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TRANSCRIPT OF PROCEEDINGS

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INDEPENDENT PLANNING COMMISSION

PUBLIC MEETING

RE: TAHMOOR MOD 4

PANEL:	**ANDREW HUTTON** **PROF ALICE CLARK**
ASSISTING PANEL:	**JORGE VAN DEN BRANDE** **DAVID KOPPERS**
PROPONENT:	**RON BUSH** **FIONA ROBINSON** **DARYL KAY**
LOCATION:	**IPC OFFICE** **LEVEL 3, 201 ELIZABETH STREET** **SYDNEY, NEW SOUTH WALES**
DATE:	**3.02 PM, WEDNESDAY, 26 SEPTEMBER 2018**

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MR A. HUTTON: So good afternoon, and welcome to the meeting this afternoon. Before we begin, I'd like to acknowledge the traditional owners of the land on which we meet, the Gadigal people, and pay my respects to their elders past and present. Tahmoor Coal is proposing to modify a development consent for the Tahmoor North underground coal mine, to allow mining-related subsidence within a small area that was not previously predicted to experience subsidence. The area referred to as the modification area comprises some 11 hectares, and lies outside of the footprint of the proposed longwall panels. Land use in the modification area includes some 48 residential houses, in Picton South, or South Picton, as well as the Picton High School.

My name is Andrew Hutton, and I'm the chair of the IPC panel today. Joining me is my fellow Commissioner Professor Alice Clark, and the other attendees at the meeting include Jorge van den Brande, a planning officer with the IPC; David Koppers, team leader, IPC; Ron Bush, environment and community manager, from SIMEC Mining; Fiona Robinson, environment coordinator; and Daryl Kay, who works for Mine Subsidence Engineering Consultants, or MSEC. In the interests of openness and transparency, and to ensure that the full capture of the information today, we'll be recording a full transcript, which will be produced and made available on the Commission's website.

This meeting is one part of the Commission's decision-making process, and it is taking place at the preliminary stage of this process, and will form one of several sources of information upon which the Commission will base our decision. It is important for the Commissioners to ask questions of the attendees, and to clarify issues whenever we consider that it is appropriate. And if you are asked a question and you're not in a position to answer, please feel free to take the question on notice and provide any additional information to us in writing, which we will subsequently put up onto the Commission's website.

So we might formally begin the meeting. And thank you again for coming up today. We appreciate your attendance, and giving us an opportunity to talk with you about the proposal. The applicant has a PowerPoint presentation that we're just putting up on the screen at the moment. Because we are recording a transcript, the first time you speak, I might just ask you to use your name, so that the transcript operator can identify us as part of the transcript. So, without any further discussion from me, Ron, I might hand over to you, mate, and just run us through your presentation.

MR R. BUSH: Righto. Thank you – sorry; Ron Bush. Thank you for invitation to present to the Commission. So we've just prepared a PowerPoint presentation, just covering some of the points on the agenda. So I'll now run through that. So - - -

MR HUTTON: Do we have a mouse? Maybe it might be easier - - -

MR BUSH: So the agenda items today will do an overview of the modification 4 proposal, the status of the Tahmoor mine and longwalls; and then I'll hand over to

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Daryl Kay to go through the subsidence modelling and the subsidence impacts; and then we'll just conclude with a bit of information on the consultation and stakeholder engagement that was done during the process. So just to update the Commission on Tahmoor Coal, so Tahmoor Coking Coal started – as an underground coal mine – started operations in 1979. Longwall mining has been undertaken at the site since 1987. So the site produces about three million tonnes of ROM coal per annum, and that equates to about two million tonnes of product coal.

The coal's mined from the Bulli Seam, which is a premium hard coking coal, and our customers are primarily for steel production, and we also produce a very small amount of thermal coal. Our product coal is transported principally to Port Kembla for both Australian domestic customers, including BlueScope at Port Kembla, and also the Liberty Primary Steel at Whyalla, and then also export customers. Export customers include customers in Japan, Korea, China, Taiwan and some European countries, such as Belgium. The current operations at the site are in Tahmoor North, and they'll continue to around 2022, and then we're proposing to move to a new mining domain, in Tahmoor South, at Bargo, and we're currently preparing an EIS for that, which should be lodged with the Department of Planning shortly.

So we currently employ about 380 employees and contractors, and we support many local and regional businesses, and also we're a proud supporter of local charities and service organisations through our CIS program. So Tahmoor has recently been acquired by SIMEC Mining, a division of GFG Alliance, and the GFG alliance is the family-owned company of the Gupta family, from the UK. And there's two parts to their business: the Liberty Group, which is more the manufacturing arm; and then the SIMEC Group, which SIMEC Mining forms part of. So the GFG Alliance is into steel manufacturing. They acquired in Australia the OneSteel Arrium business from voluntary receivership, and their strategy to acquire Tahmoor Coal from Glencore was, we're a major supplier to the Whyalla steelworks.

So that's the linkage. So they're also into shipping ports and recycling steel. So they also own a regional mini mill in Sydney. So that's SIMEC. So Liberty House Group – as I said, it's more the manufacturing part, but also they're into tertiary processing. So they Liberty Engineering actually does build car parts and components in the US and the UK, but in Australia, it's the Liberty Primary Steel mill in Whyalla, and also the Rooty Hill mini mill, and also the OneSteel – sort of – steel trade outlets.

SIMEC Group concludes SIMEC Shipping, Infrastructure, Mining, ZEN Energy and Commodities. So where Tahmoor fits in is the SIMEC Mining. So the assets that they bought with the OneSteel business, the iron ore mines in Middleback Ranges and the coking coal, are primary suppliers to the Whyalla steelworks. So that's the linkage. Also the shipping – they, sort of, control the ship that goes up to Whyalla – so it takes coal down to Whyalla and brings iron ore back to BlueScope at Port Kembla. So that's a bit of a connection there. So - - -

MR J. VAN DEN BRANDE: Perhaps it's easier if you use the arrows.

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MR BUSH: Okay. So modification 4 – I've provided an update there. So the overview of modification 4 is – was to permit low levels of subsidence in an area where subsidence was not currently permitted to occur under DA 6798. So the extraction in that area was identified in condition 6(i) of the '99 consent, so wasn't allowed to be extracted unless a separate approval or modification of the existing approval was obtained. So since the '99 consent and EIS that led up to that, improvements in subsidence monitoring and modelling methodologies enabled greater accuracy in the prediction of subsidence impacts, in particular in areas at the outer edges of the measurable subsidence effects, up to the 20-mill subsidence line.

So modification 4 area consists of about 11 hectares, to the 20-mill subsidence contour, and includes in it about 49 dwellings and the structures within the Picton High School, which is about 64 individual structures. So about the proposed modification, our next longwall, Longwall 32, will not be able to be extracted in an efficient and viable manner, and will require a longwall step-around, with loss of coal reserves. So that was the emphasis for seeking approval for modification 4. So the area of modification 4 is the area in the blue hatching. So it's about 11 hectares, as I said. To the south, you've got the Picton High School, which is shown in the cross-hatching there. And then to the north is the houses within the area, and it's Coachwood Crescent, I believe, is the main street that those houses are on.

And then to the, sort of, west of there, you can see where Longwall 32, which is our next Longwall. And then further to the west is Longwall 31, which is the longwall we've just completed. So details of the modification 4 – there's no changes proposed to the approved mining methods or operations. There's no changes proposed to the surface facilities or rates of production. Within the modification 4 area, there's no significant environmental features, no substantial watercourses, alluvial land, steep slopes or remnant vegetation. The subsidence impact assessment concluded that the modification 4 subsidence is likely to result in nil to negligible impacts on the land surface, natural and built features, and on existing land uses.

The assessment concluded that nil to negligible impact is primarily due to the very low levels of subsidence predicted; the substantial depth of cover over the coal seam – in this area, it's between 400 to 450 metres, the seam's below the current surface; the overlying surface site characteristics; and also the continue implementation of existing subsidence monitoring, management and mitigation measures. As you possibly would be aware that, we do substantial monitoring during the processes under the consents that we have. So I've just given you a bit of an update to the Tahmoor mine's status. So we're in Tahmoor North development area. So we're mining the Bulli Seam. Three million tonnes of ROM coal.

As I mentioned before, we mainly do hard coking coal, sold to Australian and domestic – and international customers. We do a small amount of thermal coal. Coal's processed through our site facilities, and any waste produced is disposited on site in a on-site ..... emplacement area, and the existing life is until 2021–2022. The current status of our sort of immediately mining areas: Longwall 31, as I mentioned, has just recently been completed, on the 17th of August. We directly mined under the

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Picton Industrial Area, and also the Main Southern Railway line. There's been some minor subsidence impacts, but they're all been within predicted range. So Longwall 32 is our next longwall, and that's approximately 2.4 kilometres.

We did our high-risk area approval notification on the 8th of June, and we've also just recently received our subsidence approval, which was issued on the 19th of September. And that was approved for the initial stage, which we call stage 1, which is up to 1100 metres, which is basically up to the mod 4 boundary. So Longwall 32 is proposed to commence in late October. It was due to start in the 17th of September, and – you may or may not be aware – we had an incident with our winder on the site, so at the moment we're in a bit of a shutdown while that is being repaired, and going through that process. So that – we expect the site will be back into full operations towards the end of next week, and then the longwall process will start for 32.

MR HUTTON: So we're on the reference to subsidence approval. That's the SMP approval - - -

MR BUSH: That's correct, yes.

MR HUTTON: - - - for the first 1100 metres.

MR BUSH: That's correct. Yes.

MR HUTTON: Yes. Okay.

MR BUSH: Yes, yes, yes. So Picton industrial area, which is part of 32, DA6798 requires that second workings are not to be undertaken under land that was originally zoned by – zoned at the time the approval was granted – that was zoned industrial 4 unless a binding compensation agreement is in place, so we're in the process of obtaining those approvals. We've got three signed at the moment. 11 have been – were with the property owners and there's 20 that are in preparation.

MR HUTTON: Presumably you had that same requirement for the top end of Longwall 31.

MR BUSH: That's correct, yes. So we've successfully, for 31, obtained those compensation agreements. We've successfully mined under the Picton industrial area for 31 and there were some minor impacts, but nothing outside predicted range.

MR HUTTON: Well, what sort of subsidence were you talking about there?

MR BUSH: It's sort of about seven or eight hundred.

MR HUTTON: Yes.

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MR D. KAY: Yes. I was going to say Darryl – if need be – Darryl Kay, but, yes, seven or eight hundred millimetres.

MR BUSH: Yes. So just on the proposal – Longwall 32 stagings – so Longwall 32 is proposed to be a stage to accommodate the timing for modification 4 and also approval, sorry, and also the Picton industrial area compensation agreement. So stage 1 was from ..... zero to 1100 metres as, as I've said, we've got the subsidence approval for that just recently. Stage 2 is 1100 to 1400 and that's to the start of – from the start of where the modification fall kicks in and then to the edge of where the Picton industrial area starts.

Stage 3 is 1400 to 2000 and that's from the start of the Picton industrial area to the end of the Picton industrial area and then stage 4 is the balance of the block. So – sort of – there could be another three applications for a subsidence approval depending on the timing and the success of the model for approval and also the success of obtaining those compensation agreements and if either of those aren't obtained, they will require a longwall step around which, obviously, sterilises coal but also is at a cost factor to the operation.

Ideally, what we would propose is if we were to obtain both the mod 4 and the Picton compensation agreements in a timely manner. We would then reapply for one additional stage, which would take us to the end of the block, so that's our preferred position but, in the worst case, we would apply for another two to three approvals.

MR HUTTON: Based on current production rates, how long does 1100 metres give you in time? Is that a six month proposition?

MR BUSH: Yes. It's probably a little bit more than six months. Maybe seven months.

MR HUTTON: Yes.

MR BUSH: Yes. Okay. So just where that lies in context, the modification 4 areas at – dark blue line there, so that's from 1100 to 14 as I said and, as you can see, there's a little bit of a crossover with the Picton industrial area and then Picton industrial area goes from the yellow, sort of, hatching, to the end of that and then there's balance of a block there. So just with modification 4 as well, what we've done with – sorry, what we're proposing for the Picton High School is a property subsidence management plan, but also what we've done for the residents – we've done – under the Work Health Safety requirements – what we do is we do a lot of risk management for subsidence.

So the first thing we do is what we call a front of house preliminary screening of the residents in the area and that's from – we have a structural engineer drive around and have look from the front of house and identify anything that looks like it could be an issue and then any ones that are identified, then we approach those residents to delve into that a little bit deeper, but also what we also do is, through our consultation,

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which is the letterbox and newsletters, we ask that if anyone is willing to, we can do what we call a PMI, which is a Pre-Mining Inspection, so that's more or less like a dilapidation survey.

But also, as a secondary thing, we also do subsidence hazard inspections, and that's by a structural engineer and that's specifically to look at, "Well, for that particular longwall, if there's any structures that could be affected by subsidence; that could be considered a WHS hazard", then we can go in and do mitigation, subject to the landowner's approval before the longwall takes place. So just also our future – so once Longwall 32 is finished, we do have what was called our "western domain". So within our western domain, there's three longwalls proposed: Longwalls 33 to 35 and that's – that will be from mid to late 2019 to 2021.

Those longwall blocks are a little bit shorter than what we currently do to avoid some natural features and, as part of the proposed conditions for the modification for – 32 to would be the last longwall that would be approved under a subsidence approval. Any future longwalls would be approved under extraction plan approval, so those longwalls would be part of an extraction plan approval. We're also investigating two additional potential walls, 36 and 37, and they're shown in the blue area there, so they're ones that we are investigating as well, so that could extend our life in the western domain by, sort of, one two years.

MR HUTTON: The current consent includes all longwalls through to 37?

MR BUSH: Our development approval allows that area. Our subsidence approval - - -

MR HUTTON: No, I understand that. Yes.

MR BUSH: Yes. Is - - -

MR HUTTON: The development approval allows approval through to Longwall 37 currently.

MR BUSH: Yes. Yes.

MR HUTTON: Yes.

MR BUSH: So just a bit of a high level for Tahmoor South. So future after the western domain is our Tahmoor South area. So that's down in our – principally in our mining less, CCL747, which is around the Bargo, so that – in the central domain – will give us another 13 years after Tahmoor North to about 2035 and extraction would be pretty similar to what we do – longwall mining. We will be seeking a little bit of additional production – up to 4 million tonnes of ROM. There's a couple years where we don't have longwall ..... to that results in an increasing production in some of those years. Pretty similar – using existing mine surface infrastructure and expansion of the REA. It's really just a life of mine extension for the operation. So I

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will hand over to Darryl to go through the subsidence modelling and impact assessment component of the presentation.

MR KAY: All right. So what we've done is we've done the predictions for substance. I think Ron touched on the fact that I've written there in the slideshow that we talked about how the predictions – technology ha moved on since 1997. It was our company that did the assessment back in 1997.

MR HUTTON: Yes.

MR KAY: But in those days, the way we run our prediction models is that they're based on empirical data, so survey information that has come from surveyors when we've mined existing longwalls and we apply that information to new areas where we make adjustments based on differences in mine geometry or differences in other factors such as depth of colour or the extraction height and those other, sort of, mining factors.

So but back in '97, a lot of those surveyors in those days where they would measure subsidence would traditionally bang in a peg in the ground, roughly half the depth of cover to point 7 of the depth of cover away from the edge of the panel and they would traditionally call that their datum point and say, "That's zero" and measure from there. And what we've learned over the years with lots of extra monitoring and better technology is that subsidence at those data points wasn't zero. There was small, additional substance from that point.

So now, traditionally, we go back – we ask the surveyors to go back quite some distance – maybe a kilometre away from the mining and traversing from there – from a more stable point so that we can pick up that extra little bit of subsidence. So in this instance what that means is – with the latest models that we've done – we've increased the amount of subsidence that goes out beyond the edges of the panels which means that in this particular area for mod 4, we are predicting subsidence in that area where, perhaps, back in '97, we would not have.

MR HUTTON: Yes.

MR KAY: Or maybe a lot less. From a practical perspective, given the subsidence is 20 millimetres or 70 millimetres, which is what we're predicting in these areas, the area that probably doesn't change a lot is the differential movements, which are important in terms of looking at potential impacts to houses, because the subsidence out – those areas is quite – the differential movements are quite gradual such that things like tilts – so if we're changing the grade of the house, we're tilting the house a little bit.

They're still very small at those distances away, whilst before, when we had the old model, we would have predicted tilts roughly to occur where we've predicted them now, it's just that now we've pushed the subsidence further out. So that got us, with

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Longwall 32 where – because we're predicting subsidence in that area – in this mod 4 area, that's why this has come about.

MR HUTTON: Yes. I understand that.

MR KAY: So that's the first bit of context.

MR HUTTON: Yes.

MR KAY: The other bit of context is back in '97, '98, there was a lot of focus on potential impacts to houses because were mining under the whole township – Tahmoor was mining under the whole township of Tahmoor and there was a lot of work done at that stage to try and estimate the level of impacts that would occur to those houses. And some of the conditions of consent that came from the Commission inquiry were related to impacts, or predicted impacts, on the houses in terms of how many houses in certain categories of damage – so whether it was no damage, or slight impacts, or moderate impacts, or high. So the methodology that was used then is very different to the methodology that's used today. However, we tried, with our letter, to refer back – you may see that in our letters, that try to refer back to the methodology that we used back in '97 and '98.

MR HUTTON: What letter are you referring to, sorry, Darryl?

MR KAY: Probably the – I think it's the one dated the 15th of September '17, so I hope – you should have that, hopefully, there – which talks through trying to apply the impact study assessment that we used back in '97 to do this. Doesn't quite work, because in those days, our understanding was less than it is now; obviously, we've moved on 15 years. In those days, what we did is, we looked at some data that Tahmoor had over Longwalls 3 to 7 and Longwall 9, and we had a whole bunch of strain data, because ground strains – the contraction or extension of the ground beneath the house – was seen as a key parameter to try to assess what kind of cracking may occur at a house. So we used that data in a statistical way, which looked at all the survey data that was over the top of those longwalls and to the sides, and then we apply that to all the properties that were in the Tahmoor North area.

Here – that would be fine. In this case, though, we can't use that method, because all of these houses are sitting 200 metres, plus, to the side of Longwall 32. So applying a distribution of ground strains that have been measured directly over the top of the longwall to some houses that are sitting 200 metres to the side doesn't really work. And then trying to do something in between, to try to work it out, is – our feeling is, we're better off just moving on to our more current methods of assessment. So we've just said, we can't use the '98 – what we did in '97-'98. We'll just use what we now do today, as we've done through a bunch of – a lot of research that we've done. So I think that might be on the next one.

So after about two or three longwalls had been mined at Tahmoor North – so 22 to 24 – we gathered a body of information on impacts that had occurred to those

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houses. We've surveyed – Tahmoor had surveyed the landform quite significantly through that area. So it was an opportunity to start improving the prediction model and the assessment model. So that's – those are about 1000 buildings at Tahmoor, and about 150 claims. So we were able to start to look at different factors, to come up with a new method of prediction, or assessment.

So we looked at whole – whether it's just vertical subsidence, tilt, ground strains, curvature – so the bending of the ground – we looked at the structure types, whether they're brick houses, slab-on-ground houses, houses with strip footings, weatherboard houses; we looked at other factors, like their age, their size, and looked for ones which stood out statistically.

The two that really stood out was one subsidence movement one, which was curvature – could have used tilt, but tilt by itself on a house – typically, whilst it changes the grade, it doesn't really affect most things in an house. It's – because the changes are very gradual. But bending certainly does, and there's a good relationship between bending of the ground, the curvature, and ground strain, typically. So it's not exact, but there's a relationship. So of the mine subsidence parameters we looked at, it was curvature. And the other one that stood out was structure type. So there was a very clear difference between a house that had been built as a weatherboard house compared to a brick house on strip footings, which seemed to be – found to be the most vulnerable of all the structure types.

So from that we've developed a – I guess – probabilistic model. Because you can never be 100 per cent certain what the ground movements will be, but we're able to, sort of, say, for a house, that a certain predicted amount of curvature, of a particular type of construction, we could give a range of probabilities back as advice to the mine, and then take it back to the residents, and give them a realistic chance, what are the chances of you having no claim, small amount of claim – small damage, minor damage, to greater damage. So from that – we've applied that to this area, that's in the mod 4 application area. And I think from there, it's a very low probability of impact, because we're only – it's very low, because the subsidence values are low, and the predicted curvatures are very low. So with 95 per cent, we're expecting to have nil to very slight impacts, negligible impacts. There might be a 4 per cent chance of very slight impacts, and a 1 per cent chance of something severe. Yeah.

PROF A. CLARK: Just a question.

MR KAY: Sure.

PROF CLARK: Will these ..... impact descriptions likelihoods based on your probabilistic model – they're taken, I think you said, from measurements done on Longwalls 22 and 24; is that what you said?

MR KAY: Yes, yep.

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PROF CLARK: Yes.

MR KAY: Yep. And that includes an area where they had greater subsidence than expected, in Longwalls 24, in particular, at the southern end, which sort of gave us, I guess, the higher range of impacts that occurred at Tahmoor. And then all the houses that are around where we've had more normal substance, it's been – we've been able to get a better range out of that. So - - -

MR HUTTON: Do you understand what caused the greater than expected subsidence at 24?

MR KAY: Yeah, there was a couple of studies done there. It was certainly something very, very surprising. But it was – we believe it's linked to the proximity of that part of the mine to the Bargo River, and also to the Nepean fault. The – an indicator that's since come out of the study was a depressed groundwater table – seemed to be the one – was a bit of an indicator. Since we seen that from Longwall 24A, we've been monitoring intensively since, and we've been able to track that reducing as we've continued on through the longwalls, up until about Longwall 27, 28, where it started to be normal subsidence from start to finish, rather than starting with increased subsidence at the southern end, transitioning back to normal, and then going through.

So we've continued to do that, including for Longwall 31, which is the last one, and that was normal. So we're not seeing any indications yet, at all, from the data that would be – that increased subsidence may occur for Longwall 32. From the mod 4 perspective, it might sound a bit counterintuitive, but from the mod 4 – what we found as a characteristic of the increased subsidence was, we actually had less subsidence beyond the edges of the longwall; we had more subsidence over the top.

MR HUTTON: Yeah, okay.

MR KAY: Reason being, we believe, the rocks there were weaker, and therefore the ground has subsided in more steeply into the trough. So what it might mean for mod 4 area is that if we got increased subsidence over the top of 32, like we saw over longwall 24, the outcome might be less subsidence than we're predicting for those houses that are 200 metres away.

MR HUTTON: Okay.

MR KAY: Because it drops in so much. So – yeah, that's probably the – yeah. Bit counterintuitive to say, if we do get increased subsidence over the top of the panel, we'll get less for those houses in mod 4, but that's based on the data we saw from 24. Yep.

PROF CLARK: So you referred to some of the impacts being the result of the rock type that was sitting over – I think you said – 22 and 24. Do you see similar sorts of rock type associations on the peripheries - - -

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MR KAY: Yes, we do.

PROF CLARK: Okay.

MR KAY: Yeah. Well - - -

PROF CLARK: Can you - - -

MR KAY: It's quite similar all the way through. It was more that those rock – the rock type in that southern part of Tahmoor, Longwall 24, 25, 26, where we had the increased subsidence – it's the same overburden if you were to drill through there, but it was the groundwater table that was less, and it was considered that it was – either more fractured or more weathered, was the – really – the term that came from the modelling that was done.

MR HUTTON: Yep.

MR KAY: That the rocks there were more weathered.

MR BUSH: Yeah, and the weathering profile was – seemed to be – impacted on the proximity to the gorge, the Bargo Gorge. Yeah.

PROF CLARK: So on the map that we have here, the Nepean fault - - -

MR HUTTON: Which is page 11.

PROF CLARK: 11 – I beg your pardon; it's Alice speaking, too – of the environmental assessment report. The Nepean fault appears to be a broad zone, and it appears to be sitting juxtapositioned quite close here, whereas, where you're talking about, it's further away.

MR BUSH: Yeah, I can answer that.

PROF CLARK: Do you have some information there?

MR BUSH: So the Nepean fault – and we've experienced it through all of Tahmoor – it's a major structural feature, and it actually forms part of the Lapstone Monocline – so at Penrith. So it's a regional – quite a large regional structure. It has a – it's not one fault; it's a series of faults in a fault zone. And it's an en échelon structure, so – which means it's a stepped – so there's areas where we can map it. So at the end of – sort of 20 – 30, 31 and the end of – beginning of 32, that's where it ..... and it steps across. So where those dotted lines are is, you know, the fault ramp, and we – in 31 and 30, we did experience, you know, the initial start of it, but, yeah, there's no defined trace of the major fault. And, obviously, we don't like to mine close to that, because it's really bad conditions. So – but then it does step to the west, and then it jumped across, over to this area here. And then, further in Tahmoor South – we haven't mined it near there, but from our exploration – we got 40 drill-holes down

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there – we can see where it steps across again, and so we've mapped it down there. So it does do a defined step structure.

PROF CLARK: So, then, just to make sure I understand you clearly, your assessment of – your probabilistic model is based on the assessment of this being quite similar, because of that en échelon feature, and the stepping across to the south? Your subsidence - - -

MR KAY: Yeah. Well, the – looking at the – having – what we've done is, we've tried to see whether or not the fault itself here, for Longwall 32, is going to create a different subsidence behaviour compared to what we're seeing in the past What we did try to do – what we did do is, there was a body of survey information that we do have between the ends of those longwalls and the fault. And so we did one study there; I think that's in the response to the regulator - - -

PROF CLARK: Page - - -

MR KAY: Resources regulator – which is figure 2.6. Page 11.

MR HUTTON: Of your response?

MR KAY: Of our response, yep. Okay. And in that instance, there are a lot of survey lines that continue on beyond the edges of the longwalls, and we've tried to look into that zone – we've actually tried to show where mod 4 might be relative to – at the same offset distance from that fault as this one is from this fault, and try to look at that information as a way of seeing what experiences we got from there, and whether they have any different behaviour here compared to elsewhere. And the short answer is, we saw very little ground strain in those areas. We haven't had a lot of claims for house damage or anything in those areas. And - - -

PROF CLARK: Do you feel the interaction with potential water ingress would be the same there, Daryl?

MR KAY: In here?

PROF CLARK: Yes.

MR KAY: Oh, and over here? That one, I wouldn't be too sure on that.

MR BUSH: Yeah, but also, the Bargo Gorge structure that was experienced down there - - -

MR KAY: It's a long way away.

MR BUSH: Yeah.

PROF CLARK: Are there any - - -

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MR KAY: Yeah.

PROF CLARK: - - - other water ingress potential - - -

MR KAY: We've got Stonequarry Creek, which is probably the closest, but it's not as deeply incised as the Bargo.

MR BUSH: Bargo.

MR KAY: Yeah.

PROF CLARK: Thank you.

MR KAY: Yeah. So from that – we did a study of that data, and we're able to then - - -

MR HUTTON: That's how our response to the submission .....

MR KAY: Yeah, so that was a way of quantifying what we seen elsewhere, to try to add, as a bit of a predictive tool, for here. The other one we done is – which I think we had in the letter of the 15th September – was just a general look as to where the impacts have – where claims have been reported for houses beyond the edges of the longwalls. And in that instance – I think, in our slideshow here – I think I talked about that.

There was sort of – we've sort of done two checks. So one check is, use our predictions; look at it probabilistically. And we came up with that 95 per cent, four per cent and one per cent figures. The second thing we did was just overlay all of the – where all the claims have occurred, historically, and see if we had any houses that had claimed at the same offset distance of – as the mod 4. And the answer was, we haven't had any; we've had some that are close, but they've been minor impacts, but not in that category 3 and above style impacts, which are the focus of the conditions of consent. Right. So we've just tried to look at it independently, those ways. And I think, really, then the third step is, well, what do we do if we see something? And then we have – we've got management plans in place, that Ron's touching on now - - -

MR BUSH: Yeah.

MR KAY: - - - that look at managing risks if they were to occur, even though they're not predicted to.

MR BUSH: So - - -

MR VAN DEN BRANDE: Thank you. That's good.

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MR BUSH: Okay. So just also – Picton High School – so we've consulted extensively with the high school. So there's a proposal to redevelop the high school, and that's a conceptual illustration of what the high school will look like. So at the end of this year, during the school holidays, the high school's going to be relocated onto demountables in the rear of the school during the construction program. And then, starting January next year, the whole school will be demolished – there's, I think, three buildings that will remain, but they're going to be substantially refurbed as well. And that construction program will be over the next 18 months. So while we're actively mining through 32, the school will be demolished and – going through that demolition process – and then rebuilt.

And then what we're proposing to do is to do substantial monitoring of the relocated school, the demountable part, but also the monitoring of the buildings that aren't demolished, and then the school as it is reconstructed and rebuilt, and then while it's in the active subsidence zone. But I suppose the ..... there is, while we're in the active subsidence zone, the school will either be being demolished or the earthworks or the early works and construction will be starting.

So, just to conclude the presentation, just touching on the community consultation that's been done. So there's two, sort of, specific areas. So there's the stuff that was done specifically for mod 4 – so we had a community information day in September last year; we released a newsletter that went out to the residents. And also we've written to the residents directly regarding mod 4 on two occasions, in September and November last year.

And then for 32 – Longwall 32 – just with our normal, routine consultation that we do. We've had a newsletter that went out to all the residents, not only in the mod 4 area, but the 32 – sort of – impacted area, in June this year. And also a letter, in July this year, to all residents in that Longwall 32 impacted area. And that letter basically explains 32, the process – it explains the mine subsidence, and also the compensation arrangements that are in place; and also offers, if any resident would like to do a pre-mining inspection or a hazard inspection.

MR HUTTON: So, Ron, did the consultation with the Longwall 32 people under the SMP include also those folks in - - -

MR BUSH: Mod 4, yes.

MR HUTTON: - - - mod 4?

MR BUSH: Yes.

MR HUTTON: Okay.

MR BUSH: Yep, yep, yep.

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MR HUTTON: So they – the people in mod 4 were individually engaged around the modification - - -

MR BUSH: That's correct.

MR HUTTON: - - - as well as included in the - - -

MR BUSH: That's correct.

MR HUTTON: - - - SMP.

MR BUSH: Yes, yes.

MR HUTTON: Okay.

MR BUSH: And then we've also, just – sort of – last week – we had a community open day for 32, specific.

MR HUTTON: Yep.

MR BUSH: And that was – sorry – in the Tahmoor Aquatic Centre, for a period of six hours, and people could drop in and ask any questions - - -

MR HUTTON: Quite close to the - - -

MR BUSH: Yes. Yeah, yeah.

MR HUTTON: With respect to the folks engaged around the mod 4, were they just residents within the predicted less than 20 millimetre subsidence, or did you widen your consultation - - -

MS F. ROBINSON: It was mainly the people within the extra subsidence - - -

MR HUTTON: Right.

MS ROBINSON: - - - and the modification.

MR HUTTON: Right.

MS ROBINSON: Yeah.

MR HUTTON: Yep. So your level of confidence that the less than 20 millimetres subsidence line won't move again and create another few houses is high?

MR BUSH: Yeah.

MS ROBINSON: In terms of the boundary, we probably went further.

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MR HUTTON: Right, okay.

MS ROBINSON: Yeah, yeah.

MR HUTTON: Okay. Yeah, okay, so – yep.

MS ROBINSON: We did all .....

MR HUTTON: Okay, thank you.

PROF CLARK: Just for avoidance of my doubt – and I'm outside my area of expertise here, but – when you say that you individually consulted, was that the same as the community information day, or what does that mean? "Individually consulted".

MR BUSH: So – well, there's a community information day, and that's widely advertised in the local newspapers and notice boards. There's a newsletter that gets letterbox-dropped to each resident, and then also there's an individual letter that goes to each resident, yeah. Yeah, so - - -

PROF CLARK: .....

MR BUSH: So – sorry – wasn't – yeah. Yeah, so – and with the pre-mining inspections, and also the hazard inspections, that is – like, we can't insist on those. So we offer those, and it's up to the residents if they would wish – would like us to do that. We then – they approach us, and then we make arrangements to come and do those.

PROF CLARK: Thanks, that answers my question.

MR BUSH: And then, just – whoa. Sorry. Just the last slide, which is our stakeholder engagement – so with mod 4, there was an initial briefing to the Department of Planning and Environment. There's been numerous briefings and discussions with the Picton High School about mod 4 and Longwall 32 and potential impacts, and also the coordination between their project to redevelop the school and our timing, and things like that.

We've had some consultation with Wollondilly Council. Also our T4C, which is our community consultative committee. And as part of the consultation with the high school, we've also briefed the high school's PNC committee. And also, we've briefed the local member, back in September. So we've had some quite extensive consultation with the high school. And also, as part of that, has been coordination with the builders of the high school and the project managers, which are part of the old public works – that are managing it on behalf of the Department of Education.

MR HUTTON: Thank you, Ron.

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MR BUSH: So that concludes the presentation that we've prepared.

MR HUTTON: Thanks. Couple of – thank you for that; it was very informative. Just a couple of quick questions. The assessments that were used in the modification ..... groundwater subsidence: were they specifically engaged for mod 4, or were they part of the wider SMP - - -

MR BUSH: No, they would have been specifically for mod 4, yes.

MR HUTTON: Okay.

MR BUSH: Yes.

MR HUTTON: Thank you.

MR BUSH: Sorry; the flood study was – I correct myself – that was done for the SMP application - - -

MR HUTTON: Yeah.

MR BUSH: The original SMP application, yes.

MR HUTTON: Could the – a number of departments put some submissions back to DP&E around the initial application. Could you just talk us through some of the additional – I guess – work, as I understand, that happened – that occurred in response to those submissions, particularly around the flooding and – I think we've covered the fault issue - - -

PROF CLARK: Yes.

MR HUTTON: - - - that was there.

MR BUSH: Yep.

MR HUTTON: And the other issue was reference to the buried drain, or buried creek, that's referred to in the letters. Could you just talk us through those.

MR BUSH: Yes, so just on the flooding side, the Office of Environment and Heritage – our flood study that was submitted just looked at the normal one per cent exceedance.

MR HUTTON: Yep.

MR BUSH: They requested a PMF – a peak maximum flood. So we engaged the consultant to run that model, and submit it as part of our response to submissions. With the buried drain - - -

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MR KAY: I can speak to that, if you like. Yes. So what we do, typically, for our assessments for the houses at Tahmoor is that we look for potential sources of irregular movement that might occur and one area is we consistently see irregular movement occurring in creeks where we have what we would call "valley closure" and ..... and the concern then is that being in an urban environment, developers have a habit of filling in creeks and putting houses and roads on top of them.

So what we have done in the past is I looked at old historical photographs to see where the creeks were and then you can see the development come over and we were able to map where they were so that we could highlight areas that might be of greater risk of impact compared to all the other houses. Statistically, it shows a slight increase in susceptibility to impact. There have been some areas where they have filled in creeks but those impacts have occurred only when we've mined directly under those buried creeks. The department did identify here that there was a buried creek.

It was in a – it's a bit different to normal. Often the subdivisions – they – it would be flat and you wouldn't be able to see it in the contours but in here you still can because the houses have just been naturally over the natural landform because it's quite a shallow creek but, yes, it had been raised that is there a chance that we could have differential movement in that – in – along that drainage line. That might, therefore, intersect or a house or it could even, in effect, intersect one of the school buildings that's there, even though a lot of them are now going to be demolished before the mine gets there.

But the short answer is, well, yes, it could, but the chances are low and what we've seen, historically, is we've not seen an impact until we mine directly under them. So yes, it does inform us. What it does – what we use that information for is that we will be saying to this – recommend to the mine that we should pay particular attention to certain houses that are built close to that creek so that things like a hazard identification inspection by the structural engineer – they might – yes – they might be requesting one for that area just to make sure that those houses are in some poor structural condition. And then they get this differential movement and then we might have a safety issue, so we run these extra checks. So - - -

MR HUTTON: In the material that I've seen, I haven't been able to see a drawing that showed the alignment of - - -

MR KAY: Yes. You probably haven't seen the report.

PROF CLARK: No.

MR KAY: Yes. Okay.

MR HUTTON: So we need to have a look at it.

MR KAY: Yes.

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MR HUTTON: So there is a map in that report ..... 15 September, but - - -

MR KAY: No, no, this is the report that was done in May 2018.

MR HUTTON: Okay. So in there there's a reference to it?

MR KAY: There is. Yes. There's a reference to it.

MR .....: ..... formed an appendices of the EA submitted to .....

MR HUTTON: Yes. Yes.

MR KAY: Yes. And we've looked at that statistically to see, "Have we had any claims for houses that are sitting over buried creeks off the edges of a longwall – these offset distances?" And the answer is no, but there's – because we will be managing it by monitoring it and a survey and then if we're seeing a regular movement or residents report an impact, then we would activate the response measures that we've got in the management plan to make sure that those houses remain safe and serviceable, so that's the way managing – dealing with that uncertainty that comes from a buried creek. Yes. But, yes, it does go through – pretty much – through that block – Coachwood Crescent, so - - -

MR HUTTON: Okay. We will - - -

MR KAY: Yes. You should be able to see it. I will make sure that's there. Otherwise we will have to send – prepare another plan, but I'm pretty sure it's there.

MR HUTTON: Yes. Okay. Do you have any other questions, Alice?

PROF CLARK: No. Keen to have a look at that, but I think everything else was pretty much covered. Was there anything else .....

MR HUTTON: The consultation with counsel identified and made reference to an old landfill site.

PROF CLARK: Yes.

MR HUTTON: Are you able to ..... I presume it's a – an old landfill that's no longer used and been rehabilitated.

PROF CLARK: Yes.

MR HUTTON: And .....

PROF CLARK: It's better if it's .....

MR HUTTON: Don't know whether that figure – figure 4 out of the ..... report.

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PROF CLARK: Yes. I think if you ..... back here - - -

MR HUTTON: In behind there, yes.

MR BUSH: .....

MR HUTTON: .....

MR BUSH: Yes, along the road there's a couple of industrial properties and then it's at the back there.

MR HUTTON: Yes. So it's on the north-eastern side of the - - -

MR BUSH: That's correct.

MR HUTTON: - - - further away from that longwall there.

MR BUSH: That's right.

MR HUTTON: All right. The SMP for Longwall 32 – the one that you've just had approved for the first 1100, did that carry through all of the previous management plans and commitments and things - - -

MR BUSH: Yes. So there's a new set of management plants that were specifically for 32, so all the public infrastructure plans, built structures – so all the ones that we traditionally do for 31 have been prepared for 32 as well.

MR HUTTON: Yes. But just updated to be relevant to the - - -

MR BUSH: Thirty - - -

MR HUTTON: ..... that are coming up in 32.

MR BUSH: Yes. 32. Yes, yes, yes.

MR HUTTON: So the commitments made around monitoring and so forth all carry through.

MR BUSH: Consistent. Yes.

MR HUTTON: Well, I think that's probably all my questions – I had a couple there, but they were ..... in the presentation, so I think – unless there's any other questions or – we might call the meeting to a close and thank you for your time today and coming up and seeing to the Commissioner. It's always very helpful to hear firsthand, so - - -

MR BUSH: And we're appreciative of the opportunity to present this.

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MR HUTTON: All right. Thank you very much. Well, we might call the meeting to a close and we will leave it there. Thank you.

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