

**Technical Note TN160**

# **Vehicle Activated Signs (VAS)**

**April 2021**

## Copyright

© The State of Queensland (Department of Transport and Main Roads) 2021.

## Licence



This work is licensed by the State of Queensland (Department of Transport and Main Roads) under a Creative Commons Attribution (CC BY) 4.0 International licence.

## CC BY licence summary statement

In essence, you are free to copy, communicate and adapt this work, as long as you attribute the work to the State of Queensland (Department of Transport and Main Roads). To view a copy of this licence, visit: <https://creativecommons.org/licenses/by/4.0/>

## Translating and interpreting assistance



The Queensland Government is committed to providing accessible services to Queenslanders from all cultural and linguistic backgrounds. If you have difficulty understanding this publication and need a translator, please call the Translating and Interpreting Service (TIS National) on 13 14 50 and ask them to telephone the Queensland Department of Transport and Main Roads on 13 74 68.

## Disclaimer

While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained within. To the best of our knowledge, the content was correct at the time of publishing.

## Feedback

Please send your feedback regarding this document to: [tmr.techdocs@tmr.qld.gov.au](mailto:tmr.techdocs@tmr.qld.gov.au)

## 1 Introduction

Vehicle Activated Signs (VAS) are digital roadside signs that display a message when they are approached by a vehicle exceeding a pre-set activation speed. VAS have been developed and used for more than 20 years in countries such as the United Kingdom, to address the problem of speed-related vehicle crashes where standard signing has been unsuccessful. It has been shown that such devices can greatly influence motorists' choice of speed at a specific location.

VAS are always used to supplement existing static roadside signs and are not intended to replace them. VAS units are discrete signs, which remain blank until activated by an approaching vehicle. The vehicle activates an integrated detector typically operating in microwave frequencies (for example, radars), and can display either a warning sign or text depending on specific application and hazard at a particular site. The sign-face display is illuminated by light emitting diodes (LED). Most VAS can also simultaneously monitor and record traffic speeds and volumes. The data recorded can be downloaded either on site using a laptop, hand-held device, or remotely using an in-built cellular modem. This information is useful in assessing the effectiveness of the signs over time, in terms of changes in vehicle speeds and crash numbers.

## 2 Related documents

The documents listed in Table 2.1 provide further information to that contained in this Technical Note.

**Table 2.1 – Related documents**

Publisher / Author	Document Title
Department of Transport and Main Roads	<i>Vehicle Activated Signs – Evaluation Report TMR Queensland, October 2012.</i>
Department of Transport and Main Roads	Transport and Main Roads Technical Specification MRTS218 <i>Vehicle Activated Signs.</i>
Department of Transport and Main Roads	Transport and Main Roads Technical Specification MRTS222 <i>Electronic School Zone Signs.</i>
Prof R Troutbeck	Review of the <a href="#">Assessment of impacts with Vehicle Activated Signs (VAS)</a> , Report for the Department of Transport and Main Roads, Queensland, January 2011.
Standards Australia	AS 1743 (2001) <a href="#">Road Signs – Specifications</a> Australian Standard, Standards Australia, August 2001.
CN Kloeden, AJ Mclean, VM Moor and G Ponte	<a href="#">Travelling Speed and the Risk of Crash Involvement NHMRC Road Accident Research Unit</a> , The University of Adelaide, November 1997.
MA Winnet and AH Wheeler	<a href="#">Vehicle Activated Signs - a large scale evaluation</a> , Road Safety Division, Department for Transport. TRL Report TRL548 (2002).

### **3 Scope**

This document sets out the guidelines for implementation of VAS, including identification and assessment of potential sites, selection of sign display, determination of activation speed, sign position and support.

The guideline adopts the term 'Vehicle Activated Signs' or VAS as an all-encompassing description for signs, which are activated by vehicles travelling above a predetermined activation speed.

### **4 Application**

This guideline is applicable to VAS installations on all types of roads under normal operating conditions, taking into account the site limitations outlined in Sections 6 and 7.

The aim of this guideline is to assist technical professionals within the Department of Transport and Main Roads (the department) and local governments, in enhancing road safety outcomes through using VAS. It is also intended to promote best practice, in the application of these types of signs, as a road safety engineering tool.

All signs to be deployed shall be in accordance with the department's Technical Specification MRTS218 *Vehicle Activated Signs*.

### **5 Rationale**

There is a well-established relationship between reducing vehicle speeds and reducing the likelihood and/or severity of road crashes. Therefore, there are considerable safety benefits to be achieved by encouraging drivers to travel at, or below, the speed limit. The question of how to encourage drivers to adhere to the speed limit is a more complex matter. Well-respected Australian research has established that speeds of just 5 km/h above the 60 km/h limit in urban areas, and 10 km/h above average speed in rural areas, are sufficient to double the risk of a casualty crash. This is roughly equivalent to the risk associated with a blood/breath alcohol concentration of 0.05.

The Safe System approach to road safety in Queensland, encourages travel at speeds that are appropriate for the conditions, to limit the physical impact force of crashes to at least survivable levels. Lower speeds result in fewer crashes, as road users have more time for decision making, are less likely to lose control and can stop within a shorter distance.

Individuals who drive above the speed limit, may often be aware of the speed limit but often do not reduce their speed in response to static speed limit signs or other warning signs. From a safety perspective, driving to the conditions can be as important as driving to the speed limit and especially on the approach to a curve, intersection, or other hazard. Introducing a countermeasure which targets drivers who exceed the speed limit, is beneficial for overall safety along a road and is consistent with Safe System approach to road safety.

### **6 Site identification**

Before taking a decision to install a VAS, it is important to undertake an audit of existing road furniture, fixed signs, road condition and road markings to assess their standard and condition. A VAS shall only be deployed when the problem cannot be remedied by improving the existing static signing.

If there is a crash history, a speed limit review shall be undertaken to determine if the posted speed limit is appropriate. If, after confirming or adjusting the speed limit, compliance continues to be a problem, VAS may be considered.

VAS can be installed in the following situations:

- in advance of an intersection
- in advance of a roundabout
- in advance of a curve or curves
- in advance of a winding road system
- in advance of a friction deficient site
- in advance of a steep descent
- in road works, and
- as a repeater sign to remind motorists of the posted speed limit.

The objective of VAS is to reduce the risk and severity of traffic crashes by reducing the speed of vehicles and enhancing driver awareness of a hazard ahead. While there are many locations that might be selected on this basis, there are other considerations that may rule out the installation of VAS. For example, road geometry and poor sight lines that may reduce the effectiveness of the sign operation (for example, the radar field of view).

As the signs are typically solar-powered, exposure of the sign to the sun should also be considered a physical constraint.

An evaluation of VAS signs undertaken by the department, found that the signs generally do not perform well:

- on roads with a high volume of traffic, it is generally not recommended to install a VAS on roads with an Annual Average Daily Traffic (AADT) greater than 20,000 vehicles per day in one direction (this figure was determined for roads with two lanes in each direction)
- on roads with a speed limit equal to or greater than 100 km/h (the sign-posted speed limit may be reduced in advance of the hazard, in accordance with the requirements of the Manual of Uniform Traffic Control Devices (MUTCD) Part 4: Speed Controls, and a VAS installed)
- on roads with more than two lanes in each direction
- on approaches to hazards with vertical or horizontal curves or gradients (external radars may be more effective on such approaches)
- in areas with a dense canopy of trees (option to locate solar panel remotely)
- on roads with a limited forward visibility, and
- on roads with an overtaking lane (speeding vehicles are often obscured by larger vehicles on the nearside lane).

## **7 Site assessment**

VAS should only be considered as secondary signage. There is often scope to improve the safety on a road segment, through implementing more cost-effective traffic management measures such as improving signs and pavement markings.

Evaluation of sites being considered for treatment with VAS, should be based on the following criteria.

- Crash history
- Speed limit
- Traffic volume
- Road geometry

Further details of these criteria are provided below and a methodology for identifying potential VAS sites is presented in the Site Assessment Flowchart provided in Appendix A.

### **7.1 Crash history**

As VAS are used as a road safety and speed reducing device, only crashes where speed is a contributing factor shall be considered in the site assessment. The Definitions for Coding Accidents (DCA codes) that consider speed to be a contributing factor are listed in Table 7.1.

Sites may be suitable for treatment with VAS if there is a history of the following types of crashes.

**Table 7.1 – DCA codes related to speed**

<b>DCA Code Group</b>	<b>DCA Codes</b>	<b>Description</b>
<b>Two Vehicle Crash</b>		
1	100–109	Intersection, from adjacent approaches
3	202–206	Opposing Vehicle, turning
8	401, 406–408	Entering roadway
<b>Single Vehicle Crash</b>		
15	502, 701, 702, 706, 707	Off carriageway on straight
16	703, 704, 708, 904	Off carriageway on straight hit object
17	705	Out of control on straight
18	801, 802	Off carriageway on curve
19	803, 804, 808	Off carriageway on curve hit object
20	805, 806, 807	Out of control on curve

## **7.2 Speed limit**

Whenever possible, conduct a speed survey at the proposed location, to establish what the speed of traffic is and whether there is a problem with vehicles travelling at inappropriately high speeds. Keeping in mind that travelling at the speed limit could, in certain circumstances, be considered an inappropriate speed (for example, especially on the approach to a hazard such as a curve or intersection).

VAS are most effective when implemented at sites where there is a high proportion (say 85<sup>th</sup> percentile) of traffic travelling at high speeds. Therefore, a site may be suitable for treatment with VAS if a high proportion of vehicles are travelling at speeds higher than what is considered safe.

The Queensland VAS trial found VAS to be most effective when sign-posted speed limits were below 100 km/h.

## **7.3 Traffic volume**

Trials within Queensland found that the positive effects of VAS may be related to traffic volume. It has been noted that, on high volume roads, when traffic travels past the sign in a platoon formation, the speed of the driver is set by the vehicle in front and drivers are more inclined to continue travelling at speeds consistent with the platoon, therefore making the VAS less effective. The trial also found that sign-performance is adversely affected if vehicles are not spaced adequately apart, to ensure only one vehicle is within the radar's field of view at any one time.

VAS performance was found to be optimised when AADTs were below 20,000 vehicles in one direction on a two-lane approach. Therefore, a site may be suitable for treatment with VAS if volumes are below 10,000 vehicles per lane, per day, in one direction and/or, at the times of day the sign is to be utilised, traffic is free flowing (no platooning) and spaced adequately apart to ensure only one vehicle is within the radar's field of view at any one time.

## **7.4 Road geometry**

VAS are most effective when placed on a straight and level road. However, signs with external radars may be implemented on approaches with vertical or horizontal curves or gradients, providing there is a clear sight-line between the vehicle and the sign, so that the vehicle can be detected and exposed to the sign message for at least three seconds. If the road geometry prevents these criteria being met with an external radar, the site is not suitable for treatment with a VAS.

VAS may be placed on single or dual carriageways. However, for dual carriageways, the sign should be placed in the central median. If it is not practical to install a sign in the median, a VAS sign may be installed on the left-hand roadside.

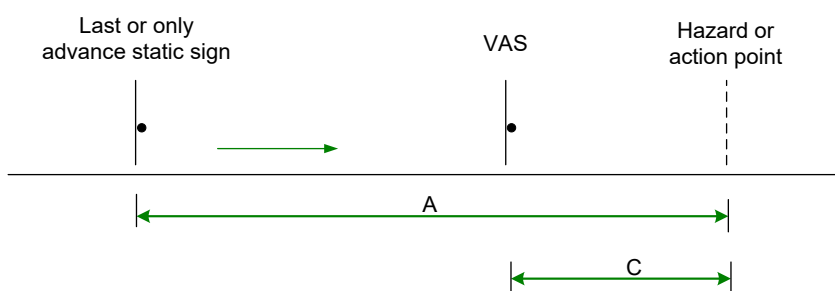
## **8 Sign placement**

When determining the position of the VAS sign, once a site is deemed to be appropriate for VAS treatment, the following factors must be considered in advance of the hazard:

- VAS perform better at locations where the forward visibility is more than 200 m. The radar has the potential to identify vehicles at this distance.
- As with static signs, VAS must be clearly visible and not be obscured by trees, shrubs or other signs. Most signs have a power source in the form of a solar panel. While the signs also have an internal battery source, it is important that trees are not overhanging or obscuring the solar panel.

- Signs should not be located under power lines. If there is no alternative, ensure that there is sufficient clearance between the top of the sign and the power cables.
- Placing a VAS on the nearside on roads with an overtaking lane, will not be as effective in reducing general vehicle speeds as on a single-lane approach. With a high percentage of heavy vehicles, the sign is often obscured by slower moving vehicles. Therefore, lanes with faster traffic, cannot be targeted by the sign thereby effectively reducing its speed and crash-reducing influence.
- Where possible, VAS signs should be located on a straight and level approach, to ensure there is enough time for the radar to detect the vehicle and display an appropriate message. On curved or undulating approaches, this constraint may be overcome by using a sign with external radar. However, practitioners must ensure that there is a clear sight-line, between the driver and the sign, so the driver can be detected and exposed to the sign message for at least three seconds, while providing sufficient distance in advance of the hazard, to give the driver suitable time to respond (this distance will be dependent on the speed of the vehicle).
- Practitioners must be vigilant to other factors affecting the function of any sign, for example, locations of driveways, parking bays, vegetation obstruction and other conflict zones that may impede the driver's view of the sign, or otherwise interfere with the sign's radar operation.
- Due to radar interference when using a VAS on a dual carriageway, signs cannot be placed adjacent to each other and must therefore be offset from one another.
- Speeds on a two-lane road can be influenced with a single VAS. Traffic speeds will be generally higher in the far-side lane and therefore, to target these drivers, a VAS shall be placed within the median.
- To determine if the VAS can be easily maintained without the need for traffic management measures, a site assessment shall be made.
- The longitudinal placement of the VAS sign is illustrated below in Figure 8.

**Figure 8 – VAS distance**



These dimensions are illustrated in Figure 8 and are applied as below/follows:

Dimension A – the primary advance warning sign-distance to a hazard, or action-point from a single advance sign, or the last of a series of advance-signs. See Table 1.12.2 MUTCD Part 1.

Dimension C – the VAS distance to a hazard or action-point, considering above sign-placement factors.

C is always less than A.



### **8.1 Lateral placement and mounting height**

The lateral placement of a VAS shall be determined in accordance with MUTCD Sections 1.12.3.2 and 1.12.3.3. In summary, on rural roads, VAS should be placed at least 600 mm clear of the outer edge of the road shoulder and between 2 m and 5 m from the edge of the travelled way. On urban roads with a kerb, the signs should be located at least 300 mm behind the face of the kerb (500 mm where mountable, or semi-mountable kerbs are used such as on traffic islands).

Similarly, the mounting-height of VAS shall be determined in accordance with the MUTCD Sections 1.12.3.4 and 1.12.3.5.

VAS near intersections and roundabouts shall not be installed at locations where they might cause sight distance problems. For example, the mounting height of a sign may be increased or decreased to avoid obstructing sight distance at an intersection.

### **8.2 Sign supports**

To maintain the forward-visibility of a VAS, it may be necessary to place the installation within the clear zone. While the speed-reducing feature of a VAS is likely to reduce the likelihood of a crash, placing the sign in the clear zone increases the risk of an errant vehicle colliding with the VAS support. Frangible sign-supports shall be used to minimise the risk of a serious injury to vehicle occupants, should such a collision occur, unless there is a suitable safety barrier in place to protect an errant vehicle from a fixed-based sign post.

To determine if a collapse mechanism is necessary and to establish which type should be used, the department commissioned a consultant to review and assess various VAS post installations. The research concluded the following:

- Slip-base posts, or an energy attenuating post (Lattix) are considered to be acceptable mechanisms to support the VAS.
- Occupants of errant vehicles would not be at a greater risk, if they collided with the proposed sign rather than a W-beam-guardrail.
- The use of the slip-base mechanism on the sign post, is a better alternative than the construction of a barrier to protect a stiffer post or sign support.
- If a slip-base pole is used, it is recommended that the centre of gravity for the assembly be restricted to be 1.7 m from the slip-base end and desirably more than 2.0 m (to minimise the chance of the sign falling on the front of an errant vehicle upon impact).
- If the guardrail is already in place at the VAS site, the sign must be placed 1 m behind the face of the guardrail. If the given deflection-distance behind the guardrail can be achieved, a fixed post construction can be used.

## 9 VAS operation

VAS are classified as normal traffic signs but, to improve their conspicuity, the sign-face display is illuminated with an LED. Different parts of the message symbols can be shown in varying colours to match, as closely as possible, the sign display within the MUTCD. To improve the conspicuity of the sign, a supplementary road safety message such as 'SLOW DOWN' is included.

The intensity of the LEDs is adjusted automatically by the sign according to different light conditions. For example, during night time conditions, the intensity of the sign reduces to ensure the sign's legibility is maintained and that the driver's vision is not impaired. When not activated by a vehicle, the sign remains blank (that is, blacked out).

VAS have a supplementary purpose and shall not be used to replace a primary static sign. That is, all standard primary (static) signage must be in place before VAS can be installed as secondary signage.

A driver will react to a VAS once they activate the sign, therefore, they will adjust their speed well in advance of the sign (unlike a static primary sign where the driver will react once they are adjacent to the sign). Therefore, VAS can be placed closer to the hazard (unlike static signs, which must be placed away from the hazard, to accommodate the required change in speed).

The range of the radar can be manually set by the supplier at the time of installation and is generally between 50 m to 200 m.

When a driver enters the radar range travelling above the pre-set activation speed, the VAS will be activated. Travelling towards the sign, the radar will continuously measure the speed of the vehicle and become deactivated if the vehicle-speed falls below the activation threshold. The radar normally stops measuring the vehicle speed when it is within 5 m of the sign (depending on the radar angle).

VAS can measure 85<sup>th</sup> percentile and mean speeds, as well as traffic volume and this data assists with setting the correct activation speed of each sign. However, the VAS-recorded traffic volume data should not be considered independently, as the same vehicle can be counted several times making the volume data unreliable.

### 9.1 VAS radar

A VAS can operate with either internal radar or external radar.

#### 9.1.1 Internal radar

The radar is built into the sign display.

##### **Disadvantage:**

- It is difficult to adjust the radar-aim independently from the sign face. These types of signs are not very effective when placed within curves, or a curve system, or when placed on a gradient.

##### **Advantage:**

- The radar unit cannot be seen and therefore is better protected against vandalism.

#### 9.1.2 External radar

The radar is generally mounted on top of the sign.

##### **Disadvantage:**

- The radar unit is clearly visible and may be prone to vandalism (although this was not experienced during the Queensland VAS trial).

**Advantage:**

- External radars can be aimed independently from the sign face, providing much more flexibility when installing the sign and are more effective when placed within a curve, or curve system, or on roads with a gradient.

**9.2 Targeted message**

A roadside traffic sign does not control the actions of a driver, but aims to influence driver behaviour, to precipitate a desired response. Traffic signs are ineffective if they are hidden, or not clearly understood, in time for the driver to respond in a safe and efficient manner. It is therefore important that VAS design is consistent with the requirements of all roadside signs and shall have the following characteristics:

*Familiarity:* Drivers will respond better to signs they are familiar with. VAS can use the established warning and regulatory diagrams from the MUTCD, which the motorist can easily recognise. Therefore, perception and understanding will be quicker and reduce the length of time it takes to react if signs are MUTCD compliant and consistent in appearance with their static equivalents.

*Provide positive information:* The less ambiguity a sign presents, the less opportunity there is for a motorist to think of an alternative course of action. As such signs should be specific about how a driver should respond. Appending a 'SLOW DOWN' message to a VAS gives the driver no doubt about the instruction being displayed and the expected course of action.

**9.3 Signs display and size**

A limited range of speed and warning signs are developed for use in combination with a 'SLOW DOWN' message. These signs have been formalised as [Traffic Control \(TC\) Signs](#) (Visit to access a copy) and should be implemented in accordance with these guidelines.

Sign sizes should be selected based on the posted speed limit as shown in Table 9.3.

**Table 9.3 – Sign selection**

Posted Speed	Sign Size
≤ 70 km/h	A
> 70 km/h	B

Sign sizes A and B should be referred to the corresponding TC signs. The size of the supplementary plate shall be consistent with the main sign face.

Signs must not contain any non-standard pictograms or messages (that is, those not prescribed in the MUTCD). Signs other than those described, must not be used without special authorisation from the Director (Safer Roads), Department of Transport and Main Roads.

VAS are not substitute for standard static signs, nor are they to be used as general speed limit repeater signs.

The following types of VAS are available for use on the Queensland road network:

- **TC 1787:** Speed limit (for example, 80) + SLOW DOWN
- **TC 1790\_2:** Left/Right Curve + SLOW DOWN
- **TC 1790\_3:** Left/Right Reverse Curve + SLOW DOWN
- **TC 1790\_4:** Cross Road + SLOW DOWN
- **TC 1790\_5:** Roundabout + SLOW DOWN
- **TC 1790\_6:** Winding Road + SLOW DOWN
- **TC 1790\_7:** Slippery Road + SLOW DOWN
- **TC 1790\_8:** Stop Sign Ahead + SLOW DOWN
- **TC 1790\_9:** Side Road Junction on outside of a Curve + SLOW DOWN
- **TC 1790\_9:** Side Road Junction on outside of a Curve + SLOW DOWN
- **TC 1790\_10:** Side Road Junction on inside of a Curve + SLOW DOWN
- **TC 1790\_11:** Steep Descent + SLOW DOWN
- **TC 1790\_12:** Give way Sign Ahead + SLOW DOWN

**Figure 9.3: Example VAS**



As the VAS displays are on a black background, the signs cannot have the same colour display as per the MUTCD. In the case of the speed limit roundels, the signs shall have illuminated white numerals within a red annulus. The 'SLOW DOWN' message is in white. Hazard warning signs (curves, intersections and roundabouts) have an illuminated white symbol within a yellow border and the 'SLOW DOWN' message is in white.

#### **9.4 Activation speed**

Following installation, the sign should be placed in a covert mode, where the sign will record traffic movements, but not be activated. Generally, a two-week period is sufficient to collect enough data to determine the 85<sup>th</sup> percentile speed.

If the 85<sup>th</sup> percentile speed is below the speed limit, then the activation threshold should be set as speed limit + 2 km/h, except in the case of a roundabout, intersection, or curve warning sign, where the activation threshold is dependent on the distance between the sign and the hazard. In these cases, the activation threshold is best determined through a speed survey and may be set below the speed limit. However, the activation thresholds shall never be set below any advisory speed that may be displayed.

## **10 Specific VAS applications**

As well as trialling this technology in Queensland, the department's Safer Roads Unit has worked with suppliers to innovate this technology to provide solutions to specific regional problems. The additional sign technologies deployed or being considered are as follows:

### **10.1 Wet weather sign**

The primary objective of this VAS, is to reduce the risk and severity of traffic crashes by reducing the speed of vehicles and enhancing the awareness of drivers at wet weather friction-deficient locations. The most likely location for these types of signs, is in advance of curves, or along a winding road system, particularly in areas of dense tree coverage where it will take longer for the road surface to dry. Under these circumstances, passing motorists could be travelling in sunny conditions and not appreciate that the road surface is wet.

These signs are equipped with wet weather rain sensors. Once the sensor becomes damp, the sign is activated by those vehicles exceeding the safe speed warning that there is a danger of losing control of their vehicle. The signs remain in 'wet weather mode' for 30 minutes once the wet weather sensor has dried up. This could be several hours after the rain has stopped and allows for the road surface to dry.

The safe speed is to be based on the results of VERICOM testing (or friction supply and demand testing). During dry conditions, the sign is activated at a higher speed threshold.

A slippery road display (TC1790\_7) with a 'SLOW DOWN' supplementary message, is generally used for this type of VAS sign.

### **10.2 Heavy vehicle classifier**

The sign display depends on the road geometry (for example, curve or winding road) and includes a 'SLOW DOWN' supplementary message. The sign can identify a heavy vehicle and activates when such a vehicle approaches the hazard too fast. The sign is best suited where there has been a record of truck rollovers, or trucks losing control on a downhill gradient. This sign operates as a final message to the driver and it is anticipated that this type of VAS will reduce the number of heavy vehicle crashes where deployed.

A classified speed survey is required to determine the 85<sup>th</sup> percentile speeds of both heavy vehicles and light vehicles.

When applying this type of VAS, two activation speeds can be set. For smaller vehicles, an activation speed of the speed limit + 2 mph or the 85<sup>th</sup> percentile speed (if lower than the speed limit) can be used. The light vehicle activation speed needs to be carefully monitored, to ensure that the number of activations for light vehicles does not influence the effectiveness of the sign for heavy vehicles. For heavy vehicles, the activation speed shall be set as the curve advisory speed.

### **10.3 Side road detector**

This type of VAS is intended for use on the major (uncontrolled) approach to an intersection, where there is a history of crashes involving vehicles from adjacent approaches, opposing vehicles turning, or vehicles entering the roadway.

This VAS operates in two ways:

- a standard speed limit, or intersection VAS, which is activated when a vehicle on a major road approach exceeds the threshold speed, and/or
- a VAS activated to all or some vehicles on the major approaches, when a vehicle is detected on the side road/s, or in an opposing turning lane.

On rural roads where the side road volumes are low, the sign is activated and displayed to all vehicles on the major road approaches, when a vehicle is detected on a side road or in an opposing turning lane.

Where side road volumes are high enough to result in the VAS being activated most of the time, it may be more appropriate to set the activation speed, as it would be set, for a standard VAS.

## **11 Further advice**

For further advice, or to provide feedback on this guideline, please contact:

The department's Safer Roads Unit

Email: [SaferRoads@tmr.qld.gov.au](mailto:SaferRoads@tmr.qld.gov.au)

**Appendix A - VAS Site selection criteria**

