



TS 00020:1.0

Standard

Town Entry Gateway Treatment

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Preface

This document was developed to support speed reduction initiatives identified by the Centre for Road Safety.

The intended outcome of this document is to establish a process for enabling consistent application of town entry gateway treatments across the TfNSW road network.

This document is the first issue.

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1 Scope

This document covers the implementation of a TEG and includes the following:

- identification of candidate sites
- design guidance
- site location assessment.

This document does not cover requirements, recommendations, or information on funding sources to implement or maintain a TEG (or any related works).

2 Application

This document is intended for use by all parties involved in the planning, design and implementation of a town entry gateway treatment on the TfNSW road network.

3 Referenced documents

The following documents are cited in the text. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document applies.

Transport for NSW standards

QA Specification R110 *Coloured surface coatings for bus lanes and cycleways*

CPr21038 *Road User Space Allocation Procedure*

Other referenced documents

Austrroads, 2021, *Guide to road design, Part 3: Geometric design*, AGRD03-16

Austrroads, 2017, *Guide to road design, Part 4: Intersections and crossings – general*, AGRD04-17

Austrroads, 2021, *Guide to road design, Part 4A: Unsignalised and signalised intersections*, AGRD04A-17

Austrroads, 2020, *Guide to traffic management, Part 5: Link management*, AGTM05-20

Austrroads, 2020, *Guide to traffic management, Part 7: Activity centre transport management*, AGTM07-20

Austrroads, 2020, *Guide to traffic management, Part 8: Local area traffic management*, AGTM08-20

Austrroads, 2014, *Methods for reducing speed on rural roads – compendium of good practice*, AP-R449-14

ARRB Group, 2013, *Evaluating the use of rural-urban gateway treatments in New Zealand*

Geographical Name Board, *Geographical Name Register (GNR) of NSW*

NSW Centre for Road Safety, 2011, *NSW speed zoning guidelines*, RTA/Publication 11.432,
Roads and Traffic Authority NSW

Roads and Maritime, 2017, *Supplement to Austroads guide to road design part 3: geometric design (2016)*, 2.1, RMS 17.435

Roads and Maritime, 2017, *Supplement to Austroads guide to road design part 4A: unsignalised and signalised intersections (2016)*, 2.1, RMS 17.336

Roads and Maritime, 2013, *RMS Austroads supplement for guide to traffic management –part 5 (2008)*, 2.0, RTA/Publication 11.032

Roads and Maritime, 2014, *RMS Austroads supplement for guide to traffic management – part 7 (2009)*, 2.1, RTA/Publication 11.021

Roads and Maritime, 2014, *RMS Austroads supplement for guide to traffic management – part 8 (2008)*, 2.1, RTA/Publication 11.022

Roads and Traffic Authority, 2008, *Delineation*, RTA/Publication 08.091

TfNSW Traffic Engineering, *Traffic Signs register*

4 Terms, definitions and abbreviations

The following terms, definitions and abbreviations apply in this document:

ARRB Australian Road Research Board

built-up area an area in which either of the following is present for a distance of at least 500 m: buildings, not more than 100 m apart, on land next to the road; or streetlights not more than 100 m apart

rural an area that does not fit within the definition of ‘built-up area’

speed zone a length or an area of road along which a signposted regulatory speed limit applies

TEG town entry gateway (treatment)

TfNSW Transport for NSW

urban see ‘built-up area’

5 Town entry gateway treatment

5.1 General

This document provides guidance on the design and implementation of a town entry gateway treatment (TEG) which may be installed at a speed zone change on approach to a town in rural road environment.

5.2 Background and purpose

People who are in control of a motor vehicle in a high-speed area and approaching a built-up area are required to reduce their vehicle's speed to what is legal and safe for the urban environment. A TEG is a speed management treatment to enhance an existing speed zone change at a town entry and consists of signs, pavement marking and lane narrowing creating a visual difference in the road environment. A TEG's purposes are to influence people's driving behaviour to encourage safer driving speeds and improve speed compliance when entering a rural town, and to aid definition of a town's extent to all road users.

The link between reduced driver speeds and improved road safety is well established, both for crash frequency and crash severity, with a TEG being one possible method to achieve these outcomes.

TEGs have been implemented successfully in other Australian states and internationally (for example, New Zealand and the United Kingdom). Austroads AP-R449-14 points to TEG benefits in speed reduction of up to 25 km/h and in crash reduction of at least 25%. Similar crash reduction benefits are also noted in the *Evaluating the use of rural-urban gateway treatments in New Zealand* research by ARRB.

TfNSW trialled a TEG installation at Cobargo in November 2020. Details of the trial are included in Appendix A.

5.3 Alternatives

Whilst a TEG may be an appropriate measure to address identified road safety concerns, alternative treatments should be considered prior to installation of a TEG.

The subject site should be assessed to determine if other remedial measures can be implemented to effectively improve road safety without the need for a TEG. The assessment may consider the following:

- a speed zone review (and subsequent actions) (refer to RTA/Publication 11.432)
- existing speed zone signage and marking:
 - condition – impact damage, reflectivity, fading
 - size – appropriate for approach speed

- location – distance from travel lane, distance from rural-urban boundary
- street lighting – providing or improving
- sight distance – mitigation of obstructions (overhanging trees, other signs)
- road-side hazard mitigation
- pavement condition/friction – re-surfacing.

Any remedial measures shall be implemented in accordance with the relevant standards, guidelines and specifications. Relocation of the speed zone change shall be done in accordance with RTA/Publication 11.432.

A period of in-service monitoring of the effectiveness the remediation should be allowed for prior to reassessment for TEG installation.

5.4 Criteria

A TEG may be considered on any rural road on approach to a town, particularly where there are road safety concerns. The safety concerns may relate to speeding, crashes or vulnerable road user groups (people walking, cycling, or riding motorcycles). Information gathered from various sources (for example, speed survey, crash data, road safety assessment, community feedback) may be used to identify these safety concerns.

A TEG may be considered if at least one of the following criteria is met:

- there is poor speed compliance with the posted speed limit within or on entry to a town
- there is a history of speed-related crashes within or on entry to a town
- there are vulnerable road user groups present within or on entry to a town.

A TEG shall only be installed where the following applies:

- there is a speed reduction on entry to a town of 20 km/h or more (for example, 70 km/h to 50 km/h)
- on roads with sealed pavement.

A TEG shall not be installed on a bridge.

Only one TEG shall be installed on any town approach (that is, not repeated as part of a series).

5.5 Complementary treatments

Complementary treatments may be installed to improve the effectiveness of a TEG.

Street lighting may be provided at the TEG site to enhance its visibility.

A discernible environmental change combined with a TEG may further promote speed compliance entering a town. Austroads AP-R449-14 indicates that a continuation of the

environmental change downstream of the TEG may help to maintain the speed reduction through a town. Austroads AGTM07-20 and AGTM08-20, and Roads and Maritime RTA/Publication 11.021 and RTA/Publication 11.022 provide detail on traffic calming features which may be beneficial, including the following:

- lane narrowing
- painted median
- landscaping
- kerbed islands
- kerb and channel.

Refer also to CPr21038 for strategies to implement these complementary treatments.

6 Design

6.1 General

An effective TEG treatment combines three key elements to increase the prominence of the speed zone change: enhanced signage, lane narrowing and a coloured threshold. Figure 1 shows an example of how these three elements are represented in the road environment.

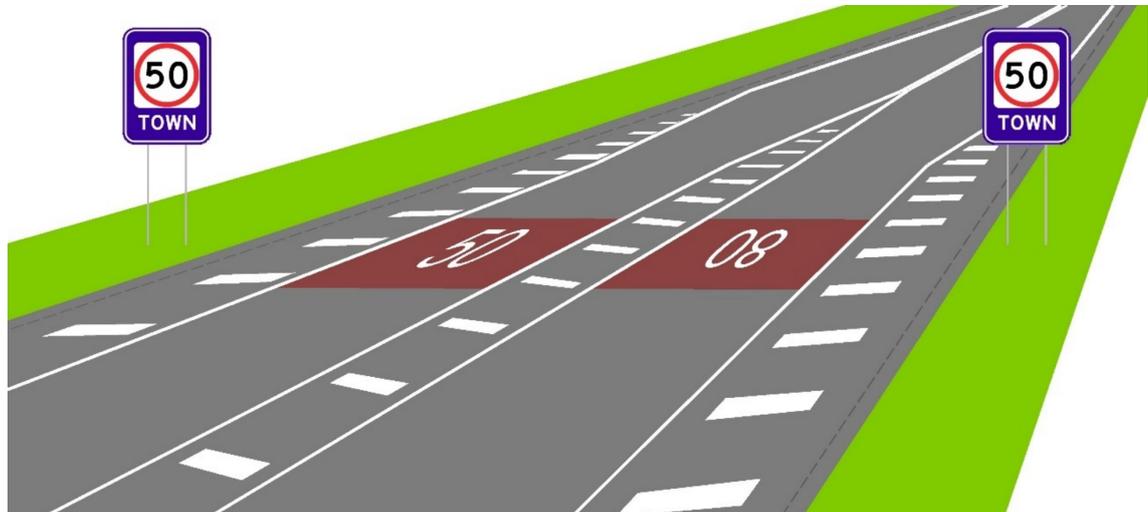


Figure 1 – Example of town entry gateway elements

6.2 Layout

A TEG shall be located at the speed zone change, with longitudinal dimensions in accordance with Figure 2.

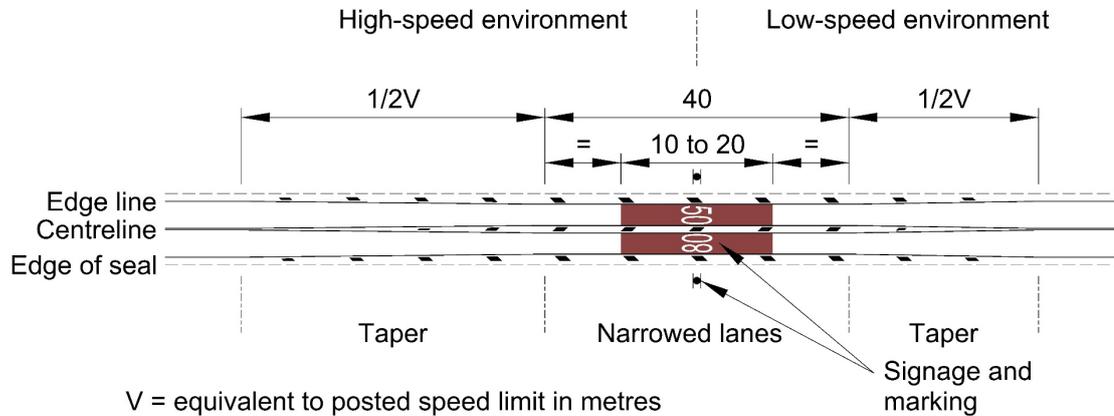


Figure 2 – Town entry gateway layout

The narrowed lane section of the TEG shall be 40 m in length and applied in both travel directions. Tapers from and to the existing lane width shall be equivalent in metres to half the posted speed limit on each approach. For example, posted speed limits of 80 km/h and 50 km/h shall have tapers of 40 m and 25 m, respectively.

Diagonal and longitudinal line marking shall be in accordance with RTA/Publication 08.091. The centreline shall be marked to prohibit overtaking in both directions for at least the length of the TEG.

6.3 Enhanced signage

The existing Speed Limit signage on entry to the town shall be replaced with Gateway Speed Zone (R4-1-1n, R4-1-2n or R4-1-3n) signage. The Gateway Speed Zone signage shall only be installed facing traffic entering the lower speed zone. Speed Limit signage (R4-1) shall be installed for traffic departing the town. Signage shall otherwise be installed in accordance with RTA/Publication 11.432.

The sign shall feature the official gazetted town name as listed in the *Geographical Name Register* (GNR) of NSW. The sign features the town name to raise awareness to people that they are entering a built-up area.

The sign face designs shall be created by TfNSW, Infrastructure and Place, Technical Services Guidance and Delineation. An example is shown in Figure 3. Refer to *Traffic Signs register* for further sign details.



Figure 3 – Example of Gateway Speed Zone signage (R4-1-1n shown)

6.4 Lane narrowing

Lane widths should be narrowed within the TEG to ensure its effectiveness. The reduction of lane widths shall be achieved by adjustment of the centreline and/or shoulder pavement marking. Lane narrowing should be implemented by combining both methods.

Lane narrowing for a TEG should only be installed where the sealed pavement width is at least 6.8 m. TEGs are intended to be a low-cost solution and retrofitting of a treatment to an existing seal is preferred to road widening, though widening may be considered.

6.4.1 Lane width

The lane width within the TEG should be 2.8 m, however a reduction of between 15 to 20% from the existing lane width may be adopted. The lane width shall be at least 2.8 m. All lanes through the TEG shall be the same width.

A swept path analysis of the design lane widths shall be undertaken to ensure design and checking vehicles can proceed through the TEG with appropriate clearances. Refer to Austroads AGRD04-17 for guidance on vehicle type and clearances.

A TEG should be avoided on curved sections of roadway where shoulder or pavement widening to accommodate heavy vehicles is provided. Where a TEG is proposed at these locations that same widening may still be required. Refer to Austroads AGRD03-16 and Roads and Maritime RTA/Publication 17.435 for guidance.

6.4.2 Centreline marking

Where lane narrowing is facilitated by adjusting the centreline, the existing centreline shall be removed and a new centreline installed at a separation width of between 400 mm to 1000 mm, measured between line centres, through the narrowed section. The width of the lane shall then be measured from the centre of the marked line.

If a wide centreline treatment exists at the site location, its width may be increased to 1000 mm.

6.4.3 Shoulder marking

Where lane narrowing is facilitated by adjustment or provision of shoulder marking within the TEG, a new edge line shall be installed at least 600 mm from the edge of the seal, measured through the narrowed section. Any existing edge line shall be removed before the new line is installed.

Diagonal marking shall be provided in the shoulder extending at least 600 mm from the centre of the shoulder edge line, measured through the narrowed section. Diagonal marking within the tapered section of the shoulder shall be at least 200 mm wide. Diagonal marking should be applied as waterborne paint to provide a smoother surface for people cycling.

Residual clear space between the edge of diagonal marking and the edge of seal should be provided to give a visual cue to people cycling that they can continue to ride within the shoulder. This residual space shall be a consistent width through the TEG. See Section 6.6 for further details of providing for people cycling.

6.4.4 Multiple lanes

Where lane narrowing is provided at locations with multiple lanes in the same direction it shall be applied as follows:

- provide a painted separator between the lanes comprising two edge lines at least 300 mm apart, measured between line centres
- adjust the centreline (see Section 6.4.2) and shoulder edge line (see Section 6.4.3)
- narrow each lane by an equal distance on each side.

6.5 Coloured threshold

A coloured threshold shall be applied within the TEG. The threshold shall extend across the full width of each lane. The length of the threshold should be 20 m, though it may be reduced to 10 m where environmental or traffic conditions may reduce durability of the coloured surface coating.

Speed limit pavement marking shall be installed within the coloured threshold adjacent the signage, in accordance with RTA/Publication 11.432.

The coloured threshold surface coating shall be installed in accordance with QA Specification R110. The colour requirement shall be the same as for a bus lane.

6.6 Provision for people cycling

Where formal provision for people cycling exists at a TEG location, it shall be retained.

Where people cycling make use of the existing road space (whether by traveling within the shoulder or the traffic lane) installation of the TEG should provide at least the same level of service.

Introduction of formal facilities for people cycling as part of a TEG installation may be considered where there is a demonstrated need or strategic merit, and it is within the context of the road use. Construction of additional sealed shoulder width can assist in providing such facilities.

Depending on the road environment, provision for people cycling may include the following:

- a sealed shoulder with diagonal marking applied over a green surface coating
- a sealed shoulder having no or reduced width diagonal marking
- a bicycle lane with a painted separator between it and the traffic lane/s
- a separated bicycle path
- other design solutions.

Any bicycle lane should start at least 15 m before the TEG and end at least 15 m after it.

For further guidance on providing road space for people cycling, refer to CPr21038, Austroads AGTM05-20 and AGRD03-16, and Roads and Maritime RTA/Publication 11.032 and RTA/Publication 17.435.

7 Site assessment

7.1 Location

A TEG enhances the speed zone change at the rural-urban boundary of a town where it could otherwise be unclear from the surrounding environment. It is intended to be installed at the location of the existing speed zone change and to replace those signs and markings.

Where the existing speed zone change location is out of context with the rural-urban boundary, then relocation prior to installing the TEG should be considered.

Where an engineering constraint (sight distance, intersections, road geometry, and so on) in the road environment prevents the placement of the TEG at the existing speed zone change, then the TEG may be relocated upstream as appropriate in advance of the existing signs and markings, as shown in Figure 4.

Relocation of the speed zone shall be done in accordance with RTA/Publication 11.432.

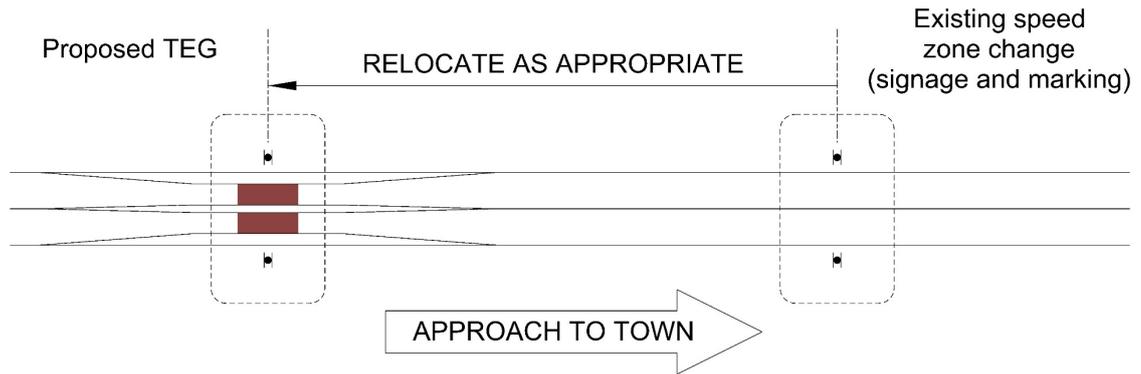


Figure 4 – Relocation of speed zone due to constraints

7.2 Sight distance

7.2.1 Adequacy

Clear visibility to the TEG is key to its effectiveness, as it relies on creating visual impact for people driving on approach to it. It is important any limitations to sight distance (for example, horizontal/vertical road geometry) are considered when assessing the proposed TEG site.

The TEG shall be visible for at least stopping sight distance (SSD) in accordance with Austroads AGRD03-16 and Roads and Maritime RTA/Publication 17.435.

7.2.2 Effects

A TEG introduces vertical features (enhanced signage) to the roadway. The effect these vertical features have on sight distance to nearby elements of the road shall be considered.

The presence of road-side features such as access driveways, service roads, intersections, parking bays, pedestrian crossings, and so on, should be noted. These features shall be considered when locating the TEG to ensure that any sight distance requirements are not adversely impacted by the treatment. Refer to Austroads AGRD03-16 and AGRD04A-17, and Roads and Maritime RTA/Publication 17.336 and RTA/Publication 17.435 for guidance on sight distance requirements.

7.3 Other signage and entry features

A TEG is not intended to replace any existing tourist or service signage, or community entry features that are nearby, nor does the installation of a TEG preclude their later provision. Consultation with the community regarding existing or planned entry features should be undertaken to address any location and compatibility concerns.

TEG signage primarily defines the speed zone and, as road safety infrastructure, its prominence within the roads space should be prioritised above other signage and features. The distance

between the TEG signage and other road signage shall be in accordance with RTA/Publication 11.432. Other road signage shall be relocated accordingly.

Sight distance impacts of other features shall be considered (see Section 7.2) to determine if their relocation is appropriate.

7.4 Pavement condition

The condition and service life of the existing pavement should be suitable for installation of the TEG elements (see Section 6). The suitability should be determined in consultation with pavement and/or asset maintenance specialists.

Any remediation or other scheduled pavement works can be coordinated with the installation of a TEG.

8 Consultation

Consultation shall be undertaken with appropriate stakeholders throughout the process of implementing a TEG. The consultation is to provide input into the TEG location, context, design, and other relevant details.

Appropriate stakeholders could include parties both within and outside TfNSW, such as the following:

- Safety, Environment and Regulation, Centre for road safety, Safer roads
- Regional and Outer Metropolitan
 - Community and Place
 - Freight
- Greater Sydney, Network and Safety Services
- Cities and Active Transport
- Infrastructure and Place, Technical Services, Guidance and Delineation
- Asset managers
- Local Councils
- Freight providers and operators (particularly where a TEG is proposed on an approved route for oversize and/or overmass load carrying vehicles).

Appendix A NSW trial site

In November 2020 TfNSW installed a trial TEG at Cobargo within the Bega Valley Shire Council, in response to community input regarding excessive driver speeds through the village. The Princes Highway has a posted speed limit of 100 km/h on the approaches to Cobargo, reducing to 50 km/h through the town.

Note: The Cobargo installation was a trial site and the detail here is provided as background information only.

A TEG was installed at both the northern and southern approaches to Cobargo, consisting of enhanced speed signs, a coloured threshold and diagonal marking within the shoulder, however lane narrowing was not included. The coloured threshold was applied over the existing 14 mm seal at the sites. The total project cost was \$35,000. The completed northern and southern approach installations are shown in Figure 5 and Figure 6, respectively.

Skid resistance testing was conducted one month after the TEG installation. The reported values for skid resistance of the coloured threshold were generally consistent with that of the existing seal on either side, with some increase in values noted resulting from the aggregate particles incorporated into the coloured patch.

Speed data recorded before and six months after the TEG installation showed a reduction in 85th percentile vehicle speeds at the northern approach of 15.7 km/h in advance of the TEG and 3.6 km/h beyond it, however no significant speed reduction was observed at the southern approach.

The project received positive feedback from stakeholders and the community, and the results are comparable to those seen in other jurisdictions within Australia and internationally. The project concluded the TEGs were a cost-effective option to highlight the change from a rural to an urban environment and could encourage reduced driver speeds. The project noted further enhancement could be made to the effectiveness of the TEGs by complementing them with other urban treatments such as kerb and gutter, street lighting, landscaping, and shared paths.



Figure 5 – Cobargo northern approach TEG installation



Figure 6 – Cobargo southern approach TEG installation