LaneWatch Unattended Enforcement Functional Description

LaneWatch unattended enforcement cameras capture video and still image evidence in quite a different way to the usual attended type CCTV cameras and operators. The LaneWatch cameras have two separate camera modules that carry out the image gathering. The first module is a colour overview camera and it gathers contextual video evidence. This is typically a 10 second clip that can also be used to produce still images for the Penalty Charge Notice (PCN). The second module is a monochrome Infra-Red (IR) sensitive camera that is used to capture and read the vehicle number plate or VRM using Automatic Number Plate Recognition (ANPR) software. Both cameras are mounted in the same housing and the images have an identical text overlay applied that states the date, time, field count number, camera identification number and the location in longitude and latitude. It is this information that legally links the overview and close-up camera images together and allows the PCN to be issued.

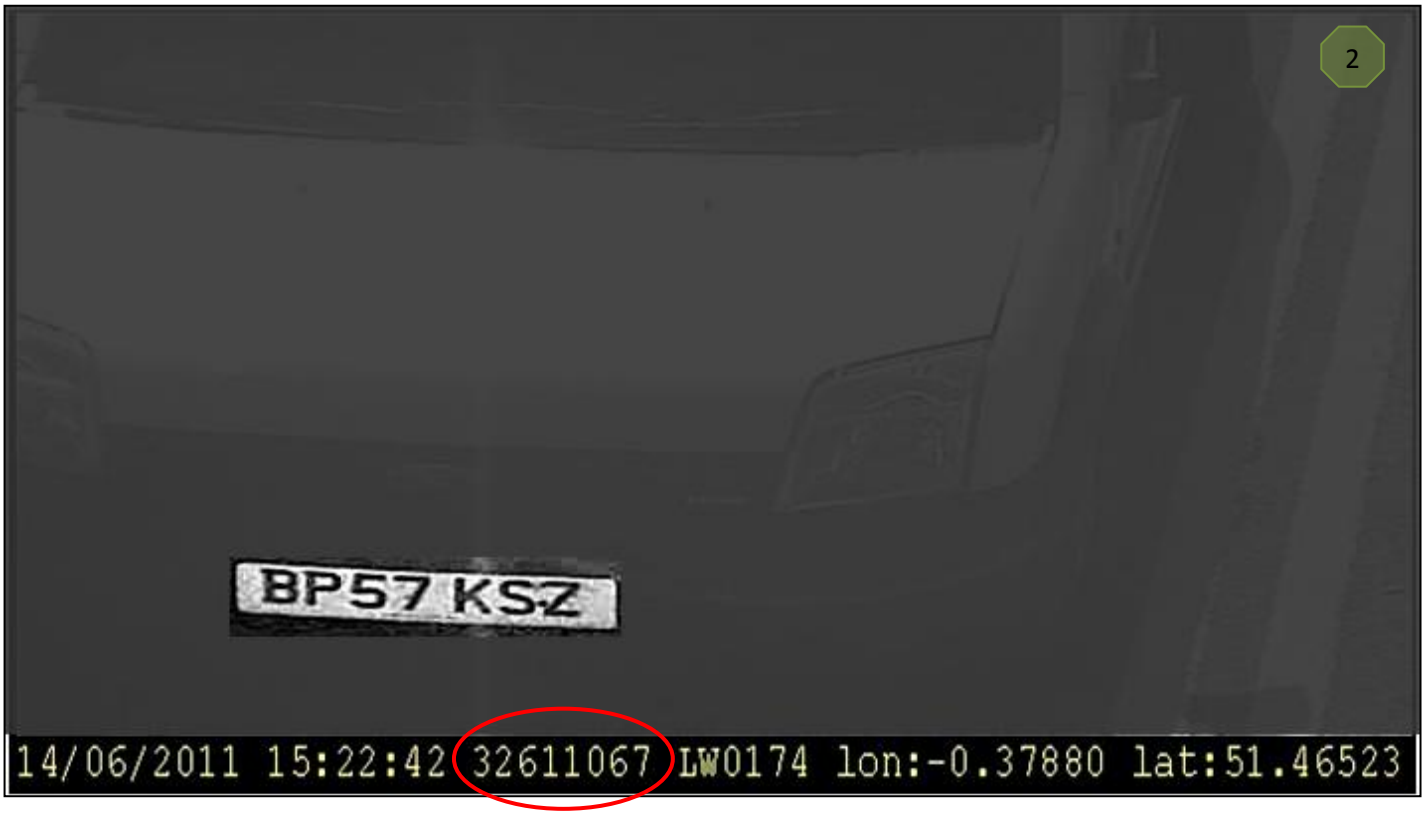
To illustrate how the LaneWatch gathers its evidence; in the composite image below we have overlaid the close-up ANPR trigger image onto the contextual overview image for reference. By design the dual camera head ensures that both the ANPR close-up camera and the contextual overview camera always point in the same direction and at the same point of interest. The ANPR Image is also included below for reference. NB The frame number highlighted with a red oval shows the frame numbers of the ANPR trigger image and the contextual overview image which are identical at the point of capture.

Exhibit A – Composite overview / close-up camera images.

1 **Contextual Camera Image.** **Infra Red (IR) Illuminated Area.** 2 **ANPR Camera Image.**

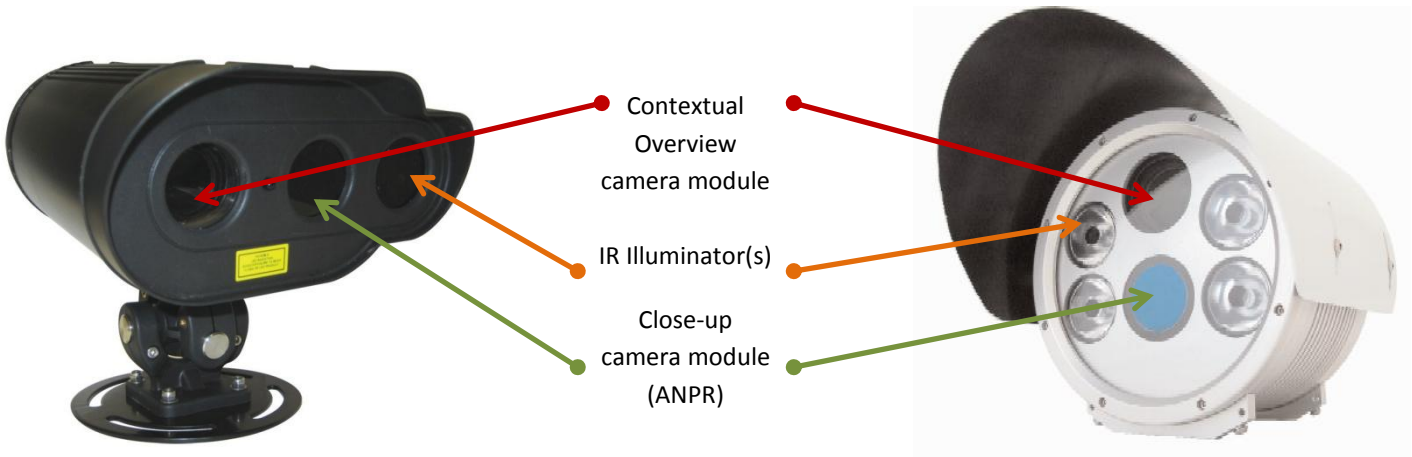
Note that the close-up camera image is monochrome this is because only monochrome cameras are IR sensitive and can see the 'invisible' light given off by the cameras illuminators. Also the image is filtered such that white light from daylight and street lighting is almost completely blocked out to limit false positive triggers and improve the read rate and accuracy of the ANPR system.

Exhibit B – Close-up ANPR camera image.



The images below show the different types of LaneWatch camera heads available. To the left is our short range 25m camera and to the right is our long range 50m camera. Both incorporate dual camera modules and IT illuminators.

Exhibit C – Camera types and functionality



Infra Red Illuminators – These small LEDs project infra-red light in the direction the camera is facing. The IR is invisible to the naked eye but illuminates an area that can be viewed by an IR sensitive camera. It is especially useful in illuminating retro-reflective number plates as used in Great Britain. The IR light is reflected by the number plate back in the direction it was originally transmitted, thus illuminating the Vehicle Registration Mark (VRM) for better visibility by the camera.

Contextual Overview Camera (Colour) – Recording constantly, this camera is not zoomed and captures an overview of any events that occur within its field of view. The camera is mounted in a fixed position with no pan or tilt mechanism. Once mounted by an engineer using a Mobile Elevated Work Platform (MEWP), it will remain in this position.

Close-up Camera (Monochrome ANPR) Camera – The close-up ANPR camera is specifically designed to capture an image of a passing VRM. Mounted within the same camera housing as the IR illuminators and the contextual overview camera, the ANPR camera can only read VRM's within the same area of interest. The ANPR camera has to be preconfigured to a narrow field of view to ensure optimum plate reads within a very specific area, this area can only be one lane of traffic. Multiple dual camera units would be required when operating over multiple lanes. Note that the view almost completely removes any objects illuminated by daylight / street light to lower false positive reads. This is known as 'band pass filtering and is accepted by the VCA and adjudication. When the camera is switched on, any retro-reflective number plate passing through the cameras field of view will be illuminated and read by the cameras ANPR system.

In order to prevent the cameras from identifying Buses, Taxis and other 'permitted vehicles' it is essential that the system installers or Zenco are provided with an accurate 'permitted vehicle list' or 'white list' of VRM's. It is this list that allows the system to recognise permitted vehicles and remove them from the evidence process.

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