2022 Special Commission of Inquiry

into LGBTIQ hate crimes

Before: The Commissioner,
The Honourable Justice John Sackar

At Level 2, 121 Macquarie Street,
Sydney, New South Wales

On Tuesday, 15 August 2023 at 10am

(Day 82)

Mr James Emmett SC	**(Senior Counsel Assisting)**
Ms Meg O'Brien	**(Counsel Assisting)**
Ms Kate Lockery	**(Principal Solicitor)**
Ms Aleksandra Jez	**(Senior Solicitor)**
Ms Penelope Smith	**(Senior Solicitor)**

Also Present:

Mr Mark Tedeschi KC with Mr Anders Mykkeltvedt for NSW Police Service

THE COMMISSIONER: Yes.

MR J EMMETT SC: May it please the Commissioner, I appear with my learned friend Ms O'Brien to assist the Commission.

THE COMMISSIONER: Thank you.

MR M TEDESCHI KC: If it please, I appear with Mr Mykkeltvedt.

THE COMMISSIONER: Thank you.

MR EMMETT: Commissioner, this is a resumed hearing in relation to the investigative practices. The evidence you will hear today, Commissioner, relates to the activities of the FASS - that is, the Forensic & Analytical Science Service - particularly in relation to the technology it has available and the progression over time by which that technology became available and the capability that the service has at the moment.

You will hear this afternoon from Dr Allsop, an expert who has published at length in relation to cold cases and what the literature and the learning indicates as to practices for cold case review.

Much of the tender bundle is already in evidence. The relevant material for today's purposes commences at tab 14, and there is one additional document to be added at tab 18A. It should already be in your bundle, Commissioner, being the expert report of Dr Allsop.

THE COMMISSIONER: Thank you.

MR EMMETT: I call Sharon Neville.

<SHARON NEVILLE, sworn: [10.29am]

<EXAMINATION BY MR EMMETT:

MR EMMETT: Q. Could you tell the Commissioner your full name?
A. Sharon Neville.

Q. Your occupation?
A. I'm employed as the Operations Director of the Criminalistic Service within the NSW Health Pathology

Forensic & Analytical Science Service.

Q. And your work address is at the Forensic & Analytical Science Service?
A. That's correct.

Q. You understand what I am talking about if I refer to that as FASS?
A. Yes.

Q. Could you tell the Commissioner your qualifications, please?
A. Yes. I have a Bachelor of Arts with Honours in Natural Science from the University of Dublin, Trinity College, Ireland; I have a Masters of Science from the University of Dublin, Trinity College, Ireland; and I have a Masters of Science Management from the University of Technology, Sydney.

Q. How long have you been working as a forensic biologist?
A. I commenced employment with, as it was then known, Division of Analytical Laboratories in 1989, so over 30 years.

Q. And we will come to this in a moment, the Division of Analytical Laboratories is the predecessor of FASS?
A. That's correct.

Q. Have you worked with the DAL or FASS since that time?
A. Yes, I have.

Q. And at all times, either as a forensic biologist or in a managerial role or both?
A. Starting off in an operational role as a forensic biologist and going through different positions to my current position in a managerial role.

Q. You have summarised that in your CV, which is annexed to your statement?
A. Yes, I have.

Q. Do you have a copy of the statement you prepared dated 1 June 2023?
A. Yes.

Q. Are the contents of that statement true and correct in

every particular?
A. Yes, to the best of my knowledge.

Q. Ms Neville, could I ask you to explain to the Commissioner the history of FASS, or formerly the Division of Analytical Laboratories. When was it first set up?
A. So, December 2012, the NSW Health Forensic & Analytical Science Service was established within NSW Health Pathology.

Q. And what about the Division of Analytical Laboratories, or DAL, before that?
A. So, that was in 1969, the Government Analyst Laboratory became renamed as the Division of Analytical Laboratories.

Q. What were their functions, to the best of your knowledge, in the '70s and '80s?
A. I believe they provided a range of services, so not just related to forensic biology but also the analysis of food and all sorts of environmental substances, so I think it was quite a broad range of analysis that they conducted at that time.

Q. And at what point, if you are aware - was there a point at which it came to specialise in forensic work?
A. So, forensic biology became part of DAL in 1986. Before then, it was part of the - it was with the Division of Forensic Medicine.

Q. Through the '80s and '90s, what were the activities of DAL so far as they related to forensic work?
A. So, forensic biology was one of the areas of specialisation, but there was also other physical evidence types that analysis was conducted in, including things like ignitable liquids, analysis of things like paint and glass and fibres, so it did cover quite a broad range of disciplines through that time.

Q. And does it still?
A. Yes, it does, plus additional services.

Q. Could I ask you, Ms Neville, to outline for the Commissioner the relationship between FASS and the NSW Police Force and how FASS provides services or support to NSW Police Force investigations?
A. So, FASS have a - we operate under a service level

agreement with NSW Police. The current SLA commenced in 2017 and has had some modifications recently but is also under review into a new SLA.

We provide a range of services within the Criminalistics Branch in particular around forensic biology and DNA, illicit drug analysis, and also chemical criminalistics. Chemical criminalistics covers a lot of evidence types, including gunshot residue, paint, glass, fibres, ignitable liquids, explosives, chemical warfare - quite a broad diverse range of disciplines worked on within that area.

So, outside of the Criminalistics service, we also have a Forensic and Environmental Toxicology service that provide services to NSW Police, particularly within the Drugs and Driving Laboratory; and also within the Drug Toxicology Unit, they provide services to the drug courts, primarily; and we also have Forensic Toxicology, which provides toxicology support for the coronial system. Forensic Biology also provides evidence for the coronial system as well as the criminal investigations both for police and for the justice system.

Q. Thank you, Ms Neville, and am I right that your area of experience and expertise is in forensic biology and DNA?
A. That's where my training is primarily, is within forensic biology and DNA, but as the Operations Director, I now have responsibility for the Chemical Criminalistics Unit and the Illicit Drug Analysis Unit.

Q. Can I ask you - my questions for the time being will be focused on the forensic biology and primarily DNA, but before I come to DNA, could you assist the Commissioner with what other kinds of tests, either before DNA was on the market - "market" is the wrong word - was on the scene or subsequently, what other kinds of tests were available as a matter of forensic biology?
A. So when I commenced in 1989 within Forensic Biology, the work that we would do would basically be identifying biological material, identifying blood, identifying that it was from a human, looking for semen, identifying the presence of semen on exhibits, and also things like saliva and, on occasion, urine or faeces. So, that would be our first point of call, to identify whether there were biological materials present on exhibits that were submitted to us for an examination.

If we did locate biological material, the testing that we could do would be primarily around determining the ABO type of the material, and then also we had some blood grouping we could do on proteins, so looking at proteins, where there were differences between different people, and we had about five different proteins that we could test for. So, we could develop a profile of the substance and say what types it has for those particular markers.

And then, if we had a reference sample from a person who was involved in some way with the investigation - and it might be the victim or it might be a suspect or it might be an elimination sample - we could do the same ABO and protein grouping on that reference sample and make a direct comparison to see whether that person could be excluded as the source of the material, which was a definitive conclusion; and if they could have been the contributor to the material because they had the same protein types, we would do a statistical calculation to give an estimation as to what weight that particular match had. In those days, the statistics would have been very, very low, so it would really say that could be from that person, but it also could be from a lot of other people in the population who would also have those same combinations of types, because those didn't discriminate the way DNA discriminates now between different individuals.

Q. Thank you, Ms Neville. You referred to five types of protein tests. Are they the tests listed in paragraph 30 of your statement?
A. Yes, that's correct.

Q. When was DNA testing introduced at FASS, to your knowledge - or DAL, I should say, sorry?
A. So, around about '89, '90, we started to do DNA testing using a technique called RFLP. So, it was a very labour-intensive technique. It needed a very significant bloodstain, probably something about the size of a 20 cent piece. But we did have the - we did develop the capability of looking at DNA using two markers and RFLP, so that was really when we started, but it would have been a rare event for it to be used. It wasn't something that was routine, and, as I say, we would have needed a reference sample from somebody to compare it to.

Q. In paragraph 34 of your statement, you say that prior

to 1989, cases requiring DNA testing were sent overseas. There were cases, were there, in which DNA testing was sent overseas before 1989 from New South Wales?
A. Yes, that's correct, yes.

Q. Are you aware of how common or prevalent that was, and if you don't know from your own experience, say so?
A. I believe it was rare, but I don't really know.

Q. Around 1990, the PCR tests became available; is that right?
A. Yes, that's correct. So, that was the next big change for us. In about '94, '95, we introduced the use of DQ Alpha and Polymarker. So, the advantages of that system were that it didn't require as large a stain and it was a faster technique to do, it didn't involve radioactive probes, but it didn't discriminate as well as the RFLP. So, we did transition to using DQ Alpha and Polymarker and we used it more regularly. RFLP would have been a rare event, but DQ Alpha and Polymarker became something we did on a more regular basis.

Q. And that change - that is, where it became something that was done on a more regular basis - occurred, did you say, around '94, '95?
A. '94, '95.

Q. In paragraph 36 you say that this technology was being investigated in 1990. Are you able to assist the Commissioner with the extent to which, in the early '90s, this technology may have been foreseeable as being on the cards as available at some point in the near future?
A. I think it was foreseeable that this methodology was going to be applied to DNA, but I think at that time really our focus would have been on how reliable was this going to be. So, determining the methods, doing the validations, making sure that it was a reliable system to use would have been a big focus at that time worldwide. Was DNA going to be accepted in the court? You know, what were the risks associated with it? So, there was quite a lot of investment in developing the capabilities and then, you know, publications on its reliability and so on and so forth.

Q. Then after the PCR targeting DQA and Polymarker Amplitype, the next advance was in 1997, was it, with the 10-marker multiplex kit?

A. Yes. 1998, we introduced Profiler Plus. So, that was a kit that looked at nine markers and also a gender determination. So, this was a really good advancement for us. It was quite a sensitive kit, it was reliable, and we started to use that on a regular basis at that time.

Q. What does it mean to call it a 10-marker kit or a 9-marker kit?
A. So, when we're looking at DNA, we're looking at a number of areas on the DNA. So, if I call it - if I look at one marker, I'm looking at one area on the DNA which is different between different people. So, it might be like looking at one characteristic, to say you have brown eyes. I'm just looking at one area on the DNA to say what type the person has at that marker.

If I look at two markers, I'm getting more information about the person. So, you have brown eyes and curly hair. So, each time I add a marker, I'm adding another characteristic to inform about that person's characteristics.

So, with DNA, we were looking at nine markers. Each time you add a marker, if I was doing a statistical calculation to determine how many people in the population would have that particular combination, it will get rarer and rarer the more markers you add on. So, nine markers gave us a good discrimination power between different people.

Q. At this time, so in the late '90s, you have said - in paragraph 42 you say:

> *Prior to DNA databases, there was no capability to search a crime scene profile against a database of individuals.*

That was the case in the late '90s; is that right?
A. That's correct.

Q. Could you assist the Commissioner with the extent to which it may have been foreseeable that such a database may become available?
A. Well, while the science was concentrating on developing the actual methods and developing the DNA kits, there certainly was an awareness that a database was something that was going to be required. I believe within

the national group of biology managers who came together, discussions had started around not so much lobbying but highlighting the need for establishing legislation so that a DNA database could be established. So, yes, moves were happening in that direction.

Q. Then at paragraphs 43 and 44 you explain that that legislation came in in 2000?
A. That's correct.

Q. And the National Criminal Investigation DNA Database was established in 2001?
A. That's right.

Q. What impact did that have on DNA profiling and the use of DNA in police investigations?
A. Well, that was a dramatic leap in capability, because now it was not restricted to having a reference sample to compare with in a case; now there was going to be the capacity to compare to people on a database or other crime scenes on a database. But at that point in time, obviously, only the samples that were taken under the new legislation could go on to the database, so the database was limited by its size for quite some time. So, the bigger the database, the more powerful it's going to be. But it did change the landscape, so to speak, from only being able to compare within a case and having suspects or samples to compare to, to being able to compare more broadly than that.

Q. Thank you, Ms Neville. Can I turn next to question 5 and paragraph 46 and following - advances in the technologies employed by FASS in relation to DNA since that time. You have identified a number of those. The first of those is extraction. Could you explain to the Commissioner what you mean by "extraction"?
A. So, to develop a DNA profile, there's a number of steps you go through. The first part is extraction, lysis and extraction, which involves breaking open the cells and extracting the DNA out of the cellular material and isolating it from any other materials that might be present.

So, in the early days, we used an extraction that I would at this point call bucket chemistry. It didn't really - it extracted out DNA, but it didn't really give you something that was highly purified. So, as the

extraction opportunities developed and the methods and technology developed, we moved to methods that were far more refined, and the extraction process gave you a purified DNA product, and that was of significance because it meant that you wouldn't get interference from things like dyes that are co-extracted from clothing, and so on. So, that was a big advancement in terms of the extraction, and also we had the capability to extract more DNA out of the original sample.

Q. When you say "more DNA out of the original sample", are you referring there to what you have described as amplification?
A. No, I'm just saying that because it's a better extraction technique, it's going to draw more DNA out of the cells that are there on the material.

Q. And so that's before we come to amplification; that's separate technology?
A. Yes, that's at the very first step.

Q. What is amplification?
A. So, amplification comes later. Once you have extracted DNA, the next step you do is you do a test to determine how much DNA have you got. In the early days, it was quite objective. It was a reading, a visual subjective reading, of a dye to see how much DNA you have, so it was a little bit of an estimate. Those techniques were refined so that you had a better idea how much DNA you had. Currently we can also say the quality of the DNA and whether it's male or female. So, we get a lot of information just when we look to see what have we extracted.

Then, we go to that stage that you mentioned, amplification. That's when you take the DNA that you've got and you basically - it's like a biological photocopier. You basically target the areas you want and you multiply them over and over and over again; you copy them. It's using heating and cooling methodology. You actually amplify up what your starting material was, and that's the amount that you then take forward to the next step, to develop into a DNA profile using capillary electrophoresis.

At every step of the way, our methodology has improved. The instruments that we're using have improved. The amplification has improved, the instruments that we use

to do the amplification have improved. So, the technology now is quite different to what it was when we started in our infancy doing PCR.

Q. You refer, in the context of amplification, to the advancement in 2012 with the introduction of PowerPlex 21. That's a kit with 20 markers as well as a sex marker; is that right?
A. So, again, that would have been the next big leap for us, was moving from Profiler Plus to PowerPlex 21. We moved, as you say, from 9 markers to 20 markers, so the potential to discriminate between different individuals was enhanced greatly.

The kit is also more sensitive, so we needed less DNA to develop a profile. It could also work with more degraded samples. So, it had a lot of advantages over the earlier Profiler Plus. It also - when we talk about database matching, there is the direct matching, just matching DNA profiles that are developed from a crime scene sample to persons, but there's also a whole range of other matching that we can do around familial matching. To do familial matching where you're not looking for the donor of the DNA on the database, you're looking for a relative perhaps of the donor, the more markers you've got in your kit, the better the familial matching works. So, taking all of the different advances together gives you a really powerful investigative tool at the end of using all these newer innovative methods.

Q. Could you help the Commissioner understand, in relation to familial matching - I want to come back to capillary electrophoresis, but first familial matching - is that effected the same way, that is, by reference to, say, 20 or 21 markers and then analysing for not an identical match but a sufficient match to indicate family relationship or is it more complex than that?
A. So, we're using the same DNA profile that we've generated from the crime scene sample. It's on the database, searching directly, but we can also then do a familial match. So, yes, what we're doing there is we're looking for profiles of people, individuals, on the database that would have - they're sharing a lot with that crime scene sample. So, it's not a direct match, but they're sharing quite a lot.

What it will do is it generates a candidate list,

a list of people who seem to share quite a bit, so could potentially be a relative. What we do then is we look at that list and we use some of our additional capabilities to see whether they could be a relative or not.

So, for example, we can do Y testing. Y chromosome testing is a profile that we might have from the crime scene sample as well as the PowerPlex 21. So, with the Y profile, it will be the same in all male relatives. So, if we have had a link on the database that might be a familial relationship, what we can do is we can take that reference sample and do Y testing on it, and if that Y profile is the same as the Y profile from the crime scene sample, well, now you've got a direct match that says these could be paternally related individuals. They're not necessarily, because lots of males will have that profile, but they are on the - they could possibly be on the family line. So, that's the information then you would report to police to say, "This is a person that might be of interest", and then they can follow up with that.

Q. Is the outcome of that familial analysis, to be clear, a statistical outcome as well?
A. You can do statistics to determine how common that particular Y profile is, and you can also do a calculation to see whether there is support for the individuals being siblings or whether there is support for them being a parent/child. So, you can provide statistical weightings to those outcomes as well, yes.

Q. I want to come to the Y typing in a moment, but first, just to assist, could you explain what capillary electrophoresis is?
A. So, capillary electrophoresis is a system where - we use what we call a genetic analyser and it separates out the DNA fragments based on their size, and they're fluorescently labelled, so we can measure the movement of those fragments through the capillary. That capillary electrophoresis generates a pictorial representation, if you like, of the DNA that is in that sample, and it's all based on the size of the DNA fragments, and it gives us our end product - after it has gone through some software that helps with the determination of what those sizes are, it ends up with giving us a sort of a picture of what that DNA profile is. It looks like peaks on a graph, everything labelled with little numbers, so we can map out the profile of that particular person or crime scene.

Q. Thank you. The current technology - you say, am I right, that FASS is able to generate an uploadable profile from as few as 10 cells?
A. That is the capability, yes. Ideally, we would like to have about 100 cells, that gives you a really nice, good-quality profile, but we can generate profiles from as low as 10 cells, yes.

Q. Many people have different images, but can you give the Commissioner a sense of how much 120 cells is? It's a very small amount, I think.
A. It's a tiny amount. It's measured in picograms as opposed to grams. It's really small. I'm not sure how I could explain it. Ten cells is, yes, very small.

Q. What is often referred to as trace DNA --
A. Yes.

Q. -- will pick up 100 cells and many more than that; is that right?
A. I suppose the way we could look at it is - that pen that you're twisting around in your hand, if I took that back to the lab, I will have your full profile on that, so you will have enough cells on that pen for me to generate a DNA profile.

Q. Thank you. Another technological advance of some importance is automation at FASS; is that right?
A. Yes. Automation has been very powerful for us to work through the volume of samples that we have in a safe way. What you have when you have manual handling of samples is you have risk of contamination.

Now, the risk of contamination historically wasn't too significant, because we would only see the DNA in the bloodstain and it wouldn't be contaminated by the operator, because they would only maybe be contaminating it with a few cells, so it wasn't such a big concern.

But now, as we're working on trace DNA and we're working on swabs of cellular material from the surface of items, contamination becomes a huge concern. So, within the laboratory operations, we don't want people touching samples. We want everything to be automated. We want, you know, the lids to be on top of the samples at all times.

So, by introducing automation, not only could we deal with the volume of samples coming through, which increased when we could do trace samples, we could also do it in a safe way, minimising risks of contamination.

Q. Are there other steps that are taken to minimise the risk of contamination at FASS?
A. Yes, there are. There's a very extensive quality assurance program in place from every step of the process, and it goes through from handling the samples and the operators wearing full protective equipment, gowns, gloves, they have specific ways of putting on all their PPE in a safe way, so even double-gloving, and minimising any chance of DNA getting into the samples.

But within an evidence recovery area, there are extensive decontamination protocols. You are cleaning so that every area you work on is absolutely decontaminated from any risk of DNA. All of the consumables we use must be determined to be DNA free. So, if we want to change to use a new consumable, we can't just go and say, "That looks okay, that looks the same. We'll order that one." We need to test those to make sure that those consumables are DNA free. So, we will get a sample in from the supplier; we will swab them and we will test them: is there DNA on them? So, we make sure that everything we're using is a DNA-clean environment.

Another thing we do is, all of our operators and all of the people who work in FASS give a reference sample to be placed on our DNA elimination database. Any contractor who comes in must give a DNA elimination sample, because the contractor might be in the area in the building, and because it's so sensitive, his DNA or her DNA could end up inadvertently contaminating a crime scene sample. So, by using this elimination database, we can make sure that we can search against that, and if a crime scene sample did happen to match to someone on the elimination database, well, that can be removed and we're not wasting investigators' time by they think they've got a DNA profile, whereas in fact they haven't.

So, that would apply to our staff, our contractors, our visitors coming in, police personnel who are involved in examination of exhibits or criminal investigations. We encourage full participation in that quality assurance register.

I haven't exhausted everything that we do to minimise DNA contamination. Every robotic platform that we get, the automated platforms, we spend an inordinate amount of time actually making sure that while the robot is doing its operations, because it's pipetting, it's moving around samples across the robot - we spend an enormous amount of time making sure that there are no contamination risks. So, we use high-yield DNA samples beside empty wells and we do the whole process and we make sure - by testing the empty wells, we make sure that there is no contamination before we even roll out that instrument into use.

Q. Just to understand, when you say "empty wells", you mean by that receptacles around the device, and if any DNA turns up in that receptacle, then that's an indication that there may be some rogue DNA in the area; is that right?
A. That's correct. So, you might have a sample that has a lot of DNA with it, and it could be beside a sample with very little DNA, so we need to rule out any possibility that any DNA from the high-yield sample could get into the crime scene sample beside it with very little. So, that extensive testing makes sure that that is not a risk.

As you roll it out, then, into operations, you always have negative samples within every batch in every step of the way, so the negative controls would be monitored to see, is there any DNA in those samples. So, that ensures that we can monitor for any chances of contamination. And contamination, I have to say, is something that can occur. Our operator sometimes could contaminate a sample. But the processes are there to identify that contamination so that that can be followed up and make sure that there's no inadvertent reporting of something along the way. And it could be an investigator involved in looking at the exhibits, too. We would monitor that as well.

Q. Thank you, Ms Neville. Could you help the Commissioner to understand how this technology operates where a sample has multiple different DNA contributors or possible contributors to the sample?
A. So, another one of the big events in our capability was around the introduction of using software to assist us with DNA interpretation. This occurred in 2013, when we introduced a probabilistic genotyping software called STRmix.

Now, prior to STRmix, we did do mixture interpretation, but it was quite limited in how far we could go. Typically, we would work comfortably with a two-person mixture, maybe a three-person mixture, and it would depend on the amount of DNA contributed from each person, you know, the balance of contributors. You might have one person contributing a large amount of DNA and another person a small amount, and there might be a nice clear-cut indication of those balances of contribution.

We had guidelines as to how to step through a mixture interpretation and we would follow those guidelines and we could provide statistical calculations on a mixture as to different contributors to the mixture, but, as I say, quite limited in what we could do.

The transition into using the software meant that we could do much more complex mixtures. So, at the current time, we could go up to five people in a mixture. It would be quite rare for us to do that, but three- and four-person mixtures, quite comfortable to do it using the STRmix interpretation tool. So, it really has enhanced the capability in mixture interpretation.

Q. I'm sure I'm oversimplifying here, but just to take the two-person example, you referred to the PowerPlex delivering a graph with a whole lot of peaks, and in a two-person example what you may have is a whole lot of peaks at one height and a whole lot of peaks at a much higher height, and that's an indicator that the peaks at the lower height are associated with one person's DNA and the peaks at the higher height are associated with another person's DNA, and then you can profile both of them?
A. That's a good example of how you could separate out the two components. So, if we just think about one DNA marker, you would have two peaks - one from mum, one from dad - if it was a single person. So, if it was two people, you might have four peaks.

Now, if the peaks were all the same size, that could be both contributors have contributed the same amount of DNA and you wouldn't be able to determine which peak went with the other one. So, say they were A, B, C, D, it could be A, B, C and D, it could be A, C, B and D - it could be any combination. But if A and B were really tall and C and D were really small, you would be making an assumption that the C and D were from the person who contributed the lesser

amount of DNA and the A and B were from the person who contributed the higher amount. Now, that's kind of oversimplifying it, because we always look at the profile as a whole, not just one marker, but it would give you a way to isolate out two profiles.

But even with the mixture where you couldn't pull the two contributors out, you'd still be able to do a calculation to say this person whose reference sample has type AC - what's the probability that they are a contributor to that mixture. You can still do calculations even if you can't pull them apart, so to speak.

Q. Those calculations could be a possible match or an elimination; is that right?
A. If you're excluded as a contributor, that's more definitive. So, if you don't have the DNA types that are in that profile, then you would be excluded.

Now, that's in a good-quality profile, where you can see that there is a good amount of DNA. It gets more complicated when you get down to the lower amounts, because, for example, a person could be AB, but down at the low levels, the B might not be there, so you would only see A on the graph. So, if a person we were comparing it to was AB, you may not necessarily exclude them; they could still be the contributor, but the B just isn't visible.

So, there's a lot of complexities to it, depending on the level of DNA, the quality of the DNA or whether it's good-quality DNA, but the calculations account for all those - they factor in all those considerations.

Q. The calculations - that brings me to the 2013 software. That software enables a much more complicated picture to be separated out; is that right?
A. Yes. It can really work with far more contributors and it can do - what it actually does is it uses all the information in the DNA profile to a far greater extent than we can. So, it's able to look at all the different peak heights; it's able to look at the possibility that things have dropped out; it's able to look at whether things are and artefact or a real allele. So, it can give weightings to a far better extent than we could, looking at the same profile in a more manual, binary "in" or "out" fashion.

Q. Does that technology enable you - if you have a sample and you don't know how many contributors there may be, does that technology assist you to identify how many contributors there are to this DNA or there are likely to be to this DNA, to this sample?
A. So, one of the critical steps in the interpretation is for the biologist to make a determination as to their best estimate as to the number of contributors, and that information is provided to the software, and it will do its calculation and its modelling, its biological modelling, based on what the biologist has told it. So, if the biologist has said, "I believe this is a two-person mixture", the software will unravel it assuming two contributors.

But what you can do is you can also say, "Now assume it's a three-person mixture", or, "Now assume a it's four-person mixture", so it can do the same thing multiple times under different assumptions. So, part of what we do is we always state the assumption. We always state that, "Assuming this is a three-person mixture, this is the outcome", so it's informative.

The newer versions of the STRmix can do variable numbers of contributors, you can indicate that - do two plus one or three plus one. So, it can look at more variable numbers of contributors.

Q. As a biologist working in the area, how does one make that judgment - can you assist the Commissioner with how one makes that judgment about whether it's two or three, or it could be one or the other, or more likely two but possibly three?
A. So, the biologists who are doing these sort of interpretations will have a lot of experience looking at DNA profiles, and a lot of training goes into the biologists who are doing the interpretation. So, they are very aware of how DNA acts, like what the profiles will look like, what a degraded profile looks like, what an inhibited profile looks like, what a good-quality DNA profile looks like.

For example, if there's a lot of DNA and I'm looking at one marker, the A and B peak will be about the same height. If we're down at lower levels of DNA, sometimes the A might be much bigger than the B peak. So, the biologists will know all of these things about how they

would expect DNA to look in certain circumstances. They know how many alleles to expect. There might be two from a single person, there might be one, if they've got a double dose of the same one. So, they can look at the DNA profile and use a lot of different considerations to see what the reasonable - and they try to get the most reasonable explanation from the profile as to how many contributors.

One of the other things we do is we have two people independently do the same thing to see that they're coming to the same conclusion in terms of numbers of contributors. But, as I say, STRmix can do the interpretation under different numbers of contributors, and often the impact of an extra contributor is not that significant in terms of the final output. So, while it's an important step in the process, it's not necessarily a really bad thing if you say that it's three people when in fact it's two people. It's not necessarily a terribly adverse outcome.

Q. Can I come to some of the specialised forms of DNA analysis now. You referred briefly to two of them, the first being Y typing. Could you explain in a little bit more detail what Y typing is?
A. So Y-STR typing is where we are looking at the male chromosome, so we're looking at markers that only exist on the Y chromosome. We use a kit now called Yfiler Plus, which looks at 27 markers. The power of Y-STR testing is of particular relevance to sexual assault cases, because in a sexual assault case, you may have an intimate swab from a female complainant, so there will be an enormous amount of DNA from the female. So, if you are doing PowerPlex 21, you are going to get a lot of DNA from the female, which might swamp out the DNA from the male.

By using Y testing, it's looking only at DNA on the Y chromosome and it doesn't care how much female complainant DNA there is, so it can generate a Y DNA profile. That Y DNA profile now, since 2018, can be searched on a DNA database against other Y profiles.

In sexual assaults, which is also of importance, historically we looked for semen in sexual assaults. Now, semen was typically only found in perhaps about 30 per cent of sexual assault cases, so the remaining cases had swabs that were stored in the freezers because - you know, thinking what's going to come in the future that we can do?

And now we have Y-STR testing, so you can go back to those swabs. They don't have semen, but you can now look at things like digital penetration, there might be skin cells left on that swab that don't involve semen. You can develop a Y-STR profile.

So, for some sexual assaults, you will only ever have a Y-STR profile, but those profiles can now be searched and can provide links to other sexual assaults, which is an investigative tool, or to people on the database that have a Y profile.

So, Y testing has been remarkable in the sexual assault space and is a really, really powerful tool. It's also very, very useful in the familial space, because, as I talked about earlier, when we get candidates who might be a sibling or a parent/child, using PowerPlex 21, we can go to Y testing to see if they could be related on the same family line, so it's giving you that added tool to assist in familial searching.

Q. Thank you, Ms Neville. The other kind of specialist DNA testing that you have mentioned already is mitochondrial DNA sequencing?
A. So, mitochondrial DNA testing is a very specialised method. We have been validated to do mitochondrial testing since about 2015. So, mitochondrial testing, again, is a lineage marker which is passed down through the maternal line, so a mother will give the same mitochondrial profile to all of her children, male or female, but it gets passed down through the maternal line.

So, again, it is of use in the sort of investigations that involve kinship, and that might be, for example, in unknown remains, so cases where we have unknown remains and the bone sample may be extremely compromised, and we try to get a PowerPlex 21, a Y profile and a mitochondrial profile for all the male bone samples, because that's your gold standard, you've got all of these different profiles searching, because you might not have a direct relative; you might have a more distant relative, so you need the lineage markers.

But with a bone, a really compromised bone, you might not be able to get a PowerPlex 21, you might not be able to get a Y because it is not a male, but you might be able to get a mitochondrial DNA sample. So, that might be the only

thing you have searching, and then that would link to any of the relatives' samples. Relatives of missing persons give reference samples, and we do PowerPlex, we do Y if it is a male, and we do mitochondrial, so those reference samples are all, hopefully, in the best place to capture that really compromised DNA sample.

Q. Thank you, Ms Neville. How long has familial searching been available in New South Wales?
A. So, it began in New South Wales in 2013, internally on the New South Wales database, and then it was in 2018 that it became available on the national NCIDD database. But within New South Wales, we have been carrying out familial searching since 2013, in line with the familial policy determined by NSW Police Force as to which cases would go forward for familial searching.

Q. The last kind of specialist DNA analysis that you mentioned in your statement is ancestry and phenotyping, which I think has become a more recent technology?
A. Yes. We brought online new instruments which had the capability to use another technology, called MPS, or Massively Parallel Sequencing, and we can use this method to do determinations that would predict a person's external visible characteristics, such as hair and eye colour, and also their ancestry.

So, another very useful tool in an investigation where the - and, again, it might be an unknown remain, where that might assist in determining the ancestry or the external visible characteristics. So, a good investment in new technology, which again increases the capability when you have run out - you've nowhere else to go, you've got no links on the database, then you get that extra bit of information, and then you may actually be able to use that information to go into forensic investigative genetic genealogy, because that seems to work really well at the moment with Caucasian-type samples, just because of the composition of the public databases, the number of people that are on there that may have a Caucasian background. So, the ancestry and phenotype can be informative to determine is a sample - should it go forward for another investigative tool in terms of the forensic investigative genetic genealogy.

Q. Thank you, Ms Neville. Ms Neville, moving forward in your statement to paragraphs 79 and following, you give an

outline of the DNA databases and when they became available. You have told the Commissioner about the introduction of the New South Wales DNA database in 2001. In 2007 - is the change that you identify there that the national database became available?
A. Well, the national database was available - it was in 2007 that we began searching on the national database, and I believe that was really - it was outside of the remit of the forensic biology lab but more around legislation and police policy, and so on, to indicate when we could - you know, the permissible searching tables, and so on, when we were able to search on the national database. But we've been searching on the New South Wales database since 2001, and everything on the New South Wales database then goes on to the national database.

Q. You draw a distinction - you say that person to scene matching was available in 2007 and then scene to scene matching available in 2014?
A. Yes.

Q. Was there a reason why they didn't become available at the same time?
A. I don't think I can answer that question. I think it's more to do with legislation and police policy as opposed to the biology side of things.

Q. Thank you, Ms Neville. I think you have already explained that familial searching at the national level was introduced in 2018?
A. That's correct.

Q. But it had been introduced in New South Wales in 2013?
A. Yes.

Q. There is also the capability, is there, to search Interpol databases?
A. That's correct. NSW Police can request that, and we will give them the profile, which they then submit for Interpol searching.

Q. Do you know how long that has been available?
A. I can't give you a date, but a long time.

Q. In addition to Interpol databases, are you aware of other databases that are available around the world, particularly in the States, in relation to ancestry?

A. I'm just really thinking now about the commercial companies that do the testing, the SNP testing, for ancestry and phenotyping. So, you can submit your samples to the private companies to do that sort of testing, and they then have their databases of those profiles, yes.

Q. Are you aware of what relationship there is, if any, between those databases, or those enterprises, and forensic investigations?
A. Well, I think with those private companies that do the profiling that would be for ancestry and phenotyping, those profiles can be uploaded onto the public databases, like the big one is GEDmatch, so if people opt to put their profile onto those public databases, then if forensic genetic genealogy is being used, they would be searching against those profiles generated by private companies.

Q. Thank you, Ms Neville. The various techniques we've been talking about in relation to DNA and the advances in what can be done with DNA analysis over not just the last 20 years but especially over the last 20 years - to what extent are those techniques of analysis available in relation to exhibits that may have been collected from a crime scene 20, 30, 40 years ago?
A. Well, the techniques are all available, they are all there. If any case is reviewed and submitted for further testing, that can happen. In particular, the samples that have been retained within the stored forensic biology facility are the most amenable to applying the new technologies, because they have been stored in optimised conditions and protected from any inadvertent contamination.

So, there is a lot of opportunity for reviewing old cases and applying technology to achieve outcomes that wouldn't have been achieved at the time, and there has been a lot of work done in that space over the years. I'm not sure if you want me to give any particular examples of programs?

Q. Yes, could you, please?
A. So, for example, in 2008 there was a four-year Cold Case Justice Program where Biology assigned two staff to this Cold Case Justice Program, and NSW Police applied resources to the program as well. Basically, they reviewed a large number of cases, so roughly around 2,000 sexual assault cases and I believe about 80 unsolved homicides

were retested and samples retrieved from freezers where possible and retested using the new technology.

So, there were numerous good outcomes from those cases, and I believe we are still getting links from profiles that have been generated from those reinvestigations and uploaded onto the database.

If the Commissioner would like specific details on that, our coordinator, Dr David Bruce, would be well placed to give you a full breakdown on how that program worked and the outcomes of which - as I say, there were a number of significant outcomes.

That program did stop in 2012, and I believe they had got as far as reviewing cases up until about 1999.

Now, when I say "stopped", it stopped as a specific program. It became business as usual. So, cold cases continued to be reviewed but without perhaps the focus of this group. It moved into business as usual, and Dr Bruce has continued, as the Cold Case Coordinator, working with NSW Police over the years, currently in the capacity of the FEAC, which is the Forensic Evidence Advisory Committee, where they review unsolved homicides and cold cases and go back to see what exhibits are available, what samples are in the freezer, what techniques can be invoked to get a better outcome, and it might need re-examination to identify biological material, it might need re-extraction, or it might need going back to the freezer to pull the extract out that was there from the original testing. So, that's one example of a defined program which focused on older cases.

A second example would be a current program we have in the laboratory, which is referred to as the SAIK Back-Capture Program, so Sexual Assault Investigation Kit Back-Capture. This was an initiative of NSW Police where they reviewed untested sexual assault kits. I believe originally they felt there was a large number that were untested and could go forward for testing, and that number did dwindle once they had sort of reviewed records.

So, resources were provided to Forensic Biology to recruit staff. We recruited 12 staff to do this program of work, and it involves testing roughly about 600 untested sexual assault kits but also going back to the freezer to

retrieve stored samples that may not have had testing done on them at the time which could go forward for DNA profiling now, particularly around Y-STR profiling.

So, that program began in July '22 and will end in December this year. So, that's another review - working on historical cases using the current technologies.

I think the third one that comes to my mind would be around the unknown remains. There was a program referred to as the HSRI, which is the Human Skeletal Remains Initiative, and it was so named in 2018 and involved a program of work involving FASS, including Forensic Medicine and Forensic Biology/DNA, but also the Missing Persons Unit and NSW Police.

The outcome of that program of work is a complete catalogue of all the unknown remains that are within New South Wales and also DNA profiling on all of those unknown remains, so profiling the ones that had not been tested but also going back and retesting the samples that had been tested with an unsuccessful outcome. So, perhaps we didn't extract enough DNA from the bone or perhaps we didn't have PowerPlex or mitochondrial or Y at the time, so we didn't have a good outcome. So, we went back to all the old samples, we went back to all the untested bones.

That body of work has resulted in a really good opportunity to resolve those unidentified remains, because we've now got, for the majority of them, at least two DNA typing profiles, either PowerPlex 21 or mitochondrial, or if it's male, a PowerPlex 21, a Y and a mitochondrial, and also all that work was done on the reference samples from the relatives of missing persons at the same time.

So, then, online with national capability for searching and matching on NCIDD-IFA, all of those profiles are now on that database, continuously searching against relatives of missing persons. So, that's another good application of the current capabilities going back to samples that weren't - you know, didn't have a good outcome at the time due to the limitations of the technology they were subjected to.

MR EMMETT: Thank you, Ms Neville.

Commissioner, would that be a convenient time?

THE COMMISSIONER: Yes, I will take a break. Thank you.

SHORT ADJOURNMENT

MR EMMETT: Q. Ms Neville, I asked you some questions before the break about commercial DNA databases, or commercial databases, genealogy databases, to which investigators may sometimes have access. Are you aware of whether there are restrictions on the extent of access that police have to those sorts of commercial databases?
A. Yes. I believe the component of the large GEDmatch database has restricted numbers of people that any police investigation can compare their profiles against. So, the people have to opt in to be part of a criminal investigation. I think there is a particular portal, if you like, or component of GEDmatch that is applicable for criminal investigations, and the people themselves who upload their profiles that they've achieved through direct consumer testing, like ancestry.com or whoever, they upload it onto GEDmatch, but they have to opt in to be part of a criminal investigation.

Q. Thank you, Ms Neville. Can I come next to the FASS exhibit storage arrangements. When did FASS first begin storing exhibits or DNA swabs or similar samples?
A. From the start of DNA testing, we have always retained the DNA extract. So, if you remember back to the first stage where we extract DNA, there has always - unless it has all been consumed in testing, we retain that indefinitely, and we always have done that since the start of DNA testing.

For exhibits, so items of clothing or whatever exhibit comes in for examination for biological material, we may remove a sample and do testing on that. When we had a freezer, which happened in about '86, then we started retaining a portion of the stain. So, if you tested a portion of the stain and there was some remaining, you could retain that stain, and the exhibit, because the exhibits were always returned to NSW Police. We never actually kept the whole exhibits. But about '86, we started to routinely store portions of stains in freezers.

Q. Were there circumstances in which, especially in the early days, the testing of a stain would consume the whole of the stain or the whole of the sample?

A. Yes, absolutely. Before DNA, when we were doing ABO and the protein groupings, typically the stain could all be used up. But, yes, even with DNA, if we did repeat testing, it could all be consumed.

Q. What are the actual storage arrangements at FASS for these exhibits?
A. Exhibits - when they are submitted for examination, we track the movement of the exhibit from the Forensic Receipt Unit through to Evidence Recovery. They are stored within the Evidence Recovery area, again recording every movement that the exhibit makes. So, the Exhibit Recovery Unit will retrieve samples, prepare them for DNA testing and send it to the DNA lab. When the case is completed and all the results have been indicated to police and the case has been reviewed and finalised, that case then gets packed up by a biologist and dispatched back to police through the Forensic Receipt Unit.

Q. In terms of the records in relation to those exhibits, that's presently electronic?
A. It's presently all electronic, yes.

Q. That's a system known as EFIMS?
A. Well, EFIMS is the police system. So, within Biology, we have our own system called FRED, Forensic Register Evidence Database. That is where we - all our case files are now electronic, and every aspect of the case is retained in that electronic case file, which is held within FRED, and the movement of the exhibits, stored exhibits, and so on, is retained within that system, and information is conveyed back to EFIMS around whether an exhibit has been disposed of or whether it has been returned, so they can see where that exhibit is. When I say "disposed of", that essentially means consumed in analysis, yes.

Q. When was FRED introduced?
A. The FRED/EFIMS interchange is around about 2012, ballparkish. I'm not exactly sure on the date, but around about that time frame, I believe we would have started that interchange of information.

Q. And what was the record system before that?
A. So, again, before that, it would have been a - well, it was, an exhibit register, a book, so a physical book, where if exhibits came in, there would be a record of the date, the person submitting the exhibits, the biologist who

accepted the exhibits and what they were and the case, so the registry of the exhibits. And then, on dispatch, there would be a - there is a stamp in the exhibit book to indicate the date and the return and who they were returned to, and that exhibit book runs up until about - well, it must run up until we were using FRED, yes.

Q. What's the system presently in place for returning exhibits or DNA samples, if they are going to be returned to the police, for returning them to the police?
A. So, DNA samples wouldn't be returned to police. They are always stored permanently, indefinitely, at FASS, unless police want to take the DNA sample. For example, they may want to take it to do the DNA typing required for forensic investigative genetic genealogy, so they would need to come and take the DNA sample and take it somewhere else. That's a special arrangement. They will contact us, that will be arranged and they will come and take that sample.

Exhibits are packed up by the biologists in the Evidence Recovery Unit, sealed up, they go to our Forensic Receipt Unit, which deals with all exhibits coming in, not just biology, and they dispatch the exhibits back to police.

So, what happens is there's a pick-up, if you call it that, I think a couple of days a week, where they come, the police come in, take the exhibits back to [REDACTED], and then, from [REDACTED], they dispatch them to the metro units themselves or to the regional units. So it's all through our Forensic Receipt Unit.

MR EMMETT: Ms Neville, we've cut the live stream. It's not a criticism, but the location you just referred to is I think not in the public domain or may not be in the public domain.

As I say, we've cut the live stream, I think, before it went out, but for the avoidance of doubt, Commissioner, for those in the room, would you make a non-publication order over that location.

THE COMMISSIONER: Yes, I will.

MR EMMETT: Thank you.

THE WITNESS: My apologies.

MR EMMETT: Can I just say, there's no criticism, but could you try to avoid references to particular locations.

I'm told that the live stream will resume in a moment, Commissioner.

THE COMMISSIONER: Thank you.

MR EMMETT: Q. You referred to the system now. Are you able to explain to the Commissioner, was the system the same or similar or different in the '90s and 2000s, during the first decades of your work at DAL?
A. The exhibit register was in existence and used at that time. Exhibits were always returned to police, and samples, as I say, weren't stored until - they started being stored in '86, and through the '90s, yes, we were storing samples.

Q. Do you know the position before 1986? That may not be from your personal knowledge but from your knowledge of the organisation.
A. Well, the exhibit book I assume would be in existence, because it was all paper-based recording of samples coming in and samples going out, and, as I say, samples just weren't stored. They were worked on, consumed or returned to police.

Q. Ms Neville, have you had experience of exhibits or samples being misplaced or not being able to be located while they're within the custody of FASS?
A. Yes, it is something that has occurred on very rare occasions. We have a large volume of work and movement of exhibits through different examinations and different processes, so we do have very elaborate tracking systems and recording of the movement of exhibits and samples taken from exhibits and final storage locations, but, yes, I am aware of a very, very small number of instances where an exhibit has been missing.

What happens in that instance is a full investigation is carried out. As part of our SLA with NSW Police, we are obliged to inform them of any lost exhibit, which we would do, and we will inform them as to what has happened and what is missing and the investigative process that occurs following that incident.

The outcomes of any sort of investigation of that type are always around preventative maintenance controls to minimise any risk of a similar incident occurring. A particular incident I'm thinking of - it's often not possible to actually determine what has happened. It's lost. You can make assumptions as to what might have happened or you follow the most logical explanation to what may have happened, but you may not be able to be absolutely definitive.

But it's a very rare event, and it's a human thing. We're humans, so occasionally a person will make a mistake. Again, it's the processes and policies we have in place in dealing with what happens in that incident and ensuring that more controls, if needed, are put in place to ensure it doesn't happen again. But, as I say, any exhibit that is lost, NSW Police will be informed at the time and informed as to the outcome of the investigation.

Q. So far as you are aware, Ms Neville, for the duration of the time that you have worked at DAL and then FASS, has the practice of FASS been the same, in that it involves, on the occasions where something does go missing, both notifying the police and conducting an investigation?
A. Yes, that's true.

Q. Can I turn next to factors that may affect the ability to recover DNA from exhibits. When an investigator is presented with exhibits, what are the matters that may impair the quality of the DNA or affect the quality of the DNA sample that is obtained from them?
A. So, just to start at the beginning of the process, there are limitations around identifying where biological material might be on an exhibit. So if we jump past that into what affects the quality of the DNA subsequently recovered, there is a whole range of variables that will affect that.

To start with, it depends on when the sample - when the exhibit is sampled for DNA, it depends on what that DNA has been exposed to before the person has taken the sample: has it been exposed to environmental adverse conditions, such as heat or moisture? So, that will be the starting point: what has that sample been exposed to?

Then you have a range of variables around how the

sample is collected, what device is used to collect that sample from the exhibit. Do you use a swab, do you use a tapelift, do you cut the sample out? So, there are various ways you can try to remove that DNA from the sample, and that can have an effect.

What type of substrate the DNA is on will have an effect, whether it's a porous substrate, a non-porous substrate, whether it's a dirty substance, any sort of - you know, there will be impact as to what that DNA is on, whether there are dyes and inhibitors on the substance that the cellular material is present on.

So, you've got all those things that come into play in terms of the quality of the DNA that you're removing, and then when you go downstream into the processing, you've got the capabilities of your technique to work with degraded samples, to work with inhibited samples, to work with low amounts of samples. You have to consider how much DNA is there in the first place: is it a small amount or is it a large amount?

So, there's a whole range of things that are going to affect the capability to recover DNA, even something as simple as identifying where the DNA is. So, for example, in an assault, if someone has been grabbed and it's a jumper that's submitted, well, how does the investigator or how does the biologist know where the perpetrator grabbed? Was it on the upper arm, was it on the lower arm? So, you may - you know, you need to target the right place, essentially, is what I'm saying, so that's going to have an effect as well.

The other thing that compounds our outcomes is if you are trying to recover DNA from a substance that has been handled by many, many people, the quality of the DNA is going to be affected by that. So, if it's a point of entry, for example a door knob into a house, lots of people will have been handling that door knob all of the time, so there will be poor-quality DNA on there, there will be multiple contributors on there, as well as perhaps the perpetrator, who could be fresh DNA. So, you get this whole mix of DNA that's all affected in different ways. So, it's not all poor quality, but some of it is poor quality.

Q. Thank you, Ms Neville. How does the passage of time

or the age of the DNA affect the quality?
A. Yes, the age of the DNA is going to be another consideration, particularly around how it's - you know, what it has been exposed to. So, if it's a stain, a bloodstain, for example, that's out in the elements, in heat and so on, it's going to degrade faster than a sample that's in the freezer. The samples in the freezer are going to last a long time. They are stored under optimum conditions, and that DNA is going to degrade a little bit, but essentially it's going to be retaining reasonable quality, whereas the sample that is ageing out in the environment, open, is going to age at a greater rate.

Q. Are you able to assist the Commissioner with a sense of what those rates are? I appreciate that it's hard to be precise, but if one is dealing with a sample that is decades old, how will that length of time, say, 30 to 40 years, affect the quality - or how might that affect the quality of the DNA?
A. What I would say is that would really depend on what the size of the stain was at that time, because our techniques are so sensitive now that even after the passage of decades, you still have that capability of perhaps getting a DNA profile. It mightn't be a full DNA profile, but it might be a partial DNA profile.

And there are other - you know, there are some other DNA typing kits that we don't use that perhaps other laboratories might use that could work even with those very, very degraded samples by targeting other markers on the DNA. So, there might be capacity beyond what we do. While it's very, very good, there may be techniques that we don't use that some other lab could apply. So, it really will depend - we can get results - basically, what I'm saying is we can get results from stains that are decades old.

Q. Either in relation to stains that are decades old or other DNA samples where it's not a perfect sample, I think you have told the Commissioner that the outcome will sometimes be probabilistic; is that right?
A. Sorry, I'm not --

Q. The outcome will sometimes involve an element of statistical analysis, of identifying the probability of a match?
A. Yes. So, any DNA profile that matches will be

reported with a statistical calculation. In other words, you need to put some weight on that match, because it's not sufficient to just say the DNA could have come from that person; we've got to provide some indication as to what's the probability of that. So, really, what we do is we provide a calculation that says what's the likelihood of getting that particular DNA profile if it originated from this person than if it originated from somebody else, so it gives weighting to that matching process.

Q. Can I come finally to - in the last part of your statement, paragraphs 120 and following, you explain the Forensic Biology and DNA Laboratory's quality assurance program. Could you explain that to the Commissioner?
A. Yes, I think we did talk a little bit about this earlier. It's around making sure that the results that we provide are of the highest quality, they can be relied upon. So, to ensure that reliability, we have a quality assurance program, which involves controls at every step of the process. Before we even implement any technique, we go through a validation process, so we make sure that the method or the instrument is working well in our hands, it's producing reliable, reproducible results, and, importantly, we understand the limitations of what we're doing and we're clear about those.

So, we go through, and sometimes it can be very frustrating that our validations are taking a long time, but it's very important for us to ensure that every method we're doing is tested and retested and we're assured it's of the highest quality.

What we can do around that is we can use a lot of known samples, so we know what the outcome should be. We look at the sensitivity, we look at the specificity, we look at any risk to the process that we're doing.

So, once we've established that the validation ensures reliability of the results, we operationalise whatever it is, whether it's an instrument or a method, and then in that method we put in place procedures in terms of whatever is applicable to the application that we're talking about every step of the way. Quality is monitored throughout the laboratory. We have a Quality Control Officer, we have a Quality Control Manager at FASS, which ensures that quality is maintained across all of the systems.

We are NATA accredited, but NATA accreditation we would see as kind of a - you know, it's nearly like a minimum standard. We go above and beyond that, to ensure that we are issuing very reliable results to NSW Police. And it's a continuous process. Any time anything would be identified where there is a possible improvement of quality, we will look to putting that in place.

We have a lot of peer reviewing. So, we have a lot of operator checks, so a second person coming to check what one person has done. We have technical reviews, we have blind technical reviews. So, we try to, to the best of our ability, ensure the highest quality of our results, and I'm very confident that they are high-quality results.

Q. Thank you, Ms Neville. Before the break, you gave some evidence about three projects you identified that involved historical back-capture or review of historical exhibits or evidence using current techniques. Can I ask this: if the police were considering reviewing exhibits or samples associated with historical unsolved homicides, a project like that - we're not asking you to break down FASS's resources in detail, but how would a project like that relate to FASS's current resources and capability?
A. So, Forensic Biology - I will just speak to the Forensic Biology DNA Lab - are currently working - we do not have enough resources to keep up with demand, if I could put it that way.

One of the main reasons for that is the complexity of what we do; the capabilities have nearly become a vicious circle. Because we can do more interpretation on complex material, it's taking longer, it takes our biologists more time, so we're absolutely stretched at the current time to deal with our current operations in addition to major validation projects so that we can keep bringing the innovative methodologies online, which we must do to ensure the currency of what we're doing for the New South Wales community in terms of forensic investigations.

So, we are under-resourced at the moment to meet the current requirements of what we need to do in forensic biology.

If we were to do historical work, absolutely the capability is there. We would need to look at what the resources needed would be. So, for example, with the SAIK

Back-Capture Program that I referred to earlier, we were given specific resources to recruit 12 individuals to carry out that work, so when the resources are there, that can be done in a timely manner without interfering with all the other components of what we do.

So, it would really be a process of ascertaining what is the body of work to be done and then determining what are the resources required to do that.

THE COMMISSIONER: Q. And what about collaboration with other institutes of a similar kind within Australia?
A. That could be a component of what could be looked at --

Q. So, there may be, theoretically at least, some untapped resources elsewhere?
A. I'm not sure that any of the forensic labs in any of the other jurisdictions have any untapped resources, but I'm not - I can't really speak to that.

THE COMMISSIONER: Okay, thank you.

MR EMMETT: Q. Could I just understand, Ms Neville, you said that an important matter would be what is the body of work to be done. Is one of the first things you would need to understand what exhibits there are, what state they are in and how many there are?
A. Yes, we would need to know what the body of work was, and then we could do a determination as to what resources would be needed to do that work.

THE COMMISSIONER: Q. And would you be able, theoretically at least, to pick within - let's say exhibits were provided to you. Would you be able to do an assessment in terms of priority as to where you think most likely results would be obtained, or would it be a trial and error in each and every case?
A. I think there could be a systematic approach to it. I think what you would do, to my mind, to start with, would be you would look at the cases where there are stored samples, because that's where you'd start, because those samples have been protected and are in the best condition. So, I would start with that body of work and then drill down into exhibits that may need re-examination. And, yes, you could look at where they've been stored and how much they've been handled and exposed, so you could very much

still have a tiered approach to how you move through that body of work.

THE COMMISSIONER: Thank you.

MR EMMETT: Q. Finally, Ms Neville, you referred to the database being introduced in, I think, 2001. When that occurred, existing DNA samples that had been taken from exhibits prior to that time - were they uploaded to that database or added to that database, do you know?
A. No, only the samples that were taken when the legislation was enabled are uploaded onto the database.

Q. And so, in relation to those past samples, those samples exist and then they need to be tested against the current database; is that right?
A. Yes, that's correct.

MR EMMETT: Thank you, Commissioner. Those are our questions.

THE COMMISSIONER: Thank you. Yes, Mr Tedeschi.

MR TEDESCHI: Commissioner, we have no questions of Ms Neville. We feel particularly blessed to have FASS in New South Wales.

THE WITNESS: Thank you.

THE COMMISSIONER: All right. Thank you. Thank you very much for your assistance today. I will now excuse you.

<THE WITNESS WITHDREW

THE COMMISSIONER: We will adjourn until --

MR EMMETT: 3pm.

THE COMMISSIONER: We have a witness at 3 by videolink, so I will adjourn until 3 o'clock. All right. Thank you.

LUNCHEON ADJOURNMENT

THE COMMISSIONER: Yes, thank you, Mr Emmett.

MR EMMETT: I call Dr Cheryl Allsop.

<CHERYL JANE ALLSOP, affirmed: [3.02pm]

<EXAMINATION BY MR EMMETT:

MR EMMETT: Q. Could you tell the Commissioner your full name, please?
A. I'm Dr Cheryl Jane Allsop.

Q. And your occupation?
A. I'm a Senior Lecturer in Criminology and Criminal Justice at the University of South Wales in the UK.

Q. And your work address?
A. Is the University of South Wales, Treforest Campus, Ferndale Building, Pontypridd, Wales.

Q. Have you prepared a report for the purpose of this Special Commission of Inquiry dated 9 August 2023?
A. I have indeed.

Q. And are the contents of that report true and correct and do they reflect the opinions you hold?
A. They do.

Q. Dr Allsop, can I ask you to begin by summarising for the Commissioner your qualifications, particularly in criminology?
A. Yes, absolutely. So, I have a PhD in criminology. My PhD was on cold case investigations and how the police seek to solve long-term unsolved major crimes, specifically homicide and sexual violence. I've got a masters degree in social science research methods, a masters degree in criminal justice studies, a degree in law and a degree in psychology.

My experience is I've been teaching at the University of South Wales for 11 years. I teach and research cold case investigations, missing people investigations, particularly missing people considered murdered. My current project is that, looking at cases of missing and murdered, and looking at ways to improve those investigations. I'm also doing research on offensive weapon homicide reviews.

I have written a number of publications on cold case investigations. I'm currently co-editing a handbook, the International Handbook of Criminology.

Q. Thank you, Dr Allsop, and --
A. Outside of that, as well, I'm also an independent panel - sorry for interrupting - independent panel member of the Metropolitan Police Service Case Scrutiny Panel that scrutinises inactive cases in their force area, and I'm a trustee of Locate International, which is a charity dedicated to helping families with long-term missing people.

Q. Thank you, Dr Allsop. You have attached to your report a CV that sets out your full experience, qualifications and publications?
A. It does. Yes, it does.

Q. The first matter that the Commission has asked for your opinion about is the genesis and current operation of the HOLMES system in the United Kingdom. That is H-O-L-M-E-S. Could you explain to the Commissioner, please, what the HOLMES system is?
A. Yes. So, the HOLMES is the Home Office Large Major Enquiry System, and it is a system that is designed to help in serious and complex cases to manage the volume of information that comes in to these cases. It enables team members to upload documents, statements, CCTV footage, things pertinent to the investigation. It means the senior investigating officer, the person in charge of the investigation, can see what's happening in real time in the investigation; you can make connections and links between information coming in, produce specific reports for the case. It then helps with the case management of your investigation.

It was brought in to UK policing following a series of murders in Bradford, Leeds, in the UK, where a number of women were being murdered and they were unable to find the suspect for quite some considerable time. A review, the Byford Review, looked into why that was. What they discovered was actually there were a lot of opportunities to find the offender, the offender being Peter Sutcliffe, but because of the sheer volume of information that had been gathered in the investigation and because it was all done on paper, those opportunities were missed.

So Byford recommended introducing a computer system along with the Major Incident Room Standard Admin Procedures to help manage these investigations. So, HOLMES

is a computer system, computer database, that helps manage lots of information in complex and serious crimes.

Q. You mentioned the Byford Review. Am I right that was released in December 1981?
A. Yes.

Q. Are you able to assist the Commissioner with how soon after that the HOLMES system was introduced?
A. As I understand it - and you sometimes see different years in the literature, but as I understand it, it was 1986.

Q. If you don't know the answer to this question, say so, but are you able to assist the Commissioner with how well known the HOLMES system was in the policing community around the world at that time?
A. I couldn't answer that question. I really don't know, unfortunately.

Q. Was it, to your knowledge - and, again, if you don't know, say so - significant and widely recognised in the policing community in the United Kingdom when it was introduced?
A. Again, I couldn't say. I couldn't say.

Q. The HOLMES system, am I right, is it project specific - that is, it's brought to bear on projects if those managing the projects decide to use it, or is it used throughout the United Kingdom Police Forces?
A. Yes, so it's available to all of the UK Police Forces. It's used in homicide investigations and serious complex cases. A senior investigating officer might in some cases decide that the investigation isn't complex to require it, but in most homicides and serious complex cases, they will use it, because it helps them manage all of that information. I think in only but the very straightforward investigations, where there perhaps isn't a lot of information required, then they might not set it up, but most often they will, because it will also help with the case management of the investigation as well. So, senior officers will use it. But forces can - if you've got a cross-force investigation, forces from the different forces can access that HOLMES database and that HOLMES system.

Q. Once the system is adopted for a given investigation

or case, does the information that is recorded there plug in to the wider system so that there is cross-pollination of information between different cases that are on the HOLMES system?
A. It can link and make connections, but when it's set up, it's set up for those particular investigations. So, it will be set up for that murder or that complex crime. It helps - you can do analysis on it and you can look for links across the information that you've got, and it's then available for you to print reports out about those particular cases for your prosecutors or others to use.

Q. And are you able to assist the Commissioner, does the HOLMES system assist, among other things, with managing records about exhibits, what exhibits have been taken in, what tests have been conducted on them, and so forth?
A. Yes. All of these reports can be input by the investigating team on to HOLMES, so you can have all of those records input on to HOLMES, yes.

Q. And do you know, what about perhaps more mundane things, like exhibit movements, if the exhibit moves from being stored in one place to another?
A. So, you mean like the chain of continuity?

Q. Yes.
A. I couldn't be certain, but I think it would depend on if they input the forensic scientist's report - or, first of all, the senior crime officer's report that says where they got the exhibit from and what they did with it and who it was passed to, and then the report from the forensic science provider is put on to HOLMES and done that way. It helps as part of the case management before it goes to trial, so I would expect that those reports would be on HOLMES.

Q. I'm just thinking, if someone picked up or came to a historical case and said, "I want to know what the exhibits are and where they are and what testing has been done and, by implication, what testing hasn't been done", if HOLMES has been adopted for that case, will that be readily accessible information to the officer?
A. As far as I understand it, it should.

Q. Are you able to assist the Commissioner in relation to other countries around the world in relation to whether they have similar systems?

A. I don't have any great expertise in international systems. I am aware from a colleague in America that they don't have something like HOLMES. They have separate computer systems by way of State and jurisdiction, so they don't seem to have a similar thing. I have been able to establish from a colleague in Canada that the Royal Canadian Mounted Police have something not to the extent of HOLMES, but you will see in my report I've put that it allows them to assign tasks and follow and monitor tasks. But I haven't been able to establish from the literature or from colleagues in other countries if they have anything similar.

Q. Thank you, Dr Allsop. Dr Allsop, I want to move next to the key factors that, in your experience or based on your expertise, bear upon the resolution of unsolved homicide investigations or cold cases. The first you identify is scientific and technological advances?
A. Yes.

Q. In your report, you explain the significance of scientific and technological advances. Perhaps I could ask you to speak to that for the Commissioner, briefly?
A. Yes, absolutely. So, in a cold case, often the forensic science is something they have now that they may not have had at the time of the original investigation, and that's because as time has gone on, better testing techniques have been developed that enable DNA profiles to be obtained from ever-smaller amounts of biological material and degraded material and mixed profiles.

So, you will know in the UK, DNA profiling for forensic purposes came in around about the mid-1980s and developed - at the original time, you needed lots of biological material, you know, big samples of blood, for example. As the years have gone on, it's those smaller and smaller amounts that can be amplified through new DNA techniques that you can then obtain a DNA profile from.

We also have the National DNA Database introduced in 1995, which enables these profiles to be databased, which means if you have, for example, a sexually motivated stranger rape or murder and you have a biological sample from the crime scene, you then get a DNA sample - a DNA profile years later from that biological material. That DNA profile can be checked against the DNA Database for offenders or other crime scenes, which then gives officers

a lead to follow. It then helps to look for the person that might have that same DNA profile, a crime scene that might have that same DNA profile. It means the same person was at two separate crime scenes, so it gives you wider scope for investigation.

It allows you to link crimes. It allows you then to - if you've got potential suspects that were named in the original investigation, they can then be eliminated if it's not their DNA profile that was left at the crime scene. So, it gives you opportunities.

It also gives you opportunities to look at what is called familial DNA processing, which is the concept of - your offender might not be on the DNA Database, but one of their relatives, who has a similar DNA profile, might be on the DNA Database. You can then do, as a team, what they call familial DNA searching. That produces a list of potential relatives of your profile, and then you can start investigating. It still requires a lot of detective work to try and match an unknown offender with an unknown relative, but we have had, in the UK, some success with that.

So, the forensic science is what we have now, and the testing, that we didn't necessarily have at the time of the original investigation, and as time has gone on, tests have got better, meaning you can get profiles from, like I say, the degraded samples that you often get in old cases, mixed profiles or, indeed, smaller, microscopic samples.

Q. Can I ask about the National DNA Database. You say it was introduced in 1995; is that right?
A. Yes.

Q. Was there an appreciation, to your knowledge, in the policing community, in the Police Forces, before 1995 that such a database was likely to be adopted, perhaps by analogy to fingerprints, or was there an understanding in the early '90s or possibly earlier that such a database may become an important tool in the future?
A. It's not something I could answer. I don't know. They used to have - forces would have their own sort of databases and spreadsheets, so maybe it was in mind that that would be of benefit, but it's not something I've asked or could answer.

Q. What about the general march of the technology. You have explained how the DNA technology has become more refined over time, more sensitive over time in a range of different ways. Again, are you able to assist with the extent to which, in the policing community in the UK, that was foreseen or thought to be on the cards?
A. Well, DNA for forensic purposes came in following a double murder in Leicestershire in the UK, where two girls were murdered a time apart, but the police at the time considered that those murders might be linked. They had a suspect, a vulnerable adult who came forward and confessed to one of the murders but not the other murder.

What I think was probably progressive of the police at that time was they made contact with Alec Jeffreys, who was a forensic scientist working in Leicester. He was working on DNA for paternity purposes rather than any kind of forensic purpose, but they went to him to see if the work he was doing on DNA and profiling might help in this double murder investigation, and that's how it became introduced in UK policing, that he was able to get a DNA profile from both the murders; that profile established that the two murders were linked, as they had suspected, but also showed that the person who had confessed couldn't have committed those murders, because it wasn't his DNA profile at both crime scenes.

It then gave them leads to follow, in that they did a mass screening of local men. It enabled them to get local men in the area to give a voluntary swab to eliminate them against the DNA profile they then held in that investigation.

So, I think it was forward-thinking of the police at that time to think, you know, could the scientist in our area looking at it for paternity - could that help here? And I think as they have started to use it in more investigations - we had, until 2012, the Forensic Science Service, which was the central forensic science provider that worked with the Police Forces, and they would be working on new tools and techniques and technologies, working with the police on looking at ways to advance forensic science.

So, I think that initial - you know, in the mid-1980s, when the police asked about DNA profiling for forensic purposes, it showed that they were thinking about it then.

I'm not sure how widely that would have been recognised. But once you can start to see it used in investigations, it was then used in a sexual violence investigation, so you start to - it was never tested in court at that first trial, because when they did ultimately catch the offender, he pleaded guilty.

It was then tested at trial a couple of years later in a different case, and it has gathered momentum from there on in. So, I think to answer your question, police at that time were forward-thinking. Prior to that, of course, we had fingerprinting, we had blood grouping that could be done, so there was some science happening and some awareness, but not to the extent it is now.

Q. Thank you. Related to that, if I could take a concrete example that may assist the Commissioner, in the, say, early-mid '90s, at a time when DNA technology existed, but a larger volume of DNA was needed in order to put together a profile, to your knowledge, was there an appreciation in the policing community in the UK that the size of the sample necessary either was likely to come down or might come down, so that if you have an exhibit that doesn't have enough DNA according to current technology, "We ought to hold on to it for the purpose of future technology - against the possibility, likelihood, prospect, of a future technology"?
A. To my knowledge, I don't think there was as great an awareness as perhaps there would be now back in the '90s. I think it would depend on individual officers, individual forces and cases they had worked on that made them think of that. But I don't think they had, in the '90s, that sort of knowledge to know that ever-smaller amounts could be amplified, that you could then get a DNA profile from it.

I am aware from when I did my PhD cold case research, the team then spoke about certain cases that they had in mind there might be better tools and techniques and technologies, but they were sort of more in the 2000s and later. I think potentially in the 1990s, I can't be certain, but I don't think they'd had quite the foresight to see how advanced it would be, and I say that based on the fact that they would often give exhibits back to families, to victims, to suspects. So, if you had that awareness, you would have retained everything.

That having been said, one of the murders that I saw

that was a murder from the 1980s that ultimately got a prosecution only a few years ago - the forensic scientist did a very, very detailed report, very detailed sketching about what could be done, lots of exhibits were retained with the view of what might have been done in the future. So, again, whether it's the forensic scientists who perhaps had that vision and were working well with the police, or the police themselves, I couldn't say. So, there are pockets of examples, but I don't think it would be widespread, is probably the crux of it.

Q. Thank you, Dr Allsop. In the second half of paragraph 24, you also refer, moving back to databases, to American genealogy websites. Are you able to assist the Commissioner with the role that those websites have?
A. I don't know a huge about them, because we don't use them in the UK. I know in America they have started to use them and they were used in a high-profile serial offence where - it's where relatives will put their DNA profile on to the genealogy websites to try and trace their own relatives, and I know a couple of these websites allow the police to use them. It's not widespread, because there are all sorts of issues around human rights and, you know, they're not designed for forensic purposes. But I know a couple of the websites in America have allowed it. Others haven't. The UK don't.

There was a case where DNA was obtained from a potential suspect that was put on to the genealogy website, and then they were able to trace him through that. That's the sort of extent of my knowledge on that, because we don't use it here, but it feels like it's a growing area.

Q. Thank you, Dr Allsop. In your report, you also stress some cautions in relying on science in cold case investigations. What are they?
A. Yes, there's quite a few. I mean, I've said to you that in old cases, samples get degraded over time. You also have the risk of contamination of samples. So, in the past - today, you know that forensic scientist crime scene examiners will wear head-to-toe covering, will have their hands covered, their feet covered, to try to avoid contamination of a crime scene. But in the past, they would pick up exhibits, they would pick up items, so therefore their DNA, their sweat and skin, has been already left on exhibits.

Exhibits also weren't retained as they should be retained now. So, I saw, for example, bags of exhibits where items were just thrown into them, which means you then run the risk of cross-contamination, that something obtained on one item may be passed on to another. So, you might have a suspect's jacket and a victim's dress, and it becomes cross-contaminated simply by how it has been stored. It might happen in that way. And that can raise issues about the reliability of it.

If you're relying on your forensic sample, you have got to be able to show that it's - from the crime scene to the court that it's as accurate as it can be and that it has not been contaminated. That can be difficult in old cases, and therefore you also get those mixed profiles that I talked about.

It also relies on you actually having the exhibits in the first place to be able to get your DNA profile. Like I've just said to you earlier, it wasn't uncommon to give back exhibits, to give back items. Not only that, even if you retain the items, the filing systems are such that you've got to find them, first of all, to be able to then do the DNA testing. So, it's not the magic bullet you might think.

You've also got to prove - you know, having DNA at a crime scene doesn't prove that that person committed the crime. It just suggests that they might be there. Their profile is there. Even that - I mean, you take my example of holding a bottle of water. I hold a bottle of water. My DNA is on it. I pass that bottle of water to you. My DNA might transfer to you. You then pick up a knife, and then police find that knife. How do I explain my DNA on it? Well, it has come from the bottle that you picked up before you picked up the knife. So, you've still got to prove your case, not just the fact that DNA is there. So, there are quite a few issues around that.

It's a challenge, I think, for the police to prove that continuity as well over the years. You've got to locate all of the officers involved, who collected the crime scene sample, who passed it on to the laboratory, what the laboratory did with it, who they then passed it on to, to then use that sample in court. So, it's not without issue, it's not the magic bullet, but it seems to be the

form of evidence that is most tangible.

Q. You referred to the experience that items are sometimes lost or misfiled or not able to be located. Are you able to assist the Commissioner with how prevalent that has been or is, based on your experience?
A. It's very prevalent. It's very prevalent. Like I say, items were given away - or given back, rather. Items have been lost. When I was doing my research, a lot of the exhibits, a lot of the paperwork, was stored in a big warehouse. When I say "stored", literally it was boxes thrown into a big warehouse. They weren't particularly labelled. So, as we were going through boxes, we were looking at it for a particular piece of paperwork in a murder investigation, but we found other paperwork related to other investigations in those boxes, so even just with the filing system.

I mentioned to you that, you know, I look at cases now, and even now, we see that exhibits haven't been retained; they can't be found; they've been lost. A large problem is Police Forces having the storage space to store all these items. So, even when I was doing my cold case research and making recommendations around retaining exhibits, retaining paperwork, keeping everything, there was talk about getting rid of things and giving back things because, where do Police Forces keep that information?

Again, when I was doing my research, items were found from various locations across the force area. So, what used to happen in the past, detectives might take with them - as they moved to different areas across the Police Force area, they might take the paperwork with them, they might take items with them, because they wanted to continue to investigate these unsolved cases between other things, and then they got put in cupboards, put in lofts, put in attics and forgotten about. So, that wasn't uncommon.

And, like I say, even now, I still hear that items have been lost, destroyed, misfiled, and it becomes a problem both in cold case investigations and potential miscarriages of justice as well.

Q. Are you aware of any developments or steps that have led to an improvement in the record-keeping or management of exhibits in the United Kingdom Police Forces?
A. One of the Police Forces - well, the Police Force

I did my PhD research with, whilst I was there, they recognised that problem of all of this storage that they had, and they were putting into place a system where they were getting any reviews they'd done, be it the 28 reviews or other reviews - getting all the paperwork from the police teams in the rest of the force area, getting it together in their storage unit, and starting to do an index system of their own, so they knew where all their paperwork was, where their documentation was.

They, at that time, only had around 27, 28 unsolved murders, so what they were also doing was reviewing each of those murders, then putting together a couple of box files of the key pertinent information, so the closing statement report, which set out what we've done on this investigation, what we've got, what lines of inquiry are outstanding, and having those boxes in their office readily available for reviewing again in future, so if another team came and took over that investigation, another officer, they could go to those boxes, look at the closing statement report and the key documentation to see what could be done in any subsequent review. So, I think that is good practice there, absolutely.

Q. When was that practice adopted, are you able to assist the Commissioner with that?
A. Yes. I was doing my research back in 2010, 2011, so they were starting to do that as I was leaving. So around about that time, they were - they'd already put in place - from cold cases they'd got their - getting the documentation whilst I was there, putting those files together, so that was, yes, 2010, I would say, 2009, 2010, 2011, that sort of time, yes.

Q. Thank you. Another note of caution you sound in relation to the science is that one needs to take care about relying on it as the only option, because there may be other opportunities to progress the case.
A. Yes. So, if you are thinking, "We've got this case here. There's clearly no exhibits, or we haven't retained any exhibits, or any tests we've done - you know, we can't do any more testing", what you might then miss is that thorough read-through of all of the documentation that might name - you know, a witness might have named a suspect that somehow has not been taken forward, or the witness at that time couldn't have been found, or there wasn't enough information pertinent to that witness.

So, it's looking for, are there names in the file you might have missed if you are just relying on science? Are there any other tools and techniques that may help you? Is there some other line of inquiry that you have missed because you are just looking at forensic science?

That being said, you have still got to prove your case, so the forensic science helps you connect your person to the crime, even finding a name in the file. So, if you find a witness in the file, you can then go and obviously speak to them and get their information, but you've still get to connect a suspect to the case. But it's looking for, is there anything else that has been missed? Was there something about that suspect that now, with other techniques, might make it easier to find them, trace them, speak to them, connect the offender? Might a name be in the file that has come up in other cases subsequently that you might have missed that gives you another line of inquiry to follow? But practically, of course, you've got to think about the sheer volume of paperwork that might render that impractical.

Q. Thank you. Could I move to the second factor that you address in some detail in your report, and that is the second factor bearing on the resolution of unsolved homicides, and that is record-keeping practices?
A. Yes, yes. So, again, it's knowing what your unsolved murders are and how many you've got and what the information is in there. So I did, right at the beginning of my PhD, a freedom of information request to all forces asking, "How many unsolved murders have you got?", bearing in mind, at that time, there was guidance to review them every two years. There were some teams in place. Some forces didn't know how many they'd got, so how can you be reviewing them and investigating them if you don't know how many unsolved murders you've got?

Again, it goes back to, if you haven't got the paperwork, if you haven't got the documentation, if you haven't got it in an organised manner such that you can see what is available, what exhibits you have got, what suspects you might need to eliminate, what witnesses you might need to speak to, it then makes it difficult to go back and review those cases, it makes it difficult to cross-reference any links with those cases.

Having it on spreadsheets - it helps if you know your own cases on spreadsheets, but you might miss links with other cases. So, it is that file and management system and retaining things in such a way that you can find what you need.

Q. Thank you, Dr Allsop. Dr Allsop, in a couple of answers to my questions, you have referred to the various Police Forces in the UK, and you have said some forces didn't know what they've got. Can you assist the Commissioner with the structure of the Police Forces in the UK? How big is a Police Force? Is it area based and, if so, roughly what sizes?
A. Yes. So, in the UK, we have 43 - well, in England and Wales, 43 Police Forces of varying sizes. In Wales, for example, we have four - South Wales Police, North Wales Police, Dyfed-Powys Police and Gwent Police. Different sizes. Some are rural, some are city based. The biggest is the Metropolitan Police Service in London.

Each force has different challenges. So, you know, our bigger forces are the Metropolitan Police, Manchester, Greater Manchester Police, Birmingham, the big city forces, compared to some of the small rural forces. So, they have different practices in place. In terms of their cold case reviewing, some of our forces now have regional cold case review teams, so they might merge and share resources. But there are 43 across England and Wales of varying sizes, in a nutshell.

Q. And are they all independent? Is there a hierarchy that sits over the top of them?
A. So, you've got the UK Home Office, and the Chief Constables are responsible to the Home Secretary. We have Police and Crime Commissioners who are linked to each of these Police Forces, who hold the Chief Constables to account. The Chief Constable will run the force with their Deputy Chief Constable. In the Met, they have Commanders, Assistant Commanders, Deputy Commanders, so they have different hierarchical structures. So, your Chief Constable is your overall in charge, but they report in to the UK Home Office, but also they are accountable to their Police and Crime Commissioners as well.

Q. Thank you, Dr Allsop. Can I come back, then, to record-keeping practices, and you referred to the FOI request that you made, and in your report you say that

there may be paperwork kept in different places across force areas.
A. Yes. So, if you take, for example - if I use London as an example, you've got all of the different boroughs in London, all of the different areas, so a force area might be Kilburn, Croydon, Lewisham. The different places within London - in Bristol, for example, you've got Bristol City Centre, but you've also got Bath, you've got locations in Somerset, so they're spread far and wide, each, again, with their own buildings, teams, that kind of thing.

So, what I said about taking documentation with them to different force areas - you might, take as an example, be working in Bristol, have your paperwork in Bristol and then have been transferred to Bath and you have taken that paperwork to Bath with you. You then move from Bath to Portishead, but you have then left that paperwork behind, and time has moved on, and suddenly in Bristol you're looking for the paperwork. Where is it? Some of it's in Bath, some of it has gone to Portishead, some of it's elsewhere at different parts of that force area.

Q. Is this effect something that you observed in the course of your PhD work?
A. It was, yes. Even to the extent that when I was doing my research, an officer came to the review team with a bag of exhibits that they'd found in their building elsewhere to see, "Is it connected to any unsolved murder?", and within that bag of exhibits were key pertinent items. Yes.

Q. One thing you say in your report is that:

Having all the documentation and exhibits together and up straight will make conducting cold case reviews more efficient and effective.

A. Yes.

Q. Are you able to assist the Commissioner, is it practicable to conduct cold case reviews at all without having that documentation and exhibits?
A. I think it's very difficult, because you need to know what's happened in the case, you need to know who potential suspects are, you need to know who your witnesses are, you need to know what exhibits are available to do your forensic testing, you need to know the circumstances of the

case. If you haven't got the documentation, it then becomes difficult. Where do you begin in your review? Where do you start?

You might have - I mean, I'm saying that, on a stranger rape I observed, slightly different, of course, to a murder, where there's sheer volumes of information, I observed a stranger rape where all the review team had was a few lines on a database saying what had happened. The Forensic Science Service that held a lot of the exhibits for Police Forces contacted the Police Force and said, "We've got exhibits in connection to a stranger rape." They upgraded one of those exhibits and were able to obtain a DNA profile.

That DNA profile was put on the National DNA Database, and it matched another crime scene. As it happens, it was a house burglary. When the review team came to look at what they could do in this investigation, they hadn't got anything connected to the stranger rape, so they looked at the burglary and what they had there, and their first port of call was to go to the homeowners to say, "You reported this burglary. Can we take a voluntary DNA swab from the homeowners, because there was some blood left on the bathroom at the time, as part of the burglary investigation?"

All of the homeowners, people living at the property, gave a swab, and when they got the DNA profile back from the gentleman who owned the house, it was his DNA profile that was on the blood in the bath in his house, which meant it was also his DNA profile from the stranger rape. So, they were then in the unusual position of having a potential suspect but no documentation, and they rebuilt the case by going back to the Forensic Science Service and getting the original documentation that was sent to them with the biological material right at the very beginning of the investigation when the crime happened. They then had to locate the doctor involved who had examined the victim. The doctor had got her records. She had retired by then, so the detective work was in tracing the people. She had retired by then but had her documentation. So, they started to build the documentation back.

They were able to establish the police officers involved at the time. They were able to establish who the victim had first reported to. They were able to get

details about it. They then had to trace where the victim now lived, which they could do. They then had to go back and get a victim statement. And so they were able to build the case back up.

They then went back to the original homeowner, because, of course, because they had taken the sample to eliminate him from the burglary, they had to take a new sample in connection to the rape, so they took another sample, and he was then convicted of that rape. So, they were able to build the case back up from literally a few lines on a database because the Forensic Science Service had retained their records and because they were able to update that DNA sample. And that happens more often in those sort of stranger rape cases.

In a murder investigation, because of the sheer volume, it's much more difficult, but having seen it in the stranger rape, you know, there are ways of trying to get some of that documentation that is missing.

Q. Correct me if I'm wrong - the example you give, it sounds like a lucky chance?
A. Yes, but I think - you know, I would say there's a lot of lucky chance in a lot of investigations. I think the fact that they had retained that sample, the fact that the Forensic Science Service contacted the force to upgrade it, the fact that people, others, the Forensic Science Service, the GP, had retained those records - you know, that original case that I said to you when DNA was used for the first time, the double murder in Leicestershire, they did the mass screening of the 500 people, and the offender wasn't in that mass screening, and it was by chance that somebody overheard a conversation in a pub where a man said, "Oh, I gave a voluntary sample for Colin Pitchfork. It wasn't him." So, hearing about that conversation, they then went to Colin Pitchfork, got his voluntary sample, and it was his profile and he confessed.

So there is lucky chance in these things, but you are making your own chance by having your documentation, doing the forensic testing, being familiar with your cases. It's that detective work and that tenacity to keep investigating that goes hand in glove with your forensic science expertise and chance.

Q. Am I right in understanding that's where the

documentation and the exhibits - although there is an element of chance, am I right in understanding that that significantly increases the prospect, in your experience, of a successful cold case review?
A. I think so, yes. I mean, the one I talked about, that they got a subsequent conviction for, for a murder that happened in the mid '80s, they had retained - and by the time it came to prosecution, they had found all but one of the bags of exhibits. They had, first of all, a lot of information, so they had information about the victim, they had victim statements, they had a lot of exhibits retained.

And, again, chance was involved here. They did familial DNA searching, because the DNA profile that they had obtained wasn't on the DNA Database. They did familial DNA searching a few times, for no success. And then one final throw of the dice, they did one last final familial DNA search, and in the meantime, the offender's daughter got involved in a low-level crime, a minor assault. Her DNA was taken, which meant when they did that final familial DNA searching, her profile was near the top as a potential relative.

Detectives then had to unravel, could it be the relative, and they discovered he lived in the area, he was of the right age. He gave a no-comment interview. It was a sexually motivated rape, so the police had to work out what his defence might be, and of course the DNA profile came from the sexual act, so they had to consider two things: one, he might have said, "Well, the act was consensual and somebody else killed her", and, two, they had to think about disclosure of all of this information, because could the defence say there was an abuse of process because you've only disclosed certain things? So, they went back to locate everything. They went back to the Forensic Science Service archives, where they found more exhibits, where they could do more testing, where they could confirm this is definitely the person.

He did ultimately, when it went to trial at the first day, plead guilty, but up until that point, up until just before trial, it was a no-comment interview, so they had to find everything. They had to be prepared to disclose everything to the defence, so you need to have that documentation available. And then what they were doing was inputting all of that information on to HOLMES to prepare for that prosecution, so it makes it, at every level of

your investigation, at trial, at pre-trial, vitally important, because a defence could argue if you have lost half of your information, there might be some other explanation.

Q. Thank you, Dr Allsop.
A. Sorry, that was quite a long answer, wasn't it.

Q. It's of great assistance to the Commission, so thank you, Dr Allsop, for that. In your report, you say that collating the documentation and then reviewing it is resource intensive.
A. Yes. It absolutely is.

Q. I'm sorry, didn't mean to speak over you. You were about to say something?
A. No, please, carry on.

Q. Based on your experience, how do the forces in the UK balance that against - you say it must be prioritised against other demands. Based on your experience, how do Police Forces balance that in their operations?
A. Yes. It very much depends on whether Police Forces have a Major Crime Review Team in place. Some do, some don't. It seems to me to be quite cyclic. They will have a review team in place, they will do some reviews, the team will be disbanded and given other duties, and then suddenly they will come back, there will be another review team and they will start again. Like I said to you before, some have now merged and have regional review teams.

I think it's having that dedicated review team that means you can do these reviews. So, some forces will have review teams in place to do the 28-day reviews or the live reviews, and I put them in the report. These are the reviews of ongoing investigations, designed to check that investigations are running as they should do, that procedures are being followed, that standards are being conformed to, and to be a help to the senior investigating officer. So if a review team are doing those sorts of reviews, they can also do cold case reviews at the same time.

Some forces would just make a decision that they might have a high-profile unsolved case that they want to focus on. They might have a particular case that they think is linked to an offender that has been caught for other

crimes, so they are investigating that offender with that unsolved case. So, what I tend to see are teams coming and going. You'll have a review team, they are disbanded, then you get another review team.

Some forces will have - like I said, I sit on a Case Scrutiny Panel. We meet monthly to scrutinise inactive cases or cases that the team want to stop looking at, so that you've got an independent pair of eyes looking at them.

But it is a balancing act and you have to think there's not unlimited resources, there's not unlimited money. You have to balance live cases with cold cases. And that example I gave you of the cold case where the man was subsequently prosecuted following the familial DNA searching - familial DNA is an expensive technique to use, and the senior investigating officer had to fight for that budget, and in so doing, that was the last time she could have done it, so had that crime not have happened, they may have missed the opportunity.

In the past, the Home Office have given money to Police Forces to look at their cold cases. We had two national cold case operations. One was Operation Advance in early 2000s, looking at unsolved stranger rapes. Money was given to see if forensic techniques could give you quick wins in upgrading samples from historic sexual violence cases to then solve them. The idea was then you are giving money to very cheaply find potential serial rapists. They profiled these cases after they had got their convictions to see what these offenders had been doing, and they found that these offenders were prolific, repeat offenders, so they justified the money by saying, one, you have taken a repeat offender out of circulation; two, victims have got justice; and, three, you are clearing up some cold cases. So, there was a business case for it.

On the back of that, the UK did Operation Stealth, where the Home Office gave money to Police Forces to look at unsolved murders where, again, could forensic techniques help you solve unsolved murders? Where I was going back to your question about police buy-in, whereas with Operation Advance, Police Forces had been reluctant initially to give money and time and resources to these unsolved stranger rapes, preferring to concentrate on live cases, because they had seen the results and the benefits that could have

been achieved from these events, they were now keen to get involved in the unsolved murders. And so forces had to bid for money, those bids were oversubscribed, and then there was a proactive monitoring of the homicide index to identify other cases to try and look at could they be solved using money to upgrade forensic samples to find murderers, and they did have some success - obviously, a lot slower success, because obviously murders take longer than the sexual violence. But those two national operations I think justified the expenditure, the resource and gave the business benefits of closing these cases and solving them.

So, forces became more active in their cold cases. But, like I said to you, that ebbs and flows. As other priorities come on, as money gets cut, so does that happen too.

Q. Thank you. What was the timing of Operation Stealth?
A. Around about 2007, I want to say.

Q. And how long did it go for? Was there a defined period that it went for, do you know?
A. It was an ongoing thing. There were two phases to it. The first phase was where forces bid for money and were given money to individual cases. The second phase was the proactive phase, where they were looking for cases off the homicide index. But then it continued for a while where forces could still look for match funding from the Operation Stealth team. And that case I told you about, the example of the case that they got the conviction for, their initial funding for the familial searching was through Operation Stealth, and their third one, which must have been in the, sort of, 2013/2014/2015 sort of time, was originally planned to be Stealth funding, and that was pulled, but they still paid for the familial searching.

So, I couldn't be exact, but it seems to me it did go on for quite some time, letting forces bid for money. There must have been an end date, because the money would have run out, the allocated money would have gone, but I don't know off the top of my head. Certainly I could find out after, if that helps.

Q. Thank you, Dr Allsop. If the Commissioner would be assisted by that, those assisting the Commissioner will ask for that information.

A. Yes. Anything I have spoken about today, if you want further clarification, do ask afterwards, yes.

Q. Thank you, Dr Allsop. In your report, you explain that when a force has a body of cold cases to be reviewed, the guidance from the Association of Chief Police Officers suggests that cold cases be reviewed every two years?
A. Yes. So, the Association of Chief Police Officers - they're now called the National Police Chiefs Council, and they are those senior officers that I talked about, Chief Constable, Deputy Chief Constable, that kind of thing, and their guidance in sort of 1998 was that you should be reviewing your unsolved murders every two years, and that was reiterated in what used to be called the Murder Manual, which was an investigation manual to investigate murder. It reiterated that two-year review period back in around about 2007/2008.

What now happens is, again it depends on resourcing, having your cold case review team, as to whether they'll do it for those two years. So, there is a suggestion that it is good practice to do that, because what you are looking for is: are there any new scientific techniques since last this was reviewed that might help in your case now? Is there any intelligence that you might have that might help you in your case now? And, of course, it helps you keep on top of your unsolved cases.

The team that I do my Case Scrutiny Panel on, we will often say, you know, it can be inactive with a view to reviewing it again in two years' time for further intelligence, for new forensic testing. You will also review cases if you are aware of new testing becoming available that you think might be valuable in your unsolved murder, but that requires your team to know about your unsolved murders to be able to think that way, and hence the two-year keeps them in mind.

Q. Dr Allsop, is there a balance to be struck between the depth of the review of each case and the volume in order to get through the cases in two years?
A. Absolutely. Absolutely. You cannot do, every two years, a full review of everything, of all the documentation. You simply can't. That goes back to my earlier point about the team condensing the key material, the closing statements, into those two boxes of A4 documentation that means the next people along have got

the closing statement reports, they've got lines to look at, they've got intelligence to explore, they might have the forensic opportunities to explore, they can look at what exhibits haven't been tested or what might be viable for a subsequent test. But you couldn't do a full cold case review, because you would just be looking at the same documentation again.

You might do that if a new team comes in, you know, there isn't that sort of encapsulated amount of documentation to do it, but you certainly wouldn't do it every two years, every two years, every two years. You couldn't do that. You do have to find that balance. So, you might do a thematic review, an intelligence review, forensic review, exhibits review, which would be more likely.

Q. Is there an appreciation that striking that balance is important to ensure that cases are reviewed reasonably frequently rather than being bogged down, spending too long on each case, on the review of each case?
A. Absolutely. Absolutely, yes. And Chief Officers will set that strategy as to how often they think it is important to do that, but there is, absolutely.

Q. The Commissioner, in this State, has heard evidence about a view that an optimum or an ideal would be to review unsolved cases every five years. Are you able to assist as to the difference between two years and five years or what the practice is in the UK based on your experience about that particular - choosing two years rather than three years or five years or some other period?
A. Yes. I mean, I guess it depends on how - you know, are you missing a scientific advancement, for example, between the case and a five-year review and another five-year review? Are you losing sight of what the case is all about, you know, remembering that case?

It depends. If, for example, you might have an anniversary that comes up within that time, an anniversary appeal, a media appeal, it might be useful to do it. Often it's arbitrary, isn't it, because it's about understanding what you've got on your cold case. If there are people to be eliminated, sooner rather than later, if there are suspects named in the cold case and you review it in five years' time, they've been suspects for five years, if there have been scientific advances in the meantime, quicker is

better.

That having been said, if there are no scientific advances, and they happen every four or five years, then five years is fine because you've got that technique, you have captured it. Witnesses - you know, the names are still going to be there, whether they are there from the original or not.

I haven't necessarily seen five years as a UK standard. It tends to be, like I say, the two-year or on anniversary appeals, significant appeals, on the introduction of new scientific advances, but then you've got to sort of know your unsolved cases to know that that scientific advance might help in that case. So, sort of a regular review helps you to know that.

There might be - for example, what the UK sometimes do is if a person has been caught for one or two unsolved cases, they will then ask forces to review their unsolved cases to see if that offender could be connected to those unsolved cases. So, there might be other prompts between times that instigate a review. So, to answer your question, is five years sufficient, you might want to consider those other things in between times as well, those sort of triggers beforehand.

Q. Am I right, is that because the longer the time between reviews, the greater the risk of missing forensic opportunities?
A. I think that - well, once a forensic opportunity is there, you have not missed it. If you have still got your exhibit, if your exhibit hasn't degraded, if your exhibit is stored correctly, then whether you test it after two years or five years - I did see instances where items were identified as being able to be tested, but they weren't tested, because you have this paradox where sometimes you might do a test and it renders it then a destructive test and you can't test it again, so you make a decision, we'll test it in future with a different test if it becomes known, and by that time it then becomes too late. I saw examples of that.

But if you have got an exhibit that can be tested with a new test, potentially you can do it after two years, the same as doing it in five years, as long as it has not become too degraded in that time and there are not issues

with it that render that test invalid for the exhibit you've got. That's not always known.

Q. Your experience is that in the UK, the received practice is two years, every two years?
A. Tends to be two years, yes. It's force by force, but as an average, I would say two years, yes.

Q. Thank you, Dr Allsop. You mentioned anniversary appeals a moment ago. Could you explain to the Commissioner their significance in relation to cold cases?
A. Yes, absolutely. They tend to be things like a 10-year anniversary of a murder happening or a 25-year anniversary. The idea of using the media is to try and jog people's memories, to try and get either witnesses to come forward who might not necessarily have realised the significance of information that they held, who might have given information at the time and maybe have changed allegiance, you know, perhaps a partner and they've separated and now retract an alibi, notwithstanding you then have to consider their credibility in that evidence. You might get a suspect who comes forward.

The idea is it's to try and jog memories of witnesses, perhaps try and prompt a suspect to come forward. They might do an anniversary appeal of - you know, an anniversary of the murder. It might be a significant birthday of the victim, to try and bring that case back to the fore. You might have an appeal if, for example, the victim - the living relatives, there are few living relatives left, so you might do an appeal because those relatives want an answer.

The whole purpose is to get people thinking about, have you got information that you might not realise is significant? You may even have given that information and you come back again, because you don't know if the police have done anything with it or not. I have seen a witness come back 30 years later, who was able to describe what he saw, what happened, and it matched a trail of blood leading from the victim, as to his description of it. He had offered at the time to give evidence to the police, at the time of the crime. He was told he would be picked up on house-to-house inquiries. He didn't fall within the house-to-house parameters, so he was never picked up at the time, so he assumed the case had been solved. Then he saw the media appeals, anniversary appeals, and came forward.

Q. Thank you, Dr Allsop. Can I ask next about what you describe as the initial stage in relation to cold cases?
A. Yes. The initial stage is gathering all of that information, is finding out what paperwork you've got, what exhibits you've got, thinking about who your suspects might be, if people were named at the time that might need to be eliminated now. So, it's understanding everything about the case. What do we know about this case? Who is the victim? What happened? What exhibits have we got? What exhibits have we got that we might now be able to test in future? Are there any witnesses we need to speak to?

So, it's gathering all of that information and working out what your gaps might be to then decide, when you have got your exhibits - because in the UK, they do focus on the forensic science more so than the changing allegiances opportunities - work out what exhibits you have got, then work out your priority of testing those exhibits, and that's the detectives working hand in glove with the forensic scientists to say which tests might be most fruitful and in which order, bearing in mind your costs and all of that kind of thing.

So, your initial stages are just that, understanding your case, what documentation you have got, what exhibits you have got, who your suspects might be and witnesses you might want to work through.

Q. Are you able to assist the Commissioner, for how long has policing practice, to your knowledge, recognised this as an important part of the - recognised the steps you have identified as forming the initial stage?
A. I think it goes back to those two national operations I talked about, Operation Advance and Operation Stealth, so the early 2000s. That's when they started to realise the benefit of forensic science to cold case investigations, and then they started to realise, well, we can only do this if we've got the exhibits retained and sorted to start with. So, then where do you begin? Well, you begin by finding your exhibits, by finding your documentation.

Now, in the past, as I said to you before, they would take with them - detectives would take with them the paperwork, documentation, as they moved to different roles across their force area, to look through them at different points. And then once they started to realise, actually,

we need to retain this documentation, and then you start to get cold case teams in place to look at it, then that becomes important to prioritise in that way, to try and work out what you have got and how to do it, so, as cold case teams started to develop, which really was, you know, in the early 2000s onwards.

Q. And another aspect that you identify as important in the context of the initial stages is what you describe as a closing report?
A. Yes. A closing report is - so, the original investigator or the Major Crime Review Officer who has reviewed the cold case, they have gone through all the documentation, they have done their investigation, they have looked at what exhibits they have got - the closing report sets all that out. So, it sets out the current thinking in the case - if there are any suspects that still need to be eliminated; what exhibits are retained and available; what future testing might you want to look out for; are there any witnesses to speak to? So, it allows a new investigating officer to come in, a new team to come in and see what that investigating officer was thinking at that time when they closed that report. It allows them to see what exhibits have been retained and where they are. It allows them to see what you are looking out for, because it could be, in two years' time, you look at that closing report and you realise there haven't been any scientific advances that help you move that case forward; there's nothing extra within that. But it gives you a point-in-time view of everything that has been done in that investigation and potential future opportunities.

Q. Is an aspect of these cold case reviews prioritising cases?
A. It is. And that's a really difficult thing to pin down, in terms of how they prioritise cases. I was given a prioritisation spreadsheet from one Police Force which others followed, but it tends to be - the prioritisation, as you would expect, tends to be chances of solving it. So, they will prioritise it around if we've got DNA profiles or the potential for DNA profiles and fingerprints. That's kind of the way of doing it, obviously, because if you are spending money and resources, you want that solvability factor. So, they will prioritise based on where they think they've got the greatest chance of success. And then after that you might look at cases where you have perhaps got family requesting it,

high-profile cases which get a lot of priority, a lot of resources given to them.

But it can be quite difficult to prioritise it, because until you have reviewed them, how would you know which ones have got the best chance of success? But again, that might go back to your closing reports that say, "Actually, there is the potential for forensic testing here", or cases where you know you've got a lot of exhibits, you might have got a DNA profile.

Even then, I'm aware of cases where there is a full DNA profile that aren't being actively reviewed. So, again, it's down to resourcing and balancing how many and what you can do with things.

Q. Again, in conducting that prioritisation, is an important part of it, in relation to each exhibit - each case - knowing what exhibits there are and whether or not they have been tested and, if so, for what?
A. Yes. Yes. Absolutely. You've got to understand, you know, like I say, some tests can be destructive, meaning you can't do any more tests on them; some you might be waiting for it to be a smaller amount or to help separate mixed profiles out. So, it's understanding that there may be future developments that might help you.

You might already have a DNA profile, it might be on the database and you are waiting for a hit. You might have things that - you might have a suspect in mind who you are looking for evidence against that suspect, but you are prioritising those cases you think you've got the greatest chance of success.

Q. Thank you, Dr Allsop. You also, in the next section of your report, address the crime scene and exhibit management. I think much of that you have touched on already. One thing you identify in paragraph 38 is the importance of keeping abreast of scientific advances?
A. Yes, absolutely. In the UK, like I say, we used to have the Forensic Science Service who were themselves, if you will, ahead of their time in developing forensic tools and techniques and they were instrumental in familial DNA searching.

The Forensic Science Service closed in 2012, and now forces have private forensic providers.

It's having that working relationship with them so that you know what these new developments are so that you know when something comes in that might help you in your cases - so those ever-smaller amounts of biological material that can now be tested that maybe couldn't be tested in the past, so knowing what these new techniques are, so knowing about familial DNA searching, for example, that might help you in your case when you have got a DNA profile. You need to keep abreast of them, because otherwise you might miss it.

The Forensic Science Service used to work very closely with forces to help them identify these sorts of things. So, now it's working closely with forensic providers, making sure you've got an idea of what is happening in the scientific world that might help in your investigations.

Q. Thank you, Dr Allsop. Would you pardon me for a moment.
A. Mmm.

MR TEDESCHI: Commissioner, I have an unavoidable obligation at 4.30. Would you please excuse me? My learned junior will remain.

THE COMMISSIONER: Yes, of course. Thank you, Mr Tedeschi.

MR EMMETT: Q. Dr Allsop, can I turn to paragraph 40 of your report where I think you summarise current best practice in cold case investigations.
A. Yes. So - sorry, go on.

Q. One thing --
A. I will let you ask the question.

Q. That's all right. One thing you identify is having a dedicated cold case review team?
A. Yes, absolutely, and that, to me, is pivotal. If you haven't got a review team in place, how can you review those cold cases and how can you keep that knowledge of what unsolved cases you've got, to have that knowledge of what can be done in future if you get new leads, new lines of inquiry. Some teams will just be set up to look at one particular case and then disbanded, but you haven't then got that overarching view of all of your unsolved cases.

If you've got a dedicated team in place and, in particular, with a tenacious officer leading that team who is prepared to fight for the resource to look at those unsolved cases, to dedicate time to those unsolved cases, you can then know about your latest opportunities to solve them; you can start to explore the scientific techniques, the looking for the witnesses, the media appeals.

It's much more difficult if you haven't got a dedicated team - the cold cases sit on the shelf until someone says, "What's happening in that case?", and then suddenly people have got to scramble together to look at that case.

So, that dedicated team, with your tenacious leading officer to push for resource and to fight for it, is, I think, pivotal.

Q. And that dedicated team - I think you referred to a moment ago the importance of that team having a command of all the cases or being across the cases?
A. Yes, yes, absolutely, and of course that depends on the size of the force. If you've got several hundred unsolved cases it makes it much more difficult. But most forces, the number they have is manageable to know how many you've got, which ones you've got any chance of success on and which ones haven't. There will be some that are so old that, actually, the chance of any success is negligible. But they will be aware of those that could have success; they will be aware of those that maybe have exhibits yet to be tested, that even have a DNA profile, that they might have in mind a suspect and they are just waiting for a way to connect them. And there have been cold cases where a suspect has been in prison, they have been due to be released, and ahead of that release, investigating the cold cases that you think that suspect might be connected to - having that dedicated review team in place means you are aware of what you have got and what you might need to work on.

Q. And is that dedicated review team effective if it allows many years to pass by without looking at - if some cold cases simply aren't looked at at all by that team for many years at a stretch?
A. Again, if they have the time and the resource to go back over their cases, then it is effective, particularly

if they make a decision that, for example, they are just going to look at forensic opportunities and they are reviewing the exhibits in all of those cases; if a family member comes forward and says, "Actually, what happened in the murder of my distant relative?" If they have not reviewed it for years, they would have to start from scratch at reviewing it or at least from the last closing report that was done on it. So, it still means they've got that opportunity to do it. If you haven't got a dedicated team in place, you've got even less likely chance that anybody's going to review that case.

Q. If you have a dedicated review team - and, in fairness, I want you to assume four to seven hundred unsolved cases in this State; I want you to assume that if a dedicated team was set up in 2004 and still now, nearly 20 years later, there are many cases that it has not looked at - is that consistent with best practice, so far as you are aware, based on your expertise in the UK?
A. None of our forces have got that sort of number of unsolved cases. I said to you right at the beginning, some forces didn't know how many unsolved cases they'd got, so there would be some that they wouldn't be reviewing.

So, you've got 700 unsolved murders. You've got a cold case team. How big is your cold case team? Is it a large one or is it just a few or --

Q. I want you to assume that at present - well, the Unsolved Homicide Team has I think 34 detectives, but some of those are engaged in active investigations of cold cases rather than review.
A. Yes. Yes, I mean, like I say, we haven't got that volume, so I can't speak to that, and I think of our bigger forces and how many they've got, there will be cases that they haven't looked at because they have focused on particular cases that are either high profile, chances of success - you know, for other reasons, so there will be some that they simply haven't focused on.

What you might get is - and it does make it more difficult if you've got officers who are doing other cases, so if they are looking at live cases, their priorities are on the live cases. If you are getting cold cases every year - so one particular force said that, you know, 10 per cent - we solve a lot of the murders in the UK; 10 per cent each year, potentially, this force didn't

solve. You might be looking at a cold case that happened five years ago, 10 years ago, and forgotten about one that happened 50 years ago. So, you might be prioritising based on the age of the case.

I think with that number that you've got, it does make it harder to decide which ones to prioritise, which ones to focus on. The longer time goes on, the harder it then becomes, because the older the case then becomes, the older your witnesses are, the harder the memory is. But you still might have your forensic exhibits within that, you still might have other opportunities. So, even if you took them year by year or an inspection review of some of them to look for commonalities, to look for potential leads, but it would be very resource intensive, very labour intensive.

It sounds like, I suppose, a small team for the large volume you've got, particularly if they are also working on other cases. It doesn't compare to the UK, so that makes it hard for me to comment. I can see why high volumes are less looked at than those areas that have got much smaller ones to deal with.

Q. Thank you, Dr Allsop. Then the other matters you identify in your conclusion as to best practice - and I think you have addressed most of them already - one is that the review team should have a close working relationship with prosecutors and forensic science providers?

A. Yes, absolutely. And that is so that you can understand what you've got in your case and how that might play out at trial. So, your forensic science provider can tell you even if you have, for example, photographs of a crime scene and an exhibit - so let's say, for example, you've got a victim who was bound with rope and you've got an exhibit of the rope, the forensic scientist will talk to the team about where you might get that contact trace material, where you might get where saliva, sweat - you know, what might have touched the rope and where to then be able to do the test on that, so working closely with the forensic provider who can say, "You could test that exhibit in this way", or, "Actually, you've got some teeth", it might be a destructive test, "wait until you've got something else that might be better to do it"; or they might suggest getting a composite profile from relatives, so helping investigators understand what they can do with their exhibits.

Similarly with the prosecutors, because they are the ones that are taking the case to trial, so they can say, going back to my example about a witness who changes allegiance, "You gave an alibi 10 years ago, now you are changing it", the prosecutor will talk about the credibility of that witness, that at least once, they have lied, so how do you get over that. Or even, you know, I spoke to you about what gets disclosed, that idea about if the suspect gives a no-comment interview, how do you overcome the fact that he could have said, "It was consensual sex and somebody else killed her", so looking at the legal complexities, so someone who can help with the legal complexities of these cases.

You've got to avoid that abuse of process because of all the years that have passed, so, again, your legal provider can do that, so making sure that they are familiar with the cases, with the evidence you have got and what else you might need to build that strong case and overcome those hurdles that the passage of time might present.

Q. Thank you. Correct me if I'm wrong, the other matters you identify in the current best practice in cold case investigations are matters you have spoken to the Commissioner about already, being making sure all documentation and exhibits are correctly stored and maintained, not disposing of items and paperwork from any investigation, keeping abreast of science and technological developments and using media appeals to identify potential witnesses and people who may have changed allegiance. I think you have spoken to all of those matters already?
A. Yes.

Q. Is there anything else you would add in relation to current best practice in cold case investigations?
A. I think it's also not being afraid to draw on expertise that you don't have. In the UK, we have a Specialist Operations Group who have expertise in different things - for example, behavioural advisers. Well, it was described to me as "experts in anything from A to Z", that, you know, "If you exhume a body, we can get you an expert on it." So, it is not being afraid to draw on those experts who might help you see a case differently, and also in conjunction with the science.

So, for example, you might use a psychological adviser

who might help you narrow down your parameters in familial DNA searches; they might help you narrow your list down from several thousand suspects to several hundred to work your way through. So, not being afraid to draw on different forms of expertise that might help you do that, be it forensic anthropologists. One thing that is useful is to draw on an analyst who can help you potentially pinpoint hotspots around investigations.

We in the UK had a series of stranger rapes that went unsolved for many, many years and an analyst was brought in who was able to pinpoint the locations that this offender was targeting and where they were going, and they were able to then plan their operations around likely locations. So, again, working with that expertise to then get your offenders. So, it's not being afraid to draw on different experts who can give a perspective that you might not have, in conjunction with what you already know with your forensic science, to help you connect your suspect to your crime.

MR EMMETT: Thank you, Dr Allsop.

Commissioner, those are our questions.

MR MYKKELTVEDT: I have no questions, Commissioner.

THE COMMISSIONER: All right. Thank you. Dr Allsop, thank you so much for your assistance today. Thank you. I will now adjourn the proceedings and thank you very much.

<THE WITNESS WITHDREW

AT 4.30PM THE SPECIAL COMMISSION OF INQUIRY WAS ADJOURNED ACCORDINGLY

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