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TRANSCRIPT OF PROCEEDINGS

TRANSCRIPT IN CONFIDENCE

O/N H-1654659

INDEPENDENT PLANNING COMMISSION

VIRTUAL SITE INSPECTION

RE: NARRABRI UNDERGROUND MINE STAGE 3 EXTENSION PROJECT

PANEL:	**PROF MARY O'KANE AC** **PROF CHRIS FELL AO** **PROF SNOW BARLOW**
ASSISTING PANEL:	**STEPHEN BARRY** **BRAD JAMES** **PHOEBE JARVIS** **RICHARD BEASLEY SC**
APPLICANT:	**PAUL FLYNN** **MARK STEVENS** **DAVID ELLWOOD** **TOM MacKILLOP** **TONY DWYER** **CLIVE BERRY** **MARK VILE**
ALSO PRESENT:	**LIAM DONALDSON** **TOM MULLANEY**
DATE:	**1.09 PM, WEDNESDAY, 2 FEBRUARY 2022**

THIS PROCEEDING WAS CONDUCTED BY VIDEO CONFERENCE

PROF O'KANE: Good afternoon and welcome to all. Before we begin the actual site inspection – the virtual site inspection, I would like to acknowledge the traditional custodians of the land on which we are variously meeting today, as well and particularly as the traditional custodians of the land on which the project is located of the Gamilaroi people and I would like to pay my respects to their elders past, present and emerging.

Welcome to the virtual site inspection for Narrabri Underground Mine Stage 3 Extension Project SSD-10269 which is currently before the Commission for determination. Narrabri Coal Operations Pty Ltd, the applicant, is the operator of the Narrabri mine, an existing underground coal mine located approximately 25 kilometres southeast of Narrabri and approximately 60 kilometres northwest of Gunnedah. The mine is located within the Narrabri shire local government area and in the northwest slopes and plains region of New South Wales.

The applicant is seeking development consent to continue longwall mining in the major southern extension area until 2044. The project also involves the continued use of existing underground and surface infrastructure including the use of the existing coal handling and preparation plant at its approved 11 million tonnes per annum capacity. At this stage the Commission is not planning any further site inspections for this application. Initially, the Commission's use of virtual technology to conduct site inspections was prompted by safety concerns during the COVID pandemic which we still note is on.

Since then Commission panels have found that virtual site inspections enable the use of sophisticated visual and spatial technologies to show us aspects of sites that would not be visible on a conventional in-person site inspection. Virtual site inspections also support the Commission's transparency. All material provided during the virtual site inspection is made publicly available on the Commission's website for interested stakeholders to review and make submissions afterwards.

My name is Mary O'Kane. I'm the chair of the Independent Planning Commission and of this panel. Joining me are my fellow Commissioners, Professors Snow Barlow and Chris Fell. We form the Commission panel appointed for this application. Also joining us is senior counsel assisting the Commission for this application, Richard Beasley SC, and we are being assisted today by Brad James, Phoebe Jarvis and Steve Barry from the office of the Independent Planning Commission. In addition to the applicant, I also welcome our community observers, Mr Liam Donaldson, representing the East Pilliga Landholders Group, and Mr Tom Mullaney from the Leard Forest Research Node.

Community observers have been an important part of maintaining the Commission's transparency and the conduct of its in-person site inspections and you will be

fulfilling the same function today. I remind all participants, the applicant included, that site inspections, whether in person or virtual, are not a forum for making submissions to the panel. Of course anything that is observed or heard today may be the subject of submissions made at the public hearing or in writing at the appropriate time.

The purpose of this site inspection is for the Commission to have the opportunity to view the site, including its location, layout and its physical attributes. I reiterate this virtual site inspection is not an opportunity to make comments or submissions to the panel. Commissioners may ask questions of representatives of the applicant to clarify issues whenever it is considered appropriate. If you are asked a question and are not in a position to answer, please feel free to take the question on notice and provide any additional information in writing which we will then put up on our website. In the interests of openness and transparency, and to ensure the full capture of information, today's virtual site inspection is being recorded and the video of the site inspection and a complete transcript will be provided and made available on the Commission's website along with the applicant's presentation material.

I request that all representatives of the applicant here today introduce themselves before speaking for the first time and for all attendees to ensure they do not speak over the top of each other to ensure accuracy of the transcript. We will now begin and I will invite the applicant to begin its presentation.

MR FLYNN: Thank you, Professor O'Kane, and Professors Barlow and Fell. My name is Paul Flynn. I'm the CEO and managing director of Whitehaven Coal Ltd. It is my great pleasure to be here today. And can I also add my – pay my respects to elders past, present and emerging of the various communities in which our business operates. Of course the Gadigal Nation of the Eora Nation where I sit today, in our office, but of course the Gamilaroi People on whose land the majority of our business sit.

So thank you very much for the opportunity. We're very pleased the IPC continues to embrace technology to allow us to bring these virtual site tours to the Commission. As you've noted there, chair, this is an existing operation which we process through existing infrastructure and is essentially a life extension of our project. I would like to introduce you, if I could, briefly, our team members for you so that – and I will ask them just to give a gesture so that the individual parties on the screen will understand who is who.

Can I first introduce Mark Stevens, our EGM of project delivery, who you will see on site. David Ellwood who is our project director of our stage 3 extension project. I've also got Tom MacKillop there, principal of resource strategies who has just raised his hand so you can see there. In addition to those people who will be participating in the presentation today, we have a number of other members of our team sitting in various capacities, also observing during the course of this process. I've got Tony Dwyer sitting there in our Gunnedah office. Mark Vile is also there. Just – Mark, I presume you're at Narrabri. And I think we've also got Clive Berry

there as senior environmental manager at Resource Strategies as well. Thank you, Clive.

We plan to use our time expeditiously today. Outside of these opening remarks, we do have a few slides we would like to present to the panel today. There is a broader overview of the project itself and then of course the most important piece of that puzzle which is the virtual site tour which David Ellwood will narrate for you. We're going to try and make sure that we leave plenty of time for questions because we know that's an important part of this process. Thank you very much again for the time and we look forward to providing the most informative virtual site tour we can for you. With that, I will hand over to David Ellwood.

PROF O'KANE: Thank you very much, Mr Flynn, and looking forward to that. I just should have mentioned that I will invite my two colleagues on the Commission to just – if you're comfortable, to just interrupt whatever we have rather than wait to wave. I think just talk in if that's okay with everybody.

MR FLYNN: Chair, I think that makes sense. There is a bit of information involved in here so if there's – to the extent that - - -

PROF O'KANE: We can ask questions of ..... too.

MR FLYNN: If there's questions on the fly, it may be best to deal with them on the way rather than accumulating them till the end.

PROF O'KANE: Let's see how we go. Yes.

MR FLYNN: Right. Thank you very much. I will hand over to you, David.

MR ELLWOOD: Yes. Thanks for that, Paul. Good afternoon everyone. My name is David Ellwood, as Paul has just said. I will be running through the presentation that we've got this afternoon as well as two site videos. So I will just start by sharing my screen and we will go through. There's a couple of slide presentation, just to essentially run through the project and then we will jump over into the site tour. So Paul has already completed the introductions for us, an agenda with a very brief site overview. It's only a few slides to run through and which will go through the location of the project and the stage 3 project itself. And then we will just move through to the virtual site, of which we have two videos to go through.

So project overview, so the Narrabri Stage 3 project is an area directly south of the existing Narrabri mine which is shown here. Stage 3 project is shown by these two areas that are red dotted lines. It's directly south of the existing mine. The area is wholly within our existing exploration licence EL 6243 which is the green mine shown here. There's a bit of an overlap there. The project itself, the existing operation is approximately 25 kilometres south-east of the township of Narrabri, which is at the top of the screen here, and is approximately 60 kilometres northwest of the township of Gunnedah. The project is approximately equidistant between the

township of Boggabri and Narrabri and it is accessed via the Kamilaroi Highway out the front of the mine.

Bit of an overview on the actual stage 3 project itself. So as you've already said, the project is a continuation of underground ..... mining within the Hoskissons seam. What we can see here is the existing operation is within ML 1609 which is the solid – ML 1609 is this solid outline here and that houses the existing operation. The northern panels, which are shown in white, and the orange panels which are shown in – southern panels, which are shown in orange, are approved under our existing project approval. The project is to extend these southern longwall panels to the south into MLA-1 and MI-2 area, south of the existing mine. The yellow longwall panels are the actual extension themselves and then the orange ones are just the existing – existing mine that's extending down to the south.

The operation will extend the life of the mine out to 2044. We're continuing to maintain the currently approved run of mine capacity of 11 million tonnes and the extension will involve some augmentation and extension of our existing gas drainage infrastructure and ventilation infrastructure. The already existing pit top area, which is shown over here, will essentially stay the same as what is already approved. We've got another slide coming up which shows the pit top area in a bit more detail. I will continue to use that over the life of the extension.

For those who don't have much to do with underground mining, each one of these panels here is known as a longwall block and the road ..... underground either side of them are known as gate roads. Each one of these gate roads is approximately 5.4 metres wide by 3.7 metres high and are used to access the whole mine. So this area down here is known as the Mains roadway and that's where the operation is accessed from the surface here. Existing mine is currently operating in the north of ..... 110. We've only just commenced in that area. We've recently finished our relocation from Longwall 9, here, up to Longwall 10.

We do have a video coming up that explains the mine layout a bit further and so hopefully that should answer any questions but if there are any questions throughout that video, please jump in and let me know. The extension will also use – as I said, will also augment the existing ventilation infrastructure which we already have constructed at the mine here. We will have to construct four new ventilation shafts, two here and two here, known as our ventilation complexes and we will see those in the videos today.

Bit more of a project overview, this is an aerial photo of our existing pit top area. So what we can see here is our rail loop which is used to access Werris Creek/Mungindi rail line which is directly in front of the mine. Inside that rail loop we have a series of water dams used for water processing and storage for the mine. You will see more in the video but the "A" series dams at the top here, they mine dirty water so water that has either come out of the pit or has come in contact with coal in the stockpile area. The "B" and "C" series dams ..... storage, and they're all fully lined, and then

our "D" series dam is our fresh water that we've imported to site from either the already constructed bore or the Namoi River.

PROF O'KANE: Can I interrupt there. Could I - - -

MR ELLWOOD: Yes.

PROF O'KANE: - - - ask a question. We were fascinated by the beautiful colours and wondered why the different greens.

MR ELLWOOD: To be honest, I'm not actually sure. I think it has got something to do with the pH levels of the different water but I can come back to you with that if you would like because I couldn't give you an answer right now, sorry.

PROF O'KANE: Thank you.

MR ELLWOOD: The other things we can see here is our ROM stockpile. ROM stands for run of mine. So that's the coarse coal that comes directly out of a pit and is stockpiled in this area prior to being processed through our CHPP. This is our CHPP area in here. It's made up of two different areas, the actual plant itself and then a secondary bypass crusher on this side. We will go through that in a little bit more detail when the actual site video comes through as well.

To the south of that we have our product stockpile which is essentially the processed or washed coal which is loaded onto the train load out here to be loaded onto the rail line which surrounds the dams. Few other things, our box cut is shown here. That's how we access the underground by three drift roadways. Again, we've got some more video of that. Our admin area which consists of our bath house, offices, stores and maintenance facilities. And over the back here, we have our reject emplacement area where our coarse rejects are stored.

This other picture is just the existing intersection out the front of the mine on the Kamilaroi Highway. So this is the Kamilaroi Highway running approximately north-south between Narrabri to the north and Boggabri to the south. And this is the main mine access road where we cross over the railway line. This area here is the ..... where we come into our rail loop. So over to the actual site ..... portion, what we have is two videos to show. So the first one is an investor presentation that we developed late in 2020. It gives a good overview of what the actual mine is as well as how the mine operates and then we will swap over to actual site footage via drone and video that I've taken. So unless anyone has got any questions, we will just go on with that. I will just stop sharing and put this next one up.

VIDEO SHOWN

MR ELLWOOD: Right. So that was just our introduction video that we used because I think it explains the operation quite well. Before we go on to the next site video with drone footage and on the ground footage, does anyone have any questions with regard to that video?

PROF O'KANE: I don't think so, thanks.

MR ELLWOOD: No worries. I will just swap over videos.

PROF O'KANE: Unless you have anything, Snow?

PROF BARLOW: No, I don't have any questions, thanks, Mary.

MR ELLWOOD: Right. So while we're presenting this video, we're just going to turn off our main video just to try and get the stream a little bit better and if anyone else can, it would be appreciated if they could turn off their video as well. It just allows the actual video to stream a little bit better through Zoom. Right. So what we're going to do now, it's just going to be a series of videos throughout the existing mine as well as the extension and I will be talking through each area that we come across. So there will be a lot of pausing. If any drop back or anything like that, please let me know and please jump in if you have any questions.

VIDEO SHOWN

MR ELLWOOD: What we're going to look at first is the mine entrance and so this is a drone view from the entrance to the mine, looking approximately west, through to the mine's pit top area. What you can see directly in front of us is the main access road. That's what this is here. And then as we zoom out we're also going to be able to see the pit top area and stockpiles shown at the back as well as a series of sediment dams used on the side to capture any runoff and remove sediment and the main water ponds are shown over here.

So I'm just going to pause it here. Directly behind us is the mine main intersection with the highway. We've got a video of that next to show how that looks. You can see the actual rail loop is this here and it goes all the way around and then comes out the mine, the ROM stockpile, CHPP and product stockpiles and then the mine admin area here. This is the main intersection to the mine out the front. This is the main rail line that also passes in front of the mine. That is the spur there – it's not matching up, sorry, on ..... that is a spur there on the – that peels off to our rail loop. That land across the road is privately owned. That's a council quarry that you can see there.

What we're going to do now is just fly down and have a quick look up and down the highway before we move further into the project. While that's happening, the mine currently employs around 520 full-time equivalent personnel. That's contractors and

employees. When the mine was originally constructed, there was a lower number of employees envisaged and so this intersection, which was constructed in 2008, was originally built for that lower number. As the operations continued, the amount of employees required to run the operations also increased therefore, as part of this stage 3 extension, we have committed to upgrading this front intersection to accommodate the current amount of employees that the mine is using.

Now, that's looking directly north, up the highway, and then what we're going to do here is spin around and just have a look directly south. Hopefully the video should smooth out after this one's missed section is finished. And that's looking down the highway towards Boggabri. Now, we've got some video of the pit top area. Now, there's a fair few different shots here, different drone footages and on the ground so we will work through that. What we can see here is, on the left-hand side – sorry, right-hand side is our ROM stockpile, then we have our CHPP and bypass crusher. Now, I will pause this in a sec just to talk through a few of these things that we can see.

So what we can see here is the ROM stockpile where run of mine coal is stored. The run of mine coal comes out from the underground conveyor system, which you can see in the background here, comes up out of the underground and is loaded onto the gantry which is then used – dozers are then used to push the coal out. When we want to reclaim this coal, dozer push is also utilised. We have two areas we can reclaim the coal through, the first being what's known as a bypass crusher. That's when this coal is pushed into the loader for the bypass crusher. The coal is then simply crushed and sized before being deposited on the product stockpile over here.

The other way we process coal on site is through our CHPP which is our coal handling and preparation plant. Coal is loaded into the rotary breaker which sizes the coal before it goes into the CHPP. Any rock that can't be sized is automatically expelled to our rejects, which are shown over here, and that's the temporary holding area for your rejects prior to being emplaced in our reject emplacement area you can see out the back. The CHPP separates coal and – thermal coal and PCI. The thermal coal comes up and is loaded out on the overall skyline gantry, which you can see all this coal here, and PCI coal comes up and is loaded out and stockpiled here.

Underneath this stockpile, there's a series of valves under here, here and in here. Those valves allow coal – when opened – to fall onto the conveyor belt shown just down here. We've got a better view of this coming up. And then that coal is then loaded on the train loadout. So we've got some more video of the coal actually being loaded out coming up. You can also see, in the background, where our box cut is. That's between the stockpiles and the reject emplacement area. Now what we're doing is moving back a bit. You can see the rail loop on the right-hand side of the video, just coming into view, as well as one of our water ponds that captures water runoff from the stockpile area.

Coming into view on the left-hand side is our main admin area. You can see the carpark for the workforce. I will pause it just coming up. And what we can see here

is our main administration area, that's these two buildings; the bath house where the guys can have their showers. We've got our stores and workshop over here and we've got our lowdown areas for our stores in these two areas here. In the background, that's the box cut, as I've already pointed out, and the reject emplacement area out the back.

Here we see a bulldozer working on the product stockpile so a train is actually being – I'm just going to pause here because it doesn't – it seems to work well when I can point when it's paused. This is the train loadout facility. What's happening here is there's a valve that's open directly underneath this coal. That coal is falling onto a conveyor that's under the ground and then is coming in, up into this batching bin here and then that bin is unloading onto the train which you can just see the top of there.

As part of the extension project we're not planning to make any changes to the ROM or product stockpiles or the CHPP or really any of the pit top – already approved pit top infrastructure. What you can see there is a bypass crusher crushing coal and loading it onto the product stockpile while that coal is being loaded onto the train. You can now see the train over off in the distance up here. That has already been loaded. What we're doing now is just panning around, getting a bit of a 360 degree look at the operation. That's looking back at our existing admin area, and then down south and then we're looking roughly east there with our dams.

So I'm just going to pause it there and just talk a little bit more about our existing water storage. These are the "A" series dams. That's water that has been either involved in the mining process, pumped out from underground or has touched the coal or stockpiles. Over here is our reverse osmosis plant where we process our dirty water for re-use on site. As we go around the video I will point out a few more dams.

PROF BARLOW: Could I ask a question - - -

MR ELLWOOD: Yes.

PROF BARLOW: - - - while we're here. You mentioned the differing colours in those dams were perhaps due to pH. What is the pH of the brine in those brine dams?

MR ELLWOOD: That's one I don't know off the top of my head, sorry. We will make sure to come back to you with that one.

PROF BARLOW: Okay. Thank you.

PROF O'KANE: I have a quick question about water.

MR ELLWOOD: Yes.

PROF O'KANE: How did you handle the recent heavy rains? I mean, is it – does that do anything to the water processes or is it all just beneficial?

MR ELLWOOD: No. So most of our dams did fill up quite considerably so we did have to release water for the first time from our sediment dams on the side of the – on the side that we showed previously. Those releases were all in accordance with our approvals. These dams in here certainly did fill up but they were – all the water was successfully contained within the dams themselves. The reverse osmosis plant has been operating for a fair few years now so we have the ability to be able to process and re-use water on site.

PROF O'KANE: Thank you.

PROF BARLOW: Are you there?

MR ELLWOOD: Yes.

PROF BARLOW: And then still requested in that is – you mentioned the receival dams, that you had to release some from the fresh water dams. What about the brine? Was there enough capacity to deal with the rainfall there?

MR ELLWOOD: Yes, that's correct. We were able to – we didn't have to do anything with the brine. It did fill up with the amount of rain we had but we didn't have to do any releases or anything like that. It was wholly captured within our brine ponds.

PROF BARLOW: Yes. What would a release look like if you had to release from the brine pond?

MR ELLWOOD: That's probably something I would have to pass over to our on site management team. I wouldn't be able to tell you here because I'm not aware of us planning to release any brine anytime. We are – which I will show in this video in a second, we are planning to construct some additional brine storage on site. That's already approved as part of the existing operation. And that brine storage will actually be constructed over here, over the other side of this ephemeral creek. So these dams here are sediment dams. The sediment dams is where we had the release of water in the last major rain event. And then these dams you can see on the side, which are fully lined, are our brine storage dams.

PROF BARLOW: Okay. What is that creek beside the sediment dams?

MR ELLWOOD: Is that – it's not called Pine Creek. I think it's just a tributary to the – I don't know if it has got a specific name. Yes. Sorry, we will have to come back to you with that one as well.

PROF BARLOW: Thank you.

MR ELLWOOD: It's just a creek immediately north of our existing pit top area.

PROF BARLOW: Yes.

MR ELLWOOD: It does feed into Kurrajong Creek just over the other side of the highway.

PROF BARLOW: Yes.

MR ELLWOOD: So what we can see here, the two ponds we can see here, we're doing a loop around the rail loop that is already constructed. This is one of the brine ponds shown here that's fully lined. This dam down here is used for our imported water. So that's water that's imported to site from our existing bore and our existing river pump. We have a pipeline, that's already constructed, from that bore and river pump to the mine site.

Now we're looking approximately south of the operation, down the Kamilaroi Highway. The Kamilaroi Highway is shown off on the side over here. Again, you can see the two lined ponds for the brine storage and that smaller pond that's shown here, that's the water that comes out of our reverse osmosis plant. And then directly in front of us, over the other side of the rail loop, is our sediment ponds – sediment dams. In front of us here is the mine's ..... and now we're looking back towards the ..... area. This is where we get a better view of our train load out facilities. You can see here, this is the batching bin loading onto a train.

Now, this is a ground level view of our CHPP. When looking from the edge of the box cut back to the east, and what we can see here is this is the main conveyor belt that comes out from the underground, goes up and loads onto the ROM stockpile in the background. This conveyor here loads out any rejects that separated out as part of the washing process for the coal and then this main building here is our CHPP.

PROF FELL: While you're in the operating area, could you show us where the flares that are mentioned in the amendment are likely to be placed?

MR ELLWOOD: Yes. So the flares will be – they're actually proposed to be transportable units that would be installed out next to the gas drainage infrastructure. We can talk about that a little bit more when we get to the gas drainage infrastructure. We're going to show that a little bit later on.

PROF FELL: Thank you.

MR ELLWOOD: What we can see here is the thermal coal conveyor that comes out of the CHPP and, bit hard to see, but directly behind it is the PCI conveyor also coming out of the CHPP.

PROF BARLOW: A question about the rejects pile.

MR ELLWOOD: Yes.

PROF BARLOW: Well, in the stage 3 extension, will rejects still go to that pile and what is the plans for that rehabilitation post mining?

MR ELLWOOD: Yes. So the rejects from the stage 3 area will go into that existing REA. So that REA, when it was designed for the existing mine, was over-designed, so all the rejects from the stage 3 area will be able to be fully contained within the existing design size of the REA. We are actually going through and doing a re-design as part of the stage 3 project as requested by the resource regulator to – what's it called, Tom - - -

UNIDENTIFIED MALE: .....

MR ELLWOOD: .....

UNIDENTIFIED MALE: .....

MR ELLWOOD: ..... design, so that work has been undertaken with the resources regulator and that's just simply from their requests.

PROF O'KANE: Yes. Could you explain what that means, a bit.

MR ELLWOOD: I'm probably not the best person to explain it but what I will do is, we will come back to you with that one, just to allow us to explain in a bit more detail what the design is looking like and how it's progressing.

PROF O'KANE: And what's the reject pile largely, just rock.

MR ELLWOOD: It's just coarse rock. That's exactly right. If we go back slightly, you'll see here, that's the reject – that's the temporary rejects before they're trucked back to the reject emplacement area. It's just coarse rock. Everything else is included in the thermal coal.

PROF O'KANE: And so that's mainly sandstone presumably, is it?

MR ELLWOOD: It's mudstone, sandstone, bit of clay, just depending on what we're mining through. The coal seam itself, in our roof, does have some clay bands and if they do fall out, that's what it mostly is made up of.

PROF O'KANE: And then Snow had that end question, what's the rehabilitation plan at the end of stage 3 for that – for the reject pile.

MR ELLWOOD: Yes. So we're going through and doing that re-design at the moment for the rehab area – for that REA area so we will be able to come back to you with the current status of that.

PROF O'KANE: Sorry, of course, yes, you mentioned that. Sorry.

MR ELLWOOD: No, that's fine. Thank you. Now, what we're looking at here is drone footage from above our box cut. The box cut has a series of water storages to capture any water before it goes underground. It's also a staging point for any water that was pumped out of the pit, out from the underground into those storage ponds before being pumped back for processing. And we're looking approximately east. It's, sort of, you know, just north of east. And what we can see here is the Kamilaroi Highway and rail line run in front of the operation, just along that line of trees. And the Namoi River is off over in the distance, down here, and it flows all the way across the screen, down over there.

Here we see a view of the box cut, just looking west with the CHPP directly behind us. So the box cut has three portals in it known as B, C and D heading. The mine operates on a one way in and one way out system for traffic, so all ingoing traffic goes through this portal; all outgoing traffic goes through this portal and then we have our conveyor portal which all the coal runs through. And then that's the conveyor that runs up to our ROM stockpile. This is the same shot, just looking in the opposite direction. So on top of the box cut, looking to the east. You can see this is the conveyor. That's the grade of the drift that goes down underground. It goes down at approximately one in eight grade until it hits the coal seam. And the drift itself, from the portals, is about 1.17 kilometres long.

Here we see the conveyor itself. That's looking underground and that's it operating before we turn around and look to the – which you can see there and that's the CHPP off in the – up the top of the hill. Now what we're doing is moving away from our pit top area and having a look at some rehabs over our first longwall panels ..... mined, longwall 101 and longwall 102. So what we're looking at here, we're looking approximately south. These two panels – this is longwall 2 here and longwall 1 over here – have been completely mined out. They were mined in approximately 2012, 2013 and they finish up over here, off in the distance.

As you can see here, the whole area has been rehabbed. There was a reasonable amount of drilling that took place over the top of these longwall blocks. All those drilling activities have been rehabbed with any gravel that was brought in removed and then the whole area has been ploughed to ensure that there's no subsidence cracks anywhere. We are in the process of continuing with our rehabilitation and monitoring it and we would envisage being able to lease that out to landholders in the future.

PROF O'KANE: So tell me a little bit more about the ..... there. Now that that has been completely mined out and everything, is that all the – you know, it won't subside any further or is - - -

MR ELLWOOD: That's correct. So it reaches almost all its subsidence very quickly after the mining is completed. It subsides a little bit further once the longwall adjacent to it is extracted. And then after that it essentially stops moving.

We have been monitoring it over the life of the mine and we haven't seen any additional movement after that point.

PROF O'KANE: And did the subsidence go pretty much as you predicted?

MR ELLWOOD: That's right. There's – the series of predictions that were done for stage 2 and that were redone for stage 3 generally followed – the subsidence that we saw generally followed what we were predicting.

PROF O'KANE: Right. Thanks.

PROF FELL: Just a question on the final landform, is the levelness achieved sufficient for cultural purposes as well as grazing?

MR ELLWOOD: I'm not sure what the level required for agricultural planning purposes is. It certainly is for grazing but we can come back and confirm what that angle actually is.

PROF BARLOW: Yes. Which – are we looking, as we look ..... is that the board – is that the higher portion and subsidence number on the side, is it?

MR ELLWOOD: Yes, that's right. So what we can see here is approximately where the gate road is and then either side of it, in here, is where the subsidence has taken place. The reason for the slightly different grasses in the area is also because that's where our drilling is taking place as well, so that's where the rehab and disturbance has been - - -

PROF BARLOW: What's the difference in levels between the centre of the subsidence and the centre of the road?

MR ELLWOOD: It varies from panel to panel but it's an average of 2.4 metres

PROF BARLOW: Okay.

PROF O'KANE: So when you say there have been holes, presumably they're the ventilation holes, are they?

MR ELLWOOD: They're gas extraction holes, so they're holes that are approximately – finished diameter about 10 ¾ inch. They're used to extract gas from behind the longwall.

PROF O'KANE: Sorry, I shouldn't have said that. Yes.

MR ELLWOOD: Yes. And there also were a series of expiration bore holes used to define the coal seam as well.

PROF O'KANE: So how far apart are they?

MR ELLWOOD: They do vary depending what the gas content is underground but they do get as close as 40 metres in some areas of the mine. I think through this area they were drilled – it varies between 150 and 50 metres.

PROF O'KANE: Thank you. And they're presumably reasonably straight forward to manage the rehabilitation on them.

MR ELLWOOD: That's right. We've got some more video of rehabilitation of actual bore holes themselves coming up. But we do try and target – we don't like to dig out of the ground too much. That way we can maintain the seed bank and maintain the roots that are already there and allow for re-growth for be established fairly quickly. So we do have some video of that coming up.

PROF O'KANE: Thank you.

PROF BARLOW: So are those holes in the rehab still active because - - -

MR ELLWOOD: No, no. They've been completely decommissioned which involves backfilling them completely with cement and then removing them at the surface.

PROF BARLOW: But what will happen – isn't there a plan to re-inject the brine at the end of the mine through those holes?

MR ELLWOOD: Some holes will have to be left open to allow for re-injection to happen but those will be at the end of the life of the mine which will be happening over on the western side of the mine plant therefore none of these will be required to be left open for any re-injection.

PROF BARLOW: Okay.

MR ELLWOOD: Most likely we would have to go through a full design process to make sure that those holes are adequate when it comes to that re-injection process at the end of the life of the mine. So what we're looking at now is just longwall rehabilitation over the top of longwall 104. Essentially, most of the area that you're seeing here has already been rehabilitated and – has been mined out and rehabilitated. This area, looking east over here, has not been mined but everything from this area, looking south, all through here has all been completely mined out.

What you can see is the vegetation and trees. There is actually looking really good. With the amount of rain we've had in the last six months, the whole area has greened up quite significantly. This is just - - -

PROF O'KANE: Is it advanced enough for grazing at the moment?

MR ELLWOOD: It's getting very close. So it's just really monitoring at the moment. We're not making – doing any additional work out there. We're just

making sure that everything is – the vegetation is taking hold before we go and start putting cattle back on it.

PROF BARLOW: As part of the rehabilitation, were any grasses re-seeded in that or - - -

MR ELLWOOD: Yes, there were some areas where we re-seeded with native grasslands, just to get it to re-establish, but there were a lot of areas that weren't as well.

PROF BARLOW: Okay.

MR ELLWOOD: So this is the operational gas drainage infrastructure and this flows on to the question you made about flaring. So what we can see here, as we're slowly moving out, is what's called a gas blower and it's used to suck gas out from the underground via these 10 ¾ inch gopher holes. So I will pause it there. Now, that pad does seem fairly large for the infrastructure that's in place at the moment but this bore hole here is drilled by a machine that handles rods between six and 12 metres long. So what happens, when we're drilling the hole we have to have the drill rig on it. We have to be able to handle a casing, that's six metres long, on the site. We have to have air compressors used for drilling, we have to have some ..... for drilling and we have to have crib huts available for the crew. So that site does get filled up very quickly by the drilling process.

What you can see here is the blower itself and we will go through that a little bit in another video coming up. And then we have some – that's the bore hole itself and then we also have a pipeline going to the south to another bore hole to attach back into this blower here. It is planned at the moment but still subject to final detailed design. We would have portable flares, that would sit on a site similar to this, near the existing blower infrastructure and rather than the gas being released directly out of the blower, it would be pushed through the flare and then flared on the same pad.

PROF BARLOW: Is that around the side – from the point of view of final rehab, is that topsoil stacked around the side or haven't you removed the topsoil?

MR ELLWOOD: Yes. So we essentially go through and level out the pad. We remove as little soil as possible. It's stockpiled on the side of the pad so we don't actually truck it away. And any vegetation that is cleared from the site, so any trees or things like that which, you will see coming up, is also stockpiled on the side of the site. Once we've finished using the site, as we will show soon, that top soil and any vegetation is pulled back onto the site to allow for rehab, so we will see that a little bit in the next video.

PROF O'KANE: Chris.

PROF FELL: Do you get much water up with the drainage gas and - - -

MR ELLWOOD: Yes.

PROF FELL: - - - if so, what do you do with it?

MR ELLWOOD: Yes. So we do get water. This is what this sled actually is. This is a water separator, so the gas comes in, the water is dropped out in this tank and then it is – the gas is then progressed through the blower over here. The water is stored within this tank or another and it's ..... tank that can be connected to it and it is emptied by a vac truck or sucker truck and then trucked back to our pit top area for processing as part of our mine water.

PROF FELL: Thank you.

MR ELLWOOD: So that's the water separator and then we're moving over to what's called the blower. So this is actually just a spinning impeller that sucks gas through here with the exhaust up the top. We've got the control system, it's that white box in the background. That has got all the monitoring of the gas. And then the white box in front here is just the diesel storage and the generator. You can see down the 300 mil poly pipe going off to a different bore hole. This is the control system I was talking about in there.

PROF FELL: Roughly how many units would you have operating at the moment?

MR ELLWOOD: At the moment, because we're only just starting up the longwall, we've only got the one running on the longwall. Once the longwall kicks away good and proper, we will actually have two or even three running at any one time. This is rehabilitation – this is rehabilitation that's just commencing as part of those pads. So what you can see here is the topsoil and vegetation has been pushed to the side while we've done a drilling. Once the drilling is complete, that topsoil and vegetation is pulled back onto the pad. And that's done to allow for the seedbank to get back onto the site. But by having the vegetation pulled back over it prevents erosion and it prevents people moving through the area.

PROF BARLOW: What's the average time between removing the topsoil and putting it back, how long will it be stored?

MR ELLWOOD: It does vary depending on what type of bore hole it is. Generally those gopher holes are rehabbed once the next longwall block is extracted so it can be sitting to the site for two years.

PROF BARLOW: Okay.

MR ELLWOOD: Now, this is some more advanced rehabilitation on an expiration bore hole. So this is a – you can see where the native vegetation has started to take hold again. These gums here that are just starting to grow, they're growing from existing rootstock that was left in the ground as part – when we stripped the area. Because we don't dig too deep into the ground, it means the roots can stay in place

and once we've rehabilitated the area they can begin to regrow. So you can already see here that we've got some of those gums taking hold. And that's another one just there.

Now, here we have a fly over of that same that same pad. We also have one that's slightly more advanced in rehab in this fly over as well. You can see here – I will just pause it here – this is that pad we just looked at there. You can see where some of the vegetation has been pulled back over the top and some of the regrowth has already taken place. This is another pad that's more established. The outline of it is approximately here and you can see where some larger trees have already started to regrow as well. So with these pads, we haven't had to introduce any seedstock. They've regrown from the existing seedbank within the topsoil.

And this is some final rehabilitation for longwall 10. So longwall 10 is our current longwall block. We've only just commenced extracting it but this was an exploration bore hole that was needed to define the coal seam under longwall 10. Because we didn't need that exploration pad anymore, we've rehabbed it immediately. As you can see here, it's already – you know, it's fairly well progressed in its commencement of rehab. We're just going through monitoring now and making sure that weeds don't take hold.

The other thing that we can talk about here – and I know one of your questions in the agenda was around koalas. So as part of the stage 3 extension project and the existing mine, we did do surveys that targeted koalas and no koala has ever been found or sighted on the existing mine or the extended area as well. We have found koala scats though, were recorded in the extension area. So as part of the clearing that we do for these exploration pads, we minimise the disturbance so, as you can see, there's still a lot of remnant vegetation around the outside of these pads.

We have a clearance protocol which requires us to have an ecologist go and check the site and trees to make sure that there's nothing present as we're doing the clearing process. We do progressive rehabilitation through these areas as well, as you can see here. And that allows – because it's the – rehabilitation is allowing the regrowth of the vegetation that was already there, it means that it's allowing for trees that were already in existence to regrow, so we're not introducing different tree species to the area.

PROF O'KANE: Are there many koalas in the adjacent blocks?

MR ELLWOOD: Not that I'm aware of but we haven't done any detailed surveys in those adjacent areas but certainly there's none have ever been sighted on the project area. Now, what we're going to look at is the existing ventilation infrastructure that we already have at the mine site. This existing ventilation infrastructure will be fairly similar to the ventilation plans that we're proposing to construct to the south. What we can see here is three main ventilation fans. Those three fans combined can suck approximately 400 cubic metres of air per second through the whole mine, so that's what these three fans are here. The reason we have

to pull so much air through the mine is to make sure that we maintain a safe working environment and de-gas the mine for the workforce underground.

The other things that you can see on this pad, we've got longwall emulsion used for the legs. We've got air compressors, our tube bundle hut – that's used to measure the gases in various places underground – and our nitrogen plant over here. Nitrogen is injected into longwall blocks to inertise them as a spon com management system. In the background we've just got a couple of generators. They can run in case we do – they can power one of the fans in case we do lose power and then we've just got a switching control station as well. And over behind the fans is another control station for the power supply for the fans.

I will pull it up here in a second. And I do note one of your questions as well was about potential ponding of – in subsidence areas. So as we've already discussed, the average subsidence is around 2.4 metres for the mine. What can happen is in these ephemeral creeks, which you can see here, is some water ponding can occur purely because this area has dropped by 2.4 metres and an area hasn't. Generally the ponding is held completely within the bounds of that creek which you can see here, there's no water actually spilling out and going anywhere. What you can see in the background is one of the flatter areas we have at the mine, so this is over longwall 1. And you can see the ponding area in this area is much larger than any of the other areas you can see in this ephemeral creek and that's purely because the land is so flat through this area that the ponding spreads out a lot more and isn't contained within the banks of the ephemeral creek.

PROF BARLOW: And clearly the longwall goes underneath the creek. Is that right?

MR ELLWOOD: Yes. So the longwall – this is longwall 1. It moves in roughly this direction, through here, and that's where that longwall has gone, underneath that ephemeral creek there. And then we have longwall 2 – or it might be longwall 3 goes up through here. It's exact same as this area. It crosses that creek there. But because the ground is dipping more the ponding is fully contained within the bounds of the actual creek bed itself.

Now we're looking roughly east from our existing infrastructure – north-east from our existing fan. And the pit top area was over on the edge of the screen. What we're doing now is just having a general view over the top of the 100 ..... area. That's the ventilation infrastructure that we just viewed and then we have a series of existing roadways over the top of the mine. Most of the roadways that are here are existing farm tracks that we've upgraded rather than constructing whole new roads.

Now, we're moving around and will be looking east soon. This is our pit top area and the back of the REA that you can see there. And now we're turning around to look south, so this is looking south from the 100 ..... area. What I will do is, I will just pause it there. Pretty much directly from where we are here, heading south, is where we're going to construct the new powerline for the stage 3 extension. That

new powerline will also have a series of other services that will be constructed along with it such as dirty water and clean water to be able to feed the mine and bring dirty water back to the pit top area for processing as well as an access track. That will go, pretty much, directly south down to those new ventilation complexes to be constructed.

So we're not going to go down and look at the area for these proposed mid-panel ventilation complex. This is the area where we will be constructing a ventilation complex very similar to the one we just saw except there will be two shafts rather than one. So the one we just saw had a single upcast shaft where air was sucked out. The one we're going to be constructing down here will have an upcast shaft where air is sucked out but then also a downcast shaft where air is sucked into the mine. You can see here the area looks very green and very good with the amount of rain we've had over the last six months.

Looking roughly west there, now we're spinning around to look north. What you can see there are a few pads. We've been drilling exploration down – in that area for the existing mine. Due to the amount of rain we've had in that area, we've actually had to gravel those pads which is not something we typically do because it means that we have to do a lot more excavation than normal. That's because of the amount of rain that we've had over the last six months and the area is just far too boggy to be able to get machines in and out.

Now we're looking west in that area and just another view of the ground level of this proposed ventilation complex. And this is one of the areas that was specifically asked to be looked at as part of the agenda. It's our southern ventilation area. And what we're doing is, we're hovering essentially over the top of where that ventilation complex will be. As part of this ventilation complex, we will be having some temporary water storage dams. That water storage is only there essentially as a staging point. So what we will do is we pump water out from the underground as we're de-watering. That water is then temporarily stored in those dams and then is pumped back to the pit top area for processing. So the water that sits there is only really to de-silt the water and then allow us to pump it back to the top area. Looking roughly west there and then we're going to spin around and look in an approximately northerly direction.

PROF BARLOW: And that mine water that will come out, that has got quite a high salt content, doesn't it.

MR ELLWOOD: Generally it has got a higher salt content than normal drinking water, yes. And that will just get processed through our REA – not our REA, our reverse osmosis plant and re-used on site if we can.

PROF BARLOW: Okay.

MR ELLWOOD: It's essentially the same water that we already pump out from our existing mine.

PROF BARLOW: Yes.

MR ELLWOOD: This is what's known as the Mayfield grinding grooves site which is an Aboriginal cultural heritage site that was found as part of the stage 3 cultural heritage surveys. What we've got there is the areas are fenced off and signs placed on there and then look down at the actual grinding grooves themselves. What you can see here is just a series of grinding grooves on different rocks through the area. It's a bit hard to see while we're jumping through but there's an axe grinding groove here, there's a couple more over here. There was another one that we just saw going on a different rock and then there's some more. All of this is confined in the same area of that grinding groove site. And there are some more grooves there.

Now, what we're going to look at here is just an overview of the area – the boundary really between the Pilliga forest and – Pilliga scrub and the western – eastern, sorry, grazing area. So it's just a bit of a 360 degree view over the longwall 204 area. Looking approximately east there and spinning around to head south. You can see all the dams are all full at the moment with the amount of rain we've had. And then spinning around and we will start looking west. And this is just flying to the north, we're just flying north up the planned longwall 204 area. You can see one of the existing farm dams in place there.

PROF O'KANE: We're talking a lot about the recent rain. How did the mine fare in the bushfires in – I should know but I completely forget, for 2019/20. What's bushfire protection like at the mine?

MR ELLWOOD: Yes. So we do have a series of firebreaks that are installed as part of the existing mine. Because our pit top area is wholly surrounded by cleared farmland, we're fairly fine there. We didn't actually have any bushfires very close to the mine. There were some in the Kaputar Forest which you can see off in the distance in a lot of our videos but we didn't have any around the mine.

PROF O'KANE: Thanks.

PROF BARLOW: Is there an ember problem though with your coal piles?

MR ELLWOOD: Is there a what, sorry?

PROF BARLOW: Ember, drifting ember from the fires.

MR ELLWOOD: No. I mean, we do have sprays for our stockpiles for dust suppression so if required we could – you know, we can douse the coal seam but didn't have any issues like that at all.

PROF BARLOW: Okay. Thanks.

MR ELLWOOD: And this is just another broader view of the general area for the southern extension, right on the boundary of the Pilliga scrub and the farmland. And

that's looking approximately west. And looking north again. And so the final area we want to look at is just the Bulga hill. This hill was identified to threatened bat species as part of the stage 3 surveys that were completed. We ultimately decided to change the mine plan and pull up our longwall blocks before undermining this hill so we don't have any direct subsidence impacts to this hill. So we've ended up shortening longwalls 205, 206 and 207 to avoid potential subsidence. What we're doing here is just looking out to the east and then running along the edge of the Bulga hill and again we're looking east instead of south-east from the top of the Bulga hill.

PROF O'KANE: So the bats are largely down here at the hill, are they? There's not – do you have bats further back in the forest that you've got on the site?

MR ELLWOOD: We will come back and – I will have to go back and double check the EIS to see if there's any other potential nesting areas in the EIS site but this was by far the largest area and the two threatened species were identified in this area.

PROF O'KANE: We can go back through the EIS. It's okay.

MR ELLWOOD: Right. Thank you. And that's looking approximately south as we fly along the Bulga hill. So we're not planning any disturbance, either subsidence or any clearance on that hill and we will just be working around it as we continue along, moving to the west. And that's the end of our video.

PROF O'KANE: Thank you. That has been really interesting. Any further questions?

PROF FELL: I was just asking a question about the flares again.

MR ELLWOOD: Yes.

PROF FELL: I think what you're telling me is they're associated with each of the drainage points. Is that correct?

MR ELLWOOD: Yes, that's correct, sir. They will be transportable with the gas drainage infrastructure.

PROF FELL: Right. There's no plan to connect up from one area to another.

MR ELLWOOD: We would connect multiple holes into a single gas blower in order to be able to get an appropriate flow through this thing to try and extract – to extract and flare as much gas as possible. So one blower could potentially have five, six or even seven bore holes connected to it at once via these lines here.

PROF FELL: Okay. Thank you.

PROF O'KANE: Snow, anything more?

PROF BARLOW: Sorry, I was just unmuting. Can you hear me now?

PROF O'KANE: Yes, we can.

PROF BARLOW: Further to that question, what would be your strategy in a high bushfire season with regard to flaring? If you're flaring within the forest like that, how are you going to manage the possibility of ignition from the flare?

MR ELLWOOD: Yes. So what we've done as part of the EIS is we've actually committed to enclosed flares which means the flares are enclosed within a box on top of them. And that's how you regulate oxygen going into the flare as well. So our flares would be fully contained within a specifically designed enclosure and so there wouldn't be open flares out in the atmosphere at all.

PROF BARLOW: Is that acceptable to the local fire authorities?

MR ELLWOOD: I think – we have consulted with RFS and forestry. I can't recall any issues brought up with them but we can go and double check that.

PROF BARLOW: Okay.

PROF O'KANE: Well, no other questions.

PROF BARLOW: That was extremely useful, I might say.

PROF O'KANE: Yes. Anybody else from the applicant got any other comments they wanted to make?

MR FLYNN: I think, Chair, just in relation to a couple of questions that were asked earlier just about brine releases. There's no capacity for brine releases under our approvals at all on site, so that's not contemplated, provided for nor committed. And as was mentioned a little later in some of the discussion there from the panel of Commissioners, that there is the opportunity for ..... at the end of mine life of brine but that would be – not will 2031 now but 2044, assuming there's an approval. And, as David stated, that would be on the western side of the flank of the lease itself and the deeper areas. The pH of the brine also is 9.7. I think it was Professor Barlow who asked that question, so that's the number for our brine facility at the moment.

PROF O'KANE: I will just check in with - - -

PROF FELL: Can I just check that figure please, nine point - - -

PROF O'KANE: 97.

MR FLYNN: 9.7.

PROF FELL: So it's highly alkaline suggesting a lot of bi-carbonate – or carbonate.

MR FLYNN: Correct. Correct. But there's no opportunity to get rid of it at all at the moment – well, at all during the life of the mine until the end of the mine's life itself.

PROF FELL: I'm conscious that your next door neighbour is actually treating that brine.

MR FLYNN: Yes.

PROF FELL: .....

MR FLYNN: Yes, yes. Yes. And there is – we have had discussions with them in the past about ways in which we might work together in that regard. The question was raised earlier about the drought impacts on the site and that was quite difficult for an extended period of time, as everybody understands. And yet, say, for instance, with that facility, they were obviously extracting water and we certainly held quite a few discussions around how we might actually use the benefits of that treated water – or once treated for production at site for our usage. But obviously since that time both projects have moved on and of course the climatic conditions have changed but I think generally there would be an opportunity for us to cooperate there, I think, across those facilities.

Unfortunately we're regulated by two different regulations and that water is deemed as refuse and would be treated differently. And so we're not able to take that currently but I think future harmonisation of regulation might see an opportunity for us both to share and collectively optimise our use of water in the area.

PROF FELL: Just on that, it was instructive to look at the percentage recovery in the RO plant and perhaps we can discuss this on another occasion.

MR FLYNN: Happy to do that.

PROF O'KANE: Right.

PROF BARLOW: Yes. Snow here. Yes, I think there is a discussion to be had there and it was interesting that you have had discussions with Santos regarding – and their RO capacity and so-called clean water afterwards. Yes. And ..... the salt composition because it's coming – well, not all their water is coming from the Hoskissons seam but the salt composition is quite similar. Is that correct?

MR FLYNN: I'm not sure of the specifics of the comparison, Professor Barlow, between the composition of our water and theirs but certainly we see an opportunity for cooperation in the future and, as part of that, our thoughts are drought-proofing our operations into the future, further discussions will be held with them.

PROF BARLOW: Thank you. And might I say, the virtual site inspection and the drone footage was particularly helpful because, you know, clearly we see more than we would see on the ground anyway.

MR FLYNN: Yes. Apologies for the clunkiness of the stream.

PROF O'KANE: It was – we clunked it a bit by asking questions. We've covered, I think, everything, have we.

UNIDENTIFIED MALE: No questions from me .....

PROF O'KANE: Thank you. I will just make a short closing statement. I would like to echo what Snow just said. It really was good to see it and we did see things we maybe wouldn't have. But all of that brings us to the end of the virtual site inspection for Narrabri Underground Mine stage 3 extension project. On behalf of the panel, I would like to thank everyone who participated in today's meeting including the community observers. I encourage our community observers to make submissions on what they've seen today at the public hearing on the 14th of February 2022 or electronically or in writing to the Commission before 5 pm on Monday the 21st of February 2022.

In the interests of openness and transparency, we will be making the video recording and transcript of today's site inspection and the presentation material available on our website in the next few days. From all of us here at the Commission, enjoy the rest of your day. Good afternoon and thank you.

ADJOURNED **[1.35 pm]**