



**Road Safety
Camera
Commissioner**

ROAD SAFETY CAMERA PROGRAM – ROSANNA ROAD REVIEW

3 September 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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EXECUTIVE SUMMARY

Considerable issues arose in the commissioning of the Rosanna Road sites. The resolution of these issues has led to delays in project delivery. As part of this review, 2 independent testing agencies were interviewed regarding their assessment as to the camera's suitability for enforcement. Both expressed the view that they now have confidence in the system's accuracy, compliance with Road Safety (General) Regulations 2017 and readiness for enforcement.

The design and build approach in the procurement of the new T-series Fixed Camera System had inherent risks and unfortunately those risks crystallised during the implementation of this project. The Department considered that the approach did have merit and would facilitate the Department's desire to bring new technology into the Victorian Road Safety Camera System. The design and build approach is an accepted procurement approach in the Victorian public service. To overcome the risks that presented in this project officials within the Department have identified an alternative approach to developing a research, development and testing capability for the State. That proposal as provided to this Review, while understood to still be in design phase, has merit and should be further developed.

As with other reviews undertaken by this Office, governance issues were considered. Opportunities were identified for the Department to complete work on an overarching Road Safety Camera Strategy. That strategy is to include a component of asset management and the proposed Road Safety Camera Project Delivery Framework. In addition, opportunities to improve record keeping and decision making, and oversight and accountability were also identified and discussed in the Review.

BACKGROUND

REQUEST FOR REVIEW

- 1 In a letter dated 17 June 2020, the Minister for Police and Emergency Services requested the Road Safety Camera Commissioner review the development, approval and testing of the Rosanna Road T-Series cameras. The Minister also sought the Commissioner's independent assessment of the cameras' suitability for enforcement.
- 2 This request is in accordance with s10(c) of the *Road Safety Camera Commissioner Act 2011*.

ROSANNA ROAD PROJECT

- 3 In September 2017, the Fixed Camera Site Selection Committee, comprising representatives of Victoria Police, Department of Transport and the Department of Justice and Community Safety (the Department) approved requests from the community group Resolve Rosanna Road for [new fixed road safety cameras along Rosanna Road](#). 4 cameras were installed at the intersections of: -
 - Rosanna Road and Darebin Street, Heidelberg, northbound (D50N).
 - Rosanna Road and Darebin Street, Heidelberg, southbound (D50S).
 - Rosanna Road and Banyule Road, Rosanna, northbound (D51N).
 - Rosanna Road and Banyule Road, Rosanna, southbound (D51S).
- 4 The project went to an open tender to existing Victorian camera vendors. The Department had a desire to introduce new technology and new capabilities as part of this project. The successful tenderer was Sensys Gatso Australia (Sensys Gatso) with its T-Series system. The T-Series system is also now used in Victoria's mobile road safety camera program.
- 5 The T-Series would be integrated with existing components and new firmware to develop a system to satisfy the legislated specifications. Once the system demonstrates it meets the requirements and passes testing, it is considered Type Approved and can be used for enforcement in Victoria.

ASSOCIATED SITES AND PROJECTS

- 6 There are other T-Series fixed camera projects associated with the Rosanna Road project: -
 - Upgrade of Sensys Gatso's dedicated test site at the intersection of Smithfield Road and Epsom Road in Kensington. This site is designated T07 and will not be used for enforcement.

- Upgrade of existing site at the intersection of Ballarat Road and Churchill Avenue in Maidstone. This site is designated F10.
- Relocation and reconstruction of an existing site on the Western Ring Road, to 500 metres south of Keilor Park Drive Bridge in Keilor East. This site is designated WF.
- Upgrade of 29 fixed camera sites Sensys Gatso cameras currently operate.
- Upgrade of Western Ring Road sites Sensys Gatso cameras currently operate.

SCOPE OF REVIEW

- 7** This review examined and considered the following aspects of the Rosanna Road project: -
- Procurement process.
 - Testing and Type Approval.
 - Technical specifications laid out by the Department.
 - Construction of camera sites.
 - Systems integration and software development.
 - Testing conducted.
 - Issues arising during the development process.
 - Resolution of issues.
 - Current status of camera sites.
 - Way forward for the road safety camera program.

METHOD OF REVIEW

- 8** This review was conducted in 2 parts.
- 9** A review of documents relevant to: -
- Type Approval process.
 - Test reports for Rosanna Road and other sites.
 - Register of issues and rectification.
 - Project timeline.
 - Briefs to Minister for Police and Emergency Services.
 - Briefs to Deputy Secretary, Police, Fines and Crime Prevention.
- 10** Interviews conducted by the Road Safety Camera Commissioner with officers of: -
- The Department's Road Safety business unit.
 - Sensys Gatso, the camera vendor.
 - SGS Australia, independent tester.
 - Enex Testlab, independent tester.

PROJECT HISTORY

PROJECT TIMELINE

| DATE | EVENT |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| August 2018 | <ul style="list-style-type: none">• Rosanna Road contract with Sensys Gatso Australia executed following tender process.• Associated 29 site upgrade contract also executed for Sensys Gatso to upgrade existing sites. |
| September 2018 | <ul style="list-style-type: none">• Issues register created with an initial 48 issues.• System testing begins at designated test site T07. |
| October 2018 | <ul style="list-style-type: none">• All 48 issues in register resolved.• Type Approval testing at site F10 begins. |
| January 2019 | <ul style="list-style-type: none">• Commissioning process for site F10 begins, involving Site Acceptance Testing, image reviews and routine testing. |
| February 2019 | <ul style="list-style-type: none">• Commissioning process for sites D50N and D51S begins, involving Site Acceptance Testing, image reviews and routine testing. |
| March 2019 | <ul style="list-style-type: none">• Commissioning process for sites D50S and D51N begins, involving Site Acceptance Testing, image reviews and routine testing. |
| May 2019 | <ul style="list-style-type: none">• Four further issues found during commissioning process.• The Department requests a cure plan from Sensys Gatso.• Sensys Gatso fixes identified issues.• Commissioning process resumes. |
| June 2019 | <ul style="list-style-type: none">• Two further issues found during routine testing. |
| August 2019 | <ul style="list-style-type: none">• Type Approval for firmware version 1.8c after June 2019 issues resolved. |
| September 2019 | <ul style="list-style-type: none">• Commissioning processes at sites F10, D51N and D51S completed. Sites activated for enforcement with daily monitoring process in place.• Issue found at F10 during operation and site deactivated.• Sensys Gatso investigates and recommends new firmware version 1.9f to address issues for Type Approval. The Department accepts this recommendation. |
| October 2019 | <ul style="list-style-type: none">• The Department extends the contract for the upgrade of 29 sites. |
| November 2019 | <ul style="list-style-type: none">• Sensys Gatso delivered firmware version 1.9f for Type Approval testing. |

| | |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| January 2020 | <ul style="list-style-type: none"> • Further issues found in operational cameras D51N and D51S during routine testing. Enforcement stopped at these cameras. • D50N and D50S proceeding with Type Approval for 1.9f calendar based variable speed limit enforcement. • Upgrade of 29 sites delayed further until new firmware version are Type Approved. |
| June 2020 | <ul style="list-style-type: none"> • Sites D51N and D51S reactivated for enforcement. • D51N damaged in collision. • Criminal damage to sites D50N and D50S delays completion of Type Approval. |
| July 2020 | <ul style="list-style-type: none"> • Damage to D51N is being remediated and camera site remains deactivated for enforcement. as of 18 August 2020. |
| August 2020 | <ul style="list-style-type: none"> • D50N and D50S not yet activated for enforcement with variable speed limits as of 18 August 2020. |

ISSUES ARISING

- 11** During the first Type Approval process in September 2018, 48 issues were identified in the T-Series. The most critical being: -
- Delayed primary speed measurements - delays can be experienced in actioning a detection when a vehicle is detected just after midnight due to archiving processes.
 - Delay in recording still images – the system can become too busy to send out real time instructions. Whilst a detection and the time of detection is accurate, the message to record images will remain in the queue until previous instructions have been cleared.
 - Delayed midnight frame number reset – the Department specifies that frame numbers must reset to “1” at the start of each day. The instruction for this is queued and may not always run at midnight. If a detection occurs just after midnight before the instruction is carried out, then the frame number rises sequentially in line with the previous day. This may result in what appears to be duplicate entries in logs.
 - Inaccurate rendition of red lights – A software issue resulted in over-exposure of the image.
- 12** All 48 issues, including critical issues, were resolved by Sensys Gatso and the T-Series achieved Type Approval with the application of firmware version 1.8c.
- 13** T-Series sites, designated F10, D51N and D51S, were activated for enforcement in September 2019.

- 14** A further issue was found in F10 in September 2019. This issue was: -
- Clustered images – delayed messages from the inductive loop sensors to the control server resulting in the vehicle being out of position by the time images were recorded. This issue was rectified in firmware version 1.9f.
- 15** A further issue was identified after a scheduled certification test at D51N and D51S in January 2020: -
- The “grace period” for red-light infringements had been incorrectly set after a routine test at D51N and D51S. This prevented these cameras from detecting red-light incidents.
- 16** D51N and D51S were deactivated in January 2020. This issue was resolved in firmware version 1.9f, and D51N and D51S were reactivated in June 2020.

WHY DID THE ISSUES HAPPEN?

- 17** Victoria does not accept off the shelf camera systems, even if they have passed testing in other jurisdictions. The State’s stringent technical requirements for fixed camera systems, includes mandating two independent speed measurement devices, production of specific data and logs, and integration into a third party back-office environment. Vendors must integrate their standard camera componentry into a system that meets these requirements. Newly integrated systems must be Type Approved, through laboratory and in-field testing, before they can be used for enforcement.
- 18** Departmental staff advise that vendors are reluctant to develop new systems to Victorian specifications prior to entering a contract. In this project a different approach to procurement was adopted where the Type Approval process for the new technology was conducted in parallel with site construction. This was a “design and build” contract meaning that the activation of new and upgraded sites was dependent on Type Approval being completed within the project schedule. This co-dependency and slippage on Type Approval caused by problems with the firmware resulted in considerable delay to the project.
- 19** A further complication of this project was that the mobile version of the T-Series was being developed at the same time. Sensys Gatso relies on one software development team in Australia, based in Port Melbourne. The T-Series was originally developed to work with Sensys Gatso’s RT4 radar, as used in Victoria’s new mobile camera system. The fixed version of the T-Series system uses in-road sensors as the primary detection method. While the fixed and mobile systems had some commonality, the systems integration had to be performed by the same team. It has been suggested that that constraint may have contributed to delays in identifying and rectifying issues in the fixed camera system.

CURRENT STATUS

SUITABILITY FOR ENFORCEMENT

- 20** The two independent testers engaged in the Type Approval process for the T-Series, Enex Testlab and SGS Australia, were consulted as part of this review. Officers of these two organisations were interviewed by the Road Safety Camera Commissioner with respect to their experiences and conclusions after testing the T-Series system throughout the development and Type Approval processes and in operation. They advised that the issues encountered were limited to the control server firmware.
- 21** Officers from both organisations advised the Commissioner in July 2020 that the T-Series system is accurate, complies with the Road Safety (General) Regulations 2017 and is suitable for enforcement now that firmware version 1.9f has been installed. Officers of Enex and SGS also indicated that firmware version 2.2 includes further enhancements and, contingent on approval, is also suitable for enforcement.
- 22** Both independent testers acknowledge that whilst known issues have been resolved, unknown issues may still manifest in operation.

STATUS OF CAMERAS

- 23** The cameras at the intersection of Rosanna Road and Banyule Road in Rosanna (D51N and D51S) were reactivated for enforcement on 5 June 2020 following the Type Approval of firmware version 1.9f. The northbound camera was damaged by a vehicle collision in the early morning of 6 June 2020 and required repairs. The repairs have not been completed as of 18 August 2020.
- 24** The two cameras at the intersection of Rosanna Road and Darebin Street in Heidelberg have not yet been activated for enforcement. This is due to the Department of Transport implementing a variable business zone speed limit from 28 May 2020. The speed limit at this location is 40km/h between 7am and 7pm every day. Outside these times, the speed limit is 60km/h. The cameras at the intersection of Rosanna Road and Darebin Street were Type Approved to enforce the variable speed limit in accordance with the Department's specifications. This was completed on 3 August 2020. The cameras have not yet been activated as of 18 August 2020.

DISCUSSION

- 25** Victoria has long prided itself as a world leader in the area of road trauma reduction. The introduction of new technology in the road safety camera space is essential and an obligation both as a leading jurisdiction but also to deliver the safest roads for Victorians. Adding new capabilities will no doubt help the State respond to emerging road safety issues.
- 26** Victoria has robust accuracy requirements for its road safety camera system. The testing and approval regime are seen by many to be among the toughest in the world. As part of system requirements, vendors must incorporate detailed data, logs and messages used for monitoring and reporting into their systems. Vendors integrate their existing hardware components and where required, develop firmware for a dedicated computer control server that takes inputs from components and creates outputs to meet the specifications. The integrated system must be tested over a significant period to meet Victorian standards. If it passes, then it is Type Approved and can be used for enforcement.
- 27** Sensys Gatso's GS11 speed camera in operation in Victoria was at the end of its life having come into operation in 2005. The management decision to pursue new technology should be commended. However, it appears that that decision was not supported by a contemporary overarching Road Safety Camera Strategy, Asset Replacement Strategy or Research and Development Strategy. A document titled, Road Safety Program, Fixed Road Safety Camera Network, Rolling Infrastructure Management Strategy 2011-12 (the "2011 Strategy") has been provided by the Department. This was an IMES document and had not been updated since 2011. In interviews with Departmental staff it appears this is the underpinning policy document that has been relied on by the Department since 2011. The 2011 Strategy does not describe the design and build approach used in this project. It must be assumed then that the strategic approach adopted for this project is contained in Cabinet papers and other briefings provided to the Minister. For transparency, it is important that policy statements like the 2011 Strategy be updated as a priority.
- 28** Victoria is not alone in undertaking these types of assessments of new technology. The recent engagement with NSW to understand the lessons learnt from their introduction of distraction (mobile phone) cameras is an example where engagement across Australian states and territories is a valuable resource. Throughout interviews conducted with Departmental staff it became clear that there appeared to be no engagement outside Victoria to determine if the T-series had been considered or deployed in those jurisdictions in the fixed environment. I am advised there was once a national forum of those who manage road safety cameras. A revival of that forum may be of use now, particularly in the space of research and development.

GOVERNANCE AND RISK MANAGEMENT

- 29** As described above, the design and build approach is an accepted procurement approach utilised across Government. It does however bring with it complexity and risk. There was in place a steering committee for the procurement and then one for the project phase of this project. However, it appears though that once the project hit some critical problems the escalation of issues and role the steering committee played become less clear. Escalation of issues and clarity on key decisions and decision makers around issues of de-activation and re-activation lack some clarity. While these issues have now been addressed, it is likely that a lack of governance clarity would have inevitably led to delay in making critical decisions during the project.
- 30** The risks of a design and build approach were perhaps not completely well understood at the commencement of the project. In this Project, this was also complicated by the fact the vendor was also successful in tendering to provide the upgrade to the mobile speed camera cameras with the same technology. This was an issue that was raised during discussions with Departmental staff as they felt the split of management of fixed and mobile camera systems within the Department also created risk to this project.
- 31** The long delays in this project inevitably led to considerations regarding decision to persist with the vendor to deliver the Project. It is apparent that the T-series systems integration within the Victorian environment was too immature for the Victorian market. However, cancelling the contract with Sensys Gatso and restarting the project with another vendor would likely have resulted in an additional delay. There was also no guarantee that issues would not be found with another vendor's system due to the desire to introduce new technology. Some Departmental staff have indicated that they felt there was no alternative than to persist with the T-Series. This was the crystallisation of the risks of a design and build procurement.

LEARNINGS

- 32** During interviews with officers of the companies providing the testing services it became apparent that there is an opportunity to engage stakeholders across the board earlier in future projects that seek to introduce new technology. The approach of Plan, Do, Check and Action to managing projects like this one was described as the preferred approach by one of the testers. In this project, the tester was brought in at the Action phase of the project. As a result they had limited time in preparing their own staff who undertake the testing, they could not influence the design of test sites nor provide their user requirements with sufficient lead time for them to be incorporated in the firm ware. In this project for example, testing was conducted at a relatively low traffic volume site. If all stakeholders had been engaged earlier feedback would have been provided to test the system at a high-volume site which it was believed would have stressed the system and issues would have been identified much earlier in the process. In the delivery timeline of the project it is apparent that further issues were identified once the system was installed in the Rosanna Road sites which is a more complex site than the Maidstone (F10) site where the Type Approval was commenced. During interviews with personnel from testing firms it is apparent that they hold a great deal of technical knowledge and a wealth of experience and are keen to engage with the Department to provide advice. That resource should be exploited by the Department. Any future projects should also ensure that engagement with all stakeholders is conducted at project design phase.
- 33** As already discussed, due to the rigorous standards Victoria imposes on vendors providing equipment to the road safety camera system, off the shelf systems need considerable adaption before they can be utilised. Vendors will not invest in adapting their technology to the Victorian environment without incentive. One approach to incentivise, the design and build approach, was adopted in this Project. Departmental staff interviewed for this review have a consistent view that the risks surrounding that approach inevitably lead to the delays and problems experienced by this Project. I have been provided with briefings regarding a different approach proposed to set up a series of test sites where vendors can test and prepare their technologies utilising built infrastructure provided by the Department before they tender for contracts. This new Road Safety Camera Project Delivery Framework would provide opportunities to vendors to continually develop and reach Type Approval of new technology at dedicated test sites with the Department as a partner. Approved systems would then become part of a catalogue that could be utilised for future procurements. Sites could then be built or upgraded using suitable systems on the catalogue. This would simplify site commissioning and ensure that new technology is regularly introduced into the State's camera system. As part of this review a high level concept briefing of this proposed approach has only been provided. The initiative should however be commended, and this Office would be keen to understand the detail once a strategy document has been settled. During interview, Sensys Gatso has indicate their support for the approach and a keenness to be

involved. They believe that approach will assist them in preparing their technology for the Victorian market and overcome the problems experienced in this Project.

- 34** The 2011 strategy does identify a funding stream of \$6 million per year for the infrastructure management strategy. This figure has been fixed since 2011 and is described as coming from operating budget. I have advice that the fund has been underspent for the last 2 fiscal years. It is proposed that this fund be used to support the test site proposal. Any decision about this is a matter for Management and the Minister. However, it is critically important that these valuable funds are used to improve the road safety camera system and not be left unspent.

CONCLUSIONS

- 35** From the experience of this Project it is conceded by Departmental staff that there is a need for a new way forward to research, develop and bringing new technology on line. The proposed new framework has merit and should be developed further. In addition, though there is a need to consolidate the policy approaches into one overarching contemporary strategy document. The issue of overarching strategy has been dealt with before by me and other Road Safety Camera Commissioners. The inclusion of a Road Safety Camera Project Delivery Framework would be one essential element of an asset management strategy component of any new strategy.
- 36** Work to improve governance and accountability for decision making need also to continue. I have been impressed with the efforts of the current project manager for this project who had come on late to the project once issues had commenced to arise. His efforts to strive to deliver this project in the circumstances should be commended.
- 37** As identified earlier in this paper. The advice from both testers who have conducted assessments of the T-series fixed site camera system is that the Rosanna Road sites meet the requirements of the legislation and are ready for enforcement. I am not a position to counter that advice and therefore accept it.

RECOMMENDATIONS

I recommend the Department of Justice and Community Safety: -

- 1** Complete an overarching Road Safety Camera Strategy that includes an Assets Management Strategy component.
- 2** Continue to develop the Road Safety Camera Project Delivery Framework proposal.
- 3** Increase its engagement with its partners across the sector in developing its project management approach to introducing new technology.
- 4** Explore the opportunity to re-create a National Road Safety Camera Forum to share learnings across jurisdictions.

APPENDIX - 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 Stephen Pritchard, Acting Director, Road Safety Camera Program
- Ms Nicola Gibbs, Policy Lead
- Mr Frank Golotta, Program Manager, Road Safety Camera Program
- Mr Guy Morton, Acting Manager, Testing and Maintenance
- Mr Pierre Phillipeau, Senior Project Manager
- Mr John Pini, Manager, Camera Strategy and Compliance
- Mr Shane Slupek, Manager, Camera Compliance and Research & Development

DEPARTMENT OF TRANSPORT

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

ENEX TESTLAB

- Mr Matthew Tett, Managing Director
- Mr Kire Terzievski, General Manager

SENSYS GATSO AUSTRALIA

- Mr Enzo Dri, Managing Director
- Mr Paul Holschier, General Manager, Operations
- Mr Toan Nguyen, Project Manager

SGS AUSTRALIA

- Ms Yiling Liang, Business Manager, Traffic Systems
- Mr Xiaopeng Chen, Technical Manager, Traffic Systems
- Mr Dan Nama, Operations Manager, Traffic Systems