



NSW Ombudsman

Speedometers and speeding fines

A review of police practice

A special report to Parliament under
s 31 of the *Ombudsman Act 1974*

April 2003



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April 2003

The Hon Meredith Burgmann MLC
President
Legislative Council
Parliament House
SYDNEY NSW 2000

The Hon John Murray MP
Speaker
Legislative Assembly
Parliament House
SYDNEY NSW 2000

Dear Madam President and Mr Speaker,

I submit a report pursuant to s 31 of the *Ombudsman Act 1974*. In accordance with the Act, I have provided the Minister for Police with a copy of this report.

I draw your attention to the provisions of s 31AA of the *Ombudsman Act 1974* in relation to the tabling of this report and request that you make it public forthwith.

Yours faithfully,

Bruce Barbour
Ombudsman

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Contents

Foreword	7
Issuing infringement notices.....	8
Vehicle mounted radars	8
Speedometers of motorists	8
Testing of car speedometers and radars.....	9
Testing of analogue speedometers	9
Digital speedometers – current NSW Police practice	10
Silver Eagle – vehicle mounted radars.....	10
Review of speeding tickets	10
Interviews with Highway Patrol officers	12
Discretion.....	12
Scenarios.....	13
Conclusions	13
Recommendations.....	15
Acknowledgements	16

Foreword

Where a motorist does not stop at a stop sign, talks on a hand held mobile telephone while driving or crosses over a double line, there is little room for doubt that a traffic infringement has occurred. By contrast, policing of speed by radar requires an acceptance of science that few motorists understand. Because of this, police equipment must be accepted by the community as highly accurate, and police procedures must be transparent and fair.

In June 2002 I reported to Parliament on some aspects of the NSW Police investigation into speeding fines issued by police officers driving Subaru cars. At that time I undertook to report on my further examination of the issuing of speeding fines by NSW Police, in recognition of the important public interest in assessing police performance in this area.

This report focuses on the issuing of speeding fines by police following detection from vehicle mounted radars, and in particular those fines issued where the police vehicle is not stationary.

Since June 2002, I have conducted a review which has included:

- an audit of over 3500 speeding fines
- examination of information concerning police cars with inaccurate speedometers
- interviews with Highway Patrol officers about a number of aspects of policing speed
- discussions with experts in various aspects of radars used for speed detection
- discussions with senior NSW Police officers about certain aspects of my review.

In addition, and because of the nature of this report, I have consulted with the Commissioner of Police prior to tabling it, and considered the NSW Police response.

For reasons that I outline in detail later, I am largely satisfied that NSW Police does a satisfactory job in policing speed.

For the sake of completeness, I should emphasise that this report does not assess the NSW Police investigations into speeding fines issued by police officers driving Subaru cars (Operation Sibiu). This is because I have not yet received the final reports from police in these matters. I am therefore not in a position to report on the fairness of the police investigation.

In addition, this report focuses on only one aspect of policing speed – when speed is recorded from vehicle mounted radars. In the future, my office proposes to carefully scrutinise other aspects of NSW Police speed enforcement practice – should any significant concerns arise I will report those in due course.

Issuing infringement notices

Traffic infringement notices for travelling in excess of legal speed limits (or speeding fines) can be issued following detection of excess speed in a number of ways: from stationary radars (including speed cameras); through laser speed testing (LIDAR); from vehicle mounted radars in police cars – which can operate whether the police car is moving or stationary; from speed checks using a police car speedometer; and from an estimate of speed.

Vehicle mounted radars

Police procedures state that vehicle mounted radars should generally be used only in rural areas or where traffic is sparse, to ensure accurate detection of speeding vehicles and avoid police vehicle collisions.

A valid speed check from a moving police vehicle requires the police officer to perform a number of steps including:

- at the commencement of a patrol, the highway patrol officer is required to test the radar (NSW Police use 'Silver Eagle' vehicle mounted radars) and undertake a correlation test between the vehicle speed as indicated on the radar (the patrol speed) and vehicle speedometer. If the test of the radar fails, or speeds as recorded on the radar and speedometer do not correlate, the officer is not permitted to use the vehicle for policing speed.
- at the time of taking a speed check of a motorist, the highway patrol officer is required to undertake a further correlation test between the vehicle speed as indicated on the radar (the patrol speed) and vehicle speedometer – if the recorded speeds do not correlate, the officer is not permitted to issue an infringement notice on the basis of the speed recorded on the radar.
- the minimum detection time is three seconds, and the police vehicle is required to maintain a reasonably consistent speed.

Speedometers of motorists

There are a number of reasons why motorists may have speedometers which do not accurately record the speed of their motor vehicle. In addition, inaccuracies may affect motorists' reading of speedometers. For example:

- The Australian Design Rules only require speedometers to indicate speed to an accuracy of +/- 10% for all speeds in excess of 40km/h. In addition, the Road Transport (Vehicle Registration) Regulation 1998 (NSW), Schedule 4, clause 41, requires that a motor vehicle speedometer 'must indicate, when the vehicle is travelling at a speed in excess of 50 kilometres per hour, a speed that is not more than 10% less than the actual speed'. This means that many speedometers intrinsically may read an incorrect speed.
- Tyre inflation and tyre wear can affect the speed indicated on car speedometers.
- Parallax error – in analogue speedometers the error which may result from reading the speedometer at an angle rather than in correct alignment.
- General readability, including that speedometer graduations are frequently at intervals of greater than 1 km/h.

Police officers need to be mindful of the errors that may impact on motorists' perceptions of speed if NSW Police is to maintain public confidence and support in policing speed within the community.

Testing of car speedometers and radars

Essential to the accurate policing of speed is the accuracy of police equipment. In my June 2002 report, I noted media reports that the speedometers of 20 police vehicles were tested and found to be at least 4km/h out. I undertook to examine the circumstances of vehicles identified with inaccurate speedometers.

Testing of analogue speedometers

A program of testing of speedometers of all Highway Patrol cars was commenced in about January 2001 and completed in February 2002. The review found that 66 police cars had speedometers with errors of greater than 4 km/h.

- only 4 police cars had speedometer errors at 60km/h – ranging from 64–66km/h.
- 17 police cars had speedometer errors at 80km/h – ranging from 84–87km/h (84km/h in the case of 13 police cars).
- 42 police cars had speedometer errors at 120km/h – ranging from 124–128km/h (124km/h in the case of 31 police cars).
- the largest recorded discrepancy was 10km/h – for one police car at 160km/h (speedometer reading 170km/h) and 180km/h (speedometer reading 190km/h).

The single issue in my review that has caused me greatest concern is that these police cars with inaccurate speedometers were not returned for a check prior to this testing program. Advice provided by NSW Police is that none of the 66 police vehicles with faulty speedometers was returned for further testing following a correlation check.

While it cannot be demonstrated beyond doubt, it stretches credibility that all correlation checks between radar and speedometers in these 66 cars were satisfactory.

I have considered any parallax error when reading an analogue speedometer, and that the graduations on the speedometer mean that it cannot be read with the same accuracy as a digital speedometer. However, an error of, for example, 7km/h at 80km/h, is substantial and should have been clearly evident when testing the speedometer against the patrol speed indicated on the radar.

And even though not all cars may have had inaccurate speedometers prior to being tested, it is difficult to accept that no cars would have had inaccurate speedometers.

That said, I cannot demonstrate in any case where a motorist was fined for speeding by a police officer driving one of the vehicles with an inaccurate speedometer, the police speedometer was inaccurate at that time.

When the issue of inaccurate speedometers came to light, it was reported that NSW Police was obtaining statements from the police officers who last drove each vehicle with an inaccurate speedometer to examine whether the officer had undertaken a correlation test between the speed of the patrol car as recorded by the radar and as recorded by the speedometer. I understand that while some statements were obtained, this process was not completed.

My view is that this was not a necessary step, given that, at the time of issuing a speeding fine, the officer certifies on every ticket: *'The instrument was set up and operated in accordance with approved procedures [including the correlation test between radar 'patrol speed' and speedometer] and I certify the above is correct'*. I am of the view that this ticket certification could be more detailed – I will return to this point later.

Digital speedometers – current NSW Police practice

Because of concerns about analogue speedometer accuracy, highlighted during the NSW Police investigation into the issuing of speed fines from Subaru police cars, NSW Police moved to install certified digital speedometers in all police cars used in speed detection. NSW Police has advised that since the introduction of these speedometers:

- at least 798 speedometer tests have been carried out.
- only 3 speedometers registered an error of greater than +/-2km/h.
- the errors (between -3 km/h and -5km/h) all operated so that police cars would have recorded a lower speed than actual road speed – meaning that any error worked in favour of a motorist who was being speed tested. These errors did not occur until 160 or 180km/h.

In addition, these digital speedometers are placed in close proximity to the radar 'patrol speed' recording, and do not suffer from the parallax errors or approximations of analogue speedometers when being read.

Silver Eagle – vehicle mounted radars

The current NSW Police vehicle mounted radar, the Silver Eagle radar, was introduced in 1996. Independent expert advice obtained as part of my review indicates that the radar technology used in radars such as the Silver Eagle is sound and reliable. Radar devices are very unlikely to drift out of accuracy by a small margin – if the radar goes wrong, or there are external (or environmental) factors which lead to a false reading, it should be immediately apparent through registration of a gross error.

NSW Police has advised that since 1976, 3175 certifications of radar accuracy have been completed at the 'National Association of Testing Authorities' (or NATA) accredited Radar Engineering Unit (this unit also calibrates the accuracy of other police instruments such as breath alcohol analysers). NSW Police advice is that no radar instrument has varied from an accurate speed determination by more than +/-1km/h.

I have been provided with the NATA reassessment report for the Radar Engineering Unit of October 2002. NATA has continued the accreditation of the Radar Engineering Unit. In the 'General Comments' section of that report, the reviewers observe that the Radar Engineering Unit's staff demonstrated sound knowledge of test/calibration techniques used, and that the Unit is generally operating in accordance with relevant standards. Some management and technical requirements are the subject of ongoing review by NATA for accreditation to continue.

My officers have also spoken to two assessors involved in preparing the report. In particular, the technical assessor was of the view that equipment used to test radars was appropriate and properly monitored, and the staff had lengthy experience and were very capable at their tasks.

The information provided to me is that the testing of radar equipment by NSW Police is appropriate. I can understand however, from the viewpoint of some members of the public, that the organisation testing speed detection equipment should be separate from the organisation policing speed. While I do not have sufficient information to arrive at a firm view concerning this matter, it may be appropriate that this issue be further considered from a broader public interest perspective. I have recommended that the Commissioner conduct such a review.

Review of speeding tickets

After receiving advice from NSW Police as to those cars with identified speedometer errors, my officers undertook an audit of 3632 speed fines issued by highway patrol officers in 2001. We focused on those local

commands where the police cars with inaccurate speedometers were stationed, although because of the recording systems then in place at the Infringement Processing Bureau for dealing with speed fines, we were unable to audit all tickets from the offending police cars. We audited all penalty ranges (exceed legal speed by: < 15km/h; > 15km/h; > 30km/h; and > 45km/h), and closely examined public holiday periods (where double demerit points apply). We have checked relevant tickets with NSW Police to seek their views. The results of the audit are generally positive.

- For 3478 of the 3632 tickets audited (95.8%), we have no question, on the face of the ticket, that the speed fine was issued where the motorist was speeding.
- Eighteen of the 3632 tickets audited (0.5%) were definitely incorrectly issued. In all these cases, the motorist was ticketed for a higher penalty range than was applicable, having regard to an appropriate tolerance for NSW Police instrument error. In all cases an infringement notice should have been issued. Six of these speed fines were issued by one police officer, and another officer issued 3 of the speed fines.
- An additional 7 of the 3632 tickets audited (0.2%) had obvious errors in the paperwork – for example, the short title for the offence (eg. exceed speed > 15km/h) being inconsistent with the appropriate penalty and offence code (corresponding to the offence exceed speed < 15km/h). NSW Police has advised that 5 of those tickets were appropriately processed despite conflicting information on the ticket – and at the lower penalty amount. NSW Police has advised that, for the remaining two tickets, the officer has either incorrectly recorded the motorist's speed or the speed zone – I have no information as to how those tickets were ultimately dealt with.
- Twenty four of the 3632 tickets audited (0.7%) were issued in circumstances where the vehicle speed changed during the period the radar was recording the vehicle, and one of the speeds recorded on the infringement notice is less than the offence ticketed.

An example is where a motorist recorded a speed check over 3 seconds at 122–115 km/h in an 100 km/h speed zone. This motorist was issued with an infringement notice for a speed of greater than 15 km/h over the legal speed limit. However, the lower speed recorded here is not more than 15 km/h over the speed limit.

I recognise that motorists who are speeding, and spy a highway patrol vehicle, will usually instinctively brake to evade a fine. In fairness, those motorists should receive an appropriate infringement notice. Police procedures, however, provide that a requirement for a valid speed check includes that the duration of the check must not be less than 3 seconds. Where the speed check reveals at least one speed during the 3 second check that is less than a higher infringement amount, it may be appropriate (consistent with the police procedures) to consider whether an infringement notice for the lower speed is preferable.

- A proportionately small but significant number of other tickets (about 3% of the tickets audited) raise questions about the appropriate application of the police officers' discretion to issue the ticket as it has been explained by senior Traffic Services Branch officers.

There is no mandatory policy within NSW Police to provide for any greater tolerance in speed checks other than to account for any speed detection equipment inaccuracy. However, guidelines orally conveyed to officers in training suggest that it is appropriate to provide an additional tolerance (for example, to account for motorists' speedometer inaccuracies) when determining whether a speeding ticket should be issued. Senior officers within the Traffic Services Branch have emphasised that the guidelines do not bind officers when making decisions, and are not mandatory. The tickets examined here fell outside these verbal oral guidelines provided to police officers – hence my question mark concerning whether the tickets should have been issued.

My officers have not been in a position to fully examine the circumstances surrounding the decision of police officers to issue each of these speeding fines (such as the weather, road conditions and other

environmental factors and safety considerations). I therefore cannot say whether, in my view, it would have been preferable that any, some or all of the tickets not be issued.

I will return to this question of discretion later in the report.

An important factor to note is that the tickets examined relied on the accuracy of the Silver Eagle radar, and not the accuracy of the police speedometer. The information obtained in my review strongly indicates that the radar tests would be accurate. Hence, any police speedometer inaccuracy should not have impacted upon the speed detection by police officers. In addition, I cannot demonstrate that any police speedometer was inaccurate at the time a speeding fine was issued.

These audit results generally reflect well on the conduct of highway patrol officers in policing speed.

In any system, there is always room for error. It is unrealistic to expect that, 100 per cent of the time, police officers issuing speed fines will not make mistakes. That is why any motorist who disagrees with a speeding fine can take the matter to the courts for a determination. This ongoing independent review of speed fines at the motorist's election provides substantial additional confidence in the integrity of speed fines issued by Highway Patrol officers in New South Wales.

Interviews with Highway Patrol officers

In addition to speaking to senior officers from the Traffic Services Branch, the Assistant Ombudsman (Police) and other senior Ombudsman officers spoke to 18 Highway Patrol officers with varying levels of experience from 4 local commands in metropolitan and regional locations. These police officers were impressive for their commitment to highway patrol duties, and I am grateful for their assistance in providing information for this report.

Interviews focused on two principal areas – the exercise of discretion by police officers and their response to two scenarios.

Discretion

As in all areas of policing, police officers charged with speed enforcement have a discretion as to whether to issue a traffic infringement notice where they have detected a motorist travelling in excess of the applicable speed limit.

All Highway Patrol officers interviewed agreed that they had been introduced to guidelines permitting an additional tolerance when determining whether to issue a speeding fine – this is consistent with advice provided by senior NSW Police officers.

The factors taken into account by the police officers interviewed in exercising their discretion to issue speeding fines include:

- fairness to the motorist, including factors such as the accuracy of car speedometers and whether the motorist has overtaken a marked police car.
- road conditions, including the weather, road quality and the speed of traffic generally.
- particular locations – a number of police officers emphasised a low tolerance for any excess speed in school zones.
- danger to other motorists if the offending motorist was to be pulled over.
- workplace considerations, including personal safety and workload.

In my view, these are all proper matters to have regard to in determining whether a motorist should be issued a traffic infringement notice for speeding. These considerations are consistent with general community expectations of a fair go, special vigilance for the safety of children, and a common sense approach to policing speed.

Scenarios

It would not be appropriate in this report to provide information of the precise scenarios provided to Highway Patrol officers and their responses. Such public reporting could impact on the integrity of speed enforcement in New South Wales. Separate to this report, I will provide this further information to the Commissioner of Police for his information. The responses to the scenarios demonstrate the following:

- The highway patrol officers interviewed provided consistent responses to a threshold question as to whether a traffic infringement notice should be issued at all.
- Many officers provided a context to their response indicating that the issuing of a speeding fine would also include additional consideration of discretionary factors.
- At higher speeds, and when the question for consideration is the appropriate level of penalty (that is to say, the motorist is clearly exceeding the speed limit by a substantial amount), there was less consistency in the response of highway patrol officers, reflecting different understandings of appropriate calculations for instrument error. I note that this is consistent to some extent with the findings of my audit of speeding tickets.

Conclusions

On the basis of information collected during my review of certain aspects of policing speed by NSW Police, I have reached the following conclusions:

1. NSW Police, and Highway Patrol officers in particular, generally do a fair and professional job of policing speed, including fairness in determining whether to issue a speeding fine.
Further, the evidence of this review is where motorists exceed the speed limit, and they are detected by NSW Police officers, they will be issued with traffic infringement notices.
2. NSW Police has improved the accuracy of speedometers used in police cars. In particular, the digital speedometers appear both more accurate and less susceptible to errors when being read. This is part of what I believe is a genuine commitment by NSW Police to have accurate and fair policing of speed in all communities.
3. NSW Police uses a NATA accredited laboratory, the Radar Engineering Unit, to ensure the accuracy of police radars. Information provided to me indicates that this unit operates in accordance with relevant industry standards, and that staff are experienced, knowledgeable and committed.

That said, it may be a legitimate public expectation that instruments used by police to enforce speed limits (or test blood alcohol concentrations) should be tested by a laboratory or agency independent of NSW Police. I have not arrived at a final view about this matter.

In my consultation with NSW Police, the financial and resource implications of an independent laboratory and the availability of experts for court appearances have been raised as relevant considerations. At this time NSW Police does not support an independent laboratory.

I propose, however, to request the Commissioner to fully review this arrangement, including the practicality of any other alternatives, with a view to ensuring that the most appropriate arrangements (which may be the present arrangements) for testing of radars are in place.

4. There are occasions where motorists are issued with a speeding fine that is not correct. Based on the results of my audit, only 1 in every 200 tickets is incorrect, while another 1 in 500 has transcription errors resulting in inconsistency on the face of the ticket. For any wrongly issued speeding fine, the motorist can refuse payment and ask a court to determine whether the infringement notice should be paid. This is the single most important safeguard for all motorists who are issued with infringement notices for speeding offences.
5. Police officers appear generally to apply the discretion as to whether a speeding fine should be issued in a consistent manner – they have regard to appropriate considerations in making that decision.
6. The question as to the appropriate penalty level to be applied can result in inconsistent outcomes, depending on the police officer. It is at these higher speed levels that the impact on motorists is potentially greatest, in terms of fines, demerit points and possible loss of licence and employment.

In my view it would be preferable if there was greater consistency amongst police officers in making these decisions.

I note the comments of NSW Police on this issue, that there is a need to strike a balance between a broad discretion for police officers on the one hand and consistency in applying appropriate penalties on the other. I agree with this sentiment, but am concerned, at present, the balance is struck such that consistency is compromised to a greater extent than might be necessary or appropriate.

To progress this issue, I will provide further information from my review to the Commissioner, and recommend clearer guidance be provided to officers in this respect, to ensure greater consistency across local commands.

7. The other aspect of a police officer's discretion that may warrant further clarification is those situations where a motorist's speed has changed during the speed check, such that the lower speed of the motorist is less than the speed relied upon by the police officer issuing the infringement notice. In these situations, police officers may require further guidance as to the appropriate infringement notice to be issued, including the relevant factors to take into account in making this decision.
8. I remain concerned that none of the police cars with inaccurate speedometers were ever returned for checking prior to the testing program beginning in January 2001. That said, I cannot demonstrate that any particular speedometer was inaccurate at the time it was used for speed enforcement.

Given that a number of tests to ensure instrument accuracy must be undertaken by police officers on a daily basis – and prior to issuing any speeding fines – in my view it would increase the community's confidence in any fines if they included a more complete certification, in addition to the present: *'The instrument was set up and operated in accordance with approved procedures and I certify the above is correct'*. That may include certification on the ticket that:

- > the radar was checked at the commencement of the officer's shift;
- > the tyre pressures of the police car were checked at the commencement of the officer's shift;
- > the relevant radar 'patrol speed' and digital speedometer correlation check was undertaken at the commencement of the shift and at the time of issuing the speeding fine; and
- > all these checks demonstrated that the equipment and police cars were operating in accordance with relevant guidelines.

I note that NSW Police has agreed to review its certification procedures and infringement books, and also to consider additional education and training and annual re-accreditation tests for radar operators. In addition, NSW Police will consider increased testing of police car speedometers,

Recommendations

In summary, I am largely satisfied that NSW Police is doing a satisfactory job in policing speed. On the basis of information provided to me by NSW Police, I am satisfied that Highway Patrol officers presently use scientifically sound equipment maintained in an appropriate manner. On the basis of the audit and interviews, my view is that the officers charged with speed enforcement are, on the whole, professional and fair – regardless of the technology, these officers apply commonsense to their task, which lies at the heart of the community's acceptance of their role.

There are some improvements that can be made, however, to make policing of speed fairer and more accountable.

I therefore recommend:

1. In respect of those few tickets that NSW Police concedes are incorrect, consideration should be given to a refund of any money (or excess money) paid and reinstatement of any demerit points (or excess demerit points) deducted from relevant motorists' licences. I note that NSW Police has been provided with details of the relevant infringement notices.
2. NSW Police should consider amending the form of traffic infringement notices to provide greater details that demonstrate relevant checks were undertaken to ensure the accuracy of speed detection instruments prior to the issuing of any traffic infringement notice.
3. NSW Police should consider providing greater guidance to Highway Patrol police officers as to the exercise of their discretion in respect of issuing speeding fines, especially when officers are called upon to determine the appropriate penalty level.
4. The Commissioner of Police should review present arrangements for testing and calibration of radar instruments, to ensure that the most appropriate arrangements are in place. I further recommend this review also include testing arrangements for other relevant police instruments, such as laser speed testing equipment (LIDAR) and breath alcohol analysers. Any review should include appropriate consultations with the community, including relevant motorists' groups.
5. NSW Police should provide me with the response to these recommendations within 3 months of the tabling of this report.

Acknowledgements

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Ron Cook, Officer In Charge, Melbourne Branch Laboratory, National Measurement Laboratory

Officers of the Traffic Services Branch, NSW Police

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