Board of Inquiry into the McCrae landslide

Before: The Chairperson,
Ms Renée Enbom KC

Federal Court of Australia,
305 William Street, Melbourne, Victoria

Tuesday, 24 June 2025 at 10.00am

(Day 10)

Mr M. Costello KC and Ms A. Kittikhoun appeared as Counsel Assisting.

Ms K. Evans KC with Ms E. Peppler and Mr C. McDermott appeared on behalf of the State of Victoria.

Ms Ms E. Bateman and Dr W. Phillips appeared on behalf of the Mornington Peninsula Shire Council.

Mr C. Roberts appeared on behalf of South East Water Corporation.

CHAIRPERSON: Good morning, Mr Costello.

MR COSTELLO: Good morning, Madam Chair. I was going to announce the appearance of Mr Roberts on behalf of South East Water.

CHAIRPERSON: Thank you.

MR ROBERTS: I seek leave to appear on behalf of South East Water.

CHAIRPERSON: You have that leave.

You are appearing for the shire?

MS BATEMAN: Ms Bateman, appearing for the shire.

CHAIRPERSON: Now, Mr Costello --

MR COSTELLO: I'm still here.

CHAIRPERSON: -- we have three witnesses today?

MR COSTELLO: Yes, that's right. The first is Dr Crook. Then Mr Tully and then Ms Kittikhoun will take the last witness, Mr Forster-Knight.

CHAIRPERSON: Do we need to cut or reduce the length some of the breaks to get through the witnesses?

MR COSTELLO: No. We'll be done well and truly in time. More likely than not, early.

CHAIRPERSON: Is Mr Crook --

MR COSTELLO: Yes.

CHAIRPERSON: Mr Crook, if you can just make your way to the witness box.

<JONATHAN CROOK, affirmed:

<EXAMINATION BY MR COSTELLO:

MR COSTELLO: Q. Dr Crook, feel free to pour yourself a glass of water, if you like.
A. I will, thank you very much.

Q. Could you state your full name for the record, please?
A. Sure. Jonathan Crook.

Q. And your business address?
A. 101 Wells Street in Frankston.

Q. Current occupation?
A. I am the group manager for analytics and performance within the digital and transformation group.

Q. Dr Crook, you have made a witness statement for the purpose of this board of inquiry?
A. I have.

Q. I will have a copy handed to you.
A. Thank you.

Q. Is that your witness statement?
A. It is.

Q. Are the contents of that statement true and correct?
A. Yes, they are.

Q. Can I ask you to sign the final page, please.
A. The final page. Yep.

MR COSTELLO: Thank you. Madam Chair, I tender that witness statement and the exhibits thereto.

CHAIRPERSON: Statement of Jonathan Crook and the documents referred to in the statement are exhibit CA40.

EXHIBIT #CA40 STATEMENT OF JONATHAN CROOK AND DOCUMENTS REFERRED TO IN THE STATEMENT

MR COSTELLO: Q. Mr Crook, you said you are the group manager for analytics and performance and South East Water?
A. Yes.

Q. You've got undergraduate degrees in mathematics and physics and a PhD in mathematics?
A. I do.

Q. You have applied your expertise here to analyse water flow data in the McCrae network. Is that an ordinary aspect of your job?

A. Not for calculating size of leaks. It's more - my day-to-day job's more around the analytics around customer metering as opposed to the main meters that we're talking about here, but in terms of the analysis of time series data, which effectively this is, that would be a standard aspect of my role, yes.

Q. So the analysis of time series data is an ordinary aspect of your job but you don't ordinarily do that work in circumstances of identifying volume of leaks?
A. Correct.

Q. Thank you. Just to set the scene, you have reached the conclusion that between 34 and 41 megalitres of water were lost during the 2024 burst event?
A. Yes.

Q. And you know what I'm speaking about when I say "2024 burst event"? All right.
A. (No audible response).

Q. Could you briefly outline the method you used to reach that conclusion?
A. By all means. We have a number of meters in the McCrae area one that feeds water into the zone as a whole and a number of what I would call submeters which take water out and supply it to zones which have other customers. The balance of the water in and the water out of that area is, effectively, the sum total of any water that's used in that area. That includes both customer usage and any other sort of unmetered usage, which may include leaks or bursts.

In this case, because the burst event happened over summer, it's tricky to know exactly how much of that water may have flown through to the customer properties. So to do that, I looked at previous years' history of customer usage or, sorry, previous years' usage into that area and tried to estimate how much would have been used by customers in that same time period, leaving the remainder to be what was unascribed usage and in this case we've applied that to the burst event.

Q. At paragraphs 10 and 11 of your statement - you have a copy of that there?
A. I do.

Q. At 10 and 11 of your statement, you have made some reference to meters, and private residential usage.
A. Yes.

Q. Why is working out private residential usage necessary if you have the difference between the meter and the submeters that you have referred to?
A. So within the area that the burst occurred, there are also a number of customer properties which are fed by that same balance. So effectively, when we do that balance, we end up with all of the usage that our customers in that same area are using as well as the water that's going to the burst, and so we need to understand how much of that is going to our customers so that we can subtract that from that water balance to be left with the amount of water that is going out of that burst event.

Q. You then refer in paragraph 18 of your witness statement to some additional checks that aren't directly related to the estimation of the leak size. What were those additional checks?
A. There were two primary ones. One is we have a series of tanks in that zone which take water, supply it both back into that area but also into a further part of our network. And so to - as a general sense check when you are doing sort of any mathematical analysis, you want to know that the data that you are getting is reasonably accurate or as accurate as it can be. So the check on those tanks was to make sure that the water flowing in and out of those tanks was of the right order given the size of the tanks, as well as that there wasn't, on any one day, more water that could have gone in or out of those tanks than the size of the tanks themselves, for example.

Q. I see.
A. The second check was around once we did that water balance between the water in and out of the zone, was to check to see if that total volume was of the right order you would expect for the number of customers that we have in there and potentially the occupancy rates that we may expect to have in that sort of an area.

Q. Thank you. You have prepared two reports dealing with the question, and you refer to them both at paragraph 22 of your witness statement. The first is dated 8 May, although you explain in paragraph 23 that, in fact, it was written in or around the middle of April.

A. Yes.

Q. And then the second is your final report.
A. Yes.

Q. And that was finalised on 13 May?
A. (Witness nods).

Q. And we'll come to the content of the final report soon, but before that, why two reports?
A. So the first report and the first calculation was done off a network diagram that I was supplied. It was identified during further investigation that one of the meters in that network diagram was incorrectly placed off one of our - one of our mains pipes. So when I was notified of that change, I made the modification to the calculations that were required to properly assign the flow coming off that meter.

Q. Right.
A. It is probably also worth sort of clarifying the timing of those reports. That work, as I say, was done in April. The reason that those two came very soon after each other was simply due to the fact that I sent out the wrong report first and then obviously needed to follow that up with the amended report.

Q. I see. Could we have on screen, please, SEW.0001.0001.4914, and if we could go to the second page, please. Thank you. That diagram there --
A. Yes.

Q. -- is that the infrastructure map that you were talking about? So the actuating difference between the initial report and the final report was that in the final report, you rely upon this diagram?
A. Yes.

Q. Whereas in the initial report, you relied upon a different infrastructure map; is that right?
A. Yes, and in particular, off the red hash that you see in the top right-hand corner.

Q. Yes. The meter, WB130, I believe it was, which is the second purple line, the underneath of those two in the Cinerama Crescent/Flinders Street PR zone, that one fed from the red hash down into that same area as opposed to

coming from the Parkes Street zone, which is identified here.

Q. Why did the initial map indicate that?
A. I'm not sure.

Q. But in any event, you were either told or determined that it was in error?
A. Told, yes.

Q. You were told it was in error and you were told that this was, in fact, this was the accurate map?
A. Correct.

Q. In general terms, what's the effect of that change in the network on your analysis?
A. Yes, so when it was in its original location it was - what I would say is behind another meter, so we had assumed that the flow going out of that meter was accounted for because it had already been registered by a previous meter. In this case, because it does, in fact, come off that main area that was in question, we have to take into account the flow that's going out of that meter to get a correct water balance. In terms of the effect on the calculation, it's a little bit trickier in that, when it was in its original zone, incorrectly, the water would, effectively, have ended up in the sum of the balance - it would have been an unknown usage into the area. So adding it in to that area simply means that it is a more correct and accurate estimate of the balance.

Q. I know the resolution is not great on this but perhaps you can just give some explanation of what it is we're, in fact, looking at here. You are pointing to the purple triangle?
A. Yes.

Q. Now, a purple - sorry, not a purple - a triangle like that is a water meter; is that right?
A. I believe the water meter is actually the F that sits beside that purple triangle. The F in a little --

Q. I see. Immediately before it?
A. Yes, before it, yes.

Q. Immediately before it. Then what's the purple triangle?

A. I would have to look at the diagram but --

Q. That's all right. These are not diagrams that you commonly have regard to?
A. No.

Q. You had to seek to understand this diagram for the purpose of doing this particular work?
A. Yes.

Q. All right. And did anybody assist you with that or were you --
A. Yes, so discussions with Julian Tully.

Q. Thank you, all right. There is another infrastructure map that appears to be different. Let me bring it up and you can tell me whether or not this was the map that you initially had regard to or if it's something else. It's SEW.0001.0001.4918.
A. If not identical, very similar.

Q. I see.
A. But with the same idea that that meter is now coming from the Cook Street tank zone, red hash, into that Cinerama Cres and Flinders Street PR zone.

Q. So this map is a diagrammatic explanation of the infrastructure in the area, but it appears to be done in a slightly different way. For example, here there is no sideways triangles that I was pointing out to you before.
A. Correct.

Q. But this is presenting the same data in a different visual format as the one we were looking at earlier?
A. Yes.

Q. Is this the one that you relied on or do you rely on the earlier one?
A. In terms of the final report?

Q. Yes.
A. The earlier one.

Q. The earlier one. Thank you. Now, is it right that in performing your calculations, you chose two specific periods - 60 days and 85 days for your analysis?
A. I wouldn't say I chose them; it's what I assessed from

the graph that came out of it.

Q. Your analysis of the graph suggested that those were the relevant periods that needed to be analysed?
A. Yes.

Q. And why 60 days and why 85 days? What was the - why not just one as opposed to both?
A. So to my eye, there was a fairly distinct in the - effectively, the difference of the balance being above zero from the 60-day mark, and, you know, a pronounced slope increase in that graph, which suggested there was something other than standard usage going on. When I'm doing any of this work, however, I always like to be trying to be very clear about what I've seen and what I've found and what I believe may be apparent, and to my assessment, there was a period of about 25 days prior to that which did have a smaller but potentially noticeable increase above a balance of zero, and I thought it would be remiss not to call that out and make that clear in the work I was presenting.

Q. I see. So you decided to use four years of historical data for the baseline; is that correct?
A. Yes.

Q. Why did you choose that period?
A. Yes, so obviously we have a fair history in there and finding a balance between how long, longer or shorter, is tricky. If we use too little data, we end up with being heavily influenced by a very small amount of changes, the things that have happened recently, which may overweight one-off events that happened in that time period. The further we go back, the more we're influenced by changes to customer behaviour or changes to the population, changes to the percentage of people that are actually occupying their properties.

With four years, it was an attempt to try a reasonable balance. Obviously COVID has complicated a lot of historical data that we've worked with, but by including those COVID years, I felt we were taking a conservative approach to the work we were doing - I was doing.

Q. You relied on a number of flowmeters for your volume calculations; is that correct?
A. Yes.

Q. Were there any particular flowmeters that were critical to the water balance?
A. The - probably the two that would be most critical would be the flow at - the main flowmeter entering the area, so WP208FT1, and then one them entering the tanks at the end, which would be one of the two in particular around WP222.

Q. I see. Are all of those meters calibrated regularly?
A. I'm not sure.

Q. Do you know if there is any standard that relates to calibration of flowmeters?
A. Not to calibration. I obviously know there is regulations which I think I have included in that, in my report.

Q. Yes. You make a reference in your report to NMIR49-1. Do you know whether or not that standard is complied with?
A. No, I'm not sure.

Q. All right. You just know that the standard exists?
A. Yes.

Q. It appears from your final report that one meter, which was WP222FT3, had an outage in early 2021. Do you recall that?
A. Not off the top of my head but it's quite possible.

Q. I will draw your attention to it in a moment.
A. Thank you.

Q. If you proceed on the assumption that that's contained in your final report, how was it that you would have come to be aware of the fact of that outage?
A. Can you call up which meter it was and I'm sure I can have look at my work so I can --

Q. Yes, it is WP222FT3.
A. Yes. So in terms of if there was an outage, typically, we would just see that as either periods of blank or null data available to me in the data I've provided.

Q. So because an outage is identifiable by null or blank data, you can be confident that there were no similar

outages that occurred during the burst period?
A. Yes.

Q. Are you aware of whether any additional work was done by South East Water to validate the accuracy of the meters during the late 2024 period?
A. I'm not aware of any, except for I believe there was one email that I received, which referred to one of the meters and a check that was done on that.

Q. You mention at paragraph 25 of your witness statement that one meter, WB130 --
A. Yes.

Q. -- was originally excluded and then included. Is that because of the difference in the diagram that we've talked about, or is that for a different reason?
A. It's for that reason.

Q. I see. So the original diagram that you relied upon for your earlier report didn't include WB130 and this diagram did?
A. Yes. So the diagram that we have up on the screen at the moment shows it coming off a zone for which the water is already accounted for by another meter.

Q. I see. And so that's - the square box in the purple --
A. Yes.

Q. -- the second square box in the purple area, and accepting as you said before that you are not entirely familiar with these types of diagrams, do you understand at least what the different colours indicate?
A. I believe they're just for distinct zones.

Q. For distinct zones?
A. Yes, in terms of what they call - the names on them, the Cook Street tank zone, Cinerama Crescent, Flinders Street PR zone.

Q. So all of the water that's being fed into the relevant zone comes from the Dromana reservoir?
A. Yes, I believe so.

Q. Then it passes through into each of the zones, and the large hashes, are they in every case a tank?

A. No. I believe the large hashes simply refer to groups of customer properties that are in the area.

Q. I see. And does each zone have a flowmeter?
A. Not necessarily. The ones that we have in these areas I believe do. But not - if you're looking, for example, for the - was that the question - yes, the four lines that go out to different hashes in blue, for example, there wouldn't necessarily - there wouldn't typically be meters on each of those.

Q. You adjusted for seasonal variation by averaging data from prior years; is that correct?
A. (No audible response).

Q. And when you averaged the data from the prior years, did you make any investigation into whether or not there was unseasonal weather in those prior years - that is, whether one year was particularly hot or a year was particularly cold?
A. Not in particular. I have more recently had a look at weather patterns for the Moorabbin area, and there didn't seem to be anything too anomalous there. I think the final year was the warmest. 2024, that is.

Q. 2024 was the warmest?
A. Yes.

Q. Thank you. Was it necessary to account for any COVID era behavioural shifts?
A. So it was considered, in that what typically happened during COVID is we had a lot less pronounced seasonal impacts. People tended to stay at home, they didn't move as much, there wasn't as much travel around. So what that tended to mean is we saw less seasonal impact. So considering what effect that's going to have on the calculation means that you end up with - I'll use a term - less what I would call a peaking factor, so less of a summer increase, and applying that would mean that we would end up to be fairly conservative about the leak size, so we would probably estimate that it would be larger potentially than it was, and so it was decided that it was better to leave that in as opposed to try and make any changes that may make us - make it look like the leak was smaller than we expected it to be, or not expected it to be, but calculated, I calculated to be.

Q. You have attributed the entire excess volume to a single burst event; is that correct?
A. Yes.

Q. Could it have been caused by a number of smaller issues or unmetered uses?
A. It could have been impacted by other uses, but what we see is that we know the day that the leak finishes, obviously we've got the Montage records that refer to that, and we see that that peak drops to - back to a normal level at that stage, coinciding with the leak being repaired. So it seems fairly unlikely that there would have been a number of other repairs or other, say, unmetered customer usage that would have also been repaired at exactly the same day and therefore it looks likely that all of that usage would be due to the burst event. There may have been short periods in that time where there are other events that could have contributed and added to it, but we wouldn't be able to know.

Q. Would you describe the change here as a sudden spike in flow or a gradual increase?
A. I would say a steady increase.

Q. So it being a steady increase, how is it that you distinguish it from just increased use?
A. That's - in terms of in the area?

Q. Yes.
A. That's to do that seasonal calibration so we look at what happened in previous years, tri4d to work out what the typical increase over a summer would be and then removed that from that year's usage to end up with the remainder being - well, you know, the excess above what we would expect to be typical, to be the burst event.

Q. Are you aware of other estimates of the burst volume being prepared?
A. I know of three, yes.

Q. What are the three that you are aware of?
A. So there is one done previously by South East Water; one done, I believe, by Mr Bolch, I believe it is; and another by Mr Christofi.

Q. The one that was previously done by South East Water, is that the estimate prepared by Mr Loudon?

A. Yes.

Q. And you had regard to that?
A. I'm aware of it, yeah.

Q. Did you consider it in the course of doing your report?
A. I didn't look into it until after I'd finished my calculation.

Q. I see. And after you had finished your calculation, you had regard to it to ascertain - as a sort of a cross-check?
A. Yes.

Q. Is that the idea? All right. Could I have on the screen, please, SEW.0001.0001.0036. This is a document you have seen before. I might just ask the operator to scroll through it just so you can see the graph at the end, which is the graph of the water going into the area, I believe?
A. Yep. Yes, I have.

Q. Is this the format that you saw Mr Loudon's --
A. I think originally I was just given it verbally but eventually I saw this, yes.

Q. I see, thank you. Now, did you interrogate the source of data used by Mr Loudon?
A. I believe it would have been a very similar source of data that I used. I'm not aware exactly of where his came from.

Q. Are you aware of whether he adopted a similar approach to you in performing his calculations?
A. No. I believe it would have been different to mine.

Q. What would be the central differences between your method and his method?
A. If he would have looked at - from - if we can actually just go back to that final graph, if that would be possible.

Q. The green one?
A. Yes, yes.

Q. If you could just scroll forward until we get to a green bar graph, not that one. Keep going. After the

photos. That one. Thank you. It is a bit grainy.
A. Yes. So my understanding is that's done off a minimum nightly flow calculation, so the smallest --

Q. Did you say done via an overnight flow calculation?
A. Over what they call minimum nightly flow.

Q. Minimum nightly flow, thank you.
A. Yes, which is to look at how - the smallest volume of water going through a meter at night. What they've done, effectively, is looked at what the baseline was prior to the leak, when they believe the leak was started, what they looked at when it was at its peak, and then simply done an area under the curve of a triangle over that time period. So that's to say, calculate how long it went for, the increase that came, and that gives you a volume.

Q. And you would accept, wouldn't you, that minimum nightly flow is an important indicator for this type of analysis?
A. In terms of finding a leak?

Q. Yes.
A. Yes.

Q. And did you take that into account in your work?
A. The minimum nightly flow?

Q. Yes.
A. I looked at it briefly. There are a couple of issues with it in terms of the context of what we're working here with. In particular, we're trying to do seven - I believe seven different meters, so minimum nightly flows happen at different times on different meters so it can be harder to give an accurate estimate.

Q. Just before you go on, could you just explain that? Why is it that the minimum nightly flows happen at different times on different meters?
A. So as an example, we have the volume of water that comes into the area, some of that feeds into a tank. The water coming into the area may stop flowing and therefore you would see its minimum nightly flow or - may stop flowing but be significantly reduced and you would see its minimum nightly flow at one time. At that same time, the tank may start feeding water back into the area, and so it might have a significant volume of water happening at the

same time as the other one has its minimum. There's also other aspects that make it a little bit more complicated. We have pressures that change at different times of the day. So even if you have a minimum nightly flow at one time, that same flow rate may not be appropriate at other times of the day. So you might get more or less water coming out from a burst depending on the pressure in the area.

Q. Are there any other reasons that you would discount it?
A. Off the top of my head, no, I suspect there may have been, but --

Q. I'll take you to paragraph 20 of your witness statement which might assist you in a moment, but before I do, is the utility and accuracy of minimum nightly flow more likely to be higher where you're looking at it in respect of a smaller area, a smaller number of zones?
A. It depends a lot on the volume of water going through the meter overnight in comparison to the size of that zone itself. So, for example, to try and sort of elaborate on that, if - meters tend to run better, from my understanding, when there is a reasonable amount of flow going through them. As you start dropping into the very low ones, potentially, the accuracy isn't as great, and therefore, if you have a very large zone for - and a very large meter that's sized for it and a small amount of water going through it, there are levels of accuracy that may not be as good.

Q. I see. Just to make sure that you have been given the opportunity to make the points that you want to make, I will just show you paragraph 20 of your witness statement, which is SEW.0001.0001.4919. Go to page 4, paragraph 20. I think this is the paragraph where you deal directly with Mr Loudon.
A. Yes.

Q. Could you just read that paragraph to yourself, and see if there's any further evidence that you wish to give, in light of the matters there --
A. Sorry. I know we were talking about minimum nightly flow and we were focusing on that. If we're talking about the calculation in particular and the reasons for the differences --

Q. Yes.
A. -- there are probably two or three that are worth calling out. It may be worth showing the graph again, but the three of them that I suppose I would call out: firstly, that calculation didn't have any seasonal adjustment so it assumes that all of the water going into that area above and beyond the baseline is all attributable to the leak event as opposed to an increase that we would see in summer. The second is - and again, I've had a look at that graph, had a conversation with people in question, and it looks like the bottom level they've chosen to start their calculation from is probably lower than is accurate. And then the third point is they assume a perfectly linear growth, in that it grows the same amount each day, and we could probably see in that previous graph that it doesn't grow like that, it tends to grow smaller at the start and then increase more rapidly at the end. So all of those three things will tend to overestimate the size of the leak.

Q. I see. And as it happened, on your analysis - if your analysis is correct, then those three factors caused it to be overestimated by 40 per cent or so?
A. I believe so, yes.

Q. So when did you first receive Mr Loudon's full workings?
A. I don't know the date off the top of my head.

Q. Was it after you had finished your first report?
A. No, I'm not certain. I can come back with the information if I can, but --

Q. Do you recall if you had regard to Mr Loudon's workings before you finalised your second report?
A. I suspect I would have had the volume. I'm not sure if I would have had the email.

Q. And you had the volume because somebody had told you the headline number. And who was that?
A. Most likely it would have been Julian but I'm not a hundred per cent certain.

Q. Julian is Mr Tully?
A. Yes.

Q. And do you recall the context in which he told you the

number?
A. No.

Q. Who was it that asked you to prepare your reports?
A. Julian Tully. Mr Tully.

Q. What was the explanation given to you by Mr Tully?
A. There was an explanation that we had identified a burst event in the area and that we were interested in trying to find the most accurate calculation we could have for the size of that leak.

Q. When Mr Tully told you the headline number that Mr Loudon had arrived at, do you recall if that caused you to go back and reconsider your own number or did you have an immediate reaction to Mr Loudon's number?
A. To be honest, I would suspect that given I have some idea how they typically do these calculations that I would have expected that his number - to have been larger. It was not a surprise.

Q. So Mr Loudon's estimate was the first of the three you mentioned.
A. Yes.

Q. The second was Mr Bolch's?
A. Yes.

Q. When did you become aware of Mr Bolch's estimate?
A. Only quite recently, sort of while - probably while preparing the witness statement. Again, I knew he had made an estimate but in terms of the volume, it was only very recently.

Q. What have you been shown about Mr Bolch's estimate?
A. So I read through the comments from the court.

Q. I see. You read through his evidence, do you mean?
A. Yes, in the transcript of --

Q. Him in the witness box?
A. Yes.

Q. I see. And Mr Bolch, I think I'm right to recall, accepted in the witness box that he wasn't an expert on this but he had made a good faith calculation?
A. Yes.

Q. Of what it might be. What are your reflections on Mr Bolch's estimate?
A. Look, I can't speak to the engineering, it's not something that I can comment on. Probably the mathematical side of things, what I was aware of with his calculation is he's assumed a leak which is the same size for the entire length of the 60 days that he calculated it over and that was obviously something that we didn't see in the data that we had available to us, which understandably, he would not have had available.

Q. Did you reconsider your work in the light of Mr Bolch's or were you able to discount Mr Bolch's estimate?
A. I was fairly comfortable with the differences.

Q. Part of Mr Bolch's estimate was based on an assessment of the pressure in the pipe. Do you recall that?
A. I believe I saw that written, yes.

Q. Is that something that you had regard to in coming to your estimate?
A. No. We're dealing with the water that actually comes through the pipe and so we sort of have an understanding of the actual water itself as opposed to the pressure that's forcing it through.

Q. So you're not seeking to ascertain whether or not the pressure has an effect in that it causes - higher pressure causes more water to leak, you're trying to ascertain the actual gap in water as identified by flowmeters and domestic meters?
A. Yes. Well, we didn't use the domestic meters but the domestic usage.

Q. Yes, thank you, you are quite right. On the question of domestic meters, did you consider having regard to domestic meters in the area?
A. We looked into them and really at a very high level of how much water had gone through them. But in terms of this calculation, because it's only a 60-day time period and we're only reading the analogue meters in the area over a 90-day time period, it means that we would have to make, say, guesswork or assumptions into how much of each of those customers' water usage was during the time of the burst event, and they were assumptions or guesses which

I felt were too approximate to be included.

Q. I see. You mentioned Mr Loudon's report, Mr Bolch's report - sorry, Mr Bolch's estimate, and Mr Christofi's. Do you consider Mr Christofi's and Mr Bolch's to be the same or do you consider them to be different?
A. Different from what I have read.

Q. And you had regard to Mr Christofi?
A. Yeah. So, sorry, I read through his - I think it was his evidence that was presented, and the main reason I try and consider them as distinct is because from what I could read into that work, Mr Christofi assumed the leak did grow over a period of time, so unlike the consistent number that Mr Bolch provided, he assumed it grew every 15 days. Probably again, if I look at the mathematical side of what he did, he assumed, I think, a 150mm leak by the last 15 days - sorry, 150mm hole in the last 15 days. And the volume of water that was going through that per day was in the order of about 4 megalitres per day. And obviously from the data that we have, I think the entire amount of water that we supply into the area in that time was about 2.5 megalitres per day.

Q. Yes. It seemed to me that Mr Christofi's analysis had a final flow rate of 4 megalitres a day and that was higher than the highest peaks in the graph?
A. Yes.

Q. And that's because that's more than the total volume of water passing through?
A. Yes.

Q. Thank you. So that's the range of estimates. Has your work been peer reviewed?
A. No, it's currently undergoing a review from the University of Technology in Sydney.

Q. And who is it that is peer reviewing it?
A. Their Institute for Sustainable Futures, so I believe that the lead of that is Professor Pierre "Mukheibi" - Mukheibir, sorry

Q. When was that peer review sought?
A. I think we kicked off about three to four weeks ago.

Q. I see. And when is the peer review expected to be

finalised?
A. We've had a preliminary report and I'd say we would have a final report in the next week or so.

Q. You have received a preliminary report?
A. Yes.

Q. And what is the headline of the preliminary report?
A. Effectively, the methodology - because we've asked them to review the methodology and not the data itself - the methodology is sound. They've given a couple of suggestions for other methodologies that could be used. They did not believe that would make a significant difference to the size of the calculation.

Q. All right. Were you involved in selecting the peer reviewer?
A. (No audible response).

Q. And on what basis did you make that selection?
A. So we've had a history of working with UTS. They have a very long history of working with water, both, you know, leak calculations, not necessarily as I have said, like this one, but in terms of volumetric flow calculations and other time series to do with water usage.

Q. I see. Can we talk a bit about uncertainty.
A. (Witness nods).

Q. I think I'm right to say that you offer two ranges of uncertainty?
A. For each of the two lengths of time, yes.

Q. One based on observed variation and one based on meter specification?
A. Yes.

Q. Before we get to an analysis of the two, perhaps it might be useful if you just explain the two of them. So commencing with the uncertainty based on observed variation?
A. Yeah. So that was simply to try and calculation the typical - what I call standard deviation variation in the volume of water that goes through it. So on any days, how much does that water usage vary. And it's probably worth noting that that includes difference in behaviour, how customers use water, as well as any other uncertainties

that are involved there. So it's always going to be - should always be the largest uncertainty you could see in it, because it includes uncertainty that's real not just uncertainty that's created by the calculation.

Q. And the uncertainty based on meter specification?
A. Yeah, so that's to run with the fact that we used a 1 per cent uncertainty in the meters to assume that or apply that to the volume of water that flowed through each of those meters, and also to assume worst case scenario, effectively.

Q. The larger uncertainty is in the range of 9 to 13 megalitres. Do you recall that?
A. Correct, yes.

Q. And that incorporates human and environmental factors?
A. Yes.

Q. The smaller range is between 2 and 3 megalitres?
A. Yes.

Q. That's the one that relates only to meter accuracy?
A. Yes.

Q. You didn't attempt to quantify the probability of your estimate being outside the 34 to 41 megalitre range?
A. No.

Q. Why was that?
A. I suppose within the larger range, again, the larger calculation, that was to give sort of a full end spectrum of how large we thought the uncertainty could be. In terms of trying to find a methodology for the probability it was outside that range, I'm not sure where I'd begin.

Q. You are not sure what?
A. Where I'd begin to look to work out what the probability of it being outside that range was.

Q. If you had to describe your estimate as "conservative", "moderate" or "generous", how would you describe it?
A. The assumptions that I have tried to make - I've always tried to be conservative, and when I say "conservative", I mean to not make any assumptions that would force the leak to be smaller than its actual result.

Q. That was your intention?
A. Was to try and make sure that, yes, wherever I could, to not discount things that would - to - yes. I'm trying not to get myself into double negatives here, but, effectively, I didn't want to try to make it look like the leak was any smaller than it could have been.

Q. I just want to ask you some questions about mathematical reliability and statistical rigour. And if any of the questions don't have a relationship to the work you've done you need only say so. You constructed a typical year using an average of prior years; is that correct?
A. (No audible response).

Q. Did you consider whether a median or a trimmed median might offer a more robust alternative?
A. I don't really think that applies in this situation, in that we're talking four data points.

Q. What about - you don't think that because of the limited data points, there's a sufficient prospect of outliers?
A. The effect it's going to have on that calculation is going to be minimal.

Q. Too small to bother. I understand, thank you. Did you check for variants or standard deviation across the years that you looked to?
A. So we looked at the yearly variation in terms of visual representation. But again, to do a standard deviation on, if you're looking for each day on four data points is - we can't even be sure it is a normal distribution, which we require to do a standard deviation. We'd looked at the standard deviation across the entire dataset, which is what you see in that uncertainty calculation.

Q. I think I'm right to say that you refer to a 95 per cent confidence interval?
A. Yes. Sorry. Yeah.

Q. And just so I understand it, did you assume a specific distribution?
A. A normal distribution --

Q. Normal distribution?
A. -- over the entire length of the dataset.

Q. The specific distribution was normal, a normal distribution?
A. Yes.

Q. Thank you. Sometimes in the context of uncertainty scales there's consideration as to whether or not error bounds are additive or multiplicative?
A. Yes.

Q. Is that something that's relevant to your analysis here?
A. No, there's only one type of error that we're including in these, so there's not --

Q. Which error is that?
A. So either - either the - we're doing basically a calculation of a daily error. So in either case we've either had a single --

Q. I see.
A. -- size of the uncertainty due to the meters or a single total uncertainty due to the standard deviation across the entire dataset.

Q. Thank you. And once you had come to your conclusion, did you then conduct any further analysis to test the robustness of your conclusions?
A. I'm just trying to think if there would be anything that would be relevant. As part of it - as part of the analysis we did, obviously, we did the checks at the time, so the ones that we've already spoken about. But once they were done, there probably wasn't anything that would be appropriate to follow afterwards.

Q. And nothing's been identified by the peer review in that regard?
A. No. Probably the only - the work was then shared amongst South East Water and at least reviewed as SME expertise, but that's, you know - they're unlikely to pull anything out mathematically from it but they are likely to find anything that would seem at cross-purposes with what you'd expect.

Q. When was it shared?

A. In the interim between the - the final report being finalised and my witness statement being written.

Q. I see. And have you received any feedback from those with whom it was shared?
A. So, yes, I mean, we sat together and went through it.

Q. I see.
A. Yes.

Q. And you sat together and talked - they talked through the report and gave you their comments. And do you recall if you made any changes as a result of that feedback?
A. No.

Q. No changes were made?
A. Sorry, probably the only - no, no changes to the calculation, no.

Q. I'm not sure that I entirely understand the extent to which there were multiple meter readings done in the course of your work. Do you recall how many meters there were that you had to have regard to?
A. What meters are we talking about?

Q. Well, I think start with flowmeters.
A. Again, do you mean customer flowmeters or the flowmeters of the area?

Q. Well, did you have regard to both?
A. So in terms of their applicability, yes.

Q. So you obtained the meter readings from both of those types of flowmeters?
A. So we did from the main meters - the main and the submeters, which are the meters that take water in and out of the area. We looked at the number of readings we had and when the readings were made of customer meters, without using the actual volumes that went through them in the calculation.

Q. Yes. I think the mistake in my question is that I was substituting - I was saying "flowmeter" when I meant "main meter"?
A. Okay.

Q. So you had regard to the main meters and the

submeters?
A. (No audible response).

Q. All right. And we had better make sure that it is clear what the role of each of these meters are. Could you describe the main meter and the submeter?
A. I'm not a network expert in regard to use. The use of the word "main" and "submeters" may be something that I use but, effectively, they are measuring the same way. They're both measuring water that goes through a pipe in South East Water's network.

Q. Would all the water that passes through a submeter necessarily have already passed through a main meter?
A. In the context that I'm using the terminology, yes.

Q. Yes. I understand. And that means there is necessarily then some relationship between the meter readings of the submeters and the meter reading of the main meters?
A. They're made independently of each other. You would expect, obviously, that you would have no more water going through a submeter than has gone through the main meter to go into it, with a little bit of variation there because there are tanks which do store water which can impact it, but, you know, you should have a net balance of water that goes through the area.

Q. So then when you were seeking meter readings relevant to your work, how do you ascertain - before we come to the actual data and whether or not there is any propagation of uncertainty, how did you actually get that data?
A. I was provided it by a colleague.

Q. You would have asked a colleague for it, and do you recall who you asked?
A. Yes, I think it's in as the one of the documents that I provide. I think the person is Vui Shin Liew.

Q. That's not someone you deal with on a regular basis?
A. In terms that we both work with data, but yes, we speak to them, but in relation to something like this, no.

Q. When you were asked to do this task, was it immediately - was it sufficiently apparent to you what data you needed or did you have a conversation with your colleagues in data analytics to ascertain what it was that

they could provide you with?
A. I would have - yeah, I would have needed to have a conversation. I wouldn't have known what meters were in the area to request the data from.

Q. I see. In any event, were you provided with the data and you understood the data to relate to what you have described as "main meters" and "submeters"?
A. (No audible response).

Q. You didn't seek data in respect of the domestic meters at individual properties?
A. No. I mean, I can get that data for myself.

Q. I see.
A. Yes.

Q. Did you have regard to that data or you --
A. So in particular, in terms of how many meters we had in there, about when they were read, yes, that was considered. Yes.

Q. Volume of usage?
A. I had a look at it at one point, yes.

Q. But am I correct to understand that you didn't think volume of usage at domestic meters, even if summed, was a data point of particular utility to your work?
A. No, so the reason for that is, a lot of the meters were read - again, they're not all measured, read at the same time, because we have people that go out and they read them over time. A lot of them were read on and around the end of November. And so it means that while they're 90 days of usage, only 30 days of that usage from the first period, and 30 days of usage from the second read, would actually have been applied to the same time period that the burst was occurring. And so we would have had to make some guess or assumption on how much of each of those customer meter reads and the volume of water they used was actually attributable to that time period. And so I felt there were too many assumptions I'd have to make to include that and it was more appropriate to do the calculation the way I did.

Q. I see. And your analysis didn't include, for example, any cross-checking of operational logs or material of that type; you were just concerned with the raw data in terms of

flow rates, is that fair?
A. Yes, except for obviously knowing the day that the leak finished.

Q. You knew the date the - well, when you say "the leak finished", you knew the date the repair was made?
A. Yes.

Q. And that date was 31 December 2024?
A. (Witness nods).

Q. And the data that you saw correlated with the fact that a repair had been made on that day?
A. Yes.

Q. You saw a change in the --
A. Yes, so I didn't actually know the date when I did the calculation.

Q. I see.
A. I correlated it afterwards, and it was obviously very obvious from the data that that was the day it should have happened on and that was confirmed by the logs.

Q. All right. So then just to understand the final conclusions that you've come to and the degree of certainty that you consider they offer, you have given a range-based estimate?
A. Yes.

Q. And you accept that that estimate - that range is subject to several uncertainties, and which are the most prominent or significant uncertainties that you would point to?
A. Probably the biggest uncertainty would be the - you know, understanding the data itself, so any calculation relies on the data that comes into it. So there is that one. The second would be we have assumed that the usage from the previous four years can be assumed to be representative of what happened in the year in question. And I'd say that would probably be the biggest assumption we've needed to make.

Q. The first you pointed to was understanding the data. Is there also an uncertainty in your mind as to the accuracy of the data or are you content that the data in respect of flowmeters is likely to be highly accurate?

A. I think there's always a risk that there is going to be uncertainty in that data. I think what gave me - gives me comfort is that there's very likely that that's going to be both a positive and a negative difference, and so there's not a bias to it, which is one of the things that we're most concerned about when doing calculations of this sort of length of time and this type. So it's unlikely to have biased the result one way or the other.

Q. One way or the other?
A. Yes.

Q. Based on the data that you've seen and analysed, you're confident that it is probable that all - well, that the overwhelming amount of excess water loss can be attributed to a single burst event?
A. (No audible response).

Q. And based on the feedback that you have received from the peer reviewer, do you anticipate making changes, even if minor changes, to the report that you and I have been describing as your final report?
A. So they've had one suggestion that I will take on board, and we will look at. I'm not sure if it's going to be possible to do, and that is around looking to see if we have other representative areas that could be used to indicate, as we've been talking about, whether or not that seasonal adjustment is appropriate for that year. The possibility of finding similar type catchments, I'm not sure about.

Q. That leads me to something that I was going to ask you about, which is: this is a fairly small area that you have looked at within the broader South East Water network --
A. Yes.

Q. -- and have you - you haven't yet given consideration to whether there are any analogues with - throughout the network?
A. No.

Q. For example, whether there might be some distribution zones in Flinders that are sufficiently similar to those in McCrae?
A. Yes, no, I haven't done that.

Q. And that's one of the suggestions that the peer review

has made in their draft to you?
A. Yes.

Q. How will you go about ascertaining whether or not there are other - is it distribution zone you'd look to?
A. That's the terminology I'm using, whether or not it's the correct one, but yes --

Q. You are not the first witness --
A. -- similar zones. --

Q. You're not the first person sitting there to use that, so you can be comforted by that.
A. Yes.

Q. How will you go about the task of seeing if there are relevantly analogous distribution zones somewhere else in your network?
A. A number of conversations with people in the business.

Q. I see. And is there an obvious person or group that you would go to to explore that?
A. Across a fair few different areas, I suspect.

MR COSTELLO: I see. Dr Crook, I don't have any further questions for you, others may.

CHAIRPERSON: Q. Mr Crook, you explain that you used four years of usage data to try to estimate customer usage during the burst period, and that four years used included the COVID years, when people obviously spent a significant amount of time at home. Did you perform the calculation using or excluding the COVID years?
A. I didn't. My worry with something like this is if I do it using multiple different methods, it then comes down to a choice of which one I select as being correct, and that can lead to comments on preferential selection of what we did. So my feeling was that this was a conservative approach to doing so and I decided to go with that.

Q. Can you explain why it's a conservative approach, given that, during the COVID years, people spent a significant amount of time at home, compared to the time that people would likely have spent at home during the period of the burst?
A. Yeah. So the key factor is less the volume of water

they're using but more for how much it increases over summer, and so if there are people who are more consistently at home, as tended to happen during COVID - people would go out to their properties and just stay there the entire time during the year - it meant that you didn't get a lot of seasonal change. So that big increase towards summer that people do when they're going on holiday and taking breaks, and so it was a lot more flat-lined, and that means that that's what we then assumed also happened in this year in question, that that peaking factor is smaller, there wasn't as big an increase in summer, people weren't going on holiday in 2024, because that's what sort of the COVID years told us, which meant we subtracted less of a volume from that increase in volume that we saw at the time.

Q. Did you perform a calculation - you didn't perform a calculation using a number of years excluding COVID. Did you perform a calculation using a greater number of years?
A. No. I guess for a similar reason. I'm always worried that whether or not what happened prior to COVID is still relevant just because of the change in people's behaviour.

Q. If you were to perform the calculation using a different number of years --
A. Yes.

Q. -- would that take you very long to do?
A. It would take a little while but nothing exorbitant.

Q. How long is a little while?
A. A few weeks, potentially.

Q. A few weeks?
A. Yes. I mean, I think.

Q. How many hours of work would it take to --
A. No, that's true. It should probably take 20, 30 hours of work, depending on getting access to the data, which would be the biggest thing for the previous one, assuming that we have it and it's accessible. The actual process is set up as a document that I think has come into the court and, hopefully, that should be able to run through reasonably quickly. It would just be whether or not there needs to be any checks to make sure there's accurate data in there. I think three data points need to be removed from the first set, and just those checks to be done.

Q. Were you only given data for the four years?
A. I was originally given data for the first two years and I went back and collected data for the extra three years beyond that.

Q. You were given the data for the first two years and you didn't perform the calculation on that - on those two years?
A. Not to the full extent, no. I did an initial investigation and decided I wanted more data than that to continue.

CHAIRPERSON: Are there any other questions?

MR ROBERTS: Madam Chair, I have two issues that I'd like to take Dr Crook to if I could, it is essentially to clarify some issues with Mr Lloyd's evidence yesterday.

<EXAMINATION BY MR ROBERTS:

MR ROBERTS: Q. Dr Crook, I'm not sure whether you had a chance to see Mr Lloyd give evidence yesterday?
A. No.

Q. Mr Lloyd was taken at one point to the various zones, and I think they've ben the "distribution zones" and "zones". And there was a bit of confusion about whether the burst had occurred in the same zone as the Waller Place distribution zone. Can you explain those two zones and how they are separated?
A. Yes. So the Waller Place zone is one of the subzones that we talked about as having a meter that feeds water into it out of that main zone. So we have the main meter coming into it, a number of submeters which take water out to other customer properties. The Waller Place zone is one of those submeter zones. The leak occurred in the main area.

Q. So for the clarity of the board, the burst did not occur in the Waller Place distribution zone?
A. No.

Q. The second issue I wanted to take you to, Mr Lloyd yesterday was taken to an email from Greta Pullen. I'm not sure if we can bring that up. It's SEW.0001.0001.4857 - sorry, SEW.0001.0001.0032. Are you familiar with that

email, Dr Crook?
A. I am.

Q. In that email, Ms Pullen attempts to calculate water loss as a percentage of total system output?
A. M'hmm.

Q. Is that correct?
A. Yes. Sorry - in this case, out of - a combination of minimum nightly flow and total system output, yes.

Q. At around about the same time as that email was sent, you had sent another email yourself, in which you'd commented on the applicability of percentages or the appropriateness to use percentages?
A. Yes.

Q. Can I ask you to bring up the first one, SEW.0001.0001.4857. Dr Crook, this is not an exhibit to your statement, but are you familiar with that email?
A. I am, yes.

Q. And in that email, would you like to just explain it to the board --
A. Yes.

Q. -- the comments you have made about the use of percentages?
A. Yes, so this was information in relation to the calculation I'd made at the time. It was trying to verify the numbers around minimum nightly flow to try and indicate whether or not there had been a potential leak event in that Waller Place zone. The comments I made was that while we couldn't find anything which disagreed with those minimum nightly flow volumes - people were interested in percentages - the comments I made were simply that for such a small zone, percentages tend to be very prone to minor changes, therefore, they don't always lead to accurate conclusions to, you know, non-revenue water percentages, they were talking at the time.

Q. And you're not sure whether Ms Pullen took that into account in relation to her email given they were sent in such close proximity to each other?
A. No.

MR ROBERTS: I would seek to tender that email, Madam

Chair, which is SEW.0001.0001.4857.

CHAIRPERSON: I take it there is no objection? The email from Jonathan Crook to Helen Morris and others, document ID SEW.0001.0001.4857, will be exhibit.

EXHIBIT #SEW3 EMAIL FROM JONATHAN CROOK TO HELEN MORRIS AND OTHERS

MR ROBERTS: Thank you, Madam Chair. No further questions.

MS BATEMAN: I seek leave to ask a few questions.

<EXAMINATION BY MS BATEMAN:

MS BATEMAN: Q. Mr Crook, I'm counsel for the shire, I just have a short number of questions for you. You gave evidence that you didn't have regard to the operational logs when doing your analysis and your analysis relies purely on the data?
A. Yes.

Q. If there was evidence that the leak may have commenced some time before the dates or the ranges of time that you've assessed, would that indicate to you that your seasonal adjustment may need revisiting?
A. If there was such evidence. The tricky question is the seasonal adjustment is based on the previous years' data, so to find out - to find another one would be to, effectively, try and pick it, to choose - sorry, select it to feed in to the results that are given, as in the logs that are there. So it's not something that I would consider appropriate to do. If there were evidence that the leak had been going on for longer, there would - yes, it would lead to a revisit of the calculations that were made.

Q. Are you aware that South East Water produced a report from SMEC?
A. I'm aware of a report. I don't know any of the content.

MS BATEMAN: I have no further questions.

MR COSTELLO: No re-examination, thank you.

CHAIRPERSON: Mr Crook, your evidence is now complete. Thank you for coming along, and you are excused.

<THE WITNESS WITHDREW

MR COSTELLO: Madam Chair, the next witness is Mr Tully, who I now call.

CHAIRPERSON: Mr Tully, if you could just make your way to the witness box.

<JULIAN TULLY, affirmed:

<EXAMINATION BY MR COSTELLO:

MR COSTELLO: Q. Pour yourself a glass of water if you would like to.
A. Thank you.

Q. Mr Tully, could you state your full name and address, please?
A. Julian Tully, and my workplace is 101 Wells Street, Frankston.

Q. Current occupation?
A. My title is technical director of civil and environmental engineering.

Q. You have made a witness statement for the purpose of this board of inquiry?
A. Yes.

Q. I'll have a copy handed to you. The version that's been handed to you, Mr Tully, does that have some words lined through in paragraph 37 and some words added?
A. Yes. I was just checking that. That's the correct version.

Q. And the same at paragraph 42?
A. Yes. It does.

Q. All right. Those changes are also reflected in the version that we have in the system. With those changes, is your witness statement true and correct?
A. Yes, it is.

Q. Could I ask you to sign the final page, please.

MR COSTELLO: Madam Chair, I tender that witness statement and its exhibits.

CHAIRPERSON: The statement of Julian Tully is exhibit CA41 (inaudible).

EXHIBIT #CA41 STATEMENT OF JULIAN TULLY

MR COSTELLO: Q. Mr Tully, you are the director of civil and environmental and engineering?
A. That's correct.

Q. What does that role entail?
A. It's quite a diverse role and it continues to evolve. It's relatively new to the organisation. But it's a wide range of things from supporting the recruitment of graduates, through to writing or reviewing technical standards, occasionally some troubleshooting on projects, a wide variety activities.

Q. You've been in that role since November 2022?
A. Yes.

Q. When did you first commence with South East Water?
A. May 2021.

Q. And that was when you were the design manager?
A. That's correct.

Q. Aside from your time at South East Water, you have other experience in the water industry?
A. Yes. Yes. I've worked in the Victorian industry my whole career.

Q. Could you just outline in general terms your experience over those 30 years?
A. Yes. I've worked - initially I was employed by a small construction contractor, after completing university, then I've worked in consulting for the majority of my time, and I've had a previous stint at another Victorian water authority.

Q. You've got an undergraduate degree in civil engineering?
A. That's correct.

Q. And a graduate diploma in environmental engineering?
A. That's correct.

Q. Does your day-to-day work include, on occasion, dealing with burst water mains?
A. Not usually, no.

Q. How was it that you came to be involved in this matter, and to be answering the questions that the board of inquiry put to South East Water?
A. Yes, so I returned from leave in mid-January. I think probably on my first day back a colleague rang me and said had I heard of the incident that was going on, and then my involvement gradually increased and then I was asked to take on a role to lead the technical aspects of South East Water's response to the events that have occurred.

Q. Just to be clear, was that role that you were asked to take on to lead South East Water's response to the landslides that occurred in January 2025 or to lead the response in respect of this board of inquiry?
A. To the events of the landslide, 2025.

Q. So concentrating, then, on those events, what work have you done in connection with the 2025 landslides?
A. It might be difficult to put into a few short words, but I've instigated a range of assessments and activities - so, for example, the previous witness, Jonathan Crook, I asked him to investigate and whether he would be able to produce our best estimate of the burst volume. I've been active in communicating with our consultant, SMEC. They're some of the activities. I've been involved in meetings with the shire, so a fairly wide range of activities.

Q. I see. Do you have experience yourself in estimating flow rates?
A. I'm not quite sure how to answer the question. In terms of burst volumes, I'm familiar with looking at data, of flowmeter data. It's not a day-to-day activity. But yes, I've done that from time to time.

Q. You have estimated flow rates or calculated likely flow rates from time to time in the course of your work?
A. Yes.

Q. I see. And is that your work at South East Water or is that work before South East Water or both?

A. Oh, I'd have to think through past experiences, but mostly at South East Water. I'm not saying I've done a lot of burst volume analysis. I'm just saying I'm used to looking at data, flow data.

Q. I see. And as a trained engineer, you would have a good understanding of the concepts, including the mathematical concepts that go into estimating flow; is that right?
A. Generally speaking, yes.

Q. But you don't claim the same degree of mathematical expertise, for example, as Dr Crook?
A. No, which is why - it was complicated, and so it was important to me that we look at that carefully and properly, and so that's why I thought that would be beyond my expertise and sought the assistance of Mr Crook.

Q. Would it be fair to say that you have a high degree of familiarity with South East Water's infrastructure in the McCrae area?
A. Oh, there's people who know it a lot better than I do, and prior to being involved in the work I've been doing this year, I would have had a very rudimentary understanding. But to be involved in the investigation is - means understanding the network better. So yes, I've had to become familiar with the network.

Q. And were you sitting in the hearing room when Dr Crook just gave his evidence?
A. Yes.

Q. Do you recall seeing the two diagrams of the McCrae network zone that I called up on to the screen?
A. Yes.

Q. Are they diagrams you're familiar with?
A. Yes. So I instigated their creation. And that was part of the process for me to become familiar with the South East Water assets in the McCrae area. It started off as a bit of a hand sketch to try and put it all together, and then in conversations with other people, it seemed like it might be of value to others, so I got that drawn up for me a little bit neatly than what I'd done in my own little sketch, and then that was used. Unfortunately, as Jonathan referred to, there was a time period between when I - creating the first sketch and getting it checked, and in

that time period, someone alerted me to the fact that I'd drawn it incorrectly.

Q. Thank you for that. Well, it sounds like you are just the man to explain it to us. So I will put it on the screen. SEW.0001.0001.4918. So as I understand it, not only do you have familiarity with this diagram, you drew at least its predecessor by hand to begin with, or a predecessor?
A. Yes. So this is the incorrect version on the screen.

Q. Yes.
A. Yep.

Q. And then the correct version is the one that I first called up, which is slightly more grainy. And who actually prepares these diagrams?
A. So we have - I used two sources of data to produce this. So we have our GIS system that includes all our pipes for our entire service area. That was one source of information. And the other source of information was we have a similar, but not to this same level of degree, diagram that covers our whole service area, so those two pieces of information I used to combine to produce this one.

Q. I would put the two of them up side by side, but the correct one is so grainy, if I make it smaller, it will be very hard to see. So let me just see if I can ask you a couple of questions about this one, and then we'll go to the correct one, but just so we can understand the differences.
A. Okay.

Q. The central difference that Dr Crook pointed out is in the purple section there, and rather than there being one line in the purple section on the corrected map, there are - sorry, diagram - there are two lines. There are two purple lines?
A. Yes.

Q. And that's for the reasons that Dr Crook pointed out before, as to the particular WB130, I think it is, being mislocated?
A. Yes. So I - when I was looking at this, I think it was late one evening and I didn't look carefully enough, I thought that the purple area, which is marked as Cinerama

Crescent and Flinders Street zone, had - I was - I knew that it had two sources of supply. I thought one was from the Parkes Street zone and one was from the Cook Street zone. But on subsequent examination, or actually it was somebody else pointed out to me when they were reviewing it, they said, "No, that's incorrect. Both feeds are from the Parkes Street zone." So then I went back and looked at our GIS and confirmed that, yes, I'd made the mistake.

Q. I see. And so you're comfortable, then, that the revised version that I took Dr Crook to is accurate?
A. Yes. Yeah, I've confirmed it myself and I've had an experienced water operations engineer confirm that that is also the case.

Q. Thank you. The other sort of most obvious difference between this diagram and the one that I'll take you to in a moment is that the other accurate diagram uses some different indicators including triangles. Do you recall that?
A. Oh, generally. I think --

Q. I will bring it up now.
A. Yes, okay.

Q. It is SEW.0001.0001.4915, and if we could go over the page, please, yes. And perhaps we could just blow up the diagram. Thank you. Now, I said it's grainy.
A. You weren't lying.

Q. I can't read the legend. But I'm hoping that you've got sufficient recollection of the document to be able to explain what the different parts of the schematic indicate. Can you see there, in the purple section, there's two triangles?
A. Yes.

Q. And there's also triangles in the green and the aqua --
A. Yes.

Q. -- below. So they're not present on the version that I just took you to.
A. Yes.

Q. So whoever's created this has used some different schematic, but it's right to say, is it, that it's still

representing the same infrastructure?
A. Yes. So it was an iterative process. So I had done an initial sketch. Someone had beautified that, I guess you could say, into the first diagram. And then that continued to be updated and improved. We added the legend. We improved some of the symbols that we used.

Q. And so as you sit there now, do you know what the triangles are?
A. Yes. So they're to represent a pressure reducing valve.

Q. And in each case, I think - no, all but one case - before the triangles, there's an ice cream cone?
A. Yes. With an F in it, F for flowmeter.

Q. So there's a flowmeter before each pressure reducing valve?
A. M'hmm, yes.

Q. There doesn't seem to be one in the green section. There seems to be a flowmeter that's after the pressure reducing valve?
A. Yes.

Q. So the flowmeter can be either side of the valve?
A. Yes.

Q. I see. The hash, as I think Dr Crook said, were clusters of customers?
A. Yes, that's their intention, to - and it represents potentially a collection of pipework that distributes the water to the customers.

Q. I see. They're triangles, but to avoid confusion, they're sort of upside-down pyramids up the top, which look the same as or close to the same as the pyramid for the Dromana reserve. What are the smaller pyramids?
A. So Dromana reservoir, yes, so --

Q. Sorry, reservoir, yes.
A. Yes, they are all water storages or also called water tanks.

Q. I see. So they are the tanks?
A. M'hmm.

Q. And then if you are looking at the blue upside-down pyramids, immediately above them, there's a red circle. Is that a pump station?
A. Yeah. So there's two pump stations in this diagram. So one down --

Q. There might be three. There's a red, a blue and a black?
A. Oh, yes, correct. Sorry, I was not counting the black one. That black one is - there's a complicated story around how that operates. Sometimes it operates - it only - sorry, I'll express that a bit better. The pump station, my understanding is, it only operates when there's high water flows, so the water can flow under gravity, or it can also flow under pump, which is why I didn't consider it a primary. But the two ones in --

Q. I see.
A. -- our area of interest are the blue at the bottom and the red at the top.

Q. The last feature I wanted to ask you about is can you see "Cook Street tank zone" at the top?
A. Yes.

Q. Beneath it, there is a Z. Immediately beneath it?
A. "Cook Street tank" - oh, sorry, yes, I was looking - there are two references to "Cook Street tank zone".

Q. Oh, sorry, yes, you are right. The one on the left in the middle?
A. Yes, the one in the middle.

Q. Yes.
A. Yes, so --

Q. There's a Z with an arrow?
A. Yes. So that represents a non-return valve which serves the purpose of only allowing water in one direction, and the direction of flow is indicated by the arrow.

Q. I see. And what's the circled X beneath it?
A. So the Xs represent valves, and the ones with a circle around them represent valves that are normally closed.

Q. That's very helpful. Thank you, Mr Tully.

MR COSTELLO: Madam Chair, we're bang on time and we'll be finished early today. We may even be finished by lunch but I suspect we will go just over lunch. Is that a convenient time to break?

CHAIRPERSON: Yes. Mr Tully, we'll have a 15-minute break and return at 11.45.

SHORT ADJOURNMENT

MR COSTELLO: Thank you, Madam Chair.

Q. Mr Tully, thank you for your explanation of that diagram. I now just want to understand some of the features of the network that are set out on the diagram. One of the features are tanks. How do tanks work operationally within a distribution zone?
A. Yes, so we have different tanks operate in different ways, and the purpose of the tanks are different. So the Waller Place tank, for example, receives water from the reservoir and then - from the Dromana reservoir, as in the diagram, and then that tank doesn't supply any customers directly. Its purpose is to store water so that it can be pumped to the Parkes Street tank. So that's one style of tank operation in the McCrae network. Then at Parkes Street, that's a little bit more complicated because we have two tanks, but if I talk about the main tank at Parkes Street, that tank serves a different purpose, which is to supply customers under gravity.

Q. And these tanks, they're all above ground, are they?
A. Yes.

Q. And then there are flowmeters, and in general terms, a flowmeter is a device that just measures the amount of water that passes through a pipe; is that right?
A. Yes.

Q. Now, you say in your witness statement that not every pipe has a flowmeter attached to it.
A. Correct.

Q. So far as you understand it, is there a particular rationale that determines where a flowmeter is placed?
A. Yes. They're normally installed at major asset sites. So we have them commonly at tanks, we have them at pump stations and, generally speaking, we have them at our

pressure reducing valve stations, we call them, or sites.

Q. The Waller Place zone is described as the "Waller Place pressure reducing zone". That's because there's a pressure reducing valve?
A. Yes.

Q. And what's the role of a pressure reducing valve?
A. So its purpose is to reduce the pressure in a section of the network or a subzone, I guess. So there's multiple benefits to controlling the pressure in a zone, but probably the simplest to understand is we don't want the pressure, the water pressure that our customers receive, to be too high. It can damage equipment - you know, washing machines, dishwashers, that kind of thing - if the pressure is too high. But that's one of several benefits.

Q. All right. But not all zones are pressure reduced?
A. No, so it depends. Maybe if I explain zones in general, it might be helpful?

Q. Yes, please.
A. So the McCrae area's got multiple zones because it's on the side of a hill. And so we've got - this is not exactly right but in simple terms, we've got the properties at the top of the hill, or higher up the hill, are in the Cook Street zone. Then the properties that are a little bit lower down the hill are in our Parkes Street zone. Then there's sort of a ring of pressure reduced zones that are in the diagram, of which Waller Place is one of those. They're a little bit further down the hill again. And then, down at the bay level, Point Nepean Road, there's also another zone which is fed directly from Dromana, the Dromana reservoir zone. So it's - those zones are staggered down the hill to prevent high pressures to any of the customers.

Q. And pressures generated by some combination of pumping, size of pipe and gravity, is it?
A. Yes. So there's - in simple terms, it's the pressure in the network is governed by the tank that supplies it. So the top water level at the Parkes Street tank is about 140 metres. So then - but the pressure that we set as a maximum in the Waller Place zone is about 90 metres. So we've reduced the pressure by about 50 metres in the zone, in the Waller Place zone.

Q. You're familiar with the pipe where there was the burst that we're interested in?
A. Yes, very familiar.

Q. All right. Now, that type of water main there, is that under pressure?
A. Yes, it is. All the water mains are under pressure. Yes.

Q. Does it operate within a fixed pressure or a fixed range of pressure?
A. The pressure can vary, but in general terms or the simplest way - no, I'll say the best way is it's around 70 metres, because that is the difference in elevation from the top water level of the Parkes Street tank to the ground level at the burst site.

Q. It's South East Water's internal practice to refer to pressure by way of metres, is it?
A. Yeah, we - because we're looking at ground, because the pressure that - if you take a pressure gauge and you connect it to a pipe, what that's measuring is the relative pressure between the ground level and the pressure set by the water level in the tank. So it's easier to work in terms of metres of water.

Q. I see. So a more orthodox measure of pressure might be PSI or pascals or something like that?
A. Yes.

Q. But for this particular purpose, it is more convenient or perhaps makes more sense to do it in the way you have just described?
A. Yes. So there's 10 metres of water is equivalent to 1 bar, is another unit of measurement, which is equal to about 100,000 kPa or kilopascals. So they're all measuring the same thing, it's just different units of measurement and we use the one that's most convenient for us.

Q. So within South East Water's own records, would you expect pressure at a main to ordinarily be ascribed a metreage; is that how it would work?
A. We sometimes use different units. We try and make things as confusing as possible --

Q. Yes.
A. -- so sometimes we are --

Q. I'm glad it's not just me.
A. We'll use different units for different purposes. But the dominant units that we use is metres of water.

Q. All right. Thank you. Now, for the purpose of preparing your witness statement, you've included some data taken from a flowmeter?
A. Yes.

Q. To be clear, there's no flowmeter on the pipe that burst?
A. Correct.

Q. There is a flowmeter into the Waller Place zone; is that the relevant flowmeter?
A. Yes. So we're talking about the 2022 burst?

Q. Yes.
A. Yes.

Q. Correct. Thank you. There wasn't a burst on the relevant pipe, but the nearest flowmeter that was of relevance is the flowmeter that measures water into the Waller Place zone; is that right?
A. Yes, that's right.

Q. Okay. And dealing, as you correctly say, with the 2022 burst, you've included a graph - I'll bring it up on the screen - it's SEW.0001.0001.4942. Can we go to page 3, please. This is the graph that I'm referring to. So this is a graph of data taken from the Waller Place - sorry, from the flowmeter into the Waller Place PR zone; is that right?
A. Correct, yes.

Q. All right. And there's the very clear spike in the middle of the graph, and what's being measured here is flow rate in five-minute intervals; is that correct?
A. Yes. So we - the way our data collection system works is the amount of flow that's gone through the flowmeter in a five-minute window is sent to our central data system. You could think of it as the data is sent to head office. And then that five-minute interval data is stored.

Q. And just to be clear, what's being shown here isn't total water loss; it's just the flow rate?

A. Yes. So that's another confusing thing that we like to do, is we change our units around a bit in different circumstances. So the units are megalitres per day, but that is an instantaneous flow. It's not saying how much water flowed over - a volume of water over a period of a day.

Q. Yes. So this tells you no more and no less than what the spike was in the flow rate but doesn't tell you as - doesn't tell you anything definitive as to the volume of water that leaked?
A. Yes.

Q. And the flow rate here peaks at about, what is it, 2.25 megalitres a day?
A. Yes, something of that order, yes. I think I've written in the witness statement 2.3, but yes, similar.

Q. And otherwise, the flow rate was always well below 0.5 megalitres a day?
A. Yes.

Q. If we could move to the next page of the witness statement, please, it's another graph here that's been annotated. Did you make these annotations?
A. Yes.

Q. Okay. I might just ask you, perhaps, to talk through this graph. First, what's this graph measuring?
A. This is basically just a zoomed-in version of the previous one. So it's the same data, the same X and Y axes as the previous graph.

Q. It was a little hard for me to tell. Is this measuring it over the same period or is this a shorter period in respect of the same flowmeter?
A. It's exactly the same as the previous one, it's just zoomed in.

Q. Just snipped --
A. Yeah.

Q. -- for the actual moment?
A. Yes.

Q. Yes, that's what I thought it was. Thank you. So you've annotated there that the burst starts at 5.40am?

A. Yes.

Q. And just explain the way the data on the flowmeters work - is it it's constantly recording the flow rate, time stamping it, is it?
A. Yes, so there's - if you can make out, along the line there's individual dots. So those dots are the actual data itself, and the line is simply playing dot to dot, joining up those dots. So each of those dots are a five-minute time period, and then what the graph is showing is that the amount of flow recorded by the flowmeter is going up quite substantially in each of those five-minute intervals.

Q. Yes. The next annotation you have got there is the burst stopped, "Valve turned off"?
A. Yes. So you can see that, going from the left, the flow has increased significantly. It's then levelled off and then it's just fairly abruptly stopped. That's because that's when our maintenance contractor has arrived on site to repair the burst and has turned the valve off.

Q. See. And you've said that's at 6.50am. Ought that be PM?
A. Yes, that looks like it's wrong, doesn't it? Yes.

Q. Yes, it does. All right. Thank you. So I will take that to be PM. So 5.40 it starts; 6.50 - 5.40am it starts; 6.50pm it's turned off. Then there's this water supply interruption period. That's because it's turned off at that point in time?
A. Yes, so that's when we've physically, on site, closed the valve, and then we've started cutting out the damaged section of pipe and putting a new section of pipe in, joining that up and getting the pipe network ready to operate or to run.

Q. I see. So that work happens, the valve's turned back on, there's then a period of mains flushing?
A. Yes. So we've done the work between 6.50pm and 8pm, or thereabouts, and then we've turned the valve back on, and then there's a series of activities that happen after that - the valve's turned on; we tend to flush the mains; and there's - also tends to be that the pipe has to be refilled, because it would have been emptied, and so there's numerous things that go on in that immediate period of time when the water's restored.

Q. Thank you. You've then set out in the paragraph immediately below that, based on your calculation, you think that - you've assessed 0.9 megalitres as being the likely loss of water?
A. Yes.

Q. And so when you've come to that conclusion, you've had regard to data other than the data in this graph?
A. No - well, it's data from the graph but it's also - I've also used our maintenance records to check that the events match.

Q. So the maintenance records are where the information comes from that's in the red on the graph; is that right?
A. It's a mixture of conclusions that can be drawn from the flowmeter data and cross-verified, I guess, with the maintenance records.

Q. All right. This flow rate graph, as we discussed before, tells you the change in flow rate but doesn't tell you the volume of water loss. So what have you done to that data to then come to the conclusion of 0.9 megalitres?
A. So this graph is produced or - so the process was that I downloaded about 10 days of data from our data system and then put that into a spreadsheet and then, from that spreadsheet, was able to produce the graph and then, within that spreadsheet, I then calculated or summed up the flow during the period between when the burst starts, which was roughly 5.40am, and when the burst stops, which is roughly 6.50pm, and then the water that was - that went through the flowmeter over those two periods - in that period, totals up to 0.9 megalitres.

Q. So this is a relatively simpler calculation than the calculation in respect of the 2024 burst?
A. Very much so. So because of - the first graph shows quite clearly how, you know, we went from a normal situation to an abnormal situation. The burst was quick. It was readily identified. Probably could be described as obvious, what was going on. There wasn't a lot of need to manipulate or to adjust the data or to manage the data or to cross-compare to the same extent that was needed for the 2024 burst.

Q. Thank you. You've pointed out in paragraph 20 of your statement that there's substantial differences between the actual physical burst at Bayview Road and this burst. One

of them is that the pipes were made of different material?
A. (Witness nods).

Q. The pipe in the 2024 burst was a PVC pipe, but the pipe here was an asbestos cement pipe; is that right?
A. That's correct.

Q. And what's the relevance of the difference between the two materials?
A. So the PVC pipe is - or PVC is plastic, and it's generally a ductile material, which means that it stretches before it breaks, whereas the asbestos cement pipe is - that material is more of a brittle material, so it snaps; it doesn't bend and stretch. So where you - you know, in a PV - so the asbestos cement pipe, it had a circumferential fracture or break, so that's commonly when - I suppose, if you think of it as just it's bent and it snaps. So that's commonly caused by a slight ground movement or that kind of thing. Yeah, with the PVC pipe, it - if that kind of thing happens, it bends and it doesn't snap; it just deforms a little bit. It can deform. If it deforms a lot, it'll fail, but it takes a lot for it to fail because it can - it's a ductile material.

Q. You describe the burst of the PVC pipe in 2024 as a longitudinal burst?
A. Yes. A longitudinal split. So a longitudinal split is, in general terms, related to two things. One is there's usually a defect of some kind that causes a weak point, and then there is a pressure - the pressure of the pipe, either pushing - whether it's soil pressure pushing in or water pressure pushing out, puts more pressure on the defect and that causes a very small hole to form. And then that's why - the behaviour we've seen in the work that Jonathan was talking about earlier, about how the burst grew over time, that's quite consistent with the nature of a longitudinal split where it can just grow a little bit over time.

Q. You ascertained that the split in 2024 was longitudinal based on Montage data, did you?
A. Yes, and I've also had a personal conversation with one of the maintenance crew that repaired the pipe, so I asked them. The Montage data probably didn't quite have as much information in it as I would have liked, so I've managed to speak to one of the - or to the lead that was on site during the repair work and asked them to repeat their

recollections of what they saw, and they repeated that it was a longitudinal split and they estimated the length as about 100mm long. But it wasn't a measured length, so it's an approximate indication of the length.

Q. All right. Thank you. Finally, it was somebody from the shire council that reported the fact of this break, was it?
A. Yes. That's what the - our Montage, or works management system information, shows, that it - I believe it was an email from the shire that alerted South East Water to the burst. This is the 2022 burst.

Q. That's right. Thank you.
A. Yes.

Q. I might just take that document down and instead put up the amended version of it, which is the version that's been tendered. It's SEW.0001.0001.5173. If we could move to page 5, please. At page 5, you start giving some evidence in answer to question 12 in the notice that was sent to SEW that concerns the amount of water that travelled down a stormwater pit?
A. Yes.

Q. Was this an issue that you were aware of before you were asked to answer this question?
A. Yes.

Q. All right, then. Had you sought to ascertain the volume of water that had travelled down the grate before you were asked to answer this question?
A. Yes, most certainly. I think I probably started thinking about this in February.

Q. All right. And you started thinking about it in February, why?
A. Well, I guess - and I've alluded to that in the witness statement - Gary had talked about hearing the noise in the stormwater system. Fortunately, we'd actually taken a photo, or Jason Marsh, I believe, took a photo of some water flowing in the drain, and straightaway, my mind went to, well, we might be able to use that to estimate how much water went down the drain.

Q. All right. And are you the person that has done the calculations to try and estimate the amount?

A. Yes.

Q. Have you had the assistance of anybody else within South East Water in coming to those views?
A. I've had a colleague check the calculations.

Q. All right. In paragraph 28, which is at the bottom of the screen there, you refer to the fact that South East Water's in the process of engaging an international expert to advise how much of the water made its way to the surface.
A. Yes.

Q. Is the international expert that you refer to there, is that SMEC --
A. No.

Q. -- the company?
A. No. It's separate.

Q. All right. And who is that person?
A. He is a professor who currently works in - at a New Zealand university.

Q. Do you recall the Professor's name?
A. I think it is Dr Kobus van Zyl.

Q. Do you know how it came to be Dr van Zyl that was engaged?
A. Yes. I was interested in the topic. I was doing some reading of papers, academic papers, because it's somewhat complicated, the way the water flowing out of the pipe interacts with the soil, and so in my background reading, I noticed that he was a - he'd authored many papers and his work was of interest and relevance to the questions I was interested in, so I contacted him to see whether he would be interested in helping us.

Q. What type of papers were you reading when you noticed that he'd authored a number of them?
A. So academic technical --

Q. Presumably they're not about flow of water down grates but something --
A. No, they were looking at the behaviour of how water - the behaviour of water leaving a split. It's a bit more complicated than might first meet the eye. And then also

how that water then interacts with the soil before making its way to the surface. There's a critical flow rate at which, if the flow rate out of the burst is very, very small, then the water might not make it to the surface, but if it's a reasonable sized flow rate, then it makes it to the surface and there's - it's a whole field of academic investigation to develop or extend our understanding of all of that, and apply some calculations to enable that to be done.

Q. Right. And Professor van Zyl, he's at the University of Auckland, is he?
A. I believe so, yes.

Q. And when was it that Professor van Zyl - I should just say to assist the transcript, it's van, V-A-N, new word Zyl, Z-Y-L. When was Professor van Zyl engaged?
A. I'm not sure of the exact timing but it's recently.

Q. How recently, do you think?
A. Oh, a handful of weeks.

Q. Do you sit on the committee that South East Water's established to deal with the McCrae issue, if I can call it that?
A. Yes, I think you're referring to what we know as the McCrae strategy group. So yes, I've been a part of that.

Q. And was the decision to engage Professor van Zyl a decision taken by that group?
A. Oh, there was a lot of discussion about - I'm not entirely sure who - how - there were several discussions about it. I'm not sure exactly which (inaudible) that was all discussed in.

Q. Do you recall if you raised the idea at a meeting of that group?
A. I think I would have certainly mentioned this activity in that group.

Q. Would you have needed somebody else's authority to engage Professor van Zyl or did you have sufficient authority to take that step of your own volition?
A. I would have consulted with other people, as to whether we - whether it was worth doing and whether there was support for it. But I think broadly, the approach has been where we think that there's value in undertaking extra

investigations that will help with us understanding it, that we should do those works. So there's also that broad high-level understanding.

Q. Who - before I ask you that, let me ask a preliminary question. Was Professor van Zyl given specific questions to answer?
A. Yes, I was asked to - well, I have given them a scope. I've had some correspondence backwards and forwards with him about finetuning that scope, and I think I'm going to be meeting with him this week to progress that.

Q. So as things currently stand, Professor van Zyl has been engaged, he doesn't yet have finalised questions to answer?
A. I would say the questions have been finalised, but sometimes, when you start these things, you don't necessarily know exactly where you'll end, so there's key things we want to know, but there might be some things that he says, "Well, yes, we can investigate this further or it would be useful to investigate that further", so it's not something I have an enormous amount of knowledge on so I'll be relying on him to guide and inform where he can make a good contribution to the topic.

Q. Does Professor van Zyl need to travel to Australia to perform his work?
A. That's not the intention.

Q. Have you identified the extent of the information or data that you intend to provide to him so that he can undertake his work?
A. It would be on a - I've provided him with some very - the key pieces of information to date, and he has replied back with a list of maybe 20-odd questions for extra data. So we'll exchange the information and data as he requests and as we discuss the topics that - there might be questions he raises that I can say "Yes, well, I've got some more information about that." I'll provide it.

Q. Have you discussed the engagement of Professor van Zyl with anyone from SMEC?
A. Yes. We've - they're aware of that work. We had initial discussion around the different parts of the puzzle that we're trying to work on, and whether they had specific expertise. My recollection of that conversation was that SMEC didn't feel they had the level of expertise in this

quite a niche topic.

Q. Are the questions that have been put to Professor van Zyl solely concerned with ascertaining the amount of water that likely travelled to the stormwater grate?
A. No. So I think it might be on the screen there - in the paragraph 25, the key question that I'm asking the professor to look at is how much water from the pipe made its way to the surface.

Q. Yes. But that's what I want to understand. Water that made its way to the surface and then ultimately to the grate, that's within scope, if you like, is it?
A. No. So I've - there are two parts to that, or I see it as two parts. So the first part is how much water from the pipe made it to the surface; and then from that water that made its way to the surface, how much of that water made its way to the grate? So two parts to that question.

Q. Professor van Zyl is not investigating the likely flow of water that made its way to the surface more generally?
A. Not sure what you mean when you say "more generally."

Q. Well, some of the water made its way to the surface and then travelled to the grate?
A. Yes, so that kind of - the flow of water from the surface to the grate is within SMEC's skills and experience. So they're undertaking that work.

Q. So he's looking at water that found its way to the surface and then did not find it way to the grate?
A. I suppose you could express it that way. But it's - the question that we're trying to - the high-level question that we're trying to answer is how much water made its way to the grate. To answer that question, there are two subquestions. So he's - the professor is answering one of those subquestions, and SMEC is answering the other subquestion.

Q. What are the two subquestions?
A. So the professor is answering the subquestion of how much water from the pipe made it to the surface adjacent to the pipe. And then the second subquestion, which SMEC are answering, is of the water that made its way to the surface, how much of that made its way to the grate.

Q. And then is anybody considering what I would consider the third part or the third obvious question, which is, of the water that made its way to the surface, but not to the grate, where did it go?
A. Well, that would be inferred from the other two questions; if we know the answer to both the subquestions, then that will tell us the answer that you've asked.

Q. Won't that just tell you that it went somewhere, not where it went?
A. Well, it'll tell us that it went - yes, you're right. It'll tell us that it went somewhere else, but we're trying to - the primary purpose of these questions and subquestions is to work out how much water made its way to the grate.

Q. And so, so far as you understand, it's no part of the work of Professor van Zyl to ascertain the likely path of water, for example, that made its way to the surface but not to the grate?
A. Correct.

Q. He's not a hydrogeologist, is he?
A. No, I don't believe so.

Q. And do you understand that to be part of the brief to SMEC?
A. In broad terms, yes.

Q. Has a date been fixed for receipt of Professor van Zyl's report?
A. I believe he's given an indication of when that would be ready, but I don't recall the date.

Q. Do you have an indication in general terms?
A. I think it was just a handful of weeks.

Q. From when?
A. From - well, I would expect - I would expect it in the month of July. Maybe that's more helpful to say that.

Q. You expect you'll receive his report at some point in the month of July?
A. Yes, possibly a draft report in the month of July.

Q. Thank you for that. To return to your preliminary calculations, if you will, you can see there at the bottom

of the page, it says "topic b":

> *[South East Water] has engaged SMEC to undertake work to calculate the proportion of water that did not travel to [the stormwater pit] from the Bayview Road burst.*

A. Yes.

Q. So that question there that SMEC's undertaking, the proportion of water that did not travel to the stormwater pit, whatever answer they come up with, one would hope will correlate with the answer that Professor van Zyl comes up with as to the amount of water that did travel to the pit; is that right?
A. Yes, I think - I find it easier to refer back to the paragraph 25, about what they're doing. So SMEC - maybe the wording in paragraph 29 could be clearer, but SMEC are answering the question that's referred to in 25(b), as how much water from the surface made its way to the stormwater pit.

Q. Okay. In any event, you've done some calculations while all of this work from the experts is going on?
A. Yes, I was curious myself, but I'm not expert in that work, so was curious to see what the common use standards and approaches might tell us.

Q. And you've undertaken those calculations on two bases, that is, using two different methods that are in the - it's the "Australian Rainfall and Runoff"?
A. Correct.

Q. That's a guide about flood estimation?
A. Yes.

Q. And was that a guide that you were familiar with before you did this work?
A. I haven't used it for many years, but I was aware of its existence. I think, if my memory is correct, it was part of my degree studies.

Q. I see. So you had a general awareness of it, but it's not part of your ordinary day-to-day work?
A. Correct.

Q. One of the methods you selected is the Horton method?
A. Correct.

Q. And in general terms, do you want to describe the Horton method?
A. Yes. So they're both - or both methods are broadly the same, they just approach it from slightly different angles. The behaviour of runoff from a rainfall event is quite complicated, but there's a few different equations that simplify what's happening in that physical behaviour, and the Horton is one of those formulas. It's very popular in the United States, it's less commonly used in Australia, but it is mentioned in the Australian Rainfall and Runoff guidelines, and what it does is it talks about the amount of rain that falls and then it also includes how dry the soil is. If the soil is dry, then it can absorb more of that rainfall. By the soil absorbing the rainfall, then that means less water runs off the surface and into the drains or the waterways. So there's three or four different parameters in that equation, and then you select those parameters and then it provides an answer.

Q. So integral to the Horton method are the prevailing soil types in the area?
A. Yes. So there's - one of the factors that needs to be considered is the soil type, and then we have a sample of soil and we've had that lab-tested from near the burst site, so we've got a general understanding of the soil particle size, distribution, and then that is one of the components that goes into selecting which category of soil we should use in the calculation.

Q. I see. And then your conclusions, in respect of the Horton method, are set out at 33 of your witness statement, which is just over the page.
A. Yes.

Q. It says there in the second-last sentence that your calculation suggests, regardless of the volume of the burst, approximately 7 megalitres of the water from the burst entered the soil?
A. Yes, that's correct.

Q. So there, you're talking about water that entered the soil and did not enter the stormwater drain; is that right?
A. Yes.

Q. And do you expect that Professor van Zyl will be having regard to the Horton method in the course of his work?
A. No, so he won't be replicating this, but SMEC will be.

Q. I see?
A. And SMEC's work, they - I believe they won't be using the simple methods that I've used, they'll be using more advanced methods to try and replicate in a computer model the complicated behaviours that are occurring.

Q. I see. The second method you used is the initial loss/continuing loss method?
A. Yes.

Q. And is that a method that is more commonly used in Australia?
A. Yes, it appears to be. Again, I'm not an expert in this, so I'm not well placed to answer the question, but my understanding is that it is more commonly used.

Q. What is the central difference between the two methods?
A. There's - the Horton method uses a standard - a set of tables to provide the parameters to use, whereas because the initial loss/continuing loss method is more common in Australia, there's a website that provides different values that should be used based on geographic location. So there's a different - it's more site-specific, I guess. However, the numbers in that - it's a little bit deceptive, just because you can type into the website and say, "I want the parameters for McCrae", it doesn't mean that - and it spits you back the numbers and you might go, "Oh, yeah, well, that's fantastic, I've now got very specific locations to my precise location", those numbers are very, very broad. So it can be misleading in its accuracy.

Q. The conclusion that you reached applying the initial loss/continuing loss method was, I think, 3 megalitres; is that your recollection?
A. Yes, it's written in the witness statement, probably I should be check to be certain.

Q. Over the page at paragraph 35.
A. Yes, that's right. It says 3 megalitres.

Q. On the application of the Horton method, 7 megalitres,

on the application of initial loss/continuing loss, 3 megalitres.
A. Yes.

Q. Am I right? I can't now see it. Oh, yes, there it is. When you applied the Horton method, you chose group B soil; do you recall that?
A. Yes, I do.

Q. And that is sandy soil?
A. Yes. There's - I found a reference, a United States publication that references sand percentages for different categories of soil, and then from the soil sample we've got from the burst location, I used that percentage of sand in that soil sample to then pick the category which was group B of the soils.

Q. And when you say the "soil sample", you mean a soil sample that somebody else had taken?
A. Well, no, I - so in the - we've got the December 2024 burst.

Q. Yes.
A. But roughly 5 or 10 metres away from that, we had a minor leak in March 2025 --

Q. Yes.
A. -- on that pipe. So while we were excavating to repair that leak, I took a soil sample and have had that sample laboratory tested.

Q. I see. So you, in fact, took that soil sample yourself, did you?
A. Yes.

Q. How far away did you say that was?
A. Oh, it's of the order of 5 to 10 metres from the December 2024 burst.

Q. You also had regard to rainfall data, did you?
A. No. I took a conservative approach that there had been no rain in the calculations, so particularly the Horton method, one of the parameters is how much rainfall had been in the preceding five days.

Q. Yes.
A. So the conservative approach was to assume it was dry.

Q. I see. And do you know, in fact, whether it was dry?
A. I know it was generally dry, but there's been some comments in Montage records and the like of some patches of rain.

Q. It is fair to say that you are not experienced in this kind of hydrological modelling?
A. No, no, it's not - the intention of doing it was just for my own personal understanding and appreciation of what might be going on, but because I've been asked as to, you know, what work I've done, I've provided that.

Q. But this work will ultimately be either confirmed or corrected by SMEC?
A. Yes.

Q. And it will be supplemented by or informed by, to some extent, the work of Professor van Zyl?
A. Yes, correct.

Q. You also did some calculations regarding flow rate to the downstream pit?
A. Yes.

Q. And you applied Colebrook-White assumptions?
A. Correct.

Q. Is that a common part of your work or was this again you doing something that's outside your ordinary work for the purpose of trying to have a better understanding of the circumstances?
A. Calculating flow rates in pipes is a common part of my work.

Q. Colebrook-White assumptions are assumptions that are commonly applied?
A. Yes.

Q. Thank you. Is one of the assumptions that - no, sorry, is 10 litres a second roughly two-thirds of peak flow, here?
A. Yes, that would - on the basis of Jonathan's calculations, he's estimated that the peak flow was around - out of the burst, was around 15 litres a second.

Q. Yes. And so you've taken that from Dr Crook's work?

A. Yes.

Q. That's an estimate that must depend, mustn't it, on the slope and the diameter of the pipe; is that fair?
A. Well, the flow rate does, but Jonathan's calculations are not looking at it from a hydraulic calculation point of view, they're looking at it - he's looking at it from the data that's been collected from our flowmeter. So there's two different ways of looking at the - or more than two, but those two ways are different ways of looking at it, at the same problem.

Q. I see. So this way of looking at it is different from seeking to examine it by reference to other hydrological methods that you could use to come to this. Are you familiar with the concept of Monte Carlo simulation?
A. Yes, yes. I've been - someone has suggested to me that I could use a Monte Carlo simulation to try and determine a percentage likelihood of the flow rate, because there are several variables that I have discussed in that, and yes, that might be worthwhile, although it can - Monte Carlo can be a bit of a rubbish in/rubbish out kind of situation.

Q. I see, Mr Tully, you're not the only one reading abstruse academic articles, late at night.
A. Monte Carlo is quite commonly used. We use it almost on a - well, maybe on a weekly basis in cost estimating.

Q. Is it different to range testing?
A. I'm not highly familiar with the term "range testing". I can infer what it means from the words, but it's probably not a phrase I would commonly use.

Q. Okay. Back to Monte Carlo, then, is that something that SMEC are likely to undertake, do you know?
A. I'm not sure exactly what they will use to establish the range. I don't think they will be able to - they will give a single answer and say, "That is categorically the number". I think they will also have the same general issues that I've talked about in that there's a plausible range of what the numbers will be, but no, we haven't got to that level of detail - they haven't got to that level of detail, is my understanding.

MR ROBERTS: Mr Tully, I have no further questions for you, but others may have some. Thank you, Madam Chair.

CHAIRPERSON: Are there any further questions?

MS BATEMAN: I do.

<EXAMINATION BY MS BATEMAN:

MS BATEMAN: Q. Mr Tully, I appear on behalf of the shire. Can we just go back to the 2022 burst. As I understand it, your evidence is that that broken pipe was fixed on 14 November? Is that right?
A. Yes, I think that's right.

Q. Can we please bring up SEW.0001.0001.4933. While that's being brought up, your evidence was that your understanding of what occurred is based on the data that you've looked at as well as - and this is exhibited to your statement, this is the Montage report; do you recall that?
A. Yes, I do.

Q. Can we please go to page 8 of this document, just to orientate for a moment. So this has a summary of the task events; is that correct?
A. Yes.

Q. That's where you draw times from - for which you said that that the project, the job was allocated and in transit; is that right?
A. Yes.

Q. And it records there that the people were on site at 2.45pm?
A. Yes, that's - that's what it says, yes.

Q. It also says "On site surface okay" 8.05?
A. Yes.

Q. On 15 November; is that correct?
A. Yes. Yes, it - the terminology can be a little bit mis - well, not misleading, but a little bit confusing, in that basically, when the onsite service is okay, that's when the water's been restored, so that's what we've - you know, that's our primary purpose, and then there's a whole host of cleaning up and backfilling holes and those kind of activities after that.

Q. Can we please go back to page 1 of that report. This

provides a bit more description here, doesn't it, of the events that occurred?
A. Yes.

Q. You can see halfway down the page there, the date in the middle of the page, saying 15 November 2022?
A. Yes, 15th? Yes, 15th, at 4.05.

Q. Have you had an opportunity to read this?
A. Yes.

Q. So we see the description there is:

Arrive/set up, drill holes to locate burst. Saw cut and remove concrete, shut main ...

A. Yes.

Q.

... found broken back next to collar, closer inspection revealed second broken back, cut in replace section, slow back ...

and it goes on. Do you accept that that indicates that the repair, in fact, occurred on 15 November?
A. So the - there's - it's important to understand, the way the Montage system works is that the person will do some work and then they will - once they've completed that work, they will then type a summary of the work they have done and then the time stamp is the time when they have pressed "enter" into the computer. So it means that all those tasks have been completed by that date, by that time, not that they were undertaken at that time.

Q. So is it the case that the Montage report, in terms of its date stamps, is not a record of actually the time that events occurred?
A. Well, there's different parts of it. And so we need to understand which component of it is - that we are talking about, because some components are precise and some components are after the fact. So the accuracy of the Montage record is depending on which component of the record you're looking at.

Q. And so looking at this section, being the task story, you'd say that the time/date stamps in this section are not accurate?

A. Well, I'd say they are accurate in that that is the time that the person pressed - entered in and had to represent when that series of activities have been completed. So it's accurate in that respect, but it's not telling at precisely at what time they arrived on site, what time they drilled the holes, what time they saw cut, what time they did all those individual activities they've talked about.

Q. You say that the metadata for the photograph of the pipe has got a time stamp of 8.02pm.
A. Yes.

Q. Has that metadata been produced to the board of inquiry?
A. My understanding is that the photos have been provided, and then the inquiry's able to see the metadata associated with the photos.

Q. That metadata - I raise this because your witness statement doesn't provide a date for that photograph. Presumably the metadata will record the date as well as the time?
A. Yes. Not every - the vast majority of Montage photos I've seen have the metadata but I have seen one or two that don't have the metadata, but I think in relation to this, the photos did have the metadata.

Q. In respect of the time it took to turn off the valve, your evidence based on the data - so not on the Montage report, on the data - was that it was turned off at 6.50pm, the valve?
A. Yes, I think so, yes.

Q. Your evidence was also that - sorry. I took you to the time the crew came on site at the back of that document, which was 2.43pm. Is that section of the Montage report an accurate section?
A. Yeah, they normally record when they - that should be reasonably - that should be quite accurate, that arrival time.

Q. So having regard to those two time frames, it seems that it took roughly four hours, from South East Water arriving on the site, to turn off the valve?
A. Yeah, well, they were trying to - I'm inferring, rather than knowing for sure, but I think when they arrived

on site, it would have been a confusing situation because the water was coming out of the road not directly above the water main. So there would have been some thinking about where's the water coming from, and what's our - the best course of action.

Q. Do you know what type of valve it was that was ultimately turned off?
A. I don't know the specifics of the valve but our water main valves are fairly standard, so I assume it would be a standard knife gate valve.

Q. And does South East Water map those valves for its field crews so that they can locate them?
A. Yes. So in our GIS system, we show the valve locations. Some of those will be - the position of those will be highly accurate and some of those might be a little bit more indicative.

MS BATEMAN: No further questions, thank you.

CHAIRPERSON: Any further questions?

MR COSTELLO: No, thank you, Madam Chair.

CHAIRPERSON: Mr Tully, that completes your evidence and you are excused. Thank you for coming along.

THE WITNESS: Thank you.

<THE WITNESS WITHDREW

MR COSTELLO: Madam Chair, one further witness today. Would that be a convenient time to break?

CHAIRPERSON: Let's return at 2 o'clock, unless that causes anyone difficulty. No? We will resume at 2.

LUNCHEON ADJOURNMENT

UPON RESUMING AT 2.00 PM

MS KITTIKHOUN: Madam Chair, I now call the third and final witness for today, Mr Andrew Forster-Knight.

<ANDREW FORSTER-KNIGHT, affirmed:

<EXAMINATION BY MS KITTIKHOUN:

MS KITTIKHOUN: Q. Good afternoon, Mr Forster-Knight. Could you please state your full name for the record?
A. Yeah, sure. Andrew Forster-Knight.

Q. And what is your business address?
A. 101 Wells Street, Frankston.

Q. And your current occupation?
A. General manager, digital and transformation at South East Water.

Q. Did you receive a notice from the inquiry to attend and give evidence today?
A. I did.

Q. And you have prepared a witness statement for the purpose of the inquiry?
A. I did.

Q. Can a copy of the witness statement and its exhibits please be provided to the witness? I see, the witness has that. I understand that you wish to make an amendment to your witness statement. Is that just in relation to exhibit 10?
A. No, there's also a - I think it's paragraph 36.

Q. Okay.
A. The number 30, we're changing to 29.

Q. So paragraph 36?
A. Paragraph 36.

Q. The "30" in the second line of that paragraph should be?
A. It says "However, the other", and put "29" instead of "30."

Q. 29?
A. Yep.

Q. Do you have any other amendments you wish to make?
A. No.

Q. Having made that amendment, are you happy that - sorry, are the contents of that statement true and correct?
A. Yes.

Q. Please initial that amendment and then sign the last - sign and date the last page.
A. Sorry, that was sign and date?

Q. And date the last page, thank you.
A. 20.

Q. Today's the 24th, I believe.
A. Thank you.

MS KITTIKHOUN: Madam Chair, I tender that statement and its exhibits.

CHAIRPERSON: The statement of Andrew Forster-Knight, together with its exhibits, will be CA42.

EXHIBIT #CA42 STATEMENT OF ANDREW FORSTER-KNIGHT, TOGETHER WITH ITS EXHIBITS

MS KITTIKHOUN: Q. Mr Forster-Knight, could you please describe your personal qualifications?
A. Yes, I've got --

Q. Professional qualifications?
A. Professional, yes, I've got a double degree from Monash University, majored in engineering, in chemical engineering; and in science, majored in mathematics.

Q. You have also completed a directors course; is that right?
A. I have. I sit on the board of a South East Water subsidiary.

Q. What's the name of that subsidiary?
A. Iota, I-O-T-A.

Q. You started working for South East Water shortly after you graduated; is that right?
A. I did, yes.

Q. What year was that?
A. 2003.

Q. Have you worked with South East Water for the entire duration of your career?
A. I have.

Q. And when you started at South East Water, what was the role that you held?
A. It was a chemical or process engineer working in treatment plant, process engineering sort of world.

Q. Treatment plant in respect of the water network?
A. No, no, more sewer, yes.

Q. And throughout your time at South East Water, you have held various roles and positions; is that right?
A. Correct.

Q. Including operational technology manager?
A. Correct.

Q. General manager, digital utility?
A. Correct.

Q. General manager, service delivery?
A. Correct.

Q. And so in general terms, would you say that your work at South East Water has centred around using operational technology and automation to improve and optimise business performance?
A. Yes, I would.

Q. When did you start in your current role as executive - sorry, general manager, digital and transformation?
A. It was November last year, so 2024, so pretty much the same time that Tim Lloyd started. We had swapped roles at that time, if that makes sense.

Q. Can I take you to the second paragraph of your witness statement just to confirm I understand. It's SEW.0001.0001.5014. The second paragraph there says that you have held the role since December 2024. Do you wish to amend that to November or --
A. I'll go with December. It was roughly in that time. I had forgotten the specific date, but if that - that would be correct in my statement.

Q. I understand. And so broadly speaking, what does your

role as general manager, digital and transformation entail?
A. Yes, so I oversee a couple of functions in there. The transformation side is we're trying to push out sort of leading-edge technology to the business to help the business, so that's one aspect of it. We also look after our existing metering fleet, which is the mechanical meters, and we've got an operational technology arm. So, yes, all in unison, we try and solve problems for the business.

Q. And do you report directly to Ms Lara Olsen?
A. I do.

Q. Are you part of the group that's been referred to as the McCrae strategy group?
A. I am.

Q. When did you become part of that group?
A. I would say it would be maybe around May.

Q. May of this year?
A. Yeah. I think that was it, about the time, yes.

Q. Mr Forster-Knight, I'm going to ask you some questions now about the roll-out of the digital meters.
A. Sure.

Q. In your statement, you describe South East Water's current program of rolling out digital meters across its network. But before I ask you about that program specifically, can I ask you some basal questions about the meters used in South East Water's network.
A. Yes.

Q. Am I right in understanding that, broadly speaking, there are two types of meters, so mechanical meters and digital meters?
A. Correct.

Q. Are the terms "analogue meter" and "mechanical meter" used interchangeably?
A. Yes.

Q. And so too "smart meter" and "digital meter"?
A. Correct. We call it "digital meter", but I know it's been referred to as "smart meter" in here, so either, either way.

Q. So both mechanical and digital meters measure the amount of water that is used by customers on private property; is that right?
A. Correct.

Q. And could you explain to Madam Chair the key differences between a mechanical meter and a digital meter?
A. So the big difference is that the digital meter transmits its data over the air back to a central server. The mechanical meter has to be read manually by people walking the streets, looking at the number on it, recording it and manually submitting it, effectively. That's probably the big difference. There's probably a few others, but that's probably the main one.

Q. And mechanical meters are typically read every quarter?
A. Correct.

Q. I now want to ask you some questions about the metering program, as I telegraphed. Mr Lloyd gave evidence yesterday that digital meters and the roll-out of those meters is squarely within your domain of responsibility; is that right?
A. It is. It's a - yes, the accountability is with me, but the business has lots of input because everyone is excited to use digital meters for lots of different purposes, so we sort of harness that input, but we - I'm ultimately accountable.

Q. At the highest level, would you describe the program as involving the exchange of mechanical meters with digital meters?
A. Yes.

Q. You say in your statement that South East Water is currently in the mass roll-out phase of the program; is that right?
A. Correct.

Q. And that phase commenced in August of last year?
A. Correct.

Q. Could you tell us about the mass roll-out phase?
A. Yes. So we've been using and experimenting and trialling digital meters for quite a few years, and so

early trials were testing out different aspects of the technology. Once we had proven that out, we started to move towards a slightly larger phase. And then all being successful, ultimately we wanted to head to a mass roll-out phase, which is effectively putting, you know, thousands of meters a month - exchanging thousands of meters a month and really making inroads to changing all of our customers over to digital.

Q. So all of the meters - is the objective of the program to convert all of the meters in the network over to digital meters?
A. Correct.

Q. And that program is scheduled to conclude in 2029?
A. Correct.

Q. And by the end of the program, you say that this will result in over 850,000 meters being exchanged?
A. Correct.

Q. Mr Lloyd gave evidence yesterday that in respect of digital meters, there are some that have acoustic sensors and some that do not. Does that accord with your understanding?
A. It does, yes.

Q. Could you tell us about those acoustic sensors?
A. Yes, so they are South East Water technology that we've licensed to some of the big vendors globally, but basically what it does, it's a cut-down version of a more sophisticated acoustic sensor that you would put out traditionally in the network. And with a low price point, it goes into - ultimately we want to put them in as many meters as we can, but it goes - once it's in there, it listens or - listens for vibration back on the South East Water side of the network, within close proximity to the house. So it's not trying to listen, you know, kilometres away or anything like that, but we do get lots of leaks in service pipes, which are the pipes that go into people's houses, and we get a couple of thousand of those a year, I think it is. So that's its target. So the difference literally between a standard digital meter and the vibration one - they look and feel exactly the same, but inside one has got a little device and one doesn't.

Q. I see. Do you know the maximum range of effectiveness

of those sensors?
A. It depends on the pipe material and lots of other things, but to give you a broad ballpark I would say sort of 50 metres is probably a good number.

Q. Those digital meters that have acoustic sensors, are they monitored by a particular platform in South East Water's network - systems?
A. They are. So it's what they call an IoT, Internet of Things, platform, so it's separate to SCADA and everything else, but ultimately there is a tool that sort of triages all of the alarms from the vibration sensors, and that's an operational tool that either our operators or our NOCC team can use to investigate leaks coming from these sensors.

Q. So if the sensor has picked up a leak, it will trigger an alarm, and that will be brought to the attention of someone within the network operations control centre; is that right?
A. Yes, roughly speaking. So the sensor detects a vibration wave form. It doesn't necessarily say it's an alarm, but it does send that data back and the tool analyses it and also looks at the neighbouring sensors and nodes around and makes a determination to say, "I think there is something here", or, "There is not something here."

Q. Would it be then up to the operator to look at that data and then decide whether a response is required in relation to that vibration?
A. Exactly right, yep.

Q. And would that operator be given instructions or training as to how to respond?
A. Correct.

Q. And what would that entail?
A. So we've got a sort of a change management division in digital and transformation, so they will literally - once we've got the tool, they sit and train and get feedback from the operators. So it's reasonably extensive, and then at a certain point it's handed over to operations or to the NOCC team to run with from that point on.

Q. You said earlier that the SCADA system is separate from the IoT system. Do they speak to each other in any way?

A. Do they speak to each other? I would say yes, very - for very specific purposes. They are not sort of hand-in-glove systems, but they can talk to each other with the technology.

Q. Can they speak to each other for the purpose of enhancing leak detection practices?
A. They don't at the moment, but in the future they probably will.

Q. So am I right in understanding that about 60 per cent of digital meters that would be rolled out in South East Water's network will contain that acoustic sensor?
A. That's the aim, yeah.

Q. Can I take you to the mass roll-out deployment strategy, which is exhibit 2 to your statement. It's SEW.0001.0001.5007. In general terms, can you describe the purpose of this document?
A. Yes. So the strategy and the plan were really just to give rigour to how we're going to exchange 850,000 mechanical meters. So you would think in theory you could start at one part of the network and work your way through. We wanted to have - instead of that, we wanted to let the business have input to determine how we should do it and put a bit of nuance as to where the best - where to prioritise our earlier roll-out. So the purpose of this was to craft a strategy that was co-designed by the business and then implement that in the roll-out.

Q. Which parts of the business have had input into this?
A. So what I would say, service delivery, which is the ops and maintenance; our customer experience team; our environmental team; and our planning team, called liveable water solutions, but the people that plan the infrastructure. Just off the top of the head, they're probably the main ones, yes.

Q. Can we specifically, please, go to page 9 of the document. This is a table that sets out the six criteria for the mass roll-out; is that right?
A. Correct.

Q. And these principles of prioritisation, as you mentioned earlier, were co-created with many areas of the business?
A. Correct.

Q. So by reference to these principles of prioritisation, South East Water then determined which geographic areas would have digital meters rolled out?
A. Not so much - I wouldn't say geographic, but it was more - because we're replacing mechanical meter walking routes, where people walk around, we'll try and replace them in one hit. So this probably prioritised those, what we call the metering zones or districts. That's what it was prioritising more so than just a geographic area, if that makes sense.

Q. Are metering zones distinct from water distribution zones?
A. They're completely different.

Q. Completely different?
A. They're literally - the metering zones are literally where - and they're legacy sort of stuff, but it's where our meter readers will walk a particular route around particular streets. That's a - that's within a metered zone. Hydraulic zones on the water side - nothing to do with it.

Q. And would you say there are more metering zones than water distribution zones?
A. Yeah - that's a good question. I don't know the answer to that.

Q. Do you know how many metering zones there are?
A. Not exactly. No, not off the top of the head.

Q. No worries. I want to ask you about the first two criteria in this table in particular, the first being the number of customer-side leaks. That was given the highest priority weighting in the strategy?
A. Correct.

Q. And so areas with high levels of historic customer leak reports, they were factored in to the deployment priorities?
A. They were, yes.

Q. In that column there headed "Justification", there is a cascading list of data sources for determining the frequency of customer-side leaks; is that right?
A. Correct, yep.

Q. The first two sources are actual sources of data --
A. Yes.

Q. -- or sources of actual data?
A. Yes.

Q. So actual data about leak allowances?
A. Correct, yes.

Q. And could you just describe to us what leak allowances are?
A. So a leak allowance - so maybe it's probably important just to distinguish that, in the mechanical world, it's really hard to discern between usage and leakage, just because we only get quarterly reads. So just put that one out there.

So the only - there's a couple of ways, but they are pretty rudimentary as to how we would know about a customer-side leak. One of the most reliable, I guess, is when a customer calls us in and says, "I've just found this massive leak. I've got a massive bill. Can I have a rebate?", in rough terms, and if South East Water accepts that, accepts that they have got a plumber and there is proof of it, then we would rebate their bill, and that's called a leak allowance.

Q. So in order for a leak allowance to be granted, does there need to be evidence that there has been an actual leak?
A. I don't know for certain, to answer that. My - having been around the business for a while, definitely at some point, that was asked; you needed to have proof. I don't know if that's the case today.

Q. Are there circumstances where a leak allowance might be afforded where there is potentially no leak at all?
A. I would say no, because they usually are accompanied by a large bill. That's normally what can trigger it, as well. So there's - I would say there would need to be some sort of basis for it, yep.

Q. I see. The second source there, under the heading "Justification", is CF alerts. Are CF alerts continuous flow alerts?
A. Correct.

Q. And this data can only be obtained from zones that have digital meters installed?
A. Correct. And maybe just to clarify, we - before we did our mass roll-out, like I said, we were already putting meters out there for various other reasons, stress testing the technology, so we had probably close to 90,000 meters in various locations. So they weren't done in full metering zones; they were done for other specific purposes. So I think they used some of that data to say, you know, "Caulfield" or somewhere, "That looks like we're getting lots of leaks. Maybe they all used the same sort of piping on their houses. Do we factor that in to the next roll-out?", if that makes sense.

Q. I see. If there has been a continuous flow through a particular meter, is that a good indication that there is a leak, or could it be explicable by other reasons?
A. It could be explicable, but in my experience I would say over 99 per cent of continuous flow alerts are leaks. And so others may argue that, but really it's only if - like, so maybe it's worth me just mentioning what a continuous flow is, because - how it's done.

So in the meter, so they're electronic meters with a battery in it, and they're scanning the water every five seconds. Now, they're not recording that data for us, but that's how it works out its volume going through it. And a continuous flow is if that meter sees flow for every - I think it's five seconds, it's either five seconds or two seconds - for every five seconds of the day, it's seeing flow. So it never goes to zero. So something is always running.

And so you ask yourself what would be doing that, and it's usually either - in real-world applications that could do it, that's probably evaporative cooling if you're in a hot summer and someone's running it flat-out for the whole time, or it could be irrigation. But then again, irrigation - that's assuming irrigation would be running for, you know, days on end. So, anyway, long story short, I would say nearly every one I have seen has been a legitimate leak. But yeah.

Q. And is the alert only triggered if there is a 24-hour period where there has been continuous flow or do you need a bigger data step?

A. Twenty-four hours in the - it's all done in the meter, and then the meter flags and says, yep, I have got a continuous flow and when I'm going to report the next day, or whenever the next window is, which is typically once a day, in the morning, it will send that payload through. So it doesn't send it instantly. So that 24-hour period might elapse at, you know, 2 in the afternoon, but it might send that data at 6 o'clock the next morning, in the next payload.

Q. So it will send that data to the IoT system; is that right?
A. Correct, yes.

Q. Would that prompt, then, someone from maintenance to go out and attend that private property?
A. No, so - and maybe just to distinguish, and you might have heard it already in the witness statements - South East Water's accountability is up to the meter; behind the meter is the customer's responsibility. Obviously we want to help them and inform them, but it's not our responsibility. So we don't do anything, but I will just caveat that. So when the data comes in, there is a whole heap of systems and business rules, and ultimately that customer will get a text message, fully automated text message, email and potentially an outbound call, but text and email are the main channels for digital.

Q. So this then really is an avenue to notify the customer, who is then responsible for attending to remediating the private leak?
A. Correct, yep.

Q. I will come back to the table. As to the third source of data, it says:

Use proxy data for leaks next ...

So is that on the assumption that the first two sources of data are unavailable?
A. Whether they're unavailable or just in the sort of cascading of priorities of when they're sort of - when the weightings and things were done. And I wasn't privy to it, but I understand there's some weightings and things that went into this, remembering this isn't, like, super scientific to a degree. It's just how do we - all right, we've got to put them everywhere; where do we - best bang

for buck?

So I think what they are talking about here is, okay, what else would be useful for customer leaks? So areas of sandy soil makes sense, because if customers are getting a leak, it's not coming to surface, they probably don't know about it. With a digital meter, they will know about it, regardless if it's invisible. So that's the sort of thing behind that.

Q. So the reference to sandy soil there is not so much a reference to the consequences of having a customer-side leak but the detectability of a leak?
A. Yes.

Q. And so in sandy soils, it's harder to detect the leak --
A. Yes, it just goes to ground, goes --

Q. -- because of its porous nature?
A. Yes.

Q. Okay. Then the second priority is network leaks. So this is to draw the distinction between customer-side leaks behind the boundary or behind the meter and then network leaks?
A. Yes.

Q. Okay. I might move on. So I understand that McCrae was prioritised for roll-out in the first phase of the mass roll-out deployment; is that right?
A. Correct.

Q. And when did the roll-out in McCrae commence?
A. It commenced I believe in either late March or early April this year.

Q. And prior to the McCrae landslide occurring, was McCrae prioritised for roll-out in that first phase?
A. It was. When McCrae was installed was in line with the planning. It wasn't any earlier. There's some dependencies, so we can have all of these great ideas about where we want stuff, but there's also some other dependencies. And so one of the dependencies is it uses the telecommunications network to send the data, like mobile phone towers, and so there was a dependency on the mobile phone towers being ready beforehand, because they

were getting upgraded as well. So there was a couple of other factors.

So to answer your question, it got deployed as per originally planned. It just happened to be right near the landslide or, you know, a month or two after the landslide, which was good to bring visibility to that area, so that we could help customers.

Q. What's the current status of the roll-out?
A. So in McCrae or just generally?

Q. In McCrae, sorry.
A. Yep. So my understanding, as per my witness statement, pretty much every house has got it bar the ones that either, yeah, have opted out, which means they choose not to have it, and I think there's a couple that might be in that basket; where we can't get access, so it's a holiday house. We can't just jump the fence and do it; we have to contact the customer, and if we hear nothing, we don't do those ones. And if - some customers have larger meters. Our larger digital meters are just being certified, so they're not quite ready. So we are doing all of the standard ones, which is the 20mm, which is the majority of our fleet.

Q. In your witness statement, you say only 110 properties remain without a digital meter in McCrae. You say a couple of those, of that number, 110, are due to customers opting out. Do you know the proportion of properties that haven't had digital meters installed by reason of property access issues?
A. I don't, off the top of my head. I imagine - and this was at a point in time - it's probably, you know, we've probably got most of them done now, but it would be - probably - I can't answer. I don't know that one, sorry.

Q. Earlier you said that digital meters with acoustic sensors can be effective over a distance of about 50 metres.
A. Yep.

Q. Do you have a view as to whether, had digital meters been installed throughout McCrae prior to November 2024, would those digital meters have picked up the burst water main in question in this inquiry?
A. I don't believe so. I think Tim Lloyd gave evidence

that that Bayview Road leak was not around properties, is my understanding; it was a trunk main. So these sensors probably weren't - that's not the intent of these sensors, to be sort of detecting leaks hundreds of metres away on large pipes that are not near houses. They've got a specific purpose, to find and fix and help us optimise the thousands of small leaks that we get in service pipes. That's their main intent.

And I think as Tim talked to, for those larger trunk mains, we will be looking at other technologies hopefully very soon that will be permanent equivalents of what currently is on the market as temporary solutions. We will be looking for something that you can deploy and leave there effectively permanently.

Q. And these instruments that South East Water intends to install on trunk mains, do they predominantly rely on acoustic technology?
A. They do, yep.

Q. Is that different from vibrations, detecting vibrations?
A. I think they're interchangeable. My understanding is, like, if you're listening just for the water, it's usually classified as a sort of hydrophone or microphone. For vibration, it's the water's leaking but it's actually vibrating along the pipe and that's what it's detecting. So just - if that sort of makes sense.

Q. And do you have a sense when the technology on the trunk mains will be rolled out?
A. As soon as possible, but - so there's some emerging on the market now that you can get that look reasonable. But South East Water's also - has sort of built their own technology and it's not far off. It's getting - it's in - literally in trial phase. So, as soon as that's ready, we plan to put that out there, but realistically it could be, you know, six months or more, by the time that we test it, trial it and make sure it's fit for purpose.

Q. You mentioned a South East Water technology. Is that the Sotto sensor or something else?
A. It is. So, yeah, that's Sotto, we call it. That's what's in the digital meter, but it's also what is going to be these other permanent ones that you can put on trunk mains and hydrants and stuff. It will be the same sensing

technology, just a different brain behind it. It doesn't need a meter. It's basically a magnetised version. You chuck on something, and it tells you leak information.

Q. Could you just give us a little bit more detail about how that works, the Sotto technology?
A. Yes, so the 60 per cent of meters that will have the vibration will have this Sotto. It's for all intents and purposes a black box that sits on the water pipe. It measures vibration, uses a piezo crystal, and as the crystal is stressed by hearing a vibration - you can put your finger on a pipe and not feel it, but this sensor would pick it up. That's how sensitive it is. It converts that sensing into a voltage, and then the electronics infer that voltage as a vibration.

So that's exactly what it's doing in the water meter, it's sitting on the pipe. And then in this standalone version, it's that exact same sensor magnetised to, say, a fire hydrant sitting in a - could be sitting in a paddock somewhere or middle of nowhere with a data logger on it. So it is not a meter per se but a little black box, and it transmits the data. Probably I think the way the guys are setting it up is it's going to transfer more frequently than the digital meter, which is that once a day. These ones that we're deploying permanently in the distribution areas are probably going to talk maybe every couple of hours or something, so you can get that more real-time aspect to it.

Q. Mr Forster-Knight, are you happy to continue or would you like to take a break?
A. Keep going if you are happy to, yep.

Q. You say at paragraph 16 of your statement that:

> *As part of the McCrae prioritisation process, any customer-side leaks ... (i.e. over 1000 litres per day) were given the highest response time priority from ... (Service Stream).*

What is that response time?
A. So this isn't a KPI or anything. So just to frame it, in this sort of hyper-care period where we've just put digital meters in, in a sensitive community area, they're all - they're lighting up with customer-side leaks, they're

also finding network leaks, because that's the intent of them, and so we wanted to put a bit of structure around that and - and, sorry, what was your question again?

Q. What's the response time from Service Stream?
A. Oh, yes, sorry. So typically we wouldn't - in a normal world and situation, we would put the digital meters out there, and, like I said, that automated process would be messaging the customer saying, "You've got a leak" and we stay out of it; like, that's all, and that works quite well.

For this one, we wanted to go above and beyond, given the sensitivity, so our contractor, Service Stream, which isn't - it's the same parent company as Service Stream that you would have heard about through Tim Lloyd, our industry partner, but it's the metering department of that, they've got some plumbing skills. We basically said, "Any large leaks that are detected, we want you guys out there straightaway to help the customer find them and either repair it for them or guide them to - if they want to get their own plumber or do it themselves."

Q. Sorry, and what was the response time?
A. Just high priority. So it wasn't - there was no formal KPIs. It's like, "As soon as we tell you, Service Stream, that there's a high leak [sic], can you get out there as soon as you can." And remembering, they are in the vicinity installing digital meters, anyway, so we've got - we had people on the ground that could scramble pretty quickly.

Q. And so this is a bespoke process that was introduced following the McCrae landslide?
A. Correct.

Q. Is this special process in connection with the customer-side leaks in McCrae intended to be a temporary or permanent approach?
A. Still to be determined. It's still getting discussed. Yes.

Q. Is it too resource intensive to continue on a permanent basis?
A. We'll have to think about that, but just if I frame it, it's - when we're paying for customer-side leaks, all of the customer base is paying for that, just in sort of

raw and rough terms, and there's also potentially sort of liabilities that we need to think through. So if we're - you know, you can have pipework in customers' houses doing who knows what, going into bungalows and doing whatever. If we get involved and start trying to change people's property too much, that's a consideration that we need to think through. So, yes, a few factors to think about there.

Q. At present, does South East Water have a view as to the minimum amount of time that this non-standard process will be in place?
A. I don't think - look, it's been discussed to say, like, the staff are asking how long do we do this for? At the moment, it's sort of all hands on deck, because we just want to show that sort of sense of urgency and care for customer, but, yeah, to be determined.

Q. Mr Forster-Knight, I'm now going to ask you some questions about customer-side leaks in McCrae in the period between 12 May 2022 and 12 May 2025. You refer to this three-year period in your statement as the "Relevant Period". You were asked to provide information - and by "you", I mean South East Water was requested to provide information - concerning private property leaks in McCrae for that relevant period, including dates on which the relevant leak was reported, the volume of water lost and the date on which the leak was repaired. You say that it is not practicable to provide that information; is that right?
A. Correct.

Q. Is that because South East Water did not have a comprehensive way, prior to the installation of digital meters, to monitor private-side or customer-side leaks?
A. That's right. Not - nowhere near - yeah, that's a good way to frame it. It's not comprehensive and we can't be sure there's - and I talked to a couple of ways where we for certain know that a customer's got a leak, but generally we don't know what's going on out there in the mechanical world, is what I would say.

So, yeah, easy to produce the table on the digital, which we have done. And then on the mechanical side, we've done it by the evidence that we do have, which is those sort of three areas, which are the leak allowance, so that's clearly a customer's got a leak, so that's one way;

the high read notification, so we manually read it, the system says, "They're going to have a big bill here. Let's tell them as well that they could have a leak and tell them how to check for it", and things like that; and there was one other one, which I've just --

Q. Red notices?
A. Red notices, sorry, yeah. That's not in my remit per se, that's a maintenance activity, but it's obviously - in their investigation, if they find an internal leak, then obviously that's proof that there's a customer leak. But outside of that, it's really hard to discern usage and leakage.

Q. Can I add to that, would you say a fourth source of information, which is the raw meter read - a raw read of the meter data?
A. Yes, so that fourth one - so that's not a process per se. I think it was - we did that because it might have been part of the question, just to show high-consumption users in that area. It doesn't necessarily indicate leak. It could be, you know, other purposes. But - yeah, that's - that's that document you are referring to, I think.

Q. I might ask you about each of those sources of information in turn. So we will start with red notices. These are notices that are issued by South East Water's maintenance staff or contractors who identify a leak on a private property; is that right?
A. Correct.

Q. Do you know what information is provided in a red notice?
A. To the customer or to South East Water?

Q. To the customer.
A. The customer gets a little note, generally, put on their door or in their mailbox saying, "You've got a leak and you've got this many days to fix it."

Q. And it's the occupier's responsibility to repair the leak; we've discussed that?
A. Correct.

Q. And is the occupier or owner required to report to South East Water once they have repaired the leak?

A. I don't believe so. I'm not fully across that process, but I don't believe that's the case.

Q. So there is no mechanism to follow up whether the customer has addressed the issue?
A. I - what I will say in - just because I've been around long enough, at a point in time there used to be a follow-up, so we would put a red notice and then somebody would manually follow up. I'm not sure to this day if that still occurs, yes.

Q. You have identified that 17 properties in McCrae were issued with red notices during that three-year relevant period. When you say "McCrae", are you referring to the entire suburb of McCrae or the confined area in the vicinity of the landslide site?
A. I don't actually know what zone we used for that. Yeah, sorry, I don't know exactly which zone. I thought we documented each - which definition of zone for each part, but clearly not in that one.

Q. Setting aside not knowing precisely the area over which these red notices concerned, does that number of red notices over a three-year period strike you as surprising or abnormal?
A. No, not at all. There's leaks everywhere. And as the digital meters would attest to, there's lots of leaks, so that number is - doesn't surprise me. It's probably on the low side.

Q. The second source you have referred to in your statement is leak allowances. You raised this earlier. So this is a situation where a customer receives a high water bill, an unexpected high water bill, and then calls South East Water and requests a reduction in their bill. Earlier you said that a leak allowance may be granted only in circumstances where there has been a leak, or might there be situations where leak allowances are afforded for unexplained reasons, for the high water usage?
A. My - I don't know for certain, but my strong assumption would be that we only give it for proof of or some evidence of a leak, not just somebody saying, "I used - you know, I filled my pool five times. Can I have some money back?" That obviously wouldn't fly. So, yeah, I'd say that's the case.

Q. You identified that 60 leak allowances were issued to

55 properties in McCrae from the beginning of 2022 to May 2025?
A. Yes.

Q. Is that an unusual number of leak allowances for that period of time?
A. I don't actually have a good reference for that one. We probably - it's probably not something that we - or I've seen analysis of versus other suburbs, so this was specifically pulled for this - for my witness statement.

Q. Where a customer requests a leak allowance, are there circumstances where South East Water would independently go to verify that there has been a leak?
A. I'm not aware of that being a process.

Q. So it's incumbent on the customer to provide evidence of the leak?
A. That's right. Either - my assumption, strong assumption, would be that they would show either an invoice from their plumber or some sort of evidence from a plumber to do it, and clearly you would expect their bill to reduce, and so there is some sort of checks and balances on that one.

Q. The third source that you refer to in your statement in connection with customer-side leaks are high usage notifications. You say that high usage notification is a manual process for mechanical meters?
A. Yes.

Q. Would you just describe what you mean by the manual process?
A. Yes, so there's no - like, the mechanical meter reading system is pretty antiquated and a bit legacy, if you like. So the meter readings come in, and then there's some South East Water-built algorithms, if you like, to come up with some business rules to say, "Is this reading higher than normal?" And then there's a second manual step, where somebody has to collate all of that information and then push it through to another system, predominantly our billing system, to amend to a customer's bill, so they get the bill and they'd get a letter saying, "By the way, you've got higher usage."

Now, that's not generally - you know, you're getting your bill and then that, so that's not ideal. So we

changed that channel to be an SMS that comes earlier than the mail, so it at least gives people a couple of weeks' earlier notice of it. But that's the manual process we've talked to. I think I mentioned in there that, you know, it could get missed, and that's basically because it is a manual process. Ideally we don't miss any, but if someone's away and someone doesn't back them up that day and it gets missed in the wash, that could happen, but it's not a predominant problem.

Q. Is South East Water looking to automate that process?
A. Yes, when we go to digital meters, there's already fully automated processes for lots of these manual workarounds, yes.

Q. Just returning to the manual process that's in place for mechanical meters, what are the two situations in which a customer would receive a high usage notification?
A. So it's their consumption, which is quarterly, looked back a year ago, and if it's three times that same amount in a quarter, they will get it; or if they have used, I think it's 1,000 kilolitres in a quarter, they will also get a notification.

Q. Is 1,000 kilolitres 1 million litres of water in a quarter?
A. Yep, that's right, yep.

Q. To provide some context, do you know what the South East Water network-wide average water consumption is in a quarter?
A. I do. It's - I think it's in one of my exhibits there, but I think it's about 44 kilolitres - it varies from season, but it's about 44 kilolitres a quarter, is the South East Water average.

Q. So 44,000 litres of water a quarter?
A. Yes.

Q. And how is that figure arrived at? Is it as simple as aggregating the total volume of water used across the network in a quarter and then dividing it by the number of properties in South East Water's network?
A. That's right. There will be a bit of segmentation in there, so that we're not including sort of commercial/industrial customers or anything like that, but just residential, but - yeah.

Q. Just residential. You have identified that 220 high usage notifications were sent to McCrae properties during the relevant period?
A. Yep.

Q. And you have exhibited to your statement a spreadsheet that records the properties that received those high usage notifications. I don't propose to take you to the detail of the spreadsheet, but in your review of the data, did you consider the volume of high usage notifications to be unusual or striking in any way?
A. I would probably say no, and I'm probably a bit biased by what we're seeing in the digital meter world that is really exposing the amount of leakage. So, yeah, I wasn't surprised.

Q. So would it be fair to say that a high usage notification is triggered when either water usage is uncharacteristically high for that property or the water usage exceeds a set threshold of a million litres a quarter?
A. Correct.

Q. And a high usage notification wouldn't give us detail as to the proportion of water that has been used as opposed to lost through a leak, for example?
A. Correct. You can't discern it from mechanical, yes.

Q. So would you accept, then, that a high usage notification in and of itself is not evidence of a leak occurring at a particular property?
A. Correct, and we don't frame it that way. We say, "You've got a high read, and by the way", and I think we send them some collateral to say, "if you want to check your property, do the" - you know, follow some simple steps to try and do that, yep.

Q. The final source of information you refer to is a table that was created by South East Water that contains information about properties within the McCrae landslide area that used more than three times the South East Water-wide network average amount of water. Can I take you to that table, which is SEW.0001.0001.5175. While we wait for the file to come up, Mr Forster-Knight, did you say earlier that this spreadsheet was prepared specifically in the context of your witness statement? Is it something

that South East Water would prepare as part of business as usual?
A. No.

Q. Thank you. So in the top row there, we've got 13 quarters going across, starting from April to June 2022, through to April to June 2025?
A. Yes.

Q. And below that, for each of the quarters, is the South East Water-wide network average amount in kilolitres for each quarter; right?
A. Yes, correct.

Q. To take April to June 2022 as an example, that network average consumption was just over 44,000 litres of water for the quarter?
A. Yes, correct.

Q. And listed below are all the properties in the McCrae landslide area that have used more than three times the South East Water-wide network average at least once during the 13 quarters examined?
A. Yep.

Q. And the red shading, that indicates the quarters where the usage has exceeded three times the network average?
A. Correct.

Q. And the properties are ordered by highest total water usage?
A. Yep.

Q. So within this dataset, you have pointed out in your statement that 10-12 View Point Road had, on average, the highest water usage in the McCrae landslide area?
A. Yep.

Q. You say that's six times the average water use compared with the South East Water network-wide average?
A. Yep, in some quarters, yep.

Q. And do you accept that this data does not tell us how the water was used at that property or whether it was lost?
A. Just for that particular property or --

Q. Yes.

A. Yes, I accept that. We don't yet have a digital meter on that property, so, yeah, we can't tell.

Q. So one wouldn't be able to look at this data and infer the extent to which this property has experienced customer-side leaks?
A. Not for that property. Other properties that have since had digital meters, yes. But not that one.

Q. Would you accept that high water usage alone is not conclusive evidence of the presence of a leak?
A. Yes, I would accept that.

Q. Stepping back and looking at the four sources of information you have referred to - red notices, leakage allowances, high usage notifications and this raw meter data - would you accept that the red notices are the only definitive source of information that can be directly tied to known leaks?
A. Yeah, I guess the - yeah, if you are taking it on the point that a leak allowance isn't proof of it, but generally it would be, but, yeah, a red notice is a South East Water contractor or staff member physically seeing a meter ticking over. So, yeah, if that's your contention, I agree with that.

Q. So you would accept that leak allowances, high usage notifications and raw meter data go no higher than identifying potential properties that have experienced leaks?
A. That's right, yep.

Q. At paragraph 19 of your statement, you refer to a spreadsheet that shows all instances of continuous flow detected on private properties in McCrae since the digital meters have been installed?
A. Correct.

Q. So that they were deployed, you say here, since 16 April 2025. And you say:

> *The data reveals that as at 6th June, a total of 57 leaks were identified on private property in the suburb of McCrae (representing a cumulative water loss of approximately 800,000 litres since digital meters began identifying leaks in the*

suburb). There have been 24 leaks over 1000 litres per day.

Do any of those findings strike you as atypical or unusual?
A. Probably - probably not the number of leaks, but the volume of the leaks we were finding, and there's reference into the tables there, but some - and I think I put just a couple of examples, but there's ones with - pretty much as fast as you could lose water out of a pipe is what was happening on some of the properties.

Q. And is that the example you have given of 17 Cook Street, with a loss of 27,000 litres per day?
A. Yep.

Q. That would be on the very high end of the spectrum of private properties?
A. That's super high, yeah. I don't think I've seen one - I've seen similar but none higher than that one.

Q. Mr Forster-Knight, I'm now going to ask you some questions about changes that have been made to South East Water's systems and procedures for identifying leaks as a result of the McCrae landslide. I will start with alarms. Am I correct in understanding that alarms are installed on various pieces of equipment in South East Water's network?
A. So I'll try and put how this actually works. So if we've got an asset, it's got sensors and electromechanical things happening, whether it's a pump station, a flowmeter, et cetera. Then there is a device that transmits that data back to a central server, which is the SCADA server. So at that point in time, it is just data coming back and it can either be ones and zeros for on and off, or it could be an analogue value for level whatever. At that point, there is no alarming still.

In the SCADA platform itself, in the configuration during commissioning time or when an asset is built or changed, somebody, generally the operations team, would say, "Okay, that value coming back there, I want to put an alarm on that of this value, and I want to make it this" - what they call severity, which is just a way of getting it to the top of a list of many thousands of alarms that come in each day. It's trying to get eyeballs on something as a higher priority. So does that make sense?

Q. Yes. Can I just ask a few follow-up questions. These alarms, are they triggered - sorry, I withdraw that. Are these alarms, for example, designed to detect changes in water pressure?
A. They can be.

Q. Water flow?
A. Can be.

Q. What are they predominantly measuring?
A. Literally any instrument in our field, of which we've got thousands of them, can have an alarm on it. So if we've got - we're measuring chlorine, turbidity, reservoir level, all just data coming back, and then there is an application to say when that data reaches a certain threshold, I want an alarm, which means it pops up in a centralised screen. Did that answer the question?

Q. Yes. And can you identify which alarms would be particularly useful in the context of leak detection?
A. Yes. So in leak detection, flow can be useful. I'll say "can", because it depends on the configuration of the zone and how complex it is, and it's not a - none of it is a silver bullet. Unless you understand the complexity of that zone, other things could be happening, and because we don't have digital meters to balance against a network flowmeter, we can't absolutely say there's a leak. But, yes, they can be - it can be useful for inferring something is happening potentially abnormally, but sometimes those areas are massive and you might say, "Okay, I've got something happening here", but there's, you know, 50,000 properties in that zone. It probably doesn't pinpoint anything, if that's the case. It's not like an acoustic sensor that will tell you exactly where it is. It's far from that.

Q. I see. So an alarm essentially would trigger a body of work to investigate whether there might be a leak or not in the system?
A. That's right, or something to follow up, yeah.

Q. And I understand that South East Water is currently reviewing the calibration of those alarms and the process for escalating issues related to the performance of its network. Could you describe that process of recalibration or --
A. Yes, I probably didn't word that well in that, but

basically what we're trying to do, if you've listened to Jonathan Crook's testimony today, the calculation he did, which is very sophisticated and, you know, zones and flow in, flow out, and all that sort of stuff, we want to build that in a real-time manner going forward so that we can apply alarms to it that have criticality built into them to say, okay, this hydraulic zone, if it gets an alarm, it's more urgent than another or it needs to be escalated. And by "escalation", I mean the alarm comes in, but it also may get an email to a general manager or a group manager of operations to say, "By the way, something important is happening here. You should be across it." So this is what we are attempting to build, and the software has sort of moved to a point where we think it's doable and that's what we're attempting to do.

Q. Do you have a sense of how long it might take to move from proof of concept to implementation?
A. I think in the next sort of two to three months, we will have a prototype working. It will need refinement, and we don't - you know, there is a balance between something that alarms all the time to the point where people ignore it or it's nuisance and then trying to find that threshold, so there will be a bit of that, but, yeah, in the next two to three months I would be surprised if we're not well progressed with that.

Q. In your statement you refer to, flow thresholds for each zone will be set to drive leak investigations. When you refer to "zones", do you mean water distribution zones or something else?
A. Yes, water distribution zones, yes.

Q. And can you tell us a little bit more about what you mean by "flow thresholds"?
A. So once we do this dynamic balance, which is, you know, one zone could have five entrances, so it could have two flowmeters coming in and three going out from PRVs, so in a complicated zone. So once we balance that, we will get a net flow for that particular zone, and the alarm will apply to that net flow algorithm or data point that we create. And the very near-term state hopefully is that once we set that alarm, it will say, "Something is very abnormal in this zone", and we can be pretty confident with it. Once we've got digital meters deployed en masse, we will be super confident that we will get sort of 90 per cent of the way there already.

Q. I see. And these flow thresholds can be calibrated depending on the sensitivity of the area in which the assets are working?
A. That's right. And more so to the balance I talked about earlier, we probably might need to live with some more nuisance alarms - not nuisance alarms but alarms that go off more regularly and get checked, and err on the side of that rather than setting conservative levels that may not get met. So that's a balance for our operations engineers to sort of help refine that.

Q. Ms Olsen gave oral evidence to this board of inquiry that there was a flow alert on 11 December 2024 prior to the McCrae landslide. Are you aware of that flow alert?
A. I am.

Q. She said that that leak grew over time. So one of the issues, I suppose, about alarms is that you can sort of look at it, it might be at a particular point in time, but actually it changes over time. Is South East Water in the process of or considering ways to overcome that challenge that Ms Olsen identifies?
A. Yes, and so what I sort of just highlighted will do that. I think that particular alarm in context would have been - if you put yourself in the shoes of the operators, it literally came in for two minutes, I think it was, and cleared itself. So it hit a threshold and then went below that threshold and then it disappears from the alarm system. So they saw it there, but with the seasonality of the peninsula, you're talking about thousands of hydraulic fluctuations, I guess their mindset was, okay, that's gone - it's appeared, it's disappeared; it's not a problem.

So the way to overcome that is to build these more dynamic zones that don't just take one piece of information, it takes the entire picture and sets the alarm to that and will be - I think it will be a lot better for our operators.

Q. So the new process will be able to provide a holistic understanding of the data rather than a point in time?
A. That - yeah, I wouldn't say "point in time". It will be just - it doesn't have the context. You might have one flowmeter that looks really high, but that could be just from demand and customers moving in, but that same zone could have heaps of flow flowing out of it from another

interface. So until you balance it all, you don't really know the full picture.

Q. I see. Is it the case that assets located in areas of landslide risk will attract more sensitive alarm thresholds?
A. That's the intention, yes.

Q. And what information or data will South East Water be drawing upon to determine areas that are susceptible to landslides?
A. I guess it's these erosion overlays, which, you know, I'm certainly learning about. But, yes, once we've got that information and it's confirmed, that's the plan.

Q. Do you have a sense of when the alarms will be calibrated to be sensitive to landslide risk?
A. So, similar to my comment on building the zones, which I think we can do in the next two to three months, as soon as those zones are built, we will be putting alarms on them straightaway and then we'll be tweaking them to make sure that they detect the right things, probably starting less conservative and so we get lots of alarms potentially early and we refine it. So, yeah, in that - I think I have said in Q1 FY26, but, yeah, in the next - so teams have literally been working on all of this stuff in the last few weeks, so it's happening.

Q. Is that a team that's under your responsibility or supervision?
A. Yes, the team that will build the technology is, but a lot of the inputs are from the service delivery team, who really own the decision about alarming. My team just triages the alarms, if that makes sense.

Q. I see. You say in your statement that South East Water is also reviewing governance of alarm management, for example, who can make a decision on an alarm, who can sign off on changing the threshold. What prompted this review of alarm management at South East Water?
A. I think it was part of a broader program, it was actually already in train before McCrae, just to review this, because over time, if you've got access to our SCADA system, we've empowered people to be able to change thresholds. It is all audited, et cetera, but unless there is some stronger governance over it, somebody could make a decision to change something that's not well

communicated, and sort of, you know, we could miss something in the future. So the governance we're looking at is, if we've designated an alarm to be critical, if somebody wants to change it, there will be a workflow where it has to be signed off by somebody up the chain.

Q. And did the McCrae landslide reveal some opportunities for South East Water to improve its approach to alarm management?
A. I think it was just more in the general discussion when sort of everything was going down and people were investigating data and alarms and all the rest of it - it was, you know, "Who did this?", and what - you know, those sort of questions. It just sort of framed it that we needed a bit more structure to that.

Q. I will move to a different topic now. You are aware that in the months leading up to the McCrae landslide, South East Water received multiple customer complaints of water surfacing on Waller Place, Charlesworth Street and Coburn Avenue?
A. Yes.

Q. Yesterday Mr Lloyd gave evidence that South East Water's systems do not have the ability to recognise clusters of complaints or recognise correlations between multiple complaints. Does that accord with your understanding?
A. Yes, the systems themselves as they are built in isolation don't do that.

Q. So South East Water's employees and contractors do not have an easy means of determining potential interrelationships between multiple customer complaints?
A. Correct.

Q. And you say that South East Water has initiated a manual process to identify when multiple customer contacts may be interrelated. Could you describe that process that's being undertaken?
A. Yes, so it's a daily process at the moment as part of this sort of hyper care we're doing down there, but it's literally somebody going into two or three different systems and checking for - you know, doing their own ad hoc analysis at the moment - that's the manual process - to see if there's any clusters or correlations, something happening over a rolling period. We're still defining what

that is, but we want it long enough to capture, you know, disparate events. It might be over a month or a few weeks. So, yeah, that's the manual process.

And then in the background - and, again, all of this stuff is happening as we speak - we're looking to automate that, and that's - I would say it's not - what would I say? It's definitely - it's doable, absolutely doable. You can get into all of these systems in the back end of all of the systems. So we've got someone writing some software that's going to pull the data out of all of them and build these clusters - cluster detection that will then present itself an alarm on the SCADA system or it might email general manager or group manager, operations.

Q. And do you know when that software will be written or be --
A. It's getting - it's literally getting written right now. When it will go live I can't say, but I would hope it would be in the next, you know, three or four months.

Q. And then once that software is available, would that be deployed across all of South East Water's network?
A. Yeah, that's the intention of it.

Q. And so for now, there's an initial - so there is a manual process in place. Is that just in relation to McCrae?
A. Yes, only because it's really hard to do it manually. You would have someone spending their entire time trying to find clusters everywhere. It would be really - yeah, probably not really efficient. So we're focusing on McCrae just to make sure that's rock-solid, and, yeah, hopefully if we get these automated ones sooner rather than later, that will go to that process.

Q. How long will this manual process remain in place in McCrae?
A. I guess it will remain - well, I haven't formally discussed that with anyone, but my view would be it will remain until the automated process, so for the next few months.

Q. I will move to the final topic. In your statement you say that these multiple reviews that are occurring in relation to South East Water's systems form part of a broader plan. What were you referring to when you

referred to the broader plan?
A. Yes, so another - a small function in my team is the non-revenue water, which I think - you might have heard about in the session so far, but basically the water lost in the network. So we created a function to focus on that, and that was last year, probably mid last year. And as part of that, we've got a three-year plan, non-revenue water plan, and part of that - that's got lots of facets to it, but one of them was - I've just forgotten your - can you say the initial question again, sorry?

Q. So what's this broader plan?
A. Oh, yeah, sorry, the plan. It's a three-year plan and it has permanent leak detection on it, you know, in different phases of the years. It tackles leaks detection, it tackles administrative errors in, if you like, meter reading, which also contribute to non-revenue water. So it is a really comprehensive plan. So, yeah, that's what I was probably getting to about being part of the broader plan.

Q. So would it be fair to say, given what you have told us today, that the time frame or the time horizon for implementing the reviews to South East Water's process for monitoring its network should be done within the next four to six months?
A. Correct. So - and just to be clear - the overarching plan, if none of this - if McCrae didn't happen, our overarching plan was over three years, and each year had a phase of work. We've obviously pivoted a bit of that because of the - we've brought forward quite a few things of that plan. Yeah.

MS KITTIKHOUN: Thank you, Mr Forster-Knight. I have no further questions, but others may.

DR PHILLIPS: Madam Chair, I appear for the Mornington Peninsula Shire Council. I do seek leave to ask a handful of questions. I have run them past --

CHAIRPERSON: You have leave.

DR PHILLIPS: There are a handful, Madam Chair, and I wonder if this would be a convenient time for a break, but I'm happy to proceed.

THE WITNESS: I'm happy to keep going.

<EXAMINATION BY DR PHILLIPS:

DR PHILLIPS: Q. Mr Forster-Knight, my name is William Phillips and I appear for the Mornington Peninsula Shire Council. I have a few questions for you, starting with the topic of the roll-out of digital water meters. Operator, if we could bring up Mr Forster-Knight's statement, which is SEW.0001.0001.5014, please, and can we go to page 4, please. At paragraph 18, you say that:

> *Digital meters have the advantage of being able to detect probable leaks on private property in near real time ...*

And then if we can go - sorry, for the benefit of the transcript, we can't record gestures, if you could say "yes"?
A. Oh, yes.

Q. Thank you. Then if we could go to page 2, please. At paragraph 10, you discuss the roll-out of digital meters across the network?
A. Yes.

Q. And we're currently in the mass roll-out phase; is that correct?
A. Correct.

Q. Or referred to as MRO?
A. Yes.

Q. And once this phase is completed, this will give South East Water the capacity to identify leaks on infrastructure within private property more readily?
A. Correct.

Q. And also some network leaks within close proximity to private properties?
A. Correct.

Q. And that's a function of whether the digital meter has that acoustic add-on; is that correct?
A. Correct.

Q. Thank you. Operator, if we can go to page 3, please. At paragraph 14, you state that the suburb of McCrae was

prioritised for the MRO?
A. Yeah, within the first 12 months, yep.

Q. And then at paragraph 15, you say that the roll-out has involved the deployment of approximately 2,500 digital meters to customers in the whole suburb?
A. Correct.

Q. And that about 110 properties remain without a digital meter in McCrae?
A. Yes, that was at the point in time of the statement. Probably updated now, but yes.

Q. Operator, if we can bring up MSC.5073.0001.0001, please. Mr Forster-Knight, this is an email from South East Water to the Mornington Peninsula Shire Council. If we can blow up the paragraph starting with, "This roll-out of 2,260", please. Would you accept, Mr Forster-Knight, based on that paragraph, that the MRO in McCrae started on 28 April 2025?
A. Yes, that looks about right.

Q. Thank you. I'm finished with that, operator. If we could bring up the statement again, please. I'm sorry, I will give the page - oh, thank you. Mr Forster-Knight, was the reason for the prioritisation of McCrae partly the occurrence of the recent landslides?
A. No, it wasn't.

Q. That being said, the ability to potentially more readily detect leaks in private property has benefits for averting landslides; would you agree?
A. So you're saying customer-side leaks?

Q. Yes.
A. Potentially. I'm not an expert in it, but assuming bodies of water are not good for the environment, then yeah, I would accept that.

Q. Thank you. Operator, if we can go to SEW.0001.0001.5005, please. Mr Forster-Knight, this is exhibit 1 to your statement?
A. Yes.

Q. And that's the Mass Roll Out Deployment Plan?
A. Okay, yes.

Q. If we can go to page 11, please, that's a description of what is referred to as the "Foundation Phase"?
A. Yes, that seems to be.

Q. And then over the page to page 12, please, under the heading "Quarter, 1 FY25" it states:

This quarter will include only:
. 20mm basic meters, and
. Portable [sic] meter exchanges.

A. Potable, as in drinking water.

Q. Oh, sorry, "potable meter exchanges", thank you.
A. Yes, correct, yes.

Q. And by 20mm meters, is that referring to the diameter of the connections to the pipes into and out of the meter?
A. Yes, it is.

Q. And then over the page to page 13, please, for quarter 2 it says something similar:

. 20mm meters.
. Basic meters, with limited vibration meters expected.
. Potable meter exchanges, with limited recycled meters expected.

A. Yes.

Q. And then if we go to page 16, please, there we have a description of the "Build Phase", and specifically it states:

Starting in January 2025, this phase will target around 7,500 installs a month for 6 months. During this phase all meter sizes ... and all meter types will be installed ...

A. Correct, yep.

Q. Thank you. And then if we go to page 20, please, there we have a description of the "Volume Phase", and it says something similar to the "Build Phase":

Starting in July 2025, the volume phase will target around 15,000 installs a month for the 12-month period, with all meter sizes and types included.

A. Correct, yep.

Q. Is it correct, then, that the roll-out of digital meters to properties with existing analogue meters that are 20mm was planned to occur first?
A. Yeah, that's right. The larger meters are a bit - proving a bit trickier, but we're not far off having those, so, yeah, the 20mm is the majority.

Q. So South East Water plan to roll out digital metres to replace the larger analogue meters after the 20mm standard meters?
A. Yes. To be honest, and remembering this is a plan done, you know, a year or so ago probably in its sort of thinking, and lots changes from logistics, procurement, but it is our plan.

What the future state is, if we had the meters readily available, we would do - if we did a metering district, which is, as I alluded to earlier, where someone used to go and read, regardless of the meter size we would exchange every single one of those. That's our - what we're aiming for. It's just some logistics of getting those larger meters means we can only do the 20mm and we will come and fill the gaps when we have the larger meters. But ideal state, do it in one go.

Q. Thank you. But based on the Mass Roll Out Deployment Plan, South East Water's position is that the larger meters will only be exchanged from January 2025?
A. Where are you getting this bit from, sorry?

Q. If we can go back to page 16, please. It's the sentence beginning with "During this phase".
A. Yes.

Q. Before that, the sentence "Starting in January 2025".
A. Yes, so, sorry, just to make the point there, that's our intention. But the meters there, they're new technology, they're - our plan is to have them all, but just from logistics, testing, certification, sometimes they are not quite ready, so this was our best-laid plans, but

it - yes, like I said, we don't - we're only just getting the larger-size meters, like, now-ish.

Q. So that January 2025 date is a bit off at this point?
A. Yes, would I say so, if that's referring to - like, for DN20s, probably okay; but for the larger sizes, that plan didn't come to fruition.

Q. And larger sizes, including 25mm?
A. Yes, 25 and above, yep.

Q. And is that because the larger meters have not yet been certified - was that your evidence?
A. Yes, and by "certified", I mean by South East Water. So the vendors have to build them and then go through lots of certification, and then South East Water do our due diligence, and that's taken a bit longer than we would have liked, but, like I said, it's pretty much over the line in recent times.

Q. Thank you. And you are aware that this board of inquiry is looking at issues surrounding the landslides that occurred in McCrae in November 2022 and 5 January and 14 January 2025?
A. I'm aware, yes.

Q. Are you aware that the landslides that occurred in November 2022 in McCrae began from the land at 10-12 View Point Road, McCrae?
A. Only during sort of hearing the witness statement. I wasn't privy to it beforehand, yep.

Q. Thank you. And are you also aware that the 5 January and 14 January landslides in McCrae also began from 10-12 View Point Road, McCrae?
A. Only through these hearings, if that's come up, yep.

Q. Thank you. Are you also aware that the property at 10-12 View Point Road, McCrae, has a 25mm water meter?
A. Yes, I've since discovered that.

Q. And are you aware as a result of that that it has been excluded from the digital metering program to date?
A. Yeah, I wouldn't say "excluded". It's just we don't have the meter for it. As soon as the meter is available and assuming it can be accessed, it will get one.

Q. Thank you. Operator, if we could bring up MSC.5031.0001.4385, please. Mr Forster-Knight, you are not copied in on that email, but have you seen it before?
A. No, I don't think I have ever seen this email.

Q. Take a moment to read it, if you like.
A. Yes, I've read that.

Q. Would you agree, then, that it states that:

We are excluding 3 Penny Lane because of damage and 10 View Point Rd because it has a 25mm meter, and at this time we [are] only replacing 20mm meters.

A. Yes, and Julian, who wrote this, he might not have been aware of the full details of the plan of - once we had them. It's not - like I tried to articulate, we weren't going to do one size and then the next and the next. It's once they are available and certified, we are bundling them all together. It's just that we physically didn't have them.

Q. Do you know if a digital meter has since been installed at 10-12 View Point Road?
A. At this point in time, I don't know for certain if it has. It's waiting on that release of acceptance of the 25mm, I would assume, and as soon as that's done, I'm sure it will get one. I haven't heard personally whether it has got one yet.

Q. But you would agree that given its connection to landslides in McCrae, it is important for a digital meter to be installed at that property?
A. I agree, yep.

Q. And do you know if a digital meter will be installed in the next couple of months or do you have a timeline for that?
A. I don't, but other than to say it is - as soon as the meters are available, I'm sure the team have got that property, amongst others, as a super-high priority.

DR PHILLIPS: Thank you. Madam Chair, I tender those two emails.

CHAIRPERSON: The email from Julian Tully to Derek Rotter

and others dated 20 March 2025, is exhibit MPSC3.

EXHIBIT #MPSC3 EMAIL FROM JULIAN TULLY TO DEREK ROTTER AND OTHERS DATED 20 MARCH 2025

CHAIRPERSON: Can you read out, Dr Phillips, the document ID for the other email that you want to tender?

DR PHILLIPS: MSC.5073.0001.0001.

CHAIRPERSON: That will be exhibit MPSC4.

EXHIBIT #MPSC4 EMAIL WITH BARCODE MSC.5073.0001.0001

DR PHILLIPS: Thank you, Madam Chair.

Q. Operator, if we could bring up the witness statement again, SEW.0001.0001.5014, please, and go to page 4. Mr Forster-Knight, at paragraph 19, you say that digital meters have only been installed with a continuous flow data capability from 16 April 2025 onwards?
A. The spreadsheet shows that data.

Q. Yes. I'm just asking for the - is that date correct?
A. I think the date is correct. I don't - I'm not sure if it's referring to when the meters went on for the first time, but that would make sense. I'm assuming the spreadsheet was cut from 16 April. The team that built that for me made the call for that. It would make sense that that was when the meters are, but I don't know for sure whether they were aligning it to or just picking an arbitrary date.

Q. Thank you. But at any rate, it's some time around that date that data starts to become available of continuous flow?
A. Yes, correct.

Q. Thank you. And if we can go to page 5, at paragraph 22 are the four sources of other information that Ms Kittikhoun took you to before?
A. M'hmm, yes.

Q. One of those is red notices?
A. Correct.

Q. And you have prepared a table of those?

A. Correct.

Q. Another one is leak allowances?
A. Yes, correct.

Q. And you have prepared a spreadsheet of those?
A. Yes, I have.

Q. The third one is the high usage notifications?
A. Yes.

Q. And you have prepared a spreadsheet of those?
A. Correct.

Q. And then finally, we have the raw meter read data indicating properties within the McCrae landslide area with an average water usage that is more than three times the South East Water network average in any quarter?
A. Yes.

Q. The area there referred to as the "McCrae Landslide Area", is that defined by a diagram at exhibit 4 to your statement?
A. Yes.

Q. Would you like me to bring that diagram up?
A. If you like. I will just caveat I'm not super familiar with every nuance of every property, but --

Q. Without bringing it up, are you able to confirm that it includes View Point Road?
A. I wouldn't - I couldn't say.

Q. Okay.
A. Yep.

Q. Operator, if we can bring up SEW.0001.0001.5006, please. Is that the diagram that --
A. Yeah, I think I've briefly seen that. I think it was - for all of this stuff, when I was putting my witness statement together, when we were talking about McCrae, the whole suburb, then we were talking about exclusion zones and then other things, I think we tried to define it. So, yeah, that rings a bell.

Q. So this spreadsheet that we're talking about now, the raw meter read data one, is linked to this area identified

on this?
A. I believe so. I - yes, I believe that's the case.

Q. And as I understand it, while this data is for high usage, not all of the usage for all of the properties triggered a high usage notification between 2022 and 2025; is that correct?
A. That's correct.

Q. And is that because for many of these properties, they just had a consistently high usage; it wasn't greater than the previous year?
A. That's right.

Q. Thank you. Operator, you can take that down now, thank you. Sticking with this last set of data, and if we could bring up the statement again, please, and if we could go to page 7, paragraph 40, you state that between April 2022 and December 2024, the property at 10-12 View Point Road had, "on average the highest water usage in the McCrae landslide area and had six times the average water use compared with the South East Water service-wide average"?
A. Yes.

Q. And you also say that in eight quarters out of 11 in this period, which is April 2022 to December 2024, 10-12 View Point Road had the highest water usage in the McCrae landslide area?
A. Correct.

Q. Operator, if we can bring up the spreadsheet at SEW.0001.0001.5013, please. So the data - we lost it. Operator, if we could go to the spreadsheet ending in 5175, instead, please. I understand that that's the updated spreadsheet. Thank you. Mr Forster-Knight, the data you are basing those statements on for 10-12 View Point Road is at row 8 of that spreadsheet?
A. Correct.

Q. Thank you. And then at row 6 of that spreadsheet - sorry, at row 9 of that spreadsheet, we see 4 View Point Road?
A. Correct.

Q. And am I right in saying that that was second in terms of highest average usage over this period?
A. Correct.

Q. And then at about row 44, I think, is 2 View Point Road?
A. 47.

Q. 47, thank you. I've been reading the old spreadsheet.
A. Yep, that's 2 View Point.

Q. So that's ranked slightly lower than the other two but still on a high average usage?
A. Yes, correct.

Q. And 10-12 View Point Road and 4 View Point Road don't appear to have received high usage notifications; is that correct?
A. Can you repeat that question, sorry?

Q. I won't take you to it unless you would like to see it, but based on my reading of your high usage notifications spreadsheet --
A. Yes.

Q. -- 10-12 View Point Road and 4 View Point Road don't appear in there?
A. Okay. I will take your word for it, but I'm assuming that the 10 one was because the seasonality was consistently high, yes.

Q. And I think you said in your evidence earlier that you can't definitively say what the reason for the high water usage is, or was, for those properties?
A. For - if you scroll up on that spreadsheet, up to the top, please - so for 4 View Point Road, that's since got a digital meter, and we've been in correspondence with the customer there and they've had an irrigation system running that they weren't aware of. So for some properties that have got digital meters, we can discern. But for the ones that don't, you're right, we can't tell.

Q. And one possible reason for high usage could be a leak within the private property network?
A. Correct.

Q. Another possible reason could be that the occupants are simply using that much water?
A. Yes, correct.

Q. And the reason for - or one of the contributing reasons for using that much water could be irrigating garden on their land?
A. Yes, that's right.

Q. This information about high average water usage, both in general and specifically about the properties at 10-12 View Point Road, 4 View Point Road and 2 View Point Road, outside of the proceedings that are part of this board of inquiry, is this information that is ordinarily provided by South East Water to the Mornington Peninsula Shire Council?
A. Not that I'm aware of.

Q. Outside of these proceedings, does South East Water ordinarily notify the Mornington Peninsula Shire Council of red notices issued to customers?
A. I'm not certain on that. That's not in my remit. I know in some of the red notices that, through the hearings, they've talked about conversing with council or, you know, "This is a council", and sort of referring, but I don't think there's - I'm not aware of a formal channel of exchanging.

Q. It's not an ordinary thing to do, for South East Water to send that to send that to --
A. I think if they felt it was a council issue or somehow related - remembering, red notices are the customer issue, so it's only if - yes, so actually, with the frame of that, it's probably unlikely that we're going to tell council, unless it's affecting a council asset as well or doing something.

Q. And outside of the proceedings that are part of this board of inquiry, does South East Water ordinarily notify the shire of leak allowances given to customers?
A. I'm not sure on that one.

Q. And would that be for the same reason as for red notices?
A. Yeah, again, not sure. It probably - it sounds unlikely that it would happen for the same reason, but I don't know for certain.

Q. And outside of these proceedings, does South East Water ordinarily notify the Mornington Peninsula Shire Council of high usage notifications issued to customers?

A. I would doubt that.

Q. A few last questions. We're almost there. So just to clarify my understanding in terminology, a leak within water infrastructure on private property is called a customer-side leak?
A. Correct.

Q. And a leak - and that means a leak on pipe infrastructure from the mains water meter to the house?
A. Correct.

Q. And that's distinguished from a network leak?
A. That's right. Network leak is from the meter back into the South East Water infrastructure.

Q. Thank you. What is South East Water's position on who bears responsibility for repairing a network leak?
A. My understanding is that's a South East Water issue, depending on how it was - no, regardless of how it is damaged, we would still repair it, yes.

Q. Thank you. And where a customer-side leak is identified, what is South East Water's position on who bears responsibility for a repair of that kind of leak?
A. So outside of this sort of bespoke process we're doing, it's the customer's responsibility to rectify that leak.

Q. So that's the ordinary course of things - it's the customer's responsibility?
A. Correct, yes.

DR PHILLIPS: Thank you. No further questions.

MR ROBERTS: Madam Chair, I have simply got one question, very quick.

<EXAMINATION BY MR ROBERTS:

MR ROBERTS: Q. You have been taken, Mr Forster-Knight, today, to the reasons why or why not a digital meter might have been installed at 10-12 View Point Road. Are you aware of whether, at the moment, the water is actually connected to 10-12 View Point Road?
A. I'm not aware of that one.

MR ROBERTS: Thank you.

MS KITTIKHOUN: Just one further question.

<EXAMINATION BY MS KITTIKHOUN:

MS KITTIKHOUN: Q. Mr Forster-Knight, are you aware whether South East Water has been able to install digital meters in properties that are still subject to the exclusion zone?
A. My understanding is that we hadn't yet, until they were - and this is just what I've heard - until they are safe to access, et cetera, we weren't installing them. That may have changed but that was my understanding.

Q. Is your understanding that 10-12 View Point Road is part of the exclusion zone?
A. I thought it was. I had a note written that it was, but I don't know for certain. Yes.

MS KITTIKHOUN: No further questions, Madam Chair.

CHAIRPERSON: Thank you for your evidence, Mr Forster-Knight, you are free to go.

<THE WITNESS WITHDREW

CHAIRPERSON: Mr Costello, that's it for this hearing block?

MR COSTELLO: Yes.

CHAIRPERSON: Yes. Thank you, all counsel, solicitors and others, for your work in preparation for this hearing block and during the hearing block. We will adjourn now until the next hearing block at the start of August.

AT 3.33PM THE HEARING WAS ADJOURNED UNTIL AUGUST 2025

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