

Marking informal heavy vehicle stopping areas with green reflectors in NSW

Technical Guide

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About this release

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1 Purpose

This guideline has been produced to provide Roads and Maritime Services (Roads and Maritime) guidance when implementing the green reflector treatment (the Treatment) in all regions of New South Wales (NSW). The Treatment may be provided to signalise informal heavy vehicle stopping areas that meet the minimum site requirements to provide a safe stopping opportunity for heavy vehicle drivers. When the Treatment is implemented, the informal heavy vehicle stopping areas are known as green reflector sites.

2 Background

Drivers of heavy vehicles can use a range of stopping opportunities to take a rest break, check their vehicle or to fill in log books.

These opportunities include:

- Formal rest stops that have been signposted by Roads and Maritime.
- Informal stopping areas developed through use, over time, by the heavy vehicle industry. Roads and Maritime does not signpost these locations as rest stops, but in some instances may mark them as green reflector sites consistent with this guideline.

The driver of a heavy vehicle looking for a place to stop for a rest break may see little difference between a formal rest stop and an informal stopping area. Drivers of heavy vehicles unfamiliar with a route are less likely to be able to identify informal stopping areas, particularly at night when they are more likely to need them. Given the importance of being able to stop safely to manage fatigue, Roads and Maritime may install green reflectors at informal heavy vehicle stopping areas so that they can be more readily identified.

Green reflectors mounted on roadside guide posts in rural areas are used as a simple, cost effective way of giving drivers of heavy vehicles advance notice that they are approaching an appropriate informal heavy vehicle stopping area.

3 Application of Guidelines

These guidelines apply to State Roads in all regions managed by Roads and Maritime.

Implementation of the green reflector treatment is typically intended for informal stopping areas that are able to safely accommodate the largest class of heavy vehicle approved to access the road without the need for improvements to the site.

This Guideline does not create an obligation on Roads and Maritime to establish green reflector sites at all informal rest areas. Green reflector sites will only be established in accordance with this Guideline and at locations determined as necessary by the Roads and Maritime Infrastructure Services Manager for that location.

Should Roads and Maritime have concerns regarding the safety, condition or community impact of an informal heavy vehicle stopping area, the site may be removed as a Green Reflector Site. This will include the removal of the green reflectors, if installed, and may include other works to prevent use of the site.

4 Site Requirements

The following requirements must be met as a minimum before the green reflector treatment may be installed at an informal heavy vehicle stopping area.

Green reflector sites or unmarked informal heavy vehicle stopping areas that do not meet these requirements should be closed or if appropriate closed and reopened following minor works being undertaken to ensure requirements are met.

4.1 Minimum Area

Green reflector sites should be able to accommodate at least one of the largest heavy vehicles that can legally use the route, with sufficient room for those vehicles to safely enter and exit the site without damage to the road infrastructure or roadside environment.

In locations where there is room for more than one heavy vehicle to stop, there must be sufficient width for heavy vehicles to pass stopped vehicles and to safely enter and exit the site when other vehicles are stopped.

With the exception of oversize vehicles, heavy vehicles are approximately 2.5m wide. Green reflector sites must be wide enough to allow the heavy vehicle driver to stop a minimum of 3 metres clear of the edge line. The minimum width of a green reflector site measured from the edge line is 6.5m. The Infrastructure Services Manager can approve a narrower width, when considered safe to do so (eg. after consideration of factors such as sight distance and traffic volumes).

4.2 Site Surface Conditions

Generally, green reflector sites are outside the paved area. The Green reflector sites are not required to be sealed, but should be of a standard suitable for use by a heavy vehicle without the risk of bogging in wet conditions.

Because the heavy vehicle industry has developed these informal stopping areas, drivers of heavy vehicles familiar with the route are unlikely to use the sites prone to bogging. However, not all who use a green reflector site will be familiar with the route or the site. It is therefore recommended that that only sites that can be used during all weather conditions be marked with green reflectors.

4.3 Sight Distance

The minimum required sight distance for all directions of travel on approach to a green reflector site is the Safe Intersection Sight Distance (SISD), as defined by Austroads Guide to Road Design – Part 4A. Table 1 below provides the required Safe Intersection Sight Distance for various rural speed limits used on the NSW road network, based on reaction times for different speeds (<90km/h = 1.5 secs, 100km/h = 2 secs and 110km/h = 2.5 secs).

Table 1. Safe Intersection Sight Distance

Speed Limit (km/h)	SISD (m)
80	170
90	201
100	248
110	300

In addition to sight distance, road geometry should also be considered prior to formalisation of 'Green Reflector' stopping areas, including grade and curvature.

Sight distance should also be sufficient for the driver of a heavy vehicle to see whether there is already a heavy vehicle parked at the green reflector site and, if so, whether there is sufficient room to safely accommodate more than one heavy vehicle, including safe access, parking and exit manoeuvres for all vehicles.

4.4 Access to Site

Green reflector sites should be easy to access, with good shoulder condition, no significant drop-off and a relatively smooth transition between the road and the stopping area.

4.5 Surroundings

Green reflector sites should not be in close proximity to overhead powerlines or other utilities that may cause damage to, or be damaged by, heavy vehicles accessing the site.

The site should not impact on drainage lines for the road or for surrounding areas.

The location of green reflector sites adjacent to rural property accesses or intersections is not recommended. Interference with the normal operation of the junction caused by heavy vehicles entering and exiting the site may result in conflict between vehicle movements. Generally, sites within 100m of intersections or major driveways must not be marked as green reflector sites.

Sites located close to residential or business premises are likely to cause amenity issues (e.g. headlight glare, noise, vehicle exhaust) and must be avoided.

Sites should be individually assessed to ensure there are no other site specific conditions that make it unsuitable for use as a green reflector site. Such conditions could include, but are not limited to, environmental concerns or conflicting nearby land uses.

5 Implementation

Wherever possible, existing guideposts should be used to indicate the upcoming site. Ideally, guideposts will be 200 to 250 metres apart.

In some circumstances the use of existing guideposts may not be suitable as the posts will be too far from or too close to the site, too close to a busy intersection, to be readily noticeable, be concealed or disguised by vegetation, signage or other road furniture or the surface, placing or pitch of some existing guide posts may not be 'reflector-friendly'. In such circumstances, erection of new guide posts in more appropriate positions should be considered.

If an existing guidepost is not close enough to the proposed green reflector site, new guide posts should be considered.

The reflectors are installed in a **"3 2 1 pattern"** (refer to Figure 1):

- Three green reflectors on a guide post 400m to 500m before the entrance to the site.
- Two green reflectors on a guide post 200m to 250m before the entrance to the site.
- One green reflector on a guide post immediately before the entrance to the site.

Green reflectors should be placed in a vertical row on the guide post below the existing red reflector. Where possible, spacing between the reflectors on a guidepost should be a maximum of

85mm with a minimum spacing of 50mm between reflectors.

Guideposts and reflectors are to comply with Roads and Maritime QA R131 Guide Posts specification and AS 1906.1 Class 400 dark green coloured sign sheeting material respectively.

Green reflectors are not to be installed without a site assessment (refer to site assessment checklist, Appendix A). Once installed, an inventory data sheet is to be completed and supplied to the Assistant Maintenance Planner for entering into RAMS.

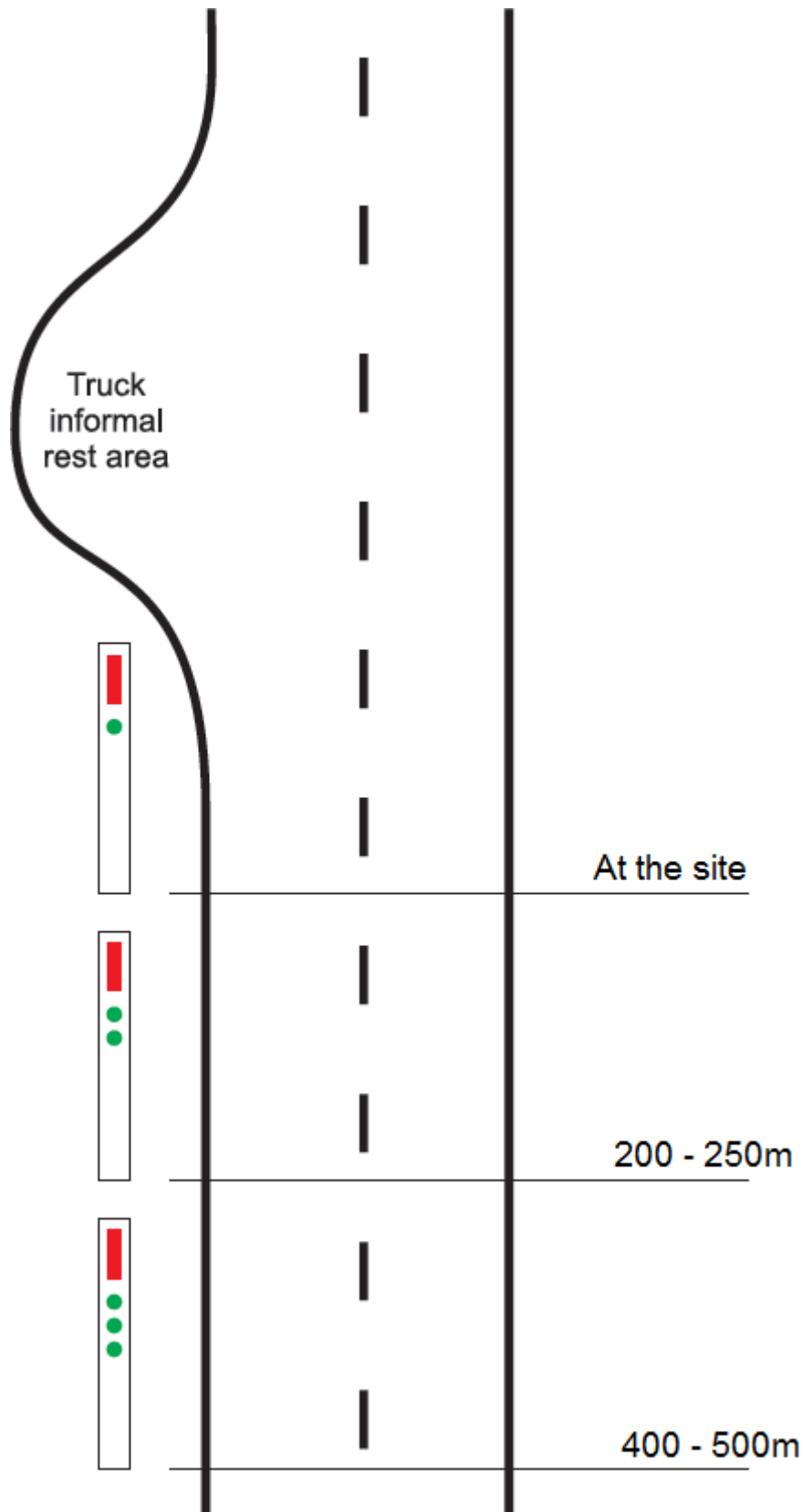


Figure 1. Marking of green reflector sites using 3 2 1 pattern

6 Asset Management

Roads and Maritime may undertake minor improvement or maintenance works to facilitate the ongoing use of green reflector sites, but any such improvement or maintenance is at the discretion of Roads and Maritime and subject to funding priorities.

To assist with future maintenance, the location of each green reflector site should be identified using ROADLOC. Each green reflector site should be entered into RAMS and inspected as part of routine maintenance.

Whole-of-life maintenance should be considered when assessing a site for the green reflector treatment. High usage and heavy loads can damage a site. If an informal heavy vehicle stopping area has a gravel surface, then the surface's propensity to be damaged by regular use (including edge break and drop-off) should be considered. A green reflector site's surface condition should be checked periodically during routine maintenance patrols. Maintaining the reflectors and the guideposts they are on should also be an integral part of the inspection and maintenance regime.

In the event of a reseal being carried out in the green reflector site's general area, consideration should be given to widening the seal at the entry/exit to reduce the impact of edge break and drop-off. Any reseal is at the discretion of the Asset Maintenance Planner.

Where green reflectors have been installed on the approach to formal rest stops, the reflectors should be removed and the appropriate signage installed to advise all road users of the location of the formal site.

Appendix A: Informal heavy vehicle stopping area preliminary site assessment

Table 2: Informal heavy vehicle stopping area preliminary site assessment components

Component	Response
Road name:	
Segment number:	
Latitude & Longitude:	
Chainage:	
Direction (Prescribed / Counter):	
Largest class of heavy vehicle approved for route:	
Carriageway and lane configuration:	
Site dimensions (length / width):	
Estimated maximum number of largest approved class vehicles:	

Table 3: Informal heavy vehicle stopping area preliminary site assessment checklist

Criteria	Finding (Y/N)	Comments
Minimum Area		
The site can accommodate a minimum of one of the largest class of heavy vehicles approved for this route?		
Is there sufficient room for those vehicles to safely enter and exit the site without damage to the road infrastructure or roadside environment?		
Is the site wide enough to allow the heavy vehicle driver to stop a minimum of 3 metres clear of the edge line?		
Is the minimum width of the green reflector site, measured from the edge line, 6.5m?		
Is there sufficient room for a heavy vehicle to manoeuvre within the site when there is one or more vehicles currently parked?		
Site surface conditions	Finding (Y/N)	Comments
Is the Green reflector site a hardstand area? (The site is not required to be sealed)		
Is the hardstand area of a standard suitable for use by a heavy vehicle without the risk of bogging in wet conditions?		
Can the site be used during all weather conditions?		
Site Distance	Finding (Y/N)	Comments
Safe intersection sight distance at entry and exit points? 80km/h = 181m, 90km/h = 214m 100km/h = 248m, 110km/h = 285m		
Sufficient sight distance for approaching heavy vehicle to determine if adequate parking space if available?		

Criteria	Finding (Y/N)	Comments
Site Distance Sight distance for nearby intersections will be maintained if heavy vehicles are parked at proposed site?		
Access to site	Finding (Y/N)	Comments
Shoulder pavement adjacent to site is adequate to support heavy vehicle traffic?		
Surface level suitable to provide a smooth ride in and out of site?		
Surroundings	Finding (Y/N)	Comments
Site clear of overhead powerlines or other utilities (e.g. gas or optical fibre) that that could be struck or damaged by heavy vehicles accessing the site?		
Site clear of rural property access?		
Site minimum of 100m clear of residential dwelling access?		
Site minimum of 100m clear of existing intersections, turning lanes, on/off ramps		
Amenity conditions will be maintained for nearby residents and businesses? (no additional noise, headlight glare, odour, litter generated?)		
Other	Finding (Y/N)	Comments
Existing guideposts present 200-250m apart suitable for attaching green reflectors?		
Are green reflectors already in place?		
Evidence site is already being used by heavy vehicles?		
Evidence site is already being used by light vehicles?		
Existing facilities (e.g. bins, seating)		
The site is clear of weeds which are normally shown by sign posting?		

Site Sketch



Inspector:

Date:



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Customer feedback
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