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TRANSCRIPT OF PROCEEDINGS

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INDEPENDENT PLANNING COMMISSION

MEETING WITH APPLICANT

RE: MOOLARBEN COAL MINE STAGE 1 AND 2 MODIFICATIONS

PANEL: **GORDON KIRKBY**
PROF GARRY WILLGOOSE
PROF CHRIS FELL

ASSISTING PANEL: **DAVID KOPPERS**
JORGE VAN DEN BRANDE

APPLICANT: **MICHAEL MOORE**
JAME STEELE

LOCATION: **IPC OFFICE**
LEVEL 3, 201 ELIZABETH STREET
SYDNEY, NEW SOUTH WALES

DATE: **11.46 AM, WEDNESDAY, 27 MARCH 2019**

MR G. KIRKBY: So good morning and welcome. Before we begin, I would like to acknowledge the Traditional Owners on the – of the land on which we meet, the Gadigal people, and pay my respects to their Elders past and present. Welcome to this meeting on development applications 05_0117 MOD 14 and 08_0135 MOD 3,
5 in relation to the Moolarben Mine Coal Project from Moolarben Coal Proprietary Limited, the proponent, who seeks approval to increase its open-cut coal production limits and optimise its coal processing and handling activities, with limited changes to its currently approved mining operations.

10 I'm Gordon Kirkby and the chair of this IPC panel. Joining me are my fellow commissioners Professor Garry Willgoose and Professor Chris Fell. Other attendees today are David Koppers and Jorge Van Den Brande from the Commission, and from Yancoal we have Michael Moore and James Steele. In the interests of openness and transparency, and to ensure the full capture of information, today's meeting is being
15 recorded, and a full transcript will be produced and made available on the Commission's website.

This meeting is one part of the Commission's decision-making process. It is taking place at the preliminary stage of the process and will form one of several sources of
20 information upon which the Commission will base its decision. It's important for the commissioners to ask questions of attendees and to clarify issues wherever we consider it appropriate. If you're asked a question and not in a position to answer, please feel free to take the question on notice and provide any additional information in writing, which we would then put up on our website. We'll now begin. And,
25 Mike and James, if you could just identify yourselves for the benefit of the tape, that would be good.

MR M. MOORE: Okay. I'm Michael Moore. I'm the manager of environmental standards within Yancoal's corporate environment community team.
30

MR J. STEELE: James Steele from resource strategies. Thanks.

MR KIRKBY: Okay. So we might just start – if you could give us - - -

35 MR MOORE: Sure.

MR KIRKBY: - - - sort of an overview, Mike, of the modifications.

MR MOORE: All right. Well, we have - - -
40

MR KIRKBY: And then we can sort of - - -

MR MOORE: - - - some presentations which - - -

45 MR KIRKBY: Okay.

MR MOORE: - - - we're handing out to the commissioners.

PROF G. WILLGOOSE: Okay. Thank you.

5 MR MOORE: And we will make this presentation digitally available. So after, we'll send a copy to Jorge and David.

MR KIRKBY: Great.

10 MR MOORE: Okay. So what I propose is just to run through the presentation. So if you turn to the second slide – this slide basically sets out the structure of the presentation. So the presentation is structured to provide a brief overview of the approved Moolarben coal complex and to set the context of the modification. It will provide a summary of the key components of the modification and the summary of
15 the environmental assessment undertaken for the mod, including key outcomes, proposed mitigation and management measures and key conclusions of the DP&Es assessment report.

20 So if we turn to the next slide, slide 3. The Moolarben coal complex comprises two stages, as shown in the figure on this slide. Stage 1 was approved in September 2007 and includes three open-cut pits, OC1, OC2 and OC3, one underground mine, UG4, a coal-handling and preparation plan or wash-plan, a rail loop, rail spur and rail loading infrastructure, stockpiles and out-of-pit emplacement areas and other infrastructure and facilities to support the operation of the stage 1 development. You
25 can see on the figure that the stage 1 elements are on the left-hand side of the figure.

30 Stage 2 was approved in January 2015 and includes one open cut mine, OC4, two underground mines, UG1 and UG2, stockpiles and out-of-pit emplacement areas, and other infrastructure and facilities to support the operation of stage 2. The rehabilitated final landform of the complex includes three approved final voids, two associated with stage 1, including a final void in OC3, and one for stage 2. These three final voids are shown in the figure in dark green. Both stage 1 and stage 2 have commenced with coal currently being mined in OC1, OC2, OC4 and UG1.

35 Coal mined in the open-cut pits is transferred to the CHP for washing; coal from the underground mine is conveyed directly to product stockpiles, that is, it bypasses the washing circuit. All product coal is loaded onto trains and transported to the Port of Newcastle for export. If we turn to slide 4, this slide provides an overview of the proposed modification. In summary, the modification consists of increasing open cut
40 ROM and total annual coal production limits, the realignment and/or the relocation of OC3 infrastructure, revised OC2 and OC3 pit limits, an internal road between OC2 and OC4, a bypass conveyer for open cut ROM coal, a water treatment facility, revised water discharge release conditions and discharge location, amended final OC2 and OC3 land uses, as well as other minor infrastructure changes within the
45 extents of approved disturbance limits.

5 The figure on this slide shows the extent of the mod components and changes to the
areas of surface disturbance for the Moolarben complex. Areas of additional
disturbance associated with the mod is shown in the blue hatching; areas which are
currently approved for disturbance and would no longer be required as shown by
10 green hatching; the areas that are no longer required to be disturbed would be
relinquished as part of the mod. Further details of each component of the mods are
provided in the following slides. Importantly on slide 5, the modification would not
change the currently approved underground operations, including layouts and
production limits, OC1 or OC4 pit limits, hours of operation, blasting frequency or
limits, side access, method of reject disposal, peak workforce numbers or final voids.

15 On slide 6, a mine planning review indicated that Moolarben could optimise its open
cut operations to increase annual coal production with no material change to the
existing mine fleet. The modification therefore proposes increasing open cut ROM
coal and annual production limits, including increasing stage 1 open cut ROM
production from eight to 10 million tonnes per annum, that is, from OC1, OC2 and
OC3 combined, increasing stage 2 open cut ROM production from 12 to 16 million
tonnes per annum, that is, from OC4, and increasing overall open cut ROM limits
20 from 13 to 16 million tonnes per annum, that is, from stage 1 and stage 2 combined.
This would then increase the annual ROM coal processing or washing limit from 13
to 16 million tonnes, increase the combined annual open cut and underground ROM
production limits from 21 to 24 million tonnes and increase annual product coal from
18 to 22 million tonnes. There would be no change to the approved underground
ROM limits.

25 On slide 7, this slide provides further detail of the proposed changes to OC2 and
OC3, including changes to the pit limits and infrastructure arrangements. As shown
previously, the blue hatching shows the areas of proposed additional disturbance and
the green hatching shows currently approved disturbed areas, which would no longer
30 be required and would be relinquished as part of the mine. The brown dash line
shows the revised OC2 and OC3 pit limits. Hopefully this is clearly indicated on the
figures.

35 MR KIRKBY: Yes.

MR MOORE: Importantly, you can see that, in OC2, the changes that are proposed
are quite minor.

40 PROF WILLGOOSE: Just this tiny little bit to here?

MR MOORE: That's exactly right, Gary.

PROF WILLGOOSE: Yes. Yes.

45 MR MOORE: The OC2 and OC3 changes include straightening and widening of
the approved haul road between OC2 and OC3 and removing the approved
permanent OC3 out-of-pit emplacement. However, waste rock extracted during the

initial development of OC3 would be temporarily stockpiled and then used as backfill in OC2 and OC3. Other changes include relocating the approved OC3 infrastructure are to within the extents of the approved out-of-pit emplacement footprint and an approximate 200-metre extension to the pit limit of OC2. This is
5 required to avoid leaving a potentially geotechnical unstable section of hill in that area. In addition, the western limits of OC3 would be straightened to improve mining efficiency and the geotechnical stability of the final landform.

10 A minor extension is also proposed to the northern pit limits of OC3 to account for additional coal that was detected during exploration drilling. If we turn to the next slide, slide 8, the figure in this slide shows the general location and extent of disturbance required for the internal OC2 to OC4 road and the open cut ROM coal by a bus conveyer. These are shown as blue hatching on the figure. The internal road
15 would be an unsealed access road connecting OC2 to OC4, which would generally be coincident with an existing track. This road would be used for the occasional transfer of mining equipment only and would not be used to haul coal or overburden. So is that evident for you guys in the figure? It's in the bottom of the figure there.

20 PROF WILLGOOSE: Yes. This one.

MR KIRKBY: This one.

PROF WILLGOOSE: Yes.

25 MR MOORE: Yes.

MR KIRKBY: Yes.

30 MR MOORE: The bypass conveyer is also shown in blue hatching. This would enable open cut ROM coal to bypass the wash circuit and would link with the existing underground bypass conveyer circuit. This would create additional marketing opportunities for Moolarben and reduce the production of washing rejects. The underground coal conveyers are shown as the grey dash lines on the figure and
35 the proposed open cut bypass conveyers are shown as black lines. Other minor infrastructure upgrades would be required to support the bypass of open cut coal. These upgrades would be within approved disturbance areas and include a stockpile area for the open cut bypass coal, extending the existing underground coal conveyer system and a conveyer to connect to the existing underground coal conveyer.

40 On next slide, slide 9, the modification also proposes changing the approved final land uses for OC2 and OC3. The approved final land uses include rehabilitating OC2 to a mix of native veg and agricultural areas and OC3 for an agricultural land use. So that's what's currently approved. The mod proposes rehabilitating OC2
45 completely to a native vegetation land use and OC3 to a mix of native veg and agricultural areas. The western side of OC3 would be rehabbed with native veg to connect with the existing vegetation to the west. The lower flatter areas would be

rehabbed for an agricultural land use. As mentioned earlier, a final void is approved at the southern end of OC3. The modification is not seeking to change this.

5 The figure shows the modified areas of final rehabilitation. The bright green colouring shows areas proposed for native veg, either woodland forest or grassy woodland, and the light green shows areas to be rehabilitated for agricultural purposes. The final void in OC3 is shown in dark green. These revised final land use outcomes would improve native veg connectivity and provide improved biodiversity outcomes. On slide 10, this slide provides detail of the proposed water treatment facility. The figure shows the indicative water treatment plant footprint shown by the black outline and additional storage dams outlined in blue.

15 The water treatment facility would sit in the vicinity of the rail loop with an approved disturbance areas. The requirement for the treatment facility was identified through the proactive review of the site water balance. This is an integral part of the mine's planning and scheduling review process. The water treatment facility will avoid the build-up of mine water in the long term and ensure that control releases are in accordance with Moolarben's environmental protection licence. Brine generated by the treatment process would be managed in the first instance by diluting with stored water and used in dust suppression across the site. Residual brine would be permanently stored in the UG4 void following the completion of mining in that underground pit.

25 On slide 11, the modification also includes relocating Moolarben's existing licensed water discharge point. The figure at the top shows the currently approved EPL release point, which is into Bora Creek, within the rail loop. The mod proposes changing this location to the confluence of Bora Creek and the Goulburn River diversion. The top figure also shows the indicative location of the water transfer pipeline. The photograph at the bottom, on the right, is an image of Bora Creek looking downstream. This shows the general nature of the creek Moolarben is already licensed to discharge into.

35 The photograph on the left is of the confluence of the Goulburn River diversion and Bora Creek. This is the proposed relocated discharge site. The channel bed at this location is formed in sandstone bedrock and has a rocky base covered with a layer of sediment. As can be seen, the channel is well vegetated with reeds and grass. The approved EPL discharge point would be relocated to this environmentally superior location and would therefore avoid potential erosion from controlled releases into and along Bora Creek.

40 If we turn to the next slide, slide 12. This slide summarises the approved and proposed controlled water releases from the Moolarben coal complex. Moolarben's EPL currently authorises the release of up to 10 megalitres per day, at a maximum salinity of 900 microsiemens per centimetre. The mod proposes an increase to controlled release volumes during certain periods of the mine life and a reduction in discharged water salinity limits. There would be no change to existing 10 megalitre

per day limit up to the commencement of mining in underground 4 and following completion of mining in underground 4.

5 There would be an increase to up to 15 megalitres per day during mining operations in UG4. This would be for an indicative five-year period, from about 2022 to 2027. If required, there would be greater than 15 megalitres per day discharge during prolonged wet periods but only with the approval of the EPA. These proposed amended released limits were developed collaboratively with the EPA and DP&E. The mod also proposes a reduction in the existing authorised EPL salinity limit from 10 900 to 685 microsiemens per centimetre. This revised limit was developed in consultation with EPA and DP&E as per the ANZECC water quality guideline process.

15 Turning to the next slide, slide 13. This slide summarises the biodiversity impacts of the mod and the proposed biodiversity offset strategy. The figure shows some of Moolarben's existing biodiversity offset areas in the vicinity of the mod components. Note that the offset areas shown are only a portion of Moolarben's total biodiversity offsets. The figure also shows the Gilgal property which is proposed as a land-based offset for the modification. The Gilgal property is owned by Moolarben and it abuts 20 the Munghorn Gap Nature Reserve to the south. Other nearby national parts and nature reserves are also shown on the figure. The modification proposes an additional disturbance of about 80 hectares, comprising 39 hectares of native veg and 41 hectares of non-native vegetation.

25 As mentioned previously, about thirty-four and a half hectares of vegetation previously approved for clearing would no longer be required and would therefore be relinquished. This includes about 15 hectares of native vegetation. The Gilgal property is proposed as a land-based offset against this additional disturbance. The OEH has reviewed and accepted the offset calculations presented in the biodiversity 30 assessment review in the EA. This was undertaken by Ecological Australia. The DP&E assessment report considers the proposed impacts to be acceptable, subject of course to the proposed avoidance, mitigation and offsetting measures. Moolarben would secure the Gilgal offset area as per the draft modified conditions of approval.

35 On slide 14, the next slide, the proposed increase production limits and minor increase in disturbance areas has the potential to generate air quality impacts. This was assessed by Todoroski Air Sciences which predicted no exceedance at the relevant PM₁₀, PM_{2.5}, total suspended particulates or dust deposition criteria and any privately owned receptors due to the emissions from the Moolarben complex 40 incorporating the modification.

The DP&E assessment report considers that predicted air quality would be similar to the existing approved levels and can be effectively managed under the existing conditions of approval. The EPA has recommended inclusion of a real time PM_{2.5} 45 monitor and Moolarben is in the process of installing this monitor. Moolarben would continue the operation of its real time and proactive air quality management system, including incorporating the PM_{2.5} monitor into this system.

Slide 15. As indicated previously, the optimisations to open cut operations, including the increased production limit, can be achieved with no material change to the existing mining fleet. Notwithstanding, a noise assessment was undertaken by SLR Consulting which predicted that Moolarben would continue to comply with its existing noise limits at all private residences.

Also, that rail noise along the Sandy Hollow/Gulgong rail line would continue to comply with the relevant rail noise criteria. The DP&E assessment report considers that predicted noise levels would continue – would be similar to approved levels and can be effectively managed under the existing conditions of approval. Moolarben would continue the operation of its real time and proactive noise management system.

Slide 16. This last slide summarises the key conclusions of DP&Es assessment report for the modification. The DP&E concluded that any additional impacts from the mod would be minor, including cumulative impacts. Controlled water releases would be as per the ANZECC Guidelines and at the currently approved release rate for the majority of the mine life. Additional clearing would be relatively small and compensated by a significant land-based offset, as well as other approved mechanisms, such as rehabilitation.

Further, that the amenity impacts of the proposal, that is, the noise and air quality impacts, can be managed under the existing conditions of approval. DP&E has proposed amended conditions to both the stage 1 and stage 2 project approvals to accommodate the modification. Moolarben and Yancoal accepts these proposed amended conditions. That's the end of the presentation.

MR KIRKBY: Okay. Just one thing I think we would like you to just take us through is the revised groundwater modelling process that took place because obviously that has come up with different predictions for groundwater behaviour, creating the, obviously, need to increase discharge limits and things. It would be good if you could just explain that process for us.

MR MOORE: Okay. The existing conditions of Moolarben's approval require a revisit of the groundwater model so basically update and recalibrate the model against the contemporary or longer term monitoring that the site is undertaking. So combined with that and combined with advances in groundwater modelling – so the initial model to support the original stage 1 application and the stage 2 application used the MODFLOW-SURFACT. The new model uses a different discretisation process – it uses an AlgoMesh – so that more detail can be provided in the model. It also includes additional layers in the model, if I'm correct, James.

MR STEELE: Yes.

MR MOORE: So the model is technically superior and it's a contemporary model. Using the updated, or the long term groundwater modelling data, that model has then been calibrated against that monitoring data. So that's the context. The original

5 application for stage 1 and for stage 2 indicated a certain mining sequence, if you like, between the open cut and the underground operations. So for the original stage 1 application, it contemplated – it didn't contemplate stage 2 so it contemplated stage 1 open cuts progressing from OC1, OC2, OC3 as well as underground 4 coming on line.

10 With stage 2, that approved two new undergrounds, underground 1 and 2 and with that there was a resequencing of the mine schedule. So the mine sequence and schedules that were contemplated in the original models is very different to what's contemplated in the new groundwater model and that's, again – a second reason – why there's a difference between the two models. So one is the updated or contemporary, state-of-the-art if you like, groundwater model using updated monitoring data to calibrate that model plus incorporating the revised mine sequence.

15 PROF WILLGOOSE: So, I guess – you know, just follow that up. The – looking at the groundwater modelling, okay, Merrick has done your existing approval groundwater modelling with the new model - - -

20 MR MOORE: Yes.

PROF WILLGOOSE: - - - and new data and the modification. And basically the difference between those two is relatively small relative to a change between the old model and the new model.

25 MR MOORE: That's correct.

30 PROF WILLGOOSE: Okay. So I guess the concern – well, not the concern but the question we have is what components of the new model – because you have mentioned there's more layers in the new model, there's unstructured grids in there rather than rectangular grids, and obviously the new data as well. Unfortunately, in – you know – unfortunately is not the right word but the Granville report doesn't really show or give us the information to be able to assess what components of that updating, you know, is important. It's all about the confidence that the community can have in the reliability of the model.

35 MR MOORE: Can - - -

40 PROF WILLGOOSE: So is it the connectivities and restorativities? Is it the geologic representation? Is it the fact that you have gone from a grid to an unstructured grid?

MR MOORE: They're very technical questions and we would have to take that on notice.

45 PROF WILLGOOSE: But - - -

MR MOORE: But, look, I think - - -

PROF WILLGOOSE: That's fine. That's fine. Yes.

MR KIRKBY: Yes.

5 MR MOORE: I think the important thing, from the context – for the context of the mod is that – I guess there's an overprint of that process of updating and calibrating the new model - - -

PROF WILLGOOSE: Yes.

10

MR MOORE: - - - against the mining activities that are now underway as part of those original stage 1 approval conditions versus looking at the change to the groundwater impacts that are predicted as a result of the modification. So given that the majority of the changes that the modification is seeking are around those minor increase to OC2 pit limits and the bigger amendments around OC3. That's why there's not a great deal of difference between, you know, that that changed between what was previously approved and what we're seeking approval for in terms of the change in impacts.

15

20 PROF WILLGOOSE: No, I perfectly understand that. I guess the question is that some of the community submissions have been around why has the mine gone from not needing a discharge licence to - - -

MR MOORE: Well - - -

25

PROF WILLGOOSE: - - - or – sorry – an increased discharge licence.

MR MOORE: Yes.

30 PROF C. FELL: Yes.

MR MOORE: So the mine is - - -

PROF WILLGOOSE: Yes.

35

MR MOORE: The original stage 1 application always contemplated the need to potentially discharge treated water. And that was linked to the development of the underground 4 mine. And that's why, I guess, Moolarben, in its environmental protection licence, has the authorisation to discharge up to 10 megs per day - - -

40

MR KIRKBY: Yes.

MR MOORE: - - - at 900 – maximum of 900 microsiemens per centimetre. Now, because it hasn't actually started development of underground 4, it hasn't necessarily had the need to discharge at those volumes. So it's only now that they're contemplating moving into underground 4 in the next few years that, you know, the revision – as I indicated in the presentation, the revision of the water balance has

45

indicated that there will be a surplus of water that will need to be managed. And Moolarben doesn't have the onsite storage capacity to manage all of that surplus water without discharging some of it.

5 PROF WILLGOOSE: Okay. No. I understand what you're saying.

MR MOORE: Okay.

10 PROF WILLGOOSE: From that point of view – I guess to just come back to the original reason why I asked the question – is that – and, you know – and I accept your point about – well, you've actually got two things going on here: one is the revised groundwater water, and the modification.

MR MOORE: Yes.

15

PROF WILLGOOSE: Now, in the community's mind, it's very easy to confuse those two.

MR MOORE: Yes.

20

PROF WILLGOOSE: And I think that there may be an element of that in some of the community comments. So I guess this may – you know, I mean, it may be a suggestion or something like that, that if you're able to get some indication – or, for instance, let's take an example, of showing how the old model calibrates to the new data relative to the new model, to give some confidence that, right, the old model didn't fit the new data that you didn't have when that model was developed and that this model fits it better, as an example of what I'm saying.

30 MR MOORE: Garry, look, I appreciate where you're headed. I'm not sure that that would necessarily – I mean, that would be a fairly extensive exercise in itself. And I'm not sure it would actually – I mean, apart from, I guess, placating the community's concerns, I'm not sure whether it would really serve a clear purpose.

35 PROF WILLGOOSE: Well, I mean, part of this is, you know, the confidence that everybody has in the model. I mean, we know models are dependent upon the data that they're calibrated to. So there is a degree of uncertainty in these models. And, you know, the fact that the model's changed from one that was – five years ago? Six years ago?

40 MR MOORE: Yes. 2005. Maybe 10 - - -

PROF WILLGOOSE: Okay. 10 years.

MR MOORE: - - - 15 years ago.

45

PROF WILLGOOSE: Okay. 10 years ago.

MR MOORE: Yes.

PROF WILLGOOSE: Okay. So 10 years ago to now. Okay. So the immediate response, particularly for non- – you might say non-technical people, is, like, well, why has it changed? Now, between us, we can say yes, there's new data. The model's been approved. It's like a new model car. It's a better one than the old model car. It just would be nice, I think, to provide some confidence to the community that this model is, in fact, better. And the way to – the obvious way for me – and I'm not thinking of a really comprehensive study but something to use the old model and just show how it fits to some of this new data relative to the new model.

I'm sure from what you're saying that the new model will fit better. But as a matter of being able to put up something that the community can understand and say, "Well, look, you know, here's the old model. Here's the new model. Here's the data we now have that we didn't have when we developed the old model. You can see how the new model fits this data better", and give the community confidence that – "Yes. This model can be relied upon."

MR MOORE: But I think we'll have to take that on notice and - - -

PROF WILLGOOSE: No. Look - - -

MR KIRKBY: That's fine. Yes.

PROF WILLGOOSE: That's fine.

MR MOORE: Yes.

PROF WILLGOOSE: I'm just trying to explain it well enough that you can see where I'm coming from here, from that point of view, because there's no doubt going to be lots of questions about the reliability of a groundwater model, because it has a direct implication in terms of the water balance, and the water balance has the implication in terms of increased discharge into the Goulburn River. Okay? So, you know, it's a logical thing. If you don't believe that part of it, then the rest of it you can't believe as well. So - - -

MR MOORE: So I think that it's important to point out that the discharge limits are predicted maximums, and so Moolarben is not anticipating that it would be discharging at that maximum for 365 days over the five years, for example, of the operation of the underground 4 mine.

PROF WILLGOOSE: Yes. Yes.

MR MOORE: So, you know, I can't sit here and say exactly what's going to be discharged on any one day, but, of course - - -

PROF WILLGOOSE: Yes. Well - - -

MR MOORE: - - - the site water balance with all – and with the groundwater model – they take a conservative approach so that we’re overestimating the impacts, if you
5 like, to put us in a position where we’re not against a point where we would go into a non-compliance position.

PROF WILLGOOSE: Again, I perfectly understand that, however, from the point of view of the community, they would look at this and say, “Well, that means you
10 can discharge more or less to your heart’s content.” I’m not saying you would, but you potentially could, and so they would look at this and say, “Well, you know, you’re asking for a 50 per cent increase”, okay, and the Department of Planning has said, “Well, look, we will think about that for part of the sequence of the mine, not
15 for the early part when you’re not looking for a discharge increase.” So, look, I perfectly understand where you’re coming from, okay, but I’m, again, looking at it from the point of view of these other legal limits unless you go back to the EPA and ask for a waiver on that limit

MR MOORE: And the other – I mean, the other important thing to point out here is
20 that we need to amend the EPL limit. So the vehicle or the licence to discharge really comes through the EPL, and that’s why, you know, there was so much effort put into reaching this collaborative outcome with the EPA and DPE in terms of the volumes and the quality criteria limits.

PROF WILLGOOSE: Yes. And that’s fine. I mean, my back-of-the-envelope
25 calculations here of the loads are that, with a reduced salinity, which you’re allowed to discharge at the load at that maximum, is about the same for the 10 as it is for 15 at a lower salinity, so. So that we had some discussion with DPE about the water – Salinity Water Trading Scheme in the Hunter.

30

MR MOORE: Yes.

PROF WILLGOOSE: That means that you’re, you know, roughly speaking, not
35 putting extra salinity load in at Denman into the Hunter River, so.

35

PROF FELL: If I could just summarise my understanding, which might extend to
areas of questioning, basically, your new model says you may have, under
circumstances, to have a higher rate of discharge than you’ve had in the past. Now, I
know that you haven’t met all of that discharge requirement in the past, but
40 extending the amount of mining you’re doing, therefore you might have to have a higher rate of discharge. Now, that’s fine. I then I ask the question, well, how much salt does that actually mean you’re putting into a local system? So if I multiply the increased rate of discharge by the concentration – that’s at 585 - - -

45 MR MOORE: 685.

PROF FELL: - - - versus the original one - - -

MR MOORE: Yes.

PROF FELL: - - - by the 900, am I doing better, if you follow me? So that's a question that a lay person has done the sum.

5 PROF WILLGOOSE: That's right. I've done the sum while you were talking, so - - -

PROF FELL: Right. That's a question a lay person might well ask.

10 MR MOORE: Yes.

PROF WILLGOOSE: Yes.

15 PROF FELL: And that's what we're seeking clarification on, I think, and - - -

MR MOORE: So I think he has - - -

PROF FELL: - - - at the same time - - -

20 MR MOORE: Garry has got the answer in front of him.

PROF FELL: Well - - -

25 PROF WILLGOOSE: Well, that's at the maximum rates.

MR MOORE: Yes.

PROF WILLGOOSE: Probably, as well, it would be – I think what Chris is getting at is it would be useful from the point of view of – you've done your 105 simulations of climate and that sort of thing – to actually look at, well, we've sort of – what would be the load implications of those in terms of a river; is that - - -

30 PROF FELL: Correct. The salt load.

35 PROF WILLGOOSE: Yes.

PROF FELL: I mean, essentially, you've dropped the allowable conductivity to 75 per cent of what it was. Now, what does that mean in terms of the additional flow you can put down and have the same salt though? Is that - - -

40 PROF WILLGOOSE: Yes. And that's – so under the old conditions that, you know, I thought I would just multiply

45 PROF FELL: It'spoint 7-5.

PROF WILLGOOSE: - - - 900 versus the new conditions at maximum is 1027, so it's about 10 per cent higher under your new conditions under the modification than it is under your existing conditions.

5 PROF FELL: Actually, it's 30 per cent higher.

PROF WILLGOOSE: Well, I did the - - -

PROF FELL: point 7-5.

10 PROF WILLGOOSE: That's why I pulled out my phone. I was just about to do the calculation, and so - - -

MR MOORE: Look, I think if you - - -

15 PROF FELL: Anyway, look, it's fine.

MR MOORE: - - - have got some questions there, I think - - -

20 PROF WILLGOOSE: Yes.

PROF FELL: You understand where we're coming from?

MR MOORE: Yes.

25 MR KIRKBY: Yes.

PROF FELL: Just some clarification on that.

30 PROF WILLGOOSE: Yes.

PROF FELL: Now, could I extend the question - - -

MR KIRKBY: Yes. Go, Chris. Yes.

35 PROF FELL: - - - in a slightly different direction? There are salts on salts and I know that the use of conductivity is a standard method by the EPA. Will composition of the flow be the same, or will it be different, and, generally, what salts are there in the water that you're discharging, or what material is it primarily? Is it primarily chlorides, or is it bicarbonates, or is it sulphates?

40

MR MOORE: Garry, I would have to – sorry – Chris, I would have to take that question on notice.

45 PROF FELL: Fine, but I - - -

MR MOORE: Yes. So I understand that the assessment documents actually do go into some of that detail, but if you've got a specific question, and if you're able to forward that to us, then we will provide a response.

5 PROF FELL: We can do that.

MR MOORE: Yes.

10 PROF WILLGOOSE: Yes. I don't think there was any chemistry in the groundwater report at least.

MR MOORE: Not in the groundwater assessment - - -

15 PROF FELL: I'm sure there will be some chemistry

PROF WILLGOOSE: There's a - - -

MR MOORE: - - - but there's - - -

20 PROF FELL: Yes.

PROF WILLGOOSE: I don't have the geochemistry one here. Sorry. Yes. That's - - -

25 MR MOORE: Yes. There's a hydrological assessment and an aquatic ecology assessment, and both of those - - -

PROF FELL: We will check out in answering - - -

30 PROF WILLGOOSE: I don't have those sitting in front of me to say – yes

PROF FELL: In answering that question, we will check out what's available.

35 PROF WILLGOOSE: Yes.

MR MOORE: Yes. So both of those assessments looked at – in fact, the EA – the assessments in the EA looked at discharging at the 900 microsiemens per centimetre – and correct me if I'm wrong, James – but the conclusions of both the aquatic ecology and the hydrological – or hydrology surface water assessments concluded

40 that, at the existing salinity levels with the proposed increases in volume, there would be negligible impact on the river system.

PROF FELL: Now, with regard to the salt that you actually capture in the reverse osmosis system, that's a brine stream - - -

45 MR MOORE: Yes.

PROF FELL: - - - you're actually proposing to store that, that which isn't used in damping down roads for dust purposes, you're proposing to store that in an underground mine.

5 MR MOORE: Yes.

PROF FELL: How stable do you feel that is in terms of the surrounding groundwater?

10 MR MOORE: From what I understand, the primary aquifer in the whole Permian sequence is the coal seams themselves, so, essentially, that's where the salty water is coming from. So the proposition is really just to put that salt, albeit in a more concentrated level, back into where the coal seam has been extracted in the underground mine. So - - -

15

PROF FELL: The voids. Yes.

MR MOORE: Yes. So the technical assessments actually looked at that and there was - I think there was an additional report provided by Noel Merrick that indicated that there would be very limited opportunities for the salt that's put back into the coal seam area and that's mined down in the underground mine to migrate into other aquifers.

20

PROF FELL: Okay. In - okay. Thank you. And if I might, I just want to follow-up on that.

25

MR KIRKBY: Sure

PROF FELL: On another project, we've been looking at storage in what I will call mine voids, right.

30

MR MOORE: Yes.

PROF FELL: And the issue of safely containing that became quite important. In other words, will it be stored down dip, I think the expression is, so that there's no risk of sudden water ingress into sections that are being mined?

35

MR MOORE: Yes. Yes. So the underground - Chris, the way that the coal seams dip is to the north, north-east - - -

40

PROF FELL: Yes.

MR MOORE: - - - and underground 4 is to the north of the open cuts. So the actual finished extraction point of underground 4 is actually in the most down dip position of the coal seams.

45

PROF FELL: Thanks for that clarification.

MR STEELE: Chris, attached to the Responses to Submissions document is Dr Merrick's specific analysis of the - - -

5

PROF FELL: Okay. I shall certainly look at that in detail. Thank you.

MR STEELE: - - - void, which considers how long it's a sink for and potential – you know, due to density and diffusion even, the limited potential for migration out of the void of those

10

PROF FELL: Thank you.

MR KIRKBY: Just to – sort of related but not directly related question. Just sort of an update. A lot of the community submissions have raised the issue of The Drip and a handover of The Drip. Where's that at? I understand - - -

15

MR MOORE: Gordon, I'm not directly involved in that whole process but what I understand is that we're going through the subdivision process - - -

20

MR KIRKBY: Yes.

MR MOORE: - - - subdividing that parcel of land and I believe that it has just caught up with administrative processes, either with the Crown Lands or with the Lands Registry Office. Look, if you need further detail, I can certainly provide that.

25

MR KIRKBY: Yes. Maybe an update, just because – obviously, it has come through in submissions.

MR MOORE: Yes.

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MR KIRKBY: It's not directly related but obviously there's some concern there as to where that process is at. Yes.

MR STEELE: Gordon, just in the department's assessment report - - -

35

MR KIRKBY: Yes.

MR STEELE: - - - on page 41, the final two bullet points of that table give the status of OEH and New South Wales Lands and Registry finalising that.

40

MR KIRKBY: Okay.

MR MOORE: Yes. So that was – I mean, that's a couple of months old now.

MR KIRKBY: Yes. We - - -

45

MR MOORE: But I do understand that we're still battling with the bureaucracy, if you like.

MR KIRKBY: We asked them and they sort of gave a similar answer.

MR MOORE: Yes.

5 MR KIRKBY: That, effectively, everything is in. It's just - - -

MR MOORE: Yes.

MR KIRKBY: It's just being sorted through so it's not - - -

10 MR MOORE: Look, what tends to happen as well - - -

MR KIRKBY: It's just nice to have a context.

15 MR MOORE: - - - is that Moolarben is a joint venture operation and within the last six, eight, 12 months, Yancoal basically bought out one of the JV partners which increased Yancoal's percentage ownership of the mining complex. But the flow on effect of that is that all of the land titles and water licences, for example, that are in the name of - are actually in the name of the individual JV partners - - -

20 MR KIRKBY: Right.

MR MOORE: - - - so whenever we have a change of the JV, we have to go through this fairly extensive process of changing the names on the titles and I think that that has overprinted this whole issue of being able to subdivide the land and getting it registered. So you would, hopefully, be aware that the area of land that encompasses The Drip itself has already been subdivided out and is part of the national park. So what we're talking about now is a larger encompassing area which we committed to provide to OEH as part of, or for a state conservation area.

25 MR KIRKBY: Okay.

MR MOORE: So it's not - you know, we're not - from what I understand, it's not our fault, if you like, that it has not - hasn't progressed.

30 MR KIRKBY: Yes.

MR MOORE: We're certainly doing everything that we can to progress it.

35 MR KIRKBY: The ball is not in your court.

MR MOORE: Yes, that's right.

MR KIRKBY: Okay.

40 MR MOORE: Thank you.

45

MR KIRKBY: Okay. Right. Okay. Any further questions?

PROF FELL: Well, I have one.

5 MR KIRKBY: Yes.

PROF FELL: And since your documents were written and indeed since the assessment by DP&E, the Honourable Brian Preston has come out with the Rocky Hill judgment which actually talked about greenhouse gas emissions, not just on-site
10 but actually use of the product elsewhere. I'm just wondering how you would respond to that.

MR MOORE: Very carefully, in the first instance. I guess, in the context of the modification - - -

15

PROF FELL: We are being recorded, so your care is appropriate.

MR MOORE: In the context of the modification, Chris, we're looking at an increase in annual limits to production, not an overall significant increase in the amount of coal that is being mined. So essentially, it's just bringing everything
20 forward. We would argue that the greenhouse gas emissions associated with the mine have already been assessed and approved. I think in the earlier approval applications and assessment documents that the three scopes, scope 1, 2 and 3, were considered. I think it's best just to leave it there.

25

PROF FELL: Thank you.

MR KIRKBY: Okay?

30 PROF WILLGOOSE: I'm all right.

MR KIRKBY: No further questions?

PROF WILLGOOSE: No.

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MR KIRKBY: Gentlemen down the end, do you - - -

MR:

40 MR KIRKBY: Okay. Thanks very much, Mike and James, for coming in.

MR MOORE: Thanks, Gordon, Garry, Chris.

45 **RECORDING CONCLUDED**

[12.34 pm]