ANNEX M: Use of LIDAR for CAV data capture and Traffic Order verification

COYC propose to use a vehicle mounted LIDAR scanner to capture traffic and parking compliance artefacts (yellow lines, plate signs etc) as well as junction layouts for junction Modelling to increase CAV readiness.

The technology captures a laser based map of the streetscene, allied with a high definition photograph for colouring artefacts

The data capture vehicle and resultant street scene is shown below

Figure 1: LIDAR equipped vehicle

Figure 2: LIDAR laser plot plus colour camera data

This data is then used to:

a) Build a 3d model of the streetscene; and
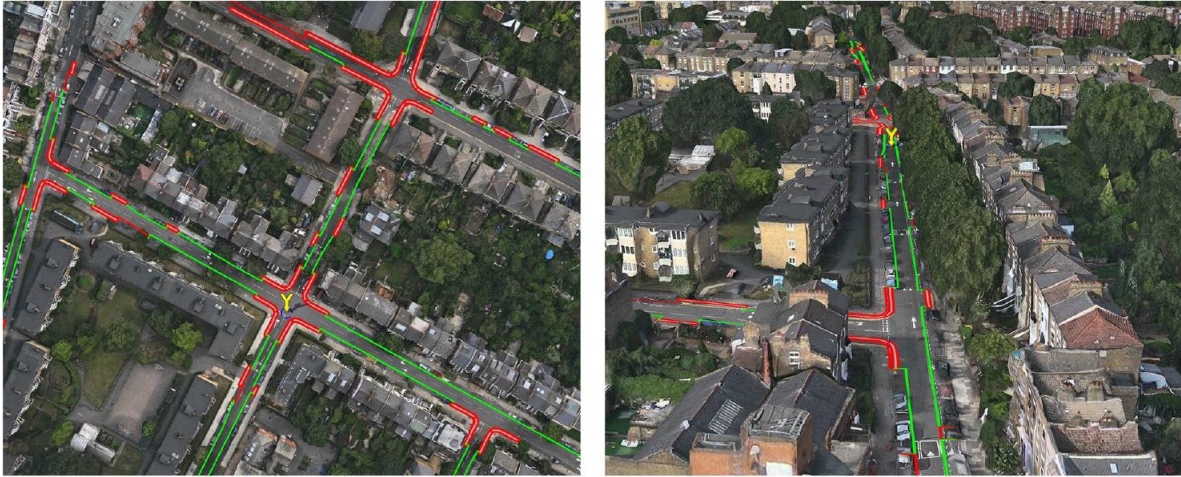b) From this, make a 2D model of the parking and traffic management order artefacts. This is shown below.

Figure 3: Capturing parking markings from LIDAR models

The 3D model can then be viewed from any perspective to add the following artefacts.

Bus Shelter	Roundabout	Seating (benches)
Bus Stop Sign	Signal controlled junction	Comms Cabinets
Dog Bin	Stop and give way	Advertising Boards
Litter Bin	Traffic calming	Cycle Racks (all)
Car Club Bay	Traffic island	Street Name Plate
Disabled Bay	Tram marking	Telegraph Pole
Doctor Bay	Waiting restriction	Gullies
Footway Parking Bay	Worded and diagrammatic marking	Speed Bumps
Limited Waiting Bay	Yellow bar marking	Carriageway
Loading Bay	Yellow box junction marking	All Parking/CPZ signs
Motorcycle Bay	School Markings	Arrow and lane destination
Pay & Display Bay	White Bar Markings	Bus markings including bus lanes
PrePaid Ticket Bay	Pay and Display ticket machine	Cycle marking
Permit Holder Bay	Post Box	Double yellow line
Shared Use Bay	Public Telephone Box	Longitudinal line
Taxi Rank	Bollards	Pedestrian crossing
All Regulatory signs	Guard Rail	Railway level crossing
All Warning signs	Dropped Kerbs/Driveways	Road stud
Safety Fencing	Footway	Highway Trees (on pavement only)

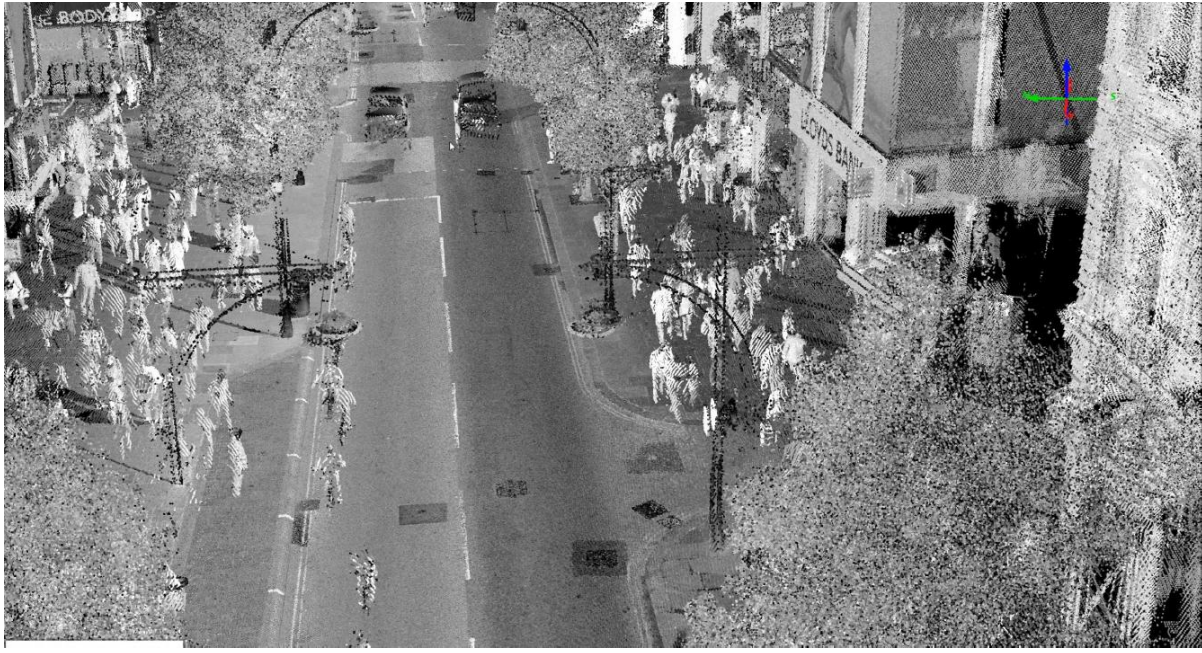*Figure 4: Artefacts captured from 3D model*

Figure 5: Example of high level virtual camera view from data captured from vehicle