REPORT ON PROCEEDINGS BEFORE

PUBLIC WORKS COMMITTEE

COSTS FOR REMEDIATION OF SITES CONTAINING COAL ASH REPOSITORIES

CORRECTED

At Macquarie Room, Parliament House, Sydney, on Friday 16 October 2020

The Committee met at 9:30

PRESENT

The Hon. Daniel Mookhey (Chair)

The Hon. Mark Banasiak (Deputy Chair)
Ms Abigail Boyd
The Hon. Sam Farraway
The Hon. Trevor Khan
The Hon. Tara Moriarty

PRESENT VIA VIDEOCONFERENCE

The Hon. Shayne Mallard

The CHAIR: Welcome to the third public hearing of the Public Works Committee inquiry into the costs for remediation of sites containing coal ash repositories. The inquiry is examining a number of aspects relating to the remediation of contaminated sites at various power stations across New South Wales. Before I commence, I would like to acknowledge the Gadigal people, who are the traditional custodians of this land. I would also like to pay respect to the Elders past, present and emerging of the Eora nation and extend that respect to other Aboriginals present. Today is the final hearing we plan to hold for this inquiry. We will hear from industry and government representatives.

Before we commence I would like to make some brief comments about the procedures for today's hearing. Today's hearing is a public hearing and is being broadcast live via the Parliament's website. A transcript of today's evidence will be placed on the Committee's website when it becomes available. In accordance with broadcasting guidelines, while members of the media may film or record Committee members and witnesses people in the public gallery should not be the primary focus of any filming or photography. I would also like to remind media representatives that you must take responsibility for what you publish about the Committee's proceedings. It is important to remember that parliamentary privilege does not apply to what witnesses may say outside of their evidence at the hearing. I urge witnesses to be careful about any comments you make to the media or to others after you complete your evidence, as such comments would not be protected by parliamentary privilege if another person decides to take an action for defamation.

The guidelines for the broadcast of proceedings are available from the secretariat. Today we will have some participants attending this hearing via videoconference. All witnesses have a right to procedural fairness according to the procedural fairness resolution adopted by the House in 2018. There may be questions that a witness could only answer if they had more time or with certain documents to hand. In these circumstances witnesses are advised that they can take a question on notice and provide an answer within 21 days. Witnesses are advised that any messages should be delivered to Committee members through the Committee staff. Finally, could everyone please turn their mobile phones to silent for the duration of the hearing.

MARK RAMSEY, Director and Chief Executive, Vecor Australia Pty Ltd, affirmed and examined

STEPHEN BLANKS, Director, Vecor Australia Pty Ltd, affirmed and examined

CRAIG HEIDRICH, Chief Executive Officer, Ash Development Association of Australia, before the Committee via videoconference, affirmed and examined

MICHAEL LORD, Lead Researcher, Beyond Zero Emissions, before the Committee via videoconference, affirmed and examined

FIONA ROBINSON, Regional Director, Australia and New Zealand, Ramboll Australia, before the Committee via videoconference, sworn and examined

The CHAIR: Can I remind you that if you lose your internet connection and are disconnected from the hearing, please rejoin the hearing by using the same link as provided by the Committee secretariat. I invite the witnesses to make a short opening statement if they so choose. If you could please keep it to no more than a couple of minutes.

Mr RAMSEY: Mr Chairman, members of the Committee, thank you for inviting us to attend today. I am a director and chief executive of Vecor Australia Pty Limited. Vecor Australia is part of the Vecor Technologies Group, an Australian company, headquartered in Sydney. Vecor owns a portfolio of intellectual property based on a unique approach to dealing with fly-ash. Vecor is focused on helping to develop new industries which can remove the problem of fly-ash by using it as the major component of a family of sophisticated products. Australia has over 400 million tonnes of fly-ash stored in dump sites. It creates an additional 10 to 12 million tonnes each year. Less than 50 per cent of the newly created ash is used beneficially, leaving five to 10 million tonnes per year, plus all of the stored ash, available to be utilised in making other products.

Fly-ash has the potential to be the backbone of entirely new industries, in areas as diverse as: sintered aggregates and sand, for use in high strength concrete; refractories, for use in high temperature kilns and furnaces, used in steelmaking, ceramics and glass manufacture; construction materials, including lightweight insulating ceramics, fireproof cladding for buildings, high-strength fireproof bricks, ceramic tiles, and artificial stone slabs; and as fillers for use in paint, adhesives and plastics. Each of these industries has the potential to create hundreds of permanent manufacturing, distribution and sales jobs. Importantly, the processes developed by Vecor, in partnership with the University of New South Wales and others, all have the effect of permanently removing the risk of toxic contamination from the fly-ash. The manufacturing process involves sintering at very high temperatures, which locks in heavy metals and other potentially toxic elements at a molecular level.

That means that even if a product eventually breaks down into dust, the dust itself will not be toxic. It means there will be no leaching from these products. Vecor's submission recommends that the Government fund a feasibility study to quantify the benefits which would be generated by the introduction of new industries producing high value-added applications from fly-ash. The study should examine the likely profitability, the number of new jobs, the training requirements, any regulatory changes, and the investment required to develop these new industries. The idea of a feasibility study has the support of several groups with which we have consulted, including the Hunter Community Environment Centre and the Australian Manufacturing Workers Union, NSW Branch. This project has the capacity to clean up a toxic waste problem, to create new industries and jobs, and importantly, to locate them precisely in those areas where they will be needed most as the existing generation using coal and mining coal winds down over the coming years.

The CHAIR: Mr Blanks, is there any aspect of that you would like to supplement?

Mr BLANKS: No.

The CHAIR: Mr Heidrich, can I invite you to make an opening statement?

Mr HEIDRICH: Thank you, I appreciate the opportunity. I do not want to labour my introduction too long, I have covered it in our submission. Vecor, who are in the room, are actually a member of ours. Some of the statistics do not correlate well with the national dataset that we collect on an annualised basis, but I think our submission speaks for itself in terms of the data and the validity of the data that we collect on an annualised basis. If I could go to the heart of our submission, which is really about recommendations going forward. It is a four- point plan. The first part of that is to recommend that we establish a State chaired working group made up of key industry bodies, community members and government to develop a clear action plan of how we manage this resource and how we can exploit the opportunities to further harvest those materials and encourage further investment.

I definitely agree that investment is one of the things that we need to encourage further with these coal combustion product resources. Part of that will be consulting with State government agencies, departments of transport and infrastructure to really look at how we can establish a framework. I did say in my submission "mandatory use"; that was really advisory. I am really a free-market believer and do not believe that we want to manipulate markets. Things should be done on an economic basis and I have never been a believer in subsidies or grants, which essentially do create an non-level playing field.

The next point is really about fostering the concept of a circular economy. It is something that is being adopted globally and Australia should be no different. I chair an international group called the World Wide Coal Combustion Products Network and we regularly collaborate internationally. The challenges in other countries are no different to what they are here in Australia. We need to look at these materials in terms of their homogeneous, that they are environmentally benign—I must take exception to the use of the word toxic because I have not necessarily had anyone demonstrate that coal combustion products are toxic. It is a major construction resource material that can be used and we should be finding ways to better utilise those resources.

My last point is around regulation. For 15 years I have worked across all the States and all jurisdictions to work with governments to develop practical, pragmatic, science-based exemptions for approvals for the use of coal combustion products. The biggest challenge I faced 15 years ago for our industry was to take coal combustion products out of a waste legislation framework—it was considered to be a scheduled waste, not a toxic waste but effectively an inert waste—into a product concept so that we do not talk to coal combustion products as waste. How can we look at ways that regulation encourages not only the use of ongoing production for whatever the foreseeable future of coal-fired power generation in this country but also the 650 million tonnes of coal combustion products stored throughout the country, not just in New South Wales. Those are pretty much the key points. It is your ticket today. You have had a few months of talking to people so I am happy to hear your questions and answer them as best as I can.

The CHAIR: Thank you, Mr Heidrich. I now invite Mr Lord to make an opening statement.

Mr LORD: Thank you. I am head of research at Beyond Zero Emissions. We are a climate and energy think tank. Our interest in coal ash stems from our 2017 report *Rethinking Cement*, which we think was the first in the world to show how we can eliminate greenhouse gas emissions from the national cement industry. Most cement emissions are related to manufacturing clinker, which is the main ingredient in cement. The benefit of coal fly-ash is that it can replace clinker in ordinary cement. That already happens to quite a large extent in Australia but it is not being used to its full potential. The other use of coal fly-ash is to create geopolymer cement, which is a completely different type of cement if you are using concrete. Australia is one of the world leaders in the development and the deployment of geopolymer cement. In the short to medium term at least, fly-ash is probably the most important material for decarbonising cement, a product whose manufacture causes 8 per cent of world emissions.

Currently when fly-ash is used in Australia it is fresh fly-ash. But as coal-fired power stations close and we remediate the sites, the stock levels of coal fly-ash that sit next to every coal-fired power station in the country—closed or open—should be seen as a great national resource. There are economic and employment opportunities in extracting and treating that stockpiled ash and manufacturing into a cementitious material. That is already happening in other parts of the world such as the United States [US], the United Kingdom [UK] and Europe. In the UK a large-scale study found that even wet stored fly-ash, once dried with the carbon removed is suitable for use in cement. I have three recommendations today: 1) carry out research into the suitability of our various stockpiles of fly-ash for use in cement and other purposes that will be mentioned today; 2) set targets for energy companies to re-use their stockpiled fly-ash as part of remediation requirements; and 3) create incentives for the construction industry to use more stockpiled fly-ash. Thank you.

The CHAIR: Thank you, Mr Lord. Ms Robinson, would you like to make a short opening statement?

Ms ROBINSON: Yes, sure. I am the Australia and New Zealand managing director for Ramboll, a global, multidisciplinary engineering firm. My background is in contaminated land and I work with a team of scientists and engineers. Our capabilities include remediation, including stabilisation and solidification, as well as management of waste, including research into technology development. I had something prepared but a lot of it has been covered by the previous speakers, particularly Mr Lord. The point that was made around the decline in ash production from the current coal manufacturing processes will see the appetite for the re-use of the legacy impoundments increase. We see that currently we have re-use ongoing in cement but not—I think the statistics were around half of the current coal ash risings were consumed in 2018, so we still have risings that are not being consumed in the domestic market.

Without the development of additional markets or international consumers, the coal ash that is currently in impoundments is less viable for re-use in cement production because it is technically difficult and would require safe excavation and deep watering and blending to provide a product to the concrete market. As has been pointed out, as supply of current coal ash risings decreases, the coal impoundments will be considered a viable resource in the future. We have considered what to do in the interim period until that market develops and how the coal ash impoundments could be managed in the short term, which might be one to two decades, while still preserving the impoundments for suitable re-use in the future. The types of temporary management that could be implemented include stabilisation and certification of the impoundments as they are and designed in a way that would not limit or could enhance the future mining and re-use of that resource. Also, things such as improving the water management around the impoundments and the safety of the structures in the short term. Those are the sorts of things that we have been looking at, along with re-use of the coal ash fines within concrete.

The other point to make, which was also mentioned, is that the quality of the fly-ash within the impoundments is not consistent with the current risings—it is higher moisture and has different particle size due to the way that impoundments are constructed. We have been doing some research into the re-use of what we have referred to as "out-of-spec fly-ash" and finding ways to blend those materials or improve those materials for re-use in producing a quality concrete product. As mentioned by previous speakers, that research has been going on in other parts of the world, particularly in the US, where they are finding solutions for out-of-spec materials. Something that should be considered is how the short-term management of the impoundments is improved in an environmentally responsible way but also in a way that allows re-use of the ash repositories in the future.

The CHAIR: Thank you, Ms Robinson. I thank all witnesses for their opening statements and we will now open the hearing up for questions from members.

Ms ABIGAIL BOYD: Thank you all for coming along today at what I think is an opportune moment in this inquiry. In the past two public hearings we have heard a range of concerns about how we can re-use coal ash, and I am quite heartened by some of your submissions today. There are two issues that have been coming out that I would like us to drill into today. The first is on the technical issues. We have heard about how you can render the substance safe within a product but we also need to explore whether there are environmental risks in the process of harvesting and how we control that when we take the ash out of the repositories and the transportation, if any, of that coal ash—I guess that is also one of the reasons it is done onsite—and then also any risks in the future, for example, a kind of a silicosis-type risk of using that material in the future, that is the first kind of group of concerns that I think this inquiry has had. The second set of concerns, which we will come to afterwards, is in relation to the development of the market around this: what the obstacles are, what we need to do in order to get that market going. If I could turn to that first set of questions, I am very interested in hearing your thoughts on how we take this stuff out of the repositories that it is currently in in a safe way. Could I perhaps start with you, Mr Ramsey?

Mr RAMSEY: Sure. Thank you for the question.

The CHAIR: Sorry, Mr Ramsey, do you mind bringing your microphone forward?

Mr RAMSEY: Is that better?

The CHAIR: Yes.

Mr RAMSEY: Let me answer the questions, if I can, in reverse order.

Ms ABIGAIL BOYD: Sure.

Mr RAMSEY: I think the question of harvesting and transport is best dealt with, essentially, by locating the sintering factories, and so on, on the site or as close as possible to the site but also by making sure that the drying processes and the transportation processes are entirely covered. We had a factory in China which we have since sold but which was using fly-ash almost exclusively in the manufacture of ceramic tiles. That process incorporated taking the fly-ash, mixing it with other aggregates in a completely sealed environment with vacuum sealing with all of the dust that might be created, recirculating that dust through the factory, sintering it, and the process of sintering is what locks in the heavy metals, which essentially are parts that are potentially toxic at a molecular level. Even if you make a product like a tile and it breaks down in 50 years, the dust itself is still safe at a molecular level. The heavy metals are still located within a sintered molecule so they are not subject to leaching. I think that is the very short answer but it is a question, really, of designing your factory or your process close enough to the dam and in making sure that as much as possible you contain the dust that can come out as you dry the wet fly-ash and then use it—melt and use it.

Ms ABIGAIL BOYD: Just to clarify, then: So we have the technology right now to be able to render those heavy metals effectively inert or non-problematic.

Mr RAMSEY: Yes.

Ms ABIGAIL BOYD: Not just for the purposes of the initial production but then also if those materials were to break down in the future.

Mr RAMSEY: That is right. That is absolutely right.

Ms ABIGAIL BOYD: Could I ask Ms Robinson for your comment on this issue as well, particularly in relation to the sort of ongoing safety and environmental risk issues of reusing coal ash?

Ms ROBINSON: I think that the issues around the processing once it is out of the impoundment can be managed, so things like dust, water management and health-related management during the processing of the material once it is excavated from the impoundment. It is probably quite manageable under fairly standard, you know, industry health and safety and environmental management programs. There is difficulty in excavation of the impoundments themselves due to their stability and the nature in which they have been constructed. They are often—like, tailings dams—are unconsolidated deposits of fairly similar particle size that can easily become unstable in construction. Those aspects would need detailed engineering in terms of how you actually go about resuming the sediments from the impoundments themselves.

I think one of the aspects of it that we have talked about is that once you start accessing the impoundments, you want to do it in a very structured way where if you think of it like a landfill you want to sort of open and close the impoundment within one campaign and recover significant volumes out of that to make it economically worthwhile. So small volumes of reuse would make it a difficult process because of the engineering requirements that would be necessary to actually access the empowerment and remove the materials in any sort of economic way.

Ms ABIGAIL BOYD: Thank you. Mr Lord, do you want to comment in relation to the environmental risks around reuse and how we manage that?

Mr LORD: Yes. Thank you. I do not want to say too much except that I totally agree that this is something that we need to take seriously, that these ashes contain, to different extents, different types of heavy metals and things which are toxic. I believe in some instances they are also radioactive. So I just think there need to be safe processes established around it and proper standards for what types of fly-ash we want to process and bring into the built environment.

Ms ABIGAIL BOYD: Thank you. Mr Heidrich, do you want to comment on that? Then I will also ask you some questions beginning on the market stuff.

Mr HEIDRICH: Sure, sure. I welcome the opportunity to comment on your three points—technical issues, environmental issues and health issues. So, look, from a technical perspective the harvesting of ash is being done at a global level right now. Mr Lord and I think Ms Robinson made reference to the United States [US] and the United Kingdom [UK]. I have seen these sites firsthand, okay. Actually we do harvest ash in Australia. At Eraring Power Station they currently harvest furnace bottom ash from the dam because they have a market demand greater than the daily production at that station. For all intents and purposes it looks like a typical quarrying operation. As Ms Robinson rightly pointed out—she is an engineer and I am sure she is aware of this—you need to put in place operational arrangements to ensure that plant and equipment and people are safe operating around it.

I think the issues around technical—no, we do not have standards in Australia. At the moment we are working with Standards Australia to develop a similar document to ASTM 3183, which is about guidelines for harvesting ash dams. I helped in the development of that document through an international liaison committee some years ago. So it is very doable and it is well characterised and understood. Companies like Boral routinely harvest better quality ash out of ash dams than they can on a day-to-day basis direct from the station from ongoing day-to-day production.

The CHAIR: Sorry, Mr Heidrich, before you go too much further you made a reference to a standard. I think you used an acronym. Can you explain what the acronym is—ASTM?

Mr HEIDRICH: Australian Society for Testing Materials—sorry, American Society for Testing Materials. Apologies for my Freudian slip there. It is the American Society for Testing Materials [ASTM]. I can send the contact for the committee, a full reference, and then you can incorporate it into your gazette. Is that okay?

The CHAIR: That will be very helpful. Please continue.

Mr HEIDRICH: No worries. In environmental issues with regards to harvesting, I have also been on an advisory committee for Duke Energy in the US. It is currently going through the process of closing down a number of impoundments in the US, okay. The investment that they are currently making, I will be frank, is being driven by lawyers making risk-avoidance decisions. What we are seeing here in the US at the moment is millions and millions of tonnes of these resources which could be used in beneficial ways being packed with artificial turf and being locked up for future generations. Frankly, I think it will be very difficult to open up those resources for future generations because that is all being driven by the avoidance of future risks, okay.

There is a company here in the US—they are probably in a similar space as Ms Robinson—they are an environmental consultancy firm that has developed for the US Environmental Protection Agency [EPA] a methodology around the safe harvesting of ash dams where they look at emissions to air, emissions to water, emissions to the ground, people, and they are essentially adopting that methodology as a part of a pre-screening process for the harvesting or the closure of ash dams by removal because, in the US, they have gone down two different pathways: closure in place or closure by removal, or you harvest the material on an ongoing basis. But again I will probably share that material offline with you because it is too complex for me to deal with here. Second to that there are organisations like Electric Power Research Institute [EPRI], which is, again, another advisory group that I participate in where they are doing very similar things at a national level as opposed to a commercial level, like Boral or a generator is doing.

On health issues, a couple of people mentioned the word "silicosis". With regards to fine materials, we manage coal combustion products, fly-ash—which are the fine particulates, an average size of 75 microns—similar to what we would with any fine material, like we would with cement. You have to wear the appropriate personal protective equipment [PPE]. I am not aware of any literature—either published work in Australia or internationally—that directly correlates silicosis with ash inhalation. With regards to radionuclides or naturally occurring radioactive materials [NORBs], I was involved in a very comprehensive piece of work done by the Australian Radiation Protection and Nuclear Safety Agency [ARPANSA]. We demonstrated that the radon equivalent in coal combustion products is less than that of, say, cement.

From an international clearance point of view, the threshold is one becquerel per gram or 1,000 becquerels per kilogram. We have a published report freely available on our website demonstrating that, on a weighted-average basis, coal combustion products are typically between 100 becquerels and 190 becquerels per kilogram, making them very low. Just to put that into real context, your granite benchtop at home that you make your food up on every night is about 10,000 becquerels per kilogram, in terms of its naturally occurring radioactive background levels. In some other parts of the world it can be lower than that. That is just one particular typical issue. I think those are probably the three points that I picked up that I just wanted to clarify.

The CHAIR: Just on two issues arising from your answer, Mr Heidrich: When you mentioned silicosis and the silica dust concentration of fly-ash, do we have an estimate as to how much of fly-ash is concentrated from silica?

Mr HEIDRICH: I am going to try to keep this pretty light, but when we look at coal combustion products that have been fused at temperatures of around about 1,300 degrees Celsius to 1,400 degrees Celsius they are amorphous in their structure. They are essentially glassy phases which are made up of predominantly aluminosilicates—they make up the predominant elements within these materials, which present in various forms of mullites and other different phases. I do not want to get into that aspect of the morphous structure of the materials. Any trace metals that are present in coal combustion products that came from the original coal tend to be bound within that glass phase of that material.

For literally 20 years we have been doing testing and analyses to demonstrate the safe inert nature of the materials. I recognise that there are things like lead, cadmium and mercury, but there are lead, cadmium and mercury in naturally occurring rocks that we use in construction every day. The current quarrying industry uses about 160 million tonnes of natural sands and quarried materials every year, and these are present but do not come from a manufacturing process. There seems to be this overt differentiation that occurs. But what we have demonstrated with our testing—and that has been proven by the regulation that now supports the use of these materials—is that these metals do not leach from these materials.

We use them in both bound and unbound application in road-making and civil works applications and we are yet to determine that in these productive uses where the materials are used in fit-for-purpose applications—it is a very important distinction. There are people out there who do inappropriate things with inappropriate materials in inappropriate locations. That happens in all industries; our industry is not exempt from that, I think is

the best way to put it. But I really do get concerned about the misinterpretation of the environmental nature of these materials. I apologise if I seem forthright in my trying to explain that, but we have worked very hard with governments across this country to demonstrate that.

The CHAIR: I have two technical questions before we move on to the market dimensions. The first is directed to Ms Robinson, in first part, but then perhaps Mr Ramsey and others as well. The proposition that the dams should be sealed: What impact would that have on the ability to extract and the engineering, Ms Robinson? Is that a proposition that is inconsistent with the extraction of the ash that would be required? This is a proposition that we heard from multiple people, that they would like to have the dam sealed from both the top and the bottom. Would that disturb the ability to extract and stabilise as you described or not?

Ms ROBINSON: I think that it could be designed in a way that does not limit the extraction in the future. If you consider how impoundment could be progressed in the future, you could complete stabilisation now in a way that was sympathetic and actually enhanced that ability down the track. But the need for stabilisation is really driven by the risk of the ash impoundment itself. If the ash impoundment represents a risk, which would be from either dust from the surface, surface water run-off or groundwater discharge with metals above levels that could be harmful to the environment, then some form of remediation could be implemented. It could be a short-term remediation strategy.

The main drivers would be to reduce the infiltration of water into the impoundment. It would not necessarily need any kind of containment on the base. If you think of it as a cell, if you can minimise rainfall coming in then you minimise water going out. If you can manage the surface—usually through a combination of surface reforming to improve gradients to surface water drainage, as well as amendment of the surface to reduce permeability, but it also could be achieved through a vegetative layer—then that minimisation of infiltration would have a beneficial effect on the amount of water filtering through the ash repository and leaving the site. That process would also have the added benefit of minimising any dust from the area and the ability to capture surface water and then divert that if it also represented a risk to a receiving environment.

The CHAIR: That was very clarifying. It clarifies the other question I have, but I will put that to you, too. Unless I misinterpreted you, in your opening statement you made reference to the requirement for there to be stabilisation as a prerequisite for extraction or harvesting. Is it your view that that has to happen regardless of whether or not it is extracted?

Ms ROBINSON: No, it is not a prerequisite; it is really a temporary management measure. If it were determined that these impoundments as they were represented a risk to human health or the environment then some temporary measure might be required, if it was seen that it might take tens of years before they were ultimately consumed. The stabilisation is a way of managing that. But you would not necessarily need to stabilise the whole ash volume; it could be downgrading at cut-off walls, upgrading at cut-off walls. It just depends on the model that you are following in terms of how groundwater and surface water are moving around the site and where the risks are represented to the off-site receptors. But if you did go down a stabilisation path then those stabilisation processes within the ash could later form haul roads and staging areas, because you have solidified the ground within the impoundment. If some consideration of future design was undertaken then you could jointly achieve both outcomes through a short- and a long-term program.

Mr RAMSEY: Mr Chairman, I think everything that Ms Robinson said is right. However, in terms of long-term investment, if it is intended that the Committee recommends or that action be taken to stabilise and seal from outside weather these impoundments, what I think ought to be emphasised is that if they are going to be used in the future the design of that sealing should take that into account. If you simply encase them in concrete, then breaking it open 20 years from now will be a completely different engineering activity and will require a lot of money compared to designing it correctly at the moment.

The CHAIR: In layman's terms, what you are saying is effectively that if it is to be sealed then it should be like a lid that you can open and close.

Mr RAMSEY: I am not an engineer but I think it should be something where you can extract the slurry without breaking the whole thing open.

The CHAIR: I have a suspicion that we are about to move on to the commercial dimensions of this question. Before we do, I might invite any other technical questions from any other Committee member.

Ms ABIGAIL BOYD: From what I am hearing from my perspective, it is quite compelling that there are reuse opportunities here. There has been a lot of talk in your submissions about how this marries up nicely with a transition for coal-fired power workers into this industry. When we talk about how to get this industry

going, I guess the first question is what are the current obstacles? I was hoping that someone could talk us through what the current market structure looks like for fly-ash. Why are these sorts of innovative ideas not being taken up more readily at the moment? Why do we have such low reuse percentage of coal ash at the moment?

Mr RAMSEY: I can give you our perspective. I think it arises from an assessment that the people and companies involved in fly-ash management all have different interests. The New South Wales Government has a long-term interest in making sure that there is not a long-term cost associated with spillage or with environmental concerns. The power stations have that interest as well but their interest in the short term is to minimise their expenditure on this. The cement companies and the extractive companies each have a different approach to what they want to do with the coal ash. They do not want all of the coal ash; they want some of it that is suitable for their industry and not for others.

It is really a question not of conflicting interests but of indifferent interests. People involved in the industry have approaches that differ not because they contradict each other but because they actually have an interest that is separate from the other people's interest. It seems to us that the appropriate role for Government and for this Committee to play is to actually try to bring that together. I think that simply relying on the markets to solve this is pushing the thing down the track. It may well be that in 10 or 20 years, or 50 years, there will be such a shortage of resources that people will find a way to extract this and do something with it. In the meantime, we have a resource that could be used in different industries but those industries are not cooperating at the moment.

The CHAIR: Mr Ramsay, what aggregate is fly-ash competing with in cement production?

Mr RAMSEY: Sand, clay and gravel.

The CHAIR: What is the cost difference between using those other alternative aggregates versus coal ash?

Mr RAMSEY: I would like to come back to you with a written answer on that but loosely speaking they are not directly comparable. As I understand it the sand extracted from beaches, riverbanks and so on has slightly different properties to sintered aggregate and sintered sand. Its shape makes it less usable for high-strength concrete. In other words if you sinter—that is cook at very high temperatures—the fly-ash and create a sand through a structure that we understand, that potentially does not just substitute but creates a slightly different and better product than the natural sand.

Ms ABIGAIL BOYD: I would be grateful for your views on this as well, Mr Lord, taking into account the study that Beyond Zero Emissions conducted into the cement industry a few years back. What do you think the obstacles are?

Mr LORD: Just to respond to the last comments, coal combustion products can be used to replace various materials in concrete. We are talking about the highest value material, which is cement, and not the sand or the aggregate. We are talking about it replacing the cement, which is the highest value but also the highest emitting component of concrete. I agree with those comments that there is basically a lack of incentives for coal-fired power stations and energy companies to market their coal ash and certainly to use their stockpiles of fly-ash. They are essentially allowed to dump it next to the power station and that is the least bother, lowest cost approach for them. I had not looked at this closely for a couple of years but when I was looking, there were only five or six power stations in the whole of Australia that were selling their fly-ash. In fact Australia was importing fly-ash, which seems crazy to me.

As I said in one of my recommendations in the introduction, they need incentives—if not requirements—to use that fly-ash, perhaps as part of their remediation requirements as they close. There was also an issue with the cement industry itself, which was keen on fly-ash but only the best quality fly-ash. Different fly-ashes have different applicability in cement. The way the cement industry works is that you use the same cement to make a very high quality, super high strength cement compared to a low-strength cement. Some of the fly-ash is more suitable for low-strength cement. It has potential but that is not the way the industry works at the moment. They just want one consistent product that can be used the same way, whatever the desired outcome is. I think targets for the cement industry would also help.

The Hon. SHAYNE MALLARD: Can I ask a question?

The CHAIR: Go ahead, Mr Mallard.

The Hon. SHAYNE MALLARD: I think that is the nub of the issue here, for me anyway. Mr Lord just said it and some earlier presenters talked about it but the market has not met the opportunity of the fly-ash because it is not competitive in a free market against the other products in the marketplace. Is that right?

Mr RAMSEY: I do not think it is as simple as that. Things are competitive in a free market when interested parties have an interest in changing their behaviour.

The Hon. SHAYNE MALLARD: Yes. Changing behaviour means regulation or subsidies. Mr Lord just mentioned incentives or conditions on remediation. You are talking about intervention in the market to get this product competitive. That is enough.

Mr RAMSEY: Intervention in the market may require regulations to say, for example, that we are going to restrict the amount of sand we dig up on beaches while there is an alternative. That is intervention in the market, if you will, but what it does is it redirects people's consciousness away from what they are doing now to something that is an alternative.

The Hon. SHAYNE MALLARD: I agree with that. There would not be four million cubic tonnes, or whatever it is, sitting there if it was competitive. It is obviously not competitive against sand on the beach. That is what we need to be looking at.

Mr RAMSEY: The trouble with just saying that it is or is not competitive is that it precludes the notion that an industry doing something that it has always done will be reluctant to change that. They are making profits by doing it the way that they have always done it. It is not a question of whether I can make more money. I am making enough by doing what I know how to do; I am not going to change unless there is a reason to. That does not mean that they could not make more money by extracting fly-ash. It just means that they are not bothering at the moment.

Mr LORD: I just want to reiterate that the highest value use for fly-ash is not replacing sand but replacing cement where it is possible. As I understood it, it was cost-effective for the cement industry to use fly-ash instead of cement. For cement they have to quarry limestone, grind it and then put it through a cement kiln at 1,500 degrees so fly-ash is a cheaper substitute than the regular cement. The problem was that it was not attractive to the energy companies to set up a system for processing and selling that fly-ash. It was more cost-effective for them just to dump it.

The Hon. SHAYNE MALLARD: Alright. It was vaguely suggested to us in the inquiry that there were contractual issues that made it difficult to extract the resource. Certain companies had rights that they did not exercise and so forth. Is there any sort of cartel or arrangement that is stopping this from occurring? Are there any contractual situations stopping the mining of the resource for cement?

Mr RAMSEY: I think the resources are essentially owned by the power stations, so there is a contractual issue. You need to contract with the controllers of the resource.

The CHAIR: In response to Mr Mallard, you said that there is a need for behavioural change, effectively, to create a market. Who does that need to be directed at? The evidence that we have heard has one category of people suggesting that it should be directed at the energy companies to invest more in it, and the other one is that the incentives need to be applied to the cement industry, road industry and others to effectively create the customer. If we were to follow the logic of your proposal, where should we be directing our attention?

Mr RAMSEY: I think the logic of our proposal is that what is needed is an education process so that all of those potential uses for fly-ash are examined, both in terms of their profitability for investors and in terms of other key incentives—job creation, creating opportunities in regional areas which are otherwise going to find themselves in a semipermanent recession when coalmines and coal-fired power stations close down, and of course the environmental consideration.

I think that it is a multifaceted issue. On the one hand, as Mr Mallard indicated, you could look at it as just an economic problem but it is not just an economic problem. I think the long answer to your question is that what is needed is an examination of which parts of the supply chain—from the existing coal ash in the dams to the coal ash being created year by year as we continue to burn coal—are most suitable for what and what purposes, and where you could set up industries which could be very high value, like cement; lower value, like sand or aggregate; or very very high value, such as the sophisticated products that I referred to in my opening.

Ms ABIGAIL BOYD: When we are talking about subsidies and market intervention, the point was made in our first hearing that if a person wanted to go and dump their waste they have to pay a tipping fee. Most people, when they are disposing of waste, need to pay a fee. Do the power stations need to pay, at the moment, at all for the amount of ash that they are currently depositing? If not, is that not a form of subsidy?

Mr RAMSEY: I just do not know the answer to that, I am sorry.

Ms ABIGAIL BOYD: Does anyone know? It is my understanding that there is no current—

Mr HEIDRICH: Can I weigh in there?

Ms ABIGAIL BOYD: Yes, please.

Mr HEIDRICH: A quick history lesson: Coal-fired power stations were once owned by the New South Wales State Government.

Ms ABIGAIL BOYD: We know.

Mr HEIDRICH: They were government trading enterprises, until recently. Many of the contracts at those stations—and I am not going to dabble into that space because of the nature of my role and the association. We do not get involved in any commercial matters and we have very clear antitrust requirements. What I can say to you broadly—and Michael kind of nailed it—is that it is a spectrum of opportunities from high value-add in cementitious applications, and the cement and concrete industry has developed very sustainable markets over many years, but we are restricted by the size of that market and the current technologies that we use.

Michael made reference to geopolymer concretes or what we call low-carbon concretes. We have just finished funding seven and a half years of research in that space because nobody wanted to put that information into the public domain because it was not in the interest to break down the traditional industry. I commend Michael and his team in the publication of the Beyond Zero work, but it is a complex issue around markets and it comes down to the fundamentals of mild economic days. They want demand to be greater than supply and that is the coal-fired power station, and the marketer wants supply to be greater than demand because that has a converse pressure point on—

The CHAIR: I am conscious that we have five minutes left in this hearing.

Ms ABIGAIL BOYD: I would like to direct the question to Mr Lord, if possible, to understand if this point about incentivising from both sides—

The CHAIR: Perhaps what we can do is ask Mr Lord for his reply, but there are a few other questions that I want to direct to Mr Ramsay as a practitioner as well to get it on the record and clarify some of the details. I also want to give other members the opportunity to ask questions, if they have any, as well. Mr Lord, do you want to give us a short addition to that conversation?

Ms ABIGAIL BOYD: Sorry, the question was on whether we should be putting some kind of fee per ton on the amount of coal ash that goes into those coal ash dams.

Mr LORD: I think so and I think that is what has driven the market in Europe. There are various incentives through EU regulation which drove the coal ash market in Europe so that there was more demand than supply.

The CHAIR: What were those incentives or requirements that the EU imposed?

Mr LORD: There was a fee per tonne, as just suggested. There were a whole load of requirements under the European waste directive—I cannot remember what it is called now—that basically tried to really limit any waste that went to landfill.

The CHAIR: Are there any such requirements or incentives in the United States?

Mr LORD: I do not know.

Mr HEIDRICH: Not that I am aware of.

The CHAIR: Mr Ramsay, you mentioned in your opening statement that there is the prospect of hundreds of jobs being created. Why do you say that?

Mr RAMSEY: Our experience in dealing with fly-ash at an industrial level relates primarily to a factory we created in Zibo in China which we have since sold, but we had over a hundred jobs created in a process which involved extracting fly-ash, milling that fly-ash, mixing it with other products and then putting it into a very large kiln and creating ceramic tiles. Those ceramic tiles are as high quality as any porcelain tile that you put into your bathroom or kitchen and there were hundreds of jobs created in that process. That is just one of many products, which I referred to in the opening, that could be created. Each one of those requires an investment in a factory, it involves extraction, it involves processing, it involves distribution, and it involves sales. I think we could give you estimates of what would be created per industry.

The CHAIR: Yes, we would like that. You are the first witness who has come before us with the most advanced view on this. It would be really helpful if you could provide us on notice with a detailed breakdown as to what you think the job-creating potential is. After being extracted, is there an export market for this?

Mr RAMSEY: No reason not to be. These are highly manufactured products that we are talking about.

The CHAIR: I am talking about the actual ash. Upon the point of extraction, is that a good that is traded globally, or is it usually transformed and processed proximate to the location of its extraction?

Mr RAMSEY: I think proximate. Perhaps Craig can correct me here, but I think it is proximate.

The CHAIR: Someone made reference to the fact that we were importing coal ash.

Mr RAMSEY: It is dangerous to move very long distances. That is the trouble.

Mr HEIDRICH: Michael made reference to the fact that when he did his study some time ago, ash was being imported into the country. As at the calendar year 2019, 154,000 tons of ash was imported into Australia. Why? Logistics, logistics, logistics. It costs money to move these materials and it was more cost effective for that material to be brought out of places like India and China into regional areas at ports, and off-loaded and used in those mixes. Why did that happen? Because the cost of logistics made it that way. I am disappointed about that and I would have loved to have seen more domestic material being used, but that has happened in the past.

To your question, Mr Chair, about whether we can export this material: I have worked for probably 10 years with the World Trade Organisation to modify the Harmonized System to include a code for coal-combustion products. Globally, we know today that over 50 million tons of material is traded in coal-combustion products, predominantly through Europe and North America, but there are opportunities to move material from Australia into the west coast of the US because of the closure of coal-fired power plants there.

There are real opportunities going forward for those sorts of things, but I want to come back to my point that I made at the opening statement. The way we will resolve this is if this inquiry looks towards making a recommendation around forming a credible group of industry participants, community groups and other stakeholders to try and work through these issues in a pragmatic way and come up with strategies that we can implement effectively together.

The CHAIR: Thank you. The time has come to an end for this particular session. I am very grateful for the evidence from the witnesses and I am sure the Committee is too. Mr Ramsay you took a few questions on notice and I think other witnesses might have as well. You will have 21 days to provide those responses and the secretariat will be in touch. Thank you for your attendance at the hearing this morning.

(The witnesses withdrew.)

(Short adjournment)

CHARLOTTE ALEXANDER, Executive Director, Commercial Assets, NSW Treasury, affirmed and examined

PAMELA HENDERSON, Executive Director, Technical Services, Infrastructure and Place, Transport for NSW, sworn and examined

The CHAIR: I welcome our next witnesses. Thank you for your attendance. I would like to offer an invitation to each of the witnesses to make a short opening statement if they so choose.

Ms ALEXANDER: I will make a brief opening statement to the inquiry providing a short introduction to my background and role at NSW Treasury. My role is Executive Director of Commercial Assets, which sits within the broader Commercial, Commissioning and Procurement Group. I commenced this role full-time earlier this year. I report to the deputy secretary of that division, Mr Philip Gardner. The Commercial Assets team manages the Government's shareholdings as well as managing the Government's enduring obligations, risks and opportunities in respect of transacted assets and businesses. In carrying out these functions we are guided by the desire to achieve value for money for the State and ensure that the State's commercial risks are managed effectively and efficiently.

The post transactions team is a group within my area of responsibility. The post transactions team is responsible for managing the assets, liabilities and functions that have remained with the State following the major asset transactions. This includes the residual environmental liabilities of the State associated with the former State-owned electricity generation assets. The team work closely with the private sector operators of these assets. Although the senior Treasury officials involved in the transactions subject to this inquiry are no longer employed by Treasury I will nevertheless do my best to assist the Committee with its questions on behalf of Treasury. I would also like to refer Committee members to the New South Wales Government submission to the inquiry dated February 2020. I will not repeat any of the submission in my opening remarks, though I may refer to it in answering the Committee's questions.

The CHAIR: Thank you, Ms Alexander. Do you mind tabling your opening statement and providing a copy to Hansard?

Ms ALEXANDER: Sure. I slightly ad-libbed but it is mostly the same.

The CHAIR: Good to hear. Ms Henderson, would you like to make an opening statement?

Ms HENDERSON: Yes. Good morning and thank you. Good morning, both Chair and Committee members. Transport for NSW welcomes the opportunity to assist with the inquiry today. As I said before, my name is Pamela Henderson. I am the Executive Director, Technical Services in Infrastructure and Place in Transport for NSW. I lead and manage the diversity of engineers from electrical engineers to road engineers and everything in between that support the development and delivery of the road and rail projects and also the place-making projects in Transport for NSW.

In regard to the use of ash in road applications, it offers opportunities and challenges. Transport has been using it in our roads for over 20 years. Transport for NSW has specific standards for the construction of roads. We build both flexible or aggregate-based roads or alternatively we call them pavements and we also use rigid, which is concrete-based, roads—again, alternatively called rigid pavements. Until recently New South Wales was the only Australian State to build concrete roads—we have been constructing concrete roads for over 40 years now—so comparing the amount of ash used between States is not necessarily comparing apples for apples.

The value of constructing concrete pavements has multiple values. One is about the efficiency of construction. It allows us to use large paving machines. It also achieves the desired customer ride quality or customer experience and also it enables great durability. So it can achieve a design life of over 40 years, which minimises the amount of time and how often and the cost of maintenance obligations. Transport for NSW allows fly-ash in flexible pavements—that is asphalt pavements. We reference the Australian standard, which allows 10 per cent ash in the granular fill of the road base, so we use the Australian standard.

Transport also allows fly-ash in rigid or concrete pavements. We do reference the Australian standard. However, the Australian standard for concrete is a generic standard. It is for the use of concrete in general. So Transport for NSW makes the requirement specific to road construction. What this means, in the Australian standard it refers to the use of up to 4 per cent of unburnt carbon content and we reference that exactly. What we have been specific about is the variability around that. That means we want to be certain it is 4 per cent or less, not above it, so we actually define what the test criteria is to ensure that it is 4 per cent or less.

Concrete is a composite material with each element having a variable property. Fly-ash is used in the concrete mixes to replace a portion of what is called the Portland cement. The specification around the use of fly-ash as a replacement for the Portland cement is a minimum of 20 per cent and a maximum of 40 per cent in most of our specifications. It depends upon the type of road and the type of application. There are actually performance benefits to using fly-ash in the concrete mixes such as improving the workability, improving the durability and it also improves the latter age strength. However, if the replacement levels get too high it can actually have a negative impact on the performance of the road. Excess amounts can have effects such as the strength-gain rate ratio is reduced or it can—

The Hon. TREVOR KHAN: Sorry, the strength?

Ms HENDERSON: Gain rate ratio. So it is actually how the concrete gains its strength. And it also can increase salt scaling. Both can decrease the service life of the infrastructure, bringing forward our need and hence the cost to actually replace the pavement or reinvest in the road. Hence the need to monitor the fly-ash during the actual construction. Transport for NSW is proposing to undertake research over the next 12 months which will investigate the fly-ash limitations. We are still going through a funding proposal arrangement for that. Transport is also including a trial of geopolymer concrete on Rozelle Interchange project with our delivery partner and also with the support of the University of New South Wales. This will use fly-ash along with a number of other supplementary cement materials. I welcome any further questions.

The CHAIR: Thank you, Ms Henderson. Do you mind also tabling your opening statement and providing a copy to the secretariat for Hansard?

Ms HENDERSON: Can do. There was likewise a minor ad lib here and there.

The CHAIR: Sure. I now open this session to questioning from Committee members.

Ms ABIGAIL BOYD: I would love to start. Ms Alexander, I am very interested in these contingent liabilities. I understand that from an accounting perspective the contingent liabilities are unquantifiable until such time as we know the date on which they are going to occur, so in this case the closure of the power station, and also when we have an idea of the quantum. Sorry, I am saying it in a very non-technical way but that is the basis as I understand it. And so on that basis it is not required to quantify the extent of the potential liabilities in relation to these power stations in the budget. We just have a note in there. In the submission from the Government we talk about two of the power station liabilities being sufficiently able to be pinned down, I guess, in order to be included within the total liability provision, being Wallerawang and Liddell, I understand. So that is now included within the $2.91 billion, which is basically a provision that includes a whole bunch of things.

Ms ALEXANDER: Correct. Yes.

Ms ABIGAIL BOYD: I also understand the statement here saying that it might be commercially harmful for the State to let the power station owners know how much they think they might be responsible for. That is the accounting side and the budget side. But from a risk management perspective, how is the Government acting to limit its eventual costs, and how is it trying to understand internally the quantum of those costs?

Ms ALEXANDER: In relation to your second question—limiting the quantum—as it says in the submission, we work regularly with the private operators to update what is happening on those sites and determine whether there is any change that would make a contingent liability have to be provisioned. That is, the process would be that to the extent a liability in relation to pre-existing contamination comes up, they would approach us for a discussion about that. That is the nature of where Liddell is up to: They know the power station is closing and we are starting to have discussions about what that might look like. So we are monitoring that. As it says in the submission, we do that a number of times a year: at the time of budget, at the time of half-year and full-year accounts and as other things arise during the year. So that is a constant dialogue on the quantum. Could you remind me what your first question was?

Ms ABIGAIL BOYD: Sorry, if I could drill into that—

Ms ALEXANDER: Yes, sure.

Ms ABIGAIL BOYD: —what you are saying there is in relation to "Do we have to disclose this in the budget?"

Ms ALEXANDER: Yes.

Ms ABIGAIL BOYD: I am more interested in whether the Government knows how much it may be liable for in the future, even if it does not have to disclose it. For example, if a power station was not going to

close until 2030 or maybe even later, but the Government is very aware of the extent of the contamination—for illustration purposes, let us imagine it is hundreds of millions of dollars—is the Government, firstly, doing anything to quantify what that is and to know internally so that it can prepare to be able to pay that out; and, secondly, actively seeking to lower that cost in some way—for instance, by putting in measures to reduce leakage or whatever it might be?

Ms ALEXANDER: The ash dams are managed by the operators and they are regulated by the Environment Protection Authority [EPA]. The Government does not have a role in that process. We rely on the EPA to regulate and manage—

The CHAIR: When you say the Government, do you mean the Treasury?

Ms ALEXANDER: Sorry, Treasury.

Ms ABIGAIL BOYD: I understand that, obviously, they are not the regulator, but they are still the ones who will have this liability recorded in the budget at some point in the future.

Ms ALEXANDER: They may or may not. I think earlier in the inquiry we heard from AGL Macquarie that it does not expect the State to have any obligation to pay under its indemnities for pre-existing contamination in relation to the Liddell ash dams. The existence of the ash dams itself does not raise an actual liability for the Government until there is an event that triggers remediation.

Ms ABIGAIL BOYD: Could we perhaps focus on Vales Point? I think we have the understanding of Vales Point very clearly—particularly the point at which there is closure and then, for a $1 put-and-call option fee, it gets passed back to the Government. At that point there is a rehabilitation obligation on the Government. Has the Government taken steps to quantify what that amount would be?

Ms ALEXANDER: I think we also heard from the operators of Vales Point, in relation to the ash dams, that they do not expect there to be a material amount of remediation of the ash dams required—

Ms ABIGAIL BOYD: They also do not think that coal ash is toxic.

The CHAIR: Perhaps we could let the witness finish.

Ms ABIGAIL BOYD: Apologies.

Ms ALEXANDER: In exactly the same way, we have conversations with them about what is happening at their site. They are complying with the EPA's requirements about constantly managing the coal ash and ensuring that they are capping and covering in the way that they are required to under that licence. So until there is a contamination event that occurs that requires the State to pay out under that indemnity because the contamination was pre-existing, there is not an amount to talk about.

Ms ABIGAIL BOYD: Can I be more specific? For instance, in the Eraring sale documents there is a provision that says that if there is a contamination event and it turns out to be due to pre-existing contamination at the time of the sale, and they have an order from the EPA to clean that up, they will then seek to come to the Government and have a discussion about it, and there is a potential liability for the Government.

Ms ALEXANDER: Mm-hm.

Ms ABIGAIL BOYD: Given that uncertainty as to whether that event will occur, because it is reliant on the EPA finding something and then claiming it, does the State not think it is a good idea to investigate that more fully or to work out exactly what its liabilities might be?

Ms ALEXANDER: The State relies on—well, not the State; I cannot talk about the State. We, NSW Treasury, rely on the EPA to do the job of regulating and monitoring any environmental issues at the power station sites.

Ms ABIGAIL BOYD: Do you think there is a conflict of interest? I accept and I have read the submission that the EPA is a separate and independent body. But the EPA is subject to the laws of this Parliament and enforces the laws and regulations of this Parliament that are made by the Government, but also will have its liabilities increased to the extent that the rehabilitation requirements and the environmental requirements are made more strict. Do you see that there could be a conflict of interest in a Government that knows that it has a liability to clean up certain contamination also being the body in charge of making laws for how strict those rehabilitation requirements should be?

Ms ALEXANDER: I would refer to the submission in relation to our separate roles. Our role is to have a commercial counterparty to the power station operators in relation to our ongoing financial liability to them under the indemnities.

Ms ABIGAIL BOYD: The question is not whether the Treasury is in a position of conflict. The question is whether the Government as a whole has a conflict of interest in making regulations and environmental requirements because it knows that that will impact on its budget.

Ms ALEXANDER: The EPA is one of a number of State-based regulators that regulate the Government and the private sector as well, in the same way that the Independent Pricing and Regulatory Tribunal regulates Sydney Water and we are the shareholder of Sydney Water. In the same way as other things—

Ms ABIGAIL BOYD: I understand. Perhaps—

The CHAIR: Ms Boyd, can we let Ms Alexander complete her answer.

Ms ALEXANDER: The EPA has a role of an environmental regulator to that business. We have a commercial arrangement with that business. We deal with regulators, as NSW Treasury, as regulators on many occasions and that is the role of an independent regulator in the State.

Ms ABIGAIL BOYD: Again, I understand that they are two separate bodies and my question is not whether there is a conflict of interest within either of those bodies. On that basis, my question is probably more fairly directed towards the Treasurer and the Government ministers, so I will stop going down that line.

The Hon. TREVOR KHAN: Ms Henderson, you used the term "fly-ash" in your opening address. Is that a term of art or is it specifically the fly-ash as opposed to what I will call the coal ash—that is, the heavier ash from the bottom of the furnace?

Ms ABIGAIL BOYD: Bottom ash, fly-ash.

Ms HENDERSON: There are two types of ash, as you mentioned: fly-ash and bottom ash. We do allow both products but in different quantities in different outcome products. We allow both fly-ash and bottom ash in the flexible pavements, which is up to a 10 per cent quantity.

The Hon. TREVOR KHAN: That is the asphalt?

Ms HENDERSON: Yes, that is the asphalt roads. Within the concrete, we are specific about the fly-ash, which is effectively the top ash.

The Hon. TREVOR KHAN: At least as far as Vales Point was concerned, I think we saw a significant take-up of fly-ash. The major problem seemed to be the bottom ash, which, as a percentage—was it 80 per cent? It seemed to me that the major ongoing problem related to the bottom ash—the heavier ash. Can it be used, apart from in the cement component, for other purposes in roadbuilding?

Ms HENDERSON: We use the bottom ash in the road base material. We have 18,000 kilometres of road across New South Wales at the moment, and we are building more. We can use it in the road base underneath the flexible base, we use that to the extent of 10 per cent. It does vary between projects what that actual limit is. For example, we have recently built some roads up north, the Scone bypass, we used 6 per cent fly-ash, but I do believe that included some content of bottom ash as well.

The Hon. TREVOR KHAN: Can I just say, I can understand Scone, because it is pretty close to Liddell, for instance, so I can see you using it there. What happens if you are doing a bypass or a highway at Ballina? Can you use it there or is distance a disinhibitor?

Ms HENDERSON: I cannot answer for Ballina. For the Woolgoolga to Ballina bypass, which is just underneath Ballina, which was a bit over 150 kilometres, that was a cement road that we put in, so we used fly-ash on the road.

The Hon. TREVOR KHAN: But you did not use any in the road base, in terms of the bottom ash?

Ms HENDERSON: I would have to take that on notice and see the specific details.

The Hon. TREVOR KHAN: Are we able, in terms of that Pacific Highway development, in terms of the various stages of that road, are we capable of identifying where fly-ash and bottom ash was used and the percentages that we used? I know the project is coming to an end. I have seen media releases put out by various National Party leaders to that effect. It seems to me that has been one of the largest road projects we have seen in a heck of a long time and I am interested to see how much of this coal ash was used in the project.

Ms HENDERSON: I do not believe we could get all of the specific details of the percentages, the where's and the what's. But I can take it on notice and see what detail I can get.

The CHAIR: I have a question along that line, as does Mr Banasiak, and because I am polite Mr Banasiak can go first.

The Hon. MARK BANASIAK: You said that it varies from project to project, what determines the variance? You quoted 6 per cent for one project.

The Hon. TREVOR KHAN: The Scone bypass.

The Hon. MARK BANASIAK: What determines that variance?

Ms HENDERSON: We, as Transport for NSW, have specifications. Those specifications are included in the tender documents and then the contract documents that go to the tenderers. We do allow, for example, in the flexible pavement up to 10 per cent in the road base and within the actual concrete we allow between 20- and 40 per cent which is a replacement of the Portland cement. It will depend upon the design of the road, what is the life criteria or how long we want the road to exist for, and what are the demands on the road. Effectively, what is the design criteria. It will then go to the market for offering and the project as a whole will be bid by external market. Where there are variability options the contractors can consider the availability in the marketplace and haulage rates that may be included in the cost assessment of the project. The contractors will comply with our specifications where we are explicit and they will adopt the variability subject to the availability within the projects where it is available.

The CHAIR: Are you explicit within your procurement documents about the use of coal ash?

Ms HENDERSON: We are explicit about when it can be used, we are explicit about the percentage that can be used and we give it as an option or as an alternative to Portland cement.

The CHAIR: But the actual decision as to sourcing is made by the contractor if they are compliant with the contract?

Ms HENDERSON: Yes. If they are compliant with the specification which is part of the contract.

The CHAIR: Are you explicit about contractors using New South Wales coal ash?

Ms HENDERSON: I would have to take that on notice.

The CHAIR: When Mr Khan asked you about the use of coal ash in the Scone bypass and you made reference to the Woolgoolga to Ballina bypass—interesting the amount that is being used—is that coming from New South Wales?

Ms HENDERSON: I would have to take that on notice. Haulage costing does considerably come into it.

The CHAIR: We just heard witness evidence that we are importing it and one of the witnesses earlier—I will give you the opportunity to respond—made the point that it seems absurd we are importing it when it is quite proximate, Liddell and Scone is not that far. Do you know whether or not it is being used from there? Do you want to respond to that claim?

Ms HENDERSON: I am certainly aware that we do use coal ash from the various power stations that you have referred to before. I do not have any information at hand regarding the import and what that witness may have been referring to.

The CHAIR: Do you mind, on notice, being able to provide as much detail as possible as to your knowledge of the supply chain and the point of origination of the coal ash that is being used by the major projects, if possible?

Ms HENDERSON: I can take it on notice and seek information.

The CHAIR: I have some questions for Treasury. Ms Alexander, I have some questions following on from Ms Boyd. Can we establish a couple of baseline facts. The power stations are technically owned by this State, correct?

The Hon. TREVOR KHAN: Not technically, they are.

The CHAIR: They are owned by the State, is that correct?

Ms ALEXANDER: Power stations are owned by the private sector operators.

The CHAIR: I understood that we owned them and you have leased them.

Ms ALEXANDER: I think they are owned, we sold them. It was a sale and purchase agreement.

The CHAIR: The power stations, yes. The 2014-15 transactions was the sale of the generators and that accompanied the sale of the ash dams as well?

Ms ALEXANDER: Yes.

The CHAIR: And so the ash dams are owned by the power companies, correct?

Ms ALEXANDER: Yes.

The CHAIR: Any use or commercialisation of the ash dam will not lead to any additional revenue for the taxpayer because it is not our property, correct?

Ms ALEXANDER: Correct.

The CHAIR: Stepping forward, in terms of the processes that you were describing around contingent liability and the realisation of it, there are two, are there not? We have provided indemnity in respect to what is loosely termed "contamination events"?

Ms ALEXANDER: Is there a question?

The CHAIR: Yes. The question is, is that one of the forms of indemnity that we have provided: for what is called a "contamination event"?

Ms ALEXANDER: We have provided an indemnity to the operators that we will be responsible for the costs of remediating pre-existing contamination at the power station sites.

The CHAIR: What about contamination before remediation commences?

Ms ALEXANDER: Until there is an actual liability to pay, that is an amount, we do not have liability until it is crystallised.

The CHAIR: That indemnity is provided through the contractual framework, is that correct?

Ms ALEXANDER: It is provided in the contract, yes.

The CHAIR: Does the contract specify how you will determine what contamination arises from the presale period and what arises afterwards?

Ms ALEXANDER: At the time of the transactions baseline studies were produced and put in the data and I think they have been provided to the upper House.

The CHAIR: They have.

Ms ALEXANDER: Which included the existing contamination at the time of that transaction, which is the line in the sand of what was the State's responsibility versus what will be any new contamination from that point.

The CHAIR: If, playing forward the hypothetical that Ms Boyd gave you, the EPA determines that there has been a contamination and there is a liability, does the contract specify how the State and the operators will determine who pays what, or is that a matter that will go to the court?

Ms ALEXANDER: The process that would happen if there was a contamination event would be that the EPA would require that the operator clean-up that event, clean-up whatever that contamination was. At that point the operator would come to the State and say we believe this contamination occurred during the time of the State's ownership and we would procure technical experts to determine whether or not we agreed with them and we would work with them to establish how that contamination should be remediated.

Ms ABIGAIL BOYD: Have any of those events occurred already?

Ms ALEXANDER: To the extent that there are provisions in the accounts, those are the ones that have occurred, for example, there is Colongra. It is not within the scope of this inquiry, but we are working with Snowy Hydro in relation to that.

Ms ABIGAIL BOYD: That is PFAS, is it not?

Ms ALEXANDER: That is PFAS.

Ms ABIGAIL BOYD: And Wallerawang, we did see that in the documents that were released recently, that there was a liability for the State.

Ms ALEXANDER: The Wallerawang indemnity is slightly different because in the case of Wallerawang we gave them an indemnity in relation to the decommissioning, demolition and rehabilitation [DDR]. We gave EnergyAustralia an indemnity relating to the DDR of the Wallerawang power station as well as an indemnity for pre-existing contamination.

The CHAIR: And that process you were describing about how you would resolve a claim from a private operator, is that process contractually proscribed?

Ms ALEXANDER: I understand that it is, yes.

The CHAIR: So that is the contamination event side, but what about the remediation? What is the trigger for remediation to commence?

Ms ALEXANDER: The trigger is that the Environment Protection Authority [EPA] requires the contamination to be remediated.

The CHAIR: So what happens when Liddell closes?

Ms ABIGAIL BOYD: Sorry, can we just be clear on the difference between remediation of a contamination event and rehabilitation?

The CHAIR: Sorry, let us talk about rehabilitation.

Ms ALEXANDER: Sure.

The CHAIR: I will switch to rehabilitation now. What exactly is the mechanism for the distribution of costs for rehabilitation?

Ms ALEXANDER: Rehabilitation of the ash dams is an ongoing function of the operators managing the ash dams. In the case of Vales Point, SPI has ongoing management of the ash dam, which is the cap and cover approach that you have heard about from others in this inquiry.

Ms ABIGAIL BOYD: To clarify, I think we are talking about what happens when a power station site closes. Under those agreements—at least the ones that I have seen—for the sale of those power station sites, we have two forms of liability. We have the remediation event liability, where the EPA comes in and says that there is contamination and looks into whether it is pre-existing and whether the State may have liability. The second one is, for example, the Vales Point one, where it says that upon disconnection from the grid there is a decommissioning of the power station and a rehabilitation of the site. I believe that my colleague is trying to get at the rehabilitation of the site aspect and how much liability the Government has for that.

Ms ALEXANDER: In relation to Vales Point, it is slightly different. The other ones own the power station and the site so it is the operator who is responsible for the rehabilitation of that site. In the same way that, in fact, Vales Point operators are responsible for the rehabilitation of that site if no option is exercised under the handback deed to call that back to the State.

Ms ABIGAIL BOYD: Even for the pre-existing contamination?

Ms ALEXANDER: Hang on, this is where we get into the rehabilitation versus remediation. The State remains liable for remediating pre-existing contamination. In relation to Liddell, that is why there is a provision in the accounts because at the time of decommissioning there may well be some remediation of contamination required. That would be the State's financial responsibility, but the general rehabilitation of the site is undertaken by the operator and the State is not responsible for rehabilitation costs.

Ms ABIGAIL BOYD: So you are saying that a rehabilitation to the standards required by the law at a particular time, that there is no liability for the State in relation to pre-existing contamination? Because that is quite different to what I have read. I just want to check.

Ms ALEXANDER: If the claim is made to the State that contamination has to be remediated, which was contamination that was pre-existing—

Ms ABIGAIL BOYD: As part of the rehabilitation?

Ms ALEXANDER: As part of the rehabilitation, the State would be responsible for that cost.

Ms ABIGAIL BOYD: So, effectively, that is the same thing, though.

The CHAIR: I understand the distinction Ms Alexander is drawing but I think for the purposes of our questions I am not necessarily convinced much turns on it. Accepting that distinction that you draw between rehabilitation of the site and rehabilitation of contamination in the rehabilitation of the site, when would the State—you said that the State is engaging Liddell now on that question.

Ms ALEXANDER: The State is aware that because of the impending closure of Liddell in three years' time, there may be obligations for us to remediate pre-existing contamination at the power station site.

The CHAIR: Let us be clear: Treasury is aware.

Ms ALEXANDER: Treasury is aware.

The CHAIR: Is Treasury the principal decision-maker in Government in respect of that question?

Ms ALEXANDER: What question?

The CHAIR: As in who pays what in the rehabilitation phase.

Ms ALEXANDER: In the rehabilitation phase, again it will be for AGL to make a claim on the State about what contamination has to be remediated to Treasury.

The CHAIR: But the State counterparty that AGL would be dealing with would be Treasury?

Ms ALEXANDER: Yes.

The Hon. TREVOR KHAN: Could I just raise something? Ms Alexander, having visited Vales Point, what troubles me is this: Rehabilitation is going on now—they are covering it. The long-term remediation costs may well be dependent on the nature and effectiveness of the rehabilitation work that is undertaken now by the operator. For instance, if they cover it with 30 centimetres of fill, that might be a cost-effective way of preventing dust affecting nearby sites—it may be very effective in that regard—but in 10, 20 or 50 years, it may be entirely ineffective if there has been water penetration of that cover, which has then allowed leachates to escape from the ash dams. Does the Government in any way factor in the effectiveness of what the operators are doing to rehabilitate the site for a long-term encasement of that coal ash and the heavy metals in it?

Ms ALEXANDER: Mr Khan, that is really a question for the EPA. We rely on the EPA as the environmental regulator to set appropriate standards that will not cause problems in 20 or 30 years' time.

Ms ABIGAIL BOYD: If you have a liability that is contingent on a contamination event occurring, and you know that you are responsible for that pre-existing contamination, why is Treasury not actively managing that liability by ensuring that the best possible rehabilitation is done now to stop the future liability occurring?

Ms ALEXANDER: Treasury allows the operators who own and manage the plant to manage it under the environmental protection licence that they were issued and that is the standard that the EPA requires.

The CHAIR: Effectively, your view is that they are managing it to the appropriate standard required and that is decided by the EPA?

Ms ALEXANDER: Yes, the appropriate standards are set by the EPA.

The CHAIR: Do you recognise that there is a conflict—at least, if an insurer was providing this sort of cover in an insurance sense, an insurer has the ability to direct the person that they are insuring to take appropriate steps to reduce risk. I accept that this is not an insurance relationship, this is an indemnity relationship, but the argument is still the same. The EPA has a certain responsibility to ensure environmental damage under the regulation, but you have an incentive to minimise financial risk. Have you not inquired into whether or not there are various methods of cap and cover or coverage that would reduce the financial liability of the State?

Ms ALEXANDER: Our commercial relationship with them is in relation to a specific indemnity that relates to us bearing the cost of that. We do not have a commercial relationship that allows them to direct in how they manage their power stations. They manage the power stations under the terms of the environment protection licences [EPLs] and development consents.

Ms ABIGAIL BOYD: Would it be fair to say, then, that the Government has sold off those assets, kept liabilities and also hamstrung itself in being able to manage those liabilities?

Ms ALEXANDER: The Government sold off those power stations, creating gross proceeds of $2 billion to remove liabilities for its—

Ms ABIGAIL BOYD: We are not talking about the—

The Hon. TREVOR KHAN: No, no—

The CHAIR: No, it is fair to allow the witness to respond.

Ms ALEXANDER: I make the point that in all of those transactions, as I was starting to say, we made gross proceeds of $2 billion, we removed $1.2 billion of debt from our books, we removed actual liabilities from the State's balance sheet and we were left with contingent liabilities that may or may not materialise. So the State's management of that has actually put us in a better position with respect to that $850 million that can now be spent on infrastructure projects by my colleagues in Transport or elsewhere. That contingent liability in relation to contamination would have been there if we had not sold those power stations. We would have been regulating Delta and whoever were the State-owned corporations managing them, would have been managing them to the environmental standards set by the EPA.

Ms ABIGAIL BOYD: In that circumstance that you have just laid out, you would also have the ability to direct these operators, if they were still State-owned, to act in a way they could minimise your own liability. What I am asking is this: Has the State effectively sold away its rights?

The Hon. TREVOR KHAN: I do not know if this is a fair question.

The Hon. MARK BANASIAK: Can I just—

Ms ABIGAIL BOYD: No, I take that.

The Hon. TREVOR KHAN: Yes.

The Hon. MARK BANASIAK: Can I just pick up on one point? You spoke about the contingency liabilities that may or may not ever materialise. Has the Treasury done any work in quantifying what that contingency liability may be? If so, would it exceed or would it be below what we have got in terms of profit from the sale of these assets?

Ms ALEXANDER: I would refer to my earlier answers. We work with them on an ongoing basis to understand what those liabilities are. As soon as we are able to quantify them, we reflect them.

The Hon. TREVOR KHAN: If the assets had not been sold, there would have been that contingency anyway.

The Hon. MARK BANASIAK: Yes. I was out of the room so I did not hear the original answer.

Ms ABIGAIL BOYD: But you would be able to control it.

The Hon. TREVOR KHAN: Well, yes.

The CHAIR: I encourage Committee members to direct their comments to witnesses, not so much to each other. We can do that in a deliberative.

Ms ABIGAIL BOYD: Yes, apologies.

The CHAIR: Ms Alexander, I want to conclude this line of questioning. You said that there is a regular process of engagement with the companies. How regular are we talking about?

Ms ALEXANDER: I would not say we have a weekly meeting. It is on an as-needs basis as issues crop up that we should be discussing with them in relation to the scope of those indemnities.

The CHAIR: Do they have a disclosure requirement—a disclosure of material events to you? Does that encompass rehabilitation or any event that would trigger the liability? Are they required to inform you?

Ms ALEXANDER: Just one second. No.[1]

The CHAIR: So how would you find out whether or not an event has taken place for which a claim might be forthcoming?

Ms ALEXANDER: Well, it is in their interest, of course, to make the claim on us if it relates to pre-existing contamination so that we would expect them to raise it with us at the appropriate time.

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[1] In correspondence to the committee received 16 November 2020, Mr Michael Pratt AM, Secretary, NSW Treasury provided clarification to the evidence provided by the NSW Treausry representative.

The CHAIR: Yes, but they get to decide what the appropriate time is, effectively. Is that what you are saying?

Ms ALEXANDER: I guess.

The Hon. TREVOR KHAN: Can I go back to Ms Henderson?

Ms ABIGAIL BOYD: Sorry, can I just follow up with one last question on that?

The Hon. TREVOR KHAN: Of course you can.

Ms ABIGAIL BOYD: Have any of those operators—let me rephrase that. Are any of those operators required under the contracts to contact Treasury in relation to pre-existing contamination claims prior to contacting the Environment Protection Authority [EPA]?

Ms ALEXANDER: I would say it would typically occur the other way round. The EPA would be regulating the licence and would find a contamination issue that way, so it would naturally occur first with the EPA rather than us.

Ms ABIGAIL BOYD: Under those contracts, has Treasury been contacted by an operator about a pre-existing contamination claim prior to them telling the EPA?

Ms ALEXANDER: I do not think so. I do not think so.

Ms ABIGAIL BOYD: Do you need to take it on notice?

Ms ALEXANDER: I can take it on notice and check.

Ms ABIGAIL BOYD: Thank you.

The CHAIR: Mr Khan?

The Hon. TREVOR KHAN: Ms Henderson, if I can go back to you. Taking into account that I finished science when I left school—

The CHAIR: Last week?

The Hon. TREVOR KHAN: Actually, in one sense it was not that long ago.

The Hon. MARK BANASIAK: How well did you finish it?

The Hon. TREVOR KHAN: It was funny taking my little lunchbox in, but anyway if we go back to this question of a standard and the Australian standard that is applied, I take it from the evidence that you have given that, essentially, apart from saying a maximum of 4 per cent, I think, in terms of one item, you apply the Australian standard. Is that right?

Ms HENDERSON: So, there are two standards.

The Hon. TREVOR KHAN: Good.

Ms HENDERSON: There is the standard relevant to a flexible pavement. We adopt that as is, which is up to 10 per cent. With respect to the rigid payments, there are two elements within the standards which we can reference. There is up to or equal to 4 per cent of unburnt carbon content. We do reference up to or equal to 4 per cent of unburnt carbon content. However, because we want to be confident that it is only up to or equal to 4 per cent we define a testing regime of how to demonstrate that. So we are actually requiring them to have non-variability above that 4 per cent, which is more around a probabilistic way of determining it through the test procedures.

The Hon. TREVOR KHAN: Right.

Ms HENDERSON: What is also within the Australian standard is then how much fly-ash you can have within the rigid pavement. We allow between 20 and 40 per cent of a replacement of the Portland cement. That is effectively the Australian standard as well and it is generally what is allowed around the world.

The Hon. TREVOR KHAN: All right. I do not know if you have seen, heard or read any of the evidence up until this point but one of the issues that has been made—actually, it has been made on a couple of occasions—is that Transport for NSW applies a standard which exceeds the Australian standard and, for instance, with regard to councils it means that they cannot use the amount of ash that they would otherwise use. That has been, I think I am fair in saying—

The CHAIR: You vary it from the specified—

The Hon. TREVOR KHAN: That has been actually a repeated complaint that has been made. So how do we, that is me, deal with the evidence that is given, for instance, by—what was council?

The CHAIR: Lake Macquarie.

The Hon. TREVOR KHAN: That said, you are imposing conditions that are in excess of the Australian standard. How do I square that with what you are saying? Are we completely at odds?

Ms HENDERSON: We are not completely at odds. So what the Australian standard says is up to or equal to 4 per cent but it does not tell—it has no specificity around how to test for that 4 per cent. What we are saying is during the process of gathering the fly-ash you need to test regularly at certain periodicities to ascertain that you have only got less than or equal to 4 per cent. So because the Australian standard does not require that testing regime, you cannot always have the same level of certainty that it is 4 per cent or less. We are providing that certainty that it is 4 per cent or less. If we did not adopt that, it would not change the amount of fly-ash we use, can use. What it might change is the amount of fly-ash from a particular provider of fly-ash, depending upon what level of confidence they have of 4 per cent or less.

The Hon. TREVOR KHAN: Right. I think we have received some evidence that the amount of carbon is different between the various stations, depending upon the age and quality, I suppose, of their furnaces, really. So, yes, I accept that—that it may be more difficult. All right.

The CHAIR: I would like to follow up on that point.

The Hon. TREVOR KHAN: Yes, sure.

The CHAIR: Ms Henderson, Transport for NSW—sorry, this is a basic question. When you say the Australian standard, are you talking about a standard set by Standards Australia?

Ms HENDERSON: Yes.

The CHAIR: Right. Is that a discretionary choice for Transport for NSW to use that standard, or are you legally required to use that standard?

Ms HENDERSON: I would take it on notice. My general understanding of Australian standards is, from an engineering perspective, you would need good reasons not to adopt an Australian standard.

The CHAIR: Yes.

Ms HENDERSON: But it does not prevent you, in complying with your other obligations, to go above and beyond an Australian standard.

The CHAIR: Sure, but there is—again, I defer to your much more superior knowledge of this—but there are New South Wales standards in respect to other products but we just do not set a standard for this, do we?

Ms HENDERSON: In the roads environment there are a number of external specifications and standards that we use. One is the Australian standard. There are also specifications written by Roads Australia, of which we do adopt many of those as well, as do the other States. We, along with the other States, are involved in the committees that do develop those standards. Likewise we will often adopt the Roads Australia standards but we may put additional requirements in our specifications beyond those Roads Australia standards where it is relevant to the design criteria of the roads that we may be building.

The CHAIR: Do you accept that the standard that Transport for NSW decides heavily impacts the decisions that local councils make in terms of their road building responsibilities?

Ms HENDERSON: There are certainly some circumstances where councils do build road to our specifications—to Transport's.

The CHAIR: So do you accept, therefore, that you are at the market centre in terms of the standards in predominantly the New South Wales road construction market?

Ms HENDERSON: We have a level of influence on it. Whether it is fair to say that we are the market centre, I could not answer here.

The CHAIR: Well, you are the biggest purchaser and builder of roads, are you not, in New South Wales?

Ms HENDERSON: I think that would be a fair statement.

The Hon. TREVOR KHAN: I think it would be overwhelmingly fair.

The CHAIR: Yes—because, if not, I am going to be asking the secretary at estimates as to what exactly is going on. But, either way, my point is that you are a major force in deciding what standards are set.

Ms HENDERSON: In New South Wales, yes.

The CHAIR: Do you accept, therefore, that to the extent to which Transport for NSW is capable of embracing the further use of fly-ash and bottom ash it will send a signal to the market that the product can be used in road construction at a greater level than it is now?

Ms HENDERSON: I do not expect we will be changing the level of fly-ash that can be used. What we are proposing at the moment is to assess whether a greater level of variability could be in the carbon content of the fly-ash.

The CHAIR: You also made reference—what about bottom ash? Do you foresee scenarios in which you can use more bottom ash?

Ms HENDERSON: We currently reference the Australian standard as is.

The CHAIR: But that is not my question. Do you foresee scenarios in which you will be using more bottom ash?

Ms HENDERSON: I am not aware of any investigations we are doing around extending the use of bottom ash.

The CHAIR: Did you see the evidence of the energy companies at the first hearing of this inquiry, or have you read the transcript by any chance?

Ms HENDERSON: I have read some.

The CHAIR: Are you aware that—I think it was Delta that said it is very eager to explore a partnership with Transport for NSW around the use of coal ash, both bottom and fly-ash, in road construction?

Ms HENDERSON: Yes.

The CHAIR: You saw that?

Ms HENDERSON: I think so, yes.

The CHAIR: Who from Transport for NSW is responding to Delta?

The Hon. TREVOR KHAN: Sorry, there is actually a step in between. You have got to ask whether Delta has made approaches to Transport for NSW expressing its enthusiasm.

The CHAIR: It said that it did in that earlier hearing, but I will be fair. Has Delta made requests to Transport for NSW to pursue further opportunities for the commercialised use of coal ash?

Ms HENDERSON: The range of—

The CHAIR: Or any other energy company, to be clear. Delta or any other energy company.

Ms HENDERSON: I have the range of road engineers that have typically been involved in the development of specifications but also the input into infrastructure. I could not identify anyone who has had conversations with Delta. What I do understand is there have been conversations with Origin, but that has been more around the coal ash dams, not regarding the use of fly-ash and/or bottom ash in the roads.

The Hon. TREVOR KHAN: Would you be able to take on notice—because it would require investigation—as to whether Delta or the other companies have made approaches with regards to the use of more fly-ash or bottom ash?

Ms HENDERSON: I can take it on notice.

The CHAIR: I think you might be right that it was more likely to be Origin, now that you remind us of that. Origin made reference to a trial in the Hunter. Do you know what it is talking about?

Ms HENDERSON: What I was able to identify, subsequent to reading that material, was that we have had conversations with them regarding the fly-ash dams. I have not been able to identify, so far, conversations regarding the trials.

The CHAIR: I think what it was referring to was trialling it on road construction on its sites and having, I think, Transport for NSW partner or at least inspect the results of its trial. Did I misinterpret its evidence, or is that—

Ms HENDERSON: I have not been able to identify anyone who has been involved in that.

The CHAIR: I would like to give you the opportunity to respond to the proposition that has been made by the energy companies, by Lake Macquarie City Council, by a whole variety of people in the cement industry, as well as the ash development side of this. That proposition is that they need a customer and Transport for NSW is a very good candidate here, but they cannot seem to be able to get engagement from Transport for NSW to respond to their desire to explore the opportunities to further commercialise the coal ash. Do you wish to respond to that theme? I think it is fair to say that has been the theme throughout the hearing, that Transport for NSW could be a pacesetter here but is not right now.

Ms HENDERSON: I do not think I picked up the question in that.

The CHAIR: I am putting to you, on behalf of a whole variety of our witnesses, that they very much would like to create a market but the obstacle is Transport for NSW's unwillingness to engage with them.

Ms HENDERSON: We do currently participate in the market. We are a significant user of fly-ash and we are a user of bottom ash. By and large, we comply with the Australian standards, except for having confidence around the variability with the unburnt carbon content in the cement. We do continuously engage with the broader Australian roads-constructing environment to make sure we both contribute and align as much as possible to the broader specifications that the road owners in Australia do construct to. I am not aware of any actions that could be seen as preventative that you referred to.

The Hon. TREVOR KHAN: Before we finish, could I just have another chip at Ms Alexander?

The CHAIR: I just have one more question for Ms Henderson, if that is possible. What is the size of the road network that Transport for NSW manages now? Is it 18,000 kilometres?

Ms HENDERSON: It is 18,000 kilometres.

The CHAIR: In terms of the construction, do you differentiate according to—you made reference to the strength ratio or something in your opening statement. Do you distinguish between the amount of coal ash that can be used on, for example, major highways versus other aspects of the road network that are not as trafficked?

Ms HENDERSON: When looking at developing and then designing and constructing a road we look at the requirements for the road, which will include deciding whether it is a flexible pavement or a concrete pavement, what the life requirements are, what the rideability requirements are, and what is the general level of traffic on the road. We consider a number of factors that will go into the design criteria for the road, and then that will determine whether it is a flexible or rigid pavement—which is asphalt versus concrete, generally—and also specify what requirements we need within that.

The CHAIR: Is there greater capacity to innovate on less trafficked roads or not, from a technical perspective? It is pointless for us to make a recommendation for effect that you should perhaps explore this on roads that are not as trafficked, for example, which is one suggestion that has been put to us. Do you see a distinction between the ability to use coal ash on major highways versus other types of roads in the network?

Ms HENDERSON: I do not see a distinction on our capability to innovate on one road versus another. There will be a difference in what our considerations can be on a flexible versus a rigid pavement.

The Hon. TREVOR KHAN: Ms Alexander, on both the first and second days of hearings of this inquiry we received invitations to make a recommendation that there should be a charge—

The CHAIR: A tonnage charge.

The Hon. TREVOR KHAN: A tonnage charge, yes. That is a different way of putting it than I would have, but a tonnage charge on fly-ash/coal ash produced. One figure that was nominated—well, actually, one figure was extraordinary—but one figure that was nominated was $20 a tonne, in order to incentivise the operators to develop a market for coal ash. If a charge of $20 a tonne was put on the operators in terms of the production of coal ash, would that in any way conflict with the terms of the—I will call it the "agreement for sale"—that was entered into by the various operators?

Ms ALEXANDER: Is the question, "Would charging"—I don't—

The CHAIR: Does the contract restrict the State's ability to impose a tonnage charge? That might be another way of putting it.

The Hon. TREVOR KHAN: Absolutely. Much more elegant.

Ms ALEXANDER: No. I cannot comment on that particular—

The Hon. TREVOR KHAN: You might be able to!

Ms ALEXANDER: The sale and purchase agreements [SPAs] are commercial agreements between the parties that deal with the allocation of risk. There is nothing in them that deals with that. Any proposals of that nature, I think, we have not dealt with. We would have to deal with it as Treasury when it came up and look into it as a proper proposal.

Ms ABIGAIL BOYD: Are you aware that in the Vales Point SPA there was a provision that a certain contractor in relation to management of the coal ash dams would need to be kept? There was a provision saying that a particular arrangement in relation to management of the coal ash with a particular contractor be kept. Are you aware of that one?

Ms ALEXANDER: No.

Ms ABIGAIL BOYD: That is actually one example of a commercial restriction that was placed in those documents.

Ms ALEXANDER: I am aware that Vales Point has to operate in accordance with a management plan set by the State in relation to the coal ash—

Ms ABIGAIL BOYD: Yes, this went beyond that. This was a particular company that they were required to keep on.

Ms ALEXANDER: Sorry, I am not across that level of detail.

Ms ABIGAIL BOYD: When we did our site visit we heard that that particular contractor was involved in the breach and then—

The Hon. TREVOR KHAN: Was speared.

Ms ABIGAIL BOYD: It was speared. It had to be let go. Anyway, you do not have knowledge of that, so that is fine.

The CHAIR: The time for this part of the hearing has expired but I will just put one more question to Ms Henderson to be taken on notice, if possible. Ms Henderson, is it possible that you could take on notice further details of the feasibility study that you referred to in your opening statement? What exactly are its terms of reference? Who is involved in it? Is it Transport for NSW exclusively or Transport for NSW plus others? When is it due to report?

Ms HENDERSON: I did note that it is subject to funding so many of those answers would be subject to funding.

The CHAIR: Yet to be determined.

Ms HENDERSON: Yes, particularly the last one.

The CHAIR: Could you therefore provide us on notice with whatever information you can about the feasibility study?

Ms HENDERSON: Will do. Can I please offer a clarification to one of the earlier questions? When you were asking about whether we source fly-ash from New South Wales, the vast majority of our fly-ash does come from Eraring, Mount Piper and Bayswater. There have been significantly fewer occasions where it has been sourced by Queensland Cement from Queensland sources. That would be where the projects are quite close to the Queensland border, which significantly takes haulage into consideration.

The CHAIR: If you have any estimate as to the amount that you have sourced from each of those locations, over what period of time, that would be really useful.

Ms HENDERSON: Yes, which will be on notice.

The CHAIR: Yes, of course. If you knew it off the top of your head, that would be very impressive. Thank you for that. I do thank Ms Henderson and Ms Alexander and respective officials for seeing us today and

for the information that you have provided. You have taken questions on notice. You have 21 days to provide the information to the secretariat. Thank you for your time.

(The witnesses withdrew.)

(Luncheon adjournment)

PETER BOYD, Governance and Assurance Manager, Dams Safety NSW, sworn and examined

CHRIS SALKOVIC, Chief Executive Officer, Dams Safety NSW, sworn and examined

DAVID FOWLER, Executive Director, Regulatory Practice and Environmental Solutions, NSW Environment Protection Authority, affirmed and examined

ADAM GILLIGAN, Director, Regulatory Operations Metropolitan North, NSW Environment Protection Authority, affirmed and examined

The CHAIR: Welcome back to the final session of our final public hearing into the coal ash repository issue. I invite each of the witnesses if they so choose—or at least each of the organisations that are represented—to make a short opening statement if they would like to.

Mr FOWLER: Not specifically. The New South Wales Environment Protection Authority [EPA] contributed to the whole-of-government written submission. In that submission there were some overview factors around the regulatory frameworks that we administer. We have nothing further to add.

Mr SALKOVIC: Thank you for the opportunity to participate in the Committee's inquiry into costs for remediation of sites containing coal ash repositories. Dams Safety NSW is a New South Wales government agency constituted under Dams Safety Act 2015. The Act, together with Dams Safety Regulation 2019, commenced on 1 November 2019. We are nearing our first anniversary in existence. Dams Safety NSW consists of five independent members appointed by a Minister together with myself, the chief executive officer. We are a small agency, currently with 18 staff. However, we have a big responsibility in administering the Dams Safety Act. It consists of the following four objects: to ensure that risks that arise in relation to dams, including any risks to public safety and to the environment and economic assets, are at a level that is acceptable to the community; to promote transparency in regulating dam safety; to encourage proper and efficient management in matters relating to dam safety; and to encourage the application of risk management and the principles of cost-benefit analysis in relation to dam safety.

Our responsibilities extend to owners of declared dams, of which there are 400 across New South Wales owned by 169 owners. State-owned corporations, mining corporations, power generators, local government and some private owners are many of the groups that we regulate. Much of what we do relates to the prevention of failure of a declared dam. Failure is defined in Dams Safety Regulation 2019. It means the uncontrolled release of the contents of a dam or a dam ceasing to perform its functions. Adopting a risk-based regulatory framework, all 400 declared dams are categorised into one of six different consequence categories or hazard ratings. This drives our compliance activity. They are low, significant, high A, high B, high C and extreme.

This rating system is consistently applied in the safety management of dams across Australia and provides a method to assess dams based on the potential to threaten downstream life or cause major property, environmental or public welfare damage. We regulate eight declared coal ash dams, four of which are rated as significant and the other four as high consequence. As mentioned earlier, from 1 November 2019 we are named as Dams Safety NSW. Our predecessor, the New South Wales Dams Safety Committee, handed over a good technical foundation for our new agency to build contemporary regulatory practice around new enforceable standards with matching penalties for non-compliance.

The CHAIR: Thank you. I will now invite questioning from the Committee members.

Ms ABIGAIL BOYD: I will start with the Dams Safety NSW witnesses, if I may. In your opening statement you say that you have 18 staff and 400 dams across New South Wales that you are responsible for regulating. Presumably your staff are focused more on the high-risk dams than the non-high-risk dams.

Mr SALKOVIC: Yes.

Ms ABIGAIL BOYD: How often would you be inspecting the coal ash dams?

Mr SALKOVIC: Audit frequency really depends on the consequence rating of the dam. For extreme dams, we look to do auditing once every two years. For the lower consequence dams, we look to do auditing in the order of once every four years. If incidents occur or if there is non-compliance then that frequency will change.

The CHAIR: When you say "auditing", auditing against what?

Mr SALKOVIC: Auditing against the requirements in the regulation.

Ms ABIGAIL BOYD: Do you think 18 staff is enough to adequately comply with that regulation?

Mr SALKOVIC: No, and we are currently increasing that.

Ms ABIGAIL BOYD: When you talk about the eight coal ash dams, I assume that you are talking about the five live coal-fired power stations: Liddell, Bayswater, Eraring, Vales Point and Mount Piper.

Mr SALKOVIC: Yes.

Ms ABIGAIL BOYD: Would the other three be Lithgow, Wallerawang and Tallawarra or something else?

Mr SALKOVIC: Yes, the names can be changed a little. Would you like me to go through the names of the eight?

Ms ABIGAIL BOYD: Yes, please.

The CHAIR: Before you do, do you mind going through the eight and identifying what is the risk rating by dam?

Mr SALKOVIC: Yes, sure. I can let you know the hazard rating for each of those dams. Bayswater ash at Muswellbrook is rated as significant. Colongra Creek ash at Doyalson is rated as significant. Eraring ash is rated as high A. Liddell is rated as high C. There is Liddell disposal and Liddell levee so that is also at a high C. Mannering Creek ash, which I understand is also known as Vales Point, is significant. Ravensworth at Singleton is significant. Sawyers Swamp Creek ash is high A.

Ms ABIGAIL BOYD: Where is Sawyers Swamp? That is familiar.

Mr SALKOVIC: Lithgow. Sawyers Swamp Creek, Lithgow.

The CHAIR: Sorry, what was the rating for that?

Mr SALKOVIC: That one is "high A".

Ms ABIGAIL BOYD: Is the Ravensworth one at Mount Piper?

Mr SALKOVIC: Ravensworth I have here as Singleton.

Ms ABIGAIL BOYD: So Mount Piper is not on there. Presumably it does not have a dam structure for its coal ash.

Mr SALKOVIC: I am not 100 per cent sure, but I believe Mount Piper would be using a dry placement and it is not considered a dam.

Ms ABIGAIL BOYD: Okay. In the past, have you ever had regulatory responsibility for Tallawarra? It has got three ash ponds. I am unsure as to whether one of them is a dam, but it is very close.

Mr SALKOVIC: It is currently not on our declared dams register. Whether it has been in the past, I will need to get back to you.

Ms ABIGAIL BOYD: Thank you. That is very useful.

The CHAIR: Just to be clear again, the risk rating is the consequences of failure on the environment, human and health. Is that what you said?

Mr SALKOVIC: Yes, that is right. The hazard rating, what we call a "consequence category", is driven by potential loss of life, environmental consequence and also property damage.

The CHAIR: Do you maintain a "likelihood of failure" rating system of any type?

Mr SALKOVIC: Yes. A risk assessment is done for dams. We have a methodologies document for that and that explains how the likelihood is taken into account when calculating the risk.

The CHAIR: But do you have a rating system that communicates the outcome of that assessment in a simple way?

Mr SALKOVIC: Peter, do you mind?

Mr BOYD: Yes, we have a requirement in our new regulation for a societal risk calculation.

The CHAIR: Do you want to give us the societal risk calculation for each of the dams?

Mr BOYD: We do not have it at the moment, sorry. I do not think we have that with us, unfortunately, Chair.

The CHAIR: If it is possible to get it before the hearing ends, that would be most useful. Otherwise, would you be in a position to take that question on notice?

Mr BOYD: Sure.

Mr SALKOVIC: Sure.

The CHAIR: Can you provide us on notice with a clear definition of that rating?

Mr SALKOVIC: Sure.

Mr BOYD: Absolutely.

Ms ABIGAIL BOYD: When we talk about the regulation of ash dams, and we have talked about the rating system in terms of the risk categories, is there a different category for ash dams or is it simply that they are regulated differently because of the different risk level that is put on them compared to a dam with water in it?

Mr SALKOVIC: No, the consequence rating and how risk assessments are done is consistent across ash dams, tailings dams, and water dams.

The CHAIR: How often do you do the rating?

Mr SALKOVIC: The regulation requires for a societal and individual risk rating once every five years.

The CHAIR: When were the ratings that you just provided completed? Or is it different per dam?

Mr SALKOVIC: The ratings that I gave were not the risk ratings, they were the actual hazard rating or the consequence rating. I need to get back to you on that exactly. It would be different points of time for different dams.

The CHAIR: When is the consequence rating, which is distinct from the societal rating you referred to, required to be done? How often?

Mr SALKOVIC: The societal and individual risk rating—risk being the product of consequence and likelihood—

The CHAIR: I mean the hazard.

Mr SALKOVIC: Sorry, what was the question again?

The CHAIR: You drew a distinction between the two different forms of rating. There is a hazard rating system, and I think you just provided us a list, I interpreted.

Mr SALKOVIC: Yes, that is right. That is a consequence rating, which is one element of risk.

The CHAIR: Okay, but you do them together every five years. Is that what you are saying?

Mr SALKOVIC: The risk is every five years. The regulation requires for it to be done every five years.

Ms ABIGAIL BOYD: Do you think that ash dam regulation should be a separate category of regulation? Do you think that there should be specific regulations for ash dams as opposed to other dams?

Mr SALKOVIC: As far as the failure of a dam is concerned and how failure is defined in the regulation, I think they should be treated the same.

Ms ABIGAIL BOYD: Do you have a different level of interaction with the EPA in relation to ash dams as you would to other dams?

Mr SALKOVIC: Could do.

Ms ABIGAIL BOYD: How does the EPA and Dams Safety NSW work together to determine risk in relation to a particular coal ash dam?

Mr SALKOVIC: We are largely driven by how failure is defined in our regulation and we are all about prevention of failure of how that is defined. That is largely the responsibility of Dams Safety NSW.

The CHAIR: Just to be clear though, the dams themselves are not self-assessing and providing you with the results of their self-assessment that you either confirm or invalidate, are they? Are you doing an independent assessment or are you relying on the dam owner to provide you with an assessment that you audit and check?

Mr BOYD: The regulation requires the dam owner to carry out the assessment. We can also require an independent check of the assessment.

The CHAIR: But you have the discretion to apply that, if you so desire.

Mr BOYD: Yes, if we so desire.

The CHAIR: Have you ever applied that discretion? To the best of your knowledge, did your predecessor body apply that discretion?

Mr SALKOVIC: We have arranged an independent assessment.

The CHAIR: Were the risk ratings you just gave us the self-assessed risk by the dam owner that they provided to you?

Mr SALKOVIC: Those risk ratings are one of the few things that were actually handed over from the transition from Dams Safety Committee to Dams Safety NSW. All of those risk ratings were verified at the time by Dams Safety Committee.

The CHAIR: But the first instance risk assessment was completed by the owner of the dam.

Mr SALKOVIC: That is right.

The CHAIR: Then that was provided to the Dams Safety Committee, which validated it.

Mr SALKOVIC: Yes, that is right.

The CHAIR: Since the formation of Dams Safety NSW, have you been provided with any change to any of the risk ratings by any of the dam owners?

Mr SALKOVIC: We have. I am not sure if it extends to these coal ash dams, but there have been some changes.

The CHAIR: Other dams. Okay, but in respect to these dams, has Dams Safety NSW ever ordered an independent assessment to determine risk separate from the self-assessment?

Mr SALKOVIC: No, we have not.

Ms ABIGAIL BOYD: Why would that be? You have the discretion to conduct an independent audit of that assessment by the operator.

The CHAIR: Just to draw the distinction, you have got the right to audit the assessment and then provide your own independent assessment. Is that correct?

Mr SALKOVIC: That is right.

Ms ABIGAIL BOYD: In what circumstances would you being doing that?

Mr SALKOVIC: In what circumstances would we arrange to do our independent—

Ms ABIGAIL BOYD: When would you exercise that discretion? Is it ever done just randomly as a spot check?

Mr SALKOVIC: I guess it would be if our technical staff see that the rating that has been presented is not quite following the methodologies that they should be using.

Ms ABIGAIL BOYD: Does the operator appoint an external consulting firm, or something of that kind, who then provides that?

Mr SALKOVIC: There is a requirement for consequence ratings for extreme and high-hazard rating dams—that an independent body should be doing those.

Ms ABIGAIL BOYD: So, for example, Eraring.

Mr SALKOVIC: That is right, for Eraring.

The CHAIR: You used the term independent but my colleague asked you external. Is there a distinction between the two?

Mr SALKOVIC: It depends on when you say external—

The CHAIR: I think Ms Boyd was putting to you a scenario in which a dam owner would commission an external consultant to prepare the assessment on their behalf, as opposed to them paying for an independent body who would report to you, effectively, as a distinction. Are you able to explain which one you are referring to?

Mr SALKOVIC: The owner of the dam would have their design team, which could be made up of a dams engineering consultant to do the work and then they would also for those higher consequence category dams arrange for an independent external consultant to review that.

Ms ABIGAIL BOYD: So in the ordinary course an operator's own staff are the ones undertaking the risk assessment. They are then giving that to Dams Safety NSW. Only if Dams Safety NSW looks at that and sees an obvious problem would it do any kind of independent check unless it was a high—

Mr SALKOVIC: Yes, unless it is a high—then they need to do an independent check. They need to demonstrate to us that they have had an independent organisation reviewing their—

Ms ABIGAIL BOYD: Okay, but when we say "independent" we mean somebody who has been paid by the company to perform that service.

Mr SALKOVIC: Yes, by the owner.

The CHAIR: Do you define what is an independent body? What is the definition of "independence" in that scenario?

Mr BOYD: Our regulation does not necessarily define it for that particular scenario but for checks of designs for dams, for example, it defined it as someone who has not been involved with the original work.

Ms ABIGAIL BOYD: And how many consulting firms would be involved in that sort of work then?

Mr SALKOVIC: As an estimate there are the large consulting firms and there are a lot of independent consultants, just sole trading consultants.

Ms ABIGAIL BOYD: With the expertise—

Mr SALKOVIC: With the expertise, yes.

Ms ABIGAIL BOYD: —to do this. How many—

Mr SALKOVIC: That is right. And particularly to do the independent review.

Ms ABIGAIL BOYD: So there is no shortage then, if you wanted to conduct your own independent review, to use a different consultant.

Mr SALKOVIC: No.

Ms ABIGAIL BOYD: Okay. In your experience has a range of independent experts been used to provide these reports in the past or has it just been sort of a one-man company?

Mr SALKOVIC: No, there has been quite a diverse range.

The CHAIR: Perhaps on notice is it possible that you can identify who precisely was, for all of the high-risk category, both the external firm retained to do the assessment in the first instance and the independent firm that was undertaken to review it?

Mr SALKOVIC: Sure. Yes. Certainly.

Ms ABIGAIL BOYD: Is the lack of self-initiated independent assessment from Dams Safety NSW due to a lack of staff or a lack of regulatory direction?

Mr SALKOVIC: It is a common practice across the dams industry across Australia and other regulatory jurisdictions, the need to do that independent or peer review of technical assessments. So it is common practice.

Ms ABIGAIL BOYD: When Eraring had their report done that identified a risk, what was the procedure then? So they gave you the report—

The CHAIR: Just to be fair to the witness I think you are referring to the Myuna Bay.

Ms ABIGAIL BOYD: Apologies. Yes. When the Myuna Bay rec centre was closed—

Mr SALKOVIC: Yes, Eraring Dam.

Ms ABIGAIL BOYD: —with the Eraring Dam just recently, when they prepared their report identifying that they needed to do some work, was that sent to Dams Safety NSW?

Mr SALKOVIC: Yes.

Ms ABIGAIL BOYD: What actions did you then take in response to that?

Mr SALKOVIC: We advised them to get an independent review of the findings.

Ms ABIGAIL BOYD: Which they presumably did.

Mr SALKOVIC: Which they did but what actually transpired at the time was the Minister responsible for the Office of Sport initiated their own independent review. So we helped the Office of Sport engage an independent organisation to do that.

Ms ABIGAIL BOYD: Then what was your ongoing involvement in that issue? As in the Dams Safety NSW—

Mr SALKOVIC: Well, we helped the Office of Sport arrange for an independent engineering organisation to do that review. Then when that review came out our involvement was just to assess whether they actually did what they should be doing.

The CHAIR: Just to be clear, in that chain of events did Dams Safety NSW advise the Office of Sport to shut the recreation camp?

Mr SALKOVIC: No.

The CHAIR: So the decision to shut the recreational camp arose after Eraring notified you or the Office of Sport?

Mr SALKOVIC: Notified the Office of Sport.

The CHAIR: When did you first learn about the report?

Mr SALKOVIC: We first learned about the report—I need to go back to the time lines, but off the top—

The CHAIR: Was it before or after the Office of Sport?

Mr SALKOVIC: That we knew about the report?

The CHAIR: Yes, or the decision to close the—

Mr SALKOVIC: No, we were aware of the report prior to the decision to close.

The CHAIR: Did you learn about the recommendation from Eraring to close the Myuna Bay recreational centre before the Office of Sport knew or did you find out—

Mr SALKOVIC: No, the Office of Sport knew about it.

The CHAIR: But I am asking you did you know before them that that recommendation was being made?

Mr SALKOVIC: No.

The CHAIR: Why not?

Mr SALKOVIC: I cannot answer that.

The CHAIR: The dam owners all have a continuous disclosure obligation to you, do they not?

Mr SALKOVIC: I understand they do.

The CHAIR: And it is material, is it not, that they are saying that a recreational camp used by schoolchildren that is right behind the dam has to close because it is not safe—you would agree that is a material event.

Mr SALKOVIC: Yes.

The CHAIR: So was that reported to you in the part of them providing you that report or was that separate? Did the report notification that you received contain that recommendation?

Mr SALKOVIC: We did receive the report. I would need to get back to you on that.

Ms ABIGAIL BOYD: Was there discussion between the Office of Sport and Dams Safety NSW in relation to the ash dam at Eraring around that time of closure of Myuna Bay Sport and Recreation Centre?

Mr SALKOVIC: There was very limited discussion prior to the decision to close, between Dams Safety Committee and Office of Sport.

Ms ABIGAIL BOYD: You said "very limited". What sort of communication then does that mean?

Mr SALKOVIC: I think it was just one phone call at that time in around March 2019.

The CHAIR: To be clear, no-one is faulting people for taking the precautionary principle in closing the sports centre.

Mr SALKOVIC: Of course, yes.

The CHAIR: But to the community it would be quite surprising that the principal regulator for dams safety in New South Wales, your predecessor organisation, to be fair—were you in that predecessor organisation, by the way?

Mr SALKOVIC: Yes, I was.

The CHAIR: What capacity did you have in that?

Mr SALKOVIC: I was titled Executive Engineer.

The CHAIR: Okay. But you would understand from the community's perspective that it would be quite alarming that they are told that their sport centre is closing because the dam is not safe but the first time the dam regulator knows about it is after the sports camp has closed.

Mr SALKOVIC: No, we knew about the report and the findings prior to that decision of closure. But at that time we advised the owner of the dam to arrange for an independent review.

The CHAIR: How much time prior to the decision to close were you aware that that was at risk?

Mr SALKOVIC: I will need to come to you on that. I believe it was all within the same month but I need to confirm.

The CHAIR: But you had the power to order—do you have the power to order the closure of any surrounding facility if it poses a risk?

Mr SALKOVIC: There is a difference between what we have now as Dams Safety NSW and what we did then under the Dams Safety Act 1978. So it would need to be looked at in the context of the Dams Safety Act 1978.

The CHAIR: That is fair. But do you have the power now?

Mr BOYD: No, we do not. We have powers to order dam owners to do things and other people to do things that endanger the safety of the dam, not necessarily—

The CHAIR: Sorry, Mr Boyd, you will have to use the microphone.

Mr BOYD: Sorry. Just to repeat: We have the power to order dam owners to do things to ensure the safety of the dam and other people to do things to ensure the safety of the dam.

The CHAIR: Did the closure of the camp or at least that report trigger a reassessment of either the hazard risk or the societal consequences of failure risk?

Mr SALKOVIC: Yes, it did.

The CHAIR: So what happened?

Mr SALKOVIC: So there was the independent review done. That was arranged through the Office of Sport, of which SMEC did the report, which basically validated the earlier finding that was done by Origin Energy's analysis team.

The CHAIR: And so what did the rating go from and to?

Mr SALKOVIC: The hazard rating stayed the same so it was still a high A. I guess what had changed was the likelihood of failure was validated.

The CHAIR: What did it change from and to?

Mr SALKOVIC: We use a concept of safety threshold. So it validated that the dam was above the safety threshold.

The CHAIR: So it was unsafe.

Mr SALKOVIC: Yes, that is right. That is what it validated. Yes.

The CHAIR: And precisely I think we heard from Origin that it was unsafe in the event of a seismic event with a Richter scale more than seven—was that right?

Mr SALKOVIC: Sorry, I am not so sure about the Richter scale level. But in terms of likelihood with the result of the risk assessment, I believe it was in the order of about a one-in-10,000 annual exceedance probability.

The CHAIR: You have just said, in layman's terms, that you validated the finding that it was unsafe. What corrective action did you order the dam owner to take?

Mr SALKOVIC: We directed them that they need to do remedial works immediately to the dam.

Ms ABIGAIL BOYD: Is there a time frame for when that needs to be completed?

Mr SALKOVIC: Yes, we do have time frames for when they need to be completed.

Ms ABIGAIL BOYD: Do you know what the time frame is for that?

Mr SALKOVIC: I believe they presented us a program of works to do that at the time, and it was in the order of about 18 months to two years. We saw that to be acceptable on the basis that, at that time, we also knew the decision was made to close the centre.

The CHAIR: This was 2018—the commencement of it?

Mr SALKOVIC: No, this was 2019.

The CHAIR: So we are 12 months or 14 months into the time frame for remediation?

Mr SALKOVIC: Yes.

The CHAIR: Is it on track?

Mr SALKOVIC: Yes, it is on track. Back in October 2019 the prediction was to be completed by the end of 2021. That has slipped a little and now their target is the middle of 2022 to complete their work.

The CHAIR: An additional six months from the original period?

Mr SALKOVIC: That is right.

The CHAIR: Has that been publicly communicated by the dam owner?

Mr SALKOVIC: I am not sure.

The CHAIR: But the onus is on the dam owner to complete the time scale, yes?

Mr SALKOVIC: That is right, yes.

The CHAIR: But, to the best of your knowledge, you are not aware of any public disclosure that there is a six-month delay in the remediation? Maybe "delay" is not the way to characterise it, but the project scale is now six months further in time than originally.

Mr SALKOVIC: To be fair, at the time there was a lot of unknowns and it was an estimate of it being completed by 2021. What has transpired since that time, I understand, is quite a lot of testing has been done.

The CHAIR: What was the legal enforceability of your original order?

Mr SALKOVIC: The original order was—

The CHAIR: Was it a direction?

Mr SALKOVIC: I am not sure but we were working under the Dams Safety Act 1978.

The CHAIR: Are they in breach of the law by delaying by six months? Have they breached the order, whatever order it was? Firstly, I am assuming there was an order and it was not a discretionary choice that was agreed.

Mr SALKOVIC: I do not believe there was an order given at that time, because I am just not sure if we actually had the powers to give an order at that time.

The CHAIR: Have you given an order under the new Act?

Mr SALKOVIC: Yes, we have.[2]

The CHAIR: When was that given?

Mr SALKOVIC: I would need to get back to you on that.

The CHAIR: In the order that you gave under your new Act, how much time did you provide?

Mr SALKOVIC: I would need to confirm that.

The CHAIR: To the best of your knowledge, have they complied with the new order made under the new Act?

Mr SALKOVIC: I understand yes[3].

The CHAIR: According to the same time line?

Mr SALKOVIC: I need to confirm that.

Ms ABIGAIL BOYD: Is there a penalty if they do not comply?

Mr SALKOVIC: There is a penalty, yes.

The CHAIR: How are you monitoring their compliance with your new order?

Mr SALKOVIC: We communicate with them quite regularly. I understand last month we were up there doing a visit with them, as well as an audit on their operations.

The CHAIR: Have you issued any such order to any other dam in New South Wales?

Mr SALKOVIC: We have issued, I believe, four to five orders.

The CHAIR: Four to five orders out of four hundred and how many?

Mr SALKOVIC: Sorry?

The CHAIR: How many dams in New South Wales do you regulate?

Mr SALKOVIC: Four hundred.

The CHAIR: One per cent of dams have been subject to an order, but Dams Safety NSW cannot tell us what exactly is your program to ensure compliance with the four orders—or, at least, this one particular order that you have made. Do you understand that that could create a perception that perhaps Dams Safety NSW needs to pay more attention to whether your orders are being complied with?

Mr SALKOVIC: I could do.

Ms ABIGAIL BOYD: Coming back to the consequence rating for Eraring, you say it was High A consequence. Is that because of the flow that would occur if there was a breach that included the Myuna Bay sports centre having a certain number of potential inhabitants?

Mr SALKOVIC: Yes, correct.

Ms ABIGAIL BOYD: When the recreation centre was closed, did the consequence level then go down?

Mr SALKOVIC: No, the consequence level is still the same. It had not been reassessed.

Ms ABIGAIL BOYD: There was no change in the risk assessment because of the Myuna Bay centre being closed?

Mr SALKOVIC: The consequence rating has not changed as a result of that.

Ms ABIGAIL BOYD: With the rectification works required on Eraring's dam be different if that Myuna Bay recreation centre was reopened, versus if it stays closed?

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[2] In correspondence to the committee received 11 November 2020, Mr Chris Salkovic, Chief Executive Officer, Dams Safety NSW provided clarification to his evidence.

[3] In correspondence to the committee received 11 November 2020, Mr Chris Salkovic, Chief Executive Officer, Dams Safety NSW provided clarification to his evidence.

Mr SALKOVIC: It probably would be the same.

Ms ABIGAIL BOYD: At the beginning of that chain of questioning, I was asking what the interaction was between yourselves and the Environment Protection Agency [EPA]. When it comes to coal-fired power stations and coal ash dams, what is the interaction between Dams Safety NSW and the EPA?

Mr SALKOVIC: We have not had much interaction with respect to coal ash dams to date.

Ms ABIGAIL BOYD: How does Dams Safety NSW keep up to date with the latest environmental science and risks? For example, when there was the Kingston disaster with the ash dam there, that triggered a bunch of new research and understanding of particular risks. Did that see its way into some change of regulation, procedures, guidelines or anything else at Dams Safety NSW?

Mr SALKOVIC: No, it did not.

Ms ABIGAIL BOYD: Have you updated your approach to coal ash dams at any point in the past however many years—how long has it been going? Since 1978?

Mr BOYD: That is probably a very difficult question for us to answer, having been in existence only since November last year. As we say, we are quite a new regulator. We have a new bunch of regulations that address those risks that we are talking about. I am not certain what are the differences in approach that the Dams Safety Committee had over the years.

Ms ABIGAIL BOYD: Would it be fair to say, then, that Dams Safety NSW is very much focused on the structural integrity of the dam itself, rather than taking into consideration any particular matter within that dam and regulating it separately? I guess that is kind of the question I asked before. I will ask it in a different way: Is there any separate regulation or even focus of Dams Safety NSW on coal ash dams, as opposed to other types of dams?

Mr SALKOVIC: Yes. To answer your question, we are focused on the failure of a dam and how failure is defined in dams safety regulation, regardless of it being a coal ash dam, a water dam or a tailings dams.

Ms ABIGAIL BOYD: When we look at the risk of failure—you talked about the consequence and the likelihood being part of that assessment. In the consequence rating, do you take into account the environmental impact of that failure?

Mr SALKOVIC: Yes. In the consequence rating, environment is taken into account.

Ms ABIGAIL BOYD: Do you take into account the latest research on environmental hazards in working out that consequence rating?

The CHAIR: Maybe the preliminary question, before you answer that one, was the first one: Can you define what environmental risk means in your rating system?

Mr BOYD: As we indicated earlier, we have a methodology for determining what the consequence category of the dam is and one of the categories is environmental impacts for a dam. For example, the methodology talks about the potential severity of the environmental impacts must be established and it has criteria such as duration and recovery: For a major impact that is five to 20 years, looks at orders and would discharge from a dam break significantly contaminate waters? That is, again, in the major category. Ecosystems: If a discharge from dam break would have significant impacts on ecosystems with natural recovery expected to take many years. That is some examples. Endangered ecological communities and threatened species: Under the major classification it is severe impacts where recovery will take many years.

Ms ABIGAIL BOYD: Whoever is making the assessment at the dam or their independent consultant, if they have one, how are they regulated in terms of ensuring that they have the most up-to-date evidence in relation to environmental impacts of leakage or breakage of the coal ash dam?

Mr BOYD: The regulation requires that whoever does the consequence category assessment and the review of it is a competent person and that is defined in our regulation to do with membership of professional organisations, however that might be, whatever specialisation it needs to be. Environment is one of them. And experience in this sort of work.

Ms ABIGAIL BOYD: What assurance do you have that the employee at a particular coal-fired power station who is responsible for coming up with that consequence level has the requisite latest knowledge?

Mr BOYD: We do it via the audit process. If we are out there looking at the consequence category assessment process for the dam, for example, we would be asking those sorts of questions. How did the dam owner satisfy themselves that these people had the latest information?

Ms ABIGAIL BOYD: And how would Dams Safety NSW auditors have the latest information?

Mr BOYD: Depends. I suppose, from an environmental sense, that is a good question.

Ms ABIGAIL BOYD: Would it be helpful for Dams Safety NSW to have guidance and direction from, for example, the EPA in making those assessments?

Mr BOYD: It would, undoubtedly, be very helpful.

The CHAIR: Ms Boyd asked you about whether or not there was an arrangement in place with the EPA and I think you said there was not yet or there was not. Was there one with the dams committee beforehand?

Mr BOYD: No, no there was not.

The CHAIR: The dam owners have a continuous disclosure regime under your new Act, is that correct?

Mr BOYD: Yes.

The CHAIR: Did they have one under the previous Act, or is that not the case?

Mr BOYD: I am not sure.

Mr SALKOVIC: I am not sure.

The CHAIR: How many have you received relating to ash dams, have you received any disclosures?

Mr SALKOVIC: To date, relating to ash dams, I would need to come back to you on that?

The CHAIR: On notice, if you can come back to us with a number, the time, who from and what it was about that would be really useful?

Mr SALKOVIC: Sure.

Ms ABIGAIL BOYD: Do you think Dams Safety NSW has the expertise to adequately oversee coal ash dams in New South Wales?

Mr SALKOVIC: I see it as a pretty broad question when you say "expertise", is there a particular area of expertise?

Ms ABIGAIL BOYD: We have heard a lot of information in this inquiry from a lot of experts, this is a very complicated area when it comes to the hazards that coal ash may represent to health and environment and we know that the consequences of getting that wrong can be really dire, as we have seen overseas. Given that, do you think Dams Safety NSW has the expertise in its ranks to adequately ensure the safety of communities and environment around these ash dams?

Mr SALKOVIC: I believe we do and we are also increasing that expertise and our team, we are building our team.

The CHAIR: On notice, are you in a position to provide us with any general information about your intention to increase your team and your expertise in terms of the regulation and enforcement of the Act in relation to ash dams?

Mr SALKOVIC: Sure.

The CHAIR: To the EPA, and whoever wishes to answer it is up to you to decide. Your regulatory function in respect to ash dams has three aspects: It is to apply the general regulation, issue the licenses and to enforce both, is that correct?

Mr FOWLER: Yes, that is correct.

The CHAIR: What regulation is in effect for ash dams? What discrete regulation applies only to ash dams, separate from general obligations and regulations that you maintain?

Mr FOWLER: None. No specific regulation, no.

The CHAIR: You have the power to make a specific regulation, is that correct?

Mr FOWLER: Yes, we have regulation-making powers, yes.

The CHAIR: Can you explain, do you think there is a need for a discrete regulation to apply to ash dams?

Mr FOWLER: No.

The CHAIR: Why not?

Mr FOWLER: The current environmental protection regulatory framework under the Protection of the Environment Operations Act 1997 is a robust regulatory framework that allows the EPA a broad suite of powers to address environmental issues associated with a wideranging suite of activities, high-risk activities that propose a high risk to the environment.

The CHAIR: Am I right to infer that your view is that an ash dam does not pose any additional or significant risk that will call for regulation?

Mr FOWLER: We regulate the activity in its entirety around coal-fired power stations in this instance. Under the Protection of the Environment Operations Act there is a schedule of activities that require the EPA's regulatory oversight and an environment protection license. All of the activities associated with the five coal-fired power stations are regulated under that environment protection license which allows us to apply specific conditions to address the environmental risks associated with that activity.

The CHAIR: You use a licensing requirement to impose the additional requirements?

Mr FOWLER: Correct.

The CHAIR: Not a regulation-making power?

Mr FOWLER: Correct.

The CHAIR: What is the license called?

Mr FOWLER: An environment protection license.

The CHAIR: Does that apply to a dam discrete from the station that is creating the ash?

Mr FOWLER: No, it is a premise-based license and the dam sits on the premise, as does the power station. The boundary of the license, if you like, is the boundary of the power station and that would capture the ash dam.

The CHAIR: You impose specific conditions through that license per premise, is that correct?

Mr FOWLER: Correct.

The CHAIR: Is there a common set of conditions that you impose on the licenses for ash dams, as in, identical requirements that you would apply across all licenses?

Mr FOWLER: No, not specifically to ash dams.

The CHAIR: You do a premise-based assessment as to what that particular premise would require and you would impose conditions, is that correct?

Mr FOWLER: That is correct. So, in the broadest sense the regulatory framework that the EPA administer under the Protection of the Environment Operations Act is linked to the planning legislation. Once an activity is given consent conditions of our license need to be consistent with that consent until the license is first reviewed. That is not relevant for power stations, they have held licenses for an extended period of time. The licenses have been built and there are standard conditions on those licenses, if you like, that are more preventative by nature. This is about maintaining plant and equipment and undertaking activities in a proper and efficient fashion. And then there are conditions that may be more specific to the activity undertaken on that site. There would be monitoring requirements on the licence—air, water, noise, potentially waste—and conditions relating to reporting to the EPA, annual reporting, et cetera.

The CHAIR: Just to be clear, do you have the ability to amend the licences?

Mr FOWLER: We do. The licences are an eternal document—they are enforced until they are surrendered or revoked—and we have powers under our legislation to vary those licences either at the request of the licensee or of our own volition.

The CHAIR: Have you, in the past 10 years, varied the licences in respect to any issue arising specifically to ash dams?

Mr FOWLER: I would suggest that, yes, we have. Under our licensing framework we have, as I said, monitoring requirements and those monitoring requirements are changed depending on risks that we might identify or issues that might arise. We also have provisions called pollution reduction studies and pollution reduction programs, which allow us to impose requirements on the licence holder to investigate issues—emerging issues, for example—that might be identified through either monitoring or through other means in terms of our horizon scanning of best practice, for example. Those pollution reduction studies will allow us to look at particular focused activities on that site and then the pollution reduction program would allow us to impose requirements to undertake certain works if appropriate.

The CHAIR: Are those licences public?

Mr FOWLER: They are. They are all available on our public register.

The CHAIR: Okay. I might be forward, perhaps, in asking you to provide us with the licences on notice in respect to all the ash dams that are part of our terms of references or any other ash dam that you feel, as well.

Mr FOWLER: Most certainly.

The CHAIR: Thank you. You enforce and audit against both the general Act and the licences, yes?

Mr FOWLER: Correct.

The CHAIR: What is your audit cycle?

Mr FOWLER: I will step back into the licensing framework. Under the environment protection licences there are obligations for the licence holder to their level of compliance to the EPA on an annual basis—that is a self-assessment of their compliance. We have a risk-based licensing framework under the Protection of the Environment Operations Act and there are inspection regimes mandated around the level of risk associated with particular activities. There is a minimum number of inspections, if you like, depending on the risk associated with a particular activity. We also have our own internal compliance audit function and, again, that is the team allocated depending on operational insights and community concerns. They will be sent to look specifically at a particular issue associated with a particular range of activities or a certain standalone site. That includes coal-fired power stations.

The CHAIR: Just so I can understand the hierarchy of enforcement options in your policy, you have a self-assessment regime that is annual, you have an inspection regime that is general and tailored to specific sites—

Mr FOWLER: Correct.

The CHAIR: You have an internal compliance team, which, can I can infer, is intelligence led?

Mr FOWLER: Correct.

The CHAIR: Presumably you also have a response team to report in on specific incidents?

Mr FOWLER: Correct, absolutely. There are obligations that the licence holder report certain incidents that are occurring on their site that pose a risk to the environment to the EPA, and there is obviously public reporting. We would respond to all of those reports that we received through our environment line.

The CHAIR: Just so I can understand your penalty regime, you have the ability to issue infringement notices.

Mr FOWLER: Correct.

The CHAIR: And that would lead to a fine.

Mr FOWLER: Correct.

The CHAIR: Without a court.

Mr FOWLER: Correct.

The CHAIR: Then you have the ability to issue rectification orders, I presume?

Mr FOWLER: To issue clean-up and prevention notices under our legislation, yes.

The CHAIR: And you have the ability to prosecute.

Mr FOWLER: Yes.

The CHAIR: Is there anything else I am missing?

Mr FOWLER: I do not think so.

Mr GILLIGAN: I might just add the pollution reduction program provisions under the licence are another tool by which we can require rectification works and the like.

The CHAIR: That is a formal rectification.

Mr GILLIGAN: Yes.

The CHAIR: The inevitable question—which am sure you will have foreseen—is to go through the enforcement records. How many—did you want to do this, Ms Boyd?

Ms ABIGAIL BOYD: Could we just have one question before that? When you talked about the different EPL conditions, we talked about the fact that when they are given the original licence there are some conditions and then they get reviewed. I have looked at some of those EPLs. Why are some so different to others in terms of the regulations? For example, in relation to limits on heavy metals, you will see in one power station's licence quite a different set of figures to another. How does that come about?

Mr FOWLER: I spoke about the risk-based approach. When we undertake a risk assessment, which is a formal process that is set out under the associated guidance linked to the regulation, we look at the receiving environment, the nature of the activity and the environmental controls put in place on that activity, and the environmental performance of the operator to determine their environmental risk, if you like. The higher risk activities would draw greater regulatory oversight and those higher risk activities may be, for example, where there is a greater risk to the surrounding environment. We may put in different types of monitoring requirements depending on that risk.

Mr GILLIGAN: I might just add to that response: For example, the receiving environment between Lake Liddell in the Upper Hunter compared to Lake Macquarie is certainly very different. You might also have different inputs, such as a different coal composition that might result in different levels of emissions for both air and water as a result of the coal that is being used, and the plant might produce different outcomes in that regard. That all goes towards those site-specific variations that you might see.

Ms ABIGAIL BOYD: Is that the same when we look at a pollution coming out of the stacks and the load-based levies? Will we not have some power stations required to pay for some chemicals but other power stations not required to pay for those very same chemicals coming out? How do you account for that?

Mr FOWLER: Load-based licensing is a little different in that it is set up under the Protection of the Environment Operations (General) Regulation. For specific activities there are assessable pollutants. For coal-fired power stations there is a suite of assessable pollutants and they draw a fee per kilo discharged per annum, whereas the licence will have concentration limits or concentration monitoring. So they are slightly different. In regards to load-based licensing, power stations are subject to load-based licensing and they are all subject to the same suite of pollutants for determining their load-based fee.

Ms ABIGAIL BOYD: So, they are all subject to the same suite of pollutants.

Mr FOWLER: Correct.

Ms ABIGAIL BOYD: Are they all subject to the same threshold levels before they have to pay?

Mr FOWLER: Yes, it is a standard. They have to pay as soon as the load fee exceeds their licence administrative fee. Any amount of pollutant attracts a fee. It may be $1 but the administrative fee is, for example, $5,000, and they pay the highest of the two. So once the load fee gets to $5,001, they will pay an extra dollar.

Ms ABIGAIL BOYD: But they are all assessed on the same?

Mr FOWLER: Correct.

Ms ABIGAIL BOYD: Are there any load-based fees in relation to the pollutants in ash dams, or are they only in the stacks?

Mr FOWLER: No, it is only in relation to air discharges and—I would have to confirm but I think—water discharges offsite, not material placed in the ash dam and remaining onsite.

Ms ABIGAIL BOYD: So only if it leaches out?

Mr FOWLER: No, only if it is discharged through surface waters.

Ms ABIGAIL BOYD: Okay.

Mr FOWLER: Under load-based licensing we are not looking at any potential discharge through, for example, the basal wall of an ash dam.

The CHAIR: We were just going to discuss the enforcement records of the dams. Can we work our way down the hierarchy, starting with prosecutions? Have you launched any prosecutions in the last five to seven years for any coal ash related matter?

Mr GILLIGAN: No.

The CHAIR: We will leave the remediation part aside. I imagine that is probably more extensive and detailed but let us go to the enforcement and penalty infringement notice sort of regime. How many have you issued for coal ash terms in general in the last five to seven years?

Mr GILLIGAN: So we have entered into two enforceable undertakings, both with AGL. So enforceable undertakings essentially sit between a penalty notice and a prosecution.

The CHAIR: Yes, an enforceable undertaking is a device by which you can order remediation among other things, I presume.

Mr GILLIGAN: That is correct, yes, and also the payment of an amount towards a project, generally a community or environmental project and the like. We have had two of those with respect to AGL.

The CHAIR: What for?

Mr GILLIGAN: One was related to a failure of an ash pipeline.

The CHAIR: Yes.

Mr GILLIGAN: I should not say an outright failure but certainly a leak from.

Ms ABIGAIL BOYD: Is that the Bayswater?

Mr GILLIGAN: Correct.

The CHAIR: AGL told us a bit about this as well, so yes.

Mr GILLIGAN: Yes, and the second related to some breaches of the coal ash order and exemption by AGL.

The CHAIR: When did the triggering event that led to the enforceable undertakings take place?

Mr GILLIGAN: I have those just here. I can provide you with those dates. With respect to the Ravensworth ash pipeline, the event occurred on 4 September 2019.

The CHAIR: Yes.

Mr GILLIGAN: And with respect to non-compliance with the coal ash order AGL became aware on 14 January 2019.

The CHAIR: Okay, and you entered into enforceable undertakings. What was the fine imposed by that mechanism for those two events?

Mr GILLIGAN: I guess we would not characterise it as a fine.

The CHAIR: Or the payment?

Mr GILLIGAN: It is essentially an offer made by the company.

The CHAIR: Yes, sure. I did not see the distinction.

Mr GILLIGAN: So, with respect to the ash pipeline, AGL has undertaken to make payments totalling $500,000 to environmental projects. They have also undertaken to do further works onsite that range between $500,000 and $600,000, and that there are a number of other elements to that but they are the most significant financial aspects.

The CHAIR: For the 4 September event, yes? The pipeline event?

Mr GILLIGAN: Correct. And with respect to the coal ash order, there are certainly provisions related to training, et cetera, payment of costs—excuse me, I am just looking to locate the figure—it is an undertaking to contribute funds towards the Upper Hunter installation of an air quality device and a weed eradication project. But, unfortunately, I do not have the precise amount.

The CHAIR: On notice, can you do that?

Mr GILLIGAN: Certainly.

The CHAIR: Can you tell us this: What would have been the maximum penalty that you would have been able to impose under law if this matter was prosecuted in terms of the ash pipeline matter?

Mr GILLIGAN: It would be a million dollars. That is the maximum available. Generally speaking, though, we would be looking at—there is a tiered series of measures available to us and we would be realistically looking at a $500,000 maximum.

The CHAIR: Yes, okay. So that is the enforceable undertaking.

Mr GILLIGAN: That is right.

The CHAIR: Where are you on infringements?

Mr GILLIGAN: So, we have issued in the last five years nine penalty notices to AGL related to Liddell and Bayswater, three to Origin Energy related to Eraring and two to Delta Electricity related to Vales Point.

The CHAIR: Two to Delta, Vales Point. Have you identified—well, has this record led you to conclude that there is more of an issue in AGL-controlled premises?

Mr GILLIGAN: I guess there is a range of different issues that those penalties relate to. Some of them relate to dust, for example; some of them relate to pipeline; some of them relate to other specific environmental incidents that have occurred. But I would not say that we have necessarily formed a view with respect to the company's performance over or above the other—

The CHAIR: So it might relate to the fact that they are managing more risky sites. But are you saying that you have not concluded that there is a specific risk being caused by the operator per se?

Mr GILLIGAN: No. I would agree that there is a range of factors at play in relation to those incidents. Some of them will be an unexpected failure. Some of them might relate to the age or maintenance of plant and those sorts of factors.

The CHAIR: Can you tell us this: What is the average quantum of the penalties? Or what are the actual penalties? Can you tell us how much the penalties would be?

Mr GILLIGAN: They are $15,000 each.

Mr FOWLER: I might interject. Just stepping back into your query about consideration of regulatory intervention in terms of more focused environmental regulatory oversight, that is a consideration within our risk-based framework.

The CHAIR: Yes, you mentioned that.

Mr FOWLER: So we do look at the operator performance and that is in fact reflected by our regulatory interventions, among other things.

The CHAIR: Yes. I understand.

Ms ABIGAIL BOYD: But, sorry, do you think that a $15,000 infringement notice is sufficient to deter these companies breaching their conditions?

Mr GILLIGAN: I guess my experience is that we do see behaviour change in response from large companies to the scale of penalty.

Ms ABIGAIL BOYD: Is it true that at AGL's Bayswater site there was a breach of the environmental protection licence [EPL] in relation to boron and molybdenum concentrations that continued for four and a half years?

Mr GILLIGAN: Certainly, we are aware that there are breaches there. Whether it is four and a half years, I do not have that information precisely before me but certainly there have been exceedances of those metals.

Ms ABIGAIL BOYD: But you believe that those that $15,000 infringement notices are doing the trick to correct that, or is there some other significant obstacle happening there?

Mr GILLIGAN: What we are using there is looking at pollution reduction studies to better understand why those exceedances are there, require the company to do further work to characterise that and, if there is a need for further rectification works to address it, then that is certainly something that we will consider.

The CHAIR: On notice, are you able to provide us with as much detail as you can about what remediation you have ordered in respect to which dams?

Mr GILLIGAN: Yes.

The CHAIR: Thank you. Also on notice, are you able to provide us with the infringement notices issued by premise by year of the ones that you have just mentioned?

Mr GILLIGAN: Yes.

The CHAIR: That would be helpful. I think that we have got a good picture of how you enforce or you assess the on-premise risk, but can we talk about the surrounding environmental risks that are not on the premise of the licence owner, namely Lake Macquarie? Can you explain to us how you are monitoring the environmental risk posed by the ash dam to Lake Macquarie?

Mr GILLIGAN: There is some ambient monitoring required of the companies involved with respect to where they might have a specific environmental impact. There is also work that is done periodically to assess environmental impacts on the lake from a range of sources. For example, we have assessed metals in biota—there was PFAS in biota in the last couple of years—to assess those risks and, where appropriate, put precautionary advice in place for the community. There is also work that is done routinely by our colleagues in Environment, Energy and Science with respect to estuarine health and also our colleagues in Science with regard to air monitoring.

The CHAIR: When you say "Science", who are you referring to?

Mr GILLIGAN: Sorry, within the Department of Planning, Industry & Environment. We have got our Science colleagues—

The CHAIR: The division?

Mr GILLIGAN: Correct—who carry out a range of work to look at air monitoring and ambient air quality and also water quality with respect to catchments like Lake Macquarie.

The CHAIR: And have you detected—what risks have you detected to Lake Macquarie through those programs?

Mr GILLIGAN: I guess, certainly as I have mentioned, the biota work has identified the presence of metals in seafood. That most significantly in terms of metals in fish is selenium, but that is at a level that has not warranted further dietary advice beyond the standard advice that Health have in relation to seafood consumption. There has also been cadmium detected in crabs so there are dietary limits in place with respect to crabs caught within the lake.

Ms ABIGAIL BOYD: Can I just follow up on that? When the studies were done that showed that there was cadmium in the crabs, was there a program then put in place to facilitate regular checks on that aquatic—

Mr GILLIGAN: Not a program put in place to require that but there has been some follow-up sampling undertaken with respect to cadmium in crabs.

Ms ABIGAIL BOYD: How often are you doing sampling in Lake Macquarie?

Mr GILLIGAN: So I think the first round was around 2018 and further sampling has been done earlier this year, and the analysis is still underway.

Ms ABIGAIL BOYD: When that analysis is completed, will the results be made public?

Mr GILLIGAN: Yes, particularly if there is any suggestion that advice to the community about consumption needs to change. That absolutely will be—

The CHAIR: What is the advice that you give about consumption of crabs and fish from Lake Macquarie?

Mr GILLIGAN: Fish are fine, with the standard restrictions around consumption of fish, which I do not have before me. But that is generally the limiting factor there is around mercury in fish, more broadly.

With respect to cadmium, it is a certain number of serves per week that differs between adults and children. Again, we can provide that on notice if you would like.

The CHAIR: But what steps have you ordered the coal ash dams to take to minimise the risk posed to the lake and now, specifically, the seafood?

Mr GILLIGAN: I think in that question there might be an assumption that there is a link there. I would suggest that is not necessarily the case. Lake Macquarie has received a whole range of pollutant inputs over the last 100 years or so from a range of different sources. It is also important to note that some of the metals we are talking about are also present in the local geology. There has not been a cause-effect relationship certainly established between metals in seafood and the operation of the ash dam. There have been no specific directions given to the operators of those dams as a result of that work.

The CHAIR: But is the absence of the establishment of a causal link arising from an investigation that you have completed that has concluded that there is not one, or has it arisen from the fact that there has just been no study as to whether or not there is a causal link?

Mr GILLIGAN: It is certainly plausible that there is a contribution from those ash dams to metals levels that are within the lake, and there has been some research that indicates that those levels increased following the establishment of Vales Point Power Station. But in terms of current performance, the advice we have had from our science colleagues is that the current operation is not likely to be an ongoing significant source of metals.

The CHAIR: Sure, but the historic operations are what we are talking about.

Mr GILLIGAN: Correct.

The CHAIR: We have just heard evidence from multiple witnesses up there from all points of the spectrum of opinion who say there is a link between coal ash and the quality of the lake, the water and the fish. I am asking whether the EPA has investigated that in any respect?

Mr GILLIGAN: In terms of a link, it is difficult for us to do that when we are talking about a legacy and we are talking about a difference in terms of the way that the power station has operated historically in terms of direct discharge from ash dams to the current arrangements. We have not specifically assessed that and it would be difficult to do so.

Ms ABIGAIL BOYD: Are you familiar with the work done by the Hunter Community Environment Centre [HCEC] generally in relation to the water quality, but particularly in relation to the discharge around—is it Crooked Creek that members of the Committee saw in Myuna Bay?—around Crooked Creek and the contaminants there that come directly from the leaching of the ash dam?

Mr GILLIGAN: I am certainly aware of the work of Hunter Community Environment Centre. We work quite closely with the team there with respect to its concerns. But I am not across the specifics of Crooked Creek.

Ms ABIGAIL BOYD: Are you aware of the work that it has done, as well as the work of Dr Larissa Schneider from the Australian National University, where they have actually done sediment samples that maintain the sediment layers in order to show what is effectively legacy and what is new? For the benefit of Hansard, the witnesses were nodding. Has the EPA thought about doing its own research along those lines.

Mr FOWLER: We have. We have had the HCEC report and been reviewing that. That would inform future work that we intend to undertake off the back of some recent work where we examined air emissions from the five coal-fired power stations, where we looked at the operating conditions, compliance with limits, the limits themselves, monitoring et cetera. We will be looking at a comprehensive study of surface water and groundwater around the power stations and their potential impacts on the surrounding environment.

Ms ABIGAIL BOYD: You will be doing that study?

Mr FOWLER: We will.

Ms ABIGAIL BOYD: When will that study be conducted?

Mr FOWLER: We have started scoping the work now. In a similar fashion as to the work we did around air quality and air emissions, we will be working very closely with the power stations themselves. The power stations are aware of the work that will be undertaken. We will be bringing the experts from the broader cluster, from the science division, and we maintain and hold our own expertise in-house around water quality and water pollution.

Ms ABIGAIL BOYD: That is certainly good news.

The CHAIR: Does that encompass groundwater?

Mr FOWLER: Yes, it does. We hold hydrologists and hydrogeologists, so we have groundwater expertise. It has been particularly built as we moved into the space of regulating coal seam gas.

The CHAIR: Does the EPA have views as to the quality of the cap-and-cover programs that have been embarked upon by different dams as to whether or not that mitigates environmental risks to water, groundwater and air?

Mr FOWLER: The cap-and-cover program around rehabilitation of dams is one way of mitigating the environmental impacts associated with the coal ash dams. There are different ways of doing it, but cap-and-cover is one where they will stabilise the surface, minimising or negating the risk of wind-blown dust, for example, and further reducing the likelihood of ingress of water into the dam itself, noting that the dam itself—because of the nature of coal ash—is not particularly porous and water tends to wash across the surface rather than leach through the body of the ash.

The CHAIR: Does remediation of the sites have to be accelerated, in your view?

Mr FOWLER: I do not have the evidence before me to indicate one way or the other.

The CHAIR: Have you examined whether or not there is a need for further remediation in a faster timescale?

Mr FOWLER: Not specifically, but when we look at the licensing framework and we are looking at those environmental outcomes and the monitoring of surface water and groundwater, for example, licensee obligations, our own work done, if there was an indicator that there was something going on at a particular site that was leading to an increased environmental impact then we have a regulatory framework that allows us to respond to that and impose additional requirements on a particular activity. We spoke about studies, programs, et cetera. There is a mechanism for doing that, but the monitoring programs and the information that we have at hand to date—

The CHAIR: We have had multiple people provide us with different views as to the quality of each form of remediation that is possible. It would be really helpful for me if we could hear from the EPA, on notice, as to its assessment of what methods exist and the quality of those methods. It would be really useful. Given that we have been invited to make submissions as to what they are, it would be helpful to have the EPA's expertise.

Mr GILLIGAN: We are certainly happy to provide that. I guess it is worth noting that largely these are still operational sites. While it is important that while they are operational sites we minimise the environmental impact, that is perhaps a different assessment than we might do as we move to a closure phase, where you are looking at a subsequent land use. Your choices around a preferred remediation strategy may well differ once you move into that new phase.

The CHAIR: I agree. We have had a variety of witnesses come back and say that there is a link between the circulation of the additional metals in both the water and the air that has had some impact on health outcomes for the community, specifically cancer. Have you made any assessment? Firstly, is that within your remit to make?

Mr GILLIGAN: Not directly. We certainly work closely with NSW Health and the Population Health units specifically with regard to those sorts of concerns, and have done so in relation to these issues specifically.

The CHAIR: But are you aware of that community concern?

Mr GILLIGAN: Yes.

The CHAIR: What steps have you taken to investigate the community's concerns?

Mr GILLIGAN: To consult with our colleagues in Health and determine whether they believe that those concerns are warranted.

The CHAIR: When did you do that?

Mr GILLIGAN: I do not have precise dates, but I certainly recall having discussed the matter with the director of Population Health for the Central Coast around concerns raised about the incidence of cancer on the Central Coast.

The CHAIR: What did Health say?

Mr GILLIGAN: It indicated that the community-identified concern related to the incidence of both lung cancer and skin cancer on the Central Coast, from a report I think done by a South Australian university.

Health's advice to me and, I understand, to the community was that skin cancer incidence on the Central Coast could be explained on the basis that it actually increases as you move further north throughout New South Wales in terms of ultraviolet exposure, and that the lung cancer incidence could be explained due to higher rates of smoking on the Central Coast, rather than being linked to a power station specifically.

The CHAIR: What is the air monitoring regime that is imposed in the area?

Mr GILLIGAN: There is a number of things. Each individual licensee is required to do a combination of stack monitoring in terms of what they emit into the environment and ambient monitoring in terms of what is actually being breathed in by the community. There are those two elements for each site and then there is our own government-operated network of ambient air monitoring across the State.

The CHAIR: Is that from the stack?

Mr FOWLER: No, the ambient air quality monitoring network is a network of 92 ambient air quality monitoring stations across New South Wales that are effectively located on a population-weighted basis. They are looking at a certain suite of pollutants that would impact the community at large. It is run by our colleagues in the Department of Planning, Industry and Environment [DPIE] Science on behalf of the New South Wales Government.

The CHAIR: Do you have discrete monitoring of dust from ash dams? Is there anyone with any monitoring of dust from ash dams?

Mr FOWLER: It is difficult to identify the source of the dust from discrete ambient monitoring. Government has done studies of the ambient air to characterise the make-up of that ambient air pollution. From the ambient air quality monitoring network, 12-month studies are done to look at particle characterisation to identify where the particles came from. I am advised that there was nothing within those studies to indicate that the coal ash dams played a particular or identifiable role in that dust impact.

Ms ABIGAIL BOYD: They could mark emissions from the stacks, though, couldn't they? They showed the Eraring and Vales Point stack emissions in Sydney, for example. They marked that flow.

Mr FOWLER: They showed industrial pollutants like sulphur dioxide and particulate associated with the burning of fuel. Yes, absolutely.

Ms ABIGAIL BOYD: Could I just pick up on Mr Gilligan's answer? I understand that you are retelling what you had been told. It is a bit alarming to hear that a higher rate of cancer could be caused by a high rate of smoking without there being an actual causal link identified, just a correlation. We could just as well say that it could be caused by having two large power stations right nearby on the basis that no causal link has been established either way. Do you know if they were aiming to do any sort of study or further research into the higher rates of cancer on the coast?

Mr GILLIGAN: Not that I am aware of, no.

Ms ABIGAIL BOYD: I just need a moment to think about that.

The CHAIR: We had evidence from Mr Piper, the MP for Lake Macquarie, that there is a new air monitoring station to be installed and that is being done by the EPA.

Mr FOWLER: That is being done by our colleagues across the cluster in Science, yes.

The CHAIR: When is that operational?

Mr FOWLER: Currently they are finalising approvals for the site, which I understand is at Fishery Point Road Morisset. The expectation is that the final approvals will be granted shortly and that they aim to have the air quality monitoring station operational by the end of this calendar year.

The CHAIR: And that will join the network?

Mr FOWLER: Correct.

The CHAIR: So this will be the ninety-third?

Mr FOWLER: Correct.

Ms ABIGAIL BOYD: That will still leave a rather large gap around the Central Coast, though, won't it? There is the one in Wyong and then there will be that one. Given the close proximity of these power stations, do you think we need more air pollution monitoring on the Central Coast?

Mr GILLIGAN: We have actually done some analysis for a period where we looked at the data coming from our Wallsend monitor, the data from Wyong and the industry monitoring on the coast. We found a high level of consistency in terms of the results that were produced. The results were also generally very good. Particularly when you are dealing with the fine particles that are of most concern from a health perspective, it is important to note that they travel quite broadly. We believe that a series of monitoring sites is sufficient to get a good representation of air quality in the area.

The CHAIR: Could I ask both the EPA and Dams Safety NSW—presumably if there is less ash in the dam then there is less risk environmentally. Is that correct?

Mr GILLIGAN: I am not sure that that would necessarily hold true. I would think that a small amount of ash, poorly managed, could have a significant environmental impact.

The CHAIR: If the ash in the dam was to be reused in a commercial sense, on balance, would that likely increase or decrease the risk to the environmental outcomes?

Mr GILLIGAN: It is difficult to say. I would suggest that while ever you have a point source that needs to be managed for some amount of pollutant—whether it is 10 per cent full or 100 per cent full—it is still going to require ongoing monitoring and management to ensure that those risks are controlled.

The CHAIR: From a structural integrity perspective, does much turn on the volume of ash in the dam?

Mr SALKOVIC: It could do. It depends on how it is configured and set up. If it is a very tall and skinny dam, versus something that is spread over quite a large area that is not as deep, that could have an effect.

The CHAIR: One of the arguments that has been advanced by people who wish to reuse this for commercial products is that it will lead to improved environmental outcomes and improved structural integrity issues for the dam. Do you agree or disagree with that proposition? We have also had other evidence that says that if you dig it up and take it out then you are actually creating more environmental risk.

Mr SALKOVIC: From a structural point of view, I think broadly that would probably hold true.

Mr FOWLER: Ultimately if there was no ash stored on that site and there was no pathway to the environment for the ash in terms of its alternate use, then there is a better environmental outcome.

The CHAIR: Sure. We put a question to Dams Safety NSW about whether they had a relationship with the EPA. Can I put to the EPA that to the best of your knowledge there is no memorandum of understanding [MOU] between the two regulators?

Mr FOWLER: Not at this time.

The CHAIR: Is this a matter that the EPA is interested in exploring?

Mr FOWLER: Absolutely, and Chris and I have had that conversation.

The CHAIR: What have you concluded in that conversation?

Mr FOWLER: That we need to have an MOU between the two organisations to ensure that our regulatory oversight effectively aligns. That we both have a similar level of exposure to intelligence around those activities and in particular the dams, their operation and their impact. That goes to your earlier points about better understanding and linking the environmental impacts to the dam risk assessment.

The CHAIR: Is it right to infer that you have agreed in principle that this is something that is desirable?

Mr SALKOVIC: Yes, certainly. We have been working on memorandums of understanding with other agencies—with Public Works Advisory and with the NSW Resources Regulator—and the EPA was going to be the next cab off the rank.

The CHAIR: You will be surprised; we asked this of one regulator in a different inquiry and they said, "Oh, we have no interest in anyone." Don't be so shocked! What is the timetable for this to be concluded?

Mr SALKOVIC: We just had some preliminary discussions. Very early in the new year was kind of what we looked at. We are in the thick of finalising an MOU with the NSW Resources Regulator.

The CHAIR: If we were to make a recommendation to have one by mid-to-late next year, is that going to be onerous?

Mr SALKOVIC: I believe that is doable.

Mr FOWLER: I would not have thought that would be onerous at all.

Ms ABIGAIL BOYD: Just back on air pollution, we have one at Wyong, we are going to get one at Lake Macquarie.

The CHAIR: Do you have one at Lithgow, by the way?

Mr FOWLER: No, I do not think—

Mr GILLIGAN: I think Lithgow was part of our recent Blue Mountains study, which was only for 12 months. I do not believe there is an ongoing site there.

Mr FOWLER: Can we take it on notice? Some work has been done up in the Blue Mountains in particular around a temporary air quality monitoring station. I just have in the back of my mind that there may be something in Lithgow. It may not be the full-blown station. They are quite complex units.

Ms ABIGAIL BOYD: I understand that there are eight or something in the Hunter, 15 or something down in Sydney and three or four in the Illawarra. The Central Coast has long complained that they only have this one independent air pollution monitoring station, which is 20 kilometres away from any significant emitter of pollution. The Central Coast is a massive area with 360,000 people. Do you really think that that is a sufficient number of independent air pollution monitoring stations on the Central Coast?

Mr FOWLER: Based on my understanding of the decisions about locating air quality monitoring stations, those stations are representative of the air quality in that area. Putting in more will simply show similar air quality impacts. It is putting in a broad network of scores of air quality monitoring stations at hundreds of thousands, if not—

Ms ABIGAIL BOYD: I completely understand.

Mr FOWLER: It is representative.

Ms ABIGAIL BOYD: But when you look at the—I do not know the technical term for these—maps that show the different weather patterns in different seasons, the way that the air is blown around is actually a bit unexpected, I think, for people who do not understand the way the weather systems work. For example, the one that is smack bang in the middle of the Wyong racecourse is, as I understand it, nowhere near the usual path of pollution from those coal-fired power stations.

Mr GILLIGAN: I guess the focus for that network is really to have the monitor where people are. They are placed in the larger population centres because that is where most people are breathing their air day in, day out. They are not being placed to pick up a plume, necessarily. We have got stack emission monitoring that tells us what is coming out of a stack. This is about saying, what sort of air quality is the community breathing in day in, day out?

Ms ABIGAIL BOYD: Is there an assumption then that air pollution monitoring is not done for the purposes of working out where air pollution is and its impact on the environment, but simply if people are breathing it in?

Mr GILLIGAN: There is a number of elements and certainly we will do research to look at where it might have come from and where it might be going, but the focus of that network is really making sure that the people of New South Wales have clean air to breathe.

The CHAIR: On notice, is it possible that you can tell us the cost of an e-monitoring station and, equally, the mobility of them by tier or I guess the quality of the station?

Mr GILLIGAN: Yes.

The CHAIR: Thank you. That brings the hearing to an end. Thank you both for the organisation of your appearance and the thoroughness of your preparation. You have both taken questions on notice and you will have 21 days to return your answers to the secretariat. We appreciate your time.

(The witnesses withdrew.)

The Committee adjourned at 14:32.