Beech Road Safety Working Group (BRSWG) -

Supplementary Report - Community Speed Watch Cameras and Vehicle Activated Displays: March 2021

Introduction

This note reviews the performance and pricing of three items of electronic traffic calming equipment.

- The Safe-Speed ANPR speed camera recently demonstrated to Beech Parish Council [Ref.1].
- The AutoSpeedWatch speed camera [Ref.2].
- The VARIO Vehicle Activated Display [Ref.3].

Other devices are available but the AutoSpeedWatch camera and the VARIO Display were chosen for review because they are reputed to be the most popular models of their type on the market and have both been tested and recommended by other Road Safety Groups or Parish Councils.

Background Information

Community SpeedWatch

Starting with the first trial in 2001, in the village of Ash in Somerset, there are now over 2000 Community SpeedWatch Groups across the UK. Volunteers are trained to use police approved equipment to monitor speeding vehicles and pass the details to the police to follow up with warning letters and, if these are ignored, a visit from police officers. A few SpeedWatch fixed automatic speed cameras have been installed as alternatives to the roadside hand-held devices but these have not been widely adopted. The primary purpose of SpeedWatch is education rather than enforcement and the information collected by SpeedWatch groups cannot be used for issuing of penalty notices.

SpeedWatch groups are registered by the police at a county level and each county has its own policies and rules on how the scheme is operated. Identifying the owners of the vehicles and the issuing of warning letters is entirely the responsibility of the police and the amount of effort they put to this depends on budgets, staffing levels and current priorities. Historically the numbers of letters issued by the police for each SpeedWatch group has varied greatly, including periods when activity stopped completely. But, the numbers have always been small compared to the total number of speeding drivers.

To operate a SpeedWatch fixed camera therefore, the support of the police is essential and permission from the County Highways department is needed to site the camera and for the deployment of warning signs.

Opinion polls have shown that Community SpeedWatch is generally well supported by the public, but it can sometimes be divisive. Comments on social media sometimes refer to the unpleasant feeling of being watched and threatened with being reported to the police by your neighbours, and that having people on the roadside pointing speed guns at you makes driving more stressful. Fixed speed cameras are also mentioned as being intimidating, giving rise to the feeling that one might be

penalised for a momentary lapse of attention. This is less likely to happen with average speed camera systems and it is thought that these are more readily accepted by drivers for that reason. Average speed cameras are also more effective than single fixed cameras at reducing speeds over extended distances. A short trial of SpeedSpike, a US manufactured average speed camera system, was carried out by a local SpeedWatch team and the Hampshire Police in Hursley Village, Hampshire in 2012, but evidently it was not adopted permanently and currently, as far as can be determined, average speed camera systems are not used with SpeedWatch anywhere.

Currently (March 2021) all roadside Community SpeedWatch activity has ceased due to COVOD-19 safe distancing rules and Hampshire Constabulary are not accepting applications to register new Community SpeedWatch groups.

Automatic Number Plate Recognition (ANPR)

ANPR is a technology for automatically reading vehicle number plates. It is used extensively in car parks and on private roads, for example, at entrances to supermarket car parks to monitor car park use. ANPR is also used by law enforcement agencies to help detect, deter and disrupt criminality including tackling organised crime groups and terrorists. Vehicle movements on UK roads are recorded by a network of 11,000 police cameras that submit around 50 million ANPR "read" records to national ANPR systems daily. The presence of police ANPR cameras is indicated by small rectangular “ANPR” signs by the carriageway. Other ANPR cameras are used for speed enforcement through roadworks and other high accident-risk locations, mainly on motorways and trunk roads, and sometimes as part of average speed enforcement systems.

Equipment

Specifications and Costs

Device	Radar speed detection	Two way traffic	Elec. Supply	Number plate camera	ANPR	Data down-load	LED Display	Purchase cost	Annual licence fee
Safe-Speed MAV Systems Ltd.	Yes	Yes	Mains	Yes	Yes	Yes (4G to server[1])	No	£10,000 (inc. 2yr licence) + installation and signs	£1600 + elec. charge
AutoSpeed Watch Auto Speed Watch Ltd. Extra solar panel	Yes	No	Solar	Yes	No[2]	Yes[3] (4G to server)	No	£549 (inc. 1yr licence) + mounting post and signs £85	£148
VARIO Vehicle Activated Display (VAD) Morelock Ltd.	Yes	Yes (speed 2 way, display one way)	Battery / mains or solar	No	No	Yes (Blue-tooth, or USB flash drive)	Yes	£2695 + mounting post and signs	No
Existing Beech Speed Limit Reminder (SLR)	Yes	No	Battery	No	No	Yes (USB cable)	Yes	-	-

[1] The Safe-Speed uses the strongest 4G available from any network. If the signal is lost it will store data until it is restored.

[2] AutoSpeedWatch has informed us that a beta ANPR capability is included in the analytical software on the server but not listed in the specifications, as the performance is unsatisfactory. Future upgrades are expected. ANPR can be enabled or disabled in the software. [Ref]

[3] AutoSpeedWatch uses the strongest 2G, 3G or 4G signal available from any network.

The Safe-Speed ANPR Camera

The Safe-Speed ANPR camera is a mains powered unit which is usually fixed to a pole above the road and requires authorisation from the utility company to connect to the supply. It is not intended to be moved from site to site.

The camera has a sophisticated optical/IR imaging system that enables it to produce high quality digital images of the number plates, together with radar speed data for vehicles travelling in both directions. Used as part of SpeedWatch, ANPR makes the process of identifying repeat offenders' vehicles more efficient. Residing on the company's secure server, the ANPR system reads the licence number of every vehicle passing the camera. Like any optical character recognition (OCR) system the process has a certain error rate and produces a small proportion of incorrect licence numbers but it is only after the decision has been made to process a speeding vehicle that a police operator checks the accompanying photograph to make sure the ANPR system has read the number correctly. If confirmed, the vehicle details are added to the police database containing results from other SpeedWatch groups. This reveals whether the vehicle has also been recorded speeding by other SpeedWatch Groups and allows the police to decide on the appropriate action.

The potential benefit of having ANPR on a speed camera is in processing relatively large amounts of data. However, it is evident from Parish Council Minutes, Road Safety Group notices and information issued by the police that, even in the most intense periods of SpeedWatch activity, the numbers of warning letters sent out by the police rarely exceeds more than about 25 per month for each SpeedWatch group (Refs.4-6). For the SpeedWatch volunteer, the task of visually checking perhaps a few tens of digital photographs per week is a relatively simple task and, under these circumstances, the benefits of ANPR would seem to be marginal.

It has been suggested that ANPR Community Speed cameras could be used to assist police in detection and prevention of rural crime. Community Speed Cameras cannot legally be used in this way. However, the police are permitted to act on information on criminal activity they uncover when following up reports of persistent speeding drivers who ignore warning letters.

The Effectiveness of The Safe-Speed ANPR Camera

The manufacturer's website refers to a Safe-Speed ANPR camera trial carried out by Rodborough Road Safety Working Group near Stroud in 2016 [Ref.7]. During the year long trial, the proportion of vehicles exceeding the 30 mph limit fell from 33.5% to 24% of the total number of vehicles passing the camera [4]. Roughly 1.3 million instances of vehicles exceeding the speed limit were recorded and 275 driver warning letters were issued by the police. Results were also reported the following year for a Safe-Speed camera on a 20 mph limit road in the neighbouring parish of Whiteshill [Ref.8], where the proportion of vehicles exceeding 24 mph was reported to have fallen from 40-50% before the camera was installed to 15% after 6 months of operation but it was not clear how the earlier figure had been obtained. No other reports of Safe-Speed camera installations or trials can be found on the internet and the manufacturer's website refers only to the Rodborough trial. A News section on the manufacturer's website lists seven local and national television and newspaper reports from different parts of the UK and all link back to the original 2016 Rodborough trial.

The AutoSpeedWatch Camera

AutoSpeedWatch is an inexpensive fixed speed camera system designed to work with SpeedWatch [Ref.2]. In the FAQ section of their website, in answer to the question, "*Can roadside cameras be moved between different locations?*" the manufacturers state, "*No. Not currently. The units have been designed to be simple, affordable, and fit-and-forget; as a consequence, the units are designed to be permanently fixed at a single position, and not moved between locations. Currently, the captured data each unit is synonymous with a physical location, and moving the unit will invalidate*

[4] Rodborough Road Safety Working Group has since been disbanded.

all previous data recorded by the unit, and would require data-reconfiguration. We will consider adding multiple location support to our development road-map, should there be sufficient demand".

It has the same basic capabilities as the Safe-Speed camera but with some important limitations. It only works in one direction, has a less sophisticated imaging system and has only rudimentary ANPR. Also, the unit requires a certain light level to operate and so does not operate at night and during the day sometimes if the light is poor. To help extend the operating hours, particularly in the winter, an optional second solar panel can be fitted above the unit.

Because of the limited ANPR capability, it is necessary for a SpeedWatch volunteer to check the accompanying photographs on the server and extract the vehicle licence numbers before identifying vehicles that are repeatedly breaking the speed limit. For large data sets some down-selection is necessary first. This is typically done by selecting a particular speed threshold e.g., every car exceeding 38 mph and then, after the vehicle licence number has been read from the photograph and the vehicle colour, make and model checked against the national database (no vehicle owner information), the data can be forwarded to the police.

The Effectiveness of the AutoSpeedWatch Camera

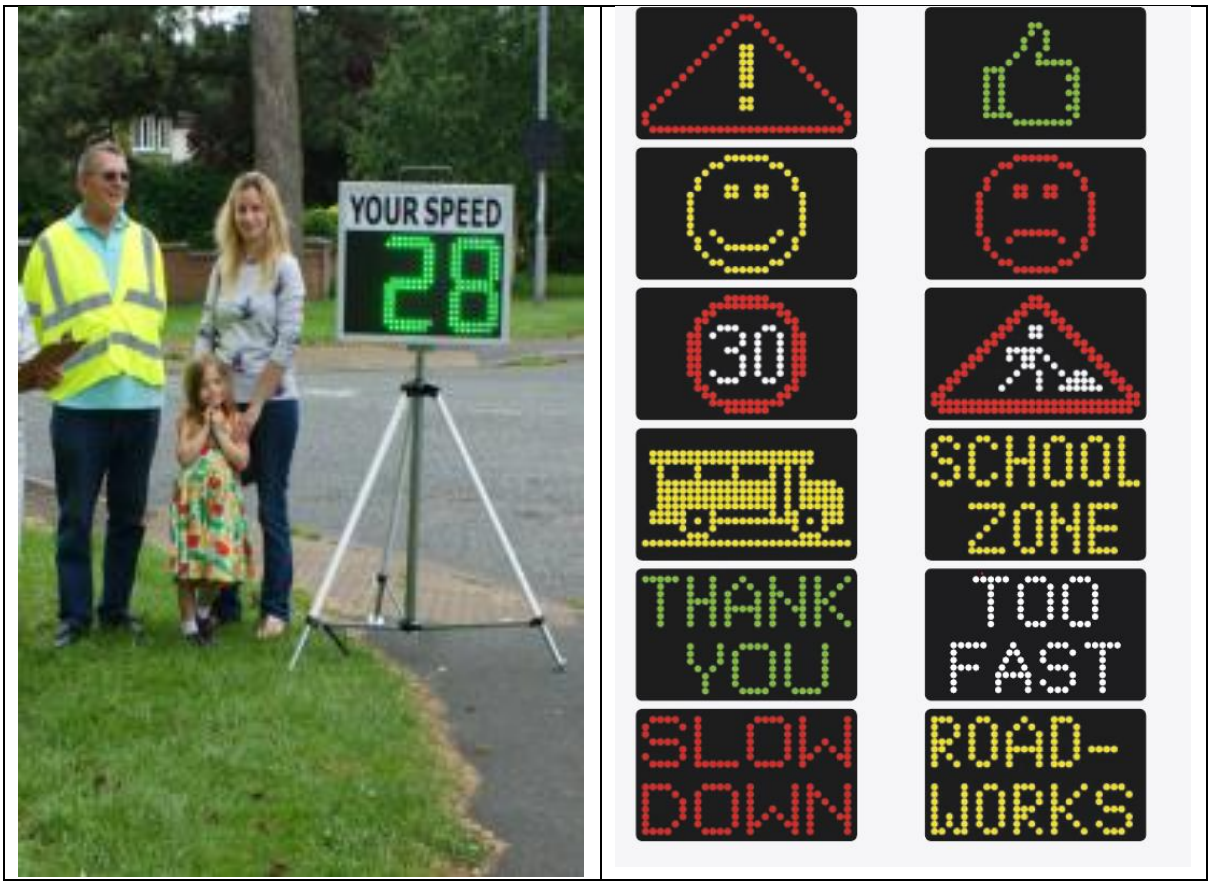
A trial of the AutoSpeedWatch camera system was carried out by Stroud District Road Safety Group[5] on a 30 mph speed limit road at the end of 2019 (Ref.9). They compared results from the first four weeks of covert operation of the camera without any warning signs with the following four week period when signs, warning drivers that speeding vehicles risk being reported to the police, were on display. The results showed a reduction of the number of vehicles exceeding a threshold speed of 38 mph from 801 to 401. The group concluded that: "As an alternative to roadside community speed watch groups, this device seems to offer an excellent, cost-effective solution, offering a full-time, automated speed monitoring service" and went on to say, "Stroud District Road Safety Group recommends that AutoSpeedWatch should be considered as part of an integrated approach to modifying driver behaviour and reducing speeding". In recent telephone contact between Beech Road Safety Working Group and the Chairman of the Stroud District Road Safety Group, the Chairman emphasized the importance of clear signage spelling out the threat of being reported to the police. He mentioned that other neighbouring parishes had deployed the AutoSpeedWatch camera without warning signs and had found little or no effect on traffic speeds. The reason would seem to be that the AutoSpeedWatch camera is a small, inconspicuous grey box which drivers do not recognise as a speed camera. AutoSpeedWatch Ltd have also emphasized the importance of signage and told us that they are about to introduce a range of larger, more eye-catching signs.

Generally, with speed camera warning signs there seem to be two schools of thought. If the main objective is catching the worst speeders and sending them letters from the police to persuade them to slow down then it is better not to warn them and to catch them unawares. On the other hand, if the objective is to persuade all drivers to slow down a bit and think about what they are doing then they need to be told that there is a camera ahead. Interestingly, the Rodborough trial of the Safe-Speed camera did not have any warning signs and it took several months for the speed reductions to kick in.

[5] Stroud Road Safety Group disbanded in 2020 and their cameras and VADs were sold.

The fact that the AutoSpeedWatch camera cannot operate at night-time means that, unlike the Safe-Speed system or indeed our existing SLR, it cannot be used to gain a full picture of traffic speeds and numbers. But, otherwise, as Community SpeedWatch is currently operated, the lack of night-time data is not really a problem. As already discussed, under SpeedWatch the police only have the capacity to process a small fraction of the vehicles breaking the speed limit, typically up to about 25 per month for each SpeedWatch team (and often fewer), so even a simple camera system like this can identify more than enough persistent speeding drivers for the police to deal with and although it is true that speeding at night will be missed, those drivers are very likely to do the same thing during the day and so would show up in the data in due course.

The VARIO Vehicle Activated Display



The VARIO vehicle activated display (VAD[6]) is recommended by several other Community SpeedWatch groups and has been used extensively across England. For example, Dorset County Council has supported a large scale deployment across the county [Ref.10]. It should be noted that each county authority has its own rules and policies relating to VADs. For example, the rules in Dorset restrict both duration and frequency of deployment: "Dorset SIDs should not be deployed permanently but as directed by us as the Highway Authority. Deployment periods are currently for 4 to 6 weeks per site, with a limit of 3 sites per SID"[Ref.11].

The unit has a bright, multicolour display, and comes with a choice of pre-programmed messages, together with the ability to programme new messages. One feature mentioned in blogs as being particularly appreciated by passing drivers is the option to change the message depending on the vehicle speed, for example, THANK YOU if the driver responds by slowing down. It records the speed of all vehicles approaching from both directions and stores them for later download and analysis.

The Effectiveness of the VARIO Driver Activated Display

Numerous reports on the internet mention significant reductions in speed for traffic approaching the VARIO display sign and a selection of these are available on request from BRSWG. In one particularly well planned trial, a SpeedWatch group in Oakley, Befordshire found that the number of vehicles speeding was approximately eight times fewer when the display was operating normally, compared with when the device was in stealth mode with the display turned off.

[6] Also known as Speed Limit Reminders (SLRs) or Speed Indicator Device (SIDs)

Final Comments

The two speed-camera systems reviewed have been shown to be compatible with Community SpeedWatch and able to record speeding vehicles and transmit their findings to the police as intended. All the devices, including the VARIO Vehicle Activated Display, have been shown to bring about reductions in the speed of approaching vehicles, providing drivers are made aware of their presence.

It is likely that speed reduction effects of traffic calming devices like these extend beyond their immediate vacinity and various national and international studies have investigated the so called 'halo' effect for police speed cameras on freeways and motorways. In these, a distance of up to 500m is sometimes quoted but how this relates to a rural single-carriageway road with a 30 mph limit is not known.

The astonishing growth of the Community SpeedWatch movement over the last 20 years indicates how important the problem of speeding vehicles is to local communities across the country. Through the efforts of thousands of volunteers, the issue of speeding traffic has risen to the top agenda and become a key theme in local government and policing. In the right situations the SpeedWatch roadside teams have a very real impact on the traffic speeds. Automating the SpeedWatch activity might have a part to play in dealing with the problem but eliminating completely the need for volunteers to interact directly with the motoring public might risk losing the communal dimension that has helped to make the movement so successful.

Conclusions

In February 2021 Beech Road Safety Working Group presented their report on improving the safety and security of pedestrians in Beech. In the report, many different measures were examined, including speed cameras, and the Working Group recommended a scheme consisting of on-road and off-road footways linking together the different parts of the village. This is the scheme that was approved by Beech Parish Council for submission to Hampshire County Council for the first stage of the approval process, a Preliminary Safety Audit. The recommended scheme was chosen in preference to the alternatives partly on the perceived likelyhood of gaining approvel from Hampshire County Council but also on factors such as their effectiveness in improving pedestrain movement through the village and the suitability of the different options in our rural setting.

The additional information contained in this supplementary report has not changed the Working Group's recommendations. Our conclusion is that, although the cameras and display devices decribed here may reduce the number of vehicles speeding, due to the special circumstances in Beech, this is unlikely to make much difference to the experience of pedestrians walking in the village. Many vehicles fail to slow down or move out enough when approaching pedestrians. Even if all vehicles were restricted to the speed limit of 30 mph the situation would still be intolerable if it was not accompanied by a change in driver behaviour.

References

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3 VARIO Speed Indicating Display (SID), UK Stockists - Morelock Ltd.

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4 Community SpeedWatch Report – Kent and Sussex 2013-2020

https://communityspeedwatch.org/FRONT-v2-Download_Report.php

5 Hampshire Community SpeedWatch – FOI Request 2017

https://www.hampshire.police.uk/SysSiteAssets/foi-media/hampshire-constabulary/other_information/hc-002822-17.pdf

6 Metropolitan Area SpeedWatch, Numbers of Warning Letters 2017-2019 - FOI Request

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https://kingswoodparishcouncil.gov.uk/wp-content/uploads/2017/12/Agenda-Item-14-May-2017-The-Final-Results-from-the-ANPR-Camera-system-sited-on-the-Stroud-A46-1.pdf

8 Whiteshill Parish Council trial of Safe-Speed camera.

https://whiteshillandruscombe-pc.gov.uk/wp-content/uploads/sites/7/2018/06/PP-Presentation.pdf

9 AutoSpeedWatch trial – Stroud District Road Safety Group 2020

https://store.autospeedwatch.org/image/docs/SDRSG_ASW_report.pdf

10 Dorset SID Deployment

https://news.dorsetcouncil.gov.uk/2020/10/21/praise-for-successful-community-road-safety-scheme/

11 https://www.dorsetcouncil.gov.uk/roads-highways-maintenance/road-safety/community-speed-indicator-devices.aspx