

1 Transcript of the Inquiry

Friday 9 December 2022

2 (10.01 am)

3 MR MARK DEGIOVANNI (continued)

4 LORD BRACADALE: Good morning, Mr DeGiovanni. Before you  
5 are asked any questions, can I just remind you that you  
6 are still subject to the affirmation you gave on the  
7 earlier occasion to tell the truth.

8 Ms Grahame.

9 Questions from MS GRAHAME (continued)

10 MS GRAHAME: Good morning, Mr DeGiovanni. You first gave  
11 evidence before this Inquiry on 12 May this year and you  
12 gave us all your details then, so I won't repeat -- ask  
13 you to repeat any of that, but let's look, just to  
14 remind ourselves of the PowerPoint presentation which  
15 you spoke to that day, and that's SBPI00089 and that  
16 will come up on the screen and if we could just look at  
17 the first or second page. Do you recognise that  
18 PowerPoint presentation?

19 A. Yes, I do.

20 Q. And you gave evidence that day and explained -- can we  
21 look at the next page? You explained the background of  
22 Advanced Laser Imaging and then can you carry on,  
23 please, to find the -- keep going. Sorry, I don't  
24 have -- that's the one. You showed us this chart and

1 explained the review that you had carried out on the  
2 work for the Inquiry and there was a yellow section  
3 which talked about your 3D digital twin capture and the  
4 green section talked about the assessment of objective  
5 material as opposed to subjective, and then the blue  
6 section you talked about the assessment that you had  
7 carried out at the end and you gave detailed evidence  
8 about that on 12 May.

9 A. Yes, that's correct.

10 Q. Thank you. That was published on -- the whole  
11 PowerPoint, I should say, was published on our website  
12 at the conclusion of your evidence on that date, so  
13 that's available on our website for anyone who wishes to  
14 go back over it.

15 A. Of course.

16 Q. And then following that you prepared a report, a very  
17 detailed report. If we could look at SBPI00149. If we  
18 could just go down that page and it says:

19 "Digital Reconstruction - Final Report.

20 "Monday, 13 June 2022."

21 Could you go down to the first page, please. Again  
22 it explains who you are, your company, and this report  
23 gives all of the detailed information essentially that  
24 you condensed into the PowerPoint slides that we have

1           just looked at?

2           A. That is correct, yes.

3           Q. So this is the -- this contains technical information  
4           and more detailed explanations of everything that you  
5           summarised when you referred to your PowerPoint.

6           A. Yes, that's correct.

7           Q. Thank you. And that will be -- it has been disclosed to  
8           the core participants in June and that will be available  
9           on the website as well.

10                  Now, this is an accurate summary of everything that  
11           you did at that time and that will be available for the  
12           Chair to consider in detail at a later stage.

13           A. Yes.

14           Q. Thank you. Then during the hearing, after you gave  
15           evidence on 12 May, you then returned on a number of  
16           days when we were taking evidence from individual  
17           witnesses and you assisted the Inquiry with the use of  
18           the 3D modelling, is that correct?

19           A. Yes.

20           Q. Thank you. So for those who have been present in the  
21           hearing room, or maybe watching, you would have been  
22           present with your computer, assisting witnesses in  
23           explaining their evidence through the mechanism of the  
24           3D model?

1 A. Yes, that's correct.

2 Q. Thank you. And for the purposes of today you have  
3 prepared a second report, effectively updating what you  
4 have done since you first gave evidence and during the  
5 work of the Inquiry at the first hearing.

6 A. Yes.

7 Q. Can we look at SBPI00175, please. And this -- well,  
8 this is the -- a second spreadsheet -- sorry, PowerPoint  
9 presentation, "December 2022 Update" for the Inquiry and  
10 we will look at that in a moment.

11 Then we also have SBPI00169, and if we could go down  
12 and we will see this is the second report, supplementary  
13 report, Tuesday 4 October, and so this is the  
14 supplementary report that you have prepared to update  
15 the Chair on the work that you have carried out since  
16 your first report.

17 A. That is correct, yes.

18 Q. Lovely, thank you. And again, this is a sort of  
19 accurate reflection of all of that work?

20 A. Yes.

21 Q. That will be available to the Chair. Could we go back,  
22 please, to the -- sorry, I should say this was disclosed  
23 to core participants on 6 October but it will be put on  
24 our website at the conclusion of your evidence today.

1           Can we go back to SBPI00175, please. My intention  
2           today, Mr DeGiovanni, is to go through this spread --  
3           I keep calling it a spreadsheet, it's Friday; it's  
4           a PowerPoint. And I'm going to take you through these  
5           slides. Now, I think there are 43, but 42 have content  
6           and we will go through each of these in turn. This will  
7           be published on the website at the conclusion of your  
8           evidence today and I would like to begin by just looking  
9           at the next slide, please.

10           We will see that this is headed up -- sorry, that's  
11           it. So that's the first slide, "December 2022 Update",  
12           and this is the second slide. Thank you. So this is  
13           the initial methodology, and if I'm right, that's very  
14           similar to that -- that is in fact the slide that we  
15           just looked at in your first PowerPoint presentation?

16           A. Yes, correct, so this was when we started the process  
17           and we wanted to explain to the Inquiry what steps we  
18           would be doing and what products we would be doing.

19           This is effectively the methodology that we had  
20           suggested.

21           Q. Lovely. And then if we can go on to the next slide,  
22           please. This is effectively an updated version of the  
23           slide we just saw?

24           A. That is correct.

1 Q. So I would like to take you through this, in order to  
2 allow you to update the Chair and those listening as to  
3 what has been done, so on the first -- if we look at the  
4 left-hand side first, we see "Material Review", and  
5 I would like you to explain, if you can, the -- on the  
6 left there's a turquoise box which says "Snapchat  
7 Enhancement (Video) SBPI-00110". Can you tell us what  
8 that is?

9 A. So when we did the material review we looked at all of  
10 the evidence that was supplied to us and one thing that  
11 drew our attention was specifically one of the Snapchat  
12 footage. Once we understood that it was the earliest  
13 high quality video that we had of Mr Sheku on the  
14 ground, we felt that actually the video in its own right  
15 could be improved and could help the Inquiry further, so  
16 in that instance we took that Snapchat footage and we  
17 applied what's known as sort of a stabilisation to it  
18 where we take a point, we fix it within the screen so  
19 that effectively it looks like it focuses on that point  
20 and that point doesn't move.

21 We also slowed that footage down as well, so it  
22 allowed the Chair and it allows the Inquiry to look at  
23 that short sequence of events just around the people who  
24 are surrounding Mr Sheku at that point in time, but they

1           can review it and they can review it slowly and in more  
2           detail.

3           Q.   So we heard evidence about this footage at the first  
4           hearing.  It was Snapchat footage recorded by  
5           Ashley Wyse from a bedroom window in her nearby property  
6           and there were clips embedded into your evidence video  
7           timeline.

8           A.   Yes.

9           Q.   And this you took the same footage and produced  
10          a version which also went in slow motion?

11          A.   Yes.

12          Q.   And we also used that in hearing 1 with taking evidence  
13          from witnesses.

14          A.   Yes.

15          Q.   And that wasn't something that you had done in advance,  
16          way in advance, we weren't anticipating you doing that,  
17          but it was something that you were able to facilitate as  
18          matters progressed?

19          A.   I think it was something, as we got more involved and we  
20          understood more of the evidence and more of the  
21          requirements that the Inquiry would have, we felt it  
22          would have been useful.

23          Q.   So not part of the initial instruction but became --  
24          became aware that it would have been useful later?

- 1 A. Correct.
- 2 Q. Thank you. And then if we stick with the turquoise  
3 coloured boxes, if we look at the right-hand side of  
4 this screen can we look -- linked to the yellow "3D  
5 Digital Twin Capture" area it says "Scene Overview  
6 (Animation) SBPI-00104"?
- 7 A. Yes.
- 8 Q. Tell us about that?
- 9 A. So obviously there were many meetings between us and the  
10 Inquiry and once we had the 3D model and we were able to  
11 show it to them, one of the key questions that came up  
12 was is there a way that we can show this as an  
13 introduction to witnesses, so we recommended that  
14 potentially an animation going through the data,  
15 highlighting key areas and key points within that data  
16 set would have been useful. That was agreed and we  
17 basically proceeded with that, so in the end we decided  
18 to produce an animation going through the 2021 survey  
19 data set, using the -- we call it a point cloud, but  
20 it's effectively a virtual version of the scene and  
21 again, just showing it in an animation format meant that  
22 it was easier for the Inquiry to use that format when --  
23 for example, when I'm not here.
- 24 Q. And in fact at the beginning of the first hearing did we

1 use this -- this was effectively the map of the scene  
2 that you zoomed in, so you had Scotland at the beginning  
3 and you zoomed in to Kirkcaldy and then you zoomed in to  
4 Hayfield Road, Templehall Avenue and Arran Crescent?

5 A. Correct. It's a scene-setter, so it helps people  
6 orientate themselves to the location.

7 Q. And then as you went into that scene, there were  
8 elements where you pointed out what appeared to be  
9 important areas, such as the nearby garage where  
10 a telephone call was made and other areas on the scene.

11 A. Yes.

12 Q. And embedded into that screenshots of CCTV footage,  
13 mobile phone footage, showing -- well, we have heard  
14 evidence now -- Mr Bayoh walking along the street.

15 A. Yes.

16 Q. Thank you. So that was something else that wasn't  
17 originally part of the first instruction but you were  
18 able to provide as it became clear that would be useful  
19 to the Inquiry?

20 A. Yes, that's correct.

21 Q. And then looking at something else that's linked partly  
22 to the yellow and green box, "Still Images Brochures 1  
23 and 2. SBPI-00127 & SBPI-00129". Tell us what that  
24 was?

1           A.  So once we had created the sort of initial sets of  
2           products, our minds turned more to how we were going to  
3           utilise this within the setting, within a hearing  
4           setting, and I think we're going to go more into detail  
5           on that actual process, but part of that methodology was  
6           to produce a series of stills of the 3D model that could  
7           be used again with or without my absence, but it allowed  
8           the Inquiry to put these stills in front of a witness  
9           and allow them to take sort of initial positions and add  
10          evidence onto that -- those stills.

11          Q.  So again, in the first hearing we would -- using your  
12          evidence video timeline and the spreadsheet, the  
13          combined audio-video timeline, we would take the  
14          evidence of a witness --

15          A.  Yes.

16          Q.  -- they would look at the 3D model on the screen, they  
17          would point and -- or with the red circles identify  
18          where people had been standing --

19          A.  Yes.

20          Q.  -- with arrows to where they had been moving, and then  
21          you created in a break in the hearing still images of  
22          those areas.

23          A.  So no, the still images that we're talking about here  
24          are the other -- the views that you brought onto the

1 screen that they would actually touch.

2 Q. Oh, I see, sorry, my mistake.

3 A. So the still brochures were the ones that you referred  
4 to say, page 8, you would bring up on here and then they  
5 would put the dots on or the lines on, so it was  
6 prepared in advance specifically so that -- as part of  
7 that process.

8 Q. Sorry, that's my mistake. So these were the images from  
9 the 3D model --

10 A. Yes.

11 Q. -- of suitable areas that the witnesses could use in  
12 order to give the evidence?

13 A. Correct.

14 Q. And it was the still images that were put on the screen  
15 and the witness would then use that to identify with  
16 a red circle where they had been standing?

17 A. Correct.

18 Q. So these still images were the blank scenes --

19 A. Yes.

20 Q. -- which they would then add things into?

21 A. That is correct.

22 Q. Thank you. Sorry, that was my mistake.

23 Then as we move down on the right-hand side we see  
24 "3D Interactive Model". Can you explain what that is?

1           A.  So after -- I think again we're going to cover this  
2           a little bit later, but the second step in the process  
3           was where -- or the second and third steps were where we  
4           placed 3D models of people within the scene and live in  
5           a hearing we would allow people to take different  
6           viewpoints and adjust those positions, if they felt that  
7           they needed to be adjusted.  All of that was done on  
8           that 3D interactive model which allowed us to change  
9           positions to get a better viewpoint for the witness and  
10          allow them to decide whether the position was correct or  
11          how they wanted to move it or rotate a character within  
12          the view.

13          Q.  And was this the part where I would say to a witness  
14          "Does that look like a reasonable indication of where  
15          you were and where others were?"

16          A.  That's correct.

17          Q.  And you were able to move things around --

18          A.  That's correct, yes.

19          Q.  -- during the hearing space --

20          A.  Yes.

21          Q.  -- until that witness was happy with the image on the  
22          screen?

23          A.  Yes, correct.

24          Q.  Thank you.  Then "Evidence Video Timeline (Video)"?

1           A.  So I think we used that again a lot during the  
2           proceedings and this is the -- effectively it's a single  
3           video containing as much of the audio, video,  
4           photography evidence that we could gather, all placed  
5           onto a single timeline, so we tried to put it against  
6           what we called the real time clock which is effectively  
7           the time at which those events would happen.

8           Q.  And that was the footage that I would play with many --  
9           all of the witnesses, really, who had been at the scene?

10          A.  That's correct.

11          Q.  And we remember the real time clock had been in the top  
12          left-hand corner.

13          A.  Yes.

14          Q.  That's the one.  Then "Combined Audio and Video Timeline  
15          (Spreadsheet)"?

16          A.  Yes.

17          Q.  And that's the spreadsheet.

18          A.  That's the spreadsheet, yes, taken and based off the  
19          evidence video timeline.

20          Q.  And that's also on our website.  I have my copy here,  
21          it's a little bit dog-eared now but that's also  
22          something we were using with witnesses.

23          A.  Yes.

24          Q.  And then it says "Live Reconstruction Images" in the

- 1           grey box on the bottom right.
- 2           A. Yes, so that's more or less what we actually did live in  
3           the hearing, so taking the still images, utilising those  
4           as one of the steps and then utilising the 3D  
5           interactive model as the other to produce a series of  
6           images for each witness based on the evidence they gave.
- 7           Q. Thank you very much. Apart from what I have drawn to  
8           your attention, is there any other areas on this slide  
9           which have been updated since you did your first slide?
- 10          A. I think mainly we have added the ARLS data in the  
11          objective just because, again, that wasn't part of our  
12          initial remit. However, once we had reviewed the data  
13          and we realised that there may be some benefit to it, we  
14          then proceeded down to adding that in as part of the  
15          evidence video timeline product.
- 16          Q. And if I remember rightly, on the evidence video  
17          timeline, the ARLS data was in the top right-hand  
18          corner?
- 19          A. That's correct.
- 20          Q. Thank you. Can we move on to the next slide, please.  
21          This is headed up "Inquiry Methodology". You have two  
22          boxes there. On the left-hand side "Evidential  
23          Considerations". I wonder if you could explain what  
24          this shows?

1           A. So when we're going to -- whatever process we wanted to  
2           put into the Inquiry to be used live in these hearings  
3           we had to make sure that it was done in a way that  
4           didn't interfere with the legal process, it didn't  
5           interfere with the witness giving evidence. Things to  
6           avoid particularly is leading, so what we didn't want to  
7           do is put in place a process, or a methodology which may  
8           have affected a witness's evidence in a negative way.  
9           An example of that, for example, is if we had an  
10          operator moving a cursor round on the screen they might  
11          interfere, they might actually draw the witness's  
12          attention away from what they're looking at, it may  
13          change their evidence, so it was very critical for us to  
14          have a step where an operator was not involved, where  
15          a screen was just open to the user to just be able to  
16          select on that screen and just choose, make their own  
17          mind up without any external influences. So that's just  
18          an example of leading that again the process needed to  
19          avoid.

20          Q. So that would avoid the witness being influenced, even  
21          subconsciously, by the movement of a cursor on the  
22          screen, or other items appearing on the screen?

23          A. That's correct.

24          Q. Thank you.

1           A. The other element was that the process that we were  
2           going to decide had to be the same for every witness.  
3           It had to be fairly rigid in terms of the steps that we  
4           went through, but it also had to be flexible enough to  
5           allow the Inquiry to ask as many questions as was  
6           required, so they're two almost counteracting  
7           principles, but you have to try and find a balance  
8           between the two.

9           Q. And so we will come through each witness, come to each  
10          witness later, but I think for the majority of the  
11          witnesses who were initially at the scene and the steps  
12          taken by them, we were able to adopt -- you were able to  
13          adopt the same methodology.

14          A. Correct.

15          Q. There was one exception to that, wasn't there, that  
16          was --

17          A. Yes.

18          Q. -- Mr Paton?

19          A. Yes, PC Paton.

20          Q. But subject to that, the other witnesses went through  
21          the same process?

22          A. Correct.

23          Q. And we will come on to this in more detail shortly.

24          A. Yes.

1 Q. Then it says:

2 "Not limiting questions that can be asked of  
3 a witness."

4 Tell me what you mean by that?

5 A. So suppose we only used the first step and we only used  
6 the still images that were available, so these are quite  
7 far-out stills, the -- there may be questions that you  
8 may be asking which weren't covered within those stills,  
9 so we need to make sure that we had a process in place  
10 which, let's just say you were asking about an area  
11 further up by the garage where we hadn't produced stills  
12 for, we could still adapt the process to cover those  
13 areas as well, so we had a mechanism in place to do  
14 that.

15 Q. So you were building in some flexibility if evidence  
16 developed in a particular way and we needed other  
17 images, you would be able to produce those?

18 A. Correct.

19 Q. Thank you. And then you said:

20 "Limited information shown initially."

21 You may have touched on that. Just explain what  
22 that was --

23 A. So initially means that we were looking at a two-step  
24 process: one where we were going to be looking at the

1 stills taken from a distance and then potentially  
2 a second one where we were going to go and dive deeper  
3 into the data and try and extract further information,  
4 or more detailed information at that point.

5 Q. And so you weren't producing images to witnesses which  
6 suggested where other people may have been standing or  
7 otherwise?

8 A. That's correct.

9 Q. They had a blank -- other than the scene itself, it was  
10 blank and they could put people into that scene as they  
11 recalled?

12 A. That's correct. I think the only addition to that is  
13 sometimes we had vehicles in place, but that would only  
14 be where we knew that vehicles were in those locations  
15 at the time the people were there, so I think that's the  
16 only addition to that.

17 Q. So that was the only exception?

18 A. Correct.

19 Q. And then looking at the blue box, "Practical  
20 Considerations":

21 "Operations must be simple and fast".

22 What did that mean?

23 A. So what we didn't want to do is have huge pauses in the  
24 evidence being given and what we didn't want to do is

1 have it -- the 3D model was there to support and  
2 supplement the Inquiry; it's not there to sort of  
3 replace it, so the aim was that everything that we did  
4 was just working in the background, it was very simple,  
5 it was very fast and almost -- the person giving  
6 evidence could just engage with it very easily. Again,  
7 if there were sort of long operations, if it took a long  
8 time for the data to load or for us to move and find  
9 a position, then we don't think that that would have  
10 been suitable to be used in a live hearing. So it is  
11 a consideration, a practical consideration, that  
12 anything that we do fits in with those principles.

13 Q. So the focus for the Chair could be on the witness and  
14 their evidence, rather than on the technology?

15 A. Correct.

16 Q. Thank you. And then:

17 "Large pauses in the hearing should be avoided to  
18 keep engagement with witnesses."

19 A. Very similar to the first one, exactly the same reason.  
20 We're trying to engage witnesses in a 3D model. If they  
21 have to wait for a long time for us to manoeuvre to the  
22 right position, or to put a person in place, or,  
23 you know, to do anything like that, then we have lost  
24 their engagement and that then would have had

1 a detrimental effect to the use of the technology within  
2 the hearing.

3 Q. Right. Buffering can be very annoying, as we all know,  
4 I'm sure:

5 "Live assessment will be limited to moving people's  
6 positions and/or taxations within the 3D scene."

7 Explain this, please?

8 A. So I think we touched on this briefly the last time  
9 I gave evidence, but what we weren't looking to do is go  
10 down to the fidelity of moving arms, moving limbs and  
11 that kind of reconstruction, mainly because it takes --  
12 again, it takes a long time. The evidence would have to  
13 be very specific to back it up and then -- and the more  
14 subjective you go with these sorts of details, the less  
15 benefit, again, we felt the Inquiry would get to it. We  
16 felt that the best solution for us doing this live in  
17 a hearing would be to keep the information limited down  
18 to just understanding where people were, how they were  
19 looking, which way they were facing within the 3D view.

20 What that practically meant is that the  
21 reconstructions would run from the first engagement up  
22 to when Mr Sheku is taken to the ground, but it wouldn't  
23 go beyond that because trying to do the holds or how  
24 people moved around the body would get too complex for

1 a system to be run in real time to carry out that  
2 information.

3 Q. So, for example, if we were looking at Mr Bayoh we  
4 wouldn't be trying to replicate arm positions or where  
5 his hands were, for example?

6 A. That is correct.

7 Q. And equally if --

8 A. Yes, it isn't that the technology couldn't allow you to  
9 do that, it's more that we wouldn't want to be doing  
10 that in that space with a witness trying to give  
11 evidence in real time. We didn't feel that that was the  
12 best use of the technology.

13 Q. Right. And again, bearing in mind you want it to be  
14 quick and easy to use, would that -- it may take a lot  
15 more time to get that level of detail?

16 A. Correct, and I felt -- and I think we discussed about  
17 this earlier, whenever you needed to get that level of  
18 detail you bring them to the front and ask them to  
19 demonstrate it and we felt that was a far simpler, more  
20 practical way of getting that evidence than us to try to  
21 use the technology to bring that out.

22 Q. So we combined the technology and getting demonstrations  
23 from the witnesses, we will all remember, in the body of  
24 the horseshoe in the hearing?

1           A. That is correct.

2           Q. Thank you. Can we move on to the next slide, please.

3           Again, this is about your methodology. Looking on the

4           left-hand side, "Step 1: Initial placement". Could you

5           talk us through these bullet points, please?

6           A. So just building on what we have talked about before,

7           based on the principles of what we discussed on the

8           previous slide, we had to decide on a multi-step process

9           for doing this. The initial stage being one by which

10          the court's touch system would be used, alongside with

11          still images to be able to position and place people

12          within the scene. The vehicles were placed based on

13          analysis of Ashley Wyse's Snapchat footage, but there

14          would be a combination of some images with and some

15          images without the vehicles, so that allowed the Inquiry

16          to decide which was the most suitable image for the

17          right witness to be able to gather their evidence. As

18          I said previously, on these stills we used the court's

19          touch screen system. You have got an example down there

20          on the lower right, and you can see where we used

21          a combination of arrows and circles to gather initial

22          positions of where people felt certain events happened

23          at certain -- throughout the sequence of events that

24          they were giving.

1 All of this in terms of its recording was captured  
2 as part of the Inquiry's live hearing system, so as  
3 these things are being stored and -- recorded and  
4 stored, they're actually capturing these locations as  
5 well, for record.

6 Q. Thank you. So in the bottom right-hand corner here we  
7 see an image of Hayfield Road from your 3D model and  
8 it's a still image. This particular image has a Transit  
9 van in the bus stop and also what we came to know from  
10 the first hearing as the fish van --

11 A. Correct.

12 Q. -- behind, and then we can see the red circles, 3 to 7,  
13 near the tree area. They were applied by the witness as  
14 they gave evidence --

15 A. Yes.

16 Q. -- to that still image, and then also 1 and 2 are the  
17 purple arrows showing directions of movement.

18 A. Correct.

19 Q. Thank you. And we will remember those. And they have  
20 been -- as the witness gave that evidence and touched  
21 the screen and made those marks, we have that recorded  
22 as part of the live streaming.

23 A. Yes.

24 Q. And those are on our website now, so if anyone wanted to

1 watch that, so they have been preserved.

2 Then we look at witness positioning methodology and  
3 can you explain what this is?

4 A. So this is actually how the Inquiry -- yourself engaged  
5 with people using this part of the system. As well as  
6 positioning using the dots and the circles, you also  
7 requested an orientation from them: "Which way were you  
8 facing?" would be common, so it's "Where was he  
9 standing?" "Which way did he face?" or "Which way did  
10 she face?" to try and understand the orientation of it  
11 and then you would then talk about pose, and pose could  
12 have been something they either demonstrated in the  
13 circle, or it could be something they just talked about  
14 if it was necessary, you know, sort of "I was standing  
15 here, or I was on the ground in this way, or --"  
16 you know, other examples. But more or less these were  
17 the information that you gathered verbally at this first  
18 stage and that was important to feed into the next  
19 stage.

20 Q. And that information assisted you later, which we will  
21 come on to --

22 A. Correct.

23 Q. -- in inserting characters, coloured blue, green people  
24 into the scene?

1           A. Yes, correct.

2           Q. Thank you. Let's move on to the next slide, please.

3           Again, continuing with the methodology used, let's look

4           at step 2:

5                     "3D Positions Reconstructed."

6           On the left-hand side. Could you talk us through

7           these bullet points?

8           A. So an operator -- generally it was me throughout this

9           hearing -- would turn the circles and lines that were

10          produced into actual characters, so we would take the 3D

11          model and we would basically reflect the circles and

12          arrows and we put those as characters, based on events

13          as they happened, so it wouldn't be that every slide

14          that was created with all the circles were then put into

15          a single 3D scene because quite often there were too

16          many dots which reflected, say, three or four different

17          events all in one. Some could be reconstructed and some

18          couldn't, based on what was being discussed and what was

19          said. So we would try and reconstruct in the sequence

20          of events that they occurred, the positions of people

21          within the 3D view. The model height or the height of

22          the avatars within the view were based on evidence, so

23          it could have been from their statements, or it could

24          have been from the evidence given at the beginning of

1           their testimony as to their heights, but that would then  
2           be used to reflect the height of the characters within  
3           the 3D view.

4           Q.   So again, on the bottom left-hand corner we can see  
5           a scene of Hayfield Road from a different angle from the  
6           photograph we saw in the previous slide, which had  
7           circles and arrows on it and -- but this again is  
8           a scene from your 3D model that you created?

9           A.   Yes.

10          Q.   And we can see that the green person is on the footpath,  
11          so this is a snap shot, if you like, of a moment in  
12          time.

13          A.   Yes.

14          Q.   It's not an animation -- I think you said in the first  
15          hearing, it's not Pixar or Disney, it's not a cartoon  
16          you're creating.

17          A.   Correct. We just want to catch a snapshot of what  
18          people are talking about and that's how they basically  
19          remembered the scene, they remembered it as a series of  
20          snapshots of where people ended up and how they moved  
21          and that's how this evidence had to reflect it.

22          Q.   All right. There may be more than one position for the  
23          same person being reflected in a particular scene?

24          A.   Correct.

1 Q. But you were able to show that on this snapshot, and  
2 model heights based on evidence, I asked many witnesses  
3 for their height.

4 A. Yes.

5 Q. Again, that was with a view to assisting you because  
6 your technology permits you to put in a particular  
7 height?

8 A. That's correct. For some of the officers we had  
9 evidence beforehand as well as to their height, so we  
10 had some information before, but that would be confirmed  
11 by what was given in evidence as well.

12 Q. Thank you. Then looking at the purple box it says:

13 "Step 3: Live Adjustment of 3D Positions."

14 And for those of us that were here, we will remember  
15 this part, but could you take us through the bullet  
16 points.

17 A. So as sort of mentioned previously, you would ask -- we  
18 would go to a view within the 3D model and you would ask  
19 them whether it was indicative, or whether they wanted  
20 to make an adjustment, so it allowed the witness to  
21 effectively look at where we had positioned people and  
22 adjust them accordingly and it might be just a rotation,  
23 an orientation, or it might be that they want to move  
24 two people closer together or further apart and it just

1           allowed them to refine that solution down based on the  
2           fact that we now had characters at the correct height  
3           now positioned in that scene, so it allowed effectively  
4           a refinement of their initial evidence. That had to be  
5           done with an operator, so I would be sat generally in  
6           that corner over there and I would do the movements for  
7           them based on their descriptions and which way they  
8           wanted to move it, but always to their direction.

9           Again, as explained before, movements are only  
10          limited to position and orientation, so we weren't  
11          trying to do anything more than that, but just  
12          understand their evidence in terms of where they  
13          believed people were at specific times.

14          We did give people an option to use a line of sight  
15          view and this is where a virtual camera would drop to  
16          the person's line of sight, so would drop to an eye  
17          height position and just look in the orientation that  
18          they were looking at. It should be noted that we only  
19          ever took line of sight for the person giving evidence,  
20          so the witness could say "Can I take that line of  
21          sight?" and we would take that person's view. What we  
22          wouldn't do is we would never have taken the line of  
23          sight of somebody else within the view because that  
24          witness couldn't comment on that, so it was always

1 a limitation that line of sight could only ever be done  
2 on the witness that was giving evidence and all these  
3 views were then stored on the digital system for us to  
4 retrieve later and produce as a report.

5 Q. Thank you. Let me just ask you a few more questions  
6 about that, if I may.

7 A. Of course.

8 Q. So this was the interactive phase of your -- and the  
9 method that was adopted?

10 A. Correct.

11 Q. And this was the point where you were in the room and  
12 the witness would say "Could you move a character  
13 slightly to the left, or slightly to the right"?

14 A. Yes.

15 Q. And it was providing that refinement of what the  
16 witness' position or view was --

17 A. Yes.

18 Q. -- to assist the Chair with understanding their  
19 evidence?

20 A. Yes.

21 Q. And although maybe your technology would allow you to  
22 show lines of sight for all sorts of people, you  
23 restricted it to only the person who could comment on  
24 that actual line of sight?

- 1           A. That's correct.
- 2           Q. But I understand with line of sight that it's not  
3           exactly a replication of the human eyesight.
- 4           A. No, the aim of the line of sight is just to get an idea  
5           of potential obstructions that may have been in the way,  
6           but what we can't do is we can't say that that is  
7           a person's vision, or what a person saw, because that's  
8           not what the system is designed to do. There are  
9           various differences between the way the human eye works  
10          and a camera in the real world and a camera in the  
11          virtual world, so it is an understanding that it is just  
12          a reflection, an idea, and a way of helping that person  
13          give their evidence.
- 14          Q. So this isn't an attempt to replicate exactly  
15          a witness's eyesight, we're not asking for prescriptions  
16          or --
- 17          A. No.
- 18          Q. -- anything of that ...
- 19          A. Correct.
- 20          Q. So to that extent that line of sight, again, would be  
21          indicative rather than an absolutely accurate reflection  
22          of their own eyesight?
- 23          A. I think we would need to also bear in mind that we have  
24          asked to position these people based on memory, so even

1 to the best will in the world, there's huge scope for  
2 that to be incorrect and it's just understanding that  
3 that really it is a tool to help them understand --  
4 you know, and gather their evidence as best we can.

5 Q. So is it fair to say that it's still a matter wholly for  
6 the Chair to actually assess the witness's own evidence?

7 A. Correct.

8 Q. Thank you. And again, you said all of this is recorded,  
9 this process was recorded as part of the live-streaming  
10 of the witness's evidence?

11 A. Correct, as well as being stored on the digital -- the  
12 interactive cloud system as well.

13 Q. Thank you. Could we move on, please, to the next slide.  
14 So this is us, we have dealt with the methodology and  
15 the process that was followed with the witnesses during  
16 the hearing, and we're now moving on to five slides  
17 which will discuss this topic, the Ford Transit van  
18 position.

19 A. Correct.

20 Q. And so let's start with this one. Can you explain to  
21 the Chair what we see on this slide, please?

22 A. So I believe when PC Walker was giving evidence he  
23 noticed that there was an inconsistency between the 3D  
24 model and the police vehicle, for the Transit van, and

1 I think in his statement he said that you can see that  
2 the passenger rear wheel is touching the yellow line of  
3 the bus stop and in the 3D model it isn't. He drew the  
4 conclusions that either the line is incorrect or the  
5 vehicle position is incorrect. What we did, whilst he  
6 was reviewing the evidence is we had a look at the 3D  
7 model, we had a look at the evidence and we realised  
8 that he was correct in his assessment in terms of the  
9 vehicle position was not exactly in the right position  
10 and we had to try and work out how that had happened.

11 Here you can see the vehicle and you can see its  
12 rear passenger wheel and it's not touching the yellow  
13 line as it is within the Ashley Wyse video footage.

14 Q. So on the left-hand side the heading is "PIRC-00371 -  
15 Ashley Wyse Snapchat footage." So this was a still  
16 taken from the Snapchat footage which was embedded into  
17 the evidence video timeline?

18 A. That's correct.

19 Q. And that was taken -- we have heard evidence -- by  
20 Ashley Wyse on her phone from a window in her property  
21 nearby.

22 A. Correct.

23 Q. And on the left we see the original location of the  
24 Transit van, so the same van we see on the left-hand

1           side photo --

2           A. Yes.

3           Q. -- towards the bus stop, but the rear passenger side,  
4           the nearside wheel is not on the bus stop line?

5           A. That's correct.

6           Q. And this came out during PC Walker's evidence to the  
7           Inquiry?

8           A. Yes.

9           Q. Can we move on to the next slide, please. So take us  
10          through this please, if you don't mind.

11          A. So to find out the issue, or where we had gone wrong we  
12          needed to break the problem down and we needed to look  
13          at each stage separately to understand where the error  
14          could have occurred. Our first step was to look at the  
15          3D model and to ensure that the 3D model was accurate  
16          because that was essential to everything that we were  
17          doing and everything that we had put in play, so what we  
18          did is we effectively put in a line -- you can see it on  
19          the screen as a red line -- and we compared the 3D model  
20          to the 2015 laser scan data that was captured, I believe  
21          by a road traffic collision unit at the time so --

22          Q. You gave evidence about that at the first hearing,  
23          didn't you?

24          A. Yes. So we know that -- so what we were looking to do

1 is just to check that the lines aligned and that the 3D  
2 model was an accurate reflection of the lines that were  
3 there at 2015. In this case they were, so we could rule  
4 that out as being the error, the model was accurate.

5 Q. And so the photo on the right -- the image, sorry, on  
6 the right is from the 2015 laser scan data?

7 A. That's correct.

8 Q. And that was the first step in checking that your 3D  
9 model -- there wasn't an error in that?

10 A. That is correct.

11 Q. And you took the view that -- having checked it, you  
12 checked that was correct.

13 Let's move on to the next slide, please. So this is  
14 "Verify the photogrammetry". Can you explain to us what  
15 you did here?

16 A. So just a very quick recap of how we carry out the  
17 photogrammetric process: we take a still from the video  
18 footage and we assess that using common points between  
19 the scene that's visible within the photograph and we  
20 align that photograph to within the 3D view. What we  
21 then do is once the two are aligned we look at contact  
22 points between a vehicle or a person and the ground and  
23 then we try and measure those points and they act as our  
24 reference for adding models in, so what you can see here

1 on the left-hand side is an output from the  
2 photogrammetry package and in the centre you can see the  
3 Ford Transit and you can see three dots which represent  
4 the position of the wheels that we have measured within  
5 the scene.

6 On the right-hand side you can again see the 2015  
7 data set and you can see effectively the three points  
8 are marked out as two lines and you can see the corners  
9 of those, or the edges -- the corners of those being  
10 those points. The point being that when you look at  
11 that passenger rear wheel, again, it is touching that  
12 line, or it's -- you know, it's in contact with that  
13 line, so again, it showed us that actually the  
14 photogrammetry again was not the cause of this issue.

15 Q. So on the left-hand photograph we can see a still,  
16 again, from the Ashley Wyse Snapchat footage, is that  
17 correct?

18 A. Correct.

19 Q. And from that Snapchat footage the photogrammetry has  
20 identified sort of white dotted lines?

21 A. Yes.

22 Q. And on the Transit van that we can see, the white dotted  
23 lines are for the two rear wheels and the front driver's  
24 side wheel?

1 A. Correct.

2 Q. And then the white line that we see on the right-hand  
3 side 2015 data scan image, shows where those two rear  
4 wheels would be and the front driver's side wheel?

5 A. That is correct.

6 Q. Thank you. And then can we move on to the next image,  
7 please. This is "Verification of Vehicle Positioning",  
8 and you've got three images here, (a), (b) and (c).  
9 Could you talk us through those?

10 A. So the image (a) is when we first placed the vehicle  
11 into the scene and what you will notice is that the  
12 wheel is in the right position, it's in the correct  
13 position as per the photogrammetry. However, when we  
14 put that vehicle in position, one thing that became  
15 abundantly clear is that the 3D model that we had used  
16 for the Ford Transit wasn't of the correct dimensions.  
17 Ford Transits come in various shapes and sizes and one  
18 thing that can vary between different models is the  
19 wheelbase, so it's the distance between the wheels.

20 The vehicle that the police use is a standard  
21 wheelbase, but the model that we had was a long  
22 wheelbase, so what we had to do is remove that model  
23 from the scene, adjust its position -- or, sorry, adjust  
24 its dimensions and then put that back into the scene

1           again.

2           When we put that back into the scene we put that  
3           back into, as you can see, in position B and it is in  
4           positioning it back into the scene that we have  
5           introduced the error. It is a human error, there's no  
6           getting away from that. When we put it back in, we did  
7           not put it in the right place. Where we should have  
8           placed it is shown in (c) and that's where that vehicle  
9           should have been put back to, again, back to the lines  
10          that were shown in the photogrammetry.

11         Q. So you discovered where the human error had occurred?

12         A. Correct.

13         Q. And it was the different model type --

14         A. Correct.

15         Q. -- from the Police Scotland Transit van. You had used  
16          a long wheelbase instead of the standard wheelbase  
17          model.

18         A. That's correct.

19         Q. And is that model something that you have in your system  
20          automatically or do you --

21         A. No, all of the -- again, it's my first report, but the  
22          majority of the vehicles that we would use would be sort  
23          of third party models. For us to model every vehicle  
24          that would be in the scene would be sort of far too much

1 work.

2 What we often do is we go back and we look at  
3 manufacturer's details, so we check that the sizes match  
4 those, but obviously in the case of a Ford Transit,  
5 there are multiple dimensions that are available --

6 Q. So the wrong wheelbase was selected?

7 A. Correct.

8 Q. But having identified that and corrected it, picture (c)  
9 is the correct model, the correct wheelbase and in the  
10 correct position?

11 A. Yes.

12 Q. Right. So that arose because of, I think, PC Walker  
13 identifying that during the course of his evidence, that  
14 was on 19 May this year.

15 A. Yes.

16 Q. And in light of that you then carried out this exercise  
17 to double check to see what the issue was.

18 A. I should also say that when we did recheck the Transit  
19 van we also rechecked all the other vehicles as well as  
20 part of that process and we were happy and content that  
21 they were in the correct position, so it only affected  
22 this one vehicle.

23 Q. And from memory, no other witness indicated any problem  
24 with the positioning of the vehicle that they had

1 spotted themselves?

2 A. No.

3 Q. Thank you. Thanks very much. Can we look on to the  
4 final slide. So this is the final slide about the Ford  
5 Transit van position and you just say "Steps taken to  
6 Rectify", and just for completeness can you talk us  
7 through this.

8 A. So at the point when this was realised, PC Walker had  
9 already given the majority of his evidence. We  
10 decided -- obviously we couldn't change it quickly  
11 enough for him to give his evidence on the corrected  
12 position, so we decided at that point any evidence that  
13 he had created, we would put a note by it which would  
14 reflect that the vehicle is not in the right position  
15 for his evidence.

16 We felt that the distance wasn't sufficient enough,  
17 so it's not that the vehicle was so far out that it  
18 would affect his evidence, but obviously if the Chair  
19 felt that, he could have asked PC Walker to come back  
20 and redo the exercise if that was necessary, so any  
21 evidence that was captured from PC Walker had  
22 a supplementary note added to it just to cover off the  
23 fact that this error exists.

24 For all other witnesses, the vehicle position was

1 corrected in the still images and in the 3D live view,  
2 so when they were positioning themselves through the  
3 process we have talked previously, that was all done  
4 with the correct position in the corrected -- the  
5 correct size vehicle in the correct position.

6 The one area that we couldn't change is in the  
7 evidence video timeline. Because of the amount of  
8 effort that that would take and the length of time it  
9 would take to correct it, it just wouldn't have been  
10 possible to move that vehicle and re-render everything  
11 and not affect the timetable that the Inquiry is working  
12 to. It was felt that the way that tile was being used  
13 in evidence it wouldn't significantly affect the Inquiry  
14 and its progression, so it was decided that that was an  
15 acceptable compromise.

16 Q. So you raised all these possibilities, bringing  
17 PC Walker back and all of that, with the Inquiry and the  
18 decision was taken not to go down those very lengthy  
19 correction methods?

20 A. That's correct.

21 Q. So let me just be clear so everyone understands, in the  
22 evidence video timeline, so that's the footage that's  
23 combined that we used with the witnesses, the tile in  
24 the middle at the top, the little reconstruction tile,

1           the position of the Transit van was not corrected on  
2           that?

3           A.   Yes.

4           Q.   And that will be something the Chair will have to bear  
5           in mind if he is watching any evidence, or considering  
6           any evidence regarding that reconstruction tile on the  
7           evidence video timeline?

8           A.   That's correct.

9           Q.   In relation to all of the witnesses after PC Walker gave  
10          evidence, the stills and the 3D model, the Transit van  
11          was in the correct position?

12          A.   Yes.

13          Q.   So the Chair would not need to consider that for any  
14          witnesses after PC Walker?

15          A.   Yes.

16          Q.   But for PC Walker himself, the corrected position was  
17          not done --

18          A.   That's -- yes.

19          Q.   -- at that time.  So the Chair will have to bear that in  
20          mind when he is looking at any of that evidence.

21          A.   And hopefully any images that have that in will have the  
22          note so that he is aware of that.

23          Q.   So you have put a note on that in the images we will  
24          come to in a moment in your slides, but it's also

1 detailed in your supplementary report?

2 A. Yes.

3 Q. So there will always be a reminder for the Chair that  
4 there was an issue about the position of the Transit van  
5 in the first images used with PC Walker?

6 A. Yes.

7 Q. Thank you. Thank you very much. I suppose we should  
8 say on the right-hand side you have given us an image  
9 which says:  
10 "Transparent model shows incorrect position, opaque  
11 model is in the correct position."  
12 So this shows both the incorrect initial position  
13 and the corrected position?

14 A. Yes, that's correct.

15 Q. So the incorrect one is the slightly grey transparent  
16 one?

17 A. Yes.

18 Q. And then the white opaque one is the correct position?

19 A. Yes.

20 Q. And you have given us some little measurements there in  
21 terms of the distance between the wheelbase for both  
22 those versions?

23 A. Yes, the rear wheel.

24 Q. Thank you. Let's move on please to the next slide and

1 leave that Ford Transit van and let's move on to the  
2 live reconstruction images. Now, the next session on  
3 your slides relates to those reconstructions and it says  
4 here:

5 "Witnesses who used the live reconstruction process  
6 were ..."

7 And this is the process where you've got the  
8 interactive section with the witness that you have  
9 described, so it was you've got here PC Walker,  
10 PC Short, PC Tomlinson, Mr Nelson and PC Paton and, as  
11 we said, Paton is -- there's a variation in relation to  
12 that. Can you just explain that?

13 A. So for PC Paton's evidence I believe it was a closed  
14 session, so carried out slightly differently and for  
15 that -- for him to be able to do that he covered steps 1  
16 in which case -- where we used the stills images to  
17 position himself, but he didn't progress or didn't  
18 fulfil the requirement to progress to stages 2 or 3. So  
19 we have the dots and the positions and the circles for  
20 him, but what we don't have is we don't have the  
21 corrected positions for his evidence.

22 Q. So we didn't have the benefit of you sitting in the room  
23 with Mr Paton doing the fine-tuning that you did with  
24 the other witnesses?

1 A. Yes.

2 Q. So for the Chair's purpose he should bear in mind that  
3 that part of the process wasn't carried out with  
4 Mr Paton?

5 A. Yes, and we didn't attempt to reconstruct it because he  
6 wouldn't have been there to verify it and again, that  
7 wouldn't have been a correct process.

8 Q. So although it would have been possible for you to go in  
9 and try and replicate that process, it wouldn't have had  
10 the benefit of him looking at the screen at the same  
11 time in real time with you in the room?

12 A. Correct.

13 Q. So that wasn't done for fear of, what?

14 A. Yes, so that wasn't done for Paton but it was for  
15 others.

16 Q. Thank you. Then you say:

17 "The brochures, animations and spreadsheet were used  
18 with other witnesses but they were not asked to position  
19 people."

20 What does that mean?

21 A. So that's to say that the evidence video timeline, for  
22 example, was used, and the spreadsheet was used for  
23 multiple witnesses beyond the five people that you see  
24 here, so when we're talking about the five people here,

1 we're specifically talking about the live  
2 reconstruction, but the other products were used  
3 significantly with multiple more -- a few more witnesses  
4 who attended the scene.

5 Q. For example, we heard evidence from a number of  
6 witnesses who had made emergency calls to the police,  
7 some of which we were able to listen to and we could see  
8 Harry Kolberg's dash-cam, the mobile phone footage from  
9 his son --

10 A. Yes.

11 Q. -- and we used the spreadsheet and the evidence video  
12 timeline for those witnesses, but this was not the  
13 process that was followed with them, they weren't at  
14 Hayfield Road in the events.

15 A. No, no.

16 Q. Before we move on to the next images let's just finish  
17 the final bullet point:

18 "In the following images the reconstructions are  
19 ordered by sequence of events, not by the order that the  
20 evidence was given [necessarilly] by a witness."

21 A. Yes.

22 Q. Tell us about that?

23 A. So quite often when evidence was given you had asked  
24 someone to position themselves, but then you might draw

1           them back to an event that happened previous to that, so  
2           what that means is the numbers that came up might be 1,  
3           2, 3, 4, but the actual order of sequence of events  
4           might be 3 and 4 and then 1 and 2, so what I want to  
5           just point out is that just because you see the numbers  
6           in sequence in the first panel, that doesn't necessarily  
7           mean that that was the sequence of events as they  
8           occurred and what we have tried to do is -- when we have  
9           gone to steps 2 and 3 -- is show the sequence by event,  
10          not necessarily by the order that evidence was captured,  
11          so it just means that those numbers might not be  
12          sequential or might not be shown in order.

13         Q. So don't be distracted or confused about the numbers --

14         A. Correct.

15         Q. -- which may appear, and so for the Chair's purpose will  
16          it be important for him to watch the actual recordings  
17          of the sessions, if he wishes to go back over that?

18         A. I think that would always be useful when looking at what  
19          was done, to bear in mind how the evidence was gathered  
20          initially and then how that reflected into the 3D model.

21         Q. Thank you. And before we move on to the next series of  
22          slides, you -- as I understand it, you do consider it  
23          important for the Chair to make all the decisions about  
24          the actual evidence himself --

1 A. Yes.

2 Q. -- and not be distracted by the technology.

3 A. The technology is here to support, it's (inaudible).

4 Q. Thank you. Let's move on then, first of all, to  
5 PC Walker and the images that were created with his  
6 evidence. There's five slides that you have produced  
7 and so let's look at that.

8 PC Walker gave evidence on 19 and 20 May this year  
9 and I would like to go through these images, so this is  
10 slide A, A.1, and you have said:

11 "PC Walker describing the locations of people as he  
12 exits the vehicle."

13 Now, at the bottom you've got your note "Ford  
14 Transit location is incorrect. See Supplementary  
15 Report, section 3 for details"?

16 A. Yes.

17 Q. So you have given the full details again in your  
18 supplementary report.

19 A. Yes.

20 Q. Let's just look at the images for the moment. Can you  
21 explain to the Chair what we see here, please?

22 A. So we have two images, one on the left and one on the  
23 right, and this will be the format for the next few  
24 slides as well. The image on the left will always

1 reflect step 1 of the process, the image on the right  
2 will reflect where we ended up at the end of step 3, so  
3 step 1 being the using the court's system to place  
4 circles and lines onto the fixed image, and step 3 being  
5 once the reconstruction has been complete and the  
6 witness has been given the opportunity to adjust and  
7 move the positions of the people within the scene.

8 In this specific case, so PC Walker was asked to  
9 describe where people were as he exited the vehicle and  
10 he positioned himself as position 1 on the left-hand  
11 screen. He positioned Mr Bayoh as 2 and he -- and  
12 PC Paton as 3.

13 What you can then see on the right-hand side are  
14 those figures reflected in the 3D view.

15 Q. So the image on the right-hand side is the end product,  
16 really, after the full process has been carried out --

17 A. Yes.

18 Q. -- involving you sitting in the room and refining the  
19 positions in light of PC Walker's evidence?

20 A. Yes. I think it should be just noted that wherever we  
21 have shown that second image, we have always tried to  
22 include that first image as well as a sort of  
23 completeness of the record of what was done.

24 Q. So the first image was a scene, a still from

1 Hayfield Road and the red circles were applied by the  
2 witness themselves?

3 A. Yes.

4 Q. Independently of you?

5 A. Correct.

6 Q. And then the image on the right is the image where you  
7 have interacted with the model and, through the evidence  
8 of the witness, that has been refined?

9 A. Yes.

10 Q. But you have been involved in that process?

11 A. Yes.

12 Q. Thank you. You have also, as part of this exercise,  
13 indicated in the grey boxes at the bottom where this can  
14 be located?

15 A. That's correct. So if you wish to look back at the  
16 evidence, you should be able to find quite quickly  
17 which -- where these bits of evidence were captured  
18 from.

19 Q. So, for example, on the left-hand side at:

20 "(a), initial locations identified, PC Craig Walker  
21 (pm)..."

22 It was in the afternoon, of 19 May this year, and  
23 you have also given the time, and would that mean if  
24 someone was going onto our website, for example, to look

1 in the hearings hub, they could identify the evidence of  
2 PC Walker and find this part of his evidence at that  
3 time?

4 A. Yes.

5 Q. Thank you. And again the same on the right-hand side,  
6 image (b):

7 "Refined positions. PC Walker (am) 20/5/2022. From  
8 02.01.30."

9 A. Yes.

10 Q. And again, someone who is looking at the evidence from  
11 20 May, the following morning, they should be able to  
12 find this aspect of the evidence at just over 2 hours  
13 into that session.

14 A. That's correct.

15 Q. Thank you. Could we move on to the second of  
16 PC Walker's images which should be A.2:

17 "PC Walker describing locations of people as  
18 PC Paton deploys CS Spray."

19 Talk us through what we see here.

20 A. So again, the left-hand view is from one of our still  
21 images. You have the roundabout and Gallaghers pub  
22 towards the top of the image, so you're looking along  
23 Hayfield Road towards the roundabout. You can see the  
24 Ford Transit to the lower right. There are three

1 circles that PC Walker positioned for this specific time  
2 point and position 3 is his own position, position 1 was  
3 Mr Bayoh, and position 2 was PC Paton.

4 Q. Thank you. And again we see some red lines from a house  
5 on Hayfield Road in the image on the left.

6 A. Yes, they were part of the still brochure because we  
7 were requested to -- as well as producing some images  
8 with vehicles in, we were also requested to produce some  
9 with a few dimensions in as well, so just as part of  
10 that still set we had some measurements in there, but  
11 they weren't overly relevant or used.

12 Q. But they are there at that time. I find them a little  
13 bit small on my screen, but that will be capable of  
14 being viewed later.

15 A. Yes.

16 Q. And again, regarding the Transit van, you have properly  
17 at the bottom of this image said "Ford Transit location  
18 is incorrect ..."

19 A. Yes.

20 Q. So again, you're reminding the Chair when he looks at  
21 this about the evidence about the Transit van?

22 A. Yes.

23 Q. And then on the right, tell us what that image is?

24 A. So the right image is the final product, or the final

1 step 3 result which shows the corrected positions as per  
2 PC Walker's evidence.

3 Q. Thank you. And again you have kindly given us the date  
4 and timing of the location in the live streaming or the  
5 recorded footage that these images can be found?

6 A. Yes.

7 Q. Thank you. Let's move on to A.3, please. So this is  
8 the third of PC Walker's images and it says:

9 "PC Walker describing locations of people as he  
10 deploys PAVA Spray."

11 Could you tell us what's on the left here?

12 A. So again, it's a similar viewpoint to the previous  
13 slide, I think it might be the same image even, but  
14 critically here we're focusing on positions 6 and 7,  
15 where 6 is PC Walker's position and 7 is Mr Bayoh's  
16 position and this is the point at which PC Walker says  
17 he deployed the PAVA spray.

18 Q. And is this an example on the left of multiple numbers  
19 and red circles appearing?

20 A. Correct.

21 Q. But in terms of the refined position, the focus has been  
22 on the locations of people as Walker deploys the PAVA  
23 spray?

24 A. Yes.

- 1 Q. Thank you. And again, we see the note to remind the  
2 Chair at the bottom and also the dates and times of  
3 the -- not the times, but how far into the recording  
4 they will find the footage.
- 5 A. Yes.
- 6 Q. Thank you. Let's move on to A.4, please, and this says:  
7 "PC Walker describing locations of people post PAVA  
8 deployment."  
9 So this is after the PAVA has been deployed and  
10 sprayed. Tell us what we see on the left first of all.
- 11 A. Again, similar viewpoint looking up Hayfield Road  
12 towards the roundabout, and here we're focusing on  
13 positions 1 and 2 and this was -- PC Walker describes  
14 having the effect of the PAVA spray and then he  
15 describes a moment of not knowing where he is or how he  
16 is moving, but then he says he felt that he ended up in  
17 position 1 with PC Walker in position 2, so that's  
18 reflected on the left-hand side.
- 19 Q. This is -- sorry, PC Walker describing locations --
- 20 A. Yes, so basically -- he basically talks about being  
21 affected by the PAVA spray and then he says he doesn't  
22 know how he got there, but he remembers himself being by  
23 the rear passenger wheel of the Ford Transit, and  
24 PC Paton being to his side and those were the

1 positions -- 1 and 2 are the positions that he  
2 identified on the left-hand side and then they're  
3 reflected onto the 3D model onto -- into part (b) on the  
4 right side.

5 Q. So on the right-hand side image we can see two blue  
6 characters.

7 A. Yes.

8 Q. The one on the left as we look at this image has the  
9 name PC Walker at the top?

10 A. Yes.

11 Q. And the one at the right has PC Paton at the top?

12 A. Correct.

13 Q. And again these are -- these were refined positions in  
14 light of PC Walker's evidence?

15 A. Yes.

16 Q. But again, you have put the note at the bottom of this  
17 slide for the Chair to bear that in mind.

18 A. Yes.

19 Q. And again, you have given us the dates that the evidence  
20 was given and the place within the recording that it can  
21 be found.

22 A. Yes.

23 Q. So again, it's a snapshot of a moment that was described  
24 by the witness, but again on the left-hand side image we

1           can see multiple red circles that maybe talk about  
2           different phases.

3           A. Yes.

4           Q. Thank you. Can we look at the final image from  
5           PC Walker's evidence please. This is A.5:

6                     "PC Walker describing location where PC Short fell  
7                     and was allegedly stomped."

8                     Now, could you describe what we see on this final  
9                     image from PC Walker.

10          A. So on the left-hand side you can see -- on the left-hand  
11          image you can see the roundabout to the right-hand side  
12          of that image, or you can see the line markings of that  
13          roundabout, so we can see Hayfield Road approaching the  
14          roundabout from left to right and on there you've got 1  
15          and 2, 1 being PC Short's position when she fell and was  
16          allegedly stomped and then position 2, Mr Bayoh's  
17          position when he allegedly stomped PC Short.

18                     When we go on to the second image, so we look on the  
19                     right-hand image, we are actually looking from the other  
20                     side of the road, so we're looking from the houses' side  
21                     into the road, so you can see the initial split in the  
22                     line marking on the left-hand side of that image and you  
23                     can see the Ford Transit van to the right-hand side of  
24                     that image.

1 Q. Where is the roundabout on the right-hand side image?  
2 A. So it's to the left of that image, so --  
3 Q. But on the left-hand image, the roundabout is on the  
4 right?  
5 A. Yes, it's going to get a bit confusing. If you imagine  
6 looking from -- if you take the left-hand image and you  
7 imagine looking from just above the houses back into the  
8 view then that's the view that you see on the right-hand  
9 side.  
10 Q. And is it fair to say -- and people may recall -- that  
11 sometimes witnesses changed images to make it easier for  
12 them to give evidence?  
13 A. Yes.  
14 Q. So looking at the right-hand image then, I see the green  
15 character is Mr Bayoh?  
16 A. Correct.  
17 Q. And the blue character is PC Short?  
18 A. Yes.  
19 Q. Thank you. And tell us what we see other than that in  
20 the right image.  
21 A. So as already explained, some of the poses and some of  
22 the -- were -- sorry, let me start again. Beyond  
23 capturing position and orientation, the poses or actions  
24 that were carried out were sometimes demonstrated within

1 the horseshoe, as you have described earlier. As I said  
2 before, the point of our technology isn't just to do  
3 everything in 3D. Where we can include -- where people  
4 have given demonstrations, it's a lot easier just to  
5 show that within the view, so what we have done is we  
6 have captured a still and it should note that it is just  
7 a still of the reconstruction carried out by PC Walker  
8 of the alleged stomp. Maybe we tried to capture it at  
9 sort of the highest point of the stomp to show that  
10 element of it, but obviously you asked him to  
11 demonstrate things like the force and things like that,  
12 so there are things that won't be captured just in the  
13 still, but it gives an idea of the moment that PC Walker  
14 is describing when he is describing these events.

15 Q. Right. So in the image on the right we can see the  
16 green character is said to be Mr Bayoh.

17 A. Yes.

18 Q. But during PC Walker's evidence, I asked him to do  
19 a demonstration in real life in the hearing space and in  
20 the grey box below this image we see that you have said:

21 "Refined positions, PC Walker [in the morning on  
22 20 May, 2 hours 13 minutes into the footage]."

23 And:

24 "Inset PC Walker demonstrating the alleged stomp."

1           And you have given PC Walker in the morning of  
2           20 May, 31 minutes in. So you have not only given  
3           a reference for the chair of when the image can be seen  
4           on the screen, but also when he can find the  
5           demonstration that can be seen and this is only a still  
6           of PC Walker's demonstration of what he said he saw  
7           Mr Bayoh do.

8           A. Yes.

9           Q. But that's not part of the process with the 3D model as  
10          question see Mr Bayoh standing is a green figure on the  
11          3D model but just standing?

12          A. Correct.

13          Q. So the Chair will have to look at both --

14          A. Yes.

15          Q. -- together to get a full picture?

16          A. Yes.

17          MS GRAHAME: Thank you. Lovely. Well, I would like to move  
18          on now to the next series of images from the evidence of  
19          PC Short.

20                 I wonder if that would be a suitable --

21          LORD BRACADALE: If that's a convenient point we can take  
22          a break. So a 20-minute break.

23          (11.17 am)

24                                 (Short Break)

1 (11.45 am)

2 LORD BRACADALE: Yes, Ms Grahame.

3 MS GRAHAME: Thank you. We were just about to move on to  
4 the series of slides in relation to PC Short's evidence,  
5 so if we could move on to that. I think I have it as  
6 seven slides beginning with number 18, but I might be  
7 wrong. That's it, excellent. So we're calling this  
8 B.1, "PC Short's Images". Now, PC Short gave evidence  
9 to the Chair on 24 May this year and I would just like  
10 to go through these seven slides please, so B.1:

11 "PC Short describes locations of people as she exits  
12 her vehicle."

13 We heard from PC Short that she was a passenger in  
14 the fish van, the smaller van behind the Transit van --

15 A. Yes.

16 Q. -- which we can see here. Describe to the Chair,  
17 please, what we see here?

18 A. So as per previous images on the left-hand side we have  
19 the stage 1, or step 1 image where PC Short has  
20 indicated the location of Mr Bayoh shown as position 3.,  
21 position 2 as PC Paton and 1 as Walker. We can see,  
22 again, just looking at that image, we can see that we're  
23 looking at Hayfield Road with the roundabout to the  
24 left-hand side of that image.

1           On the right-hand side we can see the reconstructed  
2 view with PC Short added to her location just exiting  
3 the vehicle. This was done so that she could take her  
4 line of sight and take a view into the scene so she  
5 could make adjustments, or affirm or disagree with what  
6 had been created and again, you can see -- so you can  
7 see PC Short by the fish van and you can see PC Paton  
8 and PC Walker by the Transit and Mr Bayoh by the tree.

9       Q. And the small insert on the right-hand side, is that the  
10 line of sight you mentioned?

11      A. That's the line of sight image taken from Nicole Short's  
12 position.

13      Q. Now, again, can you tell me, is that taken as a line of  
14 sight with the height adjusted for PC Short?

15      A. Yes, so that's taken from an eye height position of  
16 someone of her height.

17      Q. So her height is put into your model, but obviously not  
18 her particular prescription --

19      A. Yes.

20      Q. -- if I can say that.

21      A. Yes, I mean what the software does is it works out  
22 the -- so if you put the height of the person in, it  
23 work out their eye height based on a percentile value,  
24 so it understands that height, but obviously it's not

1 taking into account the fact that it is a person with  
2 two eyes, or those sort of human vision issues that we  
3 discussed earlier.

4 Q. But this -- the vision -- the images on the right-hand  
5 side were discussed in the evidence of PC Short and  
6 again, you have given us in the grey box at the bottom  
7 the reference where that can be found for the Chair to  
8 consider at a later date?

9 A. Yes.

10 Q. Thank you. And then moving on to B.2, please.

11 "PC Short describes movement of Mr Bayoh along  
12 path."

13 Tell us what we see here?

14 A. So in the image on the left, again we've got the  
15 roundabout to the left-hand side, and she described  
16 this -- I would like to say shadowing, I can't remember  
17 quite her word for it.

18 Q. I think -- I will be corrected if I'm wrong -- it was  
19 mirroring?

20 A. Mirroring, correct, yes, I remember now. She talked  
21 about mirroring his movement, so she talked about him  
22 moving along a path and then she talked about herself  
23 mirroring his movement, possibly somewhere behind him,  
24 so we started to recreate that area of her evidence and

1           the reconstruction she came up with was on the  
2           right-hand side which showed her still on the path  
3           but -- on the pavement but it showed Mr Sheku walking  
4           along the path.

5           Q. So just to be clear, on the left-hand side image we can  
6           see 1 and 2 and you have given the boxes:

7                     "(1) Movement of PC Short mirroring Mr Bayoh's  
8                     movement."

9           A. Yes.

10          Q. And then:

11                     "(2) Movement of Mr Bayoh along path."

12          A. Yes.

13          Q. And then on the right-hand side these are the refined  
14           positions and that evidence was given by Nicole Short in  
15           the afternoon of 24 May and the green figure is  
16           Mr Bayoh's position as he starts moving along the path  
17           and the blue figure is PC Short's position as he had  
18           started moving along the path.

19          A. Yes.

20          Q. And I should have said in relation to the earlier image  
21           as well, in these stills, the Transit van position has  
22           been corrected?

23          A. Yes.

24          Q. So for all of the stills that we now see moving forward

1 in your PowerPoint, the Transit van has been corrected?

2 A. That's correct.

3 Q. Thank you. So the Chair will not see the note at the  
4 bottom of these slides to remind him.

5 A. Yes.

6 Q. Thank you. Let's move on to B.3:

7 "PC Short describes locations of people as Mr Bayoh  
8 reaches furthest point along path."

9 So this is a dynamic situation that's being  
10 described and tell us what we see in your slides here --  
11 on your slide here?

12 A. So again, the image on the left is from the same  
13 viewpoint as the previous images. We have still got  
14 lines 1 and 2 which reflected the mirroring, the walking  
15 along, and then we've got some further information where  
16 PC Short described, I believe, the furthest point that  
17 Mr Bayoh walked along the line, so that was represented  
18 by 6, her position, which was 7, she refers to  
19 PC Tomlinson's position as 3, and then PC Walker's  
20 position as 4, and obviously this is all surrounding the  
21 fish van which you can see in the middle of that screen,  
22 of that view. Then on the right-hand side again you can  
23 see that fish van on the sort of -- fairly central to  
24 the image. You can see that we're looking from the path

1           towards the road, so you can just about make out the  
2           roundabout and the pub towards the right-hand side of  
3           that image. Again, Mr Bayoh is in green, PC Short is in  
4           the grass space between the path and the pavement,  
5           PC Tomlinson is just beyond her, and PC Walker is next  
6           to the fish van.

7           Q. On the left-hand side image I see that you've got 3, 4,  
8           6 and 7 listed?

9           A. Yes.

10          Q. And the numbers on the image itself that indicate red  
11          circles have 3, 4, 5, 6 and 7.

12          A. It's -- I think 5 reflects a different part, or  
13          a different part of the sequence and it doesn't reflect  
14          on this part of it. I mean, obviously as we've got the  
15          timings on there you can go back and look at the  
16          original evidence, but I believe 5 is where PC Short  
17          says she ends up, and I believe we covered that in the  
18          next sequence.

19          Q. All right, thank you. So this is a snapshot as Mr Bayoh  
20          is on the path moving towards the furthest point.

21          Thank you.

22                 Let's move on to the next slide please, B.4:

23                 "PC Short describes her position on the road before  
24                 turning to run, with Mr Bayoh 'closing the gap'."

1           And that's in little italics or speech marks,  
2           quotation marks. Is that a description taken from the  
3           evidence?

4           A. I believe that would have been a phrase that was used by  
5           her in evidence, so that's why we would have reflected  
6           it in that way.

7           Q. Right. And again, tell us what we see on this slide.

8           A. So again, similar viewpoint on the left-hand side, in  
9           fact, it's exactly the same image and you will notice  
10          that now we only refer to position 5, which is PC Short  
11          referring to the fact that she shuffled back before  
12          turning to run, so we're sort of describing the events  
13          as they're building up and so she is talking about  
14          moving backwards and then she is talking about Mr Bayoh  
15          coming closer towards her, so what we have then done is  
16          we have positioned her in position 5 and then she has  
17          positioned how close Mr Bayoh came to her before she  
18          turned and ran, and that's reflected in the right-hand  
19          image.

20          Q. So again, a dynamic event, but these are stills where  
21          you have replicated a moment in that?

22          A. Correct.

23          Q. And so to help the Chair, he would be perhaps best  
24          advised to go back through the particular evidence and

1 to review that as part of considering these images?

2 A. Yes, yes. Particularly when we go from one still to  
3 another, she will have described what she believed  
4 happened in-between, but it may not be something that we  
5 could replicate, or it might be that it is something  
6 that it isn't sort of a specific point in time, which  
7 then becomes very difficult for us to put that into a 3D  
8 view.

9 Q. Thank you. And again to assist the Chair in the grey  
10 boxes, you have given the date and also the period in  
11 which the footage should appear.

12 A. Yes.

13 Q. Thank you very much. Let's look at B.5, please:

14 "PC Short describes where she ran to and where she  
15 landed in the road."

16 Tell us what we see here.

17 A. So the image on the left we can see that again we're  
18 looking from the houses down, you can see the roundabout  
19 to the left-hand side and PC Short has marked position 1  
20 as the position where she fell after she was struck.  
21 That's then reflected in position 2 -- sorry, in the  
22 right-hand image where we can see a person sort of  
23 laying flat down on the floor.

24 As you will note, we have not tried to replicate

1 pose, it's just the rotated model face down on the  
2 ground to reflect that she is in that ground position.

3 I believe the second vision is where -- let me just  
4 see ... so she was also requested to locate her position  
5 where she was struck and this was added into the 3D  
6 view. I don't believe she was asked that in the initial  
7 stage, so I believe that's something that we added  
8 during that evidence, but we can go back and review that  
9 to be sure that's the case.

10 In the inset you can see Nicole Short showing the  
11 pose as she landed, or as she fell to the ground.

12 Q. So again, the right-hand image is a refinement --

13 A. Yes.

14 Q. -- and maybe contains two moments in time in a dynamic  
15 situation?

16 A. Yes.

17 Q. And the small insert is her own personal demonstration  
18 during the hearing, but again, that will have been  
19 something that was demonstrated here in the horseshoe  
20 and again, you have given the Chair the detailed areas  
21 where he can consider and reflect on that footage?

22 A. Yes. I think it should also be recognised that she  
23 demonstrated multiple poses of a sequence of events that  
24 happened past this point. We're just showing the point

1           that she initially fell and the pose that she said that  
2           she formed at that point.

3       Q.   So some people may have watched the evidence at  
4           hearing 1 and thought she also demonstrated lying on her  
5           right-hand side.

6       A.   Correct.

7       Q.   But that's something that the Chair will be able to find  
8           on the 24 May footage, 37 minutes into her evidence?

9       A.   Yes.

10      Q.   Thank you, thanks very much.

11                 Can we look at B.6 please:

12                 "PC Short describes the area of restraint and her  
13                 immediate position after getting up from the ground."

14                 Now, we see three images on this slide.  Could you  
15                 talk us through this, please?

16      A.   So on the left-hand side we've got two images.  The  
17           upper image is where she felt the restraint was taking  
18           place and so that was the position she identified.  The  
19           bottom position is her description of when she gets from  
20           the -- gets up from the ground and where she moves to,  
21           and those two positions are -- those two positions were  
22           carried out on different images, hence they've got --  
23           they are both labelled as (1) and they are different  
24           images, but we have combined that into a single image on

1 the right-hand side.

2 Q. And on the right-hand side again we can see the  
3 roundabout is on the left.

4 A. Yes.

5 Q. There's a blue character behind the fish van which is  
6 PC Short, and a green character on the ground which is  
7 Mr Bayoh?

8 A. Yes.

9 Q. And again, the refined positions and the original  
10 positions are listed in the footage.

11 A. Yes.

12 Q. Thank you. Can we look at B.7, please:

13 "PC Short describes moving away from the 'Fishvan'  
14 (Ford Connect)."

15 And talk us through what we see on this slide?

16 A. So she was -- she produced this on the left-hand side,  
17 same as previous, this is step 1, and she produced an  
18 arrow showing her movement from the back of the fish van  
19 across to what appeared to be near the bus stop. What  
20 we then did is we go to her actual position and she  
21 talked about her line of sight being blocked by the  
22 Transit van, so if you remember correctly we tried to  
23 move her into a position that that would have been the  
24 case and we couldn't do that but then she talked about

1           being next to a tree and she said she remembered  
2           branches being over her head -- I'm paraphrasing.

3           Q. Obviously it will be a matter for the Chair to look at  
4           this.

5           A. Correct. So we positioned her underneath the only tree  
6           that seemed to make sense, the one over here, and then  
7           we have taken a line of sight back towards the  
8           roundabout and towards the restraint within the inset of  
9           that right-hand image.

10          Q. And so in the inset on the right-hand image we can see  
11          the line of sight from the position of PC Short under  
12          the tree?

13          A. Yes.

14          Q. And we can see on the left of that inset most of the  
15          Transit van on the left?

16          A. Yes.

17          Q. And then the fish van to the right?

18          A. Yes.

19          Q. Thank you. And that's an indication, as you have said,  
20          about line of sight of the witness?

21          A. Correct.

22          Q. Thank you very much. Looking on the next series of  
23          slides, we're moving on to PC Tomlinson's images and  
24          there are nine slides in relation to this that you have

1 gathered together. He gave evidence on 25 and 26 May  
2 this year and I would like to -- let's start with C.1:

3 "PC Tomlinson describes locations of people after  
4 exiting his vehicle."

5 Tell us what we see here?

6 A. So on the left-hand image, again, we're looking at  
7 step 1. We can see the roundabout or the line-work  
8 leading to the roundabout on the left-hand side of the  
9 image. Position 1 is PC Tomlinson exiting the vehicle;  
10 position 2 was a representation of PC Short leaving her  
11 vehicle -- leaving the passenger side of the vehicle;  
12 position 3 is PC Walker's position, and position 4 being  
13 Mr Bayoh's position.

14 That's then reflected onto the 3D positions, so we  
15 have PC Tomlinson in the background next to the fish  
16 van, we can see the bus stop towards the lower end of  
17 that image, and in front of that we have PC Walker and  
18 Mr Bayoh effectively facing each other.

19 Q. And throughout is Mr Bayoh represented by green as  
20 a character?

21 A. That's correct.

22 Q. And again, it goes without saying the Ford Transit van  
23 position has been corrected?

24 A. Yes.

- 1 Q. Let's move on, please, to C.2:
- 2 "PC Tomlinson describes Mr Bayoh walking up the
- 3 path."
- 4 Talk us through this slide, please.
- 5 A. So again, we've got quite a few positions that have been
- 6 captured, but the ones that are relevant to this moment
- 7 of time are positions 5, the circle 5 and the arrow 6
- 8 where PC Tomlinson's described his position and he has
- 9 described the movement of Mr Bayoh.
- 10 We have chosen a position for Mr Bayoh along the
- 11 path, obviously we can't show an animation -- or we
- 12 weren't showing animations, so PC Tomlinson's position
- 13 is reflected on the right-hand side and Mr Bayoh's
- 14 position is reflected as he walks up the path.
- 15 Q. So this was -- in giving this evidence PC Tomlinson was
- 16 describing a dynamic situation and on the left-hand
- 17 side, the number of circles and the purple lines reflect
- 18 the movement and the various positions of people?
- 19 A. Yes.
- 20 Q. And then on the right-hand side you have selected
- 21 essentially one snapshot of one moment in that
- 22 description?
- 23 A. That's correct.
- 24 Q. And in this case, it's where PC Tomlinson was and where

1 Mr Bayoh was at that one moment.

2 A. Yes.

3 Q. And you have given again the -- you have identified the  
4 date and the area of footage that the Chair could  
5 consider to consider the whole passage of evidence?

6 A. Yes, that's correct.

7 Q. Right, thank you. C.3, please:

8 "PC Tomlinson describes Mr Bayoh walking up the  
9 path."

10 Talk us through this, please.

11 A. So the image on the left is the same as you saw  
12 previously. Again, there's a huge amount of detail  
13 captured on this slide but critically what we're looking  
14 at here is 7, 8, 9 and 10, so towards the left-hand side  
15 of this image, and trying to capture again that movement  
16 of Mr Bayoh, and then in reflection to that,  
17 PC Tomlinson and where he felt PC Short was at that  
18 time.

19 On the right-hand side -- so on the -- just to cover  
20 the left-hand side a little bit more, PC Tomlinson  
21 described PC Short as being somewhere behind him, but he  
22 couldn't say where, so he gave her as positions 9 and 10  
23 on the left-hand side, but just obviously knowing that  
24 she was somewhere behind him, but wasn't quite aware of

1           where she was.

2           In the right-hand side we have just reflected that  
3           by a single position and just allowed him to comment,  
4           but that's just something to bear in mind when looking  
5           at this slide.

6           Q. And to assist the Chair, have you put a note at the  
7           bottom of this slide:

8           "PC Tomlinson knows PC Short is behind him, but not  
9           sure where."

10          A. Correct.

11          Q. So when the Chair comes to look at these images, again,  
12          this note will remind him --

13          A. Yes.

14          Q. -- that this is just a snapshot of one option?

15          A. And in conjunction with reviewing the timings and the  
16          evidence given by the witnesses as well.

17          Q. Yes. And again to help the Chair you have given those  
18          periods in the footage that he can use.

19          A. Yes.

20          Q. Thank you. Let's move on to C.4, please:

21          "PC Tomlinson describes Mr Bayoh turning to face him  
22          after PAVA Deployment."

23          Talk us through this slide.

24          A. So on the slide on the left, PC Tomlinson gave two

1 possible positions for himself. These are positions 1  
2 and 2, and it's basically talking about where he adopted  
3 this defensive stance with his spray, and then position  
4 3 would have been Mr Bayoh's position as he is walking  
5 along the path.

6 On the right-hand side we can see a similar  
7 viewpoint just closer in where PC Tomlinson has been  
8 able to review his position and he talked about an  
9 opening where Mr Bayoh could come through, so he has  
10 assessed that this is probably the most likely position  
11 for him, the most likely position for Mr Bayoh at that  
12 point.

13 Q. And it is that refined position given by PC Tomlinson  
14 that appears on the right-hand image?

15 A. Yes.

16 Q. Thank you.

17 C.5, please.

18 A. Just on -- sorry, just before we do that, just one  
19 point, I think, is on the left-hand image there's a lot  
20 of descriptions about his position before he did his  
21 spray. I believe the positions that we identified were  
22 when or after he used his spray, so it's just  
23 a slight -- again, a slight difference to when we  
24 captured the first bit of evidence to when we did the

1 second, although, they are sort of momentary lapses, but  
2 it's to understand that there is that slight nuance  
3 between the two.

4 Q. So again, to assist the Chair, it would be helpful for  
5 him to look at the actual footage of evidence from  
6 PC Tomlinson --

7 A. Yes.

8 Q. -- when he is reflecting on any images that were  
9 created?

10 A. Yes.

11 Q. Thank you. C.5, please:

12 "PC Tomlinson describes Mr Bayoh passing him to his  
13 right side."

14 Talk us through these images, please.

15 A. So on the left-hand side we're talking about the  
16 circle 1 and the line -- or the arrow 4, talking about  
17 Mr Bayoh's movement and the distance from which Mr Bayoh  
18 came to PC Tomlinson. I think he talks in quite detail  
19 about that distance and hopefully that's reflected on  
20 the right-hand side in the distance between PC Tomlinson  
21 and Mr Bayoh.

22 Q. And this was as Mr Bayoh was moving past PC Tomlinson?

23 A. Correct, yes. Again, we've got an arrow showing that  
24 movement is as number 4, but we're trying to just,

1           again, pick snapshots, so we're talking about just the  
2           moment that he walks by him.

3           Q.   And again, as you have said with other slides, important  
4           to consider the evidence of the witness --

5           A.   Correct.

6           Q.   -- to understand the nuances of these slides?

7           A.   Yes.

8           Q.   C.6, please:

9                       "PC Tomlinson describes PC Short being struck and  
10           going to the ground."

11                      Talk us through this moment.

12           A.   So on the left-hand slide we're looking at positions 5  
13           through to 8.

14           Q.   So is this the same image as we saw in the previous  
15           slide but a later moment in time that we're focusing on  
16           here?

17           A.   That's correct, yes.   So 5 is PC Short's position where  
18           PC Tomlinson believes that she was struck, and saying  
19           that effectively she fell to the ground to position 6 or  
20           7, and then described the angle at which PC Short fell  
21           as being 8, so effectively away from the roundabout  
22           slightly, so towards that angle.   So that was what we  
23           gathered in step 1.   After the refinement, we had  
24           a position of Mr Bayoh behind PC Short, demonstrating

1           the approximate distance when the strike occurred, and  
2           then the position of PC Short when she fell to the  
3           ground and where she fell to the ground.

4           Q. So on the left-hand image the roundabout is to the left?

5           A. Yes.

6           Q. On the right-hand image, the roundabout is at the top in  
7           the distance?

8           A. No, it's the other way round. So on the right-hand  
9           image we're looking from the roundabout towards -- down  
10          Hayfield Road, so you can see the bus stop on the upper  
11          left-hand side, so we're looking towards the bus stop.

12          Q. Sorry, I have a terrible sense of direction. So the bus  
13          stop is in the distance --

14          A. Yes.

15          Q. -- up Hayfield Road, the roundabout would be behind  
16          that -- the person if they were looking at that image?

17          A. Yes.

18          Q. Sorry. Thank you very much. And that is the fish van  
19          on the -- to the left of the characters that we see on  
20          the right-hand image?

21          A. Yes.

22          Q. And we can see the fish van in the centre of the  
23          left-hand image?

24          A. Yes.

1 Q. Thank you.

2 Can we look at C.7, please. Talk us through this.

3 A. So we're talking now about PC Tomlinson describing the  
4 alleged stomp. In the left-hand side you can see  
5 position 3 is where PC Tomlinson positions himself;  
6 position 1 being PC Short's position on the ground and  
7 [position] 2 being Mr Bayoh's position to her side.  
8 Again, we're looking at this image with the roundabout  
9 to the left-hand side of that image.

10 Q. Thank you.

11 A. When we come to the right-hand image we are now looking  
12 towards the roundabout, so the roundabout is towards the  
13 upper end, so we have rotated around. You can see the  
14 location of the fish van on the right-hand side of that  
15 image and in front of here we can see the corrected  
16 positions by PC Tomlinson who in this correction  
17 positions himself closer to Mr Bayoh at this point.  
18 PC Short is on the ground, as per his description.

19 In the inset we can see PC Tomlinson demonstrating  
20 the stomp. Again, the snap that's been taken is at the  
21 highest point at which the stomp would have occurred.  
22 Again, as per all our other caveats, it's always best to  
23 look at the actual full reconstruction.

24 Q. And so the insert of the demonstration is just a moment

1 in time, but again, if the Chair wishes to consider the  
2 actual demonstration itself in full you have given the  
3 detailed location to find that footage at the bottom.

4 A. That's correct.

5 Q. And on the image on the right, again, Mr Bayoh is the  
6 green character, PC Short is lying on the ground, and to  
7 the right is PC Tomlinson.

8 A. Yes.

9 Q. Thank you. Let's look at C.8, please:

10 "PC Tomlinson describes moving towards and striking  
11 Mr Bayoh."

12 Talk us through what we see here.

13 A. So on the left-hand side you can see the bus stop to the  
14 north of the image, or to the top of the image, and the  
15 roundabout to the left of the image, position 1 being  
16 PC Short's position on the ground, and position 3 being  
17 PC Tomlinson's position. Position 4 shows PC Walker  
18 moving towards Mr Bayoh.

19 Q. Is that the direction of travel?

20 A. Correct, yes. And then position 2 being where Mr Bayoh  
21 and PC Walker landed. However, that's not reflected in  
22 the image on the right-hand side yet, I don't think. So  
23 on the image on the right-hand side we can see those  
24 positions. There are two positions shown for

- 1 PC Tomlinson, so one to the side of the road and then  
2 moving to his position where he is sort of face on to  
3 Mr Bayoh, again, Mr Bayoh in green --
- 4 Q. In the middle of the road?
- 5 A. Yes, in the middle of the road. PC Short is shown on  
6 the ground and then you have PC Walker coming from the  
7 left-hand side. Again, you can see there's a note where  
8 PC Walker doesn't specifically say "PC Tomlinson was in  
9 this position", but he just knew that PC Tomlinson was  
10 coming from a position to his left-hand side --
- 11 Q. PC Walker.
- 12 A. PC Walker, sorry, my apologies.
- 13 Q. No, no.
- 14 A. And he did that, again, using the line of sight image  
15 and again, we've got a note in there just to say that  
16 this is just to help him give his evidence, that the  
17 view does not replicate human vision.
- 18 Q. So in the insert on the right-hand side is the green  
19 figure, again, Mr Bayoh?
- 20 A. Yes.
- 21 Q. And on the left of that inset image, is that the arrival  
22 of PC Walker?
- 23 A. Correct.
- 24 Q. And so it's indicative of the line of sight from

1           PC Tomlinson --

2           A. Yes.

3           Q. -- who is standing in the area.

4           A. And it's just to be aware that I believe that he

5           positioned PC Walker from that line of sight view as

6           well, so it's just to ensure that those caveats are in

7           place when looking at the head's position.

8           Q. And again, the location of the actual evidence and the

9           footage of that evidence is given below.

10          A. Yes.

11          Q. And let's look at the final slide for PC Tomlinson, C.9,

12          slide 33:

13                 "PC Tomlinson describes Mr Bayoh being taken to

14                 ground."

15                 Talk us through this slide.

16          A. So pretty much the only figure we're looking at is (2),

17          it was referenced in the last slide as well, and it was

18          just the position where Mr Bayoh felt -- sorry, where

19          PC Tomlinson felt that Mr Bayoh had been taken to the

20          ground, effectively. You can see that on the right-hand

21          image where we're looking towards the roundabout, so the

22          roundabout is towards the top of the image, and the

23          position and orientation is by PC Tomlinson's

24          description.

1 Q. Thank you. There's no attempt to do a 3D model of the  
2 actual restraint itself?

3 A. No. As per our initial discussions as to why -- the  
4 reasons why we wouldn't do that.

5 Q. And I think you also explained that in hearing 1 --

6 A. Yes.

7 Q. -- why that would not be possible.

8 A. (Nods).

9 Q. Thank you. Let's move on to the next series of slides.  
10 There are four and these relate to Kevin Nelson and  
11 these are images 34 to 37.

12 He gave evidence to the Chair on 31 May this year.  
13 Can you talk us through D.1:

14 "Mr Nelson describes people's positions as police  
15 arrive."

16 A. So if we look at (a), which is the left-hand side image,  
17 you can see the bus stop again to that right-hand side  
18 of that image and the roundabout to the left, with  
19 multiple circles and arrows. To go through those,  
20 position 1 is Mr Bayoh's position as he was seen by  
21 Mr Nelson. The arrow line 2 shows the direction of  
22 Mr Bayoh's movement. Position 3 being a male officer  
23 who came out of the driver's side of the vehicle.  
24 Position 4 being Mr Bayoh's position when the male

1 officer was at position 3. The male officer -- the  
2 arrow at 5 shows the movement of that male officer as he  
3 moves back, and the position 6 shows the movement  
4 slightly later where Mr Bayoh -- where he talks about  
5 Mr Bayoh's movement after the male had discharged his  
6 spray, or after a police officer had discharged his  
7 spray.

8 On the right-hand side we see the first part of this  
9 and literally the position of Mr Bayoh and the movement  
10 of the officer as he moves down the path, so the blue  
11 positions that you see on that right-hand side are the  
12 same officer just moving back and retreating along  
13 a pathway.

14 Q. And we heard from Mr Nelson he would not be able to  
15 identify the individual officers --

16 A. Yes.

17 Q. -- other than identifying them as police officers, so  
18 the labels that you have given to these blue characters  
19 on the image on the right do not give names of officers?

20 A. No.

21 Q. And again, Mr Bayoh is green. You have said at the top  
22 there:

23 "Officer height set to 1.73 metres - Average Male".

24 Explain why that is put in there?

1           A. For this particular slide because we don't know which  
2           officer he was referring to and although I believe  
3           PC Paton and PC Walker are of similar heights,  
4           PC Tomlinson is not, so what we have done for those  
5           positions is take an average male height of 1.73 just to  
6           place into our scene as opposed to assume it's one or  
7           the other.

8           Q. So you have not attempted to put your own subjective  
9           view into these locations or into these characters at  
10          all?

11          A. No, I think the only officer who we have given a height  
12          to I think is PC Short in the next slide, but that's  
13          because she was the only female officer on-site at that  
14          time.

15          Q. Thank you. Can we move on to D.2, please -- sorry,  
16          D.1a.

17          A. So in this image the reason we have only got one image  
18          is because I don't believe there's a reconstruction of  
19          it. I believe that's because we didn't feel we could do  
20          a decent reconstruction of this one event. However,  
21          because it was captured in evidence we obviously want it  
22          to be shown and brought to light, so Mr Nelson describes  
23          the people positioned -- I believe this is obviously  
24          after the fish van arrives, so he talks about a female

1 officer being position 1, Mr Bayoh's movement being the  
2 arrow 2, and the male officer affected by the spray  
3 after its discharge being 3.

4 Q. So again, if the Chair wishes to consider this in more  
5 detail, he can look at the references on the previous  
6 slide?

7 A. Yes.

8 Q. And then move on to D.2, please:

9 "Mr Nelson describes the location of the female  
10 officer as she stumbled and fell."

11 Talk us through it.

12 A. So on the left-hand side again it's the same image where  
13 you can see the bus stop to the right-hand side and the  
14 roundabout to the left. We can see positions 1 and 2  
15 where position 1 is the position of the female officer  
16 as she stumbles to the ground, and Mr Bayoh's position  
17 is shown as position 2.

18 To the right-hand side you can see that we have  
19 placed a character -- you can't quite see the text  
20 because it's a bit far away, but that says "WPC", and  
21 then you have Mr Bayoh standing -- or them facing each  
22 other effectively. As you can --

23 Q. So the WPC was the female officer?

24 A. Correct.

1 Q. Again, Mr Nelson wasn't able to provide names or  
2 identifications.

3 A. No, but in this instance because there's only one female  
4 officer at the scene at this event we have given the  
5 height of that person as PC Short's height --

6 Q. Thank you.

7 A. -- which I believe is 1.56, or 5-foot 1.5 in old  
8 language.

9 On the inset you can see PC Nelson's description of  
10 Mr Bayoh's movement --

11 Q. Mr Nelson?

12 A. Mr Nelson, I apologise.

13 Q. Not at all.

14 A. Mr Nelson's demonstration of Mr Bayoh's movement in the  
15 scene.

16 Q. Thank you. And again, a dynamic motion demonstrated but  
17 the Chair can look at the actual footage.

18 A. Correct.

19 Q. On the right-hand image do we also see that there is  
20 a Mr Nelson label that is attached to one of the windows  
21 on the ground floor?

22 A. Yes, so he was talking about the window that he was  
23 looking out from which was his front living room window,  
24 I believe, and we took an approximate viewpoint from

1           that view and that would be the character that we used  
2           to take that viewpoint from.

3           Q.   So to assist the Chair you have added Mr Nelson on the  
4           window location that he indicated in evidence he was at.

5           A.   Yes.

6           Q.   Thank you.  And then can we look at D.2a slide, please,  
7           which is the next slide, 37, and this is an image that  
8           was prepared:

9                     "Representation of line of sight from window of  
10           Mr Nelson."

11                    Tell us --

12           A.   So again, this is the line of sight from that orange  
13           character as a viewpoint back into the scene of the 3D  
14           view that he described.

15           Q.   So this is from the window that we noticed in the  
16           previous slide --

17           A.   Yes.

18           Q.   -- on the ground floor of one of the houses and with the  
19           female officer you have marked WPC, you have used the  
20           height of PC Short --

21           A.   Yes.

22           Q.   -- for the purposes of this image?

23           A.   Yes.

24           Q.   And this was an image prepared -- a refined image after

1 the input of Mr Nelson.

2 A. Yes.

3 Q. Thank you. Thank you very much.

4 A. Just to add to that though, this image was shown to  
5 Mr Nelson and he did indicate that it was representative  
6 of his view.

7 Q. Thank you. Let's move on now to the final images, so  
8 images 38 to 41. Again, we've got four images here, and  
9 this relates to former Police Constable Paton. E.1:

10 "PC Paton describes Mr Bayoh's position as the van  
11 arrives."

12 Tell us what we see here?

13 A. So as previously said, we didn't do steps 2 and 3 with  
14 PC Paton so it's only step 1 and he --

15 Q. And step 1 is the image of Hayfield Road where he  
16 independently applied the red circles?

17 A. Correct, to the still images.

18 Q. Thank you.

19 A. So position 1 is Mr Bayoh's position when PC Paton first  
20 saw him; 2 indicates the direction that Mr Bayoh was  
21 walking; 3 is the position -- Mr Bayoh's position when  
22 the Transit van had arrived and stopped, and the fourth  
23 one is basically a repeat of the third one, I believe he  
24 did like a double tap or something to reflect that, so

1 fourth is effectively an error. So this occurs as  
2 the police van arrives which is why the scene is bare  
3 and there are no vehicles within that scene --

4 Q. Thank you.

5 A. -- or no police vehicles within that scene.

6 Q. Again, for the benefit of the Chair, you have identified  
7 the locations of the footage at the bottom.

8 A. Yes.

9 Q. And then can we look at the next slide please, E.2:  
10 "PC Paton describes the location of people after  
11 leaving the van."  
12 Talk us through this.

13 A. So we're looking at another still image. You've got the  
14 bus stop to the right-hand side and the roundabout -- or  
15 the line-work to the roundabout on the left-hand side.  
16 So position 1 is PC Paton's position when he discharges  
17 the spray, with position 2 being Mr Bayoh's position.  
18 Position 3 is the position that PC Paton moved to when  
19 he goes to the back of the van and he describes this  
20 sort of curling up, or sort of bending over. Circle 4  
21 is PC Walker's position before the spray affected  
22 PC Paton's eyes, and then 5 is PC Short's position on  
23 the ground.

24 Q. Right. And again, you have given us the footage which

1           was given -- the evidence given on 21 June --

2           A.   Correct.

3           Q.   -- or played to the Inquiry on 21 June and it's an hour

4           and 12 minutes into that footage.

5           A.   Just as a reminder that I wasn't present for PC Paton's

6           evidence, it was something that I reviewed through the

7           YouTube videos that are captured in the Inquiry system.

8           Q.   So you have reviewed it, but you have not then attempted

9           to prepare the refined slides --

10          A.   Correct.

11          Q.   -- because you didn't have the benefit of discussing

12          that with the witness in real time?

13          A.   Yes, correct.

14          Q.   And then I think there was another slide 42 but that's

15          blank, I think, if that's not been removed.

16          A.   Just this one. Have you seen this one?

17          Q.   Sorry, a slight error there. Let's look at E.3 then:

18                 "PC Paton describes the location of the restraint."

19                 Talk us through this?

20          A.   So basically, as with other witnesses, PC Paton was

21          given the opportunity to select a point on the screen

22          where he felt the restraint took place and that's just

23          demonstrated by circle 2 on the screen.

24          Q.   Thank you. I think that is the final slide, so let's

1           just check -- yes, so that's -- I would like to move on  
2           briefly just to discuss something else that you have  
3           subsequently provided to us, Mr DeGiovanni.  If we could  
4           look briefly at SBPI00187.

5           Now, after you gave your evidence and your first  
6           report was disclosed I think we received some queries  
7           where we asked you for further detail to be provided.

8           A.  Yes.

9           Q.  And you kindly were -- you were sent what we call  
10          a Rule 8 request and you prepared a response to those  
11          further queries for the benefit of the Chair.

12          A.  Correct.

13          Q.  And if we look at the document on the screen at the  
14          moment you should see what's called a Rule 8 statement  
15          from yourself which is the response that was prepared to  
16          the questions asked.

17          A.  Yes.

18          Q.  And this should be 12 pages.  I think you will have  
19          a hard copy in the folder.

20          A.  I have one here.

21          Q.  Great, thank you.  So 12 pages and can you confirm that  
22          this was signed by you on every page on 17 November this  
23          year?

24          A.  Yes, using digital systems.

1 Q. Yes. And at the end of this -- if we can go to the very  
2 final page, please. We will see a paragraph that says:

3 "I believe the facts stated in this witness  
4 statement are true. I understand that this statement  
5 may form part of the evidence before the Inquiry and be  
6 published on the Inquiry's website."

7 A. Yes.

8 Q. And that was your understanding?

9 A. Correct.

10 Q. And just so you're clear that in fact this will be  
11 published on the website after the conclusion of your  
12 evidence.

13 A. Okay.

14 Q. Thank you. I don't want to go through every line,  
15 obviously this is available for the Chair's  
16 consideration, but there are one or two things that  
17 I would quite like to be clear about.

18 Can we look, first of all, at question 2 on page 1,  
19 and you were asked to clarify what original material did  
20 Advanced Laser Imaging rely on in its work, and could  
21 you please explain to us what original material you did  
22 rely on?

23 A. So when we were first instructed we were basically given  
24 access to a huge amount of material, some several

1 hundred different documents or videos or images and it  
2 was really -- there was no real continuity chain or date  
3 of submissions for each of these, so what we couldn't do  
4 when we were looking at this is just by looking at the  
5 numbers or looking at the references understand which  
6 bits of evidence were original material and which ones  
7 weren't. What we had to do is piece by piece look at  
8 every single piece of evidence and try and understand  
9 which one was most likely to be the original source of  
10 material and this was done by looking at metadata within  
11 video files or audio files and trying to work back to  
12 understanding where, for example, compilations had been  
13 created from and the root of the evidence and that had  
14 all been done. I talk about it as being effectively  
15 a black box exercise, where we tried to use --

16 Q. What does that mean?

17 A. It basically means where we don't have other information  
18 to rely on, so we're trying to understand which  
19 information is original and which is a derivative of the  
20 core material based on viewing elements of the file  
21 itself, as I say, including metadata within the file, or  
22 the make-up of the file itself, so, for example, on the  
23 videos we would be looking at the compression type,  
24 pixel sizes, resolutions, compression ratios, things

1           like that, to try and understand which was the original  
2           material and where possible we would then use that  
3           material.

4           Q. So you did your own assessment of the material you were  
5           sent by the Inquiry to do your best to try and work out  
6           which was the original?

7           A. Correct.

8           Q. Right. In fact, as I understand it, one of those  
9           elements was the CCTV from Gallaghers pub.

10          A. Yes.

11          Q. And you have now been sent the original CCTV and you  
12          have had the chance to review it.

13          A. Yes.

14          Q. And can you tell us -- we could maybe look at  
15          question 14 which may assist. We were asked if the  
16          original -- if PIRC 01287 -- we don't need to look at  
17          that -- was the original footage from the pub and if  
18          not, did this have an impact on your work. Could you  
19          explain to the Chair the position regarding the original  
20          footage?

21          A. Yes, so I have now had a chance to review what I believe  
22          is the original material and I have done a side-by-side  
23          comparison and I believe that PIRC 01287 that we  
24          received was effectively a copy of the original. It was

1 in the same compression format, it was a same  
2 resolution, same frame rate, and when you do  
3 a comparison of two of the frames, they were identical,  
4 so it led me to believe that PIRC 01287 was indeed  
5 a copy of an original and as close an original as we  
6 had. Basically it is -- it's a digital copy of the  
7 original file.

8 Q. And just to be clear for those listening, you have not  
9 been asked -- it's not part of your role to try and  
10 enhance that CCTV or to provide further clarity. That  
11 would be for another type of expert.

12 A. Correct. There is a limited work that we would do, but  
13 it isn't our core expertise so we wouldn't stray into  
14 that.

15 Q. So that would be for someone else to discuss.

16 A. Correct.

17 Q. We will perhaps hear evidence about this later.

18 Thank you.

19 But nothing you have said would alter, as far as  
20 I understand, that it will be for the Chair to view that  
21 CCTV himself and to form his own views about what can be  
22 seen on that CCTV.

23 A. Yes.

24 Q. Thank you. Can we move on to question 27. You will see

1           that the actual heading is "ARLS", that's at the bottom  
2           of page 5, and then the question is given at the top of  
3           page 6 of your Rule 8 response -- sorry, yes, question  
4           27:

5           "          In what way were the documents listed from  
6           PIRC-03527 -- COPFS-00170 (inclusive) on page 71 of  
7           [your] first report used in creation of the digital  
8           reconstruction?"

9           And the answer is that:

10          "ALI used [those documents listed] in reconstructing  
11          the ARLS tile in the Evidence Video Timeline."

12          Now, just to remind ourselves, that's the tile that  
13          we can see on the evidence video timeline at the top  
14          right-hand corner of the screen?

15          A. That's correct, yes.

16          Q. And that's in relation to the location of vehicles and  
17          a GPS tracker?

18          A. Yes, so on the radios, the handheld radios that the  
19          police officers had and in the vehicles, they have  
20          Airwave radio, but part of that is the ability to  
21          capture and transmit GPS information which again --  
22          which gets stored onto the ARLS system.

23          What we had here in terms of PIRC 03527 through to  
24          PIRC 03543 is a series of tables or CSV files and it

1 contained technical data about the location and the  
2 timing of those GPS signals, so the -- those core CSV  
3 files were what we used to be able to position vehicles  
4 at specific times within that ARLS tile in the video  
5 evidence timeline.

6 Q. Now, I think from memory you gave quite a detailed  
7 passage of your evidence about this work that you did in  
8 hearing 1.

9 A. Yes.

10 Q. And that's still available to the Chair to consider.  
11 I didn't ask really many witnesses about this data, but  
12 I understand from your first evidence that not all the  
13 GPS signals were working on 3 May, is that right?

14 A. Correct. Several of the vehicles, the GPS unit -- they  
15 didn't store any information for it. In combination  
16 with that, some of the personal radios, there was no  
17 data at the start of the event and so I think in my  
18 original testimony I stated that it isn't a complete  
19 picture that ARLS can give you, but it does give you  
20 what's available, which is the purpose of the evidence  
21 video timeline.

22 Q. Thank you. And that evidence that you gave at hearing 1  
23 is still available in its entirety. You did explain the  
24 position that some of that data wasn't available to you.

1 A. Yes.

2 Q. Thank you. Well, I would like to move on to page 7 and  
3 question 29. We see that this question is:

4 "What is a re-encoding error? Is there potential  
5 that any re-encoding process will introduce errors?  
6 What impact, if any, might such errors have on the  
7 Evidence Video Timeline and the Chair's reliance on  
8 same?"

9 And then if we move on to the next page, at page 8,  
10 the final paragraph of that says:

11 "As the re-encoding errors are not perceivable under  
12 normal viewing and all timings have been checked, ALI  
13 does not believe that this impacts on the Evidence Video  
14 Timeline. This being said, it would be prudent in  
15 making interpretation from a specific CCTV tile in the  
16 Evidence Video Timeline that the same interpretation can  
17 be made in the original CCTV video."

18 A. Yes, that's correct.

19 Q. So to help the Chair understand, you would always  
20 recommend that he consider the original but you don't  
21 believe that the re-encoding error has an impact on what  
22 can be seen on the evidence video timeline?

23 A. Yes, correct.

24 Q. Do you have anything else to add about that? Anything

- 1           the Chair should know or ...?
- 2           A. I think it's just to bear in mind that in the evidence  
3           video timeline we used the redacted versions of the  
4           videos that were available so these don't always  
5           necessarily relate back to the original CCTV, but they  
6           will be effectively the redacted versions of -- that  
7           were produced to be shown in these hearings.
- 8           Q. So that's another factor that the Chair might have to  
9           consider?
- 10          A. I believe so, so even though the processes that we did  
11          didn't bring in any perceivable changes to the evidence,  
12          it doesn't mean that potentially there haven't been some  
13          that have been added previous to us using them.
- 14          Q. For example, Mr DeGiovanni, do we -- you may recollect  
15          that when we listened to and watched the evidence video  
16          timeline, sometimes Airwaves transmissions had areas  
17          blanked out or obliterated --
- 18          A. Yes.
- 19          Q. -- because it contained personal data of people calling  
20          the 999, calling the police, so the Chair would have to  
21          be aware that that may not be exactly as the original,  
22          but there may be redactions applied --
- 23          A. That's correct.
- 24          Q. -- for other purposes. Thank you.

1           Then I would like to turn to -- it's question 32 on  
2 page 9. This says:

3           "Can ALI provide further details in relation to the  
4 steps taken to validate the photogrammetry used in  
5 creation of the digital reconstruction tile within the  
6 Evidence Video Timeline?"

7           And you have given some quite detailed information  
8 here and you have said:

9           "In the case of digital single image oblique  
10 photogrammetry the following are considered to have the  
11 greatest effect on error."

12           I'm not sure I'm saying this correctly:

13           "Photogrammetric Error Propagation."

14       A. Correct.

15       Q. Is that a reasonable indication?

16       A. Yes, that's spot on.

17       Q. And:

18           "Lens distortion."

19           And you have given quite detailed information about  
20 this. I'm particularly interested in page 11 of this  
21 answer, and this relates to figure A.2:

22           "Variation of measurement of objects within the  
23 scene."

24           And you have given a table which talks about an

1 object -- if we can go down slightly. Page 11, sorry.  
2 We see the images and then we see the table. If we can  
3 go back to the images perhaps for a moment and I wonder  
4 if you can help the Chair understand about the variation  
5 of measurements of objects within a scene.

6 A. Yes. So after we have conducted this photogrammetric  
7 process and we have -- I have described in both sessions  
8 now how we do that and effectively we're looking at  
9 contact points with the ground, so the best way for us  
10 to determine the accuracy of a photogrammetric solution  
11 is to try and take measurements of fixed objects or  
12 known objects within the scene and then compare those  
13 back to the laser scan data which is the ground truth or  
14 the actual position, so what we have done in the near  
15 range, or at the roundabout is we have taken, for  
16 example, the centre circle of the roundabout as being  
17 a fixed object that we can measure to, and one of the  
18 lines running away from -- line markings -- away from --  
19 towards the side of that roundabout.

20 And what we have done is we have used the  
21 photogrammetric system to try and take a measurement and  
22 then we have compared that to the actual position within  
23 the 3D laser scan data. The difference between the two  
24 tells us the accuracy of the solution.

1           Now, as I have mentioned before, after we have  
2 removed or mostly removed the lens distortion, we're  
3 left with the propagation error which basically talks  
4 about the error of the solution as we go with distance,  
5 so the further away we move from the camera and the  
6 further we take measurements, the larger and the greater  
7 the error that we would get, so we have looked at the --  
8 I will call it the near position, even though it is  
9 quite far away from the camera already, which is the  
10 line markings, but we wanted to understand the errors  
11 further than that by going back into the field of view  
12 even further.

13           Because of the quality of the footage we can't pick  
14 up line-work, we haven't got specific objects that we  
15 can identify that are fixed within the scene, so in this  
16 case what we had to use is dynamic objects and for that  
17 we have used parked vehicles that the police parked in  
18 the scene as they were dealing with the incident.

19           The reason we are able to identify those positions  
20 is because we have much better footage from  
21 Ashley Wyse's camera of those locations, so we can be  
22 much more confident about their location from that  
23 footage and we can use that as our assessment or  
24 understanding of error in the far plane, and that's

1 effectively what you can see in (c) and (d), or the  
2 lower end of that image on your screen.

3 What that effectively means is, as you said  
4 previously, the further we move into this scene, the  
5 greater the error on positioning people would occur to  
6 the point that at the furthest distance -- and we're  
7 talking roughly 100 metres away from the camera -- we  
8 would be talking about an error of between 3 and  
9 4 metres on any individual measurement. It's why in the  
10 initial assessment, or the initial interview -- my  
11 initial session I have said that really when we're  
12 looking at that positioning tile, especially from the  
13 work we have done from Gallaghers footage, we should  
14 really be considering that as indicative and not be  
15 using it to try and assess in great detail exactly where  
16 people were, but just to understand the locations of  
17 people at specific times.

18 Q. So let me just take you through that a little more  
19 slowly. This is in relation to the digital  
20 reconstruction tile that is on the evidence video  
21 timeline in the top middle of the screen.

22 A. That's correct.

23 Q. And photogrammetry is one of the crosschecks that you  
24 can carry out to confirm that the positioning of

- 1 vehicles or buildings is accurate?
- 2 A. So it's when we have positioned people or vehicles  
3 within a scene. It's to understand by how much of  
4 a tolerance we fitted that person or being able to put  
5 that person into the scene, so it's how well we can  
6 position someone within that scene.
- 7 Q. And that can be carried out with things like CCTV  
8 footage?
- 9 A. Yes.
- 10 Q. And that's used, but the further away from the camera,  
11 the less accurate you can be in terms of positioning --
- 12 A. Correct.
- 13 Q. -- using that tool of photogrammetry?
- 14 A. Correct.
- 15 Q. But in this particular situation, as I understand it,  
16 you have also got not just the photogrammetry, but  
17 you've got the laser scan data from 2015?
- 18 A. Yes.
- 19 Q. And you've got the Snapchat footage from Ashley Wyse's  
20 mobile phone.
- 21 A. Yes.
- 22 Q. And you've also had those to rely on, and not just the  
23 CCTV, to position vehicles --
- 24 A. Correct, yes.

1 Q. -- and other things in the scene.

2 A. Yes, but for people positions we had to rely on  
3 Gallaghers' footage because it was the only complete  
4 source of CCTV covering the events.

5 Q. But in addition, for the benefit of the Chair, he can  
6 always go back to the individual eye-witness evidence  
7 from the witnesses that we have heard.

8 A. I don't believe that one piece of evidence should be  
9 taken in isolation. It's all got to be considered  
10 together.

11 Q. And so although there is this margin of error, which  
12 I think quite rightly you spoke about in hearing 1, the  
13 Chair should consider all the evidence available to him  
14 from all the sources and not just this one element.

15 A. That's correct.

16 MS GRAHAME: Thank you. Could you just give me one moment  
17 please?

18 (Pause)

19 Thank you very much, I have no further questions.

20 LORD BRACADALE: Thank you.

21 Are there any Rule 9 applications at this stage?

22 No.

23 Well, Mr DeGiovanni, thank you very much for coming  
24 back to give evidence again and also for all the work

1           that you and your team have done for the Inquiry.

2           I think that by using the range of products that you  
3           have developed we will all gain a clearer understanding  
4           of the evidence, so I'm very grateful to you for your  
5           input.

6                     That completes the evidence mean time and the  
7           Inquiry will now adjourn.

8           (12.51 pm)

9                                     (The Inquiry adjourned)

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