Transcript of the Inquiry

Thursday 12 May 2022

(12.01 pm)

LORD BRACADALE: Now, Ms Grahame, the first witness please.

MS GRAHAME: Thank you. My first witness is Mr Mark DeGiovanni from Advanced Laser Imaging.

LORD BRACADALE: Good morning, Mr DeGiovanni. Would you say the words of the affirmation after me, please.

MR MARK DEGIOVANNI (affirmed)

Questions from MS GRAHAME

LORD BRACADALE: Ms Grahame.

MS GRAHAME: Sorry, there appears to be an echo sounding which -- I don't know if there is an issue with the audio in the room. It is maybe me, is it?

A. It's mine, I think.

MS GRAHAME: Is it yours?

A. Yes, I can hear it.

MS GRAHAME: I think the plan was that we would have both my

1 microphone and Mr DeGiovanni's on at the same time. It
2 may be that that is causing the issue, so in saying
3 this, I'm hoping that those in the suite behind us will
4 be able to adapt the situation and maybe turn one of the
5 mics off to avoid the feedback. It certainly seems to
6 be getting quieter.
7 LORD BRACADALE: That is because Mr DeGiovanni is not
8 speaking, I think.
9 A. Yes, I think if I talk --
10 MS GRAHAME: I think this could be slightly difficult. We
11 will resolve it first.
12 (Pause).
13 Thank you very much. That sounds better, thank you.
14 I will proceed now, thank you.
15 Good morning again. You are Mark DeGiovanni?
16 A. That is correct.
17 Q. And you are from Advanced Laser Imaging.
18 A. Yes.
19 Q. So are you comfortable if I use the acronym "ALI" as we
20 talk through?
21 A. Yes, we use that a lot.
22 Q. Thank you. And you are the technical director at ALI?

A. That is correct.

Q. What does that actually mean?

A. It mainly means that I oversee a lot of the technical work that we do and I'm responsible for a lot of the delivery of our products.

Q. Thank you. And you are based in London?

A. That's correct.

Q. And for the purposes of today, Mr DeGiovanni, you have prepared a PowerPoint -- a number of slides in the PowerPoint format and I intend to take you through those now, if that's possible.

A. Yes.

Q. Thank you. So can we have those on the screen. The first slide we see says "Digital reconstruction, Sheku Bayoh Inquiry" and it has your name and that of Dave Mercel at the bottom.

A. Correct.

Q. Tell us who Dave Mercel is?

A. David Mercel is also part of Advanced Laser Imaging. He is the technical director and again, he is similar to myself, he is responsible for delivery of products and helping deliver those products.

Q. Have you worked closely together in preparing the work that you're going to discuss today?

A. Yes, we have.

Q. Thank you. And can we move on to the next slide, please. This says "Methodology and process". Would you talk us through the methodology that you have adopted?

A. So this slide really talks about the layout of the presentation, so initially we're going to talk about Advanced Laser Imaging and how Dave and I effectively got to this point here today. After that we were going to talk about the Terms of Reference, the way that we were engaged by the Inquiry and how we initially became involved. From there, we were going to talk about the general principle of reconstruction that we have used in this case.

The last three sections will be the technical details. We effectively call them the pillars of the reconstruction and they are basically the main forms of how we have been able to bring all this together and how we have developed the products for the Inquiry.

Q. Thank you very much. Let's turn on to the next slide. This is slide 3 and tell us what we see here. I see

your picture, Mr DeGiovanni?

A. So this is more about effectively our history. It is one of our standard slides to explain where we're from. Previously Dave and I worked at the Metropolitan Police Service before forming ALI. In that time we worked for an area called the Computer Aided Modelling Bureau. The principal responsibility for that team was to produce reconstructions of pretty much anything and everything police-related, so there was a lot of criminal work in there, but we also extended to terrorism and others as well.

Q. And do we see there under your history section on that slide, Metropolitan Police Service and that was between 2007 and 2013?

A. That is correct.

Q. And after you left the Metropolitan Police Service, tell us the sort of work that you did?

A. Shall I go to the next slide or do you want me to talk about --

Q. Before we go to that, could I ask you -- you have listed a number of inquiries and such-like there at the bottom because it says Computer Aided Modelling Bureau, and you

have listed a number of things. Are these things you have been involved with as ALI?

A. No, these were as the Metropolitan Police. So one of them in there is for example the Diana Inquest and it is probably most relevant to what we have done to date and it was one of the first cases where we utilised 3D modelling and laser scanning in an inquest environment. My colleague Dave Mercel in 2003 went to Paris and surveyed the scene and at the time it was probably the largest scene that the Met Police had ever tried to attempt with a laser scanner. It was about a kilometre long by 500 metres wide and it involved an underpass as well as the overpass where the incident occurred, so it was a significant undertaking from a survey point of view.

At the time we didn't have the same processes that we've got nowadays, so the whole scene had to be modelled by hand using a digital system but it was effectively modelled manually and then made into a lightweight model that we could then play in live time, in real time during the inquest. So you will see many parallels between what I have just described there

and what we have done for you -- for the Inquiry.

Q. Thank you. Let's move on to slide 4. Explain to the Chair what we see on this slide.

A. So since we formed Advanced Laser Imaging we have spread out from just doing police work and we do casework across a whole range of different courts and different clients as well. So police/prosecution represents about 28% of the work that we have taken in the last three years, but what we have noticed is that we've got other work in insurance and other legal courts.

We have also taken on and started to work a lot more for defence, police and military ombudsman and that represents probably the vast majority of our work, but beyond that we've got more standard surveying type work in terms of digital twin reconstruction.

We have been involved in another inquest which was a historical reconstruction.

Q. Tell us about that inquest, please?

A. So that relates back to the troubles in Northern Ireland and we were asked to reconstruct a scene back to the 1970s just so that the inquest at that point could understand the layout and the location of the buildings

that were no longer in place.

Q. The green area there, defence, police and military ombudsman, you've got something mentioned there about a feasibility study. What is that and what work did you do in relation to that?

A. So we were approached by a defence counsel and they were defending a client who was accused of shooting a person as he entered a vehicle. The police had carried out a reconstruction with several experts where they had physically got the vehicle and they had placed a person in there and their conclusions were, from their reconstruction, that the shot could only have been from the outside of the vehicle, and they wanted to understand from our perspective whether the reconstruction was strong and whether what they had done was correct.

So we went to the vehicle and we surveyed it and when we compared the survey data back to the original crime scene photography we noticed that the chair seat had moved. What we were able to do using photography which is a technique which we have used in this case as well, is we were actually able to prove not just that

the seat had moved, but we were able to prove by how much it had moved, and it wasn't just the seat moving forwards and backwards, but the back of the seat had been rotated back as well.

We then looked at the images from the reconstruction that was done by the police's experts and we noticed that the seat position was in the same position as we had scanned it. What that meant was the seat was not in the position that it was in at the time of the incident.

By showing that there was that inconsistency we understood that actually the reconstruction wasn't as sound as it was made out originally. We then produced digital reconstruction within a virtual world and we then presented those results to the court.

Q. So that was a comparison between the original crime scene photographs showing the seat in the position at the scene and then the reconstructions had been completed using scans taken later of the car seat?

A. That is correct.

Q. And your work involved comparing the two: the seat in the position at the scene and the seat later?

A. That is correct.

Q. Thank you.
A. And then using 3D modelling to reconstruct that seat back to the original position as well.
Q. Thank you. Let's move on to the next slide, slide 5 please. Tell us what we see here.
A. So the initial phrase, or the upper part of the screen talks about the terms of reference -- sorry, apologies. In the first contact from the Inquiry this is how we were effectively requested to be involved. It was very open and it was basically just asking whether we could be of assistance and whether we had suitably skilled contractors to help advise the Inquiry.
Q. So that sets out the initial approach from the Inquiry team?
A. Correct.
Q. And what do we see at the bottom of this screen?
A. We obviously responded favourably to that because we felt that fitted with us, but I think it was important from both our sides, from yours and from ours, to make sure that it was a good fit for each other so we had an online interview with the legal and evidential team and they talked us through a little bit more about the case

and what they were hoping to get out from the digital reconstruction. We in turn replied back and talked to them about the types of work we had been doing, expressly the Inquiry were interested in our impartiality and whether we could show impartiality in what we were doing, and then from then we were requested to show CVs and a list of work taken, and the CVs weren't just our personal CVs, it was a business CV as well.

Q. And you were also asked to give a more detailed explanation of the type of work that you had been doing since you left the Met?

A. That is correct.

Q. And is that what we looked at on the previous slide, the breakdown?

A. Yes.

Q. Thank you. Could you now please look at the next slide. Talk us through what this means, "Material review", what was this about?

A. So this slide is going to build up and it's going to build up slowly in terms of our proposal to the Inquiry on how we wanted to effectively take this forward and

how we felt that we could assist the Inquiry.

It would start with a detailed material review. At this point, we were only aware of several documents that had been given to us but we understood there was a huge tranche of material that still needed to be looked through and understood, so before we could really get down into the detail of it we needed to have a material review of what was available to us.

Q. So you were given some initial limited information but then you required to go through the process of looking at all the information that would assist you?

A. That is correct.

Q. Explain the remainder of this slide?

A. So what we then proposed, as I have mentioned before, is effectively the three columns that were going to form the digital reconstruction. The first is a digital twin capture of the scene, so this is taking the scene and making it virtual, the second is an assessment of objective material and the last is an assessment of subjective material, and we will cover those definitions later.

To capture the scene and make it digital, what we

have done is we used three technologies and we captured those all at the same time, and those three technologies, from the output of those we can produce a virtual model. However, that virtual model is only relevant to 2021 at the time that we captured the data, so what we had to do is remodel that back to 2015 and we have done that using evidence that was captured, either crime scene photography or a laser scan data set from 2015 and we have used that to remodel key elements back to 2015.

We also wanted to add-on to that the exhibited material that was captured at the scene so that we had a full idea and a full picture of what the scene was like at the time, and that would effectively form our first product which is a cloud-accessible and virtual-accessible 3D scene.

Next we were looking at the objective material and here we were trying to take the timed events, such as video and audio data, and put this into a single timeline so that we could really understand when all of these events are happening within those data sets. We were going to use that in combination with the 3D data

to determine people movement and vehicle involvement within the scene. In conjunction with that we were also going to assess the witness statements and put those in relation to the timeline. We refer that as "temporal" later in this presentation.

A combination of the two we hoped would let us identify people based on the 3D content and the statement and we hoped that that would then give us a realtime video showing people and vehicle movement, which would also include a 3D assessment as well.

Lastly, we wanted to try and understand the statement information a little bit more and we refer to this as the subjective material, and the aim would be to identify from the source material what areas would be suitable for reconstruction and then filter those down to the areas that would be reconstructed, and that would basically form a digital brochure, and this is basically what we proposed at the start of the process.

Q. So before we leave this slide, am I right in saying that slide 6 essentially is a summary -- I don't know what that noise is. I think we will just pause there for a second if you don't mind. It certainly seems to have

gone off.

So before we leave this slide, am I right in thinking that, just for the benefit of the Chair, this is effectively a summary of where you're going to go and explain in the remainder of your slides?

A. Yes.

Q. And there's three columns, the yellow, the green and the blue, and you're going to deal with each in detail as we go through the remainder, but if anyone wishes to look back at these slides in the future, this is the one that summarises where we're going.

A. That is correct.

Q. Let's -- that noise doesn't seem to have started again so let's move on to slide 7, please. Describe what we see here.

A. So when we first looked through the material we were doing that material review, it became very apparent that we could break the vast majority of the information that was provided into what we determined as objective material and subjective material. I'm going to read directly from the screen, but objective material is information that is not influenced by a person's

feelings, opinions in the representation of the facts.

What that means is it is things like video, photography, audio and measurements in the scene, there are things that over time will not change and will not degrade. We have also included into this column, expert investigation statements, and this is generally when an expert has given the facts about the systems that we are talking about, so there are experts that talk about the ARLS system and there are experts that then talk about the mobile and extracting information from that, and those we would consider as objective as well.

Subjective is information that is based or influenced on a person's feeling, tastes, opinions or experiences, so pretty much a person's memory, and into that really the ones that we have used are public statements and police response statements and diagrams.

Q. Before we leave this slide, I want to explore this distinction between objective and subjective. So when we look at the green tile, the objective material, it looks, from the images or the icons you have there that this is recordings and audio tapes and measurements. So if we're looking at the measurement between two

buildings, you have assumed certainly that the buildings haven't moved between 2015 and 2021?

A. So the 3D survey -- and just to be clear, in 2015 on the evening of the event, whilst the scene was closed, Police Scotland returned back to the scene and I believe it was a traffic collision unit came back and surveyed the scene as-is, so we have that scene captured in 3D from 2015, and that would mean that that scene -- the majority of it -- hasn't changed in terms of buildings.

Q. And that's something that you have based your work around?

A. Yes.

Q. And then the subjective material, when we talk about subjective, that's witnesses' perspectives or recollections or that type of thing?

A. Yes.

Q. But you have made a distinction between the two in the work that you have done and the way you have handled the material?

A. Yes.

Q. Thank you. Let's move on to the next slide, please, and this is -- this shows the first column of the yellow

areas, the first column of the work that you have done?

A. That's correct.

Q. Right. Slide 9, "Area of consideration/capture", so this is the first column. Could you tell the Chair what we see here, please?

A. Sure. I'm just going to switch to a different system to explain this slide a little bit clearer. So one of the first documents we received from the Inquiry was the image that you see on the right-hand side, without the blue area attached to it, so we had this red outline that you can see, and what you can see over here is running from north to south is Hendry Road, on the left-hand side of that we have Templehall Avenue, and then to the right of that we have Hayfield Road.

Two other points to note because we do reference them in what we do is Arran Crescent is based over here and Poplar Crescent is based just off Hayfield Road over here.

Q. Could I stop you there for a second, please. I would just like to confirm that the Chair and the Assessors are able to see the markings that Mr DeGiovanni has applied? Thank you. Thank you.

Well, thank you, that's very helpful. So number 1, you have said is Hendry Road and that's travelling down the middle of the page from the top of the screen down?

A. That is correct.

Q. And then 2 is Templehall Avenue?

A. Correct.

Q. 3 is Hayfield Road?

A. Correct.

Q. 4 is Arran Crescent?

A. That's correct.

Q. And 5 you said was ...?

A. Poplar Crescent.

Q. Thank you. Carry on, please, you were going to move on to the area to be surveyed.

A. So once we reviewed the core material, and this was the base statements and the CCTV footage, we recommended back that the full aerial survey didn't require to be within all of this red area, and we recommended a much smaller area, which is that blue highlighted area.

Q. What area does the blue area cover?

A. So it does cover Hendry Road, up to the two roundabouts, so there's the roundabout off to Templehall Avenue, and

around 30 metres down Templehall Avenue. It then runs down to the roundabout with Hayfield Road and on that road there is the Gallaghers public house which is also included in the survey.

Q. Could you point to the areas of the roundabouts that you have mentioned?

A. Yes, so the Templehall roundabout is over here, just south of the 1 marker, and the Hayfield Road roundabout is just south of that, between the 1 and the 5 lines and where they meet up over here.

Q. And where is Gallaghers pub in this map?

A. So Gallaghers pub is just to the South West of that junction.

Q. Thank you. Could we move on to the next slide, please, so going back to your slides, number 10, please. This is headed "3D digital twin capture", "Equipment used".

A. Yes.

Q. Tell us what we see here?

A. So in December 2021, I attended the scene with numerous other contractors and our aim was to capture those three digital data sets. The first one that we're going to talk about is the 3D laser scanner data set and for that

we used a FARO S150 laser scanner. The 150 refers to the range at which the scanner operates at.

This is a tripod-mounted device, so it sits upon a tripod and it rotates around, and as it is doing so, it captures a dome of information of 3D points back into the scene. The dome is defined by the third point down where it talks about a 300 vertical axis and a 360 horizontal axis and that represents the dome of capture from each position.

After it has captured that position, we move it through the scene and we do that through the whole of the area. Over a two-day period we captured 80 scans across the surveyed area. The accuracy of the equipment that we're using at 10 metres is 2 millimetres, and at 25 metres is 3.5 -- at 25 metres is 3.5 millimetres.

The features that you see on the bottom of that list are basically there to help us tie all of these scan positions together so as we move this equipment through the scene, it is capturing certain -- taking more sensor information that allows us to reconstruct this back into a single point cloud.

Q. The photo on this, is that a picture of the type of

scanner that you have been describing?

A. That is correct.

Q. And it's on a tripod, and you have said it moves through the scene. Can you help us understand what you mean by that?

A. So each dome of information is captured at a static position and it takes about five minutes with colour to capture that one position, so whilst it is capturing that position that scanner does not move.

After it has finished capturing that position, you pick the unit up, we move around 10-15 metres to the next position, place it down and then restart the scanner again and that means that as we progress through the scene, we capture more and more information of that scene, and the process then is to stitch all of that together to give us an accurate 3D model of the scene.

Q. And you have talked about moving it 10 metres and I'm looking at the 2-millimetre accuracy at 10 metres. Is the distance that you move it determined because of the accuracy that you have?

A. That is one consideration. The other is if you move the scanner -- there are two other issues -- if you move the

scanner too far then trying to register these point clouds together becomes an issue and also the further you move these apart, you get areas where there are fewer points in between these scan positions, so we try to balance the time we have available on-site with the quality of the scan settings that we put on, with the distance that we position the scanner and it is about using -- combining those three factors together to capture the scene in the best way.

Q. And that's what you did here?

A. That is correct.

Q. And you mentioned a moment ago the dome that it scans. Does that have much impact in an outdoor scene?

A. Normally it is more relevant to an indoor scene, especially when you're trying to capture the entire room and roof areas. I just reference it because that is what the scanner is capable of.

Q. Thank you. Let's move on to the next tile, please. Tell us what we see here?

A. In a previous slide I have referred to it as a drone capture, but here I refer to it as UAV scene capture. They mean exactly the same thing. So an unmanned aerial

vehicle, or effectively a drone, is used to fly over the scene and capture as many images as we can. We had certain limitations that were applied upon us being able to use this equipment. Because of the location to the hospital and the major route that Hayfield Road is running out from that hospital, in order to fly a -- sort of a heavier drone with a higher pixel resolution we would have to be required to have control of that scene which would include road closures. We weren't comfortable with that because of the location, so we opted to use a slightly lower resolution system but one that we felt was adequate and suitable, still fit for the purpose.

Q. How many images did you secure from that drone?

A. We captured over 2,500 images.

Q. Tell us a little bit about this level of accuracy of those images?

A. So each image that we capture is effectively 12 megapixels. Generally that's still considered a high quality image.

Q. And the concerns about the location, is that what you were saying about the location of the nearby hospital?

A. Correct.

Q. Thank you. Move on to the last tile, please, and tell us what we see here.

A. So in combination to these other two elements, what we apply is a more traditional form of survey where we're actually measuring specific points throughout the scene. For that we're using a piece of equipment called an EDM and this is a -- and a GPS system, and these two systems combined are used to locate a series of points, over 500 points across the scene and we're putting these onto what we call OSGB36 which is a UK mapping coordinate system. The reason we want to do that is twofold. 1, it allows us to put this model onto British mapping coordinates system so that when we take a point on the model we can reference that back to a mapping coordinate and we can understand that position on another system if we so choose.

The other reason is by capturing the survey control we can use some of these points to control the entire model and effectively use it as a structure to keep the accuracy of the model high. The rest of the points can be used then to validate the accuracy of the work that's

been done and the accuracy of the model.

Q. So this equipment allows you to cross-check the accuracy of the other work that you have done?

A. That's correct.

Q. And remind us what's the accuracy that you achieve with this?

A. This equipment, generally for the work that we were doing would be between 2 and 3 millimetres across the site.

Q. Thank you. Would you move on to slide 11, please. Describe what the Chair can see here.

A. So this is an overview of the model that was generated. Running from top to bottom you can see -- I will just use my mouse to run over this. You can see there is Hendry Road running up and down. To the South West of the Hayfield roundabout you can see Gallaghers pub. If we come up north of that to the other roundabout you can see Templehall Avenue running left to right and then we can see Hayfield Road running across from this lower roundabout and then you've got the entrances to Poplar Crescent on either side over here.

Q. Thank you. Then moving to slide 12.

A. So these are some closer images of the model just to show the quality that we were able to establish from the combined data set. It has picked up a remarkable amount of detail within that 3D model.

Q. So these are extracted from the 3D model that we saw previously a moment ago?

A. That's correct.

Q. But they are examples of what can be done -- what can be achieved from that?

A. Yes.

Q. So what do we see on the left-hand tile?

A. So the left-hand tile is Hayfield Road and this is the -- approaching the junction with the roundabout and you can see the crossing just to the lower end of that image.

Q. Thank you. And when you say you are approaching the roundabout, is that what we can see where we see the road markings on the right-hand side of that first tile?

A. That is correct.

Q. The middle tile?

A. This is Templehall Avenue looking towards the roundabout and you can see the crossing or the junction in the

middle.

Q. Thank you. So that's from Templehall Avenue to the junction at Hendry Road?

A. That is correct.

Q. With the Hendry Road roundabout?

A. That is correct.

Q. And then the third tile?

A. This is Hendry Road and the -- I will refer to it as the north end of Hendry Road, and this is the Shell garage which is towards the edge of that data set. We also have a video which outlines all of these positions.

Q. Could I ask you to go back and just look at the 3D model that we looked at a moment ago and just pinpoint where those three images have been taken from?

A. Sure. So Hayfield Road image is taken from this area here.

Q. That's on Hayfield Road --

A. On Hayfield Road just near the junction.

Q. -- near the roundabout. That was the first image?

A. Correct.

Q. And the second image?

A. The second image is Templehall Avenue looking towards

Hendry Road, so the virtual camera would be around this position pointing towards the roundabout over here.

Q. And do we see the houses at the top of that road at Templehall?

A. Just here (indicating), yes.

Q. Yes. And then the third image, where was that taken from?

A. So the third image is just showing the garage, the petrol station, which is just to the north end of Hendry Road which is shown over here.

Q. Thank you. Could we look at those images again. Thank you.

Can we look at the next slide, please. So this is remodelling the scene and it is slide 13. Tell us what we see on this slide.

A. So as I previously explained, the data set that we would capture -- because all the data came from December 2021, the resultant model would be from 2021, so what we tried to do is look at the available evidence from 2015 and understand the differences between the 2021 data set and the 2015 data set, and what we identified was approximately between 20 and 25 areas where the scene

had varied.

Q. So the photographs that have just come on the screen, that's areas of variation?

A. Correct.

Q. And is that the small black circles with the red exclamation mark in them?

A. That is correct.

Q. And could you give me an example of what you did with those areas where there was that variation between 2015 and 2021?

A. So we produced a reference document with each of these variances and we supplied those to the Inquiry team and we basically asked them to explain -- to tell us which ones they felt were relevant for us to remodel back to 2015 and which ones they felt weren't relevant or weren't significant enough for us to model back to the 2015 data set.

Q. Can you give an example of an area of variation where you were told not to change it back to what it was in 2015?

A. So one of those areas is there is a fence which has been built by the Gallagher public house. It is a low fence

and it doesn't interfere with the field of view of the camera and it was just felt that that wouldn't affect the understanding of the scene, nor would it contribute to anyone giving evidence, so that's something that we decided wouldn't -- that the Inquiry decided wasn't relevant.

Q. And can you give an example or examples of areas where you were asked to change the scene back to 2015?

A. So two of the most critical areas that we were asked to look at was the bus stop area. There has been significant modelling on the pavement and where the bus stop originally was, that has now been effectively created as an additional pavement. What we noticed as well is actually that change runs pretty much all the way back to the crossing on Hayfield Road, so there's been a significant change to that pavement, that pavement width, from that position onwards.

The second area was the path which, as you can see from the image above, runs from the bus stop area and in 2021 comes out at a crossing which is roughly mid-way between the two roundabouts.

Back in 2015 that was much further south and it was

nearer this red exclamation mark you can see that I'm circling here.

Q. So there were some areas identified where you were asked to remodel it back to 2015?

A. That is correct.

Q. Thank you. Would you turn to the next slide, slide 14 please. Tell us what we see here.

A. So this is basically the remodelled scene. So we have taken the majority of the 2021 data set, but in those two areas -- so the bus stop as you can see, now we have reconditioned that back to the 2015 data set, and you can actually see the line work has been reconstructed as well.

Additionally we have reconstructed the path which runs much closer to the tree line on the edge of Hayfield Road and we also were able to bring back some of the trees that were removed at the time of undertaking this work as well.

Q. Thank you. Can we turn to the next slide please, or yes, tell us what this shows.

A. So here we have just got some more visuals of the model and where -- from closer-in angles, just to view

effectively what's been created. On the left-hand side again you can see the pavement area of the bus stop has been reconstructed.

On the right-hand side you can see that we have reconstructed the path, as I say, a lot closer to the junction.

Q. So looking at the left-hand side tile, we see the bus stop on Hayfield Road?

A. Correct.

Q. And that's looking towards the roundabout with Hendry Road?

A. That's correct.

Q. And we see the vehicles on the left-hand side of Hayfield Road?

A. Yes.

Q. And then on the right-hand side tile that we see on this screen, this is taken from Hendry Road?

A. That is correct.

Q. Looking towards the path that leads to Hayfield Road?

A. Again, that's correct.

Q. And on the right-hand side of that tile we can see some of the road markings that indicate the roundabout on

Hendry Road?

A. Yes.

Q. Thank you. The next slide, please. What do these images show?

A. So as I previously mentioned, in 2015 Police Scotland captured the scene with their own device, I believe it was a Leica P20 and they captured the area from three locations, so it wasn't a significant capture of the area but it did cover the critical area that was cordoned off.

That data was very useful because it captured information within that scene that otherwise we would have had to reconstruct back from photography.

Q. So these four images are -- well, view 1 from Hendry Road junction to Hayfield Road?

A. Correct.

Q. View 2, which is at the bottom left-hand side of the screen, is from Hayfield Road towards the junction with Hendry Road?

A. That is correct.

Q. And then view 3 is an overview of Hendry Road and Hayfield Road junction?

A. Yes.

Q. And view 4, bottom right-hand side of the screen, is an overview of Hendry Road and Hayfield Road junction?

A. Yes.

Q. It looks --

A. Can I just explain just one thing on this as well?

Q. Yes.

A. You will notice that on this image 4, the data goes from being quite well coloured to being almost black. The reason for that is these scans were done late in the evening, so they were done I believe around 10 o'clock at night, and the reason obviously that's black is because at that point the onboard camera would not pick up any light source, so that's just to explain why that looks the way it does, but the most important thing is the 3D data that it captured was still accurate because this -- the way this system works, it works in all lighting conditions.

Q. So even though it was dark you could still get the data from this scan?

A. Correct.

Q. And we see on these images -- we see the bottom, the

final view, view 4, it says:

"This image is produced by 3D laser scan data captured by Police Scotland on the evening of 3 May 2015."

A. That is correct.

Q. Thank you. Let's move on. Tell us what we see here.

A. So this slide explains how we utilised that 2015 data set. On the left-hand side you can see that we have positioned these yellow paper clips. What these represent is exhibit markers that were placed in the scene by the officers that have been captured by the laser scan data. So what we're able to do is reposition those markers accurately back into the scene to their exact location that they were in 2015, and we're able to do that because of the data set that was provided to us.

Q. And those are the yellow evidence markers that we see with numbers on them?

A. Correct.

Q. Thank you. What do we see on the right-hand side of the screen?

A. So on the right-hand side we see again the 2015 laser scan data set, and what highlights here is the vehicles

that were captured. The scene was closed early that day and the scene was kept closed through the whole day, so what we know is that the vehicles that we see positioned in here were positioned at the same time during the police response, so it allows us to be able to understand not only the makes and the types of the model but also to reposition them back into the scene into their exact location that we were again at the time of the restraint.

Q. When you say the makes and models, did you do any additional work to identify the shapes and --

A. So yes, where we could, we identified licence plates from the crime scene photography, and then we used that with the DVLA database to try and understand the make and model of each vehicle. Where we couldn't purchase a specific model type to be able to put into the scene, we took one which was as close to the actual one that we could find, but generally we made sure that it would match in general shape, size and appearance.

Q. Thank you. Can we move on to slide 17, please. This is headed "Knife location". Talk to us about this.

A. Not all of the exhibited information was captured in the

laser scan data because some of it was removed prior to the laser scan data taking place. A key element, or one of the key exhibits for this would be the knife and this -- the only evidence that we really have about the location of the knife is this one image, which I believe was captured by Connell --

Q. DC Connell?

A. DC Connell on his mobile phone. So because of that we wanted to try and understand its exact location in the scene and we wanted to do it using a more scientific technique, so we introduced a technique called photogrammetry. More precisely it is known as laser scan assisted photogrammetry, and this is where we're using points and common points between a laser scan data set and an image to be able to understand the parameters of that camera. That would include the position, the orientation and the lens distortion coefficients that define where and how that camera projects back into the scene.

What we can then do is we can then use the laser scan data to outline the position and locate that knife back into the scene.

Q. And that's the work that you carried out in relation to this one image of a knife at the scene?
A. Correct.
Q. And when we say the scene, this is an image of Hayfield Road, or part of Hayfield Road?
A. That is correct. I think just this last image as well, because we're working within the laser scan data set when we're doing the analysis, it means that the knife location that we identify within the photogrammetry is also the knife position within the 3D model that we have established, and that also ties into the mapping coordinates that we talked about earlier.
Q. And the window or the tile that has just appeared at the bottom right-hand side of the screen shows Hayfield Road and we can see a white outline which is the knife?
A. Correct.
Q. And why is there a red exclamation mark circle next to that?
A. Literally that was just a note that was placed in there so that in the 3D model I can click on that and it will just show me an image of the knife, that's all.
Q. Thank you. Moving on to the next slide, please. This

is slide 18. You're going to demonstrate the interactive 3D scene now.

A. Correct.

Q. Just briefly talk us through this image first of all.

A. So I hope by now with the work we have done with the maps you can start to understand the 3D model and the layout that we're talking about. So from north to south we have Hendry Road. The more northerly roundabout leads off to Templehall Avenue and the south roundabout leads to Hendry Road --

Q. Hayfield?

A. Hayfield Road, my apologies.

Q. Not at all. Hayfield Road.

A. Hayfield Road, and again, we've got the entrances to Poplar Crescent along that road.

Q. And show us Gallaghers pub on this?

A. So Gallaghers pub is in this corner here.

Q. Thank you.

A. And what I can do is I can come into this model and we can take a closer look.

Q. So you are zooming in now into the model?

A. Correct. So the model is designed to work over the

cloud, so effectively what that means is as we move into an area the model will refine and it will load more detail as it needs to to fill in the gaps.

Q. And you are showing us on the screen Gallaghers pub?

A. Correct.

We can go up as well and we can have a look at Templehall Avenue and here we see the first junction.

Q. And is this the area where we saw a slide previously actually (inaudible)?

A. Correct, yes.

Q. And that was on Templehall Avenue looking towards the roundabout with Hendry Road?

A. Yes.

Q. And we can see the markings on the road near the roundabout.

A. Yes.

Q. Thank you.

A. We can go up and just quickly show the north extent of the model which includes the Shell garage.

Q. Yes. And that's on Hendry Road?

A. Correct.

Q. And then can we look in the other direction down

Hendry Road. Thank you. And then would you perhaps show us Hayfield Road.

A. Yes. So as you can see, the model loads as we move into those areas.

Q. Okay. Maybe you could pause there for a moment. So we're seeing a view from the roundabout at Hendry Road. Gallaghers pub is behind this point in the road and we're looking down along Hayfield Road?

A. That is correct.

Q. With the houses on the right?

A. That is correct.

Q. And the bus stop in the distance on the left, and we can see the path that leads between the trees?

A. Yes.

Q. And those are the areas that you have highlighted earlier?

A. Yes.

Q. And on this screen on the left-hand side of that road we can see the red exclamation mark. Is that where the --

A. That is correct, and as we open that up, we can see just an image -- a cropped image of the knife location.

Q. Thank you. And we see those yellow paper clips on the

right-hand side?

A. Again, these are the exhibit labels, as previously seen.

Q. Thank you. And as part of this interactive scene, is it possible to insert characters into this scene?

A. Yes, yes, absolutely.

Q. Could you demonstrate that, please?

A. So we call this a line of sight tool, and it allows us to select a point within the scene. We can give them a gender, we can choose a posture between just standing and kneeling, and we can either use a generic height, which is average, 95th percentile and 5th percentile, or we can give a custom height within this area. I'm just going to make this person blue so he sticks out.

Q. So you have used a drop down menu to create a character who can be inserted into the scene?

A. Correct.

Q. And you have placed a blue person now, male 1, next to a lamp post on Hayfield Road at the roundabout with Hendry Road?

A. Yes.

Q. Thank you. Are you able to move that person around or --

A. Yes, so we can move this person within the scene, so we can rotate and translate him and I could, for example, rotate him around to face the bus stop area.

Q. So we now see the blue person in the scene looking down Hayfield Road?

A. Correct.

Q. Towards the bus stop area?

A. Correct.

Q. And if we wanted to calculate the distance between the bus stop area and where the person is standing in the scene, is that something you're able to do?

A. Yes, so what we're able to do, for example, is I can take a view where I can see my figure and the bus stop and we can apply what we call a polygon measurement. We can go from the position of the male and we can take a general location to approximately near the bus stop and that would give us a figure of 65 metres in this case.

Q. Right. And the measurement we see there is always going to be in metres?

A. Correct.

Q. And does this allow you to calculate a number of

measurements at one time on the screen?

A. Yes, and these can range from point-to-point, or we can understand the height of an object, or we can understand information about angles, or areas even.

Q. When you say angles, would you explain what you mean by that?

A. Not entirely sure whether it's something that would be used, but what it allows us to do is, for example, we can select three points within the scene and that will give us an angle to each of those three points to understand that angular information.

Q. Is it also something -- is it possible to work out the difference in height between certain items?

A. Yes, so, for example, if I wanted to understand the height of this lamp post, we've got a specific tool that allows us to take a top and bottom measurement and it will only provide the height of that specific object between those two points, so it ignores effectively the X, Y coordinates and just shows you the height.

Q. Thank you.

Would you now, please, move on to your next slide, slide 19.

LORD BRACADALE: Ms Grahame, I wonder if this might be a good point to stop for lunch.

MS GRAHAME: It would be.

LORD BRACADALE: Very well. We will stop now and sit again at 2 o'clock.

(12.59 pm)

(The luncheon adjournment)

(2.00 pm)

LORD BRACADALE: Ms Grahame.

MS GRAHAME: Mr DeGiovanni, I forgot to ask you something before we left the interactive 3D scene. I understand you now have that back up on the screen for me.

Another function that this interactive scene has -- I would like you to demonstrate to the Chair the line of sight function, please.

A. So one of the features that we can do within the software platform is once we have created one of these line of sight characters is I can double click on the character and it goes to his line of sight. This is taken at his eye position, based on the height of the person that we put in when we created the character, so if we effectively said the person was 1.73 metres high,

it would be around 5 centimetres below that to capture that person's eye height in looking into the scene.

Q. So this is an average line of sight?

A. Correct.

Q. Yes. Thank you very much. And what we see here on the screen now is an image that's created from the line of sight of the blue character, male 1, which you had shown us on Hayfield Road near the roundabout with Hendry Road?

A. Correct. I think just to add on top of that, this isn't to say this is a human vision view, this is a reconstructed view of that eye position, and that's a very important clarification.

Q. Thank you. Then I would like you -- before we move on to slide 19, would it be possible now to show the overview which has been prepared?

A. So this is a digital animation through the 2021 data set and we basically start with a mapping of Kirkcaldy going into the area of interest.

Q. And at this point can you pause it, please, so that we can talk through this area. Thank you.

This has zoomed into an area in Kirkcaldy and again,

there's a red box that we can see on the left-hand side of the screen and describe what we see there?

A. So the road over here is Arran Crescent and we highlighted that before on the first mapping slide that we talked about.

Q. And again, can you highlight Templehall Avenue?

A. So the road, again, running to the left, east to west or west to east, is Templehall Avenue.

Q. And Hendry Road?

A. Running north to south (inaudible) past the junctions.

Q. And Hayfield Road?

A. East to west on the right side of that junction.

Q. And where was Gallaghers pub?

A. Gallaghers pub is -- again is --

Q. I don't need this circled at this stage, thank you.

A. It is this building right here.

Q. Thank you very much. Please carry on playing the overview. And would you talk us through this as we go through the video, please?

A. Yes. So we have zoomed into the area of survey. What you see here is what we call a point cloud which is basically the -- it's the same model that you have seen

before, but instead of being made what we call out of a mesh, which is edges and faces, it is made up of millions and millions of points.

As you can see, it is a 3D representation of the scene, but it is an accurate 3D representation of the scene and, as previously explained, this all fits onto mapping and it does so because of its accuracy. What we have now done is we have rotated round to Templehall Avenue and we're just going to go into the junction. What you can see is there is a crossing and this is the first sighting of a male in a white T-shirt that's referenced within the CCTV, or the video footage.

We're then going to go along to Hendry Road and we're going to go to the north end of that data set and this is going to show the Shell petrol station and again we get a clip from the dash cam footage that you will see later.

We're now going to go down to Gallaghers pub, so we're following down Hendry Road and here is Gallaghers pub.

As we rotate around Gallaghers pub you're going to see there's an extension to the carpark side of it.

This extension is where the CCTV camera was placed that we can see the majority of the events which occurred. I'm just going to take a view just behind that just to give a general appreciation of what that camera would be looking into.

Moving now onto Hayfield Road, we're going to show and highlight the area of the knife and the location of that.

From the Snapchat footage, the area of restraint is highlighted, as you can see here, and it is near the crossing just across Hayfield Road.

We have two properties which are of significance because there are civilian witnesses that make observations from within those two buildings. And just highlighted here is the bus stop which I'm sure you will probably hear reference to, specifically where police vehicles were parked and what happens around that area.

Moving up, you can see Poplar Crescent -- I will just pause that. You can see Poplar Crescent just to the side over here, and this is the furthest we see the person in the white T-shirt down Hayfield Road in the video footage.

So it just gives you an overview of the scene in 3D, it relates it back to the mapping and gives you a general idea of what you can see.

Q. And we're calling that the overview, the scene overview?

A. Yes.

Q. Thank you. Could we go back now, please, to slide 19 and we were just about to come onto that. This is the second column of the work which you did for the Inquiry.

A. Correct.

Q. And then turn on to slide 20, and this is entitled "Timing of video/audio" and "Objective assessment"?

A. So what we were trying to do here is assess the video and the audio and we wanted to try and place this onto what we call as a real time clock. The real time clock is the time that people were working to at the time, which I believe was British Summer Time, so it would be an hour difference to Greenwich Mean Time. So that was the timing that we're trying to get all of the audio and all of the video aligned to exactly the same time.

Out of all the information we had, some of the footage we were given very precise information as to the timing and how that related to the real time and that

included the Gallagher public house footage where officers went and they used a technique called the talking clock to determine the difference between the camera time or the CCTV system time and the real time. The 999 and 101 calls and the Airwave calls are all recorded accurately on the systems.

We then have a series of Snapchat images or Snapchat videos that were captured on a mobile phone. We refer to these as partially timed events because we were given some information which allowed us to constrain the time at which these were applied, but we don't have their exact time.

Lastly we have what we have defined here as unknown timed event. Now, some of these cameras have time codes upon them but what we're saying here is we don't actually understand how that time code relates to the real time, we've got no reference whether they are fast or slow or by how much, and because of that, we put them in the unknown timed event.

Q. So you were supplied with a number of different items but all the times were different?

A. Correct, and that's because they all come from different

systems, and each system has its own digital clock so it's operating on a different time.

Q. How did you resolve that conflict?

A. So if I move to the next slide. It was a matter of processing each video with the information I had available. We have over here the Harry Kolberg dash cam footage. What makes this particularly interesting is between Harry and Robson they make two phone calls to 999, both are audible within the dash cam footage. What that allows us to do is time the dash cam footage to within a second of the real time clock, so we're able to bring this footage from an unknown time into real time.

Q. Is that because the 999 calls you can accurately identify the time to within 1 second?

A. Correct.

Q. Thank you.

A. We also decided to undertake a validation of the Gallaghers CCTV public house footage. Even though we were given officer statements as to the time difference and whether it was fast or slow, we wanted to validate it because this video for us was critical, and making sure that there were no human errors or mistakes in

doing that process for us was really important.

So what we took as a common point between the dash cam footage and the Gallaghers' CCTV footage and we used that as a time of comparison between the two. From that we were able to independently verify that the police officers had conducted a good review of the CCTV and their timing was accurate to within tolerances that we could measure.

Q. What was that common point?

A. So the common point we used was the braking and stopping of Harry Kolberg's vehicle within the dash cam footage which can also be seen in Gallaghers' CCTV footage by his brake lights.

Q. I know we will come to this later, but can you please indicate on this -- the middle tile that we see -- where you were able to identify Harry Kolberg's vehicle?

A. So we're looking at this area just here (indicating).

Q. And that's from Gallaghers' CCTV?

A. Correct.

Q. And you cross-checked that with the dash cam footage?

A. Yes.

Q. To align the two?

A. Correct -- yes, temporally, so by time.

Q. By time. Carry on, please.

A. So we talked about the Snapchat footage having some constraints. With Snapchat what happens is the video is deleted within a certain period of sending them, so the videos that were originally captured were no longer present on Ashley Wyse's phone when it was examined. However, the person examining the phone was able to retrieve what we call thumbnail cache data. Thumbnails are small files that are created after a video file or after a large image is generated and its aim is basically to allow a computer system to understand a fold structure very clearly and show a visual representation back to the user.

Because we know that this file was created after the creation of the video, it helps us understand an end constraint to when these videos could have occurred. So we understood that we had the last point at which these videos could occur, and we could start to work backwards from that position.

Two of the videos occurred very soon -- the thumbnails were generated very soon after the creation

of the video and we know this because there are common features between the Gallaghers pub footage and the Snapchat footage which could only have occurred at those times.

The other footage that wasn't that -- that wasn't aligned within a few seconds, there were very, very clear differences in the number of police vehicles and the number of officers on the scene that they were occurring at a significant time period before of about 2 to 3 minutes.

So to analyse that information we had to refer more back to exact common features between vehicles, police officer positions and that allowed us then to locate and understand the location and the timing of that event as well.

Q. So you were cross-checking each of those items with other information that you had?

A. Correct. And in each case there was only ever one time that they would match, so it was very specific to when we could actually put them in the right temporal place.

Q. Thank you.

A. The other unknown footage was there's a van driving

through the vehicle and Robson Kolberg's iPhone footage. Both of these events occur and are very clearly visible within the dash cam footage, so we've got very clear common events occurring between those two events and the dash cam footage to be able to align those as well, so what it meant is that all of these elements could be aligned and put together to the real time clock.

Q. Thank you. Let's move on to the next slide. This is slide 22. Tell us what we have here.

A. So we mentioned before a GPS data set which is called ARLS. It stands for automatic resource location system. It is part of the radio systems that are carried by police in the vehicles and on their handheld units and what these units can do is under certain conditions they are able to store and -- or capture their GPS location and they're able to send that and get stored by the ARLS system.

What you see here on the left-hand side is the CSV output or a spreadsheet-type output of the data that gets stored. On the right-hand side is that information plotted out as a series of points.

What was interesting about this that we felt we

could utilise is the fact that we not only had the time and date but we also had the latitude and the longitude of each of those points as they were captured for each of those units. What that allowed us to effectively do is create an animation of units as they moved through the scene. There is some caution when doing this and I need to explain to you the assumptions and the accuracies that we are working to.

Firstly, the ARLS system uses GPS1. In an exterior setting, that is up to 5 metres of accuracy. However, that can be significantly worse if the unit is either indoors or in heavily built-up areas. This is due to reflections of the unit which would cause significant errors going into tens of metres or even higher.

We also have to understand that every single time the GPS records a signal, it is like it happens in a millisecond, and that happens either every 5 minutes or every 200 metres that vehicle travels. In order to show this and visualise it we considered linear transit between the points. What that means is that what we're showing here is indicative movement of the vehicles from one position to another. It is not the exact position

or location of a vehicle. What we do not know is if that vehicle or that person held still for half a minute then walked across and then stopped for 3 minutes and then it picked up that signal; we do not have that level of accuracy.

The last thing to bear in mind is that several vehicles did not have ARLS working effectively in their vehicles at all and several people did not have entries for their ARLS data at the start of the event, so it's just to understand that this is not a complete picture of every officer, it's the most complete picture we can do with the available evidence.

Q. Two things. When you use the word "Unit", does that mean a vehicle or could it mean something else?

A. It could also refer to a person's handheld unit as well.

Q. Like a radio, a police radio?

A. Correct.

Q. And you have created this, this is demonstrating where the data is and how it moves between two points?

A. Correct.

Q. Thank you. Moving on to the next slide, this is slide 24. Tell us what we see here.

A. So the last element that we wanted to look at within this area is tracking of people and vehicles from the available footage that we had to us. So the most complete record of what can be seen is from the Gallaghers public house footage. What we wanted to do is again use that footage to understand this movement of when vehicles arrive and the movement of people within that scene, so we have taken the original footage and very similar to what we did when we allocated the knife we used the same technique to understand the location of Gallagher pub's footage and the camera position.

We then carry out a process -- and I want to just remind you that we picked out three elements from doing that analysis: the position, the orientation and the lens distortion coefficients.

What we are able to do is create a video where we remove those distortions. That's important because when we then start to model and we start to move vehicles within the scene we can then start to understand that position more accurately without lens distortion affecting the analysis or the positioning.

The things that we have to bear in mind with this

analysis is the resolution of the CCTV from that footage is very low; it is not high quality footage.

The other thing to bear in mind is we are observing people and vehicles at distance. We can say that the vehicle positions are accurate because we have done further analysis on the Snapchat footage which is of higher quality and closer up. That allows us to position the vehicles very, very -- to a high degree of accuracy. However, they only occur for short periods of time, so understanding people movement beyond the extent of the Snapchat footage is not possible.

What I want people to bear in mind is that when we do position people within the scene, they are indicative only because of these effects and because of the tolerances that we were able to achieve with this data.

Q. Thank you. Slide 25.

A. So here we see an animation and it shows a vehicle coming in. I'm just going to pause it here.

We have represented all people within the scene as blue cylinders. The reason for this is because we are not trying to identify people within this. We cannot identify even from Gallaghers' footage, the footage is

not clear enough, but where we can understand a person's position and their movement they are represented by a blue cylinder.

Q. And can you show us that blue cylinder on the screen?

A. Sure (indicating).

Q. Thank you.

A. I also want to reference this red zone here. Again, due to the quality of the Gallaghers pub footage, when there are multiple people in very close proximity to each other we cannot identify or differentiate between them. The number of pixels that we are able to pick or understand are just too low for us to be able to understand and actually determine floor positions and individual people movement, so in that area, specifically the area of restraint, we will not be identifying using the Gallaghers' footage to understand people location.

That does change very slightly for the Snapchat footage.

Q. Thank you. Again, on the screen we can see another blue dot or a blue cylinder, and that's indicative of a person moving.

A. Correct.

Q. And another car has entered the scene from Hendry Road?

A. Yes.

Q. So this is an example of part of the reconstruction work that you have completed?

A. That is correct.

Q. Thank you. Let's move on to the next slide, slide 26, and I think at this point you're going to demonstrate part of the evidence video timeline. If we can stop there, do we see -- oh, sorry, can I ask you to go back slightly. We see that it is the evidence video timeline, "Video and audio assets positioned in real time", so this is cross-referenced with a real time clock?

A. That is correct.

Q. And it is from 7.09 in the morning to 7.41 and 28 seconds.

A. Yes.

Q. And you have also noted, quite properly, that this is a shortened version which has been redacted for public display.

A. Correct.

Q. Thank you. Carry on to the next part of this, please. Now, this is a note, and I wonder if you could explain to the Chair why this appears.

A. We want to make sure that when people are viewing this they understand what they are seeing and why we have created it. What you're going to see is all of the audio and all of the video together on one screen at one time. What that means is in order to show the areas that are critical, some of the videos have been cropped and zoomed into, so that we're only looking at the areas of action or of relevance to what -- to the incident.

The other thing to bear in mind is several of the audio assets, specifically the 999 and 101 calls, overlap with each other; they don't happen one after another, they happen all at the same time. In order to understand or make sense of that, what we have done is at the start of each phone call you will hear the phone call played at full volume. After a few seconds that volume will drop to a background noise and allow for a second phone call to come into play so you can understand the start of each phone call. You are not expected to understand what happens when multiple phone

calls are being said at the same time. To do that you can always refer to either the 999 transcript which has been created, or you can refer to the individual audio assets that are available.

Q. Let me just pause there for a moment, please. I wonder if now might be an opportunity to look at those 999 transcripts. There's a document which has been created in relation to those. Could we turn to that?

So this is "SBPI00082-999 transcript". And tell us what we see on the screen.

A. So I believe the transcripts were done by PIRC and they provided the text for each 999 call that came in, basically talking through what they can hear and what we have added to this is using the real time clock effectively the start time and if we go to the end of each conversation you will see an end time at which those conversations started and ended and that's from when we hear that first phrase to when we hear that last phrase.

Q. So can we look at the beginning, the first page please. Do we see at the top it says "Harry Kolberg-1st call" and the time is given as 07.10 and 14 seconds?

A. That's correct.
Q. So that's when that call started in the real time and then towards the end of that call, can we look down, we will see that that goes on to 07.12.16.
A. Yes.
Q. And then go on to the next one. That started at 07.10.16 and goes on to 07.10.45.
A. Yes.
Q. And that's for Simon Rowe, so again, there's an overlap there.
A. Correct.
Q. Thank you. I don't need you to go through that in any more detail, we will be dealing with that later. So that's a separate item that is available but in this footage which you have prepared, the enhanced video timeline, all the calls come in into the footage at the real time that they were made.
A. Correct.
Q. And that's why there's an overlap.
A. Yes.
Q. Thank you. Then move on to the remainder of the note please. Was there anything else that you wanted to add?

A. I think obviously with creating a report which will be made available, I think we're just going through some legal redactions and making sure that it is suitable to be released into the public. As soon as that has been done, again, when reviewing this footage we ask to take the consideration of the effort and what's been put in and the limitations of what we have produced just as we have discussed here in this forum.

Q. So in addition to your evidence here today there's going to be a report which as I understand it sets out in much more detail the evidence that you have given in relation to the slides today --

A. That's correct.

Q. -- and the work that you have done?

A. Yes.

Q. And that will be made available in due course.

A. Yes.

Q. And just to confirm, Mr DeGiovanni, you have agreed to return to the Inquiry and give further evidence if that's required towards the end of this hearing?

A. That is correct.

Q. Thank you. Can we watch this excerpt of the footage,

please, and if we start the screen, if you don't mind, and you could perhaps explain what we see on the screen at the outset.

A. So I'm just going to pause it here. So in the top right-hand corner it says "Real time".

Q. Left, I think.

A. In the top left-hand corner.

Q. Your other right!

A. Yes. There's the real time clock and this is, as we have discussed already, the British Summer Time, time of the event. Below that you will see there are three buttons: there's 101 calls, 999 calls and Airwave calls. These are effectively buttons that when a 999 or a 101 call or an Airwave message is transmitted, they will light up so it gives an idea or an indication when those are coming through.

What you will see below that -- and we refer to these as tiles -- effectively each video will come in as a tile that you can see. As you see this video is labelled as "PIRC-01293-dash cam footage".

Q. So we can see at the bottom of that dash cam footage it is 3 May 2015 and the time given on that dash cam

footage is 08.10.18, but through the work you have done your real time clock on the top left says it is 7 in the morning, 9 minutes past 7 and 1 second.

A. That's correct.

Q. Thank you.

(Video played)

Could we pause it there for a second, please. We see that on the left-hand side for the dash cam footage it now says "Footage not available". Why is that?

A. When we reviewed the dash cam footage available, the -- basically for every minute of footage played there was approximately a 10-second gap in the recording. One possible reason or explanation for this could be that the system was buffering and then trying to save the information before running or recording the next minute, but it was consistent throughout the footage and consistent in all versions of the dash cam footage that we were supplied with, so it certainly seems to be a limitation of the hardware that was used at the time.

Q. So at this stage we can see that the 101 call button has been -- it has lit up effectively.

A. Yes.

Q. And on the right we have seen the introduction of the CCTV from Gallaghers pub?

A. Correct.

Q. And this is all happening at 7.10 in the morning on 3 May 2015, and 4 seconds.

A. Yes.

Q. Thank you. Please carry on.

(Video played)

Can we stop that there for a moment, please. So we see that on this screen it is 7.11.02. The 999 call button is highlighted and we also see that the reconstruction tile that you mentioned in the earlier slide has now appeared at the top of the screen, so this is showing three things: the dash cam, the CCTV and the reconstruction tile from 7.11.

A. That is correct.

Q. Thank you, carry on.

(Video played)

A. Just to explain that, we have moved on slightly in the timeline. As I say, this is shortened so it is not the entire product which we will go through later, so we have moved forwards just a couple of minutes.

.

(Video played)

Do we see the bus stop on the left-hand side?

A. Correct.

Q. So this is Hayfield Road?

A. Yes.

(Video played)

Q. And at this point, if we can pause there for a moment, 7.13.36, we see a further tile in the middle which says "Robson Kolberg's iPhone", and this is further footage, all from 7.13.36?

A. Correct. And in the corner we have the van driven by Witness Grey as well.

Q. Thank you.

(Video played)

A. Again, we have moved forward in time now and this is to the arrival of the first emergency service vehicles.

(Video played)

Q. We can see here it is 7.20. The emergency status buttons are here and we can see the red button for Paton has lit?

A. Correct. Paton's emergency button triggers at 7.20.42, I believe.

Q. Thank you.

(Video played)

And we can see the Airwave, the green button lighting up and we can see the reconstruction tile?

A. Yes.

(Video played)

Q. If we stop it there, do we see on the right-hand side, sections of the Snapchat footage which was taken from Ashley Wyse's phone?

A. Yes, that's correct.

Q. And you have a larger tile and an enhanced tile within that?

A. Yes.

Q. Thank you.

(Video played)

And you have moved on again to 7.25.

A. Correct.

(Video played)

Q. And now can we see movement towards the roundabout and we can also compare that to the reconstruction tile and

see blue dots where that movement is being traced -- indicative.

A. Correct, but there are two people in that area so you can understand that there are two people roughly in that location.

Q. Thank you.

(Video played)

And again, we now see Snapchat footage, the final Snapchat footage on the right-hand side?

A. Correct -- er, the second Snapchat footage.

Q. The second, sorry.

(Video played)

A. Just to explain as well, with the knife image, we were able to analyse the meta image from that photograph and it gave us the time at which that photograph was taken. Again, that relates back to the real time clock, so we know that at this point in time this is when that photograph was captured.

Q. And again, we can see on the reconstruction tile a blue dot --

A. Yes.

Q. -- which signifies a person who has moved into that

area.

(Video played)

Again, 7.28, we see more Snapchat footage. This is the final --

A. That's the final we have in our presentation. I believe Ashley did take some more photos later, but they were significantly later and outside of the key area that we were analysing.

Q. Thank you.

(Video played)

And we have now moved on to 7.32 and this is coming towards the end of this excerpt.

A. Correct.

(Video played)

Q. And can we perhaps stop there. What do we see on the reconstruction tile?

A. So we have represented the ambulance as effectively a yellow block. We didn't have a make or model and it just felt appropriate of us not to make those assumptions, so we just used effectively a yellow block of approximately the right size to show the movement of that ambulance into the scene.

Q. Thank you.

(Video played)

I'm going to come back to the evidence video timeline in more detail later, but for the purposes of your slides that was a series of excerpts of the footage you have prepared shown as part of the slide show?

A. Yes.

Q. Thank you. I will come back to that. I would like to move on to slide 27, please. Tell us what we see here.

A. As I mentioned previously, the Snapchat footage is of a higher resolution than the Gallaghers pub footage. This allows us to place people and vehicles significantly more accurately than we can from the Gallagher public house footage so what we're able to do is we're able to take the original image which is on the left-hand side, and we carry out a process where we try to understand individuals within the scene and that's that lower middle image. Just to bear in mind and just -- that the image that we have actually analysed here for the individual people is at a slightly earlier time than the rest of the images and this is because we felt that this was the best image of capturing and

understanding each person's position at that time.

But the position which we have analysed to understand the locations of people is the slide you see above it, and by carrying out that photogrammetric technique, we're able then to be able to place people back into the scene.

I think one thing that I need to clarify is we see that there is a person in blue who appears to be near to the ground and we can identify that person as an officer because of his hi-vis jacket which you can see in this footage, again, a slightly different time we will show you that, but what we can't do is we identified there are three legs at the bottom -- or towards the right of that image. Because we can't understand or pick out pixel differences or pixel colours between those three legs what we can't do from an objective point of view is exactly say whose legs belonged to the officers and whose legs belonged to the other person.

It should also be noted that in this footage we do not see the torso of Mr Bayoh, we do not see his head or his arms, so there's very, very limited information to be able to position and identify and say exactly what

was going on.

Q. So you have limited what we see on the far right tile to what you can observe from the information you have available to you in the Snapchat footage?

A. Yes.

Q. So there are areas where you have not endeavoured to reconstruct something because you weren't trying to put your own interpretation on the scene?

A. Correct. We don't -- our job effectively stops when we can't see something and it's not for us to try and interpret that, we have to strip away all logic and just say what we're seeing in the scene.

Q. And you have done that. So where we see gaps, it's really a matter for the Chair --

A. Correct.

Q. -- to interpret that. Thank you.

Now, would this be a good moment to then move on to the enhanced Snapchat footage that you have prepared?

A. So even though this footage -- so the Snapchat from the first footage represents the highest quality footage that we have of the restraint and we felt it was important to make it as clear as possible as we can, so

we used a process called stabilisation. It is where we take a point within the scene -- in this case it was probably -- I think it was the wing mirror of the vehicle and what we do is we track that position as best we can as the video progresses through. We then get the software to play that video back again but keeping that pixel in the same place. We call that stabilisation and it is used quite often in numberplate analysis and those sort of techniques.

Q. So this is a vehicle that's stopped?

A. Correct.

Q. It's in a fixed position in the scene.

A. Yes. So this video is played at 100% speed but then we now play it again at 25% speed.

(Video played)

Q. And on the left-hand side we can see the full shot of the original video and on the right-hand side you have indicated it is stabilised footage with a 400% zoom?

A. Correct.

Q. So it is closer?

A. Yes.

Q. Thank you. And the speed has been reduced from 100% to

25%.

A. Correct.

Q. Thank you. Now can we move on to slide 28, please. I think this is the third column of your work for the Inquiry which is in blue, and can you take us through this column of work.

A. So this is where we start to assess the statements and the aim here is to try to understand what information we could take from all of the police and civilian statements that effectively allowed us to create a reconstruction, and we can break these down into four areas. The first one I think I mentioned right at the beginning is temporal and these are information related by time or a timed event, such as, for example, an emergency button being pressed.

The next is spatial and this relates to a location or relative position of the events, of a person or an object. For example, this could be when somebody is talking about a road name as they are approaching the scene to say which direction they're coming from, or it could be an observation of a person or a vehicle within the scene as well.

The next one is the person identification which I think is fairly self-explanatory, but it is when somebody identifies another officer within the scene or a person within the scene, and lastly is object identification, and for things like that we're talking about location of a knife, or potentially a location of a baton and these are described within the police and the civilian reports.

Q. Thank you. Moving on to slide 30.

A. So in order to understand the statements that were given to us what we needed to be able to do is be able to place them against the real time clock. When somebody writes out a statement it is normally written in chronological order, but they don't have timings on them, apart from maybe of very one specific time, which is "I looked at my watch, I saw this time". Often it is just a chronological run of events without any differentiation between when these events occur. Quite often they are not even spread out in terms of spatially -- in terms of timing so it's not like you get a comment every five minutes, you could get a very detailed statement for five minutes and then there could

be a big gap between the next piece of relevant information, so what we wanted to be able to do is relate those statements back to the temporal information which came from the objective evidence video timeline that we created.

In order to do that we firstly -- so in order to do that we created a spreadsheet. The spreadsheet describes the audio and the visual information that you see within that video and it describes it in comparison to the real time clock. What we were able to do then is go through the public statements and we're able to relate the public statements to what we can see physically in the scene so, for example, if somebody describes their car, their colour, their make, we can then relate that to the video and pick out the point at which their vehicle enters and leaves the scene.

With the police statements, it was much clearer to define and understand their evidence against the Airwave events. Because they were obviously listening to the Airwave at all times it meant that quite often they were all aware of what was being said on the Airwave and when it was being said and that allowed us a good way again

to spatially locate the police statements against the real time clock.

Q. And I will come back to this spreadsheet at the end.

Can we move on to slide 31, please.

A. So the first stage is pretty much what we covered in the last slide where we have taken all of those statements and we start to try to understand them in relation to the temporal events.

Stage 2 is where we then start to identify within those statements and within those events the areas which can be reconstructed, again, by the parts we described, which is the spatial, the person and the object identification. That allows us then to understand which areas can be reconstructed.

We then gave all that information to the Inquiry and we asked for direction and what we wanted to understand from them is which were the key areas of interest to the Inquiry and which areas they felt there was agreement or dispute between the various statements, and stage 4 -- I'm just going to move to the next slide because it explains it a little bit clearer.

Q. Thank you. So this will be 32.

A. So what we have here is effectively a series of events following the real time clock, and we had many areas where there are agreement and that's not just agreement between police statements, but there that's also agreement between police and public statements.

However, there are occasions where there would be disagreement, or dispute, where multiple versions wouldn't coincide with each other, and these were obviously sort of narrowed down and then reflected back to us as the ones that the Inquiry would like to understand in more detail.

Q. Then slide 33.

A. I think it's important to say that when we talk about a reconstruction we're not talking about a Pixar animation, we're not talking about anything in that level of detail. What we're looking at is a way of helping and assisting the Inquiry. It is a tool to help get the best evidence and achieve the best evidence with the witnesses that you have coming here.

With that in mind, the first area that we have been asked to help with is the alleged stomp, and what we would like to provide there is the interactive 3D scene

as you have seen it demonstrated today. It would be presented as you see it here, so we would have the vehicles as they were at the time and that includes the police vehicles. However, what we will not be doing before a witness gives their evidence is positioning people within the scene. We would hope that it would be allowed -- we would allow the witnesses to place themselves within the scene and use their own memory and judgment as to where they were. We can then replicate that once they have done that within this 3D view and understand where they believe their best positions of people -- of where they were and where people that they saw were, and we can actually look at that from any point of view, so, for example, we can take it from a window position or we can take it from a ground position.

Q. And you're going to be able to assist the Inquiry with placing people in the scene --

A. Correct.

Q. -- once the evidence has been led?

A. Yes.

Q. Thank you.

A. The second event that was highlighted as an area of interest to us -- or of interest to the Inquiry -- please, I apologise -- is the restraint position. For this we would not be using the 3D full interactive reconstruction but instead we would be using a series of stills. Those stills will allow a user to be able to mark-up -- similar that you have seen me do on the map, they will use the same technology and they will be able to start to mark-up lines and circles as to where things happened and they will be giving verbal description of what happened in those areas.

So the type of stills that you will see would be, for example, the two that you see here where there is no -- there are no people placed within the scene. We're also going to produce two images where we're going to place Mr Bayoh in the scene based on the second Snapchat footage where his torso and his legs are visible and we will be placing his position based on that Snapchat footage and that position, so again it's an accurate objective assessment of his location.

The last images that we will provide are the ones that we have been able to produce from the first

Snapchat footage which is the location of the officers around the time of the first Snapchat footage.

The aim of this will again -- we will also provide some of these slides which will have distances to allow the Chair and the Inquiry to understand those distances that are involved from different viewpoints.

Q. So you have described how we will be able to use within the hearings the interactive 3D scene in relation to the alleged stomp, as you put it, but not to use that interactive 3D scene in relation to the restraint other than in the use of stills.

Can you explain to the Chair why the interactive 3D scene is not suitable for the restraint moment?

A. The difference between the two is when we're looking at the stomp, we're looking at a very, very small period of time. It could be a fraction of a second, or a second at most.

When we're looking at the restraint we're looking at it over a much longer period of time, we're looking at it with many more people and significant different angles. It's significantly more complex.

The reason we don't want to use the 3D view for that

analysis is because we think it will be simpler for people to engage on that platform for more people. However, when we're using the real time interactive scenario for a single point in time, we feel that will help people understand and place themselves better because we can take their line of sight and we can ask them to corroborate whether they're happy that that represented their view and if not they can correct it, so we can actually give a little bit more information, a little bit of feedback to that specific point in time as opposed to something that stretched over several seconds or several minutes.

Q. Thank you. What I would like to do now is to move on to look at the spreadsheet and the video timeline.

I understand that you would like a few moments just to move from one technology to another and I wonder, Chair, if that would be possible just for a few moments to allow Mr DeGiovanni just to now change his system.

LORD BRACADALE: Very well. We will adjourn for about five minutes or so.

MS GRAHAME: Thank you.

(3.01 pm)

(Short Break)

(3.13 pm)

LORD BRACADALE: Yes, Ms Grahame.

MS GRAHAME: Thank you. Before I turn to the spreadsheet, Mr DeGiovanni, could we just go back again to explain why we're not using the interactive 3D scene, other than using stills, but why we're not using that for the restraint? What would the difficulties be in trying to use that interactive scene for the restraint?

A. So as I've explained in the first part, one of the issues is that obviously it happens over a longer period of time and there could be multiple positions that Mr Bayoh is in, in multiple orientations, but the other issue is about the way people would describe themselves, how they are positioning their arms, maybe how they're holding Mr Bayoh and what position he is in, and what we're not able to do in real time is manipulate arms, legs, poses. We can't operate that quickly. What that would mean is if we were trying to do that kind of work in real time when somebody is giving their evidence, it would basically hold the Inquiry up, so we're trying to find the most efficient way in which the evidence can be

taken, and then if there is enough evidence after that, potentially we could then reconstruct that back into a 3D scene in a slower time back in our offices, so it isn't that we don't want to, it's just us being very conscious of the people's time that you're bringing in here and the time it would take to manipulate the scene to the effect of showing that level of detail.

Q. Thank you very much.

Could we turn now, please, to the spreadsheet. I should say that there has been a copy provided for you, Chair, and for both Assessors. There are also hard copies provided on every seat for anyone who is in the hearing room who wishes to follow the next passage of evidence.

Could I ask, however, that those hard copies are returned to the Inquiry team before people leave today.

In terms of the legal representatives of the core participants, they not only have copies available, but they have access on our digital system to the spreadsheet. Thank you.

Let's look for now at the spreadsheet itself and as we go through this, Mr DeGiovanni, I would like to start

playing parts of the enhanced video timeline, and what I understand is we're going to bring the enhanced video timeline onto the screen now, Ms Wildgoose, if we may, and if we could stop that there. We will see that, as we have seen earlier, the real time clock is again on the top left-hand side, the buttons for the calls and the Airwaves are also just under there and we're beginning with the dash cam footage from Harry Kolberg's vehicle and I'm going to -- as we go through this footage, if I may, I would like to break it down into seven phases to try and make -- gather relevant parts together.

So the first phase will be from the beginning of the footage to 7.15.55, so we will play this through once from 7.09.20 to 7.15.55. In this section we will show -- we will hear the 999 calls that we heard earlier, and can I also just -- before we begin can I point out that this is the -- on the spreadsheet we can see the times in the left-hand column, so this is what you said in your slides earlier. The video timings are in the first column and we're going to play from the beginning down to 7.15.55 where people can see that on

the spreadsheet. So it is on page 1 of the spreadsheet.

We then see a column three in called "Caller ID Airwave transcription", and at the bottom of that page we can see some entries there, a call -- an Airwave sorry at 7.16.29, PC Ashley Tomlinson, and "Con 1" which is the control room Airwave?

A. Yes.

Q. And then the next column is "Event Airwave transcription", and do we see there a transcription of what people are likely to hear on the Airwave -- on the footage?

A. That is correct.

Q. And then in the next column along it's called "Description of visible events in the video". Tell us about this column?

A. So over here what you have is the -- it's basically a benign description of what we can see in the video footage available to us. We have tried to remove as much interpretation as possible, so it is a minimal amount of subjective interpretation of what we're seeing and it is mainly to try and relate events that we can see in the video specifically to the timeline and that's

the reason we generated this in the first place.

I should also note that there are several entries in here that haven't just been created by ALI, but they have been created by the Inquiry team as well, and it is effectively a combined effort to produce this spreadsheet to be the most faithful version of -- written version of the events that we see in the video.

Q. Thank you. And again, in terms of cross-checking things, if we look at the first entry in the spreadsheet, which is at 7.09.20 to 7.09.33, we see the description of visible events and it talks about a figure seen walking and then in the final column it gives a reference number and it refers to dash cam footage. What's in the final column?

A. So when we're making observations within the evidence video timeline there could be multiple tiles or multiple videos open at any specific time, so what we want to be clear about is when an observation is being made as to which tile that observation is being made in, so, for example, if something is being seen in the Gallagher pub footage, then everybody knows that that is where we are making that observation from.

Q. So the first three entries in the spreadsheet, so under the description of visible events, those first three entries are a description of what can be seen in the dash cam footage and the footage from Robson Kolberg's iPhone?

A. That is correct.

Q. So as we're watching this footage in real time, if people want to focus on areas that we see described in the spreadsheet, for the first three they should be looking at the dash cam footage, the mobile phone footage and then further down we see that their focus should be on Gallaghers' CCTV footage?

A. Yes, that's correct.

Q. And that's from 7.15.25, and it talks about a person in a light top and dark bottoms visibly walking towards Gallaghers pub?

A. Yes.

Q. And those entries are from CCTV?

A. Yes.

Q. So the phase 1, which you're about to show, look at first of all the dash cam and the mobile phone and then the Gallaghers' CCTV, if people wish to do so.

A. Correct.

Q. Thank you. Right, let's play stage 1 please.

(Video played)

And as we approach 7.15.25 which we see on the spreadsheet, we will be coming up to another sighting and this should be from the CCTV?

A. The Gallaghers pub CCTV.

Q. The Gallaghers pub CCTV. So again, if people can focus their attention on that area.

(Video played)

And this is combined with the reconstruction tile showing the location of the person moving?

A. Yes.

(Video played)

Q. And before we leave this first phase, could I ask you, Ms Wildgoose, to go back to 7.13.15. Mr DeGiovanni, you mentioned earlier when we went through the slide show that you had, as part of the process of the work you completed, you had cross-checked things with Harry Kolberg's car?

A. Correct.

Q. Are we able to see that in this footage?

A. Yes, so if you look at the Gallaghers pub CCTV, just below the R of Gallagher, if you follow that down onto Hendry Road you can just make out some red dots and that's --

Q. Is that Hayfield Road?

A. Hayfield Road.

Q. That's fine.

A. And that's the brake lights of the vehicle that we see in the dash cam footage.

Q. And that's what you referred to earlier in your slides?

A. Correct.

Q. Thank you. I would like to move on to the second phase, please, and this will run from 7.16.22 to 7.20.12. So 7.16.22 which you will see the timing of audio timings in the spreadsheet on page 1, to 7.20.12, which is on page 3 of the spreadsheet. As we go through this, we will hear a number of Airwaves messages from the area control room and we will also see -- if we look on page 1 of the spreadsheet you will see a reference at 7.16.28 to a -- CCTV -- on the CCTV from Gallaghers pub, person who has walked up Hayfield Road but is still visible on the CCTV. Thank you.

(Video played)

Q. If we can stop it there. I would like to move on to phase 3, and this will begin at 7.20.13 and you have just stopped the second before that and it will carry on to 7.21.38, so that's 7.20.13 to 7.21.38. This will cover the period of time from -- you will see on the spreadsheet at 7.20.13, there is an Airwaves call from Inspector Stewart in the area control room which is transcribed in the middle column of the spreadsheet and the description comes from Gallaghers' CCTV. And as we look at this screen we will see events from Gallaghers' CCTV which will be also reconstructed in the tile at the top of this screen in the middle and we will see that the first entry in the spreadsheet says:

"Large marked police vehicle arrives from the south turning into Hayfield Road."

And then two lines down:

"Police van stops on Hayfield Road within field of vision and shown on the CCTV."

And that moment -- the vehicle stops, first vehicle, at 7.20.23. And this phase, this third phase of footage will end at 7.21.38, which we can also identify on the

spreadsheet, which is on page 5 of the spreadsheet and you will see the first entry where we're going to end this footage indicates "Male secure on the ground".

Again, during this we can see other vehicles described as arriving on the spreadsheet at 7.20.30 and that second vehicle stopping at 7.20.39 on the spreadsheet, and then there is an emergency status button turned on at 7.20.42. Then from 7.20.52 we see a series of events depicted in the CCTV and there appears during this period of time two visible falls, so people have fallen or landed on the ground.

A further emergency button on at 7.21.19, and then some other movement which I will come back to at 7.21.21 of an observer and, as I said, 7.21.30 at the top of page 5 of the spreadsheet is an Airwaves message from PC Smith indicating "Male secure on the ground", so this will be the third phase of the footage and I would like you to play that now.

(Video played)

Thank you so. That's the complete phase 3. I would like you to go back, if you may, to 7.21.21, so we have seen the CCTV footage, the reconstruction and I would

now like to go back to 7.21.21. If we rely on the description on the spreadsheet, you will see that there is an Airwaves message from Ashley Tomlinson at that time, but in addition it indicates "movement of a possible person can be observed from the residential properties on Hayfield Road", and I would like to go back and look at this in case anyone missed it when they were looking at the CCTV.

Can you point out, Mr DeGiovanni, where people should look if they wish to see this part that's described in the spreadsheet, so this is at 7.21.21, which is the real time we have on the screen at the moment.

A. So if you look at this area here, so what you're going to see is what appears to be the top half of a person moving from their house across to the street.

You will also be able to see it in the reconstruction as a blue cylinder walking along that path.

Q. Thank you. Now, I would like to show this part of the footage again, and if possible, could we remove those red circles so that people can see the full image.

Thank you. Perfect.

(Video played)

And do we see that -- sorry, I will ask you to pause it there -- the blue circle disappears in the reconstruction tile when the moving image disappears behind a tree on the CCTV image?

A. That is correct. It is no longer observable.

Q. Thank you. Thank you very much.

We will move on to phase 4, please, and this will run from 7.21.38 to 7.25.17. So 7.21.38 which is on page 5 of the spreadsheet, to 7.25.17, which you will see on page 7 of the spreadsheet. So we're moving between pages 5 and 7, and you will see that on page 7 we're ending at 7.25.17 where an Airwaves call is transcribed from PC Smith indicating:

"The male appears unconscious, breathing, not responsive, get an ambulance for him."

So phase 4 covers the period up to the point that a request is made for an ambulance and can I also ask you to look at the spreadsheet on page 5 at 7.22.18, next to a description of what we can see in this Snapchat footage which says:

"A person in a grey T-shirt can be seen standing in the front garden near the entrance of one of the residential properties on Hayfield Road."

So as we look through the footage, at 7.22.18, we will see the Snapchat coming onto the screen and we should see a person in a grey T-shirt. Thank you.

(Video played)

So that actually finishes at 7.25.24, we see on the screen.

Could I ask you briefly to go back, in case anybody missed it, to the -- sorry, it is on page 5 of the spreadsheet, 7.22.18, page 5 of the spreadsheet, 7.22.18 and again, Mr DeGiovanni, would you be able to circle in red where we see this area that's described in the spreadsheet: a person in a grey T-shirt to be seen standing in the front garden near the entrance of the residential property.

A. So just here you can see a grey top and dark trousers. I think as the camera will pan around you will see a little bit more of him, but that's the location of where we can see that person.

Q. Thank you. Could we remove that red circle while we

watch this Snapchat footage now, please. Thank you. So that's the person that's described in the spreadsheet.

A. Correct.

Q. Thank you. I would like to move on to the fifth phase which is between 7.25.25, which is on page 7 of the spreadsheet and 7.34.08 which is when the ambulance arrives. This ends on page 13 of the spreadsheet, 7.34.08, by which time the ambulance has arrived. There are only two things that I would like to point out on the spreadsheet during this, the fifth phase.

7.27.54, a light-coloured vehicle approaches and a person near the grassy area stops, approaching Hayfield Road and pauses and I would like -- there's a reference here to Gallaghers' CCTV but we will see the reconstruction tile indicating where this person is.

I wonder if we could move to 7.27.54 rather than playing this entire section, would that be possible? I'm conscious of the time. So at the bottom of the page we have the CCTV footage and at the top we have the reconstruction and we can see a blue dot?

A. Yes.

(Video played)

Q. And if we could pause there for a moment just to draw to people's attention, there's a person on the CCTV footage standing at the roundabout. Could you highlight that for us, please?

A. The upper end of it --

Q. The CCTV, if possible.

A. Are you talking about the one on the roundabout?

Q. The one on the roundabout, first of all. And show us the blue dot on the reconstruction where that's recreated, and then show us the other person -- you may need to move that red circle slightly on the reconstruction.

A. On the reconstruction there -- there we go. Hopefully that makes sense.

Q. Yes. So two people visible on the CCTV and they are indicated by blue dots on the reconstruction tile.

A. Yes.

Q. Thank you. Could we perhaps fast-forward to 7.33.35. We're still within phase 5, but I'm taking this short. So 7.33.35, on page 13 of the spreadsheet, it's the second row and the description given from Gallaghers' CCTV is of the ambulance arriving during phase 5 and we

will also see this as you demonstrated earlier, the yellow tile -- the yellow --

A. Block.

Q. -- block, thank you. The yellow block on the reconstruction tile. Let's watch that, please.

(Video played)

Thank you. Can we pause it there, please, and that's the yellow block on the reconstruction, we can all see that.

A. Correct.

Q. And at the bottom we saw a vehicle arriving on the CCTV.

A. Yes.

Q. Thank you. Then if we could play just the next few seconds, we will hear an Airwave that's transcribed on page 13 of the spreadsheet which should say "Ambulance at locus".

(Video played)

Thank you very much.

Then we're moving on to the sixth phase which begins on page 13 of the spreadsheet. This is from 7.34.08 to 7.38.13. The sixth phase ends -- it begins on page 13 and ends on -- sorry, 7.34.08 to 7.38.13, and 7.38.13 is

on page 14.

A. 14.

Q. Thank you. 7.38, 14, and that ends with an Airwave message which we will hear saying "Male on stretcher", he is being taken to the hospital. So that's page 14 at 7.37.56, which is an Airwaves message from Samantha Davidson that's transcribed and it says "Male on stretcher, remains in cardiac arrest", and then it mentions the ambulance. Could we listen to that, please? Thank you.

(Video played)

Perhaps we could fast-forward, actually, Ms Wildgoose, to 7.37.56, which is the Samantha Davidson Airwaves.

(Video played)

Thank you. That's the end of phase 6, and then phase 7, from 7.38.16, which is on page 14 of the spreadsheet, to the end of the spreadsheet and we see at 7.43.36, the end of the spreadsheet and the transcription, by which time the second ambulance has been cancelled, and we see that transcribed in that seventh phase.

I don't intend to invite you to play that. Thank you very much, Ms Wildgoose.

Thank you very much, Mr DeGiovanni. That's the entire footage and the spreadsheet which can be used to interpret that footage --

A. That's correct.

Q. -- if people wish to do so. Is there anything else that I have not covered today that you feel we should discuss now?

A. I think it's just to state that when we initially -- if you remember the original plan, this was never designed to be an end product. What happened was as we presented to the Inquiry as part of our work, they realised the value of it and they felt the value to all of you people watching would be significant and that's -- from that point on we developed it into what it was, or what it is, and this became really a joint product between us and the Inquiry and, as I said previously, and it is just our interpretation of what we have seen, but we have tried to keep it as faithful to what we can see in the CCTV and the video as we can.

MS GRAHAME: Thank you very much.

LORD BRACADALE: Thank you, Ms Grahame.

I am now addressing the legal representatives. No written applications under Rule 9 were submitted in respect of this witness.

The witness will be returning and he has indicated that he is preparing a report, so it may be that in the future, legal representatives may wish to make suggestions as to lines of questioning or make Rule 9 applications. Against that background, does anybody wish to make an application at this stage? No, that's very helpful, thank you.

Well, thank you very much, Mr DeGiovanni, that's been very helpful to the Inquiry and we look forward to seeing you again in due course.

The Inquiry will now adjourn until tomorrow at 10.00 am.

(4.00 pm)

(The Inquiry adjourned until 10.00 am on Friday, 13 May 2022)

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