



**Road Safety
Camera
Commissioner**

ROAD SAFETY CAMERA PROGRAM - DOWNTIME REVIEW

29 June 2020

The Road Safety Camera Commissioner respectfully acknowledges the Traditional Owners of the land of Victoria and pays respect to their culture and their Elders past, present and emerging.

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PURPOSE

- 1 This report is in response to a letter dated 18 December 2019 and received on 10 January 2020 from the Minister for Police and Emergency Services requesting the Road Safety Camera Commissioner examine the impact of downtime, in particular 'long-term' deactivations, to the operation of the road safety camera system and any potential correlation of downtime with lower infringements in FY2018-19. This request is in accordance with s10(c) of the *Road Safety Camera Commissioner Act 2011*.

BACKGROUND

- 2 The primary objective of Victoria's road safety camera system is to reduce road trauma by creating safer roads, safer drivers and safer speeds as part of a Safe Systems approach. Victoria's fixed road safety cameras operate along major highways and at select intersections. The government's mobile road safety cameras can operate from approximately 2,000 sites. These sites have been chosen as they have been identified as high-risk locations due to reasons such as collision history, the types of roads or documented driver behaviour.
- 3 The Department of Justice and Community Safety (DJCS) is responsible for the management of the road safety camera system, overseeing the monitoring, maintenance and testing of the camera systems to ensure their accuracy and reliability.
- 4 Road safety cameras operate in a complex environment where different agencies have competing interests and requirements. All road safety cameras will, from time to time, be subject to downtime for various reasons, including but not limited to roadworks, certification and testing, system upgrades and damage suffered from collisions or vandalism.
- 5 The duration of periods of camera downtime can vary from days to years, depending on the complexity of the issue. Road safety camera downtime reduces the capacity and effectiveness of the system in meeting its key objective of reducing road trauma. If parts of the network are not enforcing, drivers who contravene the road rules are less likely to change their driving behaviour because they do not receive an infringement notice. Therefore, downtime should be efficiently managed in order to maximise camera operations and effectiveness of the system.

SCOPE OF REVIEW

- 6 DJCS provided infringement and camera operational data for the 914-day period between 1 July 2017 and 31 December 2019. This data survey period was chosen because it provides a contemporary snapshot of downtime trends and its causes. Analysis of the data identified: -
 - The magnitude of the downtime experienced by the road safety system over time.
 - How downtime affects the performance of the camera system over time.
 - The trends in, and causes of, road safety camera downtime.
 - Which agencies control and influence the causes of downtime.
 - Correlation between road safety camera downtime with a decrease in the number of traffic infringements issued between FY2017-18 and FY2018-19.
- 7 The first half of FY2019-20 was included in the data survey to provide an indication of the trend of system downtime and infringement rate for FY2019-20.

PROCESS OF REVIEW

FIXED CAMERA DATA ANALYSIS

- 8 Victoria's fixed road safety cameras operate continuously at their installation site. Downtime was examined on a site-by-site and a lane-by-lane basis as lanes and functions (speed and red-light) can be deactivated individually, while the rest of a site remains operational. For the purposes of this Review a site was only considered deactivated when all its lanes and functions were not operational.
- 9 Information about works performed and changes to fixed road safety cameras is retained by DJCS in the SiteTrak system. SiteTrak information includes, but is not limited to, the time of and a reason for the activation or deactivation of camera sites, lanes or functions. There were more than 60 activation and deactivation reasons identified, with no high-level categorisation for downtime. To expedite this Review, the information was classified into six broad categories: -
 - Upgrades – when software or hardware upgrades are performed at a camera site.
 - Roadworks – when works at or near the camera site disrupts the operation of a camera site.
 - Certification – when a camera site undergoes testing and certification processes.
 - Environmental – when a camera site has been damaged by events, such as vandalism or vehicle collisions.

- Policy – when a camera is deactivated because its operations are not in accordance with DJCS policy. For example, when a camera has missed a routine, non-certification test.
 - Technical issue – when camera operations are impacted by system component issues. For example, loss of communications, traffic lights or power supplies.
- 10** In preparing the background material for this Review, the ranges of the length of time for downtime made analysis difficult. Categorisation of downtime periods was also needed in order to draw any meaningful conclusions. The duration of downtime for each camera site and lane was classified into three duration categories. These were developed for the purpose of this Review in the absence of similar categorisation by DJCS. Downtime periods are categorised as: -
- Short-term if the deactivation lasted 28 days or shorter.
 - Medium-term if the deactivation lasted between 29 to 89 days inclusive.
 - Long-term if the deactivation lasted 90 days or longer.
- 11** Longitudinal and pie charts were generated using the duration and downtime category data to demonstrate how the magnitude of short, medium and long-term downtime, and the proportion of downtime attributed to each downtime category over the 914-period.
- 12** To determine whether there was any correlation between camera downtime and the decline of infringements between FY2017-18 and FY2018-19, an estimate of unissued infringements and unrecorded detections due to downtime for the survey period was calculated for fixed road safety cameras. This estimation was made using the average infringement rate per quarter of each camera site.
- 13** See Road Safety Camera Program - Downtime Review, Preliminary Analysis Report.

MOBILE CAMERA DATA ANALYSIS

- 14** Mobile cameras are operated by Serco Traffic Camera Services (Vic) Pty Ltd (Serco) on behalf of the government. Serco is contracted to operate at least 95 percent of rostered mobile camera hours per calendar month and additional hours can be purchased by the government above the rostered baseline. The downtime of mobile and fixed cameras cannot be directly compared. For the purposes of this report, downtime of mobile road safety cameras is defined as contracted hours that were not delivered.
- 15** DJCS provides regular mobile road safety camera data to the Road Safety Camera Commissioner of the number of baseline and additional hours worked per month and the number of infringements resulting from those hours. This data was analysed to determine the trend of camera hours worked and issued infringements during the survey period.

CONSULTATION PROCESS

- 16 The Analysis Report into the data was provided to DJCS, Department of Transport (DOT) and Victoria Police for consideration and feedback. Discussions were held between the Road Safety Camera Commissioner and each of these agencies to explore the outcomes of the analysis and the reasons for the downtime.
- 17 The Commissioner sought feedback from these agencies regarding the conclusions and his recommendations arising from this review.

OUTCOMES OF ANALYSIS

FIXED CAMERAS

- 18 Overall, the fixed road safety camera system experienced 41,818 site-days (18.45 percent) of downtime out of a possible 226,672 site-days through the data period. Approximately 80 percent of downtime was attributed to long-term deactivations. There was a spike in downtime at the start of the data survey period which was related to the presence of the WannaCry virus on some road safety camera systems¹.
- 19 Site based downtime improved from 20.58 percent in FY2017-18 to 15.62 percent in the first half of FY2019-20. This was attributed to intersection sites, where downtime improved from 20.98 percent in FY2017-18 to 14.54 percent in the first half of FY2019-20 due to the completion of Upgrades and reduction in Certification downtime. However, downtime at highway sites increased slightly from 18.90 percent to 20.09 percent over the same period due to Technical issues starting in September 2018 and Roadworks starting in January 2019.
- 20 Roadworks was the largest common factor impacting fixed road safety camera operations and some cameras were deactivated for the full 914-day survey period for this category. The proportion of downtime attributed to Roadworks increased from 35.67 percent of site downtime in FY2017-18 to 49.51 percent in the first half of FY2019-20. Some camera sites were deactivated due to roadworks before the start of the data survey period and remained deactivated after the end of the survey period. Analysis also showed there was a surge of Upgrades that began in January 2018 and ended in January 2019 and that there were also short term 'spikes' in downtime attributed to Certification.

¹ . The Road Safety Camera Commissioner's report into the WannaCry virus infection on Victoria's road safety camera system was released on May 24 2018 and can be found on the [News and Publications page](#) of the Road Safety Camera Commissioner's website.

MOBILE CAMERAS

- 21** Mobile road safety camera operations were not affected by downtime to the same level as that experienced by fixed cameras. Serco completed 275,865.64 (98.66 percent) of 279,600 rostered baseline hours through the data survey period. From November 2018 to the end of the survey period, the government purchased 3,950 additional hours above the baseline requirements. Serco operated 3,469 (87.82 percent) of those additional hours.

INFRINGEMENTS

- 22** Infringement data was analysed to determine the impact of downtime on the number of infringements issued. The number of infringements issued across fixed and mobile cameras declined by 90,078 (6.83 percent) from FY2017-18 to FY2018-19. Infringements issued in the first half of FY2019-20 declined a further 58,699 (4.46 percent) compared to the same period in FY2018-19.
- 23** Fixed cameras accounted for most of the decline in issued infringements. 90,078 fewer infringements were issued in FY2018-19. Fixed camera infringements dropped by 71,119 (78.95 percent), compared to 18,959 (21.05 percent) fewer mobile infringements. This trend continued in the first half of FY2019-20, with a further 50,399 fewer fixed camera infringements issued, contributing 85.86 percent of the 58,699 decline. Mobile camera infringements also fell by 8,300 during the same period, comprising 14.14 percent of the overall decrease.
- 24** Using the average infringement rate for fixed road safety cameras, it was calculated that camera downtime prevented the detection of approximately 700,000 infringements during the survey period

DISCUSSION

BETTER DATA / AUDIT / MANAGEMENT

- 25** DJCS officers advise that downtime can be prolonged by issues unrelated to the initial deactivation reason. Current SiteTrak data does not identify when other issues arise that delay the reactivation of cameras. Improvements to the quality of data in SiteTrak would enable precise categorisation of downtime and allow for accurate reporting into the status of individual cameras and the overall system.
- 26** Some long-term deactivations started before and continued after the end of the survey period, meaning their durations are longer than 914 days. SiteTrak data relating to these and other long-term deactivations does not provide consistent information about the work being undertaken to restore operation. For example, DOT indicated that while Roadworks at some long-term deactivated sites had concluded, the cameras remained non-operational. DJCS may consider auditing deactivated cameras to establish why they remain non-operational to assist in

effective management of these sites. Additional monitoring of deactivated sites by the DJCS Risk and Audit Committee may be required to ensure the appropriate level of governance and management is being applied in the resolution of such sites.

- 27** DJCS is to be commended for reducing the magnitude of Certification downtime over the data survey period, though 'spikes' in Certification downtime occur regularly. This suggests that Certification might be scheduled based on the proximity of locations to each other or convenience for contractors. There may be an opportunity for DJCS to review its management and scheduling practices to determine how it can minimise the occurrence of spikes in Certification with the view to spread downtime as evenly as possible.
- 28** Upgrades are essential to ensuring the camera system keeps pace with technological development and capability. Upgrades should be part of a continuous program of works that are scheduled in a manner that minimises their impact on system operations. It is evident that some cameras were part of a surge of Upgrades beginning in January 2018 and ended in January 2019. There is an opportunity for DJCS to implement an asset management strategy that ensures technological developments and system updates are deployed in a manner that minimises disruption to the operation of individual cameras and the overall system.
- 29** From this Review it is apparent that there is a need for DJCS to reconsider its governance and partnership structures in order to ensure that there is both accountability but also an ability to respond quickly to changes in circumstances. The relationship with DOT is critical going forward and consideration about how that may be formalised should also be considered.

EXISTING LONG-TERM DEACTIVATED SITES

- 30** Some sites have remained deactivated for longer than seems reasonable, particularly at sites where cameras remained non-operational despite the conclusion of associated Roadworks. This suggests that new issues arose during the restoration process. As a priority, there is a need to resolve long-term deactivated sites.
- 31** DJCS may benefit from conducting a review of the existing long-term deactivated camera sites to determine their current status, and the outstanding issues preventing their return to operation. Understanding the outstanding issues will support the development of site management plans to return these sites to service as soon as practicable. Site management plans would also assist by ensuring governance and accountability for the management of sites. Escalation of issues to Deputy Secretary or Secretary level if required and clearly identify opportunities for engagement with organisations such as DOT, Transurban or local government to improve scheduling and collaboration is needed.
- 32** There is no enforcement at fixed camera sites when long-term deactivations occur. There may also be additional risks introduced to the environment in some cases such

as Roadworks where substantial barriers are erected and lanes narrowed, or there are people working on or near the road. Part of a long-term deactivated site's management plan should include consideration of using alternative methods of enforcement, such as mobile cameras or by Victoria Police, at those locations to address these risks.

- 33** In some cases, major roadworks will permanently change the road environment which could resolve identified road safety issues. There is scope for DJCS to examine changes in driver behaviour at these locations and determine whether the road safety camera site should be restored to operation or if it could be moved to another location where there is an identified road safety need.

FUTURE SITES

- 34** DOT, local government and private organisations such as Transurban administer Roadworks while DJCS administers the road safety camera system. Roadworks undertaken by DOT and other organisations, scheduled or otherwise, directly impact camera operations. DJCS should actively engage these partners when creating future site management plans to set out a mutually agreed schedule for return of control of sites to DJCS and the process of site restoration.

MAJOR ROAD WORKS

- 35** Roadworks emerged as the major reason for downtime of fixed cameras. Major works sites commonly require significant changes to the road environment, such as the removal of emergency lanes, overhead speed limit signage, road safety cameras and the erection of semi-permanent barriers that constrict lane width. DOT officers acknowledged that current traffic management and safety plans for major works, such as the Westgate Tunnel, do not fully consider the management and enforcement of speed.
- 36** However, given the increased road safety risk at these locations, current and future major roadwork site plans need to consider alternatives to speed management and enforcement, such as mobile road safety camera setup points, temporary fixed cameras and safe zones for Victoria Police officers. DOT should seek input from DJCS and Victoria Police in the creation of such plans.
- 37** The environmental changes in major roadworks zones results in increased risk to the public, road workers and emergency services personnel. There are risks of death or serious injury as a consequence of drivers not adhering to risk mitigation measures, such as reduced speed limits or observing lane access controls. It is imperative that the community is reminded through a concerted and sustained information campaign that addresses the need to comply with safety measures for the safety of road users, workers and Emergency Services personnel operating in and around those environments.

INFRINGEMENT TRENDS

38 It is estimated that downtime could have prevented the detection of approximately 700,000 infringements. Community confidence in the Road Safety Camera system relies on it being fair and accurate. The fairness of some motorists receiving infringements for driving behaviours done by others who are not infringed at the same location when cameras are down undermines that fairness. Downtime therefore also impacts on both the specific and general deterrent objectives of the camera programme. The ORSCC will, following this Review, continue to monitor the impact of downtime on the numbers of infringements issued in order to better understand this issue.

MANAGEMENT OPTIONS TO ADDRESS FIXED CAMERA DOWNTIME CATEGORIES

39 Minimising the downtime of fixed road safety camera systems can be achieved by effective planning and management of short, medium and long-term deactivations. Through the conduct of this review a number of management options were offered or identified to address downtime. The Management Responses outlined in the below consolidated table may be of value in efficiently returning deactivated cameras to service: -

DEACTIVATION CATEGORY	RESPONSIBLE AUTHORITY	MANAGEMENT RESPONSES
Certification	DJCS	<ul style="list-style-type: none"> • Strategy • Contractor management • Project management • Scheduling • Coordination of activity
Policy	DJCS	<ul style="list-style-type: none"> • Strategy • Forecasting • Project management
Upgrades	DJCS	<ul style="list-style-type: none"> • Strategy • Program management • Contractor management • Project management • Coordination of activity • Scheduling
Technical issue	DJCS	<ul style="list-style-type: none"> • Forecasting • Project management • Contractor management • Preventative maintenance • Preventative repairs/replacement
Environmental	DJCS controls speed of response but caused by external factors.	<ul style="list-style-type: none"> • Forecasting • Contractor management • Project management

Roadworks	Department of Transport, local councils, tollway operators	<ul style="list-style-type: none"> • Stakeholder engagement • Coordination • Strategy • Program management • Project management • Contractor management • Alternative measures that meet road safety objectives
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CONCLUSIONS

- 40** The fixed camera system lost approximately 18.45 percent of available site-days to downtime during the data survey period, and as identified, that downtime may have resulted in the failure to detect approximately 700,000 infringements. Mobile cameras were not affected by downtime and were able to complete 98.66 percent of rostered baseline hours and 87.82 percent of hours purchased by government.
- 41** Approximately 80 percent of fixed camera downtime was classified as long-term. DJCS officers advise that new issues can arise during deactivations and prolong downtime. However, the data within SiteTrak could not identify when this occurred, the nature of the issues and how they affected sites. Auditing deactivations and improving data quality would enable a better understanding of the issues and lead to more effective management of long-term deactivations.
- 42** DJCS is to be commended for improving the duration of Certification downtime and for its program of Upgrades to camera systems. However, regular short-term 'spikes' in Certification are encountered and a surge of Upgrades occurred between January 2018 and January 2019. There are opportunities for the Department to review its management practices for these and other categories of downtime that are within its direct control or influence.
- 43** This Review identified that Roadworks is the largest common factor affecting fixed camera operations. While DOT does not engage in the administration of the camera system, it recognised that improving its engagement would assist DJCS with scheduling works to minimise downtime. Some camera sites remained deactivated even though Roadworks at those locations have been completed. This suggests that there are opportunities for DJCS to improve the management of existing long-term deactivations through better planning, stakeholder engagement and governance.
- 44** DOT has acknowledged that current traffic management and safety plans at major roadworks sites do not fully consider the management and enforcement of speeds. The public drive through these work sites which can be the subject of major environmental changes resulting in increased risk to motorists, workers and emergency services personnel. DOT has agreed that it needs to engage with DJCS

and other road safety stakeholders such as Victoria Police to improve traffic management and safety plans at major roadworks, including alternative methods of speed management and enforcement. DOT also acknowledges there is a need to work with Road Safety Partners to educate the community about the increased risk at these locations and increase compliance with safety measures.

RECOMMENDATIONS

BETTER DATA /AUDIT / MANAGEMENT

- 1** That DJCS update and validate the SiteTrak data system as to the reasons why sites are currently deactivated.
- 2** That DJCS Audit and Risk Committee consider monitoring of the resolution of long-term deactivations as a discrete organisational risk to DJCS.
- 3** That DJCS review its management practices in the conduct of upgrades and testing of camera sites to determine if there are opportunities to reduce downtime through better scheduling and active management.
- 4** An asset management strategy should be implemented to ensure the development and implementation of new technology is rolled out in a scheduled and expedient manner resulting in limited downtime.
- 5** That appropriate level governance oversight and management processes over deactivated sites be put in place to ensure matters can be escalated to Deputy Secretary and Secretary level and onto other stakeholders for resolution.

EXISTING LONG-TERM DEACTIVATED SITES

- 6** DJCS should conduct an audit of long-term deactivated camera sites to establish the reasons why those sites remain deactivated.
- 7** Develop site management plans for all long-term deactivated sites.
- 8** Until sites are reactivated, DJCS, consider what alternative methods of enforcement can be utilised, either mobile cameras or Police enforcement.
- 9** That DJCS consider the current need for long term deactivated sites based on analysis of current driver behaviours at the site and the impact of traffic calming that may have been installed during roadworks which may have addressed the road safety risks of the site.

FUTURE SITES

- 10** That DJCS engage more actively with the DOT and relevant local authorities to ensure that any future upgrades or other works resulting in the deactivation of a road safety camera include a planned schedule for the reactivation and hand back of the asset to DJCS.

MAJOR ROAD WORKS

- 11** That DOT include in any safety plan for future major projects elements of traffic speed management and traffic speed enforcement.
- 12** As part of the speed enforcement plan DOT work with DJCS and Victoria Police to consider provision within the sites. For example, provision for mobile speed camera vehicles, safe zones for police vehicles to conduct enforcement and / or the use of temporary point to point speed cameras.
- 13** That DOT review existing safety plans for current major road projects to consider what steps can be taken to better enable speed management and speed enforcement.
- 14** That DOT consider a community information campaign to address understanding of the need to comply with road work speed zone for the safety of motorists as well as workers and emergency service personnel who need to work in that environment.

APPENDIX A - CONSULTATION

In completing this review, the Road Safety Camera Commissioner and his staff consulted with: -

Department of Justice and Community Safety

Ms Corri McKenzie, Deputy Secretary, Police, Fines and Crime Prevention

Mr Ivan Calder, Executive Director, Police and Community Safety

Mr Stephen Pritchard, Acting Director, Road Safety

Mr Shane Slupek, Manager, Research & Development and Camera Compliance

Mr Sharafat Ali, Senior Quality Assurance Officer

Mr Matthew Costa, Senior Quality Assurance Officer

Mr Elvin Espiritu, Technical Data Analyst

Mr Bryan Larkin, Technical Support Officer

Department of Transport

Ms Robyn Seymour, Deputy Secretary, Network Planning

Mr Nick Martin, Acting Principal Advisor, Network Planning

Mr Robert Priest, Infrastructure Liaison Officer (Roads) to Department of Justice & Community Safety

Victoria Police

Assistant Commissioner Elizabeth Murphy, Road Policing Command

APPENDIX B - ABBREVIATIONS AND DEFINITIONS

ABBREVIATION	DEFINITION
DOT	Department of Transport
DJCS	Department of Justice and Community Safety
LUMS	Lane Use Management System – variable electronic signage used on Victorian freeways.
Serco	Serco Traffic Camera Services (Vic) Pty Ltd -