would like to see if this does – is approved, that mine ventilation isn't just considered fugitive emissions. There are emissions that have an impact and must be accounted for and reduced where possible. Subsidence in September 2019. I had the great pleasure of visiting the catchment area with some UNSW researchers, and the subsidence they saw was very disturbing. Upland swamps which, when they're intact, it's amazing, you get this squelch under foot and you can put your finger in it and it's like a sponge, but when they're cracked, you lose that – you lose them as a carbon sink, as well as losing their water holding capacity.

Here's tributary 21, which was undermined and we now have what was a permanent stream is now ephemeral, and so these water impacts are of great concern, particularly because if you lose water holding capacity of a catchment then all you're left with is protecting dry creek beds. Here we have some image of recent fire impacts up in the Blue Mountains from the Gospers Fire. We saw the impact of bushfire on intact upland swamps, as well as undermined ones, and the impact is just – is horrendous. One can recover and the other cannot. I note that – excuse the dodgy photo. This is Brandywater Creek, which comes down from Kemira Mine. I note that any conditions you impose on a mine are only as good as the fact that they're enforceable, and we – if there is an incident, as there was in August from the sediment pond where it – there was a collapse and it released 10 megalitres of coal sludge down the creek through Figtree, then it's impossible to undo the damage, and I note that this incident wasn't publicised in South32's community newsletter.

It's good that South32 are reaching out to the community, but the information they provide in it is always positive. It never pertains to events that – like this. They were required by the EPA to conduct a clean-up, and that's what you can see on the far bank behind the WIN TV crew, but, unfortunately, the environmental impact assessment they were required to do, as well, has never been made public and we

haven't heard why the sediment dam broke and how they're going to ensure that that doesn't happen again. Because when you've got inherently risky mining, it's essential that you maintain those assets to prevent any impact and so the – it really does highlight that preventing, like, a – rejecting this proposed extension is a key way to actually ensure that damage is prevented. This was a motion that council moved seeking greater transparency, and I'll move along.

This is downstream was Tom Thumb Lagoon. Unfortunately, it doesn't look that today. Today it looks like this, and where the orange arrow is the discharge point for water. It's just behind the McKeon's Swim School. That's what it looks like with the fences out the front and this is me standing beside the discharge point into Allans Creek into that part of Tom Thumb Lagoon. So here's an example where we're getting polluted water. So that idea of net water benefit I think is very problematic when you're equating an impact to the drinking water catchment with what is heavily contaminated water downstream. Thank you very much. I believe my time's expired.

MR BEASLEY: You still have 30 seconds left, if you wish to use it.

MS BLAKEY: Great. Okay. I'll keep going. So this is the discharge point from Appin, this is the heavy metal sampling that was recently done on Tom Thumb Lagoon. This – you can see the – particularly cobalt and zinc, there's a hotspot of pollution around that discharge point. I often thought pollution in Port Kembla was a legacy issue, but it's a concern that with this mine expansion we'll see more pollution being discharged there at Unanderra into our local waterway, and I note that these snails are used to measure that bioaccumulation of metals because they're robust enough to survive when so many other things die.

MR O'CONNOR: Your time has now expired, Councillor.

MS BLAKEY: Thank you. Thank you.

MR O'CONNOR: If you're able to take a question, I'd like - - -

MS BLAKEY: Sure.

MR O'CONNOR: Yes. I'd like to ask, we've been advised by the Department of Planning that Wollongong City Council doesn't object to the proposal. I've looked at correspondence from council and the submissions raise a number of issues they think need to be addressed, but it's not really clear whether council's supportive of this project or not. Can you just inform us what the formal council position is?

MS BLAKEY: Council itself doesn't have a formal position on this. Council officers have provided information and advice on it, but it was only – but council itself does not have a formal position.

MR O'CONNOR: Thank you. That makes it clear. I was searching to see if there was a formal position and you've made it very clear that that's not the case.

MS BLAKEY: Yes.

MR O'CONNOR: Thank you. John, do you have any questions? No. Richard? Thank you very much for your time, Councillor.

MS BLAKEY: Thank you.

MR BEASLEY: I think the next speaker is Alexandra Stengl from Wollondilly Shire Council. No. Yes. Are you there?

MS STENGL: Hi, can you hear me?

MR BEASLEY: Yes.

MS STENGL: Yes.

MR BEASLEY: Please go ahead.

MS STENGL: Thank you very much. Well, look, firstly, I'll just acknowledge the country for the Dharawal People and the land of which we sit – stand today or ..... us. Can you see my presentation? Is it showing on the screen?

MR BEASLEY: I can see the aurora borealis or something behind you.

MS STENGL: Well, that - - -

MR BEASLEY: But I'm not sure about your - - -

MS STENGL: Good. Okay.

MR BEASLEY: - - - presentation yet.

MS STENGL: Okay. All right. That's a worry. Let me just see that – if I can - - -

MR BEASLEY: Unless that's your wall, which I'm assuming it's not.

MS STENGL: I'd like to be at the aurora, but, sadly - - -

MR BEASLEY: Yes.

MS STENGL: - - - no, I'm here. Well, no, this is good, too. It's a good cause.

MR BEASLEY: Yes.

MS STENGL: Okay. Can you see my screen – my presentation now?

MR BEASLEY: Just waiting.

MS STENGL: Yes. Sharing now.

MR BEASLEY: Yes. Looks like it's happening now. Yes.

MS STENGL: Okay. Hopefully I can put it into full screen view. Maybe not, if not I'll just go from there. Can you do that?

UNIDENTIFIED MALE: The slideshows - - -

MS STENGL: Yes, I know, but I don't know – okay. Does that work?

MR BEASLEY: That works.

MR O'CONNOR: Yes. That's good.

MS STENGL: Okay. All right. Well, thank you very much for having us speak today. I guess council's position on mining for Wollondilly Shire is that we – obviously, we acknowledge the economic benefits, employment and importance of the project application to BlueScope Steelworks. We do not oppose mining operations in general or overall, but we, obviously, expect that the impacts will be subject to detailed scientific based assessment. We've also aligned and formally aligned our position with that of Water New South Wales in recognition of the land management and provisions of water supply and responsibilities. Our resolutions. There's our formal resolutions. I won't read them out.

If – we'll be sending all of this through for the panel's consideration, anyway, as a submission, but just in – it just highlights that, basically, we do request a review of the process and preparation of the preliminary issues reported by DPIE, and that we also request that the implications of the project application on the volumes and quality of potable water supply of Wollondilly and Macarthur residents for both current population and projected growth, but that's reviewed and that position still stands, and that we actually oppose the expansion of the Dendrobium Colliery Mining – sorry, extension mining operations and formally object to the proposal until the potential of – potential impacts on water sources and supplies are addressed to the satisfaction of Water New South Wales.

So, I guess, our position as a council is that we align and support Water New South Wales as an agency. You can see here the map of Dendrobium Extension. For us, I guess, this map highlights the areas through Wollondilly's LGA. What the biggest impact for us will be the growth for the Macarthur South area, which is over on the eastern part of our shire, which is in Appin and also Wilton. That's okay. I'll go to the next one. Sorry. Just going through.

Okay. So, I guess, overall our general comments, we have concerns about the conclusions and recommendations did not adequately consider or reflect the specialist advice and the number of the SEARs. We've also had some just general observations that we're concerned that the economic analysis has some shortcomings in regards to environmental costs associated with the project and, I guess, some general reference in relation to that position is that there's an – like, a general absence of avoidance mechanisms. We also believe that there's a general lack of scientific basis and justification to that particular approach and the adequacy of offsetting – of the water over the full life of the – life cycle of the project. So they're general concerns that we've got.

Moving to the next slide. Okay. Okay. So as you would be aware, so the impacts to water sources, it's generally the community has raised a lot of concerns about the quality of water and, then, of course, the ongoing cost, potentially, if there are impacts to our potable drinking water supply. There's been a number of concerns, specifically locally, the impacts to our local creeks from other mining activities, such as Redbank Creek. We look at the same type of geology and we are concerned about those type of impacts to the upper catchment and, like, tributaries of the catchment dams, and in the sense of the significant contamination caused by the disturbance of shallow groundwater aquifers.

The Commonwealth Independent Expert Scientific Committee provides project advice on coal seam gas and mining, and we know that they provided this to Dendrobium. We're just concerned, I guess, basically, of that overall – ensuring that the same standards are applied, if not to a higher level, in the drinking water catchment. We've requested that an independent expert committee for mining in the catchment investigate both the quality and the quantity associated with mining and that's why – I guess, that's where that's been driven from because of the impacts in other parts of our shire.

I've got some response to key issues. I won't unpack that fully, but as you can see we put that into a little table. Actually, I think I – but, yes, I guess, basically, what we're trying to say here is that we've – the impacts are, like, reliant on the extraction plan and one of our concerns, as we've expressed through the conditions of consent that often these type of action plans are, in the very nature through the conditions, are less enforceable and, potentially, we can see that that could be an issue in the long term compliance and management and regulatory processes for the conditions of consent to this particular project. So we ask that those be stringently reviewed and that there's mechanisms put in place in that particular area that do address that. That, I guess, for us – for want of a better word, a loophole. Are you happy with that?

UNIDENTIFIED MALE: Yes. That's fine.

MS STENGL: Yes. That's okay. All right. Sorry, I've got one of my colleagues here, who's – we're listening to this intently. So, okay, security of water supply. I guess that's one of the things that has been a major concern by the community and also our councillors. They are concerned about water as a resource not just for our

current population, but, as you are aware, there's huge growth predicted for the Macarthur region, and we are concerned that the impacts, you know – will water supply be impacted and how will we manage that moving forward with growth predicted up to 30,000 more dwellings, so that's, you know, over 100,000 more people up to 150,000 more people.

Water New South Wales has expressed that there's concern that the project would take up to 3.3 gigalitres a year of surface water from nine major watercourses and 100 small tributaries. Given that we've just literally come out of a drought and the worst horrendous bushfire season, that is, clearly, a concern for our community about, yes, the security of water and the quality of – and – of that water. So, I guess – and the concluding statement there is that both potable water and non-potable water are viewed as an important resource. Okay. We've touched on the draft conditions, but we – I guess the main point of this particular – we've got the – our own submission, the assessment reports and, again, the conditions.

We're concerned about the local water quality objectives that are not, you know, sufficiently described related to performance measures, so I guess what we're trying to say there is, yes, we would like to really bed down in the conditions some contingencies or what are – what is the process for us if the water supply is affected, we would like to see that strongly considered with this project for all the reasons outlined before. We also – we do have concerns about the offsetting payment, that it's restricted to a condition requiring the applicant entering into a planning agreement, and we've considered that this is insufficient. We think that there needs to be, maybe, greater probity and greater transparency around that particular - - -

UNIDENTIFIED MALE: ..... investigations.

MS STENGL: And an investigation, yes, within that particular payment process. We just think that there needs to be – you know, how is it modified and at the end of the day, it's the community that will be, I guess, greatly affected by the cost of water or changes to water supply, so we need to make sure that that arrangement adequately – not only, you know, maybe protects water in New South Wales, but also the end users. Okay. We're getting close. All right. Key issues. So the koala corridor protection. Look, we have got concerns. It is a main koala corridor through these areas.

We don't believe that there was sufficient avoidance and minimisation measures prior to the consideration of ..... so we got to see that there was greater review of that. Coal as a water resource. Like I said, steel production is a finite resources, 20 to 40 years when transitioning to new technologies and industries will be needed. Strong short-term economic gains will not compensate for the long term increase of costs of Sydney and Illawarra's water supply. We'd like to see consistency of the – like, greater scientific basis and economic analysis for the methodology in the SEARs studies, and also the impacts of the project application on the volumes and quality of appropriate water. Thank you.

MR O'CONNOR: Thank you, Alexandra. I do have a question. As I understood - - -

MS STENGL: Sure.

MR O'CONNOR: - - - you were – raised a concern about the potential, or the proposal to offset the loss of surface water over the full life of the project. I take it by that you mean post-closure of the mine, etcetera.

MS STENGL: Yes. Yes.

MR O'CONNOR: You're looking at the long term.

MS STENGL: Yes.

MR O'CONNOR: So does that concern relate to the fact that if the mine isn't sealed, then there could be, you know, ongoing water losses for an indefinite period?

MS STENGL: Yes. Absolutely. Yes. We – our councillors and community are greatly concerned about that particular element over time and that some of the disruption to shallow aquifers and having impacts down the track, maybe 20, 30, 40 years from now and how that will be managed and, yes, they have concerns greatly about that.

MR O'CONNOR: Thanks, Alexandra. John, do you have any questions? No. Richard?

MR BEASLEY: No, thank you.

MR O'CONNOR: Thanks for your time.

MS STENGL: Thank you very much.

MR O'CONNOR: Bye. Next speaker, please.

MR BEASLEY: Next speaker is Daniel McConnell from the Gunyun People of Jervis Bay. Sir, can you hear me?

MR McCONNELL: Yes.

MR BEASLEY: Please go ahead.

MR McCONNELL: Can you hear me?

MR BEASLEY: We can. Please go ahead.

MR McCONNELL: If upon return the Gunyun Jia Juan Atultal they will be welcome by the Gunyun Jia Juan and Toonker as Toolgal, Yuin Gunyun and as brothers to the Yuin Toolgal Jia Juan and back through the Mirial Toonker Boonan, though the Yuin Jia Juan to the Ngardi Binji Boonan to meet the Bipbip in the Ngardi. Binji Boorai and follow the Bipbip as Toolgal as Yuin Ja Juan to return to Ngardi and together travel to Bundarwa and onto Jerengonwin through Dharawal Wadi Wadi Tucamoi. The vastness and the diversity of the landscape includes the New South Wales Maritime Estate, the New South Wales Coastal Zone, the islands, the Great Eastern Escarpment, the highlands, the valleys and the floodplains of the southeast catchments of New South Wales and together they form the land, the water and the sea of the Shoalhaven and the Illawarra Regions of New South Wales, from the core of the Earth to the top of the atmosphere.

I understand this language as the land of New South Wales, interpreted in the language of the English, the sea people arriving from the sunrise in the east in the history and also understand the language in the Dharawal of the Wadi Wadi and the Garda Yuin, a koala story in the dreamtime of creation here in the sunrise of the land in the east of creation. The equity remains in the land of New South Wales, the water remains in the land of New South Wales and the values of the people in the land of New South Wales remain as the public interest in the land of New South Wales, for the people from the mountains to the sea remain here and at home within the peace of the Shoalhaven and the Illawarra Regions of New South Wales.

The people of New South Wales have determined for themselves the value of the land of New South Wales, but the State of New South Wales is not seen and will not be heard to defend the value of the land of New South Wales in the public interest, to protect the environment of New South Wales before equity in public hearing. For equity to remain in the land of New South Wales and to protect the environment of New South Wales the public interest in the land of New South Wales, the people of the land of New South Wales and the State of New South Wales must defend the public interest to protect the environment of New South Wales.

I, therefore, invite you to look deep within history to rediscover the land of New South Wales. The story of the people in the land of New South Wales inherent within the value of the land of New South Wales, the life that flows as clean fresh water through this place, being the lifeblood of the people and the land of Shoalhaven and Illawarra Regions of New South Wales. The people in the land of New South Wales in which a community has long been established with strong foundations in equity and have benefited, through generations, as stewards in the land of New South Wales in the public interest to both conserve and to protect the nature resources as good land managers and the value in the land of New South Wales and to remain here in equity of the land of New South Wales.

The value of the land of New South Wales determines equity in the land of New South Wales. To the people of the community within the society of New South Wales in peace that in time remain productive and sustainable within the land of New South Wales. The people in the community have benefited from good land

stewardship inherent from generation to generation and the conservation of the natural resources that defines the equity in the land of New South Wales protects the environment of New South Wales in the public interest.

To remain productive and healthy as an equitable society of New South Wales through the seasons, both the good and the bad times that we experience together as a community through the course of our lives, we must learn from and appreciate together the value and the benefits of good land stewardship inherent in the land of New South Wales. In order to further benefit from the value in the land of New South Wales into the future, the equity must remain in the land of New South Wales from generation to generation, because the equity remains in the land of New South Wales in the public interest to benefit all people of the State of New South Wales. Is that it?

MR O'CONNOR: You need to wrap up now, if you've any last comment you want to make, then please do that.

MR McCONNELL: Okay. In Joseph Terrence Brown v the State of New South Wales a question arose in the absence of the Crown of New South Wales and remains in equity within the Supreme Court of New South Wales. Why did the State of New South Wales fail to appear twice in the public interest when given due notice, a summons to appear and an order to appear before equity to defend in the public interest and in the sovereign right of the State of New South Wales the right to deal in the land of New South Wales within and amidst the equity of the law of the society of New South Wales as equity surely remains the law of the land of New South Wales. The priority for - - -

MR O'CONNOR: You'll have to wrap up now, thanks, Daniel.

MR McCONNELL: - - - equity within the Supreme Court of New South Wales, the Aboriginal owner with certain belief in his Aboriginal interest in the land of New South Wales declared remaining paramount in good conduct supreme in the court in the law of equity in New South Wales, society of New South Wales in merit to the conduct of the Crown of the State of New South Wales who in failing to appear before his Honour Justice Parker, duty-bound the Crown did hear equity Supreme Court - - -

MR O'CONNOR: Thank you, Daniel. Look, we'll have to stop it there. I'll just see if there's any questions. John?

MR HANN: Not from me, thanks.

MR O'CONNOR: Richard? Thank you for your time this afternoon, Daniel. Our next speaker, please.

MR BEASLEY: Next speaker is Adam Zarth who's from the Illawarra Business Chamber. Mr Zarth.

MR ZARTH: Thank you, Commissioners, and before I begin I'd just like to acknowledge that I'm coming to you from the land of the Dharawal People, and I'd just like to acknowledge and pay my respects to their elders past, present and emerging. I represent the large and diverse business community of the Illawarra and oversea the regional officer of Business New South Wales, which is formerly the New South Wales Business Chamber. We've been representing businesses now for 195 years. Now, Illawarra Metallurgical Coal are a member of Illawarra First, our business leadership forum, and they're also a previous sponsor of our business awards. So I note that to make the point that this is a company that makes a contribution to many parts of the community, including but not limited to the business community.

Now, the Illawarra Business Chamber is proud to support Illawarra Metallurgical Coal, I'll call them IMC going forward. It's a bit of tongue twister. IMCs proposal before you today to continue their mining activities at the Dendrobium Mine at areas 5 and 6 within that existing mining lease. Now, there are important considerations regarding the mine's impact on the environment, the water catchment and heritage sites, and I note that IMC have put a lot of work into addressing those as part of the proposal before you.

Now, we've made representations to government to express our dissatisfaction with the length of the process for mining approvals. We believe, you know, the time taken deters investment, creates uncertainty across the steelmaking and manufacturing sectors, as well as the wider community, as well. I guess, opponents of mines are also people who have to go through lengthy periods of uncertainty while these processes take place, but I, more importantly, want to express the confidence of the Illawarra business community in the rigour and the impartiality of the process that you're leading and our faith that the IPC will base its judgment on independent – sorry, on expert advice.

Now, look, I want to speak in favour of this proposal on, largely, an economic basis and make the point that, as we all know, mining has been part of the fabric of the Illawarra for 100 years now, and I think it benefits much greater community support and awareness as it might elsewhere as a base – as a result of this, and this is reflected in the supportiveness of public submissions. It's part of our history and now sits alongside a greatly diversified industrial base, but it's no less important today because it makes such a significant contribution to the regional and the State economy. Dendrobium itself supports 500 jobs, as you'd be aware, as well as the 200 people into the future should this – should the continuation of the mine be approved, and they'll be employed in construction of the mine.

Importantly, it's fundamental to the supply chain that supports thousands of jobs, including three and a half thousand employees at BlueScope's Port Kembla Steelworks and Springhills works, and five and a half thousand further down the supply chain in the manufacturing sector. I think John Nowlan from BlueScope, he will address you later on and I'll leave it to him to provide further detail on that, but I really want to note that their operations rely on this just in time supply of coal from

local sources, and 68 per cent of that, I understand, will be coming from Illawarra Metallurgical Coal. Now, the supply chain accounts for 25 per cent of the Illawarra's economic output or $6.5 billion of our total regional economic output, which is a significant proportion.

So we're aware that whilst there's been an economic impact of COVID and the lockdowns, will be that – you know, the impact will be with us for some time, you know, this – it's so important to maintain jobs in our region and, of course, most importantly, the high paying, highly skilled jobs that we find in mining and manufacturing further down the supply chain. I would also make the point that, I think, earlier this year the community experienced a bit of a wake up call about the importance of local manufacturing, and I think the community has an expectation that we continue to operate the economy in favour of the expansion of local manufacturing going forward.

Now, I'll just make the point before I finish – so that's my note to finish – that we are aligned with the ambition at the Business Chamber to reach net zero emissions and the decarbonisation of industry is important in order to achieve that; however, that needs to be done through an ordered transition and utilising technologies that are still in a phase of emergence. Now, steelmaking can only still be done with high quality metallurgical coal. Other technologies are decades away from commercialisation. So I would just make the point that we do need to support jobs through the transition and, of course, we will be relying on metallurgical coal for the near and to the medium term. So on that note I'd really like to thank you again for your time and hand back to yourselves. Thank you, Commissioners.

MR O'CONNOR: Thank you, Adam. I'll just see if there's any questions of you. John?

MR HANN: No.

MR O'CONNOR: Richard?

MR BEASLEY: No.

MR O'CONNOR: Thanks for your time this afternoon.

MR ZARTH: Thank you.

MR O'CONNOR: Next speaker, please.

MR BEASLEY: Next speaker is Ann Brown from National Parks Association, Illawarra Branch. Ms Brown.

MS BROWN: I mute myself. Good morning – good afternoon, Commissioners. Thank you for the opportunity to speak. Can you hear me all right?

MR BEASLEY: Yes, we can. Thank you.

MS BROWN: Okay. Good. I'm here on behalf of the local NPA Illawarra Branch, a group who love bushwalking and have a passionate belief in conservation of our natural environment for now and for future generations. We are opposed to this extension for many reasons, but primarily because it will have serious and permanent impacts upon the water catchment area of Greater Sydney and the Illawarra. Since 2014 I'd been on the CCC for the Wongawilli Coal Mine, so I've learned quite a bit about the complexities and the impacts of longwall coal mining, and I also have a science degree. The focus today will be on three issues: water quantity and quality, coastal and swamps and strategic alternatives.

I was lucky enough to join you on the well organised site visit. We saw three swamps and some watercourses, but South32 was careful not to show us any of the damage which is being caused by subsidence. Longwall mining causes ground subsidence and impacts the quantity and quality of both surface water and groundwater. This is not disputed, but the accuracy of modelling still remains under discussion. To quote the IESC regarding groundwater modelling, the IESC has a low level of confidence in the estimates of mining impacts on surface water, groundwater interactions, and I observed one of the earlier speakers thought that was important, too. In March 2020, Water New South Wales remained strongly opposed to this project in its current form as none of its key concerns were adequately addressed through the response to submissions.

Water New South Wales also considered the EIS did not contain an adequate assessment against the neutral or beneficial effect, the NorBE test, in respects of loads of concentrations of metals in streams or reservoirs. The coastal upland swamps are listed as endangered ecological communities and are significant in terms of their biodiversity. There are 46 swamps in the mining area and 25 of these are expected to be undermined. Previous subsidence has been of the order of 2.5 metres. Remember these longwalls can be two kilometres long. You and I were not shown any area of damaged ground above the subsided panels. Why not. The landmark determination of the 2010 PAC against the eastern domain of BHP Illawarra Coal Bulli Seam Project was made largely because of the acknowledged value of the upland swamps, which are the headwaters of the Georges River.

The PAC decision led to the company, BHP, deciding to withdraw the eastern domain of its mining application and, ultimately, to the creation of Dharawal National Park, but since then the swamps have been less and less protected. The significance, value and fragility of the swamps is well documented in the book by Anne Young, Upland Swamps in the Sydney Region. Dr Young refers in her book to the evidence due of damaging due to mining and to widespread dehydration of the catchment surface, page 117. Each swamp is a unique community containing rare plants and animals. The uniqueness means that offsetting of like for like is not possible, but nonetheless the department is willing to permit offsets for coastal upland swamps. It's a bit like offsetting the Opera House, really.

When mining commences, the swamps lose their capacity to hold water and rainfall drains rapidly through the cracks and fractures cause by mining. We saw this ourselves on the site visit look at the piezometer readings for the undermined swamp 1B in area 1B where the water level in the swamp rose rapidly with rainfall, but fell equally rapidly. Swamp 1B monitoring shows there's also been an observed reduction in species composition and a reduction in the area of the swamp. So significant, permanent damage has occurred. Swamp 14 is, or was, a large swamp in area 3B and has recently been undermined by longwall 15. The soil moisture level is now reported to be lower than baseline, which is a type 3 impact. In other words, there is almost no surface water in the swamp. What will happen to mitigate this. Further monitoring. There is no way to mitigate an upland swamp. Quoting the 2012 coastal upland swamp EEC determination:

> *Large swamps also contribute disproportionately to species diversity and hydrological function.*

And swamp 14 was a large swamp. We are providing these details to illustrate the lack of wisdom shown by DPIE in continuing to permit mining in the special area of the water catchment. The primary purpose of the area is to store water. Surely the department should take note of these impacts detailed by various agencies and not permit aggressive mining under the upland swamps and streams. The damage will be permanent and the negative impacts on water quantity and quality will continue for many years, maybe in perpetuity.

Are there any alternatives. Can we envisage an outcome which will benefit the water catchment as well as South32. We suggest that you, the commissioners, request that South32 provide an alternative layout and a shorter timeframe, maybe using 150 metre wide panels and mining till 2035 with one project area being approved at a time. Jobs, taxes and royalties would still eventuate, but with much less damage to the catchment and our precious water. The IAP clearly states that the intensity of impacts are considerably reduced by a narrower panel width and there will be far less damage. According to the NSCC graphs provided in the assessment report, page 55, with 150 metre wide panels the estimated vertical subsidence would be only 600 millimetres. That's a lot less than two and a half metres, and there would be much less tensile strain. This is conventional subsidence, which is the most likely to effect the swamps, rather than valley closure and unconventional subsidence.

Although a report was commissioned into the economic effects of reducing panel widths, no report was produced on the permanent monetary value of the swamps and watercourses. MineCraft, the report into mine layout, predicts that its highest model coal price of US dollars 129, the mine layout is profitable at the smaller panel widths of 150 metres and we know that prices of commodities are really hard to predict, especially with the Chinese, but the value of water is great. We understand from the latest South32 Appin CCC meeting that Appin Mine is now profitable and that exploration for expansion is underway. This is a bit different to the BAEconomics report. Maybe an alternative is to use the Bulli Seam coal from Appin mined outside the water catchment and not to proceed with the Dendrobium Extension.

BlueScope profitability is forecast by the company to increase considerably from – this year from July to December, and this may enable the company to put more research investment into green steel. Contrary to what Adam Zarth's just said, Europe already has two pilot plants producing green steel using hydrogen and they're targeting 2025 for full production. In Australia, the company H2U is planning commercial production of clean hydrogen by the end of 2022. Times are changing. Will BlueScope still need coal far into the future. Will BlueScope still have a market without producing green steel products. Please note that we do not seek the demise of BlueScope Steel and do recognise the value of IMC to the region. The strategic premise of the product is that Dendrobium coal is essential for BlueScope, but in the financial year 2019, Dendrobium supplied only .5 million tonnes to BlueScope. Point 5 million tonnes.

Much is made of the necessity of the blending of Wongawilli coal with Bulli coal, but the new area 5 will be Bulli Seam coal where it can be mined in the area outside the water catchment. At that point we won't have Wongawilli coal. Maybe the commissioners would consider approving only area 6 and the mining of the Wongawilli Seam with narrower panels. Before concluding, we must say that we consider the greenhouse gas emissions extremely important, but time doesn't permit us to comment here. There will be other speakers addressing greenhouse gases and climate change, and we oppose the project as it stands, but we urge the department to consider alternatives.

MR O'CONNOR: Thank you, Ann, you timed that very well. I don't have any questions. John?

MR HANN: Ms Brown, the issues you raised were, I think, water losses, water quality, ecological impacts. They're the same issues that have been raised by Water New South Wales in its opposition to this project. I assume your group adopts their concerns?

MS BROWN: Yes.

MR HANN: And - - -

MS BROWN: Yes, we do, and other agencies.

MR HANN: I'm not limiting it to that, but that's – you adopt the same concerns as Water New South Wales.

MS BROWN: Absolutely.

MR HANN: And one of the things you said was water is valuable. I take it by that you want the commissioners to understand that your group understands that water is given a price per megalitre, but it also has a different value in the sense that if I buy a television I can't grow a desk with it, but water has a value in the sense that, for example, it keeps the swamps you've been talking about alive; correct?

MS BROWN: Correct.

MR HANN: And without that water, those swamps die.

MS BROWN: Yes. Absolutely.

MR HANN: And I think you've expressed the concern that when those swamps die, no one puts a cost or a figure on the death of those ecosystems.

MS BROWN: In the department's assessment report, that's correct. There have been a few different attempts in the past to try to assess the value of the swamps, but I didn't refer to them because of time and – it's even harder than trying to predict the groundwater and the surface water modelling.

MR HANN: Well, it's almost intangible, I think, isn't it?

MS BROWN: No.

MR HANN: Yes.

MS BROWN: They've all did complex and difficult things - - -

MR HANN: All right. Thank you.

MS BROWN: Okay.

MR O'CONNOR: Thanks for your time, Ann.

MR BEASLEY: The next speaker is Nic Clyde from Lock the Gate Alliance. Mr Clyde.

MR CLYDE: Good afternoon, Mr Beasley and Commissioners. Thank you for the opportunity to present this afternoon. I'm speaking today on behalf of Lock the Gate Alliance from Gadigal country here in Sydney and I just want to start by paying my respects to elders past, present and emerging, and I'd also like to pay my respects to the Dharawal elders who are trying to protect their sites of great cultural significance from the impacts of further subsidence at Dendrobium. Commissioners, in the short time that I have today, I'd like to just briefly summarise Lock the – you know, why Lock the Gate opposes this development, before spending the balance of my time on what I believe are the three key issues that this determination rests on, which are, of course, subsidence, whether there really is a strategic need for another 18 years or more of longwall mining under a special area of the catchment and whether the Department of Planning and the proponent have properly considered feasible alternatives to this development, but, Commissioners, before I do that, I'm just hoping I can share my screen with you. I did want to just show you two slides just for some context.

MR O'CONNOR: Yes. That's come up.

MR CLYDE: Are they - - -

MR O'CONNOR: Yes. Is that - - -

MR CLYDE: Great. Okay.

MR O'CONNOR: - - - Mr Hannam's article from The Sydney Morning Herald?

MR CLYDE: That's right. That's right.

MR O'CONNOR: Yes.

MR CLYDE: And, look, I just wanted to say I have been on a tour of the damage above Dendrobium's current operations with Water New South Wales a couple of years ago. I'm not sure what particular stream that is, but I saw watercourse 21, which should have been flowing with water and it was bone dry at the time that we visited that. The neighbouring swamp was also bone dry and, indeed, a – a v-weir waterflow measuring experiment that was meant to be measuring the volume of water coming out of that swamp. Of course, there was absolutely nothing running through that weir, so there was nothing to measure.

Okay. So a lot has been made in the documents before the Commission about BlueScope's needs, and I do look forward to BlueScope's presentation shortly and, indeed, we have sent quite a long list of quite detailed questions to BlueScope about their needs and alternative supply opportunities that we do hope will wind up on the public record and will assist you, Commissioners, in your determination, but for the benefit of yourselves and everyone who's watching online, I thought it might be useful just to establish, well, where – how much coal does BlueScope currently need and where's it coming from at the moment.

So the answer to that question, of course, was provided in the documents. It's 2.9 million tonnes per annum, or at least in the financial year 2019. Of that 2.9 million tonnes, about a half a million tonnes is currently imported with existing infrastructure from Queensland. A large chunk, almost a million tonnes, is coming from the Appin mine, which is approved for another 20 years. Almost a million tonnes, or .8 are currently coming from the Metropolitan Mine, again that mine has approval out to 2032. There's a small quantity that comes from the Tahmoor Mine. That's a mining project that's currently seeking approval for another 10 years of mining. It's product is, I understand, 97 per cent metallurgical coal, but a contract exists with BlueScope at the moment to supply an amount of coal.

So what I was hoping you might notice from this slide is that with absolutely zero coal from Dendrobium 82 per cent of BlueScope Steel mining needs were met from other mines in financial year 2019. So when you add the half a million tonnes that the previous speaker was talking about, you reach about 2.9. Of course, there's

significantly more coal than that that's mined in the Southern Coalfields, but additional coal is exported or goes to Whyalla, as other people mentioned this morning. All right. So I'm just going to stop sharing the screen now. So that was – I hope that assists the commissioners. So what I'd like to do now is just – I don't have time to go through, you know, a catalogue of our concerns about this project, but we will be making a more detailed written submission, but I would like to just touch on a few things, including the impact on cultural heritage.

So we do note the government's representative on this issue saying that – from the Biodiversity and Conservation Division of the department that the proposed longwall layout is likely to harm multiple Aboriginal cultural and heritage sites, including a number of sites of high Aboriginal cultural and scientific significance, and that's due to subsidence. Subsidence effects from the longwall mining. The same goes, as the previous speaker mentioned, on biodiversity. Similar concerns. So from the agency that looks after biodiversity on our behalf they say in its current form the proposed mine layout remains likely to have a significant impact on threatened species and ecological communities and, in our opinion, does not satisfactorily demonstrate the avoid principle has been met.

On fire risk. I note that commissioners met with Water New South Wales last week and that Water New South Wales echoed the concerns that I've heard the community raising that 25 swamps will likely experience serious or irreversible damage from the project due to the fracturing in the bedrock beneath the swamps and that this will increase fire risk. Turning to climate. We'll put a lot more detail about greenhouse gas emissions in our submission, but I do want to notice – note, rather, that this morning when I got up and looked at the news I saw that the Bureau of Meteorology had found that Australia has just had its hottest November on record. So I know we don't need more context, but, you know, nonetheless, our – it's helpful to be reminded our planet continues to warm. In the assessment report that the department published for this project, they said:

> *No State agency expressed significant concerns relating to greenhouse gas emissions; however, greenhouse gas emissions were a matter of significant concern to a large number of special interest groups and members of the community.*

So the latter part of the statement is certainly true, but I find it very hard to believe that no government agency is remotely concerned about the emissions from this project. Commissioners, just the scope 1 emissions alone would put Dendrobium in – on the list of Australia's top 100 emitters of scope 1 emissions at about 58 or 64th place, depending on how you calculate the value of the methane from fugitive emissions. So these are new and additional emissions. They would occur at a time in New South Wales when the government itself requires a reduction in emissions of 20 – of 35 per cent, sorry, by 2030. Just nine years away now. I would – so I'm not going to use my time to comment about scope 3 emissions, but I would like to say that in Lock the Gate's view conditioning of scope 1 and 2 emissions is traditionally

weak and ineffective in New South Wales, and this is likely to be the case, in my view, if this project is approved.

Although, I would like to note an earlier comment from South32's CEO this morning that – where the CEO said that, if necessary for impacts which cannot be avoided or fully mitigated, they are prepared to fully offset those impacts. So I think, Commissioners, I invite you to take up that offer from South32 to fully offset their scope 1 and 2 emissions which cannot be mitigated or avoided. So that's a snapshot of our concerns. The issues that I wanted to speak to – sorry – in more detail are – I'll begin with subsidence. So you're going to hear a lot about subsidence, and you already have, over the next three days. I just want to note that DPIE Water described the proposed mine extension as:

> *A largescale high risk activity.*

I want to note that the government's own independent advisory panel for underground mining says:

> *It should be assumed that surface losses from the catchment will occur over the long term and potentially in perpetuity.*

I also want to note that Water New South Wales says it's "unacceptable", and that:

> *…if the project is not amended –*

sorry –

> *it should not be approved.*

So we certainly share those views of Water New South Wales. Commissioners, I also want to point out that the Dendrobium Expansion Project will result in larger, cumulative water losses at 3.3 gigalitres per annum and Wollongong Coal's Russell Vale Longwall Mine Project, which was refused consent – or effectively refused consent in 2016. So that was predicted to cause 2.6 gigalitres per annum in water losses and it was refused consent. At the time that the – your predecessors, the Planning Assessment Commission, refused consent for that project they described the potential water losses of 2.6 gigalitres as high risk. Wollongong Coal's project, of course, is inside exactly the same special area as the Dendrobium Project. Summarising the refusal of consent, the second PAC review found that the short term economic benefits were not enough to justify:

> *…the risk of permanent and irreversible loss of water of up to 2.6 gigalitres per year and damage to upland swamps with resulting impact on water quality and uncertain environmental consequences.*

Commissioners, I think we should all note that following that outcome from the PAC, Wollongong Coal gave a commitment never to propose longwall mining in the

catchment again, and true to their word they've now submitted a bord-and-pillar plan. Wollongong Coal say it's economic and it will create more employment in addition, because it's more labour intensive. DPIE agree with that proposal. They agree it's economic and they've said as much just only last week, I believe. Water New South Wales is on the public record last year saying that the proposed bord-and-pillar method is:

> *…much safer than the previous proposal for longwall mining and is unlikely to cause significant surface subsidence.*

And yet bord-and-pillar mining has not been considered at all at Dendrobium, and the department did not require the proponent to consider such a mining proposal. Two more quick points, if I may, I think given the BAEconomics review and the department's assessment report, it might be tempting to be drawn down the path of viewing the assessment of this project as somehow a cornerstone decision in the development of a quasi-industry plan that will determine the future viability of coal mining in the Southern Coalfields, coal exports through the Port Kembla terminal and, indeed, the future of steelmaking at BlueScope itself.

Working out those issues, of course, is a process that should occur as part of a much bigger deliberation with elected members of Parliament, First Nations People, the unions, civil society, government, Water New South Wales, coal and industry reps and people representing industries of the future and perhaps the Coal Commission's work in Germany on economic diversification could serve as a template for those discussions. Commissioners, I think it would be grossly unfair and completely inappropriate for you, Commissioners, and the overworked staff at the IPC to be strongarmed into making any decision as part of this process, other than whether on its merits, per the longwall mining at Dendrobium, either is or is not in the public interest. Further to that point, you know, we simply don't believe that this mining assessment on its own will determine the future of steelmaking at BlueScope.

We'd like – we hope that BlueScope will be able to unpack the various options available to it for alternatives to Dendrobium supply. That might be from Queensland. It might be from other mines in the Southern Coalfields. There might be a reduced demand for coal supply in future due to changes in technology and BlueScope have outlined what some of those look like, potentially including biochar in their later sustainability report, and longer term, of course, there's the opportunity to – for coal making to – for steelmaking, rather, to go coal free. Just to make a quick point on coal imports infrastructure at Port Kembla, BlueScope in a submission to the Independent Expert Panel for mining in the catchment that the chief scientist ran, they outlined that, "Well, it might be possible to import the kind of coal that we use for steelmaking, but – there might be a lot of metallurgical coal in future, but that we'd need import facilities that would cost about $150.

Commissioners, it's – you know, the department, Water New South Wales, have outlined the scale of water losses. South32's willing to put $103 million on the table to cover some of those losses. I note that that will only cover the cost of additional

losses. It won't cover the cost of existing water loss, which I understand will continue, and by my calculation, the $16.7 million one-off payment would probably only cover about three years worth of losses post closure. So what I'm trying to make with that point is that the cost of lost drinking water to the community on its own, I would say is commensurate with the cost that BlueScope have identified of building new infrastructure at Port Kembla that might allow the import of substitute coal for Dendrobium.

So I've run out of time. I just in closing would like to say that, you know, I believe that those alternatives to this development have not been properly described to the commission. I don't believe that information is before you, so I think this longwall project needs to be refused consent and, if necessary, South32 need to come back with a different, less damaging proposal. Thank you.

MR O'CONNOR: Thank you, Nic, and thanks for sticking to your time. Just a question I have around the offsetting of those scope 1 emissions. Would you just like to explain how you think that might be achieved?

MR CLYDE: Well, look, I mean, you know, the Federal Government through its emissions reduction fund has one mechanism for doing that, you know, where they – they – there's a reverse auction process where they buy offsets for emissions at the federal level, I mean, around the world there's any number of different mechanisms, you know, there's airlines offering offsets for people who buy tickets to travel on planes. There's any number of offset mechanisms available, so I think, you know, this – the scope 1 and 2 emissions are dramatically increasing from coal and gas mining in New South Wales at precisely the time that we need to be reducing those emissions.

If you do a bit of study of approvals and the air quality and greenhouse management plans that are in place at the moment, what you find often is there's, kind of, goodwill where the company in negotiation with the planning secretary make plans and commitments, but often they're not measurable, they're discretionary and in this case I do note that the existing mining operation at Dendrobium. The company itself has said, "Look, we were looking at mitigating our methane emissions to air, but, look, you know, we've got capital constraints and we've put that project on hold at the moment". So that's the kind of outcome that arises where the conditions are vague, discretionary and do not include, "Look, if you can't avoid or mitigate, you need to purchase offsets for the hundred – for the balance of those emissions that cannot be avoided or mitigated". Sorry. So I hope that's answered your question.

MR O'CONNOR: No, that's fine. Thank you, Nic. John, do you have questions?

MR HANN: I just quickly want to know whether you, Mr Clyde, or Lock the Gate have a view about this. Just dealing with the potential water impacts of the proposed project, you've mentioned, and other speakers have mentioned, their concerns about the risk the project poses to water and we know that there are concerns and risks raised by Water New South Wales, which is why they oppose it in relation to both

quality issues and loss of water issues, which, obviously, both have the potential for flow-on effects to cause environmental impacts, and the Independent Mining Panel has raised issues relating to similar things.

So it seems clear enough that there are parts of government have – and independent panels have raised threats of damage to the environment because of the project, and there's, obviously, an element of uncertainty as to the extent of those threats. What's Lock the Gate's view as to how the department has – or how – I'll change that. How does Lock the Gate say that the commissioners should deal with the precautionary principle in light of that material and those risks.

MR CLYDE: Well, firstly, I'd say it's – you know, the issue about subsidence is – you know, and I think as you guys know, is a lot more than a threat, you know, we've got a lot of existing mining using the same technique and similar longwalls and, you know, there's – the height of cracking report, many, many other studies have demonstrated the impacts of the current mining technique. So we know what to expect.

MR HANN: You've probably go the certainty here, rather than – the certainty of some impacts, yes.

MR CLYDE: That's right. You have absolute certainty. There's a lot of evidence on the public record, and as I said, I've walked above the mine, I've seen it with my own eyes. In terms of how the commissioners should view that, well, I think the Wollongong Coal Russell Vale decision provides a template. There the company proposed a longwall project. All of these same issues were ventilated in a similar process, and there the Commission made the very sensible decision that, "Look, you know, there are short term economic benefits, no doubt, in cheaply producing metallurgical coal for export, but, you know, we've got a growing population and we need drinking water in perpetuity. So the risks are too great. The water loss are too great. Please go back and consider less damaging alternatives", and that is exactly what has happened and a different panel that's also with the IPC is currently considering that bord-and-pillar project right now.

So to me, and this is one of my great frustrations with this process and the information that's before the Commission, I – for the life of me I simply cannot understand how eight kilometres north of the Dendrobium Project longwall mining is considered to be so unacceptable that it's out of bounds, and that's common ground between Water New South Wales, the Planning Assessment Commission and the coal company itself, and yet eight kilometres south in the same catchment with exactly the same issues, but, in fact, with a greater predicted level of damage long term, nonetheless, we haven't even considered bord-and-pillar and it – so that – I just don't understand that. I cannot accept that. I don't think that that's an acceptable proposal that's been put to the Commission for determination, and I think it should be withdrawn and the company should look at different opportunities to supply the need that they see for their product.

MR HANN: Thank you for that.

MR O'CONNOR: Thank you. No further questions, Nic. Thanks for your time this afternoon. Next speaker, please.

MR BEASLEY: Next speaker is Brian Mason from the Wilderness Society Illawarra. Mr Mason.

MR MASON: Thank you for the opportunity to make this submission. The Wilderness Society Illawarra formed in 2016 as part of a national movement to build local community groups to organise for the natural world and to act on climate change. In our four years of activity, we've had two constant things: mitigation of the climate emergency and acting to end the extinction crisis. We've spoken with thousands of local people during this time and we know there is a widespread fear for the future of our planet. People know that we must begin to reverse the damage already inflicted by fossil fuel industries.

The agency in charge of Sydney's water catchment says it remains strongly opposed to the expansion of the mine, warning that without increased setbacks to the two dam walls, risks and consequences could be extreme. In a letter to the Planning Department quoted in The Sydney Morning Herald on 19th April Water New South Wales manager for the catchment said the extension of South32's Dendrobium Underground Mine could also trigger rock fracturing and potential water losses for nine major watercourses and about 100 smaller tributaries.

Alongside those watercourses are a significant number of coastland upland swamps areas. They reduce the impacts of floods, absorb pollutants and improve water quality. They provide habitats for animals and plants and contain a diversity of life, supporting plants and animals that are found nowhere else. They are areas of great natural beauty, or at least I'm told they are. I haven't been allowed to visit that area in question on pain of a $44,000 fine. The Water New South Wales literature review of underground mining beneath catchment says:

> *The draining of swamps will lead to drying and potential erosion, loss of standing pools within swamps, vulnerability to fire damage of dry swamps, change to swamp vegetation and communities, adverse water quality impacts, loss of stream base flow, loss of swamp ecology, both terrestrial and aquatic. Loss of flow leads to the full damage – full range of damage downstream.*

Vulnerable or threatened species that have been recorded in the community include the giant burrowing frog, red crowned toadlet, Rosenberg's goanna and the green and golden bell frog. The eastern ground parrot, once common on Maddens Plains is now rare. The swamps provide habitat for the endangered giant dragonfly, which is now very uncommon in coastal regions. The proposal would generate greenhouse gas emissions, causing further harm to our climate system on which all people everywhere rely.

Human induced climate change is a key threatening process to these coastal upland swamps. Further drying of these swamps by climate change also leaves them more vulnerable to bushfire. It would contribute to intergenerational inequity, because it will leave younger people and future generations to pick up the pieces. This proposal is not consistent with ecologically sustainable development, as it would cause further damage to an already damaged and endangered coastland swamps. Wilderness Society Illawarra urges that you reject this proposal. Thank you.

MR O'CONNOR: Thank you, Brian. I don't have any questions. John? Richard? Thanks for your time this afternoon. We'll have our next speaker, please.

MR BEASLEY: The next speaker is John Nowlan from BlueScope Steel. Sir, can you hear me?

MR NOWLAN: Yes, I can. Can you hear me?

MR BEASLEY: We can, so please go ahead.

MR NOWLAN: Good afternoon, all. So there's basically five things that I'd like to cover today. The first one is just a little bit of a recap on why the steelworks is located at Port Kembla, and the three strategic advantages that our location confers on us and that platform that's essentially built on those three legs has been able to help us through – to survive through numerous cycles over the last 90 years or so. The second one is the economic impact of the steelworks on the local region and also New South Wales. The third area is just some facts about steelmaking at Port Kembla. The fourth one is the critical importance of the local metallurgical coal supply from the Illawarra to the success of Port Kembla Steelworks, and the fifth one is BlueScope's commitment to addressing climate change. So as far the steelworks location at Port Kembla, in 1928 the Hoskins family relocated the steelworks ..... for three strategic reasons ..... the access to the ..... and Victoria.

MR BEASLEY: I think we – yes. I'll just let you know, Mr Nowlan, you're breaking up and we may have just lost - - -

MR NOWLAN: ..... export and - - -

MR BEASLEY: - - - your first strategic reason.

MR NOWLAN: Sorry. I'll - - -

MR BEASLEY: Yes. Sorry. Most of the last 30 seconds, I think, we lost and continuing to break up. We might have to go to the next - - -

MR NOWLAN: Can you hear me?

MR BEASLEY: - - - speaker, Mr Nowlan, and see whether we can fix up the line with you. The next speaker is Peter Turner, National Parks Association. Are you there, Mr Turner? You might have to unmute yourself, sir.

MR TURNER: Can you hear me now?

MR BEASLEY: Yes. Thank you. Please go ahead.

MR TURNER: Okay. I'm going to share a – or attempt to share a presentation. So just bear with me while I try and do that. Okay. Can you see that okay?

MR BEASLEY: Yes. Yes, it's come up. Yes.

MR TURNER: Okay. Great. Okay. Well, thanks for the opportunity to make some comments of the proposal. I'll be focusing on two of the four critical aspects identified in the department's planning report, which are – they are mining width and water loss. Excuse me. And I've got three quotes on my title page that the panel will be familiar with, but they seemed appropriate to a title page. The first is from the 2008 Southern Coalfield inquiry which highlights the importance of the catchment relative to coal mining. The second is from the 2010 Bulli Seam Operations Project assessment report from PAC which highlights the importance of pristine – near pristine waterways and that damage to them is not acceptable – no longer acceptable.

I'm just trying to get rid of something here. Sorry. It was a mistake. And that report also, as the panel's no doubt aware, also highlights the importance of first and second order streams in the catchment, and the panel may also be aware that the current proposal is similar in some respects, anyway, to the Northcliff domain of the BSO proposal, that time where three hundred and – I think 310 ..... were being proposed, although the extraction heights were significantly less. I think around 2.5 to three metre extraction heights were being proposed. So there are some similarities.

The third quote is from the final report of the Independent Expert Panel from the end of last year which advises or urges that mining shouldn't be approved that would result in the drainage zone or the zone of hydraulically connected fractures. It shouldn't result in a drainage zone reaching the surface or getting close enough to interact with the surface fracture network. The proposal as I read it seems to overlook – or not sufficiently address a number of significant issues, either because they're not recognised in the proposal or the assessment report, or because they're left to be addressed post approval and it seems to be in the context of the importance of the special areas, but that's not really acceptable.

The project's being presented in the context of long recognised inadequacies in monitoring modelling knowledge and understanding. Importantly, for instance, it's not possible to currently estimate how much water has been lost from the current mines and historical mines. If it's not possible to estimate how much water has currently been lost, historically and from present mining, it seems difficult to gauge

the significance of any water losses that might arise from this project, and I think it's also reasonable to suggest that these concerns – the concerns raised by the project are heightened by the advance of climate change and by the rising risks of extreme drought.

I'd also like to suggest to the panel that, given the special areas contain some of the very few remaining areas of pristine bushland or near pristine bushland left in New South Wales, it's very difficult to imagine how all of the impacts and consequences of mining in the catchment in the current proposal can be adequately compensated for. Personally, I struggle to grasp with the concept or the notion of in perpetuity – water losses in perpetuity, water catchment contamination and – to be frank, actually, I was surprised that a proposal that risk – has that kind of risk associated with it would've made it this far in the assessment proposal.

Over the next couple of slides I list some concerns in no particular order that I'll try to cover quickly, but I'll address them in more detail in a subsequent written support. The first that I have here is that the drainage zone reaching the surface or, really, close to the surface would fundamentally be inconsistent with the intent of the special areas best practice catchment management. It would also be amongst the worst – very worst of the kinds of impacts you could have in a drinking water catchment and reflecting that, the perhaps poor conditions are – for the ..... project require no seam to surface connected fracturing.

The proposed compensation for water quantity loss doesn't seem to recognise in perpetuity, and it's difficult, as I say, to imagine how you might adequately compensate for in perpetuity consequences and, as I mentioned, it's currently not possible to reliably estimate how much water loss has already occurred. The IEPMC estimate of eight million litres a day of last year is an underestimate – a significant underestimate for three reasons: (1) is that it doesn't include historical losses, because the difficulties in reliably gauging historical losses of mine – what flows into a mines.

It also seems to have an incorrect inflow to Wongawilli Mine. It appears to be out by a factor of at least five, and it also appears to underestimate the losses from Avon and Cordeaux. Again, I'll elaborate on that in my subsequent written submission, but in 2016 I did a tally using the available mining reports for mines and in and around the special areas that suggested between 29 and 42 million litres a day flowing to the mines, of which an unknown quantity would be surface and subsurface water.

2018, scoping study by Water New South Wales suggests 24 million litres a day of surface and subsurface water goes into the mines, but reflecting the long known data limitations from that monitoring in the catchment, that number, which I think also has a contribution – there's also a calculation from ..... it's highly uncertain and unreliable, but it may give an indication of a potential upper bound, and if we were looking at water losses of this kind of water, 25 million litres a day, so then that would be around 10 per cent or so of the output capacity of the desalination plant as a gauge, or around 10 per cent, I think, also of the water – the drinking water

consumed – taken – sorry, the water taken from Illawarra reservoirs on a daily basis for consumption.

The question then is, well, how much water loss is too much, and there doesn't seem to be any government determination or advice with respect to that question. The assessment doesn't seem to consider the increased fire hazard associated with groundwater loss and surface drying, and there's inadequate consideration that water quality loss, including in perpetuity consequences, it's difficult – well it's actually impossible currently to estimate how much contaminants are on the reservoir floors and close to the reservoir floors. What is now quite an old paper, the then Sydney Catchment Authority estimated that between 2002 and 2011 19 and five tonnes of iron and manganese compounds were added into Waratah Reservoir from Waratah Rivulet.

There's no recognition in the proposal or the department's assessment that conventional assignment – subsidence, sorry, which is extraction with sensitive compounds the impacts and consequences of non-conventional subsidence. They – each makes the other worse. Conventional subsidence associated with 305 metre panels would be significantly greater than from 150 metre panels would be significantly greater than from 150 metre wide panels, and that's reflected in the greater subsidence from 305 relative to a hundred and – sorry, subsidence is much greater and that's reflected in the width to depth ratios being considerably greater for 305 metre panels than 150 metre panels.

The width to depth ratios for the proposal's extractions are arranged between, I think, around .7 to 1.1, which is approaching the critical width where subsidence starts to get – to maximise, to flatten out. So approaching – heading towards approaching maximum subsidence, whereas for 150 extractions, they're about half that, so significantly less – significant less subsidence and significantly less impacts and consequences arising from that.

Excuse me. Unfortunately, I've acquired a bit of a head cold. I may have to cough now and then. There's an unsupported implicit assumption that all of the water courses in the project area are sufficiently – in sufficiently steep valleys or gorges and have sufficiently high horizontal stress that nonconventional subsidence would overwhelm any conventional subsidence. I'm not aware of any physical basis for that and they don't provide any evidence to that effect, and that doesn't seem to me to be physically plausible, and it doesn't seem to have been an assessment of the project area with respect to topology and conventional and nonconventional subsidence.

As the advisory panel report notes there's an inadequate stream impact assessment focusing entirely on one type of impact. There seems to be disregard for first and second order streams, their importance, in particular, and with respect to catchment connectivity and the report would appear to have – sorry, the proposal would appear to have insufficient regard for the BSO PAC assessment of 2010, which is directly relevant. The groundwater modelling is inadequate, as the advising panel points out,

and, accordingly, the surface water modelling is unreliable. The modelling doesn't appear to be adequately calibrated. It's unclear how it's – on what basis it's setting its hydraulic conductivity values. The assumption of seam to surface may or may not be conservative – I've just got a problem here. Okay. May or may not be conservative, depending on how the drainage zone has been modelled and it's not clear from some of the comments in the groundwater assessment reports exactly how that's being done and whether it's a credible representation of the profile of the drainage zone.

So the modelling is – doesn't appear to be reliable. I think the advisory panel suggests it may be a first order approximation, but I would think in considering a project of this consequence, then that's not really adequate. There's lack of recognition in the proposal and also the assessment report that the higher the drainage zone, the greater the spread and rate of upper strata depressurisation, and that is basically because – well, it's because horizontal conductivities are 10 to 1000 times greater than vertical conductivity. So the higher the drainage zone, the greater the lateral spread, and when it reaches the surface it drains the upper strata far more quickly than would a lower drainage zone.

The proposal has a – doesn't address mine closure adequately and doesn't address the consequence of post closure discharges, and that would also seem to be unacceptable for a proposal that's reached this stage. The panel may not be aware, and I'm not sure the advisory panel or the expert panel are aware that Wongawilli can't be sealed and is expected to drain in perpetuity somewhere near Dombarton – at the escarpment near Dombarton and that's because it also has seam to surface fracturing. It's not clear why that is, but it also shows the same kind of – inflows to that mine also show – excuse me – show the same kind of rainfall sensitivity that the Dendrobium Mine does. There are significant similarities between Wongawilli and Dendrobium. Of course, those mine – that mine – that mining was approved before we – long before the current awareness – long before the current knowledge was gained.

The approval's being sought in the context of a long – as I mentioned, long-standing absence of adequate modelling, monitoring and understanding and it's then difficulty to properly assess this proposal and its significance with respect to the role – the water catchment. On that basis, what we would suggest that there shouldn't be any further mining until those deficiencies are adequately resolved. Here I have – I've got a graph showing the – I've use the Tammetta equation to indicate the drainage zone heights for the proposed extractions using the mean, the maximum and the minimum of the ..... covers, and I've shown that relative to a nine metre – sorry, a 90 metre reference point, so a reference point 90 metres below the surface.

I got that from a 2010 – or two 2010 GeoTerra reports, one for Russell Vale and one for, I think, Appin, which suggested that a prudent separation between the fractured zone and an aquifer and, by implication, the surface would be 90 to 150 metres, so I've used 90 metres as a reference point here and, in general, the drainage zone would be closer to the surface than that 90 metre – 90 metre reference point.

There's comments to the effect that the Tammetta equation is a – provides a worse case estimate of the drainage zone height and so consequences, but the longwall 13, longwall 14, longwall 15 and a January 2020 height of fracture assessment report provided ..... suggests that the impact data at Dendrobium is consistent with the Tammetta equation, so in that sense, then, the Tammetta equation wouldn't be providing a worst case scenario, it would be providing a likely outcome scenario.

Here I use the Tammetta equation to do likewise, but with respect to 150 metre longwalls and the drainage zone height is significantly lower than it is, of course, for 305 metre wide panels. In all cases the drainage zone is below 90 metres and often it's ..... some cases below 200 metres, which might be a more prudent separation between the drainage zone and the surface. The drainage zone shouldn't also be considered – just – shouldn't just be considered with respect to the surface. It should also be considered with respect to the base of the reservoirs, and, obviously, this is a now relatively old depiction of the extent of mining in and around the metropolitan and Woronora special areas. That's quite extensive mining. It's not hard to visualise drainage zones running along the longwalls and – at Dendrobium reaching up to – reaching that – in principle going beyond the surface.

So that would have a very significant effect on the groundwater regime between the two major reservoirs, and it's not difficult to imagine that if the drainage zone height exceeds the base of the reservoir that it significantly increases redirection of base flow. So significantly increases risk of base flow loss, and it'd also significantly increase the consequence of share activation. So I really conclude now, I think, actually, by saying – the other thing I was going to – sorry. I'm about to finish, actually.

MR O'CONNOR: Your time has expired, but if you've just got some final comments, please, John.

MR TURNER: Yes. I was going to say that there's an implicit assumption about the nature of the topology in the proposal in the department's assessment, but there's also an implicit assumption in the comments that – which appear to actually misrepresent the advisory panel that the kind of impacts that are seen at what a rivulet – a tributary would be acceptable at Dendrobium and they don't give any reason for suggesting that ..... that would be entirely unacceptable.

MR O'CONNOR: Thank you.

MR TURNER: Okay. So I think I'll finish there, thanks.

MR O'CONNOR: Yes. Is it possible to get a copy of those slides you were showing? Could you make that available to the commissioner?

MR TURNER: Yes, sure, and I'll also be elaborating on all of that, as I say, in my written submission.

MR O'CONNOR: Okay. I think John might have a question he wants to ask.

MR HANN: Yes. Dr Turner, in one of your slides, I think it's the first bullet point in issues of concern. You make a point, if I've understood this correctly, that nonconventional subsidence and conventional subsidence compounds the impact, if I could paraphrase your slide, as opposed to cancelling each other out, so to speak. I might have been a bit simplistic, but are you able to provide some explanation of that or evidence to us?

MR TURNER: Yes. They often will operate in different ways, so the conventional subsidence results in curvature and tension cracking around the margins of the longwall. Nonconventional is generally associated with ..... compression effects that would seem to – and long range horizontal far field movement, so they're kind of different, but they – so they don't cancel each other out. They compound each other and sometimes their interactions can be quite complex, so as I understand it, anyway, it can be difficult to separate exactly what's been caused by nonconventional – or associated with nonconventional processes and what's associated with conventional processes.

So going from 150 to 305 metre extractions you'd expect significantly larger, deeper, wider, longer cracking and more numerous cracking. They would add to the nature of the fracturing associated with nonconventional subsidence, which tends to be spreading out laterally below the valley base extending some tens of metres along the valley base. So it increases significantly, I think – the two together increase significantly the risks of water loss and two subsurface flows and that then increases the risk of loss of flows into other catchments and possibly then the avoidance of capture in storage reservoirs.

MR HANN: Thank you, Dr Turner.

MR O'CONNOR: Richard, any questions?

MR BEASLEY: Not from me. Thanks.

MR O'CONNOR: Thank you very much for your time this afternoon, John.

MR TURNER: Okay. Thank you.

MR BEASLEY: I think we have Michael Aubin from Illawarra Drug Awareness. Mr Aubin. All right. We may not have Mr Aubin just yet, but we hopefully have Mr Nowlan back with us from BlueScope Steel, but on the phone.

MR NOWLAN: That's correct. I'm here, yes.

MR BEASLEY: All right. Good. We can hear you. Please go ahead, Mr Nowlan. I think you probably know where you were up to.

MR NOWLAN: Do you want me to restart?

MR O'CONNOR: Yes, I think it's appropriate if you restart given that interruption.

MR NOWLAN: Okay. Apologies for that. We had unstable internet. So good afternoon, Commissioners. Today I'd like to cover five things quickly, if I could. So the first one is the history about why the steelworks is located at Port Kembla, and the three strategic advantages that our location has conferred on us and those three legs are really very important as far as supporting our business over the last 90 years or so, and also looking out into the future, as well. The second issue was the – just a rough summary of the economic impact of the steelworks on the local region and New South Wales more broadly. Thirdly, some facts about our steelmaking at Port Kembla. The fourth issue, of course, is the critical importance of the local metallurgical coal supply from the Illawarra to the success of our business at Port Kembla Steelworks, and the fifth one is BlueScope's commitment to addressing climate change. So that's the summary.

So the – just going to the issue about why the steelworks is located at Port Kembla. In 1928 the Hoskins family relocated the steelworks from Lithgow to Port Kembla, and the location move was, essentially, for three strategic reasons. So the first was its proximity to Sydney and, more recently, its access to the major east coast markets in Australia, including – so Queensland, New South Wales and Victoria. The second reason was the deep sea port for bringing in raw materials and iron ore, particularly, is the largest of those, but also access for the steel products to leave the steelworks for global export markets, but also the domestic markets that are further away, and the third reason was the quality of the local metallurgical coking coal supply in the Illawarra and the just in time delivery that that provides in that it provides operational efficiencies and reduced transportation costs, and these three strategic legs and competitive advantages are still relevant today as they were nearly 100 years ago, and they are the foundations for us remaining an internationally competitive steelmaker for so long and surviving through many cycles of our industry.

Today I'll focus on the importance of the third point, which is the local coal supply and why it's critical to the future of steelmaking in the Illawarra. So if I could just go to the economic impact of the steelworks. In the Illawarra, BlueScope's impact is striking. The Port Kembla Steelworks employs over 3000 people directly and we support approximately 10,000 highly skilled and well paid jobs, around 10 per cent of the jobs in the region. We provide about 11 per cent of the gross regional product, so at 1.6 billion, and we provide about 20 per cent of the region's total output at 6.5 billion. And more broadly in New South Wales BlueScope accounts for almost one per cent of gross state product at four billion and supports about 19,200 jobs, which is .6 per cent of the FTE jobs in New South Wales. There's no question that, based on these numbers provided by IRIS, which is the Illawarra Regional Information Service, in 2017 that BlueScope and the steelworks is very important and a significant economic contributor to our region and the State of New South Wales.

So just some facts about steelmaking at Port Kembla Steelworks. Our site is 760 hectares and the Port Kembla Steelworks is the largest manufacturing site in Australia. We produce just over three million tonnes of steel per annum, and to put that into context, there is about 1.8 billion tonnes of steel per annum made worldwide. So we make just over three million tonnes of steel per annum. Around 2.2 million tonnes of that production is sold into the Australian domestic market and the balance of around 800,000 tonnes we export. About half of what we export actually goes to our sister plants in the US and Asia. Since 2011 we've operated a one blast furnace operation. Over two thirds of steelmaking technology globally uses the same production route that we use here, i.e., a blast furnace, BLS route, with the balance using electric arc furnace technology using scrap steel and a small amount using DRI, direct reduced iron. Our location and scale are significant factors in keeping us cost competitive.

Now, just turning to the importance of metallurgy – the local metallurgical coal supply. We consume up to three million tonnes of coal per annum. So that is coking coal and coal for pulverised coal injection into the blast furnace, and 80 per cent of – over 80 per cent of the supply comes from the local Illawarra Coal Mines in the Southern Coalfields. Today the Illawarra has four main coal supplies. South32 with the Dendrobium and Appin Mines, SIMEC with the Tahmoor Mine, Peabody with the Metropolitan Mine and Wollongong Coal with the Russell Vale Mine, which is currently not operational, and overnight we've heard about the Metrop Mine being placed in care and maintenance until March. This just reinforces the importance of the approval of this Dendrobium Mine to maintain surety and competitiveness of local supply.

South32, including its Dendrobium Mine, supply around two thirds of our coking coal requirements. The coal is supplied by rail, the Kemira line from the Dendrobium Mine on a just in time basis, and we hold only one week's coal supply in our coalbeds onsite. So Port Kembla Steelworks is not configured to replace this supply via input. We simply don't have the capacity to cope with the volume across our burners or the ability to stockpile the replacement volumes required. The proximity to the mines and the quality and unique combined blend of local coal supply has been a key component to our international competitiveness for nearly 100 years. The future success of BlueScope's Port Kembla Steelworks continues to rely on access to competitive local metallurgical coal supply and having the right blend of quality coal required. These are the fundamental foundations for the success of our ongoing operations.

I'd just like to talk about BlueScope's commitment to addressing climate change. BlueScope has climate action and reducing our carbon emissions embedded in our strategy. We have embedded – we have established a carbon council to address the challenge facing our industry. We understand the need to reduce carbon emission and are actively working on ways of doing that both in the short term and over the longer term. The prospect of breakthrough technologies like hydrogen and green steel are exciting, but we recognise this technology and building the industries to support them are decades away from being commercially available at scale. We are

examining a raft of projects that could be bolted on to reduce emissions in our current operations. Further, by deploying proven technology and, potentially, some of this as part of a blast furnace realigned later this decade.

Since 2011 we have reduced our carbon emissions by around 30 per cent, with the closure of the number 6 blast furnace. In the near term, we're committed to reducing our emissions intensity by a further 12 per cent to 2030. Steel is vital in the deployment of renewable energy infrastructure and the use of steel worldwide is expected to grow by something like 30 per cent over the next 30 years. We currently use about 23 – roughly 23 per cent of the feed for Port Kembla Steelworks raw steelmaking is currently – is recycled scrap, and for cooling we use something like 90 per cent of our water is either recycle water from effluent or seawater. 20 per cent of our electricity supply comes from renewables via our Finley Solar Farm power purchase agreement. We also co-founded a responsible ..... and have committed to the Port Kembla Steelworks being accredited in 2021.

So, in summary, we support South32's proposed extension of the Dendrobium Mine, the continuation of competitive and cost effective local quality metallurgical coal supply is critical to the success of Port Kembla Steelworks. I've highlighted the significant economic impact of the steelworks not only on Illawarra, but on the whole of New South Wales. Local quality metallurgical coal supply is one of the three strategic legs and competitive advantages that the steelworks was established on at Port Kembla nearly 100 years ago and will continue to support us into the future if they are available. BlueScope has addressing climate change at the forefront of its new strategy and is committed to continuing to reducing our carbon emissions. Thank you.

MR O'CONNOR: Thank you, John. I just want to understand, I think I understood that you say that – you know, 80 per cent of the coal comes from the Illawarra. If you couldn't get that coal from the Illawarra, you said that the port facilities and Port Kembla wouldn't be capable of importing that quantity of coal? Is – have I understood that correctly?

MR NOWLAN: That's correct, yes. So the Port Kembla Steelworks was, essentially, set up on the basis – and the port facility has essentially been set up on the basis of local coal supply, you know, and today that's more than 80 per cent of the coal that we use comes from local coal mines, and importing iron ore. So that's – that was the basis of our wharf and our infrastructure, the way our conveyor systems and stockpiles are set up. It's both a port infrastructure issue and it's also a stockpile and just in time issue. I mean, I think you might have seen our stockpiles that we have in front of the coke ovens and what we have there is, essentially – we're, essentially, reclaiming a bed and building another bed, and that's – you know, that's roughly a week's supply on each of those beds.

MR O'CONNOR: Yes. We did see that. Thanks. I think John might have a question for you.

MR HANN: Yes. Mr Nowlan, look, and correct me if I'm wrong and I don't have my facts accurately before me, but in terms of the supply currently you have a supply locally that's blended, in this case from South32, which is Wongawilli and Bulli. With the current proposed extension, that would mean that area 5, as we understand it, would be mined first, which is Bulli coal, the seam, and then subsequently at some stage later it would be area 6. Would you be able to explain what implications that might have, given the current blend?

MR NOWLAN: Yes. So that – I – that's one of the commercial issues, I guess, you can put it that way that we're working through with South32 at this point in time. The Wongawilli seem is very valuable in our blend, and I – what we're working on is, well, how do we deal with the potential loss of that for a period of time as far as what our blend is and what we need to do to make coke that actually supports our – continues to support our blast furnace operations and the stability of them. So that's a – I guess that's an ongoing commercial discussion with South32; however, as I've said, the first priority from our point of view is that we need a competitive local coal mining industry for – that's mining metallurgical coal, and that's a – that's really the – you know, that's the starting point from our point of view. The second issue is us dealing with the blend so that we get competent coke, you know, to support our efficient blast furnace operation.

MR HANN: Okay. Thank you, Mr Nowlan.

MR O'CONNOR: And, Richard, any questions? No. If not, thank you very much for your time this afternoon, John. We'll move onto our last speaker before lunch.

MR BEASLEY: That's Michael Aubin from Illawarra Drug Awareness. Are you there, Mr Aubin?

MR AUBIN: I hope you can hear me.

MR BEASLEY: Yes, we can. Please go ahead.

MR AUBIN: Excellent. Okay. Thank you. Thanks for your time. On their webpage, the South32 business openly describes their desire to work with local communities:

> *Wherever we operate, we believe we have a responsibility to get behind our communities backing community programs. Our operations are just one part of a bigger picture. We look beyond their life and instead focus on the lives of the people surrounding them, working together to create healthier, stronger and happier communities.*

An excellent demonstration of this corporate social responsibility being carried out by Dendrobium mine in the Illawarra is the Illawarra Drug Awareness group, of which I've been chairman for six members and a board member for 12 years. Better known as Life Education Illawarra, we deliver a valuable education service to

children in the Illawarra region, and it's through the longstanding and generous support of companies like South32 and BlueScope, for that matter, that we're able to do so. After being created by Ted Noffs at his wayside chapel in ..... in the 1970s Life Education has endured for more than 40 years because of its continuing relevance, its value and the critical role it plays in educating young children about the benefits of a healthy lifestyle. In regards to that relevance, our program focuses on health promotion and initiatives, targeting the risk factors that are as prevalent today as they were 40 years ago.

Drug use, alcohol abuse, smoking, poor nutrition and lack of exercise and obesity. Our program is designed to help children develop the social skills and knowledge necessary for effective decision-making, communication and negotiation and refusal skills in drug related situations. We give them the skills to resist peer group pressure in drug related situations and the knowledge so that they can make informed decisions. We're all about making a positive impact in children's lives, contributing to an improvement in their lifestyle choices and their quality of life by placing preventative education at the core of our work we instil in children aged four and a half to 12 confidence to make safer and healthier choices not only now, but in the future.

Our programs have the potential to enhance the cultural, physical and living environment of those children but, importantly, their families, as well. It is undeniable the positive effect that Healthy Harrold and our preventative programs have on children and the important lessons that many of them carry into adulthood. South32 and, more particularly, the Dendrobium community, have been long time supporters of Life Education Illawarra. At Life Education, we believe that the best preventative education comes from a whole community partnership. With South32's support we have been able to ensure that our children understand how to look after their bodies and make wise choices that positively affect their wellbeing and ultimately result in healthy outcomes for life.

Life Education Illawarra continues to be the only provider of this much needed, specialised health program within the region that is able to be delivered at schools in line with the current curriculum through a specially designed program. Each year on average we deliver the lessons to approximately 17,000 local primary school children here in the Illawarra. It is fundamental that our attendance in schools is not compromised because of a lack of a capacity to pay. It is critical that we play an effective role in the Illawarra community in providing children with the opportunity to develop their knowledge, as well as the skills and motivation to adopt healthy promoting behaviours.

An ongoing investment in Life Education Illawarra aligns with the priorities of South32 and allows Life Education Illawarra to continue to have a significant impact on young people's lives. Life Education Illawarra would greatly value an ongoing relationship with South32 through this program and would envisage the two organisations could continue to work together in improving outcomes for children in the Illawarra Region. From a community wellbeing and enhance social fabric

perspective, we support on the ongoing viability of the Dendrobium Mine site. Thank you.

MR O'CONNOR: Thanks for your presentation, Michael. Any questions, John? Richard? Thanks for your time this afternoon. That brings us to the conclusion of this session. We will resume at two – sorry. 2.40 pm with our next batch of presenters. Thank you.

ADJOURNED **[1.55 pm]**

RESUMED **[2.41 pm]**

MR O'CONNOR: Welcome back. We'll start this session with our first speaker, please.

MR BEASLEY: Next speaker is Debra Murphy from Regional Development Australia Illawarra. Ms Murphy.

MS MURPHY: Thank you, Commissioners. I have been the chief executive officer of Regional Development Australia here in the Illawarra since 2016. In September 2019 RDA, Regional Development Australia, put forward a submission in support of the Dendrobium Mine Extension Project. Our submission was restricted to comments on the economic benefits and potential negative economic consequences should approval for the Dendrobium Mine Extension not be forthcoming. Our submissions support of the approval of the project for three key reasons. The first was that Dendrobium Mine continuity would provide ongoing high paid jobs for the Illawarra. The second is that its continued operation is aligned with Wollongong City Council's economic development strategy to lift the median income of jobs in our region and the third is that the consequences of not approving the project would be devastating to our regional economy, resulting in massive job losses at South32, BlueScope Steel and the Port Kembla Coal Terminal.

I'd like to update some of the statistics from our September 19 submission, and also elaborate on three – the three key points. The Illawarra's economy has seen significant chances in – with job losses in high paid roles and job gains in lower paid roles. Irrespective of the timeframes, whether we look back 10 years or five years, there's clearly an inverse relationship between high paid job losses and low paid job gains. For example, between 2013 and 2018 the regional los 3500 high paid jobs in the mining and manufacturing sectors and gained around 4000 lower paid jobs in the healthcare and social ..... and hospital sectors. A Cadence Economics report quoted in our submission calculated that a mining job attracts nearly three times pay of an average job in New South Wales.

A June 2020 report by BAEconomics states that in 2017/18 each employee in the coal industry had a salary that was 3.6 times the average of a person in the hospitality sector. The Wollongong City Council's economic development strategy is a 10 year plan that aims to create 10 and a half thousand high paid jobs in the Wollongong LGA. The approval of the Dendrobium Mine Project is aligned with the economic development strategy, which is to provide certainty for high paid jobs, which are much needed in our community. And, finally, to the third point, the consequences of not approving the project would be devastating to our regional economy through its impact on South32, as well as BlueScope Steel's Port Kembla steelmaking operations. The BAEconomics report of 2020, which was located at appendix F of the Dendrobium Project documents entitled Review of the Key Economic Interactions between the Dendrobium Mine and related entities in the Wollongong region is, quite frankly, compelling reading.

The report, which was commissioned by the Department of Planning, Industry and Environment emphasises the interconnected nature of the vertical supply chains, that is, the Southern Coalfields, BlueScope's steel production and Port Kembla Coal Terminal operations. It also clarifies the devastating economic consequences that could result from not approving the Dendrobium Mine Project. Historically, BHPs operations included both the current Port Kembla steelmaking operations with BlueScope Steel, as well as the Illawarra metallurgical coal operations with South32. The strong physical linkages that were created by BHP decades ago still exist today ,and you heard from John Nowlan about those earlier.

Those physical links and the commercial relationship remain strong and inextricably linked, despite them now being separate entities. Physically, coal mined at Dendrobium is sent by rail to the Port Kembla Steelworks where it is processed at the coal preparation plant within BlueScope's boundary and, commercially, the long-term contract between BlueScope and South32 for the supply of metallurgical coal continues for another 12 years, being 2032. It's estimated that South32 Illawarra Coal provides 1.5 million tonnes or 68 per cent of BlueScope Steels' coking coal required, and John Nowlan mentioned earlier that 80 per cent of their coal is sourced locally. If the Dendrobium Project is not approved and South32 coal mining operations in the Illawarra were no longer viable, then, yes, Queensland coking coal could be supplied to BlueScope and may fit the bill in terms of grades; however, this would be cost prohibitive.

The capital cost to upgrade port and other infrastructure to increase coal imports is estimated at $200 million. The BAEconomics report suggests that supply of Queensland coal to BlueScope at Port Kembla would be an additional cost of $40 per tonne, or $100 million per annum to that business. The cost structure of the Dendrobium Mine And BlueScope Steel production at Port Kembla is inseparable. To decouple these operations would be cost prohibitive. The BAEconomics report further states that the continuation of BlueScope's primary steel production is dependent on supply of local coal and, in their words:

If this supply is compromised then it is likely that BlueScope would be forced to close its blast furnace operation at Port Kembla with major detrimental consequent flow on effects to the New South Wales economy.

It is noted that this project is not just a project approval that if rejected would have devastating negative economic consequences on the Illawarra's economy, but also the New South Wales economy and our domestic steel production capability, and at RDA Illawarra we believe that this also places a sovereign risk on our nation. The BAEconomics report further contends that as Appin Mine is very high cost production that Illawarra metallurgical coal is likely to be economically unviable as a business unit of South32 without the ability to operate both the Appin and Dendrobium mines, therefore, absent Dendrobium Project approval, Illawarra metallurgical coal operations could become economically unviable.

The ripple effect of not approving the Dendrobium Project extends beyond BlueScope Steel's primary ..... and South32 operations into other regional businesses in the supply chain which we don't have time to go into today. Due to the cost structure of the Port Kembla Coal Terminal, BAEconomics estimates that if Dendrobium coal experts were lost, it would result in a 75 per cent increase in their loading charge, that is form $6.50 a tonne to $11.40 a tonne. This adds $318,000 to the cost of loading a single average sized vessel at port. They further contend that if there was no Illawarra metallurgical coal, then the cost per tonne would rise by 328 per cent, or $1.38 million per vessel. Clearly, the consequences of not approving the Dendrobium Project places the Port Kembla Coal Terminal business in jeopardy, as it would not be a viable operation.

BAEconomics states – estimated that the economic consequences of a worst case scenario resulting from cascading closures of businesses, a cessation of coal experts through PKCT – sorry, Port Kembla Coal Terminal, and the primary production of steel at BlueScope is that it would cost $6.4 billions per annum in lost regional product in the Illawarra, which represents 26 per cent of the Illawarra's gross regional product, and 10.7 billion estimated loss to the Australian economy. They go on to say that job losses would be predicted – the likely impact of 5500 jobs lost in Illawarra, as a worst case scenario, and for the whole economy there could be 25,000 jobs lost.

So in conclusion, not only does our regional economy desperately need to retain existing high paying jobs, but we also need to be aware of the far reaching economic consequences of not approving the Dendrobium Mine Project. Therefore, on behalf of Regional Development Australia in the Illawarra, we urge the Independent Planning Commission to approve the Dendrobium Project based on economic need and the devastating potential consequences of not approving the project. Thank you.

MR O'CONNOR: Thank you for your presentation. Any questions? Richard?

MR BEASLEY: No, not from me.

MR O'CONNOR: No, we don't have any questions. Thank you for your presentation one again. Next speaker.

MR BEASLEY: Next speaker is Ray Tolhurst from the Australasian Institute of Mining and Metallurgy Illawarra. Mr Tolhurst.

MR TOLHURST: Thank you, Commissioners. I'd like to make three points. Many of South32's Dendrobium ..... coal staff are Institute of Mining and Metallurgy members and are bound by our code of ethics. That requires that they put community and public interests before company and personal interest, thus there are strong assurances that any conditions that the Dendrobium extension project will be adhered to, since any member of the community can report ..... IMM members alleged breach of that code of ethics, and I forwarded the code of ethics to you in the earlier submission.

The second point I'd like to make goes on in some way from Debra's comments that the Dendrobium Mine is part of a networked integrated mining manufacturing system. The non-extension of Dendrobium would impact on many related enterprises, including, but not only, Appin Mine and BlueScope. For example, if the front end of BlueScope closes, the coke ovens close, then it means the loss of coke for the Australian based metal production industry, copper, lead, zing, nickel, and the loss of coke for the casting and manufacturing industries, and a large part of manufactured goods all have a casting in them, and they will all be – well, many of those will be impacted.

BlueScope also supply around 80 per cent of the oxygen used in New South Wales hospitals and some interstate hospitals, and that would also be lost as an indirect consequence of Dendrobium closing. The third point I'd like to make is that due tot eh nature of the Dendrobium coal deposits a great deal of the technical innovation and developments throughout the Australian coal mining industry are initiated and introduced here. The international longwall mining company, Joy, has it's Australian base and product development located in the Illawarra due to this.

The modern longwall mining system now used throughout the Australian coal industry was introduced through these Illawarra Coal mines. The university of Wollongong's very strong ACARP program, Australian Coal Association Research Program, is based on working collaboratively with Illawarra Coal and the Dendrobium Mine. The quality of Wollongong University's mining student educational program and, indeed, its viability would in turn be impacted and compromised if Dendrobium closes and publications like Australasian Coal Practices, which is the Bible of the Australian coal industry, and only possible with the support of Illawarra Coal and their staff. So they are three points that I'd appreciate if the commissioners could take into account. Thank you for your time.

MR O'CONNOR: Thank you, Ray. I'll just see if there are any questions.

MR HANN: No.

MR O'CONNOR: Nothing. Nothing, Richard?

MR BEASLEY: No, thank you.

MR O'CONNOR: No. Thank you very much, Ray. Next speaker, please.

MR BEASLEY: Next speaker is Glenn Sutherland from Pirtek Illawarra. Mr Sutherland.

MR SUTHERLAND: Yes. Good afternoon. Can you hear me?

MR BEASLEY: Yes. Go right ahead, sir.

MR SUTHERLAND: Thank you. My name is Glenn Sutherland and I own a small to medium sized company in the Illawarra Region called Pirtek. I also live in the Illawarra Region. Thank you for the opportunity to speak on behalf of our locally owned and operated business and our 60 employees and their dependents. Pirtek supports South32 and, in particular, the Dendrobium Mine site and its proposed extension projects. The Illawarra Coalfields in general have supported our business for over 30 years and have been instrumental in our continued success. We are a contracted supplier of goods and services to the Dendrobium Mine, as well as other South32 sites. We supply arrange of hydraulic and industrial hose products that are utilised on the mining equipment.

The South32 Dendrobium site is critical to our business success. We have numerous employees directly employed by us to supply and service the Dendrobium Mine, and any disruption to the continuation of the Dendrobium mining operation would greatly impact our business viability. It could result in layoffs and redundancies, which would have a huge impact on families – of the families of our local employees. From our experience, we find South32 to be a very professional organisation. As a contracted supplier we are audited regularly by South32 to ensure we supply fit for purpose products, as well as abide by all of the relevant mine site rules and regulations. We have witnessed over the years the lengths that South32 have taken to ensure they meet or exceed their responsibilities and commitments to the local community.

An example of this is the strict transportation and traffic curfew that South32 enforce on suppliers like – at the Dendrobium site, limiting road traffic and deliveries through the Mount Kembla Village. South32 have proven to be a very good business partner to Pirtek and, importantly, pay their accounts on time. Our business not only relies directly on the local mines, but also the business we obtain from other local companies that service the mining sector. This ranges from onsite coal loading operations, transportation all the way through to the work we obtain at the Port Kembla Coal Terminal. We as a supplier are not alone in being heavily dependent on the continuation of the Dendrobium operation.

There are many other local companies that are reliant on the business South32 afford us local suppliers. These companies range from industrial suppliers like us all the way through to small sandwich shop operators. It is my opinion it is not just South32 employees that would be greatly affected by limiting the life of the Dendrobium mine site. I believe the negative flow on effect to local businesses like ours, small to medium businesses, and, in turn, local employment, would be substantial if there were any disruption to the continuation of the mining at the Dendrobium site.

The Illawarra Region has one of the highest youth unemployment rates in the State. We at Pirtek pride ourselves on employing local youth in positions such as apprentices and workshop staff. We also employ numerous service technicians, deliver drivers, sales representatives and other office staff. Our monthly wage bill for our employees exceeds a quarter of a million dollars, and this is moneys that is pumped straight back into the local economy. All this would be diminished without the business we have obtained from South32 and the Dendrobium Mine. We as a business also have in excess of 600 suppliers, many of these local companies. These companies rely heavily on the business we at Pirtek afford them.

We also continue to invest heavily in equipment and infrastructure, including state of the art testing facilities, which ensure we supply a fit for purpose product for the local mines, including the Dendrobium site. This is money that we continue to spend in the local economy. In closing, our business depends heavily on the success of South32 and other local collieries. The approval of the proposed Dendrobium Extension Project will play a big part in the continued success of our local business. This, in turn, will, importantly, help to secure the employment of our 60 local employees, providing financial stability to them and their families. Thank you, Commissioner, for your time today.

MR O'CONNOR: Thanks for your presentation, Glenn. Any questions, John?

MR HANN: No, thanks.

MR O'CONNOR: Richard?

MR BEASLEY: No.

MR O'CONNOR: No questions from us. Thank you very much.

MR BEASLEY: Next speaker is Sonya McKay, Fridays 4 Future Online. Ms McKay. You might need to do your microphone.

MS McKAY: Can you hear me now?

MR BEASLEY: Yes. All good. Thank you.

MS McKAY: Sure. I'll just put up my PowerPoint slide and I'll start from there. So, obviously, I'm concerned about climate change and regarding the Dendrobium

Coal Mine expansion, this is a major concern, as well, and we can see that in the life of the mine, wanting to extend to 2048 when we just don't have that time to keep warming within that 1.5 degree mark. Now, when there's suggested to be no alternative, other countries realise that we have to have an alternative and they are striving for that green hydrogen steel plant alternative.

So there are moves overseas towards this particular goal and we know we have to do it. We can't act like we have a choice any more. We know that the department's assessment report indicates that it acknowledges that the mining of coal and its combustion is a major contributor to anthropogenic climate change, which has the potential to impact future generations. It went on to say that scope 3 emissions, which is the burning of this particular coal, is someone else's issue and tried to reinforce that with legislation that has gone through or is in Parliament.

Well, actually, that's not legislation. It's a bill. This particular Commission can still talk about conditions in term of scope 3 emissions. In relation to case law, we know that that's the case because of Rocky Hill Coal Mine, and because of the United Wambo decision, as well. Now, we know that the department has stated that they've given careful consideration to the objects of the Act, as well as the matters listed under the section of it, and we're talking about the Environmental Planning and Assessment Act.

The matters for consideration include likely impacts, submissions and also public interest, and although I'll be centring on the public interest, it still relates to those other matters of consideration, as well. So when we're talking about the department considering that the project can be carried out in a manner that is consistent with the principles of ecologically sustainably development, this is not possible. It's just not possible. Now, when we're talking about the objects of the Act that it has been suggested that the department has considered, to facilitate ecologically sustainable development, which is an object of the Act, we need to talk about the precautionary principle, the intergenerational equity issue and the polluter pays principle, as well. We already know that the department has said that the project will impact on future generations.

We also know that with the world being under a dire global warming position that the proposal is not consistent with the precautionary principle and, at the moment, the community continues to pay for the negative externalities in terms of global warming impacts without a commitment to pay for significantly expensive global warming damage that includes unprecedented and uncharted bushfires and floods. There is no consistency with polluter pays principle. So, in essence, how can this be something that is ESD compliant, particularly when the industry itself acknowledges that there is a significant impact on the climate. Now, we know that there are people in the fossil fuel industry which have said, "We believe climate change. We know it warrants action", ExxonMobil suggested that themselves.

We know that they've suggested they understand that it's increasing, fossil fuel combustion and deforestation which causes it, and we know that they suggested that

there would be a substantive climatic change around the global temperature rise of one degree, which is now occurring, and we know that they knew the impacts, as well, which are indicated there regarding polar caps and also rainfall patterns and coastal flooding. Now, we also know that this is the case because of data from NOAA that we have reached that one degree warming and we know that, also, Exxon indicated that there would be 430 parts per million around the time of 2030 and just after we would reach 1.5 degree warming, which is a major concern as I'll talk about very shortly, and we also know that Exxon talked about that they didn't want – or a physicist in Exxon that they didn't want to say there wouldn't be catastrophic impacts beyond 2030.

We also know that Shell indicated that there would be a warming in the range of 1.5 to 4 degrees by 2050 and that change would be too fast, perhaps, for life to adapt without severe dislocation. So the industry knew and we know that one of the key messages from the United Nations Special Report from the IPCC is that we're already seeing the consequences due to extreme weather, rising sea levels, diminishing arctic sea ice and other changes, and that if we go – keep going towards 1.5 we're going to see 70 to 90 per cent coral loss globally and over 99 per cent if we get to two degrees, and they've said every extra bit of warming matters, especially since warming of 1.5 degree or higher increases the risk associated with long lasting or irreversible changes, such as the loss of ecosystems.

Now, we know that we're likely to reach 1.5 between 2030 and 2052 if we don't do something about it. Now, we also know that the World Meteorological Organisation has said we're likely to hit 1.5 degrees in one of the next five years. We also know that the Bureau of Meteorology in Australia has indicated that Australia, because of its geographical location, has already reached 1.4 degree warming. We're warming faster than the rest of the global planet, and that the projected warming globally is 3.4 degrees, and in Australia 4.4 degrees and that was from centre estimates.

So we're talking about locked in commitment of warming, at the moment, globally of, already, 1.5 degrees Celsius and already nearing towards two degree Celsius in Australia. So the – this is dire and we either do something or we don't do something. This project is indicating that if we're particularly going towards 2048 that we're not doing something and not doing something sufficiently necessary to have a survivable planet. Now, we know that Department of Defence in the US is concerned about rising global temperatures, changing precipitation patterns and also extreme weather events, global instability, hunger, poverty and conflict and also the intelligence, army and NASA went even further with a Pentagon report talking about blackouts, disease, thirst, starvation and war. They basically put on the table the issue of possible collapse in defence, as well as the social fabric as we know it at the moment.

Now, I need to talk about Australia and I interviewed Andrew Wilkie yesterday who said the US military and intelligence community and the Australian military and intelligence community has recognised climate change as a significant threat to national security. He indicated that he was involved in the intelligence community in Canberra around 20 years ago and that they were talking about the climate changing,

and he was involved in transnational issues at the time. So this was well ahead of the political discussion. They discussed in the intelligence community the likelihood of unregulated people movements, some areas becoming uninhabitable, some farming areas becoming unfarmable, the prospect of whole regions having to relocate and the prospect of water wars between countries as changing rainfall patterns, and he said:

> *When you've got the CIA talking about climate change is a threat to national security and a threat to global stability you would think politicians would again sit up in their chair, but they don't.*

We're already talking about defence legislation and using army reserve or defence reserves in relation to natural disasters and emergencies in Australia, so the government is taking it seriously as to the impacts of global warming, but not in terms of mitigation and prevention and the necessary adaptation. They are meant to, under the Paris Agreement, lead the way towards being well under two degrees and going towards that 1.5 degree Celsius of warming, and yet they're not going to – or unlikely at the moment to reach that target that they have in 2030 and they're only going to reach the 2020 target because of carryover of credits with the Kyoto agreement, and that was only because of an Australia clause which allowed Australia to actually increase emissions. So we went the wrong way. We committed to a net increase in emissions and we can no longer stand for that. The catastrophic consequences - - -

MR O'CONNOR: If you could wrap up, now, please, Sonya.

MS McKAY: Yes. So is that the end or - - -

MR O'CONNOR: If you've just got any final comments to make, but, yes, your time has expired.

MS McKAY: Final comments. We are looking at major 3.4 trillion loss in GPD – or GDP, sorry, if we don't change. 880,00 fewer jobs. Now, if we do change we could have 680 billion in terms of economic growth and also 2.6 degree – per cent for the economy and 250,000 jobs. That's not me saying that. That's Deloitte. Otherwise, we can keep on with the natural disaster cost reaching 39 billion per year, so we have a chance to change this and we need to change it and we need to do it now for the next generation and for younger generations to come and that we're supposed to be looking after for the wellbeing of their - - -

MR O'CONNOR: Thank you, Sonya.

MS McKAY: Thank you.

MR O'CONNOR: Thank you. I'll just see if there's any questions. No. No. No questions. Thank you very much for your presentation, Sonya. Before I ask Richard to introduce the next speaker, I just want to make it clear that Rob Newman is someone I've worked with in the past and done work for his company. I'm a

planning consultant based in the Hunter Region and I've undertaken work in the Hunter Region for Mr Newman. So over to you, Richard.

MR BEASLEY: Mr Newman from the SCE Group. Are you there, Mr Newman?

MR NEWMAN: Good afternoon, Commissioners. Can you hear me okay?

MR BEASLEY: Yes. Please, go ahead.

MR NEWMAN: Great. Thank you very much. Thanks, firstly, for the opportunity of being able to speak today at the Commission. My name's Robert Newman. I'm the major shareholder of SCE Group Pty Limited. We're a family owned and operated company established and based in Port Kembla. WE have for some six yeas been supplying onsite material handling services and transport services to steel and mining sectors based in the Illawarra. In our region, the operations of coal mines and iron and steel furnaces have very strong interdependencies. The steel and mining component of our total workload at SCE comprised the majority of services we, as a group, provide our customers. SCE group directly employ more than 200 in the Illawarra and, in addition, run operations in Sydney, Newcastle and the Hunter Valley, including quarries and recycling centres. Our operations also support more than 150 subcontractors, most of whom provide transport services.

SCE is a major onsite material handling contractor to South32, and our material handling footprint covers all of South32's operational sites in the Illawarra. The specific services provided to South32 by us in the Illawarra Coalfields include clean coal handling and loading, stockpile management, coal wash and placement services, rehabilitation services, screening services and train loading services. We employ some 50 people directly to do this work for South32. In order to provide these services, we operate around 50 items of large plant and equipment, or yellow goods as they're commonly referred to. These include front end loaders, dozers, dump trucks, excavators, graders, eight-wheel trucks, screening plants, compacting rollers, lighting towers, water carts and service trucks, and peoples' work functions include OH&S management – OHS&E management, I should say, plant operators, of which we have 36. Maintenance employees, of which we have 10, administration services and operational management and supervision.

We operate two fully equipped workshop facilities to keep this plant and equipment operating for the South32 business. One at West Cliff Colliery and the other at our main yard, which is based in Port Kembla. I'd like to draw your attention now to third party suppliers. We rely on many third party service providers in order to carry out our work for South32 safely and efficiently. With more than 20 substantive third party suppliers the flow-on effect is clearly far greater than the significant direct harm that may be caused to SCEs employees wellbeing from uncertainty from within South32's operations in the Illawarra and planning approvals and so forth.

From our perspective, the orderly continuation of South32's operations in the Illawarra Coalfields not only provides security for our employees at SCE and their

families, but also for all our third party service providers, of which there are a great many. The continuation of South32's operations underpins many third party suppliers in the Illawarra like SCE, and the important employment and economic benefits provided by those suppliers back to the Illawarra community. I think it's important that the Commission fully appreciates the importance of South32's operations to regional employment and to the regional economy. Thanks very much for your time.

MR O'CONNOR: Thank you, Rob. I'll just see if there's any questions. John? And Richard?

MR BEASLEY: No, thanks.

MR O'CONNOR: Thanks for your presentation this afternoon. Next speaker, please.

MR BEASLEY: Next speaker is Killian Grennell from Nexus Mining. Mr Grennell.

MR GRENNELL: Hello.

MR BEASLEY: Yes. Can hear you now.

MR GRENNELL: Yes. Good afternoon, and thank you for the opportunity to speak. I'll start by introducing myself and Nexus Mining. My name is Killian Grennell, the general manager of Nexus Mining. I'm a local resident of the Illawarra for over 25 years with two – with a family of two boys under three. I'm also a life member of the university rugby club. I've experience and qualifications in both civil engineering, mining engineering and environmental planning. I obtained a civil engineering degree from the University of Wollongong and a Masters in Mining Engineering from the University of New South Wales. Prior to my career in the mining industry I worked for six years within environmental planning and assessment.

So who is Nexus Mining. Nexus Mining is a mining contractor based in the Illawarra with 350 employees within the district and 250 employees engaged at Dendrobium. Our payroll is circa $44 million per year with 96 per cent of employees living within the Illawarra region. We invest in training with over new to mining entrants being engaged over the past two years and placed in local jobs. Nexus was in a position to retain and provide stability to the majority of its employees during the impact of COVID-19 by reducing our profit and offering job share programs. We are committed to providing long-term employment in the region for both experienced and inexperienced mine workers.

I speak in favour of the Dendrobium Mine Extension Project given the coal mining has a long history within the district and has played a large part in creating the dynamic, vibrant and thriving Illawarra Region that exists today. The coal being

mined is predominantly metallurgical coal used for the manufacture of steel. The requirement of steel production to facilitate the world's economic stimulus to recover from the impacts of COVID-19 will be significant, and this market opportunity should be taken by the businesses and participants of the Illawarra economy.

Approval of the project will maintain employment and financial stability for our employees and their families into the future. It will increase local jobs for both experienced and inexperienced mine workers. It will provide a boost and provide stability to the local economy. My areas of expertise and years of experience make me well equipped to identify mining companies who are generally competent and committed to maximising their operation without compromising on their commitment to safety and the environmental compliance. Whilst I'm not in a position to comment specifically on the assessment of the environmental factors, I'm confident that South32 fully understand and accept the risk of mining within the catchment and under significant surface features.

I ask the Commission to consider in detail the impact of job losses and employment instability to employees and their families and the communities which they support. South32 has experience and knowledge to yield and engineering solution that will reduce the risk of mining underneath significant surface features as low as reasonably possible. I would not endorse a company does not match my own and Nexus Mining high standards and core values. Approval of the Dendrobium Mine Extension Project will ensure that the benefits of mining contribute to a secure and prosperous future for the Illawarra. Thanks for your time.

MR O'CONNOR: Thank you for that, Killian. Any questions, John? Richard?

MR BEASLEY: No.

MR O'CONNOR: No questions. Thank you very much. Next speaker.

MR BEASLEY: I think we have Misha Zelinsky from the Australian Workers' Union. Mr Zelinsky.

MR ZELINSKY: Thank you for having me along and I know that there are a lot of speakers, so I'll try to keep my presentation really brief, because I don't want to duplicate evidence that you'd perhaps hear from others. So from the Australian Workers' Union point of view we represent, you know, thousands of people working at the BlueScope Steelworks in Port Kembla, and so the relevance for us here relates to the integrated supply chain aspects of the mine site being discussed today. So, you know, it goes without saying steelworks is an enormously important component to the Illawarra's economy. You know, when you look at the numbers alone, it's 3500 direct jobs, 5400 indirect jobs, you know, on a numeric basis it's a huge engine, employment engine and economic engine within the Illawarra economy and it's an important link in Australia's overall manufacturing base.

You know, the relevance to the mine, is – you know, it's an integrated supply chain. The steelworks is heavily reliant on the coking coal that comes out of the mine site and, you know, the – you know, and I'm no metallurgists, nor am I chemist, but I invite you to, you know, look at these things yourself, but as was explained to me, you know, the quality of the coke that comes out of the Dendrobium Mine and the blend of the local mine sites of which 90 per cent of the coking coal sourced by BlueScope comes from local mine sites.

That Illawarra blend, as they call it, is, if not the world's best, close to the world's best coking coal, and so that provides an enormous benefit to the steelworks over all and the quality of its operations, its cost operations, etcetera, and so the jobs at the steelworks and the jobs in the mine sites integrated together are an enormously important economic driver and productive part of the economy in the Illawarra and, so, you know, people might ask, "Well, isn't it easy just to, you know, switch these out? They're commodities, can't they be imported from elsewhere", but, you know, as you guys will no – well understand that – no doubt understand, rather, is that, you know, the proximity of the mine sites being just up the road in Illawarra relies for just in time delivery.

For the amount of coking coal that the steelworks relies upon to some via, essentially, the other option you know, apart from presently by truck and rail for it to come by seaborne trade, through the port would require an enormous upgrade of capital in the steelworks and in the port site most likely, as well. The way the steelworks currently operates with it swashing facilities and its, sort of, dual storage units, they're in constant perpetual operation on a just in time basis, so it required quite a bit of – in the order of hundreds and millions, I'm told, to upgrade the facilities at the steelworks in order to keep it operative, f we were to switch out its coking coal inputs and, also, you know, one of the other inhibiting factors is that would likely also, you know, given the shipping costs associated, rather than it being just up the road and having a close proximity on that tonnage being shipped, you know, it would increase the overall operating cost of the steelworks.

So, you know, steel is a global commodity, you know, people at the steelworks – our members over the last five years have fought incredibly hard. Many, you know, five years ago took a very tough decision to, essentially, in some cases vote themselves out of jobs and in other cases take enormous pay cuts to keep the steelworks open during a period where it was struggling. It's now returned to profit, which is great, but, you know, these things operate in cycles, as you would no doubt understand, but, also they are globally – sort of in a globally competitive environment, so costs are very important. So, you know, we would argue that maintaining this sort of unique advantage that we have in the Illawarra right here with that close link between the coking coal and the steelworks itself provides a significant cost and input advantage to the steelworks.

So, now, overall there's a huge economic supply chain argument. There's a critical capital flow on cost if the decision is made not to extend the mine and so many people rely on the mine sites, the steelworks for their – you know, for their wages

and their – supporting their families that, you know – I ask that you keep that in mind when considering whether or not – for the expansion and we hope that you do take into account all those relevant facts. Happy to take questions, though, on the – I'd say on those more technical engineering questions, I'm happy to answer them, though, perhaps I'm not best qualified, so - - -

MR O'CONNOR: Thank you, Misha, four presentation. John, any questions?

MR HANN: No. No.

MR O'CONNOR: Richard?

MR BEASLEY: No, I'm fine, thanks.

MR O'CONNOR: We don't have any questions. Thank you for your time. Next speaker, please.

MR BEASLEY: Next speaker is Kaye Osborn from Illawarra Residents for Responsible Mining. Ms Osborn.

MS OSBORN: Good afternoon. Can you hear me okay?

MR BEASLEY: Yes. Thank you.

MS OSBORN: I'd like to start by acknowledging that I'm on the country of the Dharawal People and to pay my respects to leaders past, present and emerging. I'm a resident of Wollongong and I'm speaking today on behalf of Illawarra Residents for Responsible Mining, which is a group that was formed about 10 years ago in opposition to the proposed expansion of the Russel Vale mine, which is just a few suburbs up from Dendrobium. We advocate for responsible mining, which we see as mining which puts the health and wellbeing of ordinary people and the environment ahead of corporate mining interests. Today I'm going to share some of my observations on the damage which has already been caused by the Dendrobium Mine and make some comments on the project, including the timeframe and the alternatives that have not been presented. I'd just like to begin by sharing my screen.

MR O'CONNOR: Yes. That's fine.

MS OSBORN: Yes. You can see – okay. You can see that now. Great. So, well, you've seen this creek already today. I understand that the panel went to Dendrobium site area earlier, but I understand that the areas that were viewed were no actually the damaged areas, and yet there is ample documentation of the damage which has been caused by longwalls of this width within the Dendrobium mine area within the schedule 1 special areas. This I Wongawilli Creek tributary WC21, and I went there a bit over a year ago and this is a creek which the guide on this site visit told us used to flow perpetually. So it used to flow even in times of drought, and yet

since being undermined by – since the area was undermined by Dendrobium's longwalls, it – yes, it basically has dried up and, of course, we're in drought time.

There were just some stagnant pools lying around. We could see how the mining had caused this cracking in various areas up and down the small section of creek that we visited. Another thing that concerned my on my visit is the impact that the mining infrastructure is having on the special areas. There are multiple areas that have been cleared. There's mining construction occurring and this is, after all, in an area which the public is unable to enter. It's meant to be a protected area. An area protected in order to maintain the integrity of our water supply and, of course, everywhere we went there was evidence of subsidence impacts from this mining.

Water New South Wales has made very clear its position on this project and on their website they helpfully explain to people like me, who don't have a background in hydrogeology, you know, the many means by which yield is lost in the water catchment due to longwall mining, and when we were there a year or so ago, the Cordeaux Reservoir was really very low. It's very disturbing and it highlighted to us the extent to which we need to protect our water supply. I'm just going to stop sharing now and continue. So the commitment by South32 to only undermine named – only undermine unnamed watercourses is not really helpful in the grand scheme of things, because, as we know, a river, and, indeed, a reservoir, is only as good as its tributaries, and if you crack and drain the tributaries and watercourses, you'll affect the reservoirs and the rivers.

Likewise, I've noted several times the comparison of water loss from mining to water loss from pipes leakage throughout the Sydney water supply, and this again is not helpful, because pipes can be fixed and yet damage to the water catchment by mining cannot be repaired. There is no like for like offset. This morning, I think it was Howard Reed mentioned the recently purchased property by South32 on Maddens Plains, and the suggestion was that this was the offset, although it wasn't entirely clear for the damage that would be caused by this project or, at least, part thereof. Maddens Plains, this is not a like to like offset. This is not in the special areas. There is no like for like offset for the – for an area which is damaged by mining in the special areas.

I'm particularly concerned by the length of term that is proposed here. 28 years in this current environment is an incredibly long time frame. Climate scientists tell us we need to rapidly reduce fossil fuel emissions to have any hope of slowing climate change, and also zero carbon steel using hydrogen is not only possible, it is, according to the Grattan Institute's report, Start with Steel, the best way to reduce carbon emissions from industry. The global demand for metallurgical coal is falling. As we speak, coal ships are anchored off the coast of China and we see that the demand for Australia's coal is likely to fall further.

Other mines in the water catchment have applied for much shorter project terms, and the speaker from Lock the Gate Alliance mentioned this earlier. Russell Vale has applied for a five year extension. It is unacceptable for this very long – you know,

nearly three decade project proposal is really of great concern, and it is unacceptable for incremental approvals to be relegated to a subsidence management plan stage. These plans lack transparency and the opportunity for public comment and input and, furthermore, as the Wollondilly Shire Council representative mentioned earlier, the compliance and regulation is compromised, and this is particularly important given the strategic importance of the special areas for the whole of Greater Sydney for their water supply.

The final report of the Independent Expert Panel on mining in the catchment notes an incomplete mine knowledge base and a significant variation in actual versus predicted outcomes. So in this volatile time when the need for coal is plummeting, the need for water is increasing, the climate is changing, droughts are becoming longer and more frequent and the true impacts of this mining, as the IEPMC noted and Peter Turner from NPA also noted earlier today, are not really clearly understood. This is not the time for a huge three decade mining expansion like this.

The secretary's environmental assessment requirements for this project state that there should be a consideration of alternatives, and yet alternatives have not been presented. Even the alternative of narrower longwalls have been dismissed as not being economically viable, and the Department of Planning supports this notion; however, I've just recently spoke at a IPC hearing for the Russell Vale Colliery, which is not far down the road from Dendrobium, and the department – they are proposing a five year bord-and-pillar expansion and saying it is economically viable. The Department of Planning also states that bord-and-pillar mining at Russell Vale is economically viable. So if it's viable why is viable – why is it not viable for South32. I just don't understand this discrepancy.

The average water loss from the project of 22 megalitres per day for the life of the project is equivalent to the water use of 110,000 residents, and as Illawarra residents we're particularly concerned about the impact on water quantity and quality. The threat to the Avon reservoir, which is the only source of water for over 310,000 residents and businesses in the Illawarra Region and also the Water New South Wales Avon Deep Water Access Project, which ..... provide water security for the Illawarra. We will always need water, but we don't – we won't always need coal. We need government support for a sustainable transition in this region, for our steelworks to continue, but - - -

MR O'CONNOR: Kaye, Could you wrap up now, please. Your time has expired.

MS OSBORN: The special areas should be off limits for mining. They should be protected as a water catchment. So on behalf of Illawarra Residents for Responsible Mining Incorporated, I call on you to reject the Dendrobium Extension Project.

MR O'CONNOR: Thank you, Kaye. Questions, John?

MR HANN: No.

MR BEASLEY: No, thanks.

MR O'CONNOR: We don't have any questions. Thanks very much for your presentation.

MR BEASLEY: Next speaker is David Keith from the Centre for Ecosystem Science at UNSW. Mr Keith.

MR KEITH: Thanks very much for your time, Commissioners. I'm going to share my screen. Just quickly, can you see that?

MR BEASLEY: Yes.

MR KEITH: Yes. Yes. I'm professor of botany at University of New South Wales and deputy director of Centre of Ecosystem Science. I have expertise in ecosystem dynamics and I also have expertise in risk assessments of threatened ecosystems and species, and I also have an interest in long term ecological research and one of my major interests there is in upland swamps.

MR BEASLEY: Could you just – Professor, could you just maximise your screen if that's possible?

MR KEITH: Yes. I apologise.

MR BEASLEY: That's all right.

MR KEITH: Let me – how's that?

MR BEASLEY: Yes. Yes. Thank you.

MR KEITH: Okay. So I wanted to tell you a little bit about our research to assist the Commission. Some of it is quite local, although globally we're very interested in this notion of ecosystem collapse, because if we can understand the mechanisms of how ecosystems might collapse, it can inform our – the way that we manage ecosystems and try to avoid those adverse outcomes. The case study I'm going to talk to you about is indeed these upland swamps, which are actually much more widespread in the northern hemisphere than thy are in the south, but most of the biological diversity, ironically, occurs in the south where they're much more restricted, and in Australia in particular we have some very high diversity swamps with many, many species that don't occur elsewhere in the landscape.

So the unique biodiversity is one of the key values of these systems, but they also provide existent services to people, for example, through sustained flow of high quality water and also through carbon sequestration in their peaty substrates and vegetation. They're listed as endangered both under State and Commonwealth legislation. In terms of their dynamics, dynamics are often represented in, you know, this, kind of, ball and hollow model which represent alternative states of ecosystems,

and ecosystems are naturally dynamic. They shift around in response to small changes in the environment, but sometimes they receive cues that trigger a major state change and that's what we call ecosystem collapse, and so our work is really focused on trying to understand those triggers that push those systems and how they actually operate in order to manage them.

So turning in more detail to upland swamps. There are three key features, I guess, that promote the development and maintenance and sustainability of these ecosystems in a landscape. The first in the top left here is a wet climate. The second is flat terrain and the third is an impermeable substrate, and what those things add up to, essentially, is an excess of moisture inputs over time over moisture outputs, and what that does is it allows the system to accumulate water rapidly and then release it very slowly, which is why they're such important systems for regulating the flow of high quality water.

And the systems tend to become self-sustaining when those three conditions are met, because we have these positive feedbacks that operate to maintain the system. Essentially, more water means dense vegetation and accumulation of peat and that further obstructs the flow of water which promotes, once again, the dense vegetation and so on. So this positive feedback loop is very important in sustaining them, as are these three key features, including low permeability substrate.

Now, there are other factors that also influence the dynamics of these systems. One is recurring fire regimes. Fire have had a very long history in Australia, including the Sydney Basin. There's evidence of recurring fires in the Australian environment for at least 60 million years, so long before people evolved. Second factor is climate change. I don't think I need to say much more about that. There's obviously a trend that's not going to change for some time because of the lags involved, and third is longwall mining, which triggers these hydrological changes locally by altering the permeability of the substrate.

Now, I'm going to speak to you about some work that we've been doing in similar swamps in the Blue Mountains on the Newnes plateau which was burnt in the Black Summer Fires last – nearly 12 months ago now, and we set up a factorial experiment here to look at the regeneration of those swamps after the fire, and that experiment was designed to look at the comparison of the regeneration process post fire between mined and unmined swamps. Similar longwall mining practices occurred up on the Newnes plateau, and also between different landforms, the valley sides and the valley bottoms of the swamps.

We measured a whole range of response variables, which I'll take you through shortly, and some details here of our data analysis. We did this work 10 weeks after the fire in early March this year and just last week we were back monitoring again for a follow up and these are results from March and, essentially, they show that the fires burnt mined and unmined swamps with equal severity. We have the unmined swamps here in green. The mustard colour over here is mined swamps and,

essentially, no difference there between – no statistical difference between those two categories.

However, in terms of the peat consumed there was significantly more peat consumed in the mined swamps compared to the unmined swamps. In terms of the structure of the regenerating vegetation, we found that the shrubs were shorter and sparser in the mined swamps compared to the unmined swamps and that the non-woody vegetation was sparser in the mined swamps than the unmined swamps, although a similar height, and you can see here that some of these differences were quite substantial. Turning to the actual weight of vegetation, the dry biomass. Those differences are even more significant. Very little green material returning 10 weeks after the fire in the mined swamps compared to quite lush regrowth at a very early stage, and the swamps are actually functionally quite important for this reason: they're the first part of the landscape to return after a major bushfire event, and, therefore, they're actually quite important in sustaining regional fauna populations.

In terms of the number or the diversity of different plant species that occur in the regenerating swamps we found more of those in the unmined swamps than the mined swamps, and just, finally, this diagram here shows – it compares the composition of those plant species and the separation of the green reference unmined swamps here on the left from the mined swamps here on the right, essentially, means that there's quite a strident difference in the composition of plant species that are returning in these two different types of swamps, and I'll just add that I mentioned land form earlier on. We found no consistent differences between the valley floors and the valley sides in any of these response variables that we measured.

So what happened. These are some drone images of mined swamps – sorry, unmined reference swamps, the top, and the mined swamp on the bottom 10 weeks after the fire, and as you can see the unmined swamps appear to be resilient to the fire and recovery is well and truly underway even 10 weeks after the fire; however, the mined swamps have, indeed, collapsed, and thinking about the explanation of that in terms of theory, we explain it by the longwall mining weakening the resilience of the ecosystem through the hydrological change. So we represent that here by this shallower well, if you like, which actually makes it easier for the ecosystem to change state into a collapsed state when we get a fire, and in terms of cause/effect, we have a very high level of confidence about longwall mining being the cause, because we have five years of data of monitoring soil moisture prior to the fire and the mined swamps have diverged and stayed and even continued to decline in their soil moisture, and you can see there was a substantial difference at the time that the fires went through.

And these results, as I said, were from March. From November, essentially, we can say that those differences are not only maintained by they seem to be even greater, although the data analysis is still to come, since it was only last week and, finally, I just wanted to conclude with the options that could be done, and I think, by and large, the major tool that we have in our toolbox is through preventative planning and

implementing mine designs such as exclusion zones or perhaps bord-and-pillar to avoid that shattering of the bedrock. Thank you very much for your time.

MR O'CONNOR: Thank you. David, are you able to provide a copy of that presentation to us?

MR KEITH: Yes, I've already done so.

MR O'CONNOR: Very good.

MR BEASLEY: Professor, can I just ask you just a couple of questions on the submission you just made. Do I understand this right, tell me if I'm wrong, that in relation to your Blue Mountain study the – what you're calling the mining swamps were heading towards a state of collapse because of the mining and did the bushfires then take them pass the point of return?

MR KEITH: Yes. That's essentially right. The symptoms of ecosystem shift are somewhat harder to see until a fire comes through, and – but we know that the swamps were drying because of the soil moisture data and we also have anecdotal data about the death of vegetation in those mined swamps.

MR O'CONNOR: All right. Well, moving - - -

MR BEASLEY: Just on that – sorry. Sorry. Sorry. Just on that about the drying swamp. A swamp is a wetland, I guess, and - - -

MR KEITH: Yes.

MR BEASLEY: Which tends to indicate to me they're meant to be wet. Is there a period beyond which if they're dry beyond a certain amount of time that you can't save them?

MR KEITH: Well, it depends on the type of wetlands.

MR BEASLEY: Yes.

MR KEITH: For these particular wetlands, I think that's an accurate statement, yes, because what happens is the peat oxidises and it then repels moisture and we break down that positive feedback cycle that the swamps depend on for their persistence.

MR BEASLEY: All right. And does the study you've done in the Blue Mountains lead you to a particular view in relation to the risks associated with the South32 mine that's before the commissioners now?

MR KEITH: Yes. Well, I think the logic that I would use is that the systems functionally are quite similar. In terms of the plant species, they're a little different. There are some that occur in both ..... but functionally and hydrologically, they're

very, very similar, and the mining methods, my understanding is, that they are also quite similar. In fact, if anything I think the longwall widths might be slightly narrower up at Newnes.

MR BEASLEY: Yes. All right. Thank you for that.

MR O'CONNOR: Can I just ask a follow up question in relation to that issue of the mining itself. So it was longwall mining. You think it's a similar width panel. Do you know what the depth of the mining was in the case of the Newnes plateau?

MR KEITH: I would have to get back to you on that, but I think it's between two and three hundred metres.

MR O'CONNOR: Okay. Thank you.

MR BEASLEY: Thank you.

MR O'CONNOR: Any questions, John?

MR HANN: No.

MR O'CONNOR: Thank you very much for your presentation. That brings us to a short break. We'll resume at five minutes past 4. Thank you.

ADJOURNED **[3.48 pm]**

RESUMED **[4.05 pm]**

MR O'CONNOR: Welcome back to the final session for today. Our next speaker, please.

MR BEASLEY: Next speaker is Felicity Davis from Pittwater Knitting Nannas. Can you hear me, Ms Davis. You might just need to put your mic on. I think she's trying to. Yes.

MR O'CONNOR: You might be on mute.

MS F. DAVIS: Can you hear me now?

MR BEASLEY: You might need to just – I don't know if it's us or you – turn your volume up.

MS DAVIS: It is up.

MR BEASLEY: Now you're right.

MR O'CONNOR: Great.

MR BEASLEY: Now we can hear you loud and clear.

MS DAVIS: Good. Okay. Righto.

MR BEASLEY: So please go ahead.

MS DAVIS: Righto. Well, I'll just do a little introduction of my background. I had a husband who was a chemical engineer and a filmmaker and we used to make educational videos. We made lots of videos on science and physics and we made videos on our energy future, global warming and greenhouse gases in the late nineties, early two thousands. We sold our videos all over the world including China, US and UK to nine different countries. Anyway, I was actually contacted by Water New South Wales to speak to you this afternoon because they are so worried and strongly opposed to this project that you are considering that they asked me if I would speak.

I was very flattered because I'm no expert, but I'm very passionate about acting on climate change. It seems that, you know, there's two bad things about this project. Two whammies. One we've got that it's coal mining and the other than it's mining underneath the catchment which, to my mind, is absolutely ridiculous. We are the driest country in the world and we have the lest – you know, we have the most need of water and here we are endangering our water supply for a commodity that is not even going to be needed soon. So if this goes on it will be really, really bad. Also, we've got to reduce our carbon dioxide emissions. This is not going to do that if they carry on mining and burning coal. We have stop mining and burning coal. But we're not going to be doing it if this goes ahead.

Anyway, there's – 73 countries have signed on to be net zero emissions by 2050 which is fantastic and that also includes two of our very good customers that have been taking our coal which is Japan and South Korea. Also, China, apparently we've got about over 60 ships floating around in the Pacific and they can't land in China because China won't let them, but I don't think that's particularly because they're worried about the environment. I think they're more worried about us being annoying. So that's a terrible thing. Also, we are losing so much water in the water catchment because when the huge machines go under – travel along underground gouging out the coal 250 to 400 metres wide and they're just chewing away at the coal front and then as they move forward they just allow the ceiling behind them to collapse and this causes fissures in the rock and this causes the water to leak through into the mine underneath and apparently we're losing eight million litres a day of our water which adds up to something like – what was it – 2920 million litres of water a day – I mean, a year which is absolutely ridiculous.

Also, we don't even need this coal because people say, "Yes, we need coal to make steel." But now – I don't know whether you've heard, but there's a new way of making green steel. Dr Veena Sahajwalla from the University of New South Wales has been working with OneSteel who are with BHP and they have been making what they call green steel and they're using old tyres and plastic – recycled plastic which is fantastic and they can make that without any toxic waste because they do need a little bit of coking coal which joins with the molten iron to make steel along with clean gases such as hydrogen and carbon monoxide.

Also, there was a very interesting article on the front of the Herald today from the former UN climate chief Christiana Figueres and she said that the world is waiting for a suicidal Australia to reverse its stance on climate change and she is very disappointed in Australia and the way we've been carrying on for the last 10 years. She's been very frustrated. Also, she says that if we got on with our climate solutions based on avoiding deforestation which is another thing, I admit, that we would make US$800 billion in revenue by 2050 and I rest - - -

MR O'CONNOR: Felicity. If you could just please wrap up. Your time has expired.

MS DAVIS: I have. Yes. I've wrapped up. That is my – that is my little speech.

MR O'CONNOR: Thank you. Any - - -

MS DAVIS: Thank you.

MR O'CONNOR: - - - questions John or Richard?

MR HANN: No. I'm good. Thanks.

MR O'CONNOR: Thank you very much for your time this afternoon. Next speaker, please.

MR BEASLEY: Next speaker is Dr Sharyn Cullis from Georges River Environmental Alliance. Dr Cullis, can hear me?

DR S. CULLIS: I'm just trying to unmute. Hang on a minute.

MR O'CONNOR: No. We can hear you.

DR CULLIS: Can you hear me?

MR O'CONNOR: Yes.

DR CULLIS: Can you hear me?

MR O'CONNOR: I can.

DR CULLIS: Fantastic.

MR O'CONNOR: So - - -

DR CULLIS: Okay then. So – and you can see me as well, yes?

MR O'CONNOR: We can.

DR CULLIS: Yes. Thank you. Good afternoon and thanks for this opportunity. I'm Sharyn Cullis. I have recently graduated PhD in coal mining impacts in the New South Wales Southern Coalfields. I have been on the Appin Mines Community Consultation Committee since 2012. Those South32 mines interact with the Dendrobium mines so I have a close view. Could I have my first slide, please.

MR O'CONNOR: Yes. That slide's up.

DR CULLIS: Fabulous. Thank you. I represent the Georges River Environmental Alliance. We object to this project because it will have serious irreversible impacts on drinking water. It does not pass the public interest test and should be rejected. By the way, we support the steelmaking industry in Wollongong, but don't think this project is the only or the best way to provide for it. Might I have the next slide, please. Whilst the GREAs submission is broader and complex, today I only focus on the flawed economic justification, interactions and some alternatives to this project. The DPI relies on the report it commissioned from BAEconomics that claims the regional economy is at risk if the Dendrobium Extension is refused, but that report is not reliable and is flawed at its foundation.

The author admits to no face-to-face meetings with the businesses, hindered restrictions because of COVID and that some of the businesses would only supply limited data anyway. It is also misleading to present only as an – to present only an approval or a do nothing option. There is a range of other alternatives that are not revealed or evaluated so now to explore some of those. Firstly, BlueScope Steel can continue if South32 supplies coal from the Appin Mines instead of Dendrobium. The Appin Mines are outside, not inside drinking water catchments. However, the BAEconomics report makes the implausible claim that Illawarra Coal, part of South32, is likely to be economically unviable without jointly operating both the Appin and Dendrobium mines.

Here is the opposing evidence. South32 are currently acting a business with a bright future. On the 17th of November South32 reported to the CCC that the Appin Mine was profitable and its new exploration lease was guiding future Appin Mine expansion. The business reported a major investment in a new Appin ventilation and mine access project which is integral to that planning. South32 reported also that a contract has been signed for an expensive RO water treatment plant at the Appin North pit top and waste emplacement. It is required to protect the Georges River from mine pollution. That is a big investment in the future. What a shame BAEconomics and the DPI weren't present to hear that.

By the way, those facts are in the draft minutes of the meeting. Hypothetically, if stringent environmental standards for wastewater discharges and beneficial reuse are required for the Dendrobium Extension, if approved, that mine could become as costly as the Appin Mines and it is a moral imperative as people in the Illawarra deserve the same environmental safeguards as those now downstream of the Appin Mine. Now to the claim that South32 must supply BlueScope a blend of Bulli Seam coal with Wongawilli Seam coal from Dendrobium. The DPI present this as justification for a whole approval when there's a pragmatic case for just a partial approval. Area 5 of Dendrobium, only producing Bulli Seal coal, can be substituted by the Appin Mine product. Area 6 of Dendrobium is the source of the other ingredient, Wongawilli coal.

Approving only area 6 would limit the damage to swamps and the water supply. There is a precedent. A partial approval took place for the Bulli Seam Operations when 40 per cent of the project area was excluded. South32, despite protest at the time, continues to be viable. Yet another alternative is that BlueScope could develop another blend to avoid the use of the Wongawilli Seam coal completely. Coal blending can't be an insurmountable problem. There are scores of steel mills around the world and their coal blends must vary. BlueScope could be adaptive. Thinking even more laterally, if Dendrobium is not approved, South32 could import coal from its own operations in the Bowen Basin where it has a lucrative share in the Eagle Downs Mine. That may be the lowest cost coal.

This outcome might be the best for both the port in the long-term and BlueScope Steel. By failing to consider alternatives like these and others the proponent's case and it's acceptance by the DPIE has not met the mandated matters set out in the SEARs and no approval is justified. Could I have my next slide, please. The proponent has chosen a very deficient and biased methodology with respect to the cost benefit analysis which overstates the project's economic value and the DPI accepts that without an impartial assessment or a peer review. The project cost benefit analysis assigns a monetary value to the direct benefits of the project. Yet it identifies 12 indirect costs without estimating their monetary values. This is a serious deficiency with respect to the loss of natural features like swamps, streams and drinking water.

This methodology does not meet the industry best practice standard as defined and published by the Federal Government. It recommends the monetising of costs and benefits even for goods and services not traded in markets and suggest a wide range of tools and these include contingent valuation and choice modelling. This Federal Government stance reflects the better approaches both in literature and also previously applied in the Southern Coalfield. It was, for example, used to underpin the economic case for the Metropolitan Coal Expansion in 2009 and for the Bulli Seam Operation in 2010. They're the Appin Mines. The project net benefit for the Appin Mines took account of the loss of natural features even though it is difficult as such features are often seen as priceless, assigning a dollar value is better than nothing. Yet the cost benefit analysis of the Dendrobium Projects values those at nothing.

The PAC for the Bulli Seam Operation determination recommended the choice modelling approach for future assessments of mining in New South Wales. This IPC should therefore apply the wisdom of this past PAC to reach the same standard of rigour for this assessment or exceed it. We have developed examples that reveal – we meaning GREA – have developed examples that reveal how the monetised value of natural features and water can and should be reported but today I only have time to overview one of those. Could I have the next slide, please.

With respect to this, the most aggressive of all the mines in region, disgracefully located but hidden from public view in a drinking water catchment, here is one way of measuring the water loss that will incur. Using the current Sydney water pricing structure and the Water New South Wales estimates of water loss accepted by the DPI report, the annual loss can be valued at eight to 10 million per annum. South32 have only offered 103 million which only represents 10 to 13 years of water loss. However, the DPI has admitted the water loss will continue for at least 170 years. How is that fair? The miner will pay for 10 years and then water consumers will bear the brunt of water scarcity and increased charges to subsidise this mine long after it's gone for at least another 160 years. Could I have the slides off. Thank you.

So there is clearly a case for a refusal of this consent as a consequence of the dire long-term impacts on drinking water and South32 is not prepared to compensate for that. I wish to finish with a personal statement. I'm wrapping up now. It is meant for the IPC but also those miners and their supporters who have flooded the consultative process with messages of support for this mine. It is fine that you worry about your jobs while people like me worry about your drinking water and the greater public interest. But jobs and industries come and go. Structural adjustment and employment uncertainty is the economic norm. This year South32 have ruthlessly terminated more than 400 contractors. In 2016 South32 shed 300 jobs. BlueScope wiped out 500 jobs in October 2015 and, surprise, the sky did not fall in on Wollongong after each of these events.

Now to the present. The Dendrobium Extension will directly support 500 employees and 200 contractors. As mining and heavy industry become increasingly capital intensive there will be fewer jobs. So hopefully for you there will be a just transition ahead, employment in cleaner and sustainable new industries, perhaps even in the production of green steel. Thank you.

MR O'CONNOR: Thank you, Sharyn. Any questions John, Richard?

MR HANN: No.

MR O'CONNOR: Thank you very much for your presentation. Next speaker.

MR BEASLEY: Next speaker is Dr Rada Germanos, Doctors for the Environment Australia. Are you there, Doctor?

DR S. GERMANOS: Yes. I'm here. Can you hear me?

MR BEASLEY: We can so please go ahead.

DR GERMANOS: Yes?

MR BEASLEY: Yes.

DR GERMANOS: Great. Thank you. Yes. So my name is Rada Germanos and I'm a general practice registrar. I'm presenting today on behalf of Doctors for the Environment or DEA and I'd like to thank the Commission for your time. I was raised on Dharawal land in Illawarra and I worked in the Illawarra Shoalhaven Local Health District for three years after completing my medical studies and I'm currently working with people experiencing homeless in the inner Sydney – on Gadigal country. The proposed South32 Dendrobium Mine Extension Project will harm the health of the community and it will harm people in different ways, further reinforcing inequities in health and wellbeing experienced by individuals and communities in the Illawarra. Doctors for the Environment strongly opposes this proposal.

There are many negative health impacts that will result from the Dendrobium Expansion proposal if it's approved but given time restraints I'm just going to focus on three in particular: Aboriginal cultural heritage destruction, air pollution and drinking water losses. The Aboriginal culture heritage assessment surveyed only 6.91 per cent of the area due to be undermined in areas 5 and 6. They identified 58 Aboriginal heritage sites. These are mostly rock shelters, some with, some without art and deposits and axe grinding group sites located in creeks. These sites are estimated to be over 2000 years old and some up to 4000 years old and all sites are potentially subject to destruction from subsidence. It's incredibly insulting that South32 states that it will avoid Aboriginal cultural heritage sites and areas of cultural sensitivity as far as practicable.

The approach of South32 and the DPIE considers these special and sacred sites as inert historical objects, not places tied to both the cultural integrity of the region as a whole as well as to the lived present of First Nations people in this region. Destruction of cultural heritage is part and parcel of the ongoing genocide and dispossession of Aboriginal peoples on this continent. As I'm sure the Commission is well-aware, Aboriginal people die on average eight years younger than their non-Aboriginal counterparts and rates of mental illness and suicide are many times greater compared with the rest of the population.

An approval of the Dendrobium expansion will be complicit with the ongoing cultural genocide of Aboriginal peoples, the destruction of invaluable country, history and living culture and contributes in very real terms to the ongoing poor health outcomes for Aboriginal people on this continent. Turning now to air pollution. There is extensive medical literature detailing the links between particulate pollutions such as PM2.5 and PM10 and a range of health conditions such as cardiovascular disease, cerebrovascular disease and cancers. One of the Public Health Association of Australia's key policy positions is that there is no known

absolute safe level for inhalation of particulate matter so population exposure should be minimised. It is clear that there is no level of PM2.5 or PM10 exposure that can be considered safe and, indeed, cumulative exposures to particulate pollution has an additive harmful effect on health.

The appendix I, air quality and greenhouse gas assessment, details the air quality monitoring and modelling of PM10s and PM2.5s at various locations around the Dendrobium pit top, vent shaft, rail line and coal processing plant or CPP at Port Kembla. The modelling details that the ventilation shafts are responsible for about 48.6 per cent of particulate pollution followed by the CPP at 35.6. Table 6.1 details the estimated annual particular pollution and I note that the CPP at Port Kembla has over 4600 kilograms per annum of PM2.5 pollution and over 31,000 kilograms per annum of PM10 pollution and I also note that there is only one PM10 monitoring site in Warrawong and this is owned by BlueScope. There are no PM2.5 monitoring sites in this area adjacent to the CPP.

There is modelling to suggest that there will only be one day per year where PM10 exceedances occur in Warrawong and no days of predicted PM10 exceedances in Cringila. It's very telling that there is minimal monitoring of air quality in this area and, indeed, no modelling of dangerous PM2.5 levels in this area. It's also unclear what the effects of wind direction will be on the distribution of this particulate pollution. Cringila and Warrawong are suburbs whose communities are more ethnically diverse ..... mean in the 2016 census. We know that these experiences of marginality are correlated with poor overall health. These are also communities which have experienced historical and ongoing air, soil and water contamination due to their proximity to the Port Kembla steelworks and adjacent heavy industry.

The lack of existing monitoring sites in this area and the lack of a clearly defined plan to erect more is very telling of South32s regard for the health and wellbeing of the communities of Cringila, Warrawong and Port Kembla. In their response to submissions document, South32 state that they intend to install additional PM10 and PM2.5 real-time monitoring equipment to evaluate the emissions of the project against contemporary particular matter criteria. It is unclear where these monitors will be or what action should be taken should a breach occur. It is clear that the Dendrobium Extension will worsen the already poor air quality in Cringila, Warrawong and Port Kembla due to particulate pollution from the CPP. This will directly harm the health of these communities and it will deepen existing health inequities. The lack of air quality monitoring in these communities is a clear indication of the lack of concern that South32 has for the wellbeing of residents in this region.

Now, turning lastly to water impacts. Access to clean water is an essential environmental determinant of health. Clean and plentiful supplies of water to the five million people living in Sydney, Illawarra, Shoalhaven, Blue Mountains, Southern Highlands and Goulburn Regions are dependent on the health of the Greater Sydney water catchment. The proposed Dendrobium extension into areas 5 and 6 will longwall mine deeper into the protected metropolitan special areas

between the Avon and Cordeaux Reservoirs, indeed, coming close to 300 metres from the reservoirs themselves. The Dendrobium Mine already has the highest water losses of any mine operating within the catchment area and it's estimated that water losses into the mine will peak at 26 megalitres daily or the daily water consumption of about 130,000 people.

Indeed, the Independent Advisory Panel for Underground Mining raises concerns that the Dendrobium Mine will have perpetual water losses as the mine may not be able to be sealed at the end of its life. Water New South Wales also raises issues of heavy metal contamination into water courses and reservoirs metals like arsenic, which is known to be carcinogenic and neurotoxic. Furthermore, the subsidence-related damage to natural ecological filters such as upland swamps reduce the purity of drinking water in the catchment. Water security and intact health ecosystems will only become more and more important in a future shaped by climate change and global heating, a future in which we can expect hotter weather and more severe droughts.

It is risky and reckless to permit mining in the special areas of the drinking water catchment mining that has a clear track record of significant subsidence impacts and enormous resultant water losses. Clean water is a crucial public health asset and clean, secure water is dependent on a secure and healthy water catchment. The Dendrobium Mine Extension Project poses clear harms to the health of communities in the Illawarra, Greater Sydney and beyond. Doctors for the Environment Australia strongly opposes this project and we voice our concern for the thousands of people set to suffer the lifelong health impacts that South32 would deliver to this region. We have an opportunity before us to protect invaluable cultural heritage sites. By rejecting this proposal the IPC has an opportunity to improve the health and wellbeing of our communities for generations to come. Thanks.

MR O'CONNOR: Thank you, Rada. I will just see if there's any questions. No?

MR HANN: Not from me. No.

MR O'CONNOR: No, no questions. Thanks very much for your presentation. Thank you. Our next speaker, please.

MR BEASLEY: Next speaker is Dylan Green from Australian Youth Climate Coalition Wollongong Branch. Mr Green.

MR D. GREEN: Hello. Can you hear me?

MR BEASLEY: Yes.

MR GREEN: Great. Thank you. Thanks for letting us all speak now. My name is Dylan. I live in Wollongong and I've grown up here and, as you mentioned, I'm speaking on behalf of the Australian Youth Climate Coalition today. I'm a member of the local branch in Wollongong. We're a nationwide organisation of young

people who advocate for action on climate change with a focus on empowering those communities most affected by the climate crisis and looking after those communities that are going to be most affected by society's inevitable shift away from fossil fuel reliance and this is something I'd like to emphasise: that society is moving away from fossil fuels and it's moving away from coal most rapidly and, as I see it, the real question is how fast are we moving away from fossil fuels and how much greenhouse gas will we collectively emit before we can function in an entirely carbon neutral way and from my perspective that's what this IPC is primarily about.

It's about whether the potential benefits of the proposed expansion of Dendrobium Mine is worth the contribution to greenhouse gas build-up from scope 1, 2 and 3 emissions and, ultimately, I think it's not worth it and this is without the consideration of the mine's effect on Sydney and Wollongong's water supply that we've just heard about because once subsidence occurs the damage to the water catchment and swampland ecosystems is effectively permanent. This proposed expansion of Dendrobium Mine has a lifetime of 28 years. The market for coal might not last that long. The Great Barrier Reef might not last that long. The current rainfall patterns across the Sydney Region might not last that long. You commissioners might not last that long, but I think we can be quite confident that most people at least my age who are alive now will still be alive in 28 years. The children of today and of the future will be alive in 28 years and beyond and they'll have to deal with the consequences of decisions made today, decisions like whether Dendrobium Mine should be expanded.

In this context, people often talk about intergenerational inequity. Inequity that some generations will live in a health ecosystem and relatively safe climate while other generations will not. But I find the word "inequity" very opaque. It hides the cause. It hides the fact that this inequity has been created by generations who have known the consequence of fossil fuel expansion and continued to rely on these resources despite having alternatives. The problem of climate change has been fed by those who approve mines because they want some immediate gain and are willing to give a long-term loss to following generations. This project is worse than inequity. It's intergenerational theft. If you approve this mine expansion, you will be knowingly compromising future generations' water supply and environmental security.

It'll be taking from future generations to serve current purposes. Young people might not have a great deal of influence over current decisions, but when coal is finished, when the world has moved past fossil fuels and when it starts to become apparent what was lost and what was saved in our transition the one thing that today's young people will determine is how we remember the people that got us there: the politicians, the corporates, the commissioners and so I ask you finally, Commissioners, how will history remember you.

MR O'CONNOR: Thank you, Dylan. Any questions?

MR HANN: No.

MR O'CONNOR: No. Thanks very much for your presentation. Next speaker.

MR BEASLEY: Next speaker is Gregory Olsen from Wingecarribee Net Zero Emissions. Mr Olsen.

MR G. OLSEN: Thank you, Commissioners, for the for the opportunity to submit my objection to the Dendrobium Coal Mine Extension Project. I'm speaking from Gandangara land that has never been ceded and for the Wingecarribee Net Zero Emissions community group. There have been many objections to this project extension that have shown no confidence in the management of the water use and water pollution issues it poses. I support these concerns fully. I'll be looking at the project's greenhouse gas emissions related to the environmental and health issues. At the start of October 2020 China announced that it will reach greenhouse gas emissions by 2030 and net zero emissions soon – by 2060 or sooner.

This totally unexpected announcement was followed two weeks later by Japan with a commitment to net zero emissions by 2050. Two days later South Korea proclaimed the same goal. In 2018 China, Japan and South Korea accounted for more than 55 per cent of Australia's total coal exports. India is already decades ahead of its Paris climate targets. Russia's President Putin has ordered a 30 per cent cut on its 1990 emissions by 2030 and President elect Joe Biden will re-sign the US to the Paris Climate Agreement and announce zero net emissions by 2050. So where does this leave Australia's fossil fuel industry, I ask. Down a very deep coal pit without a ladder, might I suggest. Within the space of just a few weeks Australia's major destinations for coal exports have delivered the last rites to Australia's coal extraction industry.

The global market for coal is starting its inevitable collapse as the world transitions to net zero greenhouse gas emissions and yet we see the attempt to mine even more coal from the Dendrobium Coal Mine Expansion as if this project is immune to the climate crisis we are facing. Of course, the Dendrobium Coal Mine primarily extracts metallurgical coal. Australia exports the vast majority of its metallurgical coal and prices have fallen sharply in recent months reaching four-year lows as a result of the demand-side impacts of COVID-19. China, the largest importer of Australia's metallurgical coal, has a policy of limiting coal imports to support domestic producer prices and that is slowing down cargos.

In mid-September around 100 vessels were queued waiting to unload at major coal import terminals in Northern China. However, there's much more involved in the decision to allow this coal mine to proceed than merely money, profit and financial returns, the fact that the extraction and burning of coal as the amount of greenhouse gas emissions included in the atmosphere raising the planet's temperature and exacerbating global warming and climate is in itself a major reason why I oppose this application. There are emerging renewable alternatives to coking coal such as green steel made from renewable generated hydrogen. This is a responsible direction for future investment rather than continuing to mine and burn coal.

The legacy of anthropogenic climate change was clearly evident in Australia's recent Black Summer bushfires. The fires burnt an estimated 186,000 square kilometres of native forests and national parks, destroyed over 5900 buildings including 2779 homes and killed at least 34 people. Almost three billion koalas, kangaroos and other animals are estimated to have been killed or displaced and some endangered were believed to have been driven to extinction. Nearly 80 per cent Australians were affected either directly or indirectly by the Black Summer bushfires. At their peak air quality dropped to hazardous levels in all southern eastern states. Around 450 – sorry – 445 people died as a result of the smoke. Over 3000 people were admitted to hospital for respiratory problems and 1700 people presented for asthma.

The National Royal Commission into this cataclysmic event acknowledged that climate change was not only the major contributing factor but also will continue to increase the frequency and intensity of natural disasters fuelled by the extraction and ignition of coal, gas and oil. It's important to understand that there's a worldwide surge of investment into the renewable components of energy. In today's Guardian I read that global investors plan to almost double their spending renewable energy infrastructure over the next five years amid deepening concerns that the fossil fuel industry has no climate plans. This applies, of course, to the making of steel as well as electricity. For many years insurance companies have included the risk of climate change in their premiums and are now refusing to insure new fossil fuel extraction projects.

Banks won't lend for new coal mines. Why? Because they know that new coal is a terrible investment and a soon to be stranded asset and economically and environmentally fraught. Finally, the economic impact assessment of the Dendrobium Coal Mine reveals that it will emit 22.8 megatonnes of greenhouse gas emissions. This is equivalent into the atmosphere of 2.85 tonnes of CO2 for every resident of New South Wales. That's you and me. Is that something of which you would be proud to tell the children of today and the future? I think not. I want to re-emphasise that there's no place for new extraction in the 21st century and the Dendrobium Coal Mine Extension should not be approved because of its contribution to the damage of public health and ecosystems in New South Wales, Australia and planet Earth. For the sake of our future, I implore you, leave it in the ground. Thank you.

MR O'CONNOR: Thank you, Gregory. Any questions, John?

MR HANN: No.

MR O'CONNOR: None from Richard.

MR BEASLEY: No.

MR O'CONNOR: Don't have any questions. Thanks very much for your time. Our – yes – final speaker, please.

MR BEASLEY: It's Tony Wood from The Grattan Institute. Mr Wood.

MR T. WOOD: Yes. Good afternoon and thank you. Now, I'm assuming that I can share my screen with you.

MR O'CONNOR: Yes. That's come up.

MR WOOD: It takes a minute to properly load I – here we are. Right. Okay.

MR O'CONNOR: Yes.

MR WOOD: So, look, what I'd like to do in the next 10 minutes or so is basically give you an update on a piece of work that Grattan published a couple of months ago now back in May in which we talked about the potential role for a green steel manufacturing country in Australia and some of the thinking behind that and where it leads us in terms of our conclusions.

MR O'CONNOR: I can read it.

MR WOOD: The summary of this is that, in our view, based upon a very specific and targeted piece of economic analysis is that green steel or steel manufactured from low emission hydrogen producing therefore very low levels of emissions is a major opportunity for Australia in a low carbon world. This is important for the east coast of Australia, particularly in areas like the Illawarra which employs about four and a half thousand people in what we'd call carbon-intensive activities. The – Australia's in a very good position to take advantage of this opportunity because we do have a comparative advantage and will have one in a low carbon world. Steel manufacturing is the best opportunity of the difficulty to decarbonise sectors of which there are many.

There are different pathways to how this is done. If we were to adopt this opportunity, it would create a significant revenue stream for exports that could replace our existing fossil fuel exports and, finally, I think whilst it's not unique in Australia the Illawarra is well-placed to take advantage of this opportunity. So taking you very briefly – quickly through some of the material – and I'm very happy to share any of this with the Commission as you may require – this chart looks at the – where the carbon-intensive jobs in Australia currently exist and they exist in a relatively small number of places, a very large number in Central Queensland, a somewhat smaller number in the Hunter Region of New South Wales and a significant to smaller number in the Illawarra Region of New South Wales and so forth.

So this is a – for those areas it's an important issue. It's also a difficult – it's an important political issue because some of these areas were areas where there was a swing politically at the last election partly due to concerns around the future of jobs in these regions.

MR O'CONNOR: Tony, can you click through your slides. I think we're still on the very first slide.

MR WOOD: I'm sorry. I'm clicking through them but you're obviously not seeing that.

MR O'CONNOR: No. Maybe if you go to a full screen, that might help.

MR WOOD: Yes, it's – mine's showing up as full screen. I don't know. All right. Now, I've got – can you see a summary slide now?

MR O'CONNOR: No.

MR BEASLEY: No. We're still on the front page.

MR OLSEN: Well, I – oh dear. I've got no idea what's causing ..... slide, show, display settings.

MR O'CONNOR: Maybe close it down and start it again might - - -

MR WOOD: Yes. Let me do that. Okay. Let's do that.

MR O'CONNOR: We'll give you some extra time. That's fine.

MR WOOD: Okay. Look, I can talk to this and I can send you the – the material is – but some of the charts may or may not be interesting to you. So, look, let me pick up where I left off and that is that there are – in the Illawarra area there are about four and a half thousand carbon-intensive jobs basically associated with coal mining but not only and this is both an important economic question and also an important political question for both the Federal and State Government. Secondly, the other factor that's important is that Australia in a low carbon world will have a – potentially a really interesting competitive advantage and that arises because whilst we are not unique in the world we do have an unusual combination of solar and wind resources that could be capitalised on which we could capitalise and, secondly, because of our relatively small population in this country, we're uniquely placed to export that in some form.

Now, whether we can add value to that energy or whether we simply export it as energy either as hydrogen or as electricity remains to be seen, but there's not many in the countries have that sort of opportunity. When you look at the various areas of our economy that need to decarbonise, if we accept that something towards net near zero becomes important in the future, then you find that beyond electricity which has attracted a lot of attention because it's about a third of our greenhouse gas emissions and to which there are reasonably straightforward replacements, although they're by no means trivial in terms of renewable energy, the other areas more difficult. So things like steel, cement, alumina, aviation fuel and ammonia are quite challenging.

When you look at those – each of those sectors, however, firstly, by some fair proportion steel manufacturing in the world contributes about seven per cent of global emissions. Australia has a substantial share of the world's iron or traded iron ore market and a substantial share of the world's traded metallurgical coal market. We have a very small percentage of the world's steel market because what we do is we export the iron ore and we export the metallurgical coal to other parts of the world and they turn it into steel. The current size of these markets is very substantial and I'll come back to why that becomes very interesting for Australia. But steel in those difficult to decarbonise areas not only is as difficult to decarbonise, but it's also a very big opportunity if we could do something about that.

The other thing that's interest about the steel process is that to – the way you manufacture iron from iron ore, it uses metallurgical coal to basically extract the oxygen from the iron oxide. If you replace that with a different reductant or hydrogen in this case, instead of producing carbon dioxide which produces those seven per cent of world's greenhouse gas emissions, you produce hydrogen oxide otherwise known as water which doesn't have the same problem and so, interestingly, not only – you're not using the metallurgical – you're not reusing the hydrogen as a source of energy. You're using the using the hydrogen as an alternative to metallurgical coal in a chemical process and in that case what it means is the premium that would need to be paid for manufacturing green steel relative to let's loosely call it black steel is much smaller than the premium you need to pay for other commodities where you're just using the hydrogen as a source of energy or a source of electricity and that fundamentally changes the economics and therefore the economic attractiveness of this opportunity.

Now, the process itself is well-understood. There are other countries in the world that already make green steel or greener steel from hydrogen. Most of them use it – they start with natural gas and produce the hydrogen from natural gas and then produce the steel in the process I'm talking about. So we know how to do it using the hydrogen. What is the relatively new development or it's been well-known for many, many years is the use of electrolysis to basically take renewable energy and electrolysed water to produce the hydrogen in the first place. It's still relatively expensive, but it's possible. So the alternative that we're talking about is instead of Australia exporting iron ore from the Pilbara and metallurgical coal from the east coast of Australia to parts of Asia particularly, we'll be – we could export the iron ore from the Pilbara and export the hydrogen – renewable hydrogen from places like Newcastle or Port Kembla or Gladstone.

But hydrogen is very difficult to transport. To transport as a liquid you need to liquefy it to very, very low temperatures and so it actually makes far more economic sense to combine the hydrogen – renewable hydrogen with the – Australia's iron ore in Australia to produce the iron from the iron ore and then either turn that iron into steel or export the what's called pig iron. It's also the fact that when you look at the economics of doing this some might say, well, why don't you just do this in the Pilbara where the iron ore is. Well, again, the economics tend to favour places like the east coast and therefore places like the Illawarra Region because the cost of

labour and the cost associated with doing this in the Pilbara almost certainly would be much higher than actually transporting the iron ore to the east coast of Australia are basically and that's what we do often with – in other areas of our economy as well.

We transport bauxite to different places to turn it into alumina and to aluminium. So for us what that means is there's a really interesting economic pathway which depends fundamentally on economics being attractive. It clearly depends upon a range of other things. Someone has to be prepared to seriously want green steel and someone needs to be prepared to either pay a premium for that green steel or to impose some sort of emissions constraint on black steel. Now, the – this is emerging. We're already seeing companies like the one that owns Liberty Steel or GPG in Whyalla. A gentleman called Sanjeev Gupta who owns that company, he's very much talking about this opportunity. We do know that the green shoots that are necessary to support a transition to green steel area already emerging, although it's early days yet.

So what we're talking about here is not an opportunity for tomorrow, but it is an unusual opportunity because not only could it create substantial employment opportunities on the east coast of Australia, it could also replace a significant export – source of export revenue for this country. Not immediately, not overnight but over time and so in summary the economics favour this – doing it in Australia relative to exporting it to places like Japan and Korea. It won't always be the case. China's more difficult because the Chinese could equally do this, but places like Korea and Japan don't have access to the renewable energy we do and so that's another reason why this is interesting. In terms of scale, the total number of jobs on the east coast of Australia that are involved in this industry is the best part of 30,000 today in the carbon-intensive jobs.

We could replace that with green steel manufacturing. The export opportunity would represent something like 40-odd billion – sorry – 60 – more than $60 billion worth of export revenue on today's iron prices and steels prices and that represents a number which is in the same order of magnitude as our exports of things like iron ore and LNG. It would create jobs of the same scale. This could be lost over the next several decades as and if the world turns away from our coal and it could create those jobs in places where the jobs will be needed. So if those jobs are disappearing in the coal industry, this is almost like a valuable hedge in that we could progress with this opportunity as fast or as slow as the world moves away from our coal exports.

So what we've been arguing and we presented in this report and it's become well-covered in the media and also in the industry in this country is that there is an opportunity here. It's not a walk in the park. To be able to capture this opportunity will require actions by government, state, federal and even local and it will require action by industry, but there's a lot of interest in this area. There's no doubt that the global iron ore industry, the global steel industry, not just Australian companies but global steel companies are looking at this opportunity. This opportunity could be one for us and we don't – what we think is important is we don't look back in 10

years or 15 or 20 years' time and say why didn't we capture this opportunity because it also is doing something that Australia has often very much struggled to do and that is to add value to our natural resources.

So in terms of, finally, why would the Illawarra make sense, now, there are – as with Australia not being unique in the world, there are a number of places in this country where this could be done and on behalf of the national hydrogen strategy, one of the major engineering companies did an assessment of the sort of things you would need to be able to do this successfully. Many of those things exist in the Illawarra. So, firstly, the negative side of it: the Illawarra's already exposed to the potential loss of carbon-intensive jobs and industry. Secondly, we already have an incumbent steel manufacturing industry through BlueScope. Thirdly, we have a reasonably significant workforce with skills that are not completely but significantly transferable from one sector to another, that is, from the carbon-intensive jobs to the steel jobs.

We do have a port and we do have other infrastructure including relatively close access to the transmissions grid which will be important. The renewable energy that would be produced – used to produce the hydrogen is within a reasonable distance. It almost certainly would be on the western side of the divide and, finally, we have access to, you know, significant research capabilities in the university. So for those reasons we think this is an area that could be of great interest to the Illawarra Region. It offers a medium to longer term – long-term future for both the jobs and the region economically, but it will require significant action to achieve that. Thank you very much.

MR O'CONNOR: Thank you, Tony. Just have a question from Richard.

MR BEASLEY: Tony, can I – I think you've probably covered this in your presentation but can I just ask you your views on a couple of - - -

MR WOOD: Sure.

MR BEASLEY: - - - statements I'll just read from your – from the department's assessment report. I'll just read them out. You don't need to have it in front of you.

MR WOOD: Okay.

MR BEASLEY: But in relation to the issue that you've just presented onto the commissioners, first of all, the department says there's currently no economically viable alternative to the use of metallurgical coal as a reducing agent in a blast furnace at a commercial scale. That's – is that right at the moment but may not be at some stage in the near future?

MR WOOD: That statement's been worded very carefully.

MR BEASLEY: Yes.

MR WOOD: Firstly, let me repeat one thing I did say and that is that there are commercially viable processes - - -

MR BEASLEY: Yes.

MR WOOD: - - - that produce steel using the reductant process I have described – it's not a blast furnace – in Europe using natural gas.

MR BEASLEY: Yes.

MR WOOD: Those plants are being designed now – and the Swedish Government recently announced the project – in a way that they can simply – the natural gas can be replaced with renewable hydrogen. The challenge is to bring down the cost of hydrogen. That number that has been quoted by the Federal Government in its technology investment roadmap which has a target of $2 a kilogram of hydrogen would deliver the sort of outcome we're talking about. Now, at the moment that price is not there because the renewable energy is not at that level nor are the costs of the electrolysers, but most of the assessment including that done by CSIRO and committed to by the chief scientist and the Australia Government - - -

MR BEASLEY: Yes.

MR WOOD: - - - is to achieve that sort of target. So, yes, it's not there today but it's eminently possible if we get it right.

MR BEASLEY: All right. Can I – I'll just ask for your views on this other statement just a little bit further on in the assessment report which, again, touches on something you've just presented onto the commissioners. The report notes that over – it says over the last six months, it might be longer, that there's been increasing public discussion about the possibility of Australia developing a green steel industry and they then say the industry would be based on using hydrogen produced by electrolysis of water using low cost renewable wind or solar to reduce iron ore to steel. They say any such industry is more likely to develop close to large iron ore mines, for example, the Pilbara, rather than close to metallurgical coal mines which would not be required for the process.

MR WOOD: Look, I've sort of generally covered that but I'll come back to it - - -

MR BEASLEY: Yes.

MR WOOD: - - - specifically. Look, it's possible to do it in the Pilbara. On the basis of the economics for the same reason that we transport bauxite around the country the economics would suggest that it would be lowest cost to transport the iron ore to the east coast of Australia where the workers are than transport the workers to where the iron ore is - - -

MR BEASLEY: All right.

MR WOOD: - - - and the numbers would have to be – and I certainly in the material I was hoping to present but I can certainly share with you - - -

MR BEASLEY: Yes.

MR WOOD: - - - that presentation and the full report if you're interested, but the economics suggest the numbers would have to be substantially and more than would seem reasonable for that to change.

MR BEASLEY: All right. Thank you.

MR O'CONNOR: John, any questions?

MR HANN: No.

MR O'CONNOR: Thank you very much for your presentation. You will provide a copy to us, I take it, Tony, so - - -

MR WOOD: I will indeed. May I – I don't know what happened, but I will do that. Yes.

MR O'CONNOR: That's great. Thank you very much.

MR WOOD: Okay. Thank you.

MR O'CONNOR: Good afternoon. That brings us to the end of day 1 of this public hearing. Thank you to everyone who has presented today and for your very thoughtful presentations. A transcript of today's proceedings will be made available on the IPC website in the next few days. Just a reminder, that the Commission will accept written submissions on the Dendrobium Mine Extension Project up until 5 pm on Tuesday, 15 December 2020. It's particularly helpful to us if you can comment in your submissions on the assessment report prepared by the department for this project and the associated proposed draft conditions. You can submit your comments using the Have your say portal on our website or by email or by post. We'll be back tomorrow morning at 10 am for day 2 of these proceedings. Thank you for your company today. From all of us at the Commission, enjoy your evening. Goodbye.

MATTER ADJOURNED at 5.00 pm UNTIL THE NEXT DAY