

ECONOMICS AND INDUSTRY STANDING COMMITTEE

INQUIRY INTO MICROGRIDS AND ASSOCIATED TECHNOLOGIES IN WA



**TRANSCRIPT OF EVIDENCE
TAKEN AT PERTH
WEDNESDAY, 16 MAY 2018**

SESSION TWO

Members

**Ms J.J. Shaw (Chair)
Mr S.K. L'Estrange (Deputy Chairman)
Mr Y. Mubarakai
Mr S.J. Price
Mr D.T. Redman**

Hearing commenced at 10.28 am

Mr ROBERT GEORGE KLUG
CCO, Sandfire Resources, examined:

Mr WARREN JOHN PEARCE
CEO, Association of Mining and Exploration Companies, examined:

Mr NEIL VAN DRUNEN
Policy Officer, Association of Mining and Exploration Companies, examined:

Mrs COLLEEN FERRIER
Sustainability Senior Advisor, Sandfire Resources, examined:

The CHAIR: On behalf of the committee I would like to thank you for agreeing to appear today to provide evidence in relation to the committee's inquiry into microgrids and associated technologies in Western Australia. My name is Jessica Shaw and I am Chair of the Economics and Industry Standing Committee. I would like to introduce the other members of the committee: to my left, Deputy Chair, Sean L'Estrange; Stephen Price, member for Forrestfield; Terry Redman, member for Blackwood–Stirling; and Yaz Mubarakai is likely to join us later. It is important you understand that any deliberate misleading of this committee may be regarded as a contempt of Parliament. Your evidence is protected by parliamentary privilege; however, this privilege does not apply to anything you might say outside of today's proceedings.

Before we begin with our questions, do you have any questions about your attendance here today?

The WITNESSES: No.

The CHAIR: Would you like to make a short opening statement about your submission?

Mr PEARCE: Yes, I would. Thank you, Madam Chair. I suppose our major engagement with this committee is through our support for the gold and lithium and battery minerals industry in Western Australia. I appreciate that to some degree is a bit aside from the purpose of the committee, but we are looking to use this opportunity to try and promote the opportunity for Western Australia. In that vein we have released a couple of reports. In January we released a report called "A lithium industry in Australia: A value chain analysis for downstreaming Australia's lithium resources" really trying to talk up the opportunity for Western Australia and undertaking a bit of an analysis of where the global supply chain is for lithium and where Western Australia can sit into it.

That has led us into a piece of work really encouraging government to support industry in growing that value-adding opportunity. You can see over the last six months there have been significant announcements on major projects in Western Australia, as recently as last week with Kidman Resources and SQM, earlier in the year with Tianqi extending their processing plant in Kwinana, and with Albemarle looking to build a processing plant in Kemerton outside Bunbury. So there is a lot happening in that space, and what we have been trying to encourage is government and for the community to understand that the conventional wisdom about our ability to value-add and compete in an international market actually is quite different than what we perceive it to be.

We have got a long conversation in Western Australia around our inability to value-add to our materials, that we dig up our minerals and ship them out. In the lithium space there is tremendous

opportunity arriving now in terms of the demand for lithium-ion batteries driven by battery storage and electric vehicles, and we are exceptionally well placed in WA because we already mine all the minerals that go into a lithium-ion battery, which changes the cost scenario for Western Australia in competition with other nations that may have lower cost environments or lower wage environments. It is a natural opportunity to build on, that we can begin that process in Western Australia, but there is a challenge we have to meet. That is, in order to do that requires substantial knowledge and expertise, and most of that sort of technology knowledge and expertise is held by a small number of large companies at the other end of the value chain, and we need to find ways of encouraging those companies, we believe, to come to Western Australia and look to partner with our resource companies and miners to establish processing and refining facilities. Then we can look at building our way down the value chain.

Our report in January recognises that this is a \$2trillion industry by 2025, the demand curve for batteries is off the scale. So today we have released recommendations for what we want to see from government, both state and federal, in this report called, “The Path Forward”. Really it sets out some recommendations that we, working with government, can actually work our way down the value chain. It starts with leadership. We need our state and federal government leaders to be providing a clear signal to the market, and internationally, and really making the case for these companies to come to Western Australia and look at our suitability for setting up operations here, and making clear that Australia wants to support a battery industry locally. We need a planning coordination role, we need to identify the places these processing places can go, and we need to make sure that the conditions are clear so that they are able to move and set up quickly. Finally, we really need a whole-of-government approach, and so we are asking the state government to identify a lead minister to take responsibility for driving this new industry and to coordinate as a point of coordination or point of contact the companies or industry can come to to try and work these matters through.

The CHAIR: Thank you.

Mr Klug, would you like to give us an overview of Sandfire’s perspective?

Mr KLUG: Sure. Thanks, Madam Chair. From Sandfire’s point of view, we are not specifically in the lithium battery space. I guess my role here today is to sort of echo Mr Pearce’s comments in relation to our government as an enabler of these types of technological advancements that can assist companies in progressing into that area. So, Sandfire’s own experience is that we were looking at ways that we could increase our sustainability to decrease our carbon footprint. We looked at solar power as an option. We are abundantly supplied with sun, especially in our part of the world near Meekatharra, and so we looked at building a solar power station. Without the support of the Federal Government we would not have been able to do that. That enabled us to get into the space and build the solar power station, and since that time the learnings that we have made and the technological advancements that have happened in those particular things have been extraordinary for us.

We can see ourselves, with the level of interest in the power station both from companies within Western Australia as well as international companies—we host a visit on a very, very regular basis—the old “once you build it, they will come.” We are living it; that is exactly what has happened. All of a sudden companies—and we may have been one previously—that may go, “It’s too hard, it’s too expensive and it will never work”, are now coming around a bit and they will come up to you at a conference or something and say, “So, how is it working? What have the challenges been and what is the cost like?” You can actually see in true living proof that if government, and us in this particular case, take a bit of a leap of faith then the rewards start to come. So I guess from our point of view

that is what we would like to say to the Committee today: that it can start with governments, a little bit of assistance, and then industry can get on board. If you can work together then there do seem to be abilities to work into these kinds of renewable spaces.

The CHAIR: Thank you very much for your opening submissions. To give you a little bit of a context of how this Committee intends to tackle what is a very big topic, the first phase of the inquiry, we are very much looking at the opportunities presented by microgrids and the various inputs in, which is why it is fantastic to receive AMEC's original paper and now to hear more about your subsequent paper. The other thing as well that we are very interested to hear about are the companies that have deployed these types of projects into their processes, and so it is going to be very interesting for us to hear the benefits and some of the challenges, perhaps, that Sandfire experienced. So, this whole first part of the inquiry is intended to scope out the opportunity. The second phase of our inquiry will be looking at barriers, so, what are the regulatory issues that are potentially working against the adoption of these technologies, is there anything that government could do to encourage these types of technologies? I think your evidence before us is going to be very relevant to this first phase that we are in at the current time.

I think certainly what I would like to do is maybe hear a little bit more about Sandfire's experiences, and your decisions behind adopting the technologies that you chose to deploy to site, and then we can move on to some of the policy issues, if that is all right. Could you perhaps give us a bit of an overview of what were you doing prior to adopting a microgrid solution, what led you to adopt one, and did you encounter any difficulties with that, and what have the benefits been?

Mr KLUG: Yes. Just so we are clear, the solution we adopted was an off-grid solution.

The CHAIR: Yes.

Mr KLUG: So, that is not actually, strictly speaking, a microgrid. A microgrid situation is where —

The CHAIR: So, it is a stand-alone power system?

Mr KLUG: Correct.

The CHAIR: Yes.

Mr KLUG: So, it is what they call an island power station.

The CHAIR: Yes.

Mr KLUG: You know, if we had been able to connect to a grid, it actually would have been a lot easier for us in the longer term, as it has turned out. Just to be clear in relation to that. So, yes, ours is an island power station, and what we were doing beforehand was we were 100% diesel-fired generator power station. Yes, so that was what we were before.

The CHAIR: What do you have now?

Mr KLUG: We have a combination. We have built an island solar power station that, via a black box as I call it—I am not a technical person; I apologise for that—the solar power station talks to the diesel power station, and during the day when we have enough sun the solar power station generates our power. Then at night-time, or other times when the solar power station is down the diesel power station kicks in and supplies our power.

The CHAIR: So, you do not have a battery on site at the moment?

Mr KLUG: You know, this is an interesting thing and this is when I say we are not indirectly involved. The only sort of battery storage we have at the moment, because the technology is not yet sufficient for us to be able to store batteries—but it is getting there very quickly—and use that battery power during the night, is enough effectively to act as a buffer to keep the solar power station up and get

it running when it is turned off, or when a cloud comes over. It kicks in for about 90 seconds, two minutes, something like that, for cloud cover. So it gives it a little bit of an ability to be able to keep working while a cloud comes over, and then hopefully there are not too many clouds that day and then it can kick back in again.

The CHAIR: So how long ago did you make the transition from 100% diesel to a diesel/renewable —

Mr KLUG: I think we have now been going for just over two years—two and a half years—something like that.

Mrs FERRIER: Our commissioning was in 2016.

Mr KLUG: Yes.

The CHAIR: And did you build-own-operate or have you contracted out?

Mr KLUG: No. So, we are very lucky. We had the support of ARENA.

The CHAIR: Right.

Mr KLUG: So the federal government and two international companies, one a French renewable financier called Neoen, and a German renewable, sort of more an operator, called juwi. Juwi built the project for us using some local and some international operators, and Neoen financed 50% of it and ARENA financed the other 50%.

The CHAIR: Did you run a tender process for that, or did ARENA run that? Or how did that work?

Mr KLUG: We did run a tender process in a way. It is fair to say there have been a lot of people that have been trying to operate in this particular area for a few years now, and the group that kind of ended up persuading us was a group that had partnered with juwi, and these were a couple of brothers out of Queensland. They, I guess, did the front-end business development type, you know, persuading us it was possible. Then during the negotiations and the technical sort of due diligence and “will this actually work?” phase we dealt more with juwi, but there was juwi and a partnership between a couple of brothers from Queensland.

The CHAIR: Are you aware whether they provided those types of technologies to other mining operations?

Mr KLUG: There are some other mining operations that have got some solar power options. They differ a little bit both in size and in technology, but yes, I think there are four, five, maybe six, now in Australia. Ours, though, is by far the biggest in terms of sort of supplying the power to a whole site.

The CHAIR: How big is your system?

Mrs FERRIER: Twelve megawatts.

Mr KLUG: Twelve megs, yes.

The CHAIR: Okay. That is really quite sizable.

Mr KLUG: Yes, I think it might be the second-largest or largest off-grid power station in the southern hemisphere.

The CHAIR: And did you approach ARENA for support? How did you find—explain to us your interaction.

Mr KLUG: So, the group we were talking to, the juwi–Queensland partnership—I forget the names of the gentlemen—they approached ARENA. They came to us and said, “Look, this is what we think we can do and this is how we think we can fund it, if we can persuade you technically, we will get there first and then let’s see if we can look after the commercials after that because we think we

have got those covered.” They were able to persuade us technically that it was possible, and then after that they said, “And here is the funding solution.”

The CHAIR: And how has the performance been compared to your diesel standalone system?

Mr KLUG: It is fair to say there have been challenges, and that is one of the things I think Warren is alluding to—that this technology is available and looks like it works, but it is not until you put it into a remote Australian mining context that you actually understand just how different it is from downtown Rotterdam or somewhere like that. That is what I say, that once you put these things out there, that is when you actually learn and you get the learnings and technological advances very, very quickly. So, you know, we have found it is good now. It has probably taken us until now to actually get it running seamlessly, but now it is hitting the levels of what we want where it supplies now between 20 and 25% of our power to our site, once you take into account the 24-hour cycle. That is what everyone modelled when we started out.

The CHAIR: Great.

Mr S.J. PRICE: Sorry, I just want to say, if you have got a 12-megawatt system to run your whole site, so keeping a little bit of steady power flow to the processing plant would be quite important, the battery must be actually quite a decent size if it provides that cover to switch over for 90-odd seconds or whatever it is.

Mr KLUG: Yes. It is chunky—it has to be—but yes, nothing like what we would need if we were to be able to —

Mr S.J. PRICE: Yes, fully.

Mr KLUG: —actually store and use it for running at night-time.

Mr S.J. PRICE: Do you know the size of it, the watt-hours?

Mr KLUG: Of the battery? No, not off the top of my head.

Mrs FERRIER: Not off the top of my head.

Mr KLUG: Yes, but suffice to say, when we caught up with the guys I think a couple of months ago they said that the technology has already moved on and if we get a mine life extension—which hopefully, touch wood, we announced the start of one yesterday—that is one of the things we would look to do in optimising the power station with, so can we actually now put in a bank of batteries to actually get us running into the night as well? That is straightaway what people are talking to us about now. We have had visits from Woodside and Rio and these sorts of places and they are saying that is where their interest is looking.

Mr D.T. REDMAN: My question is to Warren. You are one of the lead mining organisations in the State. You have come out now with two reports with a headline on lithium. Before you decided to pursue that as an objective to try and support or push for particular government policy settings, did you do any analysis on other alternative technologies that might well have come to the surface that have a bit of a membership base also sitting in your organisation?

Mr PEARCE: Not in that sense in terms of actually doing a piece of work around a report on it. Certainly there are other potential competitors to lithium-ion batteries but they are not as advanced. Really, what has become clear to us in pursuing that piece of work over the last six to 12 months is that we do not think there is likely to be a substantive competitor in that space for 15 to 20 years. Certainly, there are opportunities for it, and there are minerals both being mined in Western Australia and across Australia that are all quite respective that would be used if, say, things like vanadium came into that sort of space.

But in that regard, in terms of our representation of industry, we are agnostic about the opportunity. Certainly where there is demand, there is ability to explore and develop mines to meet that demand—that is the business that we are in, trying to promote exploration and mining activity—but it seems to us that the opportunity around lithium is so much greater than pretty much any other opportunity, particularly for the broader range of battery minerals. I think lithium's the headline mineral, but over 12 or 15 other minerals have all seen commodity price increases, greater demand rising, whether it be graphite, nickel—lots of minerals that perhaps have not been in the lithium story, we are actually starting to see a big boost and a significant increase in interest in exploring for those products and also opening mines.

So, from our end, we are agnostic about it. Why we have chased it is we think there is an opportunity, we think that opportunity is now. One of the things that our report essentially says is we think the global supply chain for lithium and lithium-ion batteries will set in the next couple of years. What is happening in the industry worldwide is kind of chaotic; there are companies and countries engaging everywhere, and deals have been struck all over the place. Commodity prices from deal to deal differ quite dramatically, but at some point that chain is going to get ironed out and it is going to set. Once those companies like LG and Panasonic, the electric vehicle manufacturers, have sorted out and secured their supply, it probably will not change very much. So our argument is to government and the community: we need to be able to establish ourselves in that value chain now, because if we are not there once that supply chain sets, getting into it then is going to be all but impossible.

Mr D.T. REDMAN: One of the tools that you put in your recommendations of your first report was to consider or look at the potential of State Agreements being a tool.

Mr PEARCE: Yes.

Mr D.T. REDMAN: The history of State Agreements is essentially around a tenure—security of tender to go to investors. The way some of the rules have changed, as I understand it, that is sort of less of an issue these days; you can have confidence in the current process. Is this as much about the value-adding dialling that into a State Agreement?

Mr PEARCE: Yes.

Mr D.T. REDMAN: Can you tell us the components of a State Agreement that would be significant to industry?

Mr PEARCE: Yes, certainly about certainty. So, I think what we recommend in our report released today is that the government should explore and consider the use of state agreements. The reason we say that is—but it is sort of a combined recommendation. What we are really looking for from government is an ability to be able to make certain to an industry or companies that might invest here that they are going to be able to develop their project quickly. So, if you think about a two-year window, that is a short time to market. Now, you can work through our existing process. The lead agency process is very effective, if you are given lead agency status. What those companies are looking for is certainty that if they invest they are going to be able to move through the approval systems quickly and begin the project development.

Now, State Agreements essentially push out—override—the approvals process so you can set your own conditions into the state agreement. That is one way you could deal with it; it would give those companies investment certainty and a clear certainty more around the time frame. But you can also do it through the existing process but it requires a commitment from government to ensure that they are helped through the process to move through it quickly. So, for example, the Tianqi processing plant in Kwinana were able to move through the approvals process in nine months as an

identified lead agency project. That is impressive. That is much better than most projects would do through the ordinary process. If you are able to guarantee that level of support, that will be very attractive to companies to invest in WA.

Mr D.T. REDMAN: Some of the traditional State Agreements—legacy State Agreements—have got built into them value-adding prospects—the iron ore industry being the case in point.

Mr PEARCE: Yes.

Mr D.T. REDMAN: Is that something that industries or investors would accept as part of a State Agreement if there were concessions that might help them set up, for example?

Mr PEARCE: I think they would. I think primarily the types of companies we are looking to attract are looking to do that value-adding anyway. I mean, we have got the exploration, the mining space, cornered. We provide 60% of the world's lithium, and we provide all the other minerals that are needed. That is not the space that needs help; it is getting the value-adding into the processing, because the mining companies themselves largely do not have that expertise. We are going to need to be able to find partners to help us get into that space.

We are really looking for creating a policy environment that supports the attraction of companies from overseas to come and partner with Australian miners and Australian companies—the trade-off being they get security of supply and product and we get to value-add our product and participate in the next step in the value chain where there is a much expanded value pool. As we work our way down the value chain, we dominate the end of the chain that is worth the least.

The CHAIR: Can I pick that issue up? In some commodities, and more recently particularly in gas, what we are seeing is the end user, the electrical companies in Korea and Japan, increasingly taking equity positions in the raw material in the project. Oil and gas projects very often are underwritten by the electrical generators sitting there in Korea. Could you see a similar type of trend emerge in a commodity like lithium where the —

Mr PEARCE: It is already happening.

The CHAIR: Could you give us some examples of that?

Mr PEARCE: Sure.

The CHAIR: Sorry, just allow me to flesh this out. I guess we are trying to understand what conditions are required to attract the capital here for that mid-step in the process. I think the State Agreement angle is an interesting aspect of that, but if you could give us some examples where an equity position in a raw material has been taken for that value chain capture, that would be great.

Mr PEARCE: Yes. There are a number of those examples. For example, Pilbara Minerals, which is a lithium mine project in the Pilbara outside Nullagine. Great Wall, the Chinese vehicle manufacturer, has essentially purchased all the products being created out of that mine before the mine is completed. It is essentially the LNG contract where the —

The CHAIR: So they have taken a contract for the output?

Mr PEARCE: Yes.

The CHAIR: They have not actually taken an equity position in the project, though; they have just underwritten the output. Do you see the difference?

Mr PEARCE: Yes, I do see the difference, but I cannot tell you the detail about it.

The CHAIR: Yes; okay.

Mr PEARCE: I suspect the second is also true, but I am not sure.

The CHAIR: Yes.

Mr PEARCE: But, for example, Tianqi, that is set up as the processing facility, a large Chinese operation has purchased 50% of the Greenbushes lithium mine with Talison. They are purchasing and securing their supply, and then bringing it to the next step. The problem that we encounter is that most of the companies that are in a position to do that have the balance sheet to do that. If they are in the processing space or electrochemical manufacture, they are securing their supply in the agreement but then building the processing facilities overseas. That is really what we are trying to change. We want the processing facilities to be built in Western Australia to provide the economic opportunity here—and of course those jobs.

Mr D.T. REDMAN: Can you give me the basic analysis of that—manufacturing 101 for me? The history of our mining is that we dig it up and send it overseas. It is driven by industry, as distinct from anyone giving an incentive to build that. So what is the unique nature about lithium that says that it is okay to manufacture here, or do some level of refinement?

Mr PEARCE: There are a few things. The first is that all the minerals are already here. You actually have to get all these minerals together in the one place to actually begin putting batteries together, so sort of a step along the chain. But it changes the cost environment for you, which means that rather than having to actually export all the product, which is mostly waste, overseas to the one point to actually begin processing, doing it here gives us a cost advantage.

Mr D.T. REDMAN: It is as a big volume difference?

Mr PEARCE: Yes, as a substantial difference in cost. Also, the lithium processing industry is less reliant on cheap labour to keep costs down. You are talking about numbers of about 200 to 250 people working in a large processing facility rather than talking about thousands of people. That is to be considered along with the fact that things are changing for our competitors. China is becoming a much higher cost environment, but it is still cheaper than doing it in Australia, but we are really only having to outcompete it in terms of capital cost. The infrastructure and the investment in building the processing facility is of a considerable factor more, but the cost of operating it is getting, not one-to-one, but much closer. So the advantage of having the minerals in the one place offsets the additional costs you would pay for actually doing business here in Australia—that processing or value-adding. We think that is really, really important.

The other bit about it is I think that we have got a natural advantage since there are really only two places lithium's coming from. It is coming from Australia or it is coming from South America—Argentina and Chile. They have got a different product. So we have got a hard rock called spodumene, which is crushed up and used, and they have a brine that essentially is evaporated—much like a salt pond, they evaporate it and then collect it. The difference between the two products is that ours can be moved into a lithium hydroxide, which is the critical component for batteries, in one stage; theirs has to be moved to a lithium carbonate equivalent and then to lithium hydroxide, which is estimated to give us a 10 per cent cost advantage with our product over their product. That was put together by McKinsey, in a report that they have been circulating recently.

Mr S.J. PRICE: So all the positives are there, but the question is why are they not over here doing it now? What do you think is stopping the development?

Mr PEARCE: I think there are a few things. One is that these companies come from other countries and they have got governments that are obviously pushing a policy about local investment in those spaces, so we are competing in that space. Yes, it is more expensive, but the thing is that what we have seen over the last six, 12 months is that companies are actually coming to Western Australia. You have got three major international companies looking to set up, and two have already

committed to—one is in the process of making that decision—doing so without financial incentives or subsidies. They are showing that it is commercially viable to do it in Australia.

One of the drivers for that is the quality that we can produce here. Tianqi particularly is driven by being able to set up a state-of-the-art plant here, and if you talk to these companies, they will tell you that the demand that is going to come from electric vehicle manufacture is around the quality of the lithium. They are currently asking for premium grades that at this stage no processors in the world can meet. So we need to be able to target up to the best possible product, and they believe that they can do that here in Australia perhaps better than they can do in other places.

Mr S.J. PRICE: Downstreaming, though, why aren't people making batteries here now, when we have got all these advantages compared to different places around the world?

Mr PEARCE: Yes. So, the major barrier for us is the technology per se. There are a few things, so as you work your way down the value chain it gets more and more complex. Practically, at the moment what we have is a mining industry that is producing a lot of lithium, and that has been shipped overseas. We now have one operating processing facility in WA, with two more being set up. The product is not actually here yet to actually start moving down the chain and into batteries. I think the biggest barrier for it is the technology. So, the lithium-ion battery goes back to Sony's development back in the 1990s. It has taken near-on 30 years to get to this point, and that has been developed, and that technology and knowledge is closely held—proprietary information—by those companies. In order for us to be able to get into that space, we either have to learn to do it ourselves or you have got to be able to access their technology. That is why we are focused on trying to attract partners to Western Australia; they bring the tech and we provide the material.

Mr D.T. REDMAN: Can you give us a quick scan of the profile of the lithium mines in WA? Greenbushes is probably the pinnacle, and it is in my electorate, so I have some fair chunk of knowledge of that. The rest of them, how do they rate in terms of their purity or whatever in those quality factors are?

Mr PEARCE: When I talk about the purity, I was talking about the premium that you process it into in terms of lithium hydroxide. The hard rock material is there. It is prospective in multiple regions. There are a number of mines in our membership—Neometals just outside Kalgoorlie, Pilbara Minerals just outside Nullagine in the Pilbara, MinRes has another mine in the Pilbara that is shipping through Port Hedland port, and there are two others in the south west.

Mr VAN DRUNEN: Altura Mining is on the Pilgangoora deposit next to Pilbara Minerals as well, and then there is Mt Cattlin near Ravensthorpe and that's Galaxy.

Mr D.T. REDMAN: What is the raw material like in those mines? Are they —

Mr VAN DRUNEN: It is all spodumene, so it is all hard rock stuff. It is good, yes.

Mr D.T. REDMAN: Okay. Of the same sort of grade that you've got out of Greenbushes?

Mr VAN DRUNEN: Yes.

Mr PEARCE: Yes, that is right.

Mr D.T. REDMAN: Okay.

Mr VAN DRUNEN: The reason you do not want brines is because they have got impurities in it, and it is quite an involved process getting all the impurities out.

Mr D.T. REDMAN: Yes. It was not that long ago when I had a briefing from the Talison mob that they had enough lithium and were significant players in the export market that they had to watch how much they actually put on the market because it would affect the world price. What is the sensitivity

analysis around our lithium supplies, which are coming on real fast, and the impact or what have you?

Mr PEARCE: Yes. There are two competing theories. One is that there will be a large increase in supply—which I think is going to happen—and that will either oversupply the world market or it won't. Some people project that over the next two years there will be a peak, and then the lithium price will drop because of an oversupply. Our view is that that probably underestimates the demand and underestimates the ability of companies accepting that material into their facilities and gearing up for it. Whether or not that happens in the next one, two years, as far as we can see, the demand curve for this is so substantial that realistically there is going to be enough demand to meet all the supply that Australia can provide.

The CHAIR: Just a quick question on workforce capabilities. So you have said this is not a particularly labour-intensive process, but do you think that if we are to take that second stage, we have a workforce that is capable—or do we need to do something in terms of preparing the workforce to participate in this midpoint in the processing chain?

Mr PEARCE: Yes, I think that is probably true—that we will need to be able to provide probably company training to the people coming into that industry. As I understand it, the processing facilities and the process they go through is primarily done through machines, but you need to have people who are skilled in managing and maintaining those machines. It is certainly recognised that we have a well-qualified and well-schooled workforce that we expect to be able to meet that, but I expect there would also be some additional requirements in terms of training.

The CHAIR: Any other questions?

Thank you very much for appearing before us today. No doubt we will probably have some additional questions once we have had an opportunity to digest your report, so we may well come back to you with some further questions. Thank you for tabling it with us today; we really appreciate it.

I will proceed to close today's hearing and thank you for your evidence before the committee today. A transcript of this hearing will be emailed to you for correction of minor errors. Any such corrections must be made and the transcript returned within seven days of the date of the letter attached to the transcript. If the transcript is not returned within this period, it will be deemed to be correct. New material cannot be added via these corrections and the sense of your evidence cannot be altered. Should you wish to provide additional information or elaborate on particular points, please include a supplementary submission for the committee's consideration when you return your corrected transcript of evidence.

Thank you very much. Thanks for coming in.

The WITNESSES: Thank you.

Hearing concluded at 11.01 am
