

Transcript

Briefing on the release of the Williamtown Environmental Site Assessment and Human Health Risk Assessment – 11 August 2016

START

CRAIG HEAP:

Okay good morning ladies and gentlemen and welcome to RAAF Base Williamtown. Many of you - some of you I definitely know. I'm Air Commodore Craig Heap, I'm the senior ADF officer at RAAF Base Williamtown at the moment, so I'm one of the key conduits really to the community regarding the groundwater contamination issue. Today we're here so that our contractors, Defence's contractors that have conducted the environmental site assessment and the Human Health Risk Assessment can deliver that again to the media. We're looking for all forums to actually get messages to the community, and this is relatively - this is very key, a key part of it.

This morning what we have is Steve Grzeskowiak, he's the Deputy Secretary for Estate and Infrastructure Group. From Defence we have Paul McCabe, who is one of the specialists who has conducted the investigation in general, but is a specialist in the environmental site assessment, and Michael James, who is the project director for the Human Health Risk Assessment. Ladies and gents, I'll hand over to Steve.

STEVE GRZESKOWIAK:

Thank you and good morning everybody, thank you for coming. We've got about an hour set aside today to run through a presentation, but we'll go into detail about the outcome of our Human Health Risk Assessment and environmental site analysis. And we recognise that there's considerable challenge ongoing for the community in this area at the moment, and a lot of uncertainty, and so we're trying to take every opportunity and every avenue to put out information as we gather it on the development of this issue. These two reports - the environmental site assessment and the human risk assessment are a critical step along the way for us understanding this issue in detail, and they are by no means the end of the process. We have an ongoing series of work to do more analysis, and I'll talk a bit later on about next steps and some of the remediation that we'll be doing. But the main event here is to understand the detail of these studies and what they're telling us, so I'll introduce Paul McCabe and Michael Jones, who will go into that. First I think Paul, over to you to talk about the environmental site assessment.

PAUL MCCABE:

Thanks Steven. Thanks everyone. As he said, I'm Paul McCabe, I'm a technical director at the environmental consulting firm AECOM. AECOM is an independent organisation that's been engaged by Defence to undertake the environmental investigations into PFAS contamination associated with the

historical use of AFFF at RAAF Base Williamtown. I'm the project director of the works that have been undertaken for the last year or so. My colleague Michael Jones has been directing the risk assessment team. So I'm going to give you a brief overview of what has been a very extensive investigation, and then we'll take questions at the end.

So firstly I'll start with some definitions, and I apologise that the environmental site assessment is a very jargon rich process, so I'll talk about a few definitions. Firstly, what is an environmental site assessment? It's a process that includes the study of past and present activities that have taken place on a parcel of land or site, using this information on the possibility of contamination on and off the sites assessed in addition to the human and ecological impacts of that contamination. Now, importantly the process we'd follow in undertaking this is outlined in what's called the National Environment Protection Measure for the assessment of contaminated land. So everything we do has to comply with that overall framework, and the work we do is independently reviewed against the requirements of that standard.

Secondly, the Human Health Risk Assessment. It's a process where we estimate the nature and possibility of adverse health impacts in humans who may be exposed to chemicals and contaminated environmental media now or in the future. Human Health Risk Assessment includes four basic steps - firstly hazard identification, and a dose-response assessment, exposure assessment and risk characterisation, and Michael will take you through that process. Oh, and similarly, as with the environmental site assessment process, the techniques we follow are outlined in the National Environment Protection Measure.

Thirdly, some definitions you'll keep - you'll hear me use a number of times of terms, source pathway and receptor, and we use these both in the site assessment and in the risk assessment process. Firstly the source is the point or area where contamination has originated from, most often where a chemical has been used or stored, and in the case of Williamtown, that's where AFFF has been used, principally in training but also in emergency response, and in some places waste disposal. Secondly, the pathway is the physical path that a contaminant takes from source to the receptor, such as food, water or soil, and in this case it's AFFF soaking into the ground [coughs] - excuse me, can I just take a break. Thank you.

It's where AFFF soaks into the grounds, migrates in groundwater and surface water and ultimately ends up being exposed to the receptors. The community or ecosystem which is ... the receptors of the community or ecosystem which was exposed to and susceptible to a contaminant that people, wildlife, livestock or waterways.

So, an overview of where we're at at the end of last year. So in about September we reported on the nature and extent of contamination as it was known at the time. We knew that there was AFFF or PFAS contamination of soil and sediment and surface water and biota at great distances from the site as well on Base. But what we didn't know is detail about the nature and extent of the impact. We didn't know about the pathways that it was migrating through, and we didn't know about what receptors had been affected.

So the investigations we've undertaken since late last year have addressed those data gaps. So firstly, in terms of the sources, we've improved our understanding of the historical nature of the use of

PFAS at Base, and we've done that by documentary review and by interviews with people who've been involved with fire fighting and associated activities. Secondly, we've looked at the nature and extent of the impact in various media, so we've done extensive sampling of soil, sediment, surface water, groundwater. We've set up flow gauging stations to look at surface run-off, we've done extensive aquifer testing to characterise the groundwater systems under and around the site. We've built a very extensive computer model on the hydrogeological conditions to allow us to predict or understand the nature of groundwater flow and the interaction with surface water and then also to model the migration of PFAS in that aquifer system.

We've also generated substantial data on the receptors that I mentioned before, so we've undertaken water use surveys with the community, we've looked at lifestyle issues through another community survey and we've tested privately owned residential bore water, surface water and tanks, and in addition to work done by the Department of Primary Industry on fisheries testing, we've looked at fruit, vegetables and pasture and other biota sampling. One point I'll make is that unlike most of the usual contaminants we deal with, PFAS compounds are an emerging contaminant - that means that whilst we know a lot about them, the science associated with how to investigate them, their movement in the environment and their ultimate effects on humans and the environment is still a rapidly evolving field.

Now, one of the characteristics of the investigation which has been quite a challenge is the sheer scale of the area. The EPA late last year defined what they called the investigation area, that covers about 50 square kilometres and in addition to that, there's two major waterways, so Fullerton Cove and Tilligerry Creek, which we've had to investigate as an integrated unit. Now normally this sort of process would take two to three years, but because of the urgency of the situation, we've compressed and overlapped different tasks, and as a consequence we haven't completely closed out many of the uncertainties that we would typically do over a two to three year process.

However, notwithstanding that, we've collected a lot of data. So we've investigated more than 200 private residential private properties for their water, we've installed over a hundred new monitoring wells, more than a thousand groundwater samples and hundreds of other media have been tested as well. Now, in addition to that, we've combined the data we've collected over the last six or seven months with data from our previous stages of investigation, but also with information from the EPA, from Hunter Water, very extensive fisheries sampling by the New South Wales Department of Primary Industry, and also data that's been generated on Base as part of the redevelopment works. So in total we've got thousands of data points, more than 5000 pieces of information that we've integrated into our understanding of the nature and extent of contamination.

This map just gives an overview of the extent of the sampling. So the blue line here is the investigation area that's been defined by the EPA. The red line is the outline for RAAF Base Williamtown. To the south-west is Fullerton Cove, up here is Tilligerry Creek, this is the Stockton Sand Dunes area. Couple of important features in here is that what we now understand about the movement of groundwater is that it generally moves in the south to south-easterly direction through the Base, but importantly groundwater also flows up from the Stockton area towards the sort of main drainage channel through the middle here, and surface water discharges south through - sorry, south-east, south-west, through the 14 foot drain and the 10 foot drain, and up in this direction through Moors Drain,

which comes of the Base, and Tilligerry Creek. Also drainage, a very important drainage pathway off the Base is Dawsons Drain, which comes down from here, which - and it originates from a surface water body called Lake Cochran.

Now you'll hear me in a short while talk about what we call the southern area - that's this hatched area to the south of the Base, and we've found that that location has significantly different contamination characteristics to the balance of the investigation area, and I'll explain why shortly. Now this is what we call a conceptual site model, so we pooled together all of that information on the history of AFFF use, what we've learned about the nature of the hydrogeology on the site and added to that our testing of surface and groundwater. Key message here, this is a slice through the Base from Lake Cochran off towards more or less the south-east. At depth, we've got the Medowie(*) clay, which is effectively a bedrock layer under the area. Distinguishing characteristic of the region is that this is sequences of very porous, sandy soils. At distance from the site, that's the Stockton sands, and up under the Base is the Tomago Sandbeds.

We now know that the principle sources - remember I talked early about sources, pathways and receptors - the principle sources on the Base were an old fire training area and an associated waste placement. There's also a current fire train - fire station and associated training area. We also now know that through surface water run-off contaminated with PFAS that then infiltrates into open drains and water bodies on the Base, like such as Lake Cochran, we've got a secondary source of contamination. So the general model is AFFF, the historical formulations of AFFF which contain PFAS were used source areas, they leach under the action of rainwater into this very, very shallow groundwater that's through the area. It then moves down through the aquifer to the south of the site, and then up wells into the surface water drainage network. So that's the main mechanism of migration of PFAS through the landscape.

The other issue that we've clarified is that where surface water runs off the Base, it's also carrying PFAS, and [indistinct] Dawson's Drain running off to the south of the site, and we've got Moors Drain running off to the east of the site, and both of those water bodies appear to carry PFAS, and indeed all of the surface water drainage that's been tested on the site contains detectable concentrations of PFAS. So when you put all of that information together, we've mapped the areas where we've identified PFAS in groundwater. This is pretty - this is, I have to stress this is - whilst we've got a very large data set, this is spread out over a large area, so this is quite a conservative illustration of the extent of the impact, and I'll just explain the colours here.

So everywhere that's mapped as shades of blue is where we've identified PFAS in the shallow groundwater. The palest blue out here is from what we call the limited reporting. That's the lowest level that the laboratory can detect in routine analysis. So basically no detects out here, and then within the outer blue area, we've got PFAS detection. Where there's higher concentrations - which in this case exceed the screening concentration that Defence has adopted for the project, and that's based on a 2009 US EPA drinking water guideline - that's coloured this medium blue colour. And then higher concentrations still above about 10 micrograms per litre are these darker areas. Now these darker areas correspond with what the historical view indicates to us are the main sources, and of particular note here, we've Lake Cochran and the area to the south. This contains significantly higher concentrations of PFAS than the balance of the investigation area. Also importantly, we've got this area up at Salt Ash, and this was curious to us because this area's here and this is what we would expect from the

groundwater migration pathway that I mentioned, but what we've now identified is that through interaction with surface water drainage and the shallow groundwater, we've got this secondary area of PFAS impact developing. So that appears to be through groundwater migrating along, soaking into the ground at distance and creating this secondary area.

Now there's been considerable interest in a recent change to the US EPA drinking water guideline. So it's gone from 0.2 of a microgram per litre to 0.07 of a microgram per litre. So we've prepared this map to show the differences between the two standards, and the key messages here are that the outer extent of impact is unchanged. So from the limited reporting and above, the overall extent is the same. The area that exceeds the revised drinking water guideline is slightly more extensive. If you look, for example, just here versus just here, it's slightly more extensive on this map. I have to stress that no-one's making any decision on the basis of either of these guidelines. They're just simply used at the moment to screen the data for illustrative purposes.

Now - so we've talked about sources. We've identified some of the path [indistinct] and the nature and extent. Now we're looking at really the pathways. How did ... that material get from the sources out to where we're currently finding it? And this is where the groundwater model comes in, where we put all this information together from the hydrogeological characteristics of the area, and we've been supplied with a lot of information from Hunter Water Corporation, and then we look back at that historical review information, and then start loading in PFAS sources in areas that we understand from the history were - and confirmed by the nature and extent investigations that we've done. So we then insert that into the model, and then track it moving forward. And I have to stress, this is a tool we use for understanding what's going on. It's not an exact model at the moment. It's the first cut we've got on this, and it's over a very large area, but it's a useful tool for understanding and interpreting the data.

So if we start in the mid 1970s, when we believe the use of PFAS commenced. I'll just click through these quickly. So we go from the '80s, we see a very large plume developing, coming off the Base, but importantly also this area of shallow groundwater intake coming off Moors Drain, and I have to stress that this model assumes no remediation. Now that's clearly not going to be the case. But we just go through, and this is about 2000. We think this is approximately - and we go 2010 - the maximum extent of the plume, and we've modelled out to 2036 just in this illustration. So just to go back to the beginning. See, the source is coming in migration in groundwater and along the surface water drainage.

Now to approximately current conditions, and then again, without management, moving forward. So that's the status of where we're at in terms of the knowledge and understanding of the nature and extent of the sources, the pathways, and the receptors. And I'll now pass to Michael Jones to take you through the risk assessment process we've done, and I have to assess that Michael's not a risk assessor himself, but we've led the team that has undertaken this work. Thanks Michael.

MICHAEL JONES:

Thanks Paul. So first to the objectives of the Human Health Risk Assessment. The key objective was to take the data that we have available from the ESA that Paul's just been discussing and to assess the potential for risks to people. In particular we considered the risks to people off the Base. Within the EPA

investigation area, but off the Base. To do that we followed a process that's set down in the National Environment Protection Measure, and we also followed guidelines that are proscribed by enHealth in their 2012 guidelines. Really what the process of doing a risk assessment is, is we're estimating how much contaminant can get from the environment, and people's interaction with the environment, into their body. In doing that we looked at different areas of the environment, so we looked at soil, looked at groundwater, surface water, sediment, plants and animals that people might eat, and then also seafood that people might eat within the investigation area.

To consider how that material might get- and how the PFAS gets into people's body we took the information from the water use survey and from the community survey, and that informed the pathways by which P- by which the contamination entered peoples' bodies. We looked in particular at drinking groundwater, we looked at dietary intakes. So seafood, home grown plant and animal produce. From unintended swallowing during activities when you interact with the environment, so from swimming in groundwater that may have filled pools, from swimming in drains, things like that. Also from interaction with sediment soil. We also looked at potential skin for contact, or dermal contact, with impacted soil, groundwater, surface water, and sediment. And we considered breathing in a dust.

What were th- the risk assessment was a multi-pathway risk assessment, so we considered, well we considered multiple pathways. We also developed a series of exposure scenarios. We developed 21 exposure scenarios. And each one of those there were different combinations of these different pathways. Then we added the intake from each of those different pathways together to get a cumulative intake that people might receive. For each of those 21 pathways we also considered upper levels of exposure, which represented high levels of interaction with the environment and also high concentrations in those [indistinct] we considered in the environment, and then we considered typical levels of exposure, which are more representative of average exposures. In doing this we also adopted a quite- a very cautious approach in that we assumed that these intakes that we calculated for people would happen every day over the course of a lifetime, that they'd be present in the area, so over 35 years, so that the intakes we calculated happened every day for 35 years.

In addition to the data from the ESA we collected data that was particularly relevant to the Human Health Risk Assessment. That data included seafood data, and the seafood data was actually collected by the Department of Primary Industries, so the New South Wales Government. And they had an extensive suite of sampling done on fish, prawns, oysters, and crabs. We also collected samples of eggs, we collected samples of fruit and vegetables, honey and pasture grasses which the report calls Grazing [indistinct].

In some instances we didn't collect samples of particular sorts of plants or animals, and so therefore we calculated concentrations. And what we do there is we use established equations that have been developed by scientists around the world and we apply those equations, those equations allow us to calculate concentrations of PFAS in these substances from concentrations in soil and concentrations in water. We calculated PFAS concentrations for milk, beef, eggs, fruit and vegetables. And as I mentioned, the reasons we calculated PFAS concentrations were in some instances we didn't have concentrations that were measured, and in other instances there was a question about whether the data we collected was representative of circumstances prior to the New South Wales Government's advice around limiting the interaction with groundwater. So it may be that some people had chosen, based on

the New South Wales advice, not to irrigate, for example, their fruit and vegetables with PFAS-affected groundwater. So there's a question as to whether the samples we had collected were representative of the conditions prior to that occurring. So in those instances we did the calculations.

Generally speaking, the calculations are more conservative than the direct measurements and where that was the case we adopted, in the risk assessment, the calculated values as opposed to the measured values.

The next element of the risk assessment was a toxicity assessment. And the toxicity assessment is really founded on this parameter of the Tolerable Daily Intake. So the Tolerable Daily Intake is something that's developed based on current knowledge at the time and it's an estimate of the daily intake of the chemical which is considered to be safe over a lifetime. And by lifetime we mean 70 years. So that's the amount of, in this case, PFAS that can be taken into the body every day for 70 years and which is considered to be safe. At the time when we were preparing the risk assessment there was no nationally adopted TDI within Australia, and so we engaged, or Defence engaged ToxConsult, who is a - and in particular Roger Drew, who is a specialist toxicologist, to review the body of literature which available around the world and the body of guidance that other regulators around the world have, and to select an appropriate TDI for this work. And the TDI - and he recommended that we adopt the EFSA, so the European Food Safety Authority, TDI. The TDI was also reviewed and accepted by the New South Wales EPA accredited site auditor, and the EPA was consulted as part of that process.

The final element of the risk assessment is where we compare - is called Risk Characterisation, and it's where we compare those identified intakes, so the amounts of PFAS that we've calculated might get into people's body, and we compare that to the TDI. So in a circumstance where the amount that we've calculated using the multiple expos - multiple pathways and the different exposure scenarios, where that amount exceeds the TDI, we would say that there's a potential risk. And where the amount is less than the TDI, we would say that risk is low and acceptable. The term low and acceptable is a term that's defined by the National Environment Protection Measure for using in risk assessments, and it effectively means that the amount that's in the body is considered to be safe.

In terms of the findings of the risk assessment, these findings relate in particular to the area outside the Southern Area. So as Paul mentioned the Southern Area, which is that area that had the black cross-hatching, is different from the other areas in the sense that it has elevated concentrations of groundwater and soil. So the res - these recommendations relate to the area outside the Southern Area.

We found that the risks from the following pathways were low and acceptable. So from the inhalation of dust from soil irrigated with groundwater, so that's irrigated with PFAS-impacted groundwater or PFAS-impacted surface water. We found that the unintentional or incidental drinking of surface water or groundwater has a low and acceptable risk, and also from dermal contact with surface water or groundwater. Those incidental contacts or ingestion might occur where groundwater's been - where you're swimming in a pool that's been filled with groundwater, where you're swimming in a dam that's been filled with surface water, for example. We also found that the incidental ingestion and dermal contact with soil and sediment in outdoor activities was a low and acceptable risk. And a low and acceptable risk was also found for the consumption of locally sourced seafood including finfish, prawns, crabs, and oysters.

We found that a potential risk may result from the consumption of groundwater, and where we're saying here is that we calculated that the amount that might come into the body from groundwater was greater than that TDI was a significant component to exceeding the TDI. And we also found that there's a potential risk from the consumption of large quantities of eggs from backyard chickens that have drunk PFAS-impacted groundwater.

So in relation to the Southern Area, which is the area where there were the elevated concentrations of soil and groundwater, we found there were potential risks from exposure- from drinking of groundwater, from incidental or unintentional ingestion of groundwater while showering, bathing, or in pools and sprinklers, so basically interacting with groundwater in either indoor activities or outdoor activities. Eggs from backyard chickens, beef grown in the Southern Area, and also cows-cow milk produced in the Southern Area.

Another pathway that was considered was the potential for exposure to PFAS contamination, or the risks from exposure to PFAS contamination through ingestion of breast milk by infants during the first six months of their life. The report found that there was no significant increase in the risk from a- as a result of breast feeding for the first six months of life. And the way that we calculated that was we calculated the potential input- intake by someone over six years, for a child over six years, assuming they didn't breast feed and assuming they were exposed through all the other pathways we talked about, and then we calculated assuming they were exposed through the intake of breast milk during the first six months and averaged it out over six years. And there was no significant difference in the amount of PFAS that the body took in.

The other point that I would make there is that the enHealth guidance, which has been- the enHealth guidance suggests that the benefits of breast feeding far outweigh the potential risks from the intake of PFAS or from exposure to PFAS.

So the recommended precautions, these are our suggested precautions in light of the findings of risk assessment. So we'd recommend that you don't drink groundwater, particularly in areas where there are elevated concentrations of PFAS reported. We'd also suggest that you don't eat eggs from backyard chickens that have drunk PFAS-affected groundwater. That applies to the entire area. And then additional precautions that we would suggest for the Southern Area are again, not to drink groundwater, not to shower or bathe in groundwater, not to fill pools with groundwater, not to eat beef grown within the area, not to drink milk from local dairy cows, and not to eat eggs, again as for the other area, from chickens that drink PFAS-affected groundwater.

So in conclusion, the outcomes of the HHRA. So we think that the HHRA has been successful in identifying what the most significant exposure pathways are for people to PFAS contamination which is in the environment. And we think those are groundwater, eating beef, eating eggs, and drinking milk. In particular beef, eggs, and milks where the animals that produce those have been drinking PFAS-impacted groundwater, or in the case of beef and milk, where the cows have been grazed in the Southern Area. We think we've identified the key area within the investigation area that is influencing the risk to people, namely the Southern Area.

And we've also identified that there's further work needed. We think that there's further work needed to refine the extent of the Southern Area, to really understand where the boundaries of that are. And there's further work needed to improve the understanding of groundwater contamination within the broader investigation area. There's further work needed to understand the potential for PFAS exposure through the ingestion of eggs, milk, and beef. And then we'd also note that there may be further work required based on the current review of the enHealth guidance, which is due by the end of the month, depending on what that review concludes, we may need to revise the risk assessment to reflect the outcomes of that.

Thanks.

STEVE GRZESKOWIAK:

Well thank you Michael, and thank you Paul for that very informative presentation. Just a few words from me on where we're going next, and then we'll open up the questions on the presentations and on where we're going next.

I think I'd just reiterate that the studies that have been done and are continuing represent fairly significant pieces of work. They've been done in a very quick time for the nature of the studies we're doing, and that's part of the reason why we're going to roll on and carry on and do more work. I think some of the experts that I've talked to in this field tell me that this study is a significant study certainly in the Australian context, we don't think there's been a study of this scale done before, and it will be a significant study globally. So we already have interest from overseas for copies of this work which we'll make available to the scientific community. So we're going to keep on doing more analysis.

Using the results of this analysis, we're now starting to look at more remediation options. We're already treating and remediating groundwater on the Base at Williamstown. I was having a look around the treatment plant there yesterday and it's decontaminated about 170 million litres of water thus far, since it came into operation around February this year. So that's ongoing.

We're also putting in place a second water treatment plant that will commence operation towards the end of September. I had a look at that yesterday and the work to put that in place has commenced. It will be focusing on cleaning the water as it exits from Lake Cochrane into Dawsons Drain. So we'll be once that gears up, all of the water coming out of Lake Cochrane into Dawsons Drain will have been cleaned before it leaves. And when I say cleaned, I mean put through a very complex filtrations, multi-stage filtration process that removes PFAS. So that work is ongoing.

As well we're looking at a study, we're doing a study into the broader drainage network in the area and we're doing that with Port Stephens Council, an engineering study. And we'll use that to inform our options for how we can look at starting to decontaminate the drains or improving the effectiveness of those drains.

You'll be aware that the Government announced the availability of blood tests for people who are in the investigation zone area here in Williamstown and Oakey. So we're working with the Department of Health. The Department of Health are taking the lead on this. Defence will be funding

the blood tests. We think in around six weeks' time the first of those tests should be available. The intent is that they'll be made available through the local GP network, and the planning for that is ongoing at the moment. And as I reiterated, or said on Tuesday night last week, if any member of the community from the investigation zone has already self-funded a blood test, Defence will reimburse those people if they can present to us the invoice or the receipt from that funding. And they can contact Defence through the local hotline, which is 1800 011 443.

So we want to continue to engage with the local community on this issue as much as possible. We had a very successful community drop in session yesterday afternoon, about 150 people came to that session and had the opportunity to talk to not only representatives from Defence, but also representatives from the New South Wales EPA, the New South Wales Health, the New South Wales Department of Primary Industries, and a range of other officials. We'll continue to run those sorts of sessions, we'll continue to make information available to the community as we have it, and we're always ready to engage with the community on this issue.

As well, the Government made a commitment to look at the issue of property buy-backs, and that will be- the Government will be looking at that within the next couple of months. They do need to see the results of the review that the Government have put in place into the enHealth guidelines that were published in June of this year. That review has commenced. Professor Bartholomaeus has been selected by the Department of Health as an independent toxicologist to undertake that review. It's ongoing and it will be completed on 30 August. And that's one of the last pieces of information that the Government would need to then consider that issue of land buy-backs.

We're also now looking at- we're ongoing with an ecological study into the area, and that study will mature in September as well.

So with that, I'll be very pleased to take questions that you may have on the detail of the studies that we've done or the work that Defence is progressing.

QUESTION:

Okay, your studies showed that the most contaminated bore I think is 77 micrograms per litre, the most contaminated residential bore. What have you done to speak about that with the affected property owner and to remediate that part of the land?

STEVE GRZESKOWIAK:

Yes. So as you'd be aware, since September last year Defence has been providing drinking water to anybody who's been otherwise relying on bore water. As you're aware, when the New South Wales EPA declared the investigation zone they as well recommended that people shouldn't drink bore water. So we've been providing clean water and we'll continue to provide clean water. Looking at remediation options for bores is something that we're going to do. Technically I'm not sure if that's possible or not, we're asking experts to give us the advice on that. And so one option is to connect people to town water, and you're aware that the Hunter Water Corporation are progressing that work, Defence is funding the

connection of properties to town water. And if that's done and people are no longer relying on bore water, that removes that exposure pathway.

QUESTION:

Have you told them that their bore was tested at 77 micrograms per litre?

STEVE GRZESKOWIAK:

Everybody who's had their water tested should have been informed, I'll just ask for confirmation.

PAUL MCCABE:

Yes, everyone gets a personalised results letter, and there's also going to be a program of annual, at least annual retesting.

CRAIG HEAP:

Just to clarify, if there is a positive detection at any stage, then I actually visit with a representative from EIG as well. I personally go out, I've undertaken to do that, I've delivered many of these into the community. And it's always been respectful. We deliver, we talk through and walk through the findings, including that one you were talking about, and then also take action items if required from the people involved. And from that make sure- they've also got a contact number to make sure they've got easy access to water or any other issues they want to bring up. So we reaffirm and update them on the situation whenever that occurs.

QUESTION:

What testing have you done to the northwest of the site?

STEVE GRZESKOWIAK:

I'd have to ask Paul to talk about that.

PAUL MCCABE:

To the northwest there's not all- it's mostly bush out that way, and also that's predominantly up-gradient in terms of the groundwater flow. So there's not a lot out there. There is some data and I think there's also information that we've looked at from Hunter Water Corporation from their bores.

QUESTION:

And what did that show?

PAUL MCCABE:

It was clean.

QUESTION:

So there was no detects to the northwest of the site?

PAUL MCCABE:

No detects in the northwest, no.

QUESTION:

So the 29 years or – I think you said 30 years – that you looked at, if a Human Health Risk Assessment is supposed to be over 70 years why is it only looking at exposure over 30 years?

MICHAEL JONES:

My understanding- what it is, is you look at six years as a child and then you look at 29 years as an adult and that's based on NEPM(*) guidance which suggests that that's the average time period that someone will live at the same residence. That's the standard parameter that's used in risk assessments.

QUESTION:

With the breast milk, you decided not to use data on human serum levels from Fiskville even though that's a contaminated site, and chose to use Australian background levels instead. But given that this is a contaminated site wouldn't it be preferable, in a precautionary approach, to use serum levels of people that had been exposed to elevated levels of the contaminants?

MICHAEL JONES:

My understanding is what we did for the breast milk is we took into account the fact that Fiskville levels were somewhat elevated and we did adjust the background levels to take that into account. We didn't use the Fiskville data per se but we did adjust the background levels that we adopted in our assessment.

QUESTION:

Why did ToxConsult, in their kind of paper that went with the Human Health Risk Assessment, they said that there's no adverse effects, health effects associated with these chemicals. I think they made that claimed based off a study by a Korean scientist. Are you aware of any other studies that they've looked at to kind of make that assertion or is that the only one that they're looking at?

MICHAEL JONES:

That's really a question for ToxConsult. ToxConsult, as I understand it, has reviewed a very large number of papers to form its view but I can't comment on that particular thing. You'd need to ask them.

QUESTION:

So your understanding is that they've used more than just that one paper?

MICHAEL JONES:

Yes.

QUESTION:

Okay. Do you know why they didn't mention the other papers in their report?

MICHAEL JONES:

No I don't.

QUESTION:

So the plume, being at its maximum extent you're saying, why does the plume continue to move in Oakey for 100 years but why is it stopping from moving here?

MICHAEL JONES:

Different hydrogeological conditions. Oakey - the Base is sitting on what's called the Oakey Creek alluvium, which is another quite deep aquifer, but it flows off in a generally westerly direction from the Base and there's really nothing stopping the movement of that groundwater. Whereas here, as I mentioned at the beginning of the presentation, the Tomago Sandbed aquifer flows broadly south and then it meets with water coming from Stockton Sandbeds, and so that's really the thing that's stopping that plume moving any further. Effectively the PFAS migrates to the south of the Base and then up wells into the surface water drainage network, which is why we're finding PFAS in the surface water at such distances from the Base.

QUESTION:

So basically the Environmental Protection Authority, I'm sure you're aware, they're now asking people to moderate consumption of fruit and vegetables from the red zone, and they've upheld the fishing bans but from your report it's saying that there's no risk with fish, saying that there's no risk with fruit and vegetables. So do you disagree with their decision?

STEVE GRZESKOWIAK:

We have regular communication, obviously, with the EPA. We've consulted and conducted an independent expert to do a review and they've made their recommendations and you've seen those here today. The New South Wales EPA will make their decisions based on that report but they've explained to us that they want to see the results of the review into the enHealth guidelines, which is due for the end of this month, and then when they have that information they'll take the information we've given them, they'll look at whatever comes out from that review from Professor Bartholomeus(*), and then they'll move quickly to make their decision. Now obviously I can't make any commitment on behalf of the EPA about how quickly but they've assured us that they'll seek to make a decision within a month or so of receiving that enHealth study review.

QUESTION:

So does Defence believe- obviously your report's based on the enHealth guidelines as they currently stand, so if there's no change to those guidelines do you believe the fishing ban should be lifted?

STEVE GRZESKOWIAK:

It's really not for me to say whether or not the fishing ban should be lifted, I think that's a matter for New South Wales authorities. We'll also look at the outcome of the review into the enHealth guidelines and depending on what the outcome is we would re-run the analysis that's been done here, if the outcome would make any different to the analysis that's been done. So we'll look at that closely and if there is a change, and depending on what it is we'll do this analysis again.

QUESTION:

Did the report use all the seafood data from the Department of Primary Industries?

MICHAEL JONES:

It used all the seafood data that we had available at the time when we were preparing the report. There was a date, which I can't remember exactly, but there was a date at which we used all the data available to that point. The DPI may have gone on to do more testing but I don't know. We used everything they gave us to that point.

QUESTION:

So you're confident then that people are able to freely eat fish from the affected waterways in [indistinct] ...

MICHAEL JONES:

[Talks over] The outcome of our report is that the risks from eating fish are low and acceptable. It's not for me to make health guidance warnings, make guidance, provide that guidance. That's really a matter for ...

QUESTION:

[Talks over] Isn't that the point of the report though?

MICHAEL JONES:

That's a matter for the New South Wales Government to make those recommendations.

QUESTION:

But they're doing it on the basis of your report.

STEVE GRZESKOWIAK:

Yeah, we've contracted for a report to be done following national guidelines about how you do these things, as you heard. That is now done. We've provided that to the New South Wales authorities and it is for them to make a decision based on the information we've given them. And they've- their initial look at the report and the feedback I've had is that it's a comprehensive report. They have asked us to do more work and we've agreed and we're going to do more work, and ongoing monitoring as well.

QUESTION:

What more work have they asked you to do specifically?

STEVE GRZESKOWIAK:

I think it really goes around- during the presentation you heard that in some areas we used modelled data for some of the potential pathways, and we want to try and use real samples. So it's in the areas of beef samples and some other aspects. Michael would have to go into the detail but it's so we can just try and get more actual data where we've had to use modelled data.

QUESTION:

Why didn't you test any beef in [indistinct] property?

STEVE GRZESKOWIAK:

I think Michael might be able to give a fuller answer. I think there's a process you have to go through to get the necessary approvals to do those sort of samples, and by the time that process was complete the sample that would've been taken was no longer available to us.

QUESTION:

So the time that it took to do the Human Health Risk Assessment, that wasn't enough time to get the necessary approvals [indistinct] ...

STEVE GRZESKOWIAK:

[Talks over] I think's about the- can you explain?

MICHAEL JONES:

It was about when we would've got the results of the analysis. Steve's right, there was a process that we went through and when we went through that process and by the time that we would've had the results of that analysis it wouldn't have been in time. As you appreciate, there's a lot of work goes into preparing one of these documents and we need the data at the front of that so that we can inform the process. We are- as you would have seen, one of the areas of future work that Defence is committed to is filling that data gap, if you like, and taking [indistinct] samples.

QUESTION:

When did you start the process trying to get the approval to test cattle?

MICHAEL JONES:

I don't know the answer to that off the top of my head. I'd have to take that on notice.

QUESTION:

What studies have you looked at on dust and inhalation and hand-to-mouth contact?

MICHAEL JONES:

Specific studies?

QUESTION:

Yep.

MICHAEL JONES:

I don't have that information at hand either ...

QUESTION:

[Talks over] So you don't know?

MICHAEL JONES:

I personally don't know. I'm sure that the studies that have been referred to in the report, and I'm sure that I can provide that answer.

QUESTION:

But you don't know what's in the report about dust and inhalation?

MICHAEL JONES:

I know what the conclusion is that's in the report, but I don't know what the studies were that informed it right back as part of that, right at the start of the report.

QUESTION:

So you don't know if the reports looked at the 2012 study done by a US EPA scientist, that found that contact for kids breathing in dust was as significant as dietary intake?

MICHAEL JONES:

No. Like, I said, I don't know exactly what studies have been- I'd have to refer that to the risk assessment team and ask them.

QUESTION:

How can community have confidence in a report given that you are telling me you don't know what's in it?

MICHAEL JONES:

The report's been prepared; it follows the NEPM, so the National Environment Protection Measure; it's consistent with the enHealth guidelines; it's been viewed by the New South Wales EPA accredited site auditor; it's been reviewed by the EPA, and I think all those things together say that the community can have confidence in the report.

QUESTION:

How do you feel they responded to the report during this week when you explained these - how do you feel they responded to what was in it?

MICHAEL JONES:

I guess ...

CRAIG HEAP:

I might make comment on that. So I was obviously at the community information session and also at the walk-in yesterday, and do a lot of engagement - as I said, deliver every letter - lots of engagement with the community at various stages. And certainly the information session on Tuesday night was very ... it was very difficult for the community, concerns were definitely there as we presented the findings in this space. There's a lot of angst, there's a lot of concern, and there's a lot of anger. By the same token, the walk-in session yesterday, there was a lot of people that were very happy with the ability to access specialists to get lots of answers, or at least answers in ways ahead from specialists across New South Wales Health, across the EPA, going into even talking of methods of compensation for the future depending on where the Government goes with that. So there was the beauty of yesterday, the good thing about yesterday was that more than 150 did turn up. They had in their own time, at their own pace, the ability to talk to specialists, and that was positive, and that's what we've found from those walk-in sessions at various stages, including the one you went to Carrie, back- I think it was in April, this one.

QUESTION:

In terms of- there's an awful lot of technical information, and I know you tried to break down the terms and everything, but for the average person to be sitting here and absorbing that information, could they take away much at the time, or is this- I know you said there's more concessions and there's a chance [indistinct], but how is it for them to all of a sudden have to be experts and understand all this sort of information?

CRAIG HEAP:

It's got to be very difficult, I think, and that's why we were giving them as much access as we can by various means, including websites, all our specialists in the room and the information session on the Tuesday night as well. But specifically yesterday again, I think was a good opportunity to communicate to a lot of the people that in the community are affected by this tremendously, and we want to make sure that they get an opportunity to get the best information from specialists that we can provide.

QUESTION:

I know you spoke about the plume before but something we talked to residents with about is they're saying well this is going to be an issue that's going to affect us now for the rest of our lives. There kind of is no solution, and looking at that map, I know you said it was with no remediation, but you could see the spread. Now that there is filtration, I know that that may possibly stem it, but in terms of the future, is there a chance it will continue to spread? Because it's just too far torn (*) in those outer areas.

PAUL MCCABE:

Good question. One of the ways I've discussed it with people at the walk-in session is that the spread we're seeing at the moment is really the cumulative impact of probably 40 years of leaching and migration, water flow, flooding, all the rest of it. So it is certainly possible that it's going to continue to evolve, possibly spread, but at the same time, it's not going to get any- it's unlikely to get any worse, because the source was stopped at least a decade ago. There's going to be ongoing removal or

management of the source areas and some of the pathways. So it will evolve, but it's unlikely to- I feel at the moment it's unlikely to significantly spread further.

QUESTION:

And if it does spread, it would be more a case that the levels would be low?

PAUL MCCABE:

They're already very, very low at distances to the site. These are sub part per billion concentrations over extensive areas.

QUESTION:

Okay.

QUESTION:

When did Defence stop using AFFF at Williamstown, and when did it stop using [indistinct] at Oakey?

STEVE GRZESKOWIAK:

So the term AFFF is a generic term: aqueous film-forming foam. The question, I think, is when did we stop using the legacy AFFFs that contained these PFAS chemicals. So from 2004 we started limiting the use, and the main use of these foams, historically, was always for training, because thankfully, we don't have that many aircraft fires to actually put out. So we stopped its use for training from 2004 at Williamstown. It would have been similar timescales for Oakey; I don't have the exact date in my head. And it's fair to say Defence would have still used those legacy foams to put out an actual aircraft fire at that time, but we started from that time changing to a different foam.

QUESTION:

When was the last time that you used it at Williamstown?

STEVE GRZESKOWIAK:

Well, it would have- I don't think- it's a question I cannot answer exactly. It would have been 2004 in a training sense. I don't think we used it on an actual aircraft fire in those sort of timeframes. I'd have to do some research to see that.

QUESTION:

Why did the ...

CRAIG HEAP:

[Interrupts] My understanding, Carrie, I can provide a little bit on that. So my understanding was 20-2010 was the last time that that legacy foam was not used on the Base, but was on the Base, and still in a position to be used. It was predominantly in hangars, in hangar systems, and that was- we really need a way to put out an aircraft catches on fire in a hangar, then we needed to be able to put that fire out, obviously. So therefore, that- there was a difficulty in trying to rem- to get that foam out of the place and out of the system and make sure it was in that space. But 2010 is my information on the last time that that legacy AFFF was on the Base in a position to be used, and as Steve said, we ceased training with it, as far as I can understand, back in 2004.

STEVE GRZESKOWIAK:

And I think- just to be clear, that doesn't mean it was used in 2010. It means it was in [indistinct] the firefighting system that if there'd been a fire in a hangar, could have been used, but I'm not aware of any hangar fires we've had.

CRAIG HEAP:

No, we did everything we could with the new AFFF to replace it. I think it was fully replaced in 2007, 2008, around about that time in the other systems.

STEVE GRZESKOWIAK:

We used a company called CRC Care back in the mid-2000s to do an analysis of the available options to move to a different cover, and they evaluated some products and we moved to a product called Ansulite, and that transition occurred through that mid-2000s period.

QUESTION:

If it was known that it was dangerous, though, prior to then, why wasn't it immediately disposed of? Like, why was it kept until 2010. Because regardless if there was a fire, it would have entered the system.

STEVE GRZESKOWIAK:

So we put in place measures so that if the product was used, it would be collected and taken away and treated. So in a hangar situation, that can be done, because the drainage out of the hangar can be arranged so that you collect the outflow and take it away for treatment. So those engineering control measures were in place.

CRAIG HEAP:

If you had a fuel-based aircraft fire, whether it's an airliner or a fighter, on this Base and you wanted to save people – civilians or military or other personnel – then you had to use that foam, up until that replacement foam was utilised. Indeed, I believe there's actually an exemption under some of the

international regulations that allows the use of that foam through that period. I'm not sure [indistinct]. But anyway, we had no other way to save you as a civilian coming off an aircraft, if you're on fire. If the aircraft's on fire, we have to put it out - a la the 777 in Dubai a couple of weeks ago - you had to use that foam. We've now replaced that foam with another foam that's similar, and there's procedures in place, procedures as alluded to. But if we ever use that, we save the people, we do the accident investigation, big tape put around the area that's affected, and then there is a remediation process to actually collect it up properly in that space.

QUESTION:

We know about the distress in the community. What's the morale and the feeling on the Base about this and these findings?

CRAIG HEAP:

I think the Base- really for our people it's about the fact that the- we have not been connected with this very much. So we're actually out at the moment now conducting operations. Lot of young people in this Base. Most of the people that are serving here are under the age of 30, and we're still doing the same job we always did. We're dedicated to serving our country. We do put our lives on the line at times in that effort, and we're doing that right now across a whole bunch of areas, not just in this Base, but other areas. But where it's- I suppose the key piece there is that in reality, they're aware there's an issue. They're aware there's tremendous concern in the community, and we're doing everything we can to help the community, from my perspective, to engage them. This is another tranche of that, today in that space. But our people certainly are reading. They're listening. We have briefed them on the situation, and also briefed them on the path ahead as we work with the community at state and federal levels to do everything we can to remediate the issues that exist.

QUESTION:

What about former staff? Because we've had numbers of them contact us with fears and worries for their own health and health of their families.

CRAIG HEAP:

So former staff, I believe, would work through the DVA in most cases. In that space, this is people that aren't serving any more. If they contacted us we would have put them in the direction of DVA, but I can take that question on notice and get back. I'm pretty sure that's how it would work, the Department of Veterans' Affairs in that space. And certainly there's a recognition in the Department of Veterans' Affairs about the exposures we've had as military personnel to various things throughout our service. I can remember walking through things in various operational environments in the Middle East with no idea what was actually in that space [indistinct]. That is- the reality is that's actually recognised because of the situations, the dangerous situations we go into. In the gen- in this space, however, there are a lot of other things that are also very dangerous, other chemicals: there's fuel, there's oils, there's other things that you need to keep an aircraft running, so we have procedures to safely manage and work

around those health risks [indistinct] appropriate procedures and/or protective equipment when we're at risk.

QUESTION:

Is there any cap on how many blood tests you're prepared to pay for? Is it the thing where everyone's entitled to one, or if they're concerned about the results they can go and have another one? What's going to be the situation?

STEVE GRZESKOWIAK:

So the Department of Health as I said are working up the detail of that and putting in place the necessary contractual mechanisms for it to happen. We haven't got as far as understanding caps. The intent would be that certain people who live within the investigation zone or have lived within it for long periods of time, people who from the fishing industry, for example, who might have been eating a lot of fish, or Defence people who've been here for a long time but aren't here now, all those sorts of people will be the sort of people we'd seek to include in the blood testing process. We'd be taking advice or Health will be taking advice from the experts on how frequently you might do that, and I don't know the answer to that.

QUESTION:

Have you put aside a specific budget for that, or that's just going to be one of the ones that just is there with- when it's finished, it's finished?

STEVE GRZESKOWIAK:

[Talks over] No, the Government- the Government made a commitment of around \$55 million. That's not just for the blood tests. That includes the connection to Hunter Water, further studies and remediation work. That- we- it's difficult to estimate the cost, but the cost won't be a factor in limiting tests for people who live in this area.

QUESTION:

Can I just ask- you're indicating that the blood tests are a personal choice? Why isn't that something that you consider for these studies?

STEVE GRZESKOWIAK:

Yeah, it's- and one of the things that Health are doing now is- as well as organising for the blood tests to be made available free of charge and on a voluntary basis, they're working on putting in place what's called an epidemiological study, which would seek to try and understand the effect on people of these chemicals, using things like the results on blood tests and interviews with people about possible exposure pathways that they would have been exposed to.

Now, Health will be encouraging as many people as possible to take part in the epidemiological study, but it'd be voluntary participation. So people will be able to have a blood test and not be part of the study, if that's what they want. But obviously the more people that partake in that epidemiological study, the better information will come from it to better inform what health outcomes might be and management strategies in the future. The details of that study are being worked through by Health at the moment, and it would obviously kick off at around the same time as the blood sample- blood tests will be made available, so in around six weeks from now. And I think the nature of these studies is that they are long term and look at people over an extended period.

QUESTION:

What are you going to do if people follow the results of your study and find that their blood tests, that their blood levels of PFAs are going up? I think there's already some evidence to suggest that.

STEVE GRZESKOWIAK:

Yeah, it's- and that's one of the issues why longitudinal testing's useful, because people would want to know if the actions that they're taking to try and eliminate exposure pathways, and the main one we've always thought would be not drinking contaminated water as the main exposure pathway. People are going to want to be- to be interested to see if their levels are going down. The evidence I have and I've seen is that if you eliminated all exposure pathways, then over a period of something like four to seven years, that sort of order, your body has the ability to expel these chemicals. But of course, that would be different for different people, I think, just because it's different physiologies. Now there are- there are many pathways to exposure for this chemical, so we know that in Australia and in most of the developed world, most of us have got an amount of this chemical in our blood ...

QUESTION:

[Interrupts] Well, the Australian population's levels – it's been well-documented – they've dropped something like 56 per cent in 10 years. So would you be concerned to see residents' blood levels going up if they're following your precautions?

STEVE GRZESKOWIAK:

That would be- that would be a concern, because from the work we have done- and we're certainly making recommendations about what people should stop doing in it, and it's obviously not drinking bore water, and we're saying issues around eggs from chickens that have been drinking bore water, and not eating- in the southern zone there, not eating meat from that southern zone. If people did all those things and their blood levels were still going up, then clearly that would be something that would need to be looked at. But again ... this chemical is, while it's not made in America any more, it's still produced worldwide, and it's still in products, and it's not been made illegal. Certainly by Australia I think, and maybe some places in the world where that process is ongoing, so it's actually still- still being produced, still being used in some products. And we know from historical data ...

QUESTION:

[Interrupts] Do you know specifically which products are still using them?

STEVE GRZESKOWIAK:

No, I don't. But we do know from historical data that of the total production of these chemicals, about three per cent was used in firefighting foams. Around 48 per cent was used in various fabric treatments, so your stain-resistant carpets, your stain-resistant furniture, your waterproof clothing. The chemical that made them stain-resistant and waterproof was these PFAS chemicals. So that was about 48 per cent of the global usage, and then something like around 40 to 45 per cent was used in food packaging. So not anymore, of course, but that- until about a decade ago, that sort of paper packaging with a glossy interior, a glossy side of the paper, these chemicals were what gave you that glossy moisture-impermeable effect. So that's- they're some of the routes where people in the general population would have seen exposures over time. We know that the chemical is produced on a much smaller scale now, and I don't know, I couldn't tell you what sort of products it might be in.

QUESTION:

I think it was only like 25 kilos was imported into Australia in an entire year, and I don't know any local manufacturers of the chemical.

STEVE GRZESKOWIAK:

It's not- to my knowledge it's not made in Australia and hasn't been.

QUESTION:

Have you done any air monitoring, and if not, why not?

MICHAEL JONES: I'm not aware- there was no air monitoring done for- as part of these investigations. I don't know if there's air monitoring being done as part of the Base redevelopment work.

QUESTION:

Why not?

MICHAEL JONES:

Why didn't we do air monitoring as part of the investigations? Because we modelled the risk. We used calculated values to calculate the potential risk from inhalation of dust.

QUESTION:

[Talks over] And ...

STEVE GRZESKOWIAK:

Non-soluble? It's not soluble.

PAUL MCCABE:

[Talks over] Volatile.

MICHAEL JONES:

Yeah, that's- the other corner I guess is it's not volatile, and so it doesn't go to the vapour phase. So dust was the primary way in which it could have, through air could be taken into the body, and we used calculations to model that.

QUESTION:

And just finally, why- you said that your treatment, your first water treatment plant only came online in February. Why was there something like 12 months worth of dewatering happening on the Base where you knew that you were making the problem worse and you knew that you were exposing workers? Why was that allowed to happen? Who made that decision?

STEVE GRZESKOWIAK:

I'd have to go and check the detail but I don't think there was 12 months worth of dewatering. We weren't- the dewatering is in connection with the Joint Strike Fighter works and 18 months ago those works were not occurring.

QUESTION:

There's been documentary evidence that dewatering started to happen before you had a water treatment plant, so that water wasn't being treated.

STEVE GRZESKOWIAK:

So to my knowledge, the- as part of the works we do – in this case it's the works for the forthcoming Joint Strike Fighter – there's an environmental management plan goes with all of our projects. We're not allowed to commence work that digs up ground without an independently written and assessed environmental management plan. As part of that environmental management plan we already sample soils or waters from where we're going to be doing excavations, and if there are contaminants found then we must follow the Environmental Protection and Biodiversity Conservation Act requirements for containment or decontamination. Most of the areas in which we are doing the Joint Strike Fighter works are areas which are not heavily contaminated by these PFAS chemicals on the...

QUESTION:

[Talks over] But some of that dewatering is happening at known hotspots.

STEVE GRZESKOWIAK:

Yeah I'm not sure of that. I'd have to take that away, have a look in detail. But what I do know is that all of those works have been in compliance with the environmental management plan, we've done extensive sampling of both soil and water, and where we've found PFAS then we've either decontaminated or we've – in the case of some of the soils – we've made safe stockpiles so that they can be treated at a later date.

QUESTION:

What about their effect on making the plume worse, that you've been advised you're making the plume worse by dewatering?

STEVE GRZESKOWIAK:

Yeah, I've heard that. I'd be happy to take a comment from Paul on that.

PAUL MCCABE:

Yeah, it'll be- the extent of the plume is much greater than the site already, so if you were dewatering within an area and either reinjecting or discharging it's unlikely to affect the overall extent. So you might move it around a bit in the...

QUESTION:

[Talks over] So you're saying it'll stay within the Base?

PAUL MCCABE:

No, as in I'm saying its all- if you dewater from one part of the Base the area around it is already affected and has been probably for decades. So it's not a case of making it worse necessarily, it's just moving it around within an area that's already been affected.

QUESTION:

So moving it around's not going to make it worse?

PAUL MCCABE:

I'm not sure how you would define worse when it's all- the water is all affected, so if you take PFAS-affected water from one location and move it to another location where the water's already affected with PFAS it doesn't make a big difference.

QUESTION:

What about ...

STEVE GRZESKOWIAK:

[Talks over] If I can just interject, that isn't what we do. Where we dewater we take the water through a four stage cleaning process which involves activated carbon filtering, sand filters, an active resin filter, and then more carbon filtering, and at the end of that process the water is decontaminated of PFAS and then that water is put back into the ground. So about 170 million litres of water has been through that process on the Base, and while that's not a complete decontamination program it is going somewhere to taking PFAS out of the groundwater that's currently on the Base. And that ...

QUESTION:

[Talks over] What about unprotected workers that were working doing dewatering near hotspots? Why weren't they protected?

STEVE GRZESKOWIAK:

I think they were protected. What gives you the view that they weren't?

QUESTION:

They and the unions have said that they weren't.

STEVE GRZESKOWIAK:

So I think we've heard from the study here that dermal contact with contaminated water is not considered an exposure pathway. And I was out having a look at the dewatering process yesterday, and it's done by putting spears into the ground down to six metres, and sucking water out, through the decontamination process, and then clean water put back onto the ground in a different location on the Base. So the risks of any exposure to the workforce would be absolutely negligible.

QUESTION:

If dermal contact isn't an exposure pathway why would the material data safety sheets from 3M say that it is?

STEVE GRZESKOWIAK:

I haven't read those; I can't comment.

QUESTION:

How can you not have read those? Those are central to the use of the product.

STEVE GRZESKOWIAK:

We haven't been using the product for a number of years.

QUESTION:

Did Defence read those at the time that it was being used?

STEVE GRZESKOWIAK:

It's impossible for me to know the answer to that. I assume they would.

QUESTION:

But you personally haven't read them?

STEVE GRZESKOWIAK:

Not from the 3M Light Water product that we stopped using in the middle of last decade.

QUESTION:

So those weren't considered in any sort of risk assessment study?

STEVE GRZESKOWIAK:

Well the risk assessment - and Michael could talk about it - followed national guidelines, used the information available and came to the conclusion that dermal contact was not an exposure pathway of concern.

CRAIG HEAP:

[Indistinct] it's after 12, we've probably got time for one or two more questions.

QUESTION:

I just would like to look back at one of the slides if that's possible at the end. I mean, if you guys have more questions, but just before we leave I just wanted to look at the one on the southern area about the recommendations please.

QUESTION:

Did you on Tuesday give the residents at the [indistinct] an understanding of how the buyback will work in terms of what's going to happen over the next couple of months? When you said this is going to happen over the next couple of months did you give them an idea of how it's going to flow?

STEVE GRZESKOWIAK:

What I said was that the government would be considering the issue over the next couple of months. I don't know what the outcome of that process will be. We'll be involved in providing advice, of course, but I don't know what the outcome will be at this stage.

QUESTION:

So we're not up to property valuations or anything...

STEVE GRZESKOWIAK:

[Talks over] Not at this stage.

End