



**New South Wales Government**  
**Independent Planning Commission**

**TRANSCRIPT OF PROCEEDINGS**

RE: BOWDENS SILVER (SSD-5765)

**DEPARTMENT MEETING**

COMMISSION PANEL:           PETER DUNCAN AM (Panel Chair)  
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LOCATION:                        VIA VIDEO CONFERENCE

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MR DUNCAN: Good morning and welcome. Before we begin, I'd like to acknowledge that I am speaking to you from Gadigal Land, and I acknowledge the traditional owners of all country from which we virtually meet today, and pay my respects to their Elders past and present.

Welcome to the meeting today to discussing Bowdens Silver Project, currently before the Commission for determination. The applicant, Bowdens Silver Pty Ltd, is seeking approval to develop an opencut silver, lead and zinc mine approximately 2 kilometres north of the village of Lue in the Midwestern Regional Council area. The mine would  
10 extend and process around 30 million tons of ore and up to 2 million tonnes per annum to produce silver, lead concentrate and a zinc concentrate.

My name is Peter Duncan. I am the Chair of this Commission Panel, and I am joined by my fellow Commissioners Claire Sykes and Peter Cochrane. We're joined by Geoff Kwok and Nima Salek from the office of the Independent Planning Commission. In the interests of openness and transparency and to ensure the full capture of information, today's meeting is being recorded, and a complete transcript will be produced and made available on the Commission's website. This meeting is one part of the Commission's consideration of this matter, and will form one of  
20 several sources of information upon which the Commission will base its determination. It is important for the Commissioners to ask questions of attendees and to clarify issues whenever it is considered appropriate. If you asked a question and are not in a position to answer, please feel free to take the question on notice and provide any additional information in writing, which we will then put on our website.

I request that all members here today introduce themselves before speaking for the first time, and for all members to ensure they do not speak over the top of each other, to ensure accuracy of the transcript. We will now begin, and, as I said, we will ask questions, however, you have a fairly comprehensive agenda there – I think it's best  
30 we run through that and if we have any questions along the way, we'll raise them. So, Clay, are you going to lead, or Stephen?

MR PRESHAW: Yes, me. Thank you, Chair.

MR DUNCAN: Yes. Over to you, Clay.

MR PRESHAW: Yes, good morning. Just for the record, my name is Clay Preshaw. I'm the Executive Director of Energy, Resources and Industry Assessments for the Department of Planning and Environment, and I am here today with my colleagues  
40 Steve O'Donoghue, who's the Director of Resource Assessments, and Rose-Anne Hawkeswood, who's a team leader within the same team, and Phil Jones, who's an

environmental specialist who's assisted us on this project. I'd like to start by thanking the Commission for giving us the opportunity to brief you on the project today, and I will also just say, for the purposes of our discussion today, when I make reference to or when we make reference to "the project", it refers to the Bowdens Silver Project.

I will begin with a few brief comments about the assessment report itself and then briefly identify what we believe are the key issues associated with the project, and, as you mentioned, Chair, if we don't have the answers to your questions at hand, then we will let you know and come back to you in writing later. I will also use this  
10 opportunity to provide further details on the key assessment issues and our evaluation of the project, and in particular the key reasons for our recommendation to approve the project to the Commission.

So, look, as I've said in other meetings like this, our assessment report is not meant to be a full compilation of all the information that's been presented throughout the assessment process. All of the key relevant information informing the assessment is publicly available on the Department's Major Projects Planning Portal, and can be accessed if necessary. Instead, our assessment report is really a distillation of all that  
20 material, and it's designed to give the decisionmaker - in this case, the Commission - sufficient information to make a determination. I will say that we are confident that our report does provide a good summary of our views about the project, but this meeting and the upcoming public hearing will also be important for fleshing out key issues relating to the project, from the community perspective in particular.

So moving to some high-level comments about how that applies to this particular project, I won't go into detail about the project itself, as these are described in our report, along with the EIS and subsequent amendment reports. But as you would be aware, the project contains three key elements: the open-cut silver mine and associated infrastructure; the relocation of approximately 5 kilometres of Maloneys  
30 Road; and the realignment of around 3 kilometres of a 500-kilowatt powerline that traverses the site.

Before I say anything further about the development itself or the key issues, I think it's important to say from the outset that assessing greenfield mines like this one is inherently difficult and complex. The project is located in a rural setting, and most of the mine site is currently used for livestock grazing. The mine would be located around 2 k to the north of the village of Lue, which has around 40 dwellings, with another 30 or so dwellings located on the outskirts of the village to the south of the mine, and there are also around 12 privately owned residences within 3 kilometres of  
40 the western, northern or eastern boundaries of the site.

So the following two figures, which I think will be shared shortly, should give you a good idea of the regional context of the mine and sensitive receiver locations. We will refer to these as we work through some of the issues.

10 A couple of key aspects of this project are more than 50 per cent of the waste rock would be potentially acid-forming, and would require careful management to prevent downstream impacts on water users and the environment, and also while the project is described as a silver mine, the ore body is rich in lead, and a silver-lead concentrate is produced, and this is a key concern for the community due to potential for health  
10 impacts from exposure to lead and other heavy metals, and also the mine site is located, as I've said, relatively close to Lue village and residences, so the potential amenity impacts and the presence of mining operations in a rural area and close to the Lue community means the project has potential negative social impacts on local community, which of course must be weighed against its potential and social and economic benefits.

20 So as a result we have found that there are two key issues for the assessment. Firstly, impacts on water resources, in particular, impact on water quality from acid mine drainage or other pollutants, but the community is also understandably very concerned about other impacts, including the adequacy of the water supply and drawdown impacts. And the second key issue is health and amenity impacts on the local and community, including exposure to heavy metals, noise, dust, air emissions, visual, lighting impacts, traffic impacts - really, the full range of impacts associated with a greenfield mine, along with social impacts more broadly. Aside from those two key issues, the Department considers the other key issues to be, that are important, are biodiversity, mainly related to the mine footprint, with the clearing of native vegetation, including box gum woodland, and economics, including the employment and regional local business opportunities, rehabilitation and final landform issues.

30 The Department has assessed a range of other matters, including impacts on Aboriginal historic heritage, agricultural impacts, impacts from blasting and vibration, hazards and risks, greenhouse gas emissions, and traffic impacts on the broader road network.

40 So just some comments on the strategic context of the project, and that's before I get deeper into the assessment issues, or as Steve and Rose-Anne will, it's important to provide that context in relation to location and importance of the resource, and the existing land use surrounding the site. So the Department's regional plan has identified the importance of the mining industry in the region, which contributes around 16 per cent to the regional economy, with the current draft regional plan

including a specific objective to support the sustainable development of mining in the region.

10 The New South Wales Government's vision to become a major global supplier and processor of critical minerals is also outlined in a document called the New South Wales Critical Minerals and High-Tech Metal Strategy, and in that document both silver and zinc are listed as critical minerals in the strategy. As well as that, the Mining Exploration and Geoscience Division within the Department of Regional New South Wales has identified that this deposit is the largest undeveloped silver project in Australia, and one of the largest in the world. The project would target recovery of approximately 97 million silver equivalent ounces. However, there is potentially more recoverable resource available in both the opencut and potential deeper underground project that would be subject to a separate assessment and approval process.

20 So MEG, which is Mining Exploration and Geoscience, has advised that there are extensive sequences of similar rock formations along the margins of the Sydney bowl and basin that host numerous smaller silver deposits, so the development of this project could lead to further development of such deposits in New South Wales in the future.

Now, in relation to the project, in describing the project, I will go back to the original application. I think it's important to understand how the project has evolved throughout the process of the assessment. Now, the original application did not formally include the relocation of the 500KV powerline. This was always required for the project, because the powerline currently crosses too close to the proposed location of the pits, and the impacts were included in the EIS. However, Bowdens was initially intending to seek separate approval for the works via a part 5 application through TransGrid. The first amendments to the application was to formally include the relocation of the powerline into this project.

30 The original project design also included a water supply, a pipeline that was proposed to supply make-up water and Ulan and Moolarben coal mines, located to the north of the project site, so the second amendment was to remove the water pipeline and instead rely on an optimised water management strategy that really minimises water losses and maximises onsite reuse of water.

40 As part of that second amendment, Bowdens also changed the proposed alignments of the 500KV powerline to address some concerns raised in submissions about the visual impacts of the powerline. The new alignment is a little further from the closest privately owned residence, about 1.5 kilometres instead of 1.4, and a little shorter, 2.7

against 3.5 kilometres, which means two fewer towers and slightly lower down the hill, away from the receivers.

Now, at this point, I will throw to Steve, in the first instance, to get into some detail and to start to work through the agenda items, and at this point, as we work through those agenda items, very happy to take questions along the way as the Commission sees fit.

MR DUNCAN: Of course. Thanks for that. Stephen.

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MR O'DONOGHUE: Thanks, Clay. Look, just to also flag, Steve O'Donoghue, Director of Resource Assessments, for the record. Look, I was going to step in through some of the agenda items on water resources, unless you've got any specific questions. I'm just - firstly up, I was just going to talk about the water supply demand issue and the water balance modelling, if you're happy with me just to proceed on that.

MR DUNCAN: Yes.

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MR O'DONOGHUE: The project - based on the assessment and modelling that was undertaken, the project would require up to about 1,300 megalitres per year of water, mostly for processing of the ore, which is estimated to require about almost 1,092 megalitres in the peak year, in the processing plant, but also for dust suppression, and smaller volumes for potable water supply and sort of miscellaneous uses, like truck washing, for example, and uses like that.

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Now, there's just a figure up here, it's in our report, on the water demands for the project, and just to flag in there the breakdown of that. So, again, the majority of the water for the site is in processing, with a dust suppression, varying every year for a number of reasons, but partly because the area of disturbance changes over the life of the project, but also that will vary depending climatic, you know, conditions as well, in terms of the amount of water needed, depending on in situ rainfall, et cetera.

The community raised concerns about where this water would come from and the impacts of the water take, so it was a very high-level in submissions in terms of concerns about that and potential impacts on water resources, particularly with the removal of the pipeline from the project, which was initially a key part of the project, and in terms of obtaining water from Ulan and Moolarben mines, potentially.

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Now, given the concerns of the community and also given that the water pipeline was taken out of the project, and we considered this a key issue, we did engage Earth Systems, led by Sophie Pape, to advise on the surface water assessment, and that's

included in the package provided to the Commissioners. It included a review of the water balance modelling, along with impacts on surface water resources, but also a key part that is acid mine drainage assessment, which we'll also touch on later.

10 Look, a key reason - one of the reasons for the removal of the water supply pipeline was partly that Bowdens Silver couldn't come to a sort of final agreement for, with the operators in the Moolarben and Ulan mines for the supply of water, so there was no guarantee that the water could be provided. And they undertook further work on water optimisation studies, as Clay flagged earlier, in the amendment, to provide, to demonstrate that they had water security for the project.

20 This included additional dewatering of tailings, so that's more efficiency, higher efficiency to get water out of the tailings before it goes into the tailings dam, to reuse that water in a paste thickener plant, so more of a water efficiency measure, and advanced dewatering ahead of mining, you know, with the bores put down to extract water from the groundwater resource, along with inflows into the pit as that develops as well. And also providing additional larger water storages onsite so that, you know, water, captured water, could be retained onsite and used. So, again, there's a figure coming up there about, you know, where the sources of water would come from in that.

So just referring to that, there's a fairly - in terms of the dewatering, that's providing about 380 megalitres consistently through the years. The groundwater inflow into the pit varies depending on the pit development and also rainfall runoff will vary, and this is for average weather conditions, this information as well.

MR DUNCAN: Just to clarify, the groundwater is the green, is it? It's not very clear, the key on the screen.

30 MR O'DONOGHUE: In the green bit, sorry?

MR DUNCAN: That's the groundwater there?

MR O'DONOGHUE: That's the groundwater, yes.

MR DUNCAN: Okay. The key is not very clear. I can see the colour but not the key.

40 MR O'DONOGHUE: Right, yes. So, look, there's two components of groundwater, really. It's the advanced dewatering, which is taking, you know, water out of the groundwater resource ahead of mining through bores, but there's the inflow into the

open-cut pit itself. So the bluer and green colours, you know, the groundwater resources, the yellow is more from, you know, surface water sources.

MS SYKES: Steve, I just had a question on the - you mentioned that's related to average weather conditions, is the runoff and rainfall.

MR O'DONOGHUE: Yes.

10 MS SYKES: Do you have some context around what is average, in terms of the timeframe that that was taken?

MR O'DONOGHUE: Look, it's based on, they had the silo data from, you know, Bureau of - used in the modelling, which was over a long climatic sequence, so it was the average over that, you know, over the climate sequence in the modelling scenarios, so that was used in, you know, water balance, but also, you know, in the, you know, for the surface water assessment in particular, in terms of runoff characteristics. So there is reference in the reports as well as about, like, worst case, which is looking at the climate, you know, using that climate scenario data to look at the range based on that, but the figure here is really the average based on that.

20 MS SYKES: Okay. Thank you.

MR O'DONOGHUE: So the modelling indicates that the water would be available, on average, looking at average again, about 1800 megalitres a year would be available, mostly from rainfall runoff, pit inflows and smaller element of clean water harvestable rights in there as well. I'd just like to note also, the Bowdens Silver, they're entitled to capture some of this water under harvestable rights, and also excluded works under exemptions permitted under the Water Management Act, and those components don't need to be licensed. If they're, with the exemptions, if water flows into dams on first and second water streams, they come under excluded works provisions under the

30 Water Management Act.

Now, for the tailings dam, given there's third water streams on there, there is a licensing element required for that, and there's a figure up here which is in our report as well, which sort of shows where the licence volumes held by Bowdens Silver against the different water sources for both groundwater and surface water. So there's - this is just a summary of or comparing that which is sort of explained in our report in more - I guess the point here is that they do have, you know, to cover their maximum volume of take, they do have available water there.

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However, the high reliance on rainfall runoff would be of a risk for the project during prolonged dry periods when there'd be, you know, that reduce rainfall and runoff. There were sensitive analyses done of lower rainfall runoff and reduced groundwater inflows, which did demonstrate there's potentially constrained water availability in drier years. The base case modelling did show a higher liability, about 96 to 90 per cent, for water supply for the processing plant, and similar for dust suppression. However, that, in a low runoff scenario, in terms of assumptions used, that did fall to 98 per cent, and then for scenarios where there was low groundwater inflows, that was in the 65 to 86 per cent range as well, if there was less water available in groundwater, than assumed in the modelling.

And this was a point of discussion between our expert and the company, in terms of, you know, the assumptions around that. However, I guess the key point to make here is that in mining projects, and it is a requirement, it is accepted that operations may need to be scaled back depending on climatic factors, and it would mean that the rate of processing in particular would need to be reduced potentially at times if the water wasn't available, and there's certainly a requirement to match available water supplies is consistent in contemporary mining operations in New South Wales.

So I'm probably going to leave it there, just on water supply and demand, unless you had any questions. I know that we've only got one hour slotted in for the presentation. I was going to just move briefly on groundwater impacts associated with drawdown.

So just coming up on the screen, this is in our report as well, there's just a figure here on predicted drawdown as a result of the underground mine development, but also bore - the proposal to take water out of the groundwater system ahead of mining. So I guess the key here is that the groundwater drawdown extends about 2 kilometres to the south and east of the mine and 3 kilometres to the north and west of the open-cut pit, with the peak occurring post-mining, about 50 years post-mining, for that propagation, that full propagation to occur. It doesn't extend to Lue village in terms of any significant drawdown.

The modelling also indicates that the groundwater drawdown would be unlikely to impact other water users or high-priority GDEs, or groundwater-dependent ecosystems, and impacts could be managed with standard conditions of consent that we have in mining projects.

There's one privately owned bore to the north of the project, which could potentially experience drawdown of between 2 to 5 metres post-mining, so that's after - that's predicted in the years after mining has finished. However, it is located in shallower strata, so it would be an induced effect from de-pressuring the deeper seams, and the

view of the model for the company is it's unlikely to be hydraulically connected to the drawdown from the mine.

We have recommended conditions, however, that, you know, there's ongoing model calibration, there's requirements to monitor drawdown, and there is standard conditions there about compensating landowners for any impacts on – as a potential of the drawdown, keeping in mind this is also linked to the aquifer interference policy in terms of acceptable impacts on users and GDE, where a 2-metre drawdown is sort of the trigger for that.

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I was going to move on to surface water impacts, unless there's any questions on ground - I will discuss a bit further with groundwater that, I will discuss a bit further issues around the final void, which has come up as well, further, which is partly leaked surface water impacts and potential throughflow issues that were raised.

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On surface water impacts, groundwater drawdown and direct reduction of flow due to captured water within the water management system, including the tailings storage facility, would result in reduction in flow contributions to Hawkins Creek and Lawsons Creek. However, the flow reductions would be relatively minor, up to about 2.2 per cent in Lawsons Creek, downstream of Walkers Creek, and during mining operation. There's a figure up, figure on there at the moment just showing the different catchments. The Walkers Creek catchment is mainly associated with the tailings dam, but that flows into Lawsons Creek, further to the west of the mine.

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On the opencut and waste rock emplacement side, you've got Blackmans Gully catchment, which is sort of in the centre, near the centre of the pit. You've got Price Creek catchment, and also just an undefined small catchment that goes into Hawkins Creek, so that, they're contributing to waterflow in there. So by excising the areas out from the mine, there is a reduction in flow to Lawsons Creek, Hawkins and Lawsons Creek, which is the main creek system through there.

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After completion of mining, with the rehabilitation of the catchment - so this is, again, when you're rehabbing to get that flow back in there and return clean flows back to the system, once it's, the monitoring shows that it's a stable landform, good quality water, this would reduce the sort of intersection of that water to 0.4 per cent of the flow downstream, in Lawsons Creek, downstream of Walkers Creek. So the intention with any rehab strategy is to get that water back downstream, apart from, you know, any final void catchment that would be flowing into the final void, which would be the sort of residual catchment capture from the project.

The reductions are not expected to have significant impacts on the creeks, given the largely ephemeral nature, particularly of the creeks flowing into the Lawsons Creek. The modelling - importantly, too, the modelling indicates that cease to flow conditions in Lawsons Creek would increase the frequency by less than about 1 per cent or 0.6 per cent with the project. So that's an important point, because that's when, you know, in terms of water availability to downstream users, you want to know what the impacts on the low flow to no flow periods are on that system.

10 I was just going to touch on water quality and acid mine drainage. Again, this was flagged by Clay earlier, and also in submissions. You know, a key issue is potential impacts from acid mine drainage of metal drainage from the mine site. It's a key water-related issue for the project, because of the potential for water pollution. Particularly given here the large amount of potentially acid-generating rock that would need to be stored and managed, and the relatively high percentage compared to other projects of potentially acid-forming material, which is estimated to be over 50 per cent for this project.

20 It's one of the reasons that we did engage a system, Sophie, to provide advice on here, and there was a lot of work done by both our expert in providing advice but also the proponent's experts in, you know, providing further information in relation to, you know, management of PAF material, applying best practice, and I guess at the end of the day of the conditions that we included in the recommendation to the Commissioners in how to address this.

30 I guess the key is that, you know, the intentions that any potentially acid-forming material would be fully encapsulated within the waste rock emplacement area, but how that is done is quite critical, in terms of applying best practice for that, and our conditions are certainly, got requirements in there to develop acid mine drainage plan, but also a verification plan on the amount of acid material, potentially acid-forming material from the mine.

40 So just touching on that a little bit, that's a bit of an overview, the company classified rocks as either non-acid-forming or potentially acid-forming based on geological characteristics of the rock, and set up a model around that. Earth Systems recommended that the geochemical characteristics of some of the rock classified as non-acid-forming, particularly in the northern part of the open-cut, should be further verified, with static and kinetic testing, and I can touch on more about that later, but you probably don't want to go into the detail too much, given a number of agenda items.

So as a result of the recommendations from Earth Systems, we're recommending conditions requiring that this additional test work be undertaken as part of a detailed materials classification and verification program, and that that would need to be done prior to construction commencing. So this is a fairly key part – this is a fairly critical condition in here. So there is a - so construction wouldn't be able to commence until there's satisfactory information. We would also engage, you know, an appropriate expert as part of that review for us as well, in terms of looking at that information.

10 So I think just up on the screen, there's the condition B34, is what we're proposing in terms of materials classification and verification program. And in conjunction with that, and the outcomes of that, there'd be a requirement for an acid mine drainage management plan that would really be utilising the information out of that verification program, in terms of how to ensure that PAF material is encapsulated in the long term, and there's a low risk to the environment.

MS SYKES: Stephen, in terms of the acid mine drainage management plan, could you confirm the frequency of updates for that plan, and, like, what is the trigger in terms of - so it would be first around the verification of the AMD in that northern area, which, and the outcomes of that would determine the AMD plan.

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MR O'DONOGHUE: Yes.

MS SYKES: Could you just put a little bit more context around that in terms of the minimum expectations regardless of those findings from the analysis?

MR O'DONOGHUE: Look, I guess the verification plan will be fairly critical in terms of, you know, because that will feed into, I guess, the, directly into the acid drainage management plan, because that will define the volumes of that material and how to manage that, so that first step is quite critical for the project. So they would need to be  
30 completed with expert review on their side, but also peer review on our side, before there was any signoff that that could be appropriately managed.

Now, the outcomes of that within the acid mine drainage management plan, like all our management plans, there would be – it's not a one-off, you know, it's written and that's it. There's, our standard sort of management plan conditions require ongoing review, at least, you know, following audits, following annual reviews, and based on monitoring programs. So if either monitoring or audits or, you know, the annual reviews are showing that there's an issue, there'd be a sort of review, feedback to demonstrate, you know, to update the acid mine drainage management plan, similarly  
40 to Norway's water management plan. This is a sub-plan of the water management plan as well, because it's predominantly a water quality issue, at the end of the day.

MS SYKES: Okay. Thanks, Steve.

MR COCHRANE: Peter Cochrane, Commissioner. Thanks, Steve. Just a quick question on that B34 condition. It talks about static geochemical testing and then kinetic geochemical testing.

MR O'DONOGHUE: Yes.

10 MR COCHRANE: I'm just wondering what the kinetic one embraces. Is that an - obviously it's an ongoing process. How long would that last for? Presumably as you, as the project continues to remove rock, you would need to keep testing to classify it into non-acid-forming, potentially acid-forming, wouldn't you?

MR O'DONOGHUE: It would. There'd still be - this sort of first one, because there's a query over, particularly in that northern sort of area of the mine, which Earth Systems has picked up, they don't, there is disagreement between the experts on particularly classifying that area. So a lot of the focus of this verification program is about that sort of, I guess, getting the information there about properly classifying that, and that will inform the amount of NAF and PAF material that's got to be managed, but certainly there would be - and this is in advice from Sophie as well - there'd 20 certainly be an ongoing requirement, you know, for modelling and monitoring and modelling to inform the acid mine drainage management plan of materials as it progresses through the mine.

MR COCHRANE: But the kinetic testing would, is, it's a dynamic testing part of the program, then, presumably? I'm just wondering what - - -

MR O'DONOGHUE: It's - yes.

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MR COCHRANE: Could you be - some better definition about what "kinetic" might actually mean.

MR O'DONOGHUE: Look, it's, the kinetic one, the testing that - look, I can provide more information specifically on that, but it is a test that is a longer term test. I'm not sure how many months the test is, but it's looking at the leachability, dynamics of the, aspects of the target or waste rock, and looks at testing to see - because it's looking at the acid-neutralising capacity of that material, which, but also the sulphide material, to see how long over time that. the acid-neutralising material may take effect, and when 40 acid may start generating. So there's a time, this is more looking at a time-lag issue in terms of when acid might generate in a particular part of the ore body. But I can

certainly take that on notice and provide more information around the static, specifics on static geochemical testing and the kinetic.

MR DUNCAN: Yes, or point us to in the documentation to see if it seems to - we've got about 20 minutes, so we've got a bit to go through, so let's just keep moving.

MR O'DONOGHUE: Yes. Certainly water is one of the key issues. Look, I'm happy to, look, is there any other particular aspects on the water you wanted to run through at the moment?

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MR DUNCAN: I think that's sufficient at the moment. Maybe, as we said, a bit more information around kinetic and how that process works.

MR O'DONOGHUE: Look, probably the only other thing, like, and we can certainly give further brief on it, but the other key, the key aspect was really in the final void, and that we engage Mr Hugh Middlemis to provide on groundwater modelling aspects, and I guess a key residual issue there, you know, was whether the void would be a, stay a groundwater sink, or the potential for throughflow to occur, and as – if that was the case, you know, potential water quality impacts downstream, you know, if that were to occur. It's probably, like, in summary, there was - and if you read the report and look at the information, there was a lot of back and forth between Mr Middlemis and the company, but ultimately, Mr Middlemis did accept that there would be viable options to ensure that a sink, like a groundwater sink, final void, could be met, but it would, you know, it would still require, similarly to acid mine drainage, ongoing model validation in terms of the final design, to get that outcome. But I just wanted to probably make that point on the water.

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So just to, given the time, is there any particular - like, the agenda items you wanted to focus on before any others, or just step through, like, human health, sort of aspects?

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MR DUNCAN: We'll go for human health. We'd like to have a bit of an understanding of this potential of future resource as well, that, just to understand what that means, you've referred to a few times. But I think human health is an important one, so let's get to that.

MR O'DONOGHUE: Yes, okay. Look, certainly. Like, as Clay flagged earlier, like a main focus on our assessment was on the potential risks to health from lead in particular, but other heavy metal. like, it is a, although it's described as a silver mine, you know, it is a lead concentrate being produced which adds to the silver equivalence. But certainly it is a concern, you know, given community issues, you

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know, from other, you know, mines like Broken Hill, Central, so it certainly was on the, high up in the number of concerns in the community about that.

I guess the first thing, different to other sort of lead centres, there's no lead smelting undertake facility or high-temperature processing in terms of , that's going on at the site, so, you know, in terms of potential air emissions from stacks, et cetera, that could volatilise lead and distribute it. So the primary means by which the project would be dispersing any heavy metals would be, you know, metal particles attached to dust, generated from the site. And also by, you know, metals mobilised in surface and  
10 groundwater but certainly, you know, potential metals in dust is, I guess, one of the pathways, key exposure pathway, potentially, for that.

The mobilisation of metals in water was considered as part of the water quality assessment, but in terms of dust-borne metal emissions, the environmental impact statement included a health risk assessment undertaken by Environmental Risk Sciences, or ENRS, they're called for short.

ENRS relied on the air quality assessment undertaken by Ramboll, you know, for the proponent, where they calculated the metal content in total suspended particulates, and  
20 particulate matter based on an elemental analysis of ore and waste rock and soil, and undertook that air dispersion modelling based on that, to look at the dispersion of that, at particular individual receiver locations, at residences.

ENRS compared the amount of each metal that would be deposited as a result of proposed activities, with the existing background levels of lead and metals in soils that already occur without mining, so there's a pre-mining baseline, to determine how the project would change the exposure to metals. The modelling demonstrated that increased exposure to lead and other metals would be very small, and on the screen, in our report, there is a figure up there showing the relative contributions for a number of  
30 metals, and this is looking at, this is looking particularly at residence R4, which was the closest receiver to the mine, which has been subsequently acquired by the proponent. So this is the sort of maximum sort of incremental contribution to individual receivers at that.

Now, the risk index is really, of one is really a threshold where below that, which there'd be a negligible risk of health impacts, so it's - which was used in the assessment. So Bowdens Silver, they engaged peer reviewers for the air quality assessment and human health risk assessment. We also engaged in Dr Roger Drew of Drew Toxicology and Consulting to provide advice on the human health risk  
40 assessment, and his advice is part of the package that's been provided to the Commissioners.

Dr Drew did confirm that the assessment followed a standard process in that it showed that the health risks from the project would be low, essentially accepting the predictions of the, that was done for the, by ENRS and the proponent.

We've recommended a number of conditions, including setting dust limit conditions, for PM10, 2.5, total suspended particulates in deposited dust, and these are based on EPA assessment requirements, and also the National Environment Protection Measure requirements that sort of contribute to the EPA's modelling and assessment guidelines.

10 We've also recommended conditions for monitoring of dust emissions, including metal concentrations, at representative locations, which would include Lue school as well, which was a receiver of concern to the community.

Probably another key feature of the conditions is that blood-lead monitoring was committed to by the applicant, and we've included it as a part of the social impact management plan requirements to be incorporated as a social mitigation measure, partly because the - while the impacts have been shown to be very low, there's still fear in the community about lead, and I think from a, like, from a social impact point of view, it's important to have conditions in there that can, you know, provide

20 information about reducing those fears to the community, and concerns about that. Also there's trigger action response plans based on the monitoring programs as well.

So I'll probably leave it there on that at the moment. I was going to, Rose-Anne was going to go into some amenity issues, if you wanted to, if you wanted to move on to that issue.

MR DUNCAN: Yes, and maybe a comment a bit on traffic as well.

MS HAWKESWOOD: Thank you, Steve. Thank you, Commissioners. This is Rose-

30 Anne Hawkeswood. I'm a team leader in the Resource Assessments Team. Just before I start talking about the community impacts, it's probably worthwhile looking at an image which just shows the topography of the mine site. I'm not sure if it has come up on you screen. But the mine site is characterised by a series of topographic ridges. One of them is called Bingman Hill, and you can see it on the screen here, it sort of runs in a north-westerly to south-easterly direction, and essentially provides some shielding between the village of Lue, which is located down here, and the activities on the mine site, or many of the activities on the, particularly on the eastern side of the mine site, and that gives some sort of protection for the community impacts on those properties.

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In relation to air quality impacts, the EIS includes modelling of air emissions for a number of representative mining years, which shows that the mine would comply with the criteria in the approved methods at all sensitive receivers for annual average and 24 average concentrations of total suspended particulate and particulate matter, PM10 and PM2.5. The assessment also calculated that the mine would comply with the approved methods of criteria for metal dust emissions.

10 The Department - Steve has already mentioned that the Department has recommended conditions limiting dust concentrations, as well as TSP and particulate matter, and also included a requirement to monitor metal concentrations in dust and develop a trigger action response plan if concentrations are higher than expected.

In relation to noise impacts, the highest levels of noise would actually be associated with the construction of Maloneys Road. During that period, which is approximately six months, there would be some exceedances of the 45dB construction noise criterion at five residences when activities are close to those residences. So that would be for approximately a one- to two-month period. But the roadworks would only occur during the daytime, and would be limited to that six-month period.

20 During mining operations, so from the construction of the, completion of the construction of the road, there would be two residences that would experience 3 to 5dB above the EPA's noise criteria. That would be, on some occasions, during the site establishment phase, so in that first 18-month period, and then one of those might experience noise exceedances again for a brief period, a one- to two-month period, during year 3 when the transmission line is relocated.

30 During the rest of the mine life, those properties would experience as noise of 1 to 2dB above the criteria, and there would be another four residences that would also experience that. So the Department has recommended conditions giving the two higher impacted residences mitigation upon request rights in line with the VLAM.

The night-time operational noise levels are expected to comply with the applicable sleep disturbance criterion at all receivers, and road noise levels would be negligible and there would be no, negligible impact beyond those already experienced by receivers.

40 In relation to blasting impacts, Bowdens is proposing to design the blasts to comply with the standard limits for over-pressure and vibration at all privately owned residences. So the intention is to monitor and refine the blasting practices based on the outcomes of that monitoring.

The EIS did include calculations for safe-working distances with respect to ground vibration and air blast pressure for residences and buildings and roads, et cetera, as well as livestock, which is based on the indicative blast design, but, as I said, their intention to design the blast to comply.

10 In terms of visual impacts, the undulating topography and surrounding vegetation mean that the mine would actually be largely hidden from view from residents in Lue and most nearby residences. There are three residences that have been identified that would have quite direct views of parts of the mine site or parts of the mining  
landforms. That would include the top of the tailings facility embankment or the  
waste rock emplacement, but the properties are located some distance away, so one  
would be 1.9 kilometres away, another one would be 2.2 kilometres away, and the  
third one is 4.5 kilometres away.

20 Having said that, the powerline would also be visible from some locations. It's proposed to move the powerline around 300 metres west of its current location, which would mean that five properties to the southwest of the project would have increased views of the line or of the transmission towers. The closest of those properties is about one and a half kilometres away, so the visual impacts are not expected to be  
significantly greater than what are already experienced.

30 The Department did receive a number of submissions indicating the community is very concerned about sky glow from the mine, which would diminish the clarity of the night sky, and about impacts on astronomical observatories. There are around five within 200 kilometres of the mine site. The EIS did include an assessment of those impacts. The project is not predicted to affect observing conditions at Siding Springs or any of the close observatories. They would shield the lights in accordance with the standards set in the control of occlusive effects of outdoor lighting guideline and tilt the lights downward, so there would be no direct light shining into the sky. The visual impact  
assessment indicated that lighting perhaps or typical sky glow would typically  
potentially occur on an evening when there is a cloud cover, rather than on a clear  
night, because it reflects off the water in the air.

The Department has recommended conditions requiring Bowdens to minimise visual and lighting impacts, including implementing a landscaping strategy to shield public views of the development as far as practicable.

40 I'll hand over to Steve again to discuss the social impact assessment, and then I'll talk about the traffic impacts after that.

MR DUNCAN: We just probably need to do a time check. We're about five minutes to go but is everybody okay if we run over for about 10 minutes? Is that okay? All right. I see a positive response, so keep going, Steve.

MR O'DONOGHUE: Sorry, just unmuting myself. I'll just bring up - just on the social impacts, I mean, I guess partly a lot of the impacts we've been talking about with the noise, visual, air quality, human health, will all overlap the social impacts as well, but more broadly, so I guess that's the first point.

10 The other one is that it is a greenfield mine, so similarly to other mines, we are acutely aware of the potential social impacts of a project of this nature, and it's been raised in a large number of submissions on the project, you know, about social impacts to the village of Lue, and receivers around there, apart from just the, you know, assessing against guidelines, et cetera, and noise and air quality, et cetera.

Bowdens' social impact assessment wasn't informed by a stakeholder engagement program. They'd employed a variety of communication mechanisms, as documented in our assessment report. It did help Bowdens gain some understanding about the community concerns, and also informed our assessment. It provided feedback on the  
20 project, and looked at mitigation and management strategies for social impacts.

The social - apart from the, like, the air quality, noise, traffic, human health impacts, et cetera, that are also assessed under other legislation or policy, there's probably somewhat less tangible residual social impacts as well, so loss of social amenity, loss of sense of community, you know, trust in the decision-making process, property damage and price impacts, and more broadly health and wellbeing because of increased stress and anxiety, even through the assessment process, which is always, you know, always comes to the Department's attention, particularly on these greenfield projects, about, you know, for a number of years under assessment prior to  
30 that, you know, there is social cohesion issues in the community that is of concern.

Look, Bowdens, they've proposed a range of social impact mitigation and management measures in undertaking the social impact management plan, social impact assessment, including, you know, community contributions and sponsorship programs, local procurement and employment opportunities, you know, for the, and for the region, community engagement strategy about ongoing, identifying concerns if, you know, if the project were to proceed, continuation of community consultative committee for the project, and also ensuring there's appropriately skilled people, your community liaison reps, to manage that engagement.

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We've looked at - in our recommendations, we've recommended the social impact management plan, but particularly based on, I guess, input from council and the community, and some key elements to that which we think are important for this project. Again, stakeholder engagement is a key to this, including, you know, ongoing surveys of attitudes as well. Community investment programs that the company is committed to, in addition to, you know, voluntary planning agreements in terms of giving benefits back to the local community more directly. Monitoring and managing impacts on near neighbours, which does come into particularly air noise, vibration and lighting impacts and ensuring that they're managing that appropriately.

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As mentioned earlier, broader community cohesion is an important aspect in terms of the village itself, and how that's dealt with. Workforce accommodation strategy, it's always one for these greenfield projects which is important in terms of where the workforce is staying and how that might impact on tourism in the area and other uses, and ensuring there's sufficient accommodation.

Now, particularly post-COVID, you know, we are, there's that awareness now there has been a move to regional areas that would need to be considered and cumulative impacts that are associated with other projects that are going on. The SIMP would also focus on local business and services, but also, you know, post-closure aspects as well, which fit into the rehab and the life cycle of the mine and social impacts associated with any closure, and certainly, like any other management plan, it's important to have a trigger action response from the monitoring that's undertaken, and feedback on the community surveys.

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That's probably key points for social. I think the next agenda item was traffic, so I was going to hand it over to Rose-Anne, who has been, can talk about that.

MS HAWKESWOOD: Thanks, Steve. I've put a picture on the screen just to show you how the traffic would be accessing the site. So at the moment, exploration staff and existing Bowdens staff access the site typically driving along Lue Road, which, I'm not sure if you can see my mast pointer, but Lue Road along here, and they would come up through Pyangle Road and access the site on the eastern side of the site.

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Once, you know, if the project is approved, it would mean that if they were to continue to use this side of the site to access it, they're expecting most of the traffic to be coming from the west and the direction of Mudgee, from the western side. So that would mean that traffic would typically behaving to go through Lue. So one of their key mitigation measures to reduce those impacts is the relocation of the Maloneys Road onto the western side of the mine site, and that would mean that traffic coming from the west wouldn't need to go through Lue. There would still be some traffic

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coming through Lue. There'd be traffic coming from the Rylstone side but not as much, and they would continue to retain access to the site on this side, but that would typically be for light vehicle use only. All the heavy vehicle and most of the traffic would come in on the western side.

10 Most of the heavy vehicle traffic would be generated during the site establishing and construction phase of the project, so that would be the first 18 months of the project, and during the peak of this phase, there would be up to 62 heavy vehicle movements and some oversized vehicles on the road network, so that's not necessarily all through Lue, but on the road network, where there are 200 car movements expected during that period.

There would also be a heavy amount of traffic or heavy vehicle load on this part of the relocated Maloneys Road between the mine site access, which comes in at the north side of the mine, down through here to the TSF area, the access to the TSF area, where they'd be building the TSF embankment. That would be about 266 traffic movements during that early phase of site establishment and construction.

20 MR DUNCAN: To clarify, Rose-Anne - - -

MS HAWKESWOOD: Of - sorry.

MR DUNCAN: Once Maloneys Road is relocated, will the mine be the only user from Lue Road to the north?

30 MS HAWKESWOOD: It would be the primary user. There's the possibility that some of those residences would use it, but they come down Paralowie Road. There's also a quarry up there that could potentially use it, but it would be a public road, so it would be available for other people to use.

MR DUNCAN: Okay.

MS SYKES: Rose-Anne, is the relocated Maloney Road - I assume that will also be for the transport of finished product or concentrate.

MS HAWKESWOOD: Correct.

MS SYKES: And where is the final destination for that concentrate?

40 MS HAWKESWOOD: They've got two or three different routes that they could take, so they haven't nominated one. Port Pirie was one, I think Newcastle was the other

one, and I can't remember the third but generally it would, so I think that they suggested that most of them would be going towards the west, and there would be some going potentially to the east. But concentrate movements would be relatively limited. They're talking four to six trucks per day, potentially.

MS SYKES: Okay.

MS HAWKESWOOD: Yes. So once the mine is operating, there'd be about eight truck movements a day, with deliveries, and so 16 movements per day was the prediction - up to 16 movements per day.

MS SYKES: Okay. Thank you.

MR PRESHAW: Rose-Anne, Port Botany was the other one that they'd suggested.

MS HAWKESWOOD: Thank you. In terms of safety through Lue, obviously the first mitigation measure is the relocation of the road, but B-doubles are restricted, they can't travel past the school on Lue Road, anyway, so the mine would need to comply with that during school, staff end times, so the bus operating time for the school, not all day.

They would also be - there was some concern in submissions about the transport of dangerous goods. In that regard, explosives would be transported in accordance with the Dangerous Goods Act. Sodium cyanide would be transported in sealed iso-containers, which would be designed in accordance with the requirements of the additional cyanide management code for manufacturer, transport and use of cyanide. The EIS did include a preliminary hazard analysis that included a root evaluation study in accordance with HIPAP 11, the Hazards Industry Planning Advisory Paper number 11, and they didn't identify any issues of concern along the roads.

In terms of road maintenance, the company has entered into an agreement for a VPA with council, which includes road contributions of \$110,000 per year for Midwestern Regional Council, and the company would be responsible for the construction of the relocated road entirely.

Are there any other aspects of the road traffic that you'd like to ask?

MR DUNCAN: Not really, no. Not at this stage, but we did want to have a bit of an understanding of the potential of the mine to - in the future. Stephen, I'm not sure whether you can answer that at the moment, or point us to somewhere where can understand that.

MR O'DONOGHUE: Sorry, could you ask that again? I just missed that last bit there.

MR DUNCAN: There's comments about the future potential of the mine beyond this application, and we just wanted to have a bit of an understanding of that. We understand it's about a third of the resource, and how would that, you know, how would that change in the future, should they wish to take more resource out?

10 MR O'DONOGHUE: Look, certainly, I mean, there is some information in the report about the, I guess, the mineral reserves there and the percentage that they're taking, and that's based on, I guess, you know, the current knowledge. Now, there is obviously ongoing exploration being undertaken, and I'm sure Bowdens Silver can provide, like, an update of that, but, I mean, there's commercial in-confidence issues about that how much - if it's not information on the ASX, I guess, in terms of, you know, the firmness of that.

20 But certainly, MEG, in its advice to us, based on the information they've got, certainly, you know, it advises quite a significant, you know, deposit in that area, in that region, which hasn't been mined before, so there's a broader potential for production at some future time. Probably in terms of the, like, the reserves at the site itself, they're mining down to about 118 metres, which they've identified on the current, like, the grades that are economical after - there's about 97 million silver-equivalent ounces, which part of that is the lead and zinc as well, converted to a silver-equivalent ounce, which is about 30 per cent of the 318 mineral ounce, mineral resource there that they've identified.

30 Now, a lot of that will come down to grade and prices and that and pit shell, and part of that is also at deeper depth below the open-cut, which would be more of an underground, you know, potential underground resource, which is not, you know, which they're not seeking underground mining at this point, but it's, like a lot of the mines in New South Wales, based on further exploration, a lot of the mines. If you look out at Cobar, if you look at Lake Cal, Cadia, ongoing sort of exploration that defines the resource better, and there's either additional modification, if it's - depending on the scope of it, or, like, in USSD processes also, there is potential, but you probably need to see what additional information that Bowdens could provide that's not, I guess, commercially sensitive as well.

40 MR PRESHAW: If I could just jump in there as well, Steve, and to the question that you were asked from the Chair, and it's always difficult to speculate on a future project which we haven't received yet, which probably hasn't even developed yet or designed yet - - -

MR DUNCAN: Yes. Yes.

MR PRESHAW: - - - but to build on what Steve was saying, I think the assessment that we've got now is obviously the open-cut, and I think regardless of what may occur in the future with a, you know, an underground potential project, the, what we've assessed is probably, at least in terms of the surface impacts, essentially what would be required regardless of whether or not they progress to an underground project, in terms of clearing and that sort of thing and traffic impacts and social  
10 impacts, et cetera, et cetera. If there was to be another underground extension, the first thing I'd say is, it probably would be an entirely new State-Significant Development application. It would probably not be possible to do that via a modification. That's the experience that we've had with other projects like this under the current settings.

And the second thing I'd say is that while the surface impacts of the project that we're assessing will likely occur regardless, there would probably be changes to some other aspects underground in terms of groundwater, potentially, even the use of water onsite, and also of course what we're currently assessing in terms of closure and rehabilitation would need to be reassessed, if there was to be another project underground.

20 So I guess I'm just - the reason I say all of that is, you know, firstly to emphasise that we can't, you know, prejudge a project that hasn't been designed or submitted to us, but if there was to be a future project, it wouldn't be as if the assessment process had been a waste, because most of the surface disturbance issues, which are a large part of this assessment, and the social impacts, et cetera, would still occur regardless of whatever future potential that the site presents.

MR DUNCAN: Thank you, Clay, for that clarification, that's helpful. All right. Look, we've probably run out of the additional time as well. From Peter or Claire's  
30 point of view, is there anything more you'd like to cover just now quickly, or we'll get something back?

MR COCHRANE: Oh, no, I think we can deal with them later.

MR DUNCAN: Sure, okay. Look, I - Claire, are you okay with that?

MS SYKES: Yes, yeah.

MR DUNCAN: We'll have a talk, and I'd just like to say I appreciate your time  
40 today, Clay, Stephen, Rose-Anne and Phil. It's been very clear, your presentation, and helpful, and if we've got some further clarification, we reserve the right to come back

and maybe put something in writing if needed. Clay, is there anything you wish to say in wrapping up?

MR PRESHAW: No, nothing further to add. Thank you for your time.

MR DUNCAN: Okay. Thank you.

**MEETING CONCLUDED**