Streamlined Forensic Reporting (SFR)	MG22C (SFR2)
EXPERT RESPONSE – Speed Estimation from Video	

Relates to (person):	Click or tap here to enter text.	Crime/Occ. No:	Click or tap here to enter text.
Location:	Click or tap here to enter text.	Force Forensic Ref:	Click or tap here to enter text.
Date of Offence/Incident:	Click or tap here to enter text.	Forensic Provider Ref:	Click or tap here to enter text.
Other Ref 1:	Click or tap here to enter text.	Other Ref 2:	Click or tap here to enter text.

Statement provided by:	Click or tap here to enter text.	Organisation:	Click or tap here to enter text.
Date of Statement:	Click or tap here to enter text.	Annexes Included with this Statement:	**Annexes A, B, C and D**

1.	I have been asked to provide more information about the methodology used to determine the vehicle speed.

Evidence Type Supporting / Technical Information

Analysis of incident and test footage using approved Forensic Video Analysis software revealed that the CCTV system recorded at 15 frames per second. Each second of footage was made up of a constant repeating pattern of two intervals of 0.08 seconds followed by an interval of 0.04 seconds. There were 5 sequences of these 0.2 second intervals in each second of displayed footage.

Test footage was retrieved in the same format as the collision footage. Verification of the CCTV system's frame intervals and recording pattern was conducted using a pair of calibrated Home Office Frame Interval Timers (FIT), Serial Numbers XXXX and XXXX.

The distance the Subject Vehicle had travelled was determined by using 'Line of Sight' and 'Passing Points' methodology. A fixed feature was identified in the collision footage where the Subject Vehicle could be seen to align with respect to the view of the camera and another which it passed over, namely (Point 1) a lamppost on the central reservation and (Point 2) a white painted lane line marking.

The Subject Vehicle entered camera view in the upper left corner at 18h:51m:00s

Close scrutiny of the footage showed that the Subject Vehicle was straddling the lane line that separated the two lanes when at Point 1 and was also straddling the same lane line when it arrived at Point 2.

These points were identified within the registered 3D laser scan point cloud of the scene. The distance was measured electronically within the scan point cloud using proprietary software and found to be approximately 51.8 metres.

The Subject Vehicle took 27 frame intervals to travel between Point 1 and Point 2. This equates to 9 x 0.2s intervals and was an overall time of 1.8 seconds.

In my opinion, the average speed was therefore **64 mph** (51.8m ÷ 1.8s = 28.8 metres per second).

In my opinion, in this case any uncertainty in the estimated time is likely to be very small compared to the estimated value, and has therefore been considered insignificant. However, defining the exact location of the leading edge of the subject vehicle with reference to the physical features identified at both points introduces uncertainty of measurement in the distance which must be considered. Having evaluated and combined the uncertainty at both points the speed of the subject vehicle is estimated as 64 +- 0.65 mph.

Signature:	**Date:**

Figures 1 to 6 illustrate the methodology to determine the speed of the Subject Vehicle.

Lamppost on central reservation with Subject Vehicle at Point 1

Pedestrian in eastbound carriageway

Figure 1

Figure 1 shows the Subject Vehicle at Point 1 as it was straddling the lane line when passing the exit road for a supermarket car park to its nearside. At this point, it was around 63 metres from the point of impact with the pedestrian.

03-06-2021 Sat 18:51:03

Figure 2

Signature: **Date:**

Figure 2 is a cropped and enlarged section of the same image showing the Subject Vehicle at Point 1 visually aligned with the lamppost on the central reservation from the CCTV camera's point of view. Its offside and nearside headlight can be seen in the image either side of the lamppost. Close scrutiny reveals that the front of the Subject Vehicle was mid-way between two lane line markings (i.e. longitudinally - along the carriageway). In addition, the lane line markings ahead of it were illuminated by the headlights, which assists in revealing the Subject Vehicle's lateral position mid-way across the carriageway.
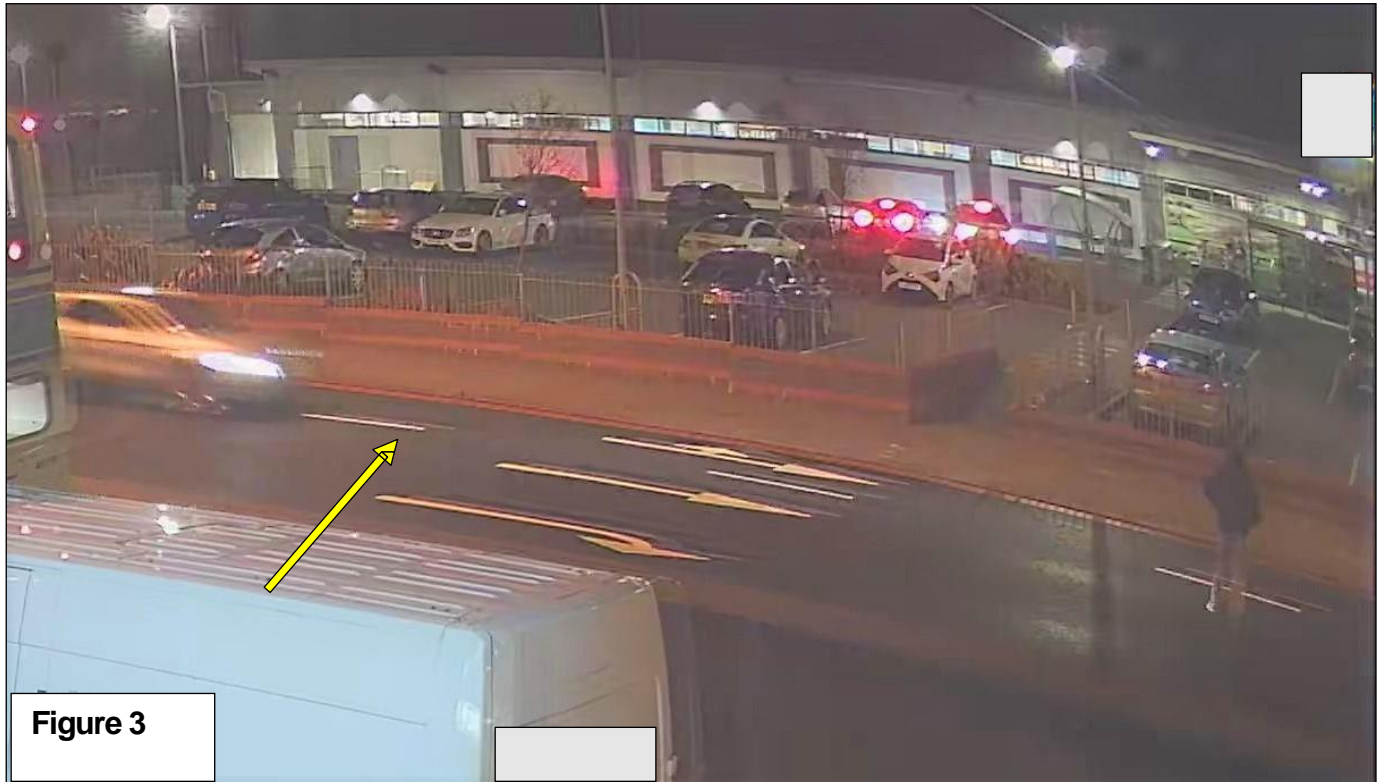

Figure 3

Figure 3 shows a cropped and enlarged portion of the footage frame immediately preceding the frame in which it reached Point 2 in order to show the lane line marking used as the reference point.

Figure 4 shows the front of the Subject Vehicle at Point 2 now concealing the further end of the lane line marking from the view of the CCTV camera.

Point 2 was approximately 11 metres from where the Subject Vehicle subsequently struck the pedestrian.

Figure 5 shows an oblique image captured from the 3D laser scene scan point cloud with two lines of sight shown extending from the CCTV camera lens position (represented by the blue vertex) to the respective reference points on the carriageway.
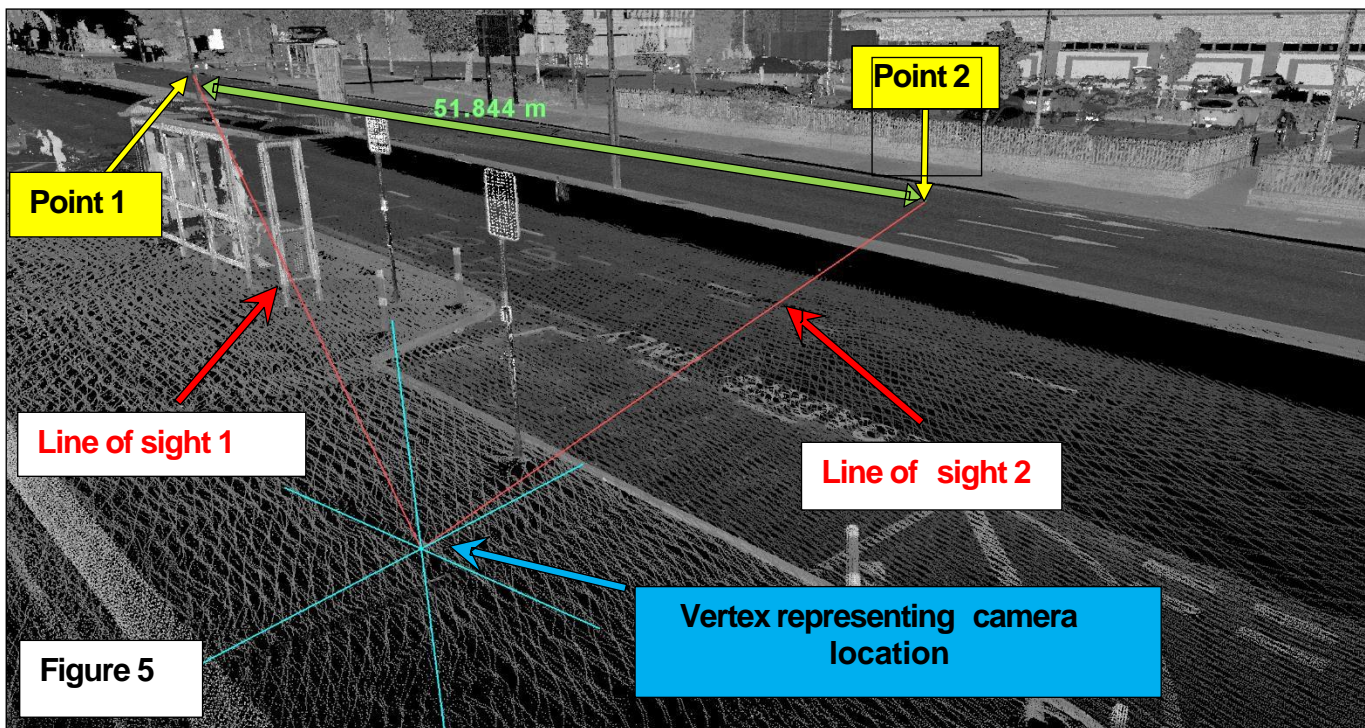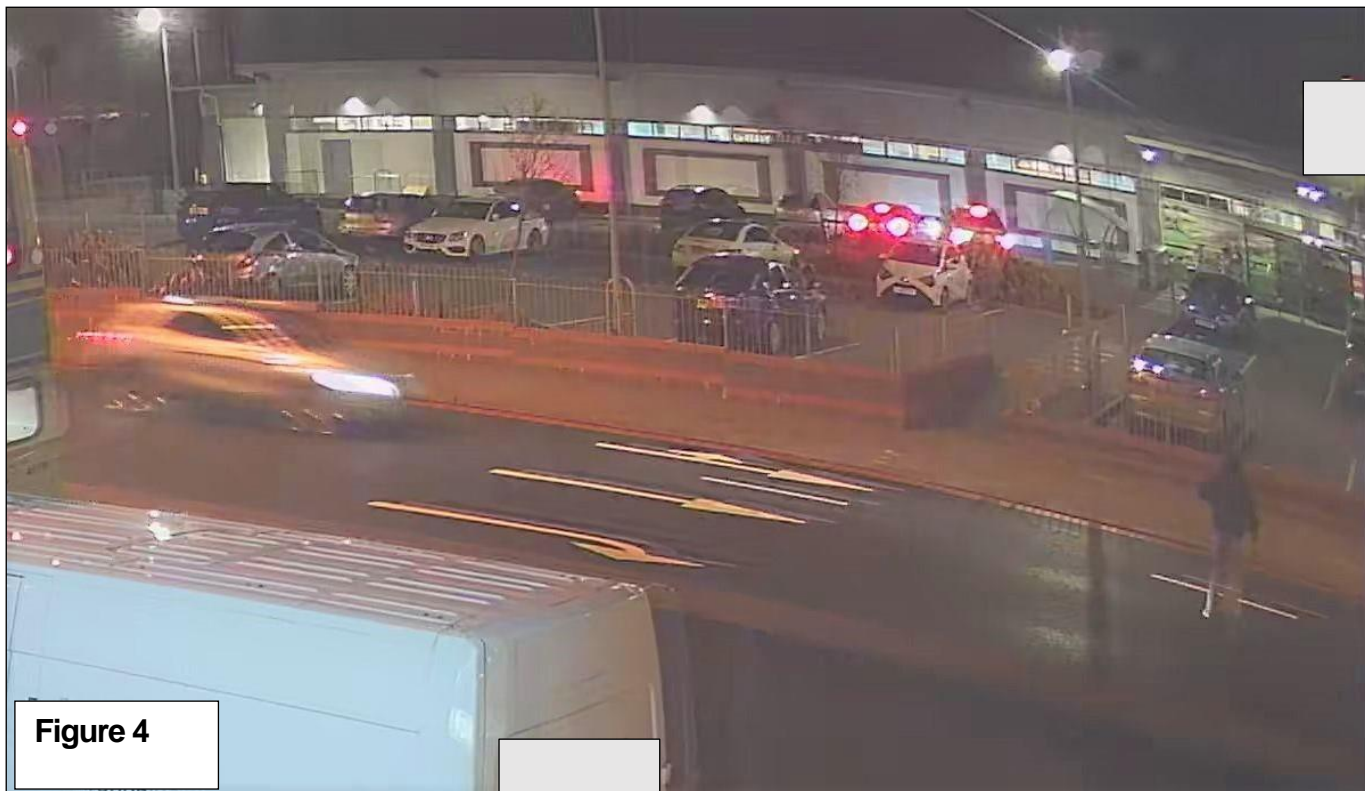
The distance measurement between Point 1 to Point 2 (in green) is as shown within the computer software.

Signature: | **Date:**

Figure 4

Point 2

51.844 m

Point 1

Line of sight 1

Line of sight 2

Vertex representing camera location

Figure 5

Signature: Date:

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Point 2

51.844 m

Line of sight 2

Point 1

Lamppost

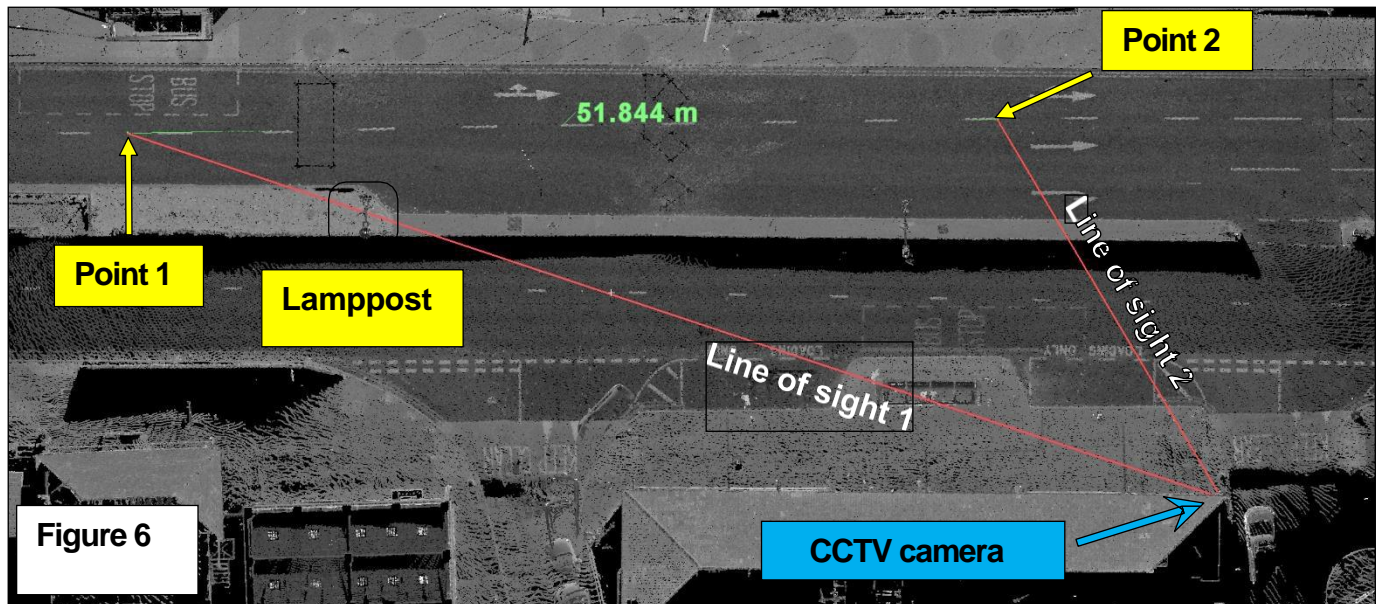Line of sight 1

Figure 6

CCTV camera

Figure 6 shows the orthographic (top-down) image captured from the 3D laser scene scan point cloud. Line of sight 1 can be seen projected from the CCTV camera through the lamppost on the central reservation to the midpoint on the carriageway where the front Subject Vehicle was located. Line of sight 2 extends from the camera to Point 2. The measured distance between these two reference points is again shown in green.

Compliance Declaration

This statement describes the outcomes of forensic science activity conducted under 'DIG 301 - Specialist video multimedia, recovery, processing and analysis' of the the Code of Practice published by the statutory Forensic Science Regulator [insert issue].

I have not complied with the Code of Practice published by the statutory Forensic Science Regulator [insert issue]. The details of this non- compliance are included to the best of my knowledge and belief in Annex B, with details of the steps taken to mitigate the risks associated with non- compliance.

Qualifications and Experience

Criminal Procedure Rules, r 16. 2; Criminal Justice Act 1967, s. 9

Statement of: Click or tap here to enter text.

This statement (consisting of x pages signed by me) is true to the best of my knowledge and belief and I make it knowing that, if it is tendered in evidence, I shall be liable to prosecution if I have wilfully stated in it anything which I know to be false, or do not believe to be true. Where this statement contains expert opinion evidence, I believe that its contents also reflect my obligations to include any relevant matter required by Crim. PR 19.4. I understand and expect that Crim. PR 19.6 will apply, should another party disagree with my conclusions.

Signature: | **Date:**