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TRANSCRIPT OF PROCEEDINGS

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INDEPENDENT PLANNING COMMISSION

PUBLIC MEETING

RE: SUNRISE MOD 4

PANEL:

**ROSS CARTER
PROF ALICE CLARK
DR IAN LAVERING**

ASSISTING PANEL:

**DAVID KOPPERS
ALANA JELFS**

APPLICANT

**SAM RIGGALL
TIM KINDRED
JUSTINE FISHER
JOHN HANRAHAN
BRONWYN FLYNN
LUCAS BURNS**

LOCATION:

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

DATE:

1.32 PM, THURSDAY, 11 OCTOBER 2018

MR R. CARTER: Good afternoon, and welcome. Before we begin, I would like to acknowledge the traditional owners of the land on which we meet, the Gadigal People, and pay my respects to their elders past and present.

5 Welcome to the meeting today, Clean TeQ Holdings Limited, the applicant is proposing to modify its development consent for the Sunrise Project, an approved nickel-cobalt scandium mine near Fifield in the central west region of New South Wales. Key elements of the proposal include changes to the mineral processing facility and mine layout, an additional supply of limestone from third party suppliers,
10 and diversification of the mine's water supply to include surface water from the Lachlan River.

My name is Ross Carter, I'm the chair of the Independent Planning Commission panel. Joining me are my fellow commissioners, Professor Alice Clark and Dr Ian
15 Lavering. The other attendees at the meeting at David Koppers and Alana Jelfs from the Independent Planning Commission Secretariat, and from the applicant, Clean TeQ Holdings Limited, Sam Riggall, Tim Kindred, Justine Fisher, John Hanrahan, Bronwyn Flynn and Lucas Burns.

20 In the interests of openness and transparency and to ensure the full capture of information, today's meeting is being recorded and a full transcript will be produced and made available on the commission's website. The meeting is one part of the commission's decision-making process; it is taking place at the preliminary stage of this process and will form one of several sources of information upon which the
25 commission will base its decision. It's important for the commissioners to ask questions of attendees and to clarify issues whenever we consider it appropriate. If you are asked a question and are not in a position to answer, please feel free to take the question on notice and provide any additional information in writing, which we will then put up on our website.

30 So we will now begin, and thank you for sending the presentation through. I think, sort of having a quick scan through it, it pretty much touches all of the issues that we've put on to the agenda, so it's probably easier if we just hand over to you to run through the presentation and, if we want to dive into any issue, we will raise it at that
35 sort of point in the - - -

MR S. RIGGALL: Great.

40 MR CARTER: - - - in the presentation. So over to you, Sam.

MR RIGGALL: Thank you, Ross, and to the commission members for attending and thanks in advance, probably, to the enormous amount of work you've had to do to get through all the material that has been prepared. Maybe if I just begin with introductions today, on our side. My name is Sam Riggall. I'm the Chief Executive
45 Officer of Clean TeQ. I've had 25 years in the mining industry and I've been involved with Clean TeQ for about five years now, since becoming CEO. Justine.

MS J. FISHER: Good afternoon. I'm Justine Fisher, general manager for government, external relationships and community. I've been with Clean TeQ for over a year and I've spent most of my career working in the New South Wales mining industry.

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MR RIGGALL: John.

MR J. HANRAHAN: My name is John Hanrahan. I'm the environmental and approvals lead for the project and I've been on the project for just under two years now.

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MR T. KINDRED: Tim Kindred. I'm the project director for the project. I have 30 years of experience in the mining industry in a few different parts of the world, including Australia, and 20 years of that time I've been working on nickel and cobalt-related projects or operations for mining companies and I have been through the project development cycle, from the design phase to the operating phase, three times on similar projects.

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MR RIGGALL: Bronwyn.

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MS B. FLYNN: I'm Bronwyn Flynn. I'm the environment superintendent for the project. I've only recently joined Clean TeQ, but I've been working in the mining industry on three mines for more than 15 years.

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MR L. BURNS: Good afternoon. My name is Lucas Burns. I work for Resource Strategies, and Resource Strategies has been assisting Clean TeQ for the last three or four years with their environmental approvals.

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MR RIGGALL: Excellent. There's a more detailed description of our CVs in the presentation, so I will leave that as taken as read.

MR CARTER: Yes.

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MR RIGGALL: The structure for today's presentation is really to touch on a few issues. Firstly, I'd like to do a brief introduction to Clean TeQ and who we are. Some of you may not know a lot about us. I'd then like to hand over to Tim to give an overview of MOD 4 and the reasons for it.

MR CARTER: Yes.

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MR RIGGALL: John will then follow-up and provide a summary of the environmental assessment work that's being done for this MOD, particularly around the areas of air, noise, transport and water issues. And, finally, Justine will give you a sense of the work that has been done so far with the local communities and our engagement strategy so far. We think it's important that you understand, before going to site, how much engagement there actually has been there.

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So if I can begin with Clean TeQ. I won't spend a lot of time on this, but we are an industrial technology company. We've been around for over 20 years, listed on the Australian Stock Exchange since 2006. We're also listed in the North American market on the Toronto Stock Exchange.

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Our company has two divisions: a water treatment division; and a mining division, and they tend to overlap, so a lot of mining – sorry, a lot of water clients also happen to be in the mining industry; we do a lot of water remediation work for mining clients. We've got water plants in the Middle East, building one in the DRC, one in Victoria at Fosterville Gold Project, we're currently designing one for Papua New Guinea; most of those are mining-related water treatment facilities.

In our mining business, we've been working for over 20 years with major mining companies finding hydrometallurgical solutions; that's really been our area of expertise, hydromet processing, a fancy way of saying we're actually good at extracting metal out of solution and both these businesses rely on a common technology, which Clean TeQ has developed, or a process called ion exchange. So we use ionic resins to pull metal out of solution and I will show you – I will explain a little bit of what that is later, because it's quite important to understand how that technology is impacted the flow-sheet, which has led on to some of the modifications we're discussing today.

Just a summary on this slide, as I say, we're both Australian Stock Exchange, ASX 200, and TSX listed. We have a very experienced board and management team. We have people at both levels who have both funded developed and operated mines all over the world and we're doing something unique with this project. We are building a mine here that will ultimately produce products directly for the battery industry. There's no intention for this project to produce metal. They're metalliferous products at the end of the day, but we're producing nickel sulphate, cobalt sulphate in hydrated form, in chemical form, and a scandium oxide. Now the nickel and the cobalt will be used to service the battery industry for lithium ion batteries and the scandium oxide is an alloying agent for aluminium, which we are targeting into aerospace and the automotive industries.

We have a number of partnerships for this mine. This mine is actually a very large development. It's probably one of the largest greenfield projects in Australia today – it's going to cost us about \$2 billion Australian to build – outside the coal and iron ore space or the bulk space, I struggled to find another project that's probably as large as this one; maybe in the rare earth space there are a couple on the table, but this is an important project state-wide and nationally and, therefore, the partnerships we're developing are important.

So around our investors, Australian Super is a substantial shareholder; Australia's largest institutional fund. Fidelity, out of Boston, who is I think the world's second-largest institutional investor; they are also a substantial shareholder and also happen to be Tesla's largest shareholder. So this project already has a very high profile with exceptional investors, and they're already on our register.

Secondly, from a customer point of view, we've already locked in 20 per cent of our production with China. China's second largest cathode manufacturer, a company called Beijing Easpring is already a partner of ours for 20 per cent of our production and more off-take agreements will be negotiated in the near term.

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And finally, around the financing, we have a lot of support from banks. So we have a consortium of international banks who've provided preliminary indications of support for about \$500 million US dollars to assist with the construction of the project, and we hope that as we get closer to the syndication, the level of debt-carrying capacity for the project will probably increase.

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Why I highlight those partnerships is that this approvals process actually has quite a strong bearing on how we're moving forward with the project and there's obviously intense interest to make sure that we can get the approvals done efficiently so that we can proceed with things like project debt funding, our offtake commitments and so on.

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This project overview slide has quite a bit of detail and I won't go through it. What I would just say is that the box in yellow represents the period of time over which we have owned the project. The activities that occurred prior to this were through previous ownership, but all of it has culminated in work that is being delivered today and was delivered earlier this year in the definitive feasibility study. From an approvals perspective, maybe a couple of points to note: in 2001 was when the first development consent was issued for the project, the first and only. In 2006, the project commenced, and that was triggered by the construction of the borefields down in Forbes Shire, and then the project had quite a long hiatus, and the reason for that was simply metal prices.

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They were not high enough to support development of the project. That has changed considerably today, in that there is now a structural shift to developing technology, in this case, batteries and electric vehicles, which is underpinning much higher metal prices for the key products that this mine will produce, nickel and, primarily, cobalt: particularly cobalt, where we've seen a trebling of cobalt prices over the last couple of years. This is now economically a very robust project, and it will remain so if you look at the way the electric vehicle market is developing. In 2016, we went through MOD 3, and that was a simple application to add scandium to our modification – sorry – our development consent – scandium production, and, through that process, the department also took the opportunity to contemporise the development consent, which, by that stage, was quite old.

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So that was probably – maybe over 12 months work to get the development consent into a form that is contemporary with today's expectations and standards around conditions, and then, more recently, in 2018, the key deliverables are now coming to the fore for the project. The mining lease was granted. The definitive feasibility study on which bank funding and customer commitments are based was completed, and we've appointed our EPC contractor out of China to build the project. So, subject to raising funding, the project is in very good shape to hopefully enter

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construction next year. I guess my point I'd like to stress here is that this is already an approved project. It was approved some time ago.

5 The purpose of MOD 4 is simply to try and strengthen some of the aspects of the development and operations of it, and a lot of that work has evolved as we've gone through the definitive feasibility study and understood better how we can improve the operating performance of the plant, how we can improve environmental outcomes and social outcomes in the way it's set up. So that's really what MOD 4 is intended to address, and, as you as I said before, the project benefits for the Sunrise – Clean TeQ Sunrise are substantial: approximately 1000 jobs during construction and 300 through operation, almost \$2 billion in salaries and wages over the first 25 years of operation. Most of that will be local: opportunities for local business and economic growth. We've agreed in principle an \$18.3 million voluntary planning agreement with the three shire councils, which is currently on public exhibition.

20 There will be commitments to upgrading local infrastructure and roads, community enhancements and, obviously, to government – state government through royalties and through income tax. This will be a large contributor to the taxation base for Australia. More importantly, down the bottom, you know, already, in the short time we've really been in the field and explaining the project to the community, we've seen a lot of interest in employment for the project and a lot of interest in supply and procurement activities from local businesses. So we continue to engage. I'm also pleased to say that this area of Australia is probably the highest concentration of our shareholder base. There are a lot of local retail shareholders in this region who actually want to see this project succeed. So I'll probably leave it there. That's an introduction to the project and Clean TeQ – and maybe hand over to Tim to explain the MOD 4 and the rationale for it.

30 MR KINDRED: Thanks, Sam. So an overview of the modification: so there's two main aspects that I'll cover. First one is the mining and processing improvements. So the selection of resin-in-pulp processing technology offers significant benefits in terms of environmental outcomes for the project, a smaller footprint, and that particular flowsheet also has less environmental emission points, which we'll come to later, and this is a - - -

MR RIGGALL: Can I just stop you there, because I did tell you I would show you what resin in pulp was.

40 MR CARTER: Yeah.

MR RIGGALL: These are resinous polymers. They're very small beads that contain an ionic charge, and once you've leached your ore in solution, and the metal is in solution, they bind to these resins. These green resins now are loaded with nickel and cobalt and scandium. We then drop the metals off, and we refine them to a battery-grade nickel sulphate and cobalt sulphate in hydrated form. So that's – the

technology in metal extraction's really around that middle bit, in using the resins to extract metal very effectively and efficiently. Sorry, Tim.

5 MR KINDRED: That's okay. So resin-in-pulp processing flowsheet maximises metal recovery compared to conventional flowsheets and reduces capital cost. So there's a lot of economic benefits and – of doing that. The other piece here is there's an – a more selective mining plan been developed between the pre-feasibility study and the current time or the current MOD, where the processing of the ore, high-grade ore, has been moved into the early years of the project, and that enhances the economics at the beginning in terms of revenue and assisting with funding of the project. As Sam said, cobalt is a very – very much in demand now. So this is a world-class cobalt deposit, much higher cobalt grades than comparable deposits around the rest of the world. The other piece to this modification is improvements around water supply.

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15 So there's a proposed addition of surface water extraction as – to supplement extraction for the borefields as currently approved, and there's also work been done around recycling and treating of water at the mine site. So the principle there is to recover as much water as possible and re-use it, and that's a significant change from the previous plan. So water demand for the project will be reduced as a result of that, and the project water supply security will be diversified across both surface and bore water now. So this is a bit more detail here on the mining and processing improvements. So if we start on the left-hand side, as I said, we are selectively mining high-grade material at the – in the earlier years of the operation to increase the return and economics of the project, and, as a result of that, up the top there, with the higher grades, we have higher impurities, and our demand for sulphuric acid increases.

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30 So we will bring in more sulphur, make more sulphuric acid, as a consequence of that change. One of the benefits of increased acid production is acid production produces steam. Every tonne of acid generates steam, and that will reduce our reliance on external power demands. So we'll generate more of our own power on site. The central box there around resin in pulp, as we've talked about quite a lot – so adoption of that actually removes hydrogen sulphide from the process flow sheet, and that was in one of the processing options. So hydrogen sulphide is both an environmental and a health and safety risk. It's pretty toxic, and the facilities required to manufacture that hydrogen sulphide have involved three stacks, emission points that have now been eliminated by moving to that resin-in-pulp technology – and, as I said, improved metal recovery and project economics as well with the resin in pulp.

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45 Down the bottom there, the limestone consumption does increase in the earlier years and as required to neutralise the acid in part of the process, and that requires increased transporting of limestone, which we'll come to later and I think was mentioned as a requirement or request for third-party limestone to be coming into the project now, and, as a result of that, the tailing storage facility increases in size somewhat as well, as more tailing's produced, with more limestone being used for

neutralisation, and this is a – an overview of the water management improvements.
So the items in green are the items related to MOD 4.

5 So we see that the water treatment plan or recycling of water from the tailing storage
facility is shown at the bottom there, and we will maximise the recycle and re-use of
all water that we can out of our tailing storage facility back into the processing plant,
to reduce our overall water demand, and, at the top there, you'll see the
evaporation pond, and, as a consequence of that, the amount of water we're
evaporating on site is significantly less. So the – we'll see a plan in a moment.
10 Evaporation pond size is reduced significantly. So we will re-use that water, rather
than sending it to an evaporation pond and having it evaporate – evaporated. So that
aspect reduces our water demand, and, on the bottom left there, we're
introducing, or requesting to introduce, surface water from the Lachlan River to
supplement water from our borefield, approved borefield, to give – diversify the
15 water supply and – the various stakeholders balance our water usage from those two
sources. Okay. So one more plan – I thought there was one more slide. So this is an
overview of the site. Am I okay to stand up and point, because there's quite - - -

20 MR CARTER: Yeah. Yeah.

MR RIGGALL: There's a bigger one there if you want to have a look at that.

MR KINDRED: Quite hard to talk to this one so I'll just work through the
highlighted items. So this is the modified evaporation pond site and you can see that
25 was the previous evaporation pond here, so there's a much smaller evaporation pond
only for very select streams that can't be recycled and so the amount of water
evaporated will be decreased significantly. The increased footprint of the tailings
storage facility, which we spoke about, we need to have enough space to store all the
additional tailings that are generated through the process. As a result of the tailings
30 increase in size, the diversion drain on the southern side is modified; it's exactly
the same principle, it's just diverting clean water around the site, but that's modified
and it's a change.

35 We have, in this area here, a modified infrastructure area, so this is the plant site
that's been modified in configuration and the footprint has been changed slightly
because there's some high grade ore in that area so that's part of the modification as
well and, finally, up here, we have the explosives magazine, so the majority of our
ore body for the early years is free digging. In later years, as we get further into the
ore body there's hard rock material that may not be free digging, so we've had a
40 request for the optionality to do blasting in later years, but that's well into the life of
the mine.

45 So in summary, we've introduced – the introduction of Resin-In-Pulp increases our
project economics and reduces the environmental impacts and, on the water side, we
are diversifying our supply base and maximising our reuse of water to reduce the raw
water supply. So I will hand over to John now, and John will go through the MOD 4
in a bit more detail. Thank you.

MR HANRAHAN: Thanks, Tim. So, yeah, as per our introductions before, my name is John Hanrahan and I'm the approvals and environmental lead. So we undertook a number of environmental assessments to support our modification application, however, in line with the commission's request, we would like to present
5 an overview of four of the key assessments today, namely, the air quality, noise assessment, road transport, and water management assessments.

So firstly the air quality assessment. So as mentioned, the modification includes increased sulphuric acid production, a minor change to the location of the acid plant
10 emission point, and, significantly, a reduction in the number of emissions stacks from four to one, as Tim mentioned, with the elimination of the hydrogen sulphide from the process. So that's a significant environmental improvement for the project.

So we therefore undertook a contemporary air quality assessment, which was
15 prepared by Ramboll Environ and it was undertaken in accordance with New South Wales EPAs approved methods. Notably, the EPA raised no concerns regarding the potential air quality impacts and they also supported the baseline data that we used in the modelling. With respect to the air quality and in the response to community questions, Clean TeQ and Ramboll made a comprehensive presentation to the
20 community consultative committee back in February this year and which included a description of the control measures that we would implement, details of the emissions to be released, their dispersion mechanisms and also the modelling process and the predicted impacts, including, you know, in the context of health and odour limits.

So I would just like to go over some of the main components or inputs used in the dispersion modelling. There has been questioned raised by some community
25 members regarding the validity of the inputs to the model. So firstly, one of the inputs is the meteorological data. So the site representative data used was in
30 accordance with the EPAs approved methods; it correlated well with the Met data collected at – previously collected at site for the EIS, and it involved – so the consultant reviewed the regional data from approximately six Bureau of Met stations in the area, including Parkes, Forbes, Dubbo, Condobolin, etcetera, as well as from
35 some of the mines in the area as well, from Northparkes and Cowal, and that was – and they found that the – they used the Condobolin Airport data, which was comparable to the EIS and those other data sources.

Secondly, regarding the emission source data, so as mentioned by Tim, we will be adopting the – by adopting the Resin-In-Pulp process, we've eliminated three of the
40 approved stacks, so there was an extraction fan over the sulphide filter vent. There was a hydrogen sulphide flare stack and a hydrogen reformer stack. So that leaves one approved sulphuric acid plant stack. The sulphuric acid plant emissions are based on the New South Wales EPAs allowable in-stack concentration limits, and we use the maximum case of those limits, and it's also based on the proposed stack
45 design parameters, which have been designed to maximise dispersion.

The processing plant is also designed to minimise the gaseous emissions by, one, maximising the capture of sulphur dioxide and sulphuric acid for reuse in the process plant. This makes economic sense. The reason for the existence of the acid plant is to produce sulphur dioxide to convert into sulphuric acid. So we don't want the product escaping. So it's a bit different to the normal sort of other smelting operations where you may have sulphur dioxide as a waste gas; in this case, this is our product that we're trying to capture. We're also minimising the emissions by ensuring that the in-stack concentrations comply with the EPA criteria.

10 With regard to the dispersion model that we use, it's called the AERMOD model, which is a New South Wales approved model or a steady-state plume dispersion model. It has also been adopted by the US EPA and also the Victorian EPA. So based on these data inputs and the dispersion model we use, the output or the results of the modelling are predictions of the ground level concentrations of the relevant emissions. So the results in this case are no exceedence of sulphur dioxide, sulphuric acid and O₂ dust or particulate matter criteria, so none of those exceedences are predicted.

20 This is a table of the results of the modelling, showing the predicted ground level concentrations at the nearest offsite sensitive receptors, which in this case is a company-owned property. So as you can see the predicted maximum concentrations, which is that second-last column on the right, are well below the criteria, which is in the third column there, and if we just pick one, in the case of sulphur dioxide, the predicted maximum, as you can see there, is 0.7 micrograms per cubic metre or one per cent of the annualised criteria, and we will show this result in the next slide as well. But one thing to note here is that these results are modelled on the maximum in-stack concentrations, based on the EPA criteria, so we expect the actual stack concentrations to be well below the criteria, therefore, we could regard these results as conservative.

30 So this is a contour concentration plot of the same data, in this case, the annual average ground level sulphur dioxide concentration. So this is the one microgram per cubic metre contour. So if we compare that, you can see the New South Wales EPA criterion in the bottom there, which is 60 micrograms per cubic metre, so we see that it's well under that. So the 0.7 that we saw in the previous table refers to the ground level concentration predicted at the nearest receptor, which is on the mine property, Sunrise, which is – you can see that up there, but it's this point here.

40 MR CARTER: Yes.

MR KINDRED: Yes, so these green properties up there are owned by Clean TeQ.

MR CARTER: Okay.

45 MR HANRAHAN: So our air quality monitoring regarding that, so the – as we've just seen, the air quality modelling has demonstrated that if the in-stack emissions comply with the EPA in-stack criteria, then the ground level concentration at the

nearest receivers will be well below the relevant EPA ground level concentration criteria. So therefore, we will monitor the in-stack concentrations on a continuous basis. In addition, we will monitor the particulate matter continuously using TEOMs. This will include the PM2.5 and PM10, and the monitors, as you can see
5 on that – on that side plan there, the monitors for that will be on either side of the mine.

We'll also have a number of dust deposition gauges on the side as well. Regarding the air quality verification report, and this is one of the points that the commission
10 wanted us to provide the rationale for, this study was proposed by the Department of Planning and Environment and also the EPA. So our understanding of the rationale for the studies that we will be required to undertake further air quality modelling to verify the conclusions of the air quality assessment and to ensure that we comply with the best practice emission concentrations, and we intend to undertake the study
15 as proposed. So secondly, the mine noise – the noise assessment - - -

MR CARTER: Sorry, just one question. Is there correlation between particulates and other pollutants that you inspect monitoring? So if you – for example, if you're getting an elevated level in the TEOM, does that correlate at all with the other
20 pollutant that's through the stack or is a separate sort of pollutant stream?

MR KINDRED: Yes, so it would be – would be independent fairly much, so - - -

MR CARTER: It's - - -
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MR KINDRED: So the activity around dust is mainly related to mining activity and disturbance.

MR CARTER: So that's not going to be related at all to the - - -
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MR KINDRED: They shouldn't. Particulate emissions are not - - -

MR CARTER: - - - emission particulates.

MR HANRAHAN: Well - - -
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MR KINDRED: Sorry, John.

MR HANRAHAN: No, you're right. It's – the particulates is mainly dust
40 generated, but also, the other particulates is from diesel - - -

MR CARTER: Yeah.

MR HANRAHAN: - - - emissions, which, in this case, we're primarily looking at
45 the sulphuric acid

MR CARTER: Cool.

MR HANRAHAN: So, secondly, the noise assessment: so the modification included some minor changes to the operations: for example, the TSF layout and the processing plant location. We therefore undertook a contemporary noise assessment in accordance with the New South Wales Industry Noise Policy and the Voluntary
5 Land Acquisition Mitigation Policy, or VLAMP. So we're committed to implementing reasonable and feasible noise mitigation measures, and the result of the assessment found that no marginal, moderate or significant exceedances of the relevant EPA noise criteria are predicted, and the EPA was satisfied with the noise assessment. Just one point here I wanted to raise with the Commission was
10 regarding the limestone quarry noise emissions. So this modification doesn't propose any change to the approved limestone quarry and therefore the associated noise impacts. However, the Department of Planning and Environment assessment reports states that there will be changes, and therefore there is a discrepancy between what – what's proposed in the modification and in the department's report. So we'd
15 be requesting the Commission to make no change to the currently approved noise criteria to the quarry.

MR KINDRED: And we've notified the department of the discrepancy.

20 MR HANRAHAN: Yeah. We've spoken to the department, and we've notified them. They've also said that they've notified the Commission, or they would notify the Commission and – both verbally and also in their briefing, I think.

MR CARTER: They've certainly raised it with us verbally, and they've indicated
25 they'll follow up formally in writing.

MR HANRAHAN: So does the Commission need us to – so, given that, that the department will follow up in writing, you don't – do you require us to - - -

30 MR CARTER: Look, that should close the loop on it, but we'll get back to you if we need anything formal as well. Okay.

MR HANRAHAN: So, thirdly, the road assessment. So we have a map here. I'm sure the Commission's familiar with this map of the central west with the location of
35 the main centres there, being Parkes, Forbes and Condobolin. So this map that we – we're showing at the moment, that shows the approved transport route, which starts from Parkes. It goes via a town called Bogan Gate, which you can see there on Henry Parkes Way, heads north through a village called Trundle, then heads west to – through the village of Fifield, which is near the mine site, and finishes at the mine
40 site. The next photo: this is just a photo, for the Commission's benefit, of Bogan Way or Forbes Street, which is the main street through Trundle. It's approximately 60 metres wide, and it lays claim to the – to being the widest street in New South Wales. Your site itinerary next week will take you through Trundle. So we can see that then.
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As I'm sure you're aware, concerns were raised by some members of the community in the Trundle community regarding the possible amenity impacts in pedestrian and

vehicular safety caused by the modification. So in response to that, we reviewed the proposed traffic movements, and we were able to reduce them by committing to higher capacity vehicles and – in this case, AB-triples and also the use of shuttle buses for our employees. So, as you can see here in this table, we've been able to
5 achieve an overall reduction in project operational traffic through Trundle of approximately 35 per cent. So that's the MOD 4 projected numbers on the right compared to the approved project, which is in the first column on your left. So that's a 35 per cent decrease.

10 So, separate to that – and if we look at the project as a whole – so not just Trundle but the whole project, including Trundle – the – this modification would actually reduce the total overall project traffic by approximately 34 per cent, and, again, this – I just wanted to raise this as an inconsistency in the department's assessment report, where it's stated that the proposed modification would increase total traffic volumes
15 associated with the project. So they had – so in their report, there's a table 3 and 4 which are incorrect. So, again, we've raised this with the department, and hopefully they've raised that with the Commission as well.

20 MR CARTER: Yeah. They've raised it with us and indicated a correction will be coming through. So - - -

MR HANRAHAN: so, in response to the concerns regarding – or the community's concerns regarding vehicle and pedestrian safety in Trundle, we commissioned a pedestrian access review, which was undertaken by GTA
25 Consultants. We actually commissioned this before the end of the exhibition period for MOD 4. So this was before Christmas last year, Justine, I think.

MS FISHER: Yes.

30 MR HANRAHAN: So the assessment concluded that it was unlikely that a significant deterioration in the safety of the existing pedestrian and vehicle environment would result as a result of the modification. However, what they did find was that there could be some improvements made to both of those conditions of
35 the existing environment, and we – we've committed to doing that in consultation with Parkes Shire Council. In addition, the assessment found that Bogan Way, which is this – the transport through – via Trundle, is suitable for the modified project traffic, and the reasons for that were – they outlined a number of reasons.

40 One was it's part of the existing regional road network, and that was – Parkes Shire Council, as part of their submission to the modification, also requested that their preference to – for us to – for project traffic to use a hierarchy of national roads first, national, state, regional and try and avoid local roads – so this is consistent with their request. It found that the road has adequate capacity. It's suitable geometry, as far
45 as intersections, etcetera. It's also approved to carry project heavy vehicle types, and we also did a road noise assessment, which found that there would be no exceedances of the relevant noise criteria in Trundle as a result of the modified project as well. In the same report or with the same assessment, the consultants also

referred to a possible traffic bypass of Trundle, and this was from one of the suggestions from the community.

5 Their finding was that, overall, it's considered that the existing and forecast heavy vehicle volumes on Forbes Street would not justify construction of a bypass route, and the reasons for that are because of the reasons we just noted earlier with regard to the existing route and why it's suitable, but also, with a bypass, you would be moving a minor number of heavy vehicles off this route. You would be moving it onto unclassified local roads that are principally used for local access, and they don't
10 experience any significant traffic volumes at this stage. The majority of those roads are unsealed, with substandard intersections, and they're not designed for heavy vehicles, and you'd need – significant road upgrades would be required to do that. However, the project will bring road improvements to the area.

15 So some of the road improvements, say, for instance, in Trundle, that the pedestrian access review identified included kerb treatments, threshold treatments and speed reduction signage, and, like I mentioned earlier, these improvements are recommended not because of the modification, but these could improve the existing conditions, and, as I said, we're committed to undertaking these improvements in
20 consultation with Parkes Shire Council. In addition to that, the other improvements we'll be making will be implementing various road and intersection upgrades for the project in accordance with the voluntary planning agreement that's on exhibition at the moment that we've agreed with the three councils and also in accordance with the current development consent.

25 So, with regard to those road and intersection upgrades, we've consulted with the RMS and councils regarding those, and the – and, like I said, the details are included in both of those documents, and we'll undertake these road intersection upgrades as agreed. So, regarding the amenity in Trundle, we – as I mentioned before, we
30 undertook a road noise assessment specifically in Trundle, and it predicted no noise exceedances of the road noise criteria. It was conducted in accordance with the New South Wales Road Noise Policy, and the EPA supported the modification based on the predicted noise levels. In addition, we're also preparing a traffic management plan that will include measures to minimise the amenity impacts, such as minimising
35 compression braking, manage appropriate driver behaviour as far as speed limits, safe overtaking, etcetera.

We'll ensure that our vehicles adhere to the designated approved route, and we'll also coordinate heavy vehicle departures to stagger those, so that the – any impacts
40 are – on the road network are limited. In addition, we'll also include strategies to minimise any impacts on the community. So, for community events in Trundle, we'll consult with the event organisers to identify any sort of potential interactions. We'll also develop strategies with them to minimise any disruption to their – to the events. For example, the – in the case of the Trundle ABBA Festival, which is a
45 one-day event in the year, we anticipate that we would not operate heavy vehicles, say, you know, through the – through Trundle during that event. So, finally – and

the fourth area we'd like to just go through is the water supply improvements that we'd like to make as part of this modification.

5 So, as Tim mentioned earlier, we're seeking to improve the project water supply security by diversifying our water sources and by gaining access to surface water from the Lachlan River. The project already has access to groundwater from the approved borefield, and we're not proposing to make any changes as part of this modification to the borefield. So water extracted from the borefields would be supplemented by licensed surface water extraction from the Lachlan, and the
10 Lachlan's a regulated stream. It's regulated by upstream releases from Wyangala Dam. As Tim mentioned, as you can see there, we'll be maximising the amount of water recycled on the mine site to minimise the raw water demand Tim mentioned this is a major change to the approved process, in that the approved process was we were using water.

15 It was going to site, and then we had a problem of excess water, and we were evaporating it. This – in – with this modification, at every step we're trying to recycle water and keep it in the process. As Tim mentioned, our – the size of our evaporation dam is quite small now. We're reducing that for one small stream to
20 evaporate, but, other than that, we are keeping the water within the process. So we plan to use – utilise both water supply sources to meet the project raw water demand, which you can see there, in accordance with the water licences under the Water Management Act and in accordance with the development consent requirements, which, in this case, would be the groundwater management plan.

25 Also, I'd just like – just wanted to note too that, in response to MOD – our modification 3, the Department of Industry, Water – one of their recommendations was that Clean TeQ consider alternative water supply options, such as access from the regulated Lachlan River. So as – I just wanted to point out, with the raw water,
30 the raw water demand will stay the same. So the surface water extracted from the river would be used instead of the groundwater, not in addition to. So this makes environmental sense. It gives us maximum flexibility in the operation of the borefield. So, to avoid localised impacts – so we'll have the option to be able to rest the borefield, especially in times of abundant surface water, and this is obviously
35 supported by other groundwater users such as, you know, agricultural irrigators in the area, and, in dry times, such as the moment, without approval to the access – to access that surface water where the – you know, the storage dam is currently over 50 per cent capacity, the project would be reliant on the groundwater.

40 So I just wanted to touch on water licensing. As I note there, the Commission was keen to hear what our thinking was with that. So with – if we were granted approval for the surface water access to the Lachlan River, we would then apply to the regulator for a water access licence with a zero allocation. Then we would go into the market to buy water allocations. As I said before, this – it's a regulated river.
45 It's got quite a mature – it has a Water Sharing Plan which is quite mature, I think since 2004, and there's quite some depth to the market as far as being able to purchase allocations for that access licence, and, just to give you some example of

this market – so, at present, there’s roughly just under 600,000 unit shares of general security water available in the system, which, if, on a one – if you have a one per unit share basis that would be 600,000 megalitres available of general security, and high security just under 30,000 unit shares available.

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And as far as trades in the markets – so if we look at the 2016/2017 year, in the case of high security trades, there was about eight trades with a total of about just over a thousand unit shares traded, which would – which would translate to around a thousand megalitres. And also in general security there was 61 trades, and that totalled around just under 36,000 share components traded.

10

MS FISHER: I might add to John’s point that we have consulted with Lachlan Valley Water, which is the peak body comprising landowners and water users, I should say, in zone 5, where our borefields are located. We’ve presented to their committee, and they have indicated that they are very supportive of our desire to access surface water, as have many of the landholders who live around our borefields.

15

MR CARTER: So you may not have determined this yet, but are you looking at general security or high security?

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MR HANRAHAN: We haven’t determined it as yet because, obviously, we haven’t got the approval yet. But what we envisage is that it would be a combination of both. So in times of abundant surface water, you would have – you could utilise your general security licences, and whereas in times like the dry time at the moment, you would be depending more on your high security licence because your general security would most likely be zero in times of less water.

25

MR CARTER: Right. So you would consider a sort of optimisation of your position at the moment on it.

30

MR HANRAHAN: Yes. Correct. Yes. So, lastly – and this is the last slide in my presentation – just to touch on some of the changes to the water management infrastructure. As Tim alluded to earlier, with the surface water or the clean water diversions, we have a couple of diversions that are approved. And this is consistent with the approved project where we would be diverting any upstream clean water and diverting it round the disturbed areas of the site, and it would be reconnected with existing drainage lines downstream of the site. Now, we have two small catchments above the site, which contribute to two shallow – quite shallow, broad, ephemeral water courses that cross the mine site, and we have slight changes in the diversion because the TSF footprint is increasing.

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Secondly, with the tailings dam, as Tim mentioned before, the modification would increase the capacity of the tailings dam, therefore, it would increase the footprint and the final elevation. But the other components of the tailings dam, such as the tailings delivery, the under-draining seepage collection, etcetera and the decant, would generally be unchanged. In accordance with the development consent, the

45

design of the tailings dam would conform to the dam safety committee requirements and also with the conditions of the current development consent regarding the permeability of the walls and the floor of the tailings dam. I think I've covered everything there, so thank you very much.

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PROF A. CLARK: Yes.

MR CARTER: Thanks, John.

10 MR HANRAHAN: I will pass on to Justine now and to talk about community engagement.

MS FISHER: Thank you, John. So for my section of this presentation, I would like to give you an understanding of the scope and range of consultation that we've undertaken across the community to support MOD 4; and I would also like to give you confidence in the conversations we've had, where we've tried to engage and, really, importantly, how we have listened to the community. John referenced and showed you the table around traffic movements through Trundle. We sought – we worked very hard to reduce those movements after receiving the feedback from the community about their concerns. Likewise, there were concerns raised regarding the transportation of construction water from our borefields which do not form part of MOD 4 any more because we removed that as well.

25 So we have responded and sought to listen. Building our social licence to operate, our community spans three local government areas of Forbes, Parkes and Lachlan. And the three consultation communities have included Trundle, Fifield, Waroo, being the smaller communities, and the larger centres of Condobolin, Forbes and Parkes. I, myself, live in Parkes. I've lived in the central west for seven years. And the team on the ground, which comprises community, environmental and other team members, is a local team, and most of – all of those representatives have lived in the region for quite some time. We have focused on ensuring that we have a local team that can build relationships and really bring to the table a good understanding of the community, its needs and also aspirations for the future.

35 With respect to each of the shire councils, we've had frequent meetings at all levels of council to discuss all aspects of MOD 4, and in addition to agreeing the Voluntary Planning Agreement, we've kept each council very well apprised of our plans throughout the project to this date. Our community consultative committee was reformed in August/September last year. It's chaired by Lisa Andrews, who also chairs the Cowal CCC. She recently took on that role, and we've met five times over 40 the last year. The members include our near neighbours to our mining lease, some neighbours that are slightly further out are represented from the Trundle CCC, the Chambers of Commerce in Parkes and Condobolin, and very importantly, the Wiradjuri Condobolin Corporation, who we enjoy a very positive relationship with, 45 and then representatives from each of the shire councils.

I just want to highlight that of the last five meetings, two in particular, we've invited, as John mentioned, external experts to come in and talk to the committee. When the community raised their concerns around air quality and emissions in December/January this year, we worked quickly to respond to that. We invited
5 Ramboll to attend that meeting. And the presentation they gave us, which was very detailed, that content is available on our website and was shared with all CCC members. It was also excellent having Stephen Grocott in the room there. Stephen joined Clean TeQ around a year ago now from Rio Tinto and has many years of experience in processing and works closely with Tim and his team.

10 In addition, we've had Sam attend our CCC. Of course, Tim is a member of our CCC and other members are of Tim coming in over the last year. Thank you. We communicate with our stakeholders regularly, and we use a variety of channels to do this. Being a regional area, local newspapers are well-read and are a go-to
15 place for information. So we have ensured that we've advertised all meetings that we're holding in our local media. We've also produced four community newsletters, particularly around MOD 4, which are inserted into the local newspaper and also distributed by mailbox drop. And you can see up on the slide here some examples of some of the advertisements that we have placed in the local media over recent
20 months around MOD 4 again.

We wanted to ensure that people know who Clean TeQ is, what our plans for Clean TeQ Sunrise are and, really, importantly, who they contact should they have any
25 questions. As you would expect, a lot of our stakeholders know who we are, and they're in regular contact with us. But we want to ensure that all sections of the community have the opportunity to engage. We've also used our social media to ensure that we connect with all parts of our community. Thanks, Nicholas. So let's take a look at the engagement that we've done to date around MOD 4. Starting on the left-hand side of the column, for our near neighbours in the Fifield community,
30 we recently held a site tour for our neighbours in August.

We've also held informal barbecue evenings. What I have learnt about community consultation is that people like to engage in all variety of ways. What suits
35 one person might not necessarily suit somebody else. That said, we've captured all consultation, and we have an extensive database of all of that engagement and concerns raised and answers provided. We've also met with our near neighbours for one-on-one meetings either at their homes or our shop fronts. We've got two shop fronts, one in Condobolin and one in Trundle. These were established last year and they provide the community either with the opportunity to drop in and ask us a
40 question or for us to be able to hold meetings with relevant stakeholders.

Community information sessions, these have been held across the region: Condo, Parkes, Trundle and Forbes. We actually held these in the evening to ensure that we could provide people with ample opportunity to come along to learn about the
45 project, inquire about employment or procurement opportunities, and some 320 people turned out and, in Trundle, there were actually I think around 35, which is a great representation of a community that's some 300 people strong.

5 We've held community drop-in meetings, which are advertised, in Fifield, Trundle, Parkes and Forbes. They might go for a couple of hours – you can see a photo there down the bottom; John and I are in that photo – and it enables people who live in Slee Street in Fifield and other regions to be able to drop in and have a chat with us and, really importantly, ask us the questions that they've got.

10 For the landholders surrounding our borefield, we have consulted with this group. We've met with the concerned residents at Warroo Hall in April and May this year – John and I were present for those meetings – together with others, and most recently, we've conducted a bore census. We've visited 155 bores across 73 properties and that information is being shared with all landholders at present. It has been a pretty big project to compile individualised reports for each property owner and that will inform the development of our groundwater management plan, which is currently underway.

15 Whilst that, of course, is a technically focused exercise, it also enabled our community relations team and environmental specialist to be able to talk to all of those landholders and, again, try and answer their questions, understand what their concerns are around water usage and build relationships. We've recently held community coffee carts in five of the – well, in five towns. These are informal, open to everyone and we've had a wide range of people drop by who we may not have seen before.

25 As a local resident living in Parkes – I've also lived in Forbes as well – I know that it's really important that we're involved in our community; that's why we have to have a local team who's part of the community. So we've had information stands at the local ag shows. We've participated in local events, you know, whether it's Abba – the Abba Festival or whatever community event it might be that's important to that community and, again, that allows us to show people that we want to be a part of this community, not just today but going forward. Thanks, Lucas.

35 Data is really important when it comes to consultation and I hope, as I said at the beginning, to give you some confidence about the extent and scale of the engagement we've undertaken. So we've had 93 meetings with community stakeholders. Some of those may be meetings with one person a number of times. For the drop-in meetings and the other public meetings that I mentioned that, as I said, we have advertised, we've connected with 593 people.

40 I've covered our CCC, that's the incredibly important forum and, on that, I must note that for the neighbours who live around the ML, there are four representatives on our CCC and so they are provided with a great deal of information through those channels and they're also able to answer questions. Lisa, our chair, requests – the questions are submitted in advance of the meeting, so that what we present the community is actually in response to their information needs, and that is run exceptionally well. We've got an electronic news, Facebook, for those people who have internet connection and then, as I mentioned before, the newsletter, which is

very well read by the local community. So we have worn out a lot of shoe leather and we've printed a lot of publications. Thanks, Lucas.

5 In summary, what I would like to take you through here is to give you an understanding of the community sentiment about MOD 4. The yellow circles show the smaller communities of Fifield, Trundle and Warroo and it's in these parts of the community that we know people by name and we've spent a lot of time out there. We've worked hard to answer questions and, importantly, provide factually correct information. We've had numerous and detailed conversations about all of the things
10 that John has talked about today, plus other topics. We also know all of the landholders who live around our ML and beyond.

With regards to Fifield, we really haven't heard many objections from the people who live in Fifield proper. You will pass through Fifield next week. I'm not sure if
15 they will attend the public meeting; it's a fair distance for them, but we have offered to transport them should they wish to attend.

Looking at the community of Trundle, we know this community very well and there is a large bank of support for MOD 4 in Trundle. I will point out that it can be
20 difficult for some people in smaller communities to express their support for a project, but both of the school principals, of St Patrick's Catholic School and Trundle Central School, they are actually away next week for the public meeting, but I understand that they wish to provide written submissions so you understand their views about the project and the engagement that we've undertaken with those two
25 very important parts of that community.

And with respect to Warroo and our borefields, I feel that I have covered that off. The bore census, as I said, gave us an opportunity to talk to a lot of different folk, and it can be difficult in small farming communities to say much, particularly at
30 times of – dry times such as these, because water can be an emotive issue.

Condobolin, it's very optimistic about the opportunities. I flagged that we have very good relationship with the Wiradjuri Condobolin Corporation and we will look to continue our engagement with that organisation and the opportunities that we hope to
35 be able to afford the community there. And in Forbes, we've spent a lot of time trying to engage with that community and back into Parkes.

Parkes has Northparkes as part of its LGA, so they're quite familiar with having the footprint of mining and mining as a neighbour and they have a very positive
40 relationship with Northparkes, which we hope to embody, not only with Parkes, but, importantly, with Forbes and the Lachlan Shire Council as well. So in summary, my sense, being a resident in the local community and proud to do so, is that there is a lot of support for Clean TeQ and our plans for MOD 4 and a lot of engagement has been undertaken. Thank you.

45

MR RIGGALL: Thanks, Justine. So look, just in conclusion, this modification is very important, because we believe it will improve the project significantly. As

we've already said, the high-impact emission points for the project have been reduced substantially in this modification, including the removal of hydrogen sulphide from site. It will result in an overall decrease in traffic for the project and will allow us to diversify our sources of water to the project. So we believe there are significant benefits to this MOD, not just for the project, but for the local community.

You know, I would be lying if I didn't say the economics of the project are important to us, and they are, they're very important because with such a large capital build, the focus on repaying that capital is very important, so we have the added benefit from this MOD that it should reduce capital and operating costs. It will improve metal recoveries for the very reason that Tim alluded to before with the focus on the high grade zones of ore in the early years and will improve water security. We are just as conscious of water security as anyone in this region.

Bear in mind our business does include a water treatment division and we've worked in this industry for a number of years and are very attuned and sensitive to the issues around water security. We also feel as though through this mod we have tried to address the concerns that have been raised with us, whether by government or local community. So, you know, we have agreed to use high capacity vehicles to try and reduce traffic movement. We are very supportive of changes to the road and road infrastructure to support the traffic movements that go through Trundle.

We are fully committed to continuous emissions monitoring at the stack and particulate monitoring as well, and we've tried to support that with community engagement. We understand there will always be people who will oppose development, and particularly of mining operations like this one, and usually that opposition is closer – stronger the closer you get to the site. We understand that, and we're not going to make everyone happy, but we've tried to – or we have ensured that every thing we are doing is within the framework of the regulations and the laws and the recommendations that have been set by the EPA for us, and this mod is an important part of that.

Finally, I would just like to say that this is a very important project, not just for New South Wales but for the country. There is a significant technological disruption coming in the transport industry with the introduction of electric vehicles. And I spend a lot of time in China; what you are seeing happen here, there is tens of billions of dollars going into new battery capacity development. And, at the moment, everyone is looking around saying, "We can build new battery plants but where are the raw materials going to come from?" And this won't be a silver bullet for that problem because the scale of expansion is so large, but it's a very important one because what we are demonstrating through Clean TeQ is a much better process for producing these key raw materials, more environmentally friendly and lower cost.

Australia is a – has an important role to play here. We're the world's largest producer of lithium and the world's second or third largest producer of nickel and the worlds third largest producer of cobalt. All of those are key raw materials for these batteries. And this will be, really, the demonstration project to show how you can do

it much better than the way – any way it’s done today. So we thank the commission for hearing us out today, and I’m conscious that I’m not sure if we’ve addressed all of the issues on the agenda but if you would like to ask questions now, we’re very happy to take them.

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MR CARTER: All right. Thanks very much, Sam and team. We certainly found that very helpful. Did you have any follow-up?

10 DR I. LAVERING: I didn’t ask a the time because I wanted to wait until we had gone through everything, but, Tim, based on your past experience and what you see with this project, how flexible do you see that requirement for water within the process? Will you get any pleasant surprise, do you think, from the ore body that you’re dealing with there or have you seen much flexibility in the past with these types of things?

15

MR KINDRED: So the water demand we have is based on our mass balances and our test work and so on.

20 DR LAVERING: Yes.

20

MR KINDRED: We have done some more test works recently. So with a complex project we’re continually doing test work and have done in the past, so there’s indications from recent test work that our tailings should release more water than we thought.

25

DR LAVERING: Okay.

30 MR KINDRED: But we’re confirming that and that will be an opportunity, once we require the water, it’s a matter really of that is a requirement of the process. It’s a matter of managing it tightly on the site.

DR LAVERING: I understand.

35 MR KINDRED: Measuring it and really being very focused on - - -

DR LAVERING: Yes.

MR KINDRED: - - - minimising the usage.

40 DR LAVERING: Okay. Thanks.

MR CARTER: Alice, do you have any - - -

45 PROF CLARK: How many other operations of this type use this technology around the world?

MR RIGGALL: I don't know the exact number but probably three or four dozen. Ion exchange was developed principally in the former Soviet Union, so you see a lot of these plants in Russian, Kazakhstan. And although we've designed one for – there's Barrick's operation in the United States, so they've built a thiosulphate plant for their gold plant there. It's about a million ounces. It's – think of it – Carbon-In-Pulp is a very common way of pulling gold. Just think we replaced the carbon with resin; it's a simple process. Usually you see them also in uranium extraction and copper extraction.

10 The unique aspect here is that we haven't yet seen a commercial scale development of a nickel/cobalt extraction, but the plant engineering is almost identical. What you see that is different is really the functional chemistry on the resins. They attract nickel and cobalt rather than copper. To give you confidence, we – and to give us and our banks confidence, we piloted this at very large scale in Perth now for – well, 15 the first piloting programs took place at BHP and Barclay back in the early 2000s. There have been multiple campaigns. And we're very conscious that the technology aspect of what we are doing here has to be well demonstrated before the banks will even put a cent into the project.

20 MR CARTER: Yes.

MR RIGGALL: So we're very confident that, given the number of plants that operate at a much larger scale than ours will be around the world, it will be a very good way to pull nickel and cobalt.

25 PROF CLARK: Just for my own, I guess, background, many of those other plants around the world would have complex ore body mineralogies like this one?

MR RIGGALL: There are a few. So in Russia in particular you find some 30 polymetallic resources. So I think there's a couple of gold and copper mines that are polymetallic. This one is not – I wouldn't say this is a complex ore body in terms of its mineralogy. I mean, nickel laterites are relatively common resources. In fact, extremely common resources. The challenge in the last, probably, two generations has been demonstrating a hydromet process that's economic to extract them. Tim 35 has had experience on a lot of them, in fact. You've probably bounced around most of those that have been - - -

MR KINDRED: Yes.

40 MR RIGGALL: - - - developed in the last few years. And, you know, if you follow the industry, some of them have had complications. And generally you can see some like Murrin Murrin today operates very well in Western Australia. Tim has come out of Ambatovy, Ramu in Papua New Guinea is working well. There are two in the Philippines that the Japanese run that are – that are excellent operations. So we feel 45 that over time the industry has learnt, you know, a lot from the previous developments, and we're trying to bring as much of that experience to our team as we can.

PROF CLARK: Thank you.

MR RIGGALL: And, finally, there was a question about scandium. That is an
5 aluminium scandium alloy. That is – has about .3 per cent scandium in the
aluminium. That is a fifth of the weight of titanium but stronger than titanium. So
the work we do at Airbus is to develop new alloys that they can use in the fuselage of
their aircraft that adds a lot of value both in terms of the weight. Removing one
kilogram of weight from an A380 aircraft is equivalent to about US\$1 million of fuel
10 savings over the life of the aircraft, so lightweighting is a very big focus for that
industry and scandium hopefully will play an important part of that.

MR CARTER: Okay. Well, once again, thanks very much, Sam and team, for the
presentation. That has been very helpful for us and I will declare the meeting closed
at this point.

15 MR RIGGALL: Thank you.

MR CARTER: Thank you, Sam.

20 MR KINDRED: Thank you.

PROF CLARK: Thank you.

25 **RECORDING CONCLUDED**

[2.52 pm]