RSS 21
Traffic calming devices

September 2004

transportsafety

Survey of traffic standards and guidelines

The Land Transport Safety Authority (LTSA) is the government agency responsible for *promoting safety in land transport at reasonable cost*. Part of its function is to 'monitor adherence to safety standards within the land transport system'.

To support this objective, the regional engineering sections of the Land Transport Safety Authority undertake a survey programme that assesses the effectiveness of the implementation of various safety standards by road controlling authorities.

The purpose of these surveys is to:

- assist and advise road controlling authorities on the implementation of selected traffic standards and guidelines that affect traffic safety

- measure the uptake of standards and guidelines by road controlling authorities

- provide a national summary of the uptake and compliance with standards and guidelines, and report findings to road controlling authorities and other interested parties

- identify changes to improve standards, guidelines or traffic rules.

The surveys are usually carried out in two parts:

- Part 1 uses a questionnaire to look at the systems and procedures a road controlling authority has in place to deliver on the standard.

- Part 2 uses a field survey to measure, where possible, the actual delivery from the user's viewpoint. It essentially provides a snapshot of road safety delivery at the date of the survey.

This report presents the national results of the latest of these surveys.

I believe you will find the information of value and will be able to use it to improve road safety in New Zealand.

Please contact the nearest regional office of the LTSA if you would like further information or assistance with implementing traffic standards or guidelines.

John Kay

General Manager Operations

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Executive summary

Introduction

Surveys were undertaken during 2003/2004 to investigate policies and practices in two safety areas – traffic calming devices and road markings.

This report describes the procedures and presents the results of the traffic calming devices survey. A companion report, RSS 22 *Road markings*, details the results of the survey on road markings.

The traffic calming devices survey was undertaken between mid-November 2003 and mid-February 2004.

Methodology

Staff in 33 road controlling authorities (RCAs) were interviewed about their policies and practices by the Land Transport Safety Authority (LTSA), after receiving a questionnaire in advance. The interviews were followed by field surveys, where a sample of existing traffic calming devices was assessed.

Interview results

- All of the RCAs surveyed reported that they used traffic calming devices.

- Traffic calming devices were generally funded from the Minor Safety Works budget, and therefore attracted a contribution from Transfund.

- The methods and sources used to identify the need for traffic calming devices varied between the RCAs. They included requests from the public, issues raised by the Police, councillors and council officers, and crash reduction studies. Two-thirds of the RCAs did not have set procedures for the introduction of traffic calming, but consultation was generally undertaken.

- The majority of traffic calming devices were installed as single features. There was no clear trend in their relationship to wider schemes – for example, being installed as stand-alone schemes or as part of larger street schemes.

- Extensive surveys were often carried out prior to the introduction of traffic calming, but surveys were rarely carried out afterwards.

- There was strong support for the development of guidelines or a set of best practice examples, with 31 of the 33 RCAs supporting this proposal.

Field survey results

The purpose of the field surveys was to gather examples of traffic calming devices, should guidelines or a document illustrating best practice be developed. (Examples of

both good and bad practice were collected, as a guide would need to cover what *not* to do as well as what *to* do.)

Discussion

If a set of guidelines or a best practice guide was developed, it would have to be carefully written to meet the needs of all RCAs, regardless of the RCA's size or experience in developing traffic calming. The document should provide advice on how to implement traffic calming devices, but should not dictate how they must be installed. Areas that could be covered include:

- design details

- guidance on the selection of appropriate traffic claming devices

- guidance on when not to use a particular traffic calming device.

Little is currently done to assess the effectiveness of traffic calming devices. If guidelines were developed, it would be important to carry out an assessment of existing schemes, so the guidelines could provide advice on the effectiveness of different approaches. Also, the guidelines should provide advice to RCAs on what 'after' studies should be carried out.

Recommendations

- The LTSA, through its Standards and Guidelines Steering Group, should facilitate the development of guidelines on traffic calming devices. The guidelines should cover the types, design, implementation and effectiveness of traffic calming devices.

- RCAs should assess the impact of traffic calming devices. (Studies should be carried to assess the effectiveness of devices that are already in place, and 'after' studies should be implemented for future schemes.)

- The LTSA, through its Standards and Guidelines Steering Group, should develop a set of case studies to evaluate the overall affect of various types of traffic calming device. The case studies should include 'before' and 'after' studies of pedestrian movements, traffic volumes, traffic speeds, crash rates and public perceptions.

1   Introduction

Between November 2003 and February 2004, the regional offices of the Land Transport Safety Authority (LTSA) conducted surveys to investigate two road safety areas. The surveys were carried out with a sample of road controlling authorities (RCAs).

The two areas surveyed were:

- traffic calming devices

- road markings.

This report describes the procedures and presents the results for the survey of traffic calming devices. A companion report, RSS 22 *Road markings*, details the results of the survey on road markings.

Definition

A *traffic calming device* has been defined as 'a measure introduced into a road to encourage drivers to travel at an appropriate speed for their surroundings, and to discourage unnecessary through traffic'.

The introduction of a traffic calming device can provide a higher level of safety for all road users, while making streets more pleasant, particularly for pedestrians and cyclists.

A traffic calming device may be introduced in isolation, to solve a problem at a specific location, or as part of an area-wide scheme or route treatment.

2   Purposes of the survey

The purposes of the survey were to:

- identify RCA use of traffic calming devices

- identify policies and procedures RCAs have in place for traffic calming devices

- establish what standards and guidelines are being used by RCAs for the provision of traffic calming devices

- establish whether there is support for the development of national guidelines or a best practice guide for traffic calming devices

- take a 'snapshot' of the type and extent of traffic calming devices currently in use on the road network in New Zealand.

3 Methodology

3.1 Sample selection

A sample of 33 RCAs was chosen for the surveys. This included 29 territorial local authorities and four regional offices of Transit New Zealand (TNZ). The sample was weighted towards authorities not included in the 2002/2003 LTSA surveys.

The territorial local authorities were grouped into peer groups according to population size and the percentage of crashes that occurred in rural areas. Six of the territorial local authorities were in Peer group A, four in Peer group C, eight in Peer group D and 11 in Peer group E.

Appendix 1 lists the 33 RCAs included in the surveys and provides a definition of the peer groups.

3.2 Interview surveys

Interview surveys were conducted with representatives of each of the 33 RCAs. Survey forms were sent in advance, to allow the respondents to research answers, where necessary. Questions were centred on the standards, guidelines, programmes and practices used for the provision of traffic calming devices.

The questionnaire used for the interview surveys is shown in Appendix 2.

3.3 Field surveys

Field surveys were conducted for all except one of the 33 RCAs. The RCA that did not have a field survey conducted had only two traffic calming devices and did not plan to introduce any more.

The field surveys aimed to identify examples of good and bad practice, which could be used at a future date in the development of traffic calming guidelines or a best practice guide. The findings of the field surveys are not discussed in detail in this report, but Appendix 4 shows examples of the main types of traffic calming device recorded.

A copy of the form used for the field surveys is in Appendix 3.

4 Results of the interview surveys

4.1 Traffic calming devices in use

Every RCA surveyed had some type of traffic calming device on their network. There was a correlation between the peer group an RCA was in and the extent to which it used traffic calming – eg, Group A authorities had more traffic calming devices than Group C authorities.

The extent to which RCAs used traffic calming devices ranged from Kaikoura District Council, which had two raised platforms, to the metropolitan cities, which had very extensive, area-wide schemes.

Table 1 shows the number of RCAs that had in place the main types of traffic calming device.

Table 1: Number of RCAs using traffic calming devices, by type and road classification

Traffic calming device	Road classification		
	Arterial	**Collector**	**Local**
Road markings and physical islands to redistribute road space or narrow the carriageway width	20	21	17
Kerb line alterations	18	16	19
Pedestrian refuges	18	15	14
Gateways/thresholds	15	13	14
Traffic signs to emphasise the nature of the area	11	13	15
Roundabouts	13	11	13
Road humps	3	6	22
Changed priority at intersections	5	6	13
Surface treatments	5	6	13
Raised intersections	4	8	12
Platforms	4	3	10
Coloured road surface	8	6	9
Chicanes	6	6	9
Rumble strips (judder bars)	3	4	6
Road closures	0	0	9
Speed cushions	0	0	4
Other	1	2	2

As can be seen from Table 1:

- Overall, a reduction in road space was the traffic calming device used by most RCAs.

- A reduction in road space was the traffic calming device used by the greatest number of RCAs on *arterial* and *collector roads*.

- Road humps were the traffic calming device used most on *local roads*.

- Speed cushions and road closures were used by only a few RCAs.

Five authorities reported that they used measures that are not listed in Table 1. These include:

- depressions in the road

- raised medians

- four-way stops

- one-way slow points.

4.2 Funding of traffic calming

All of the RCAs reported that they funded their traffic calming devices from the Minor Safety Works budget, or an equivalent budget. This approach attracts a Transfund contribution. Seven (21%) of the RCAs had additional budgets for road calming, ranging from $20,000 to $1,000,000. Four of these authorities were from Group A, two from Group C, and one was a Transit region.

No indication was given of whether the source or level of funding was affected by the class of road where the traffic calming would be installed.

One RCA in Group E did not identify any funding source, as they do not intend to install traffic calming devices in the foreseeable future. This is because of the very low traffic flows on their network.

4.3 Identification of need

RCAs used a number of ways to identify the need for traffic calming devices. These included:

- requests from the public – 30 (91%)

- issues raised by the Police, councillors and council officers – 30 (91%)

- crash reduction studies – 11 (33%).

Two (6%) of the smaller RCAs stated that the need for traffic calming devices was not normally raised as an issue.

Twelve (36%) of the RCAs had set policies governing the consideration of traffic calming devices. All of the Group A RCAs were included in this number, along with all of the Group C RCAs and two of the four Transit regions.

Fifteen (45%) of the RCAs had backlogs of requests for traffic calming, because there were more requests from the public or sites identified than current resources could address. These RCAs included four in Group A, three in Group C, three in Group D, two in Group E, and three Transit regions. Of these 15, 12 had established systems to prioritise the schemes to be undertaken first. The priority system was normally based on crash history and an assessment of greatest need.

4.4 Procedures for considering traffic calming devices

Two-thirds (22) of the RCAs surveyed stated that they did not have set procedures for the introduction of traffic calming devices. As a general rule, the larger the RCA, the more likely it was that it had set procedures, although 50% of both Group A and Group C did not have procedures in place. Only one (3%) RCA stated that they had a set policy to safety audit such schemes.

When other questions in the interview survey are taken into consideration, it appears that RCAs tended to have specific procedures for consultation and prioritisation. Procedures for design and construction tended not to be as specific, and were likely to follow the general procedures of RCAs for this type of work.

4.5 Data collection

Fairly extensive surveys were usually carried out prior to the introduction of traffic calming devices. The majority of RCAs (75%) either *always* or *usually* carried out investigations into volume, speed and crashes, as shown in Table 2.

Table 2: Number of RCAs undertaking surveys before introducing traffic calming devices

	Always	Usually	Seldom	Never	Not stated
Traffic volume	22	9	0	0	2
Vehicle speed	17	11	3	0	2
Crashes	18	7	5	0	3
Ped. counts	3	11	6	4	9
Other	7	3	0	0	0

4.6 Consultation

Consultation was widely undertaken, with only one RCA (3%) stating that it did not consult. Most consultation involved local residents. The emergency services, specialist road users (such as haulage contractors and bus operators) and local businesses were also consulted, albeit on a less frequent basis.

4.7 Design

From the information gathered, there did not appear to be one single source of advice that was followed by RCAs for the design of traffic calming devices. The Austroads guidelines were the most commonly used documents, and were used by 15 (45%) of the 33 RCAs. A number of the other documents used for advice were either not comprehensive enough or unsuitable for this purpose.

Five of the six Group A RCAs had developed their own guidelines, based on the work they had already undertaken. In total, seven (21%) of the RCAs had either developed their own guidelines or used guidelines developed by other RCAs.

Two of the smaller RCAs specifically stated that they relied on the knowledge of consultants to ensure that the design of any such work was appropriate.

There was a strong level of support for the development of guidelines or a document setting out examples of best practice. Of the RCAs surveyed, 31 (94%) wanted to see this happen. One RCA did not express an opinion, as they do not think they will introduce any traffic calming devices in the foreseeable future. One (3%) RCA stated that they would not use such a document, but said they would still be prepared to submit examples of schemes, if requested. The most common opinion expressed was that the document, if developed, should allow for the adaptation of advice or designs to suit local conditions.

4.8 Implementation

Traffic calming schemes were often implemented principally for the safety of pedestrians and cyclists. This was the case in 23 (69%) of the RCAs. These schemes were primarily implemented in areas of high pedestrian and cyclist activity, such as around schools or in CBDs.

Group E areas tended to introduce schemes for reasons other than pedestrian or cyclist safety.

Nineteen (58%) of the RCAs made provision for cyclists at traffic calming devices. The smaller RCAs tended not to make provisions for cyclists, with only 3 (27%) of Group E and 4 (50%) of Group D doing so.

Table 3 shows the number of schemes implemented by each RCA per year, and the proportion of these that are stand-alone, part of a street scheme or part of an area-wide scheme. As would be expected, the larger RCAs install the most traffic calming devices each year, with Christchurch installing by far the most. However, there appears to be no

fixed trend in relation to whether devices are installed on an individual basis or as part of a larger scheme. It should be noted that many of the smaller RCAs do not introduce traffic calming devices on a yearly basis, so statistics for these RCAs are not included in the table.

Table 3: Number and proportion of schemes implemented per year

RCA	Devices per year		Percentage		
	Stand alone	Schemes	Stand alone	Street scheme	Area scheme
Peer group A					
Auckland City	20	1	80	20	0
Christchurch City	30	140	15	60	25
Hamilton City	10	2	50	50	0
Manukau City	10	2	55	45	0
North Shore City	20	5	30	60	10
Wellington City	30	5	60	30	10
Peer group C					
Gisborne District	1	0	100	0	0
Rotorua	5	1	10	45	45
Timaru District	3	1	60	30	10
Whangarei District	7	2	28	68	4
Peer group D					
Ashburton District	6	5	50	5	45
Far North District	0	0	90	10	0
Manawatu District					
Masterton District	0	0	80	10	10
Selwyn District	4	2	70	30	0

Southland District	6	6	10	45	45
Waimakariri District	3	0	100	0	0
Waitaki District	4	0	100	0	0
Peer group E					
Banks Peninsula					
Carterton District					
Clutha	2	0	100	0	0
Hauraki District	2	0	20	80	0
Hurunui District					
Kaikoura District					
Otorohanga	1	0	100	0	0
Ruapehu District	0	0	0	100	0
Stratford District					
Wairoa District					
Waitomo					
Transit regions					
TNZ Dunedin	3	3	50	50	0
TNZ Hamilton	2	0	100	0	0
TNZ Wanganui	1	0	80	20	0
TNZ Wellington	3	0	100	0	0

4.9 Monitoring

Monitoring, in the form of specific 'after' surveys, was not carried out to the same extent as 'before' surveys, as can be seen by comparing Table 4 (following) with Table 2. Taking traffic volume as an example, only 10 (30%) of the RCAs either *always* or

usually carried out 'after' surveys of traffic volume, compared with 31 (93%) who carried out 'before' surveys of traffic volume.

The main type of monitoring was based on comments received from members of the public. Thus, the success of a scheme was largely assessed by its level of acceptance (or otherwise) with local residents.

Table 4: Number of RCAs undertaking 'after' surveys

	Always	Usually	Seldom	Never	Not stated
Traffic volume	4	6	5	8	10
Vehicle speed	3	10	8	5	7
Crashes	4	10	4	5	10
Public attitudes	10	7	5	4	7

4.10 General comments

The main theme running through the general comments was the need for national consensus on the design and use of traffic calming devices.

Fourteen (42%) of the RCAs did not offer any further comments. Of those that did, 13 (39%) commented on the need for national guidelines or a review, by a national committee, of road calming devices that have been introduced successfully and unsuccessfully in the past. As part of this process, one (3%) RCA indicated that they would like to see a national survey of public attitudes towards traffic calming devices.

One (3%) RCA cautioned that traffic calming needs careful consideration and noted that, if implemented incorrectly, it can create more problems than it solves. Another RCA stated that they had introduced devices that they would now remove if they had the resources, because the impact of these had been adverse.

5   Results of the field surveys

5.1   Objective

The objective of the field surveys was to create a collection of examples of traffic calming devices that would be useful if guidelines or a best practice document was developed.

Appendix 4 shows examples of traffic calming devices used around the country. Comments are also made on some of the strengths and weaknesses of the examples.

6   Discussion

6.1   Development of guidelines or best practice document

There was a great deal of support among the RCAs for the development of guidelines or a best practice document. The main driving force behind this was the need for consistency and to avoid 'reinventing the wheel' when an RCA introduced a traffic calming device. However, careful consideration of the form this document would take is required.

The experience of the RCAs surveyed with regard to traffic calming devices ranged from Group A RCAs that had developed their own guidelines, to small, mainly rural Group E authorities that had few traffic calming devices and hence little experience. There was a clear indication that the smaller RCAs were reliant on their consultants and would find useful a document enabling them to specify exactly what they wanted, and to check what they obtained.

Any guidelines or best practice publication would need to cover the range of needs across the groups. It should not only outline the design of individual traffic calming devices, but also detail how they could ideally be combined to produce the desired result. However, RCAs expressed a strong desire for local adaptation to be enabled, so the document should not be overly prescriptive, but allow engineering judgement to be applied to in relation to local conditions.

6.2   Consultation

One of the main issues raised by the survey was the limited amount of consultation carried out prior to the introduction of traffic calming devices. Experience abroad shows that detailed consultation, particularly with the emergency services, is essential for the success of such schemes.

6.3 Assessment

From the information gathered, there appears to be very little assessment carried out to ascertain the success, or otherwise, of traffic calming devices. The most common type of assessment was gauging the reaction of the public once a scheme had been completed.

If a set of guidelines or a best practice guide was developed, it would be important, as part of this process, to carry out an assessment of existing schemes, so advice could be given on the effectiveness of different approaches. Also, the guidelines should provide advice to RCAs on what 'after' studies should be carried out.

The guidelines would need to contain advice on undertaking the entire process, from consultation and data collection to monitoring.

7   Recommendations

- The LTSA, through its Standards and Guidelines Steering Group, should facilitate the development of guidelines on traffic calming devices. The guidelines should cover the types, design, implementation and effectiveness of traffic calming devices.

- RCAs should assess the impact of traffic calming devices. (Studies should be carried to assess the effectiveness of devices that are already in place, and 'after' studies should be implemented for future schemes.)

- The LTSA, through its Standards and Guidelines Steering Group, should develop a set of case studies to evaluate the overall affect of various types of traffic calming device. The case studies should include 'before' and 'after' studies of pedestrian movement, traffic volume, traffic speed, crash rates and public perception.

Appendix 1: Road controlling authorities surveyed

RCA	Peer group	Traffic calming in use		Support guidelines or best practice	
		Yes	No	Yes	No
Auckland	A	✓		✓	
Christchurch	A	✓		✓	
Hamilton	A	✓		✓	
Manakau	A	✓		✓	
North Shore	A	✓		✓	
Wellington	A	✓			✓
Gisborne	C	✓		✓	
Rotorua	C	✓		✓	
Timaru	C	✓		✓	
Whangarei	C	✓		✓	
Ashburton	D	✓		✓	
Far North	D	✓		✓	
Manawatu	D	✓		✓	
Masterton	D	✓		✓	
Selwyn	D	✓		✓	
Southland	D	✓		✓	
Waimakariri	D	✓		✓	
Waitaki	D	✓		✓	
Banks Peninsula	E	✓		✓	
Carterton	E	✓		✓	
Clutha	E	✓		✓	
Hauraki	E	✓		✓	
Hurunui	E	✓		✓	
Kaikoura	E	✓			
Otorohanga	E	✓		✓	
Ruapehu	E	✓		✓	

Stratford	E	✓		✓	
Wairoa	E	✓		✓	
Waitomo	E	✓		✓	
TNZ Dunedin		✓		✓	
TNZ Hamilton		✓		✓	
TNZ Wanganui		✓		✓	
TNZ Wellington		✓		✓	
Total		33		31	1

Peer groups

Group A: Major urban areas with some rural areas on the outskirts (population > 97,500 and/or rural crashes < 25%)

Group B: Major urban areas with some rural areas on outskirts (population > 40,000–97,500 and/or rural crashes < 35%)

Group C: Large provincial towns and hinterland (population 35,000–75,000 and/or rural crashes < 55%)

Group D: Provincial towns and hinterland (population 20,000–75,000 and/or rural crashes > 55%)

Group E: Small provincial towns, low traffic volumes (population < 20,000 and/or rural crashes > 55%)

Appendix 2: Questionnaire

TRAFFIC CALMING DEVICES QUESTIONNAIRE

Road Controlling Authority: _____

Person(s) replying to questionnaire: _____

Position in organisation: _____

Contact phone number: _____

Contact email: _____

Interviewer: _____ Date: _____

A traffic calming device is a measure that is introduced into a road to encourage drivers to travel at an appropriate speed for their surroundings and to discourage unnecessary through traffic. Through their introduction they can provide a high level of safety for all road users while making streets more pleasant, particularly for pedestrians and cyclists. They may be introduced in isolation to solve a problem at a specific location or they may be introduced as part of an area wide scheme or route treatment.

Please indicate below on what classes of road you have used the following commonly used traffic calming devices.

Treatment	Arterial	Collector	Local
Road humps			
Speed cushions			
Rumble strips (judder bars)			
Pedestrian refuges			
Surface treatments			
Kerb line alterations			
Coloured road surface			
Road markings and physical islands to redistribute road space or narrow the carriageway width			
Traffic signs to emphasise the nature of the area			
Chicanes			
Raised intersections			
Roundabouts			
Road closures			

Changed priority at intersections			
Platforms			
Gateways/thresholds			

QUESTIONNAIRE

		Prompt
1. Have you installed any traffic calming devices other than those listed above?	☐ Yes ☐ No Please describe.	Design Purpose
2. Do you have an annual budget specifically for traffic calming devices and what is its approximate value?	☐ Yes ☐ No Value $:	All same budget or different budgets
3. How do you/ would you fund the implementation of traffic calming devices?		Is it the same for all classes of road?
Would it attract a Transfund contribution?	☐ Yes ☐ No	

4a. On average, how many devices/schemes do you implement each year?		**Number**	ie. As a stand alone device or as a scheme
	Single devices		
	Traffic calming schemes or routes		
4b. Please complete the following table showing the proportion of traffic calming devices/schemes installed.	**Installed as:**	**Proportion**	ie. Traffic calming only or part of a larger scheme
	Stand alone treatment		
	Part of street or route treatment		
	Part of an area wide treatment		
5. How is the need for devices/schemes normally identified? Eg, public, councillors, police, council officers, set procedures.		

6. Do you have set policies governing the consideration of traffic calming devices?	☐ Yes ☐ No Please detail.	How and when is traffic calming considered?
7. Do you have set procedures on how to introduce traffic calming devices?	☐ Yes ☐ No Please detail.	Set procedures for design, installation safety audit
8. Do you have a backlog of traffic calming devices/schemes to be installed? If so are they introduced on a prioritised basis and how are they prioritised?	Backlog: ☐ Yes ☐ No ☐ How many? Prioritised ☐ Yes ☐ No Please detail.	
9. Have you introduced traffic calming devices/schemes principally for reasons of pedestrian or cyclist safety?	☐ Yes ☐ No Under what circumstances?	
10. Do you make specific provisions for cyclists at traffic calming devices?	☐ Yes ☐ No Please detail.	
11. Indicate the extent of data gathering used to justify the introduction of a traffic calming device or scheme.		

	Always	Usually	Seldom	Never
Ped. counts				
Traffic volume				
Traffic speed				

		Always	Usually	Seldom	Never	
	Crash data					
	Other (state)					
12. Would you undertake consultations prior to the introduction of a traffic calming device or scheme?	☐ Yes ☐ No Please detail (who with?)					
13. Indicate the extent of monitoring you have undertaken to measure the success of traffic calming devices or schemes.		Always	Usually	Seldom	Never	
	Volume					
	Speed					
	Crashes					
	Public					
14. What design guidelines or best practice advice do you use?						If none used, why not, and what is design based on?
15. Would you find the development of guidelines or best practice examples of benefit?	☐ Yes ☐ No Comments?					
16. Any general comments or suggestions on how the LTSA could assist you with any problems that cause you concern with respect to traffic calming devices?						

If this survey finds sufficient support, the development of a guideline or best practice document will be investigated. To assist any such development, examples of devices or schemes that you have used and consider being either successful or unsuccessful are required. Please complete details on the attached pro forma.

Appendix 3: Field survey sheet

TRAFFIC CALMING DEVICE/ SCHEME/ AREA/ ROUTE EXAMPLE

Road Controlling Authority: . . . . City/District/TNZ region

Location of traffic calming: . . . .

The device was considered   Successful ☐   Unsuccessful ☐

Site Description:

Problems: (ie, existing site problems)
How were the problems identified?

Aims:

Treatment:

Date implemented:

Cost: $

Comments.

Effectiveness	(eg, speeds/accidents)	
Before		
After		

Would other details of the scheme be available at a later date, if necessary?

Appendix 4: Examples of traffic calming devices in use

Road humps

Photo 1

Photo 2

Photos 1 and 2, above, show two different approaches to marking road humps. In Photo 1, markings are used to highlight the presence of the ramps. In Photo 2, no markings are used on the ramps and it is difficult to tell that the pedestrian crossing is actually on top of a raised platform.

Photo 1 shows a road hump used in isolation. Although this approach is very effective for reducing the speed of vehicles at a given location, it will have little effect on vehicle speeds along the rest of the road and can create some adverse noise problems. Placing pedestrian crossings on top of road humps helps to reduce speed and conflict, if marked correctly.

Speed cushions

Photo 3

Photo 4

Speed cushions are not widely used in New Zealand. Photos 3 and 4 show examples of permanent and temporary speed cushions in Hamilton.

Pedestrian refuges

Photo 5

Photo 6

Pedestrian refuges are widely used on all types of road. Photo 5 shows the use of a coloured road surface to highlight the presence of the crossing location. The use of colour in this way has to be done carefully because it can give an impression to pedestrians that they have a right of way over traffic. Photo 6 shows the use of barriers to direct pedestrians in the middle of the road.

Surface treatments

Photo 7

Photo 8

Surface treatments are most commonly used on local roads. Photo 7 shows the use of a contrasting surface colour to highlight the presence of a platform. Photo 8 shows the use of block work to emphasise to drivers that they are in a shopping area. In schemes such as that shown in Photo 8, care has to be taken to ensure that the road surface provides a suitable contrast to the footpath surface, for the visually impaired.

Kerb line alterations

Photo 9

Photo 10

Kerb line alterations are used on all types of road. Photo 9 shows how the radius of an intersection has been reduced to lower entry speeds from the side road. Photo 10 shows the use of kerb line alterations and central islands to create a chicane effect. The visual impact of such schemes has to be taken into consideration, to aid their acceptance by the public.

Coloured road surface

Photo 11

Photo 12

Coloured road surfaces can be used to highlight areas of conflict to drivers, as in Photo 11, or to enhance other measures, such as central hatching, as in Photo 12. The choice of colour is very important and there should be consistency throughout road networks and between neighbouring road networks.

Reduced road space

Photo 13

Photo 14

Reducing the width of road available to vehicles is the most common type of traffic calming device used. Photo 13 shows road markings being used to achieve this. Photo 14 shows mature planting being used to achieve the same effect in a CBD.

When using planting, as in Photo 14, care needs to be taken to ensure that safety is not compromised by reducing intervisibility between drivers and other road users.

Traffic signs

Photo 15

Photo 16

Signs can be used to indicate, to drivers, a change in the area they will be driving through. This can either be done on a local, neighbourhood basis, as in Photo 15, or at a gateway to an urban area, as in Photo 16. Care needs to be taken with the design of the signs and the message they convey. The meaning of the sign in Photo 15 is not clear.

Chicanes

Photo 17

Photo 18

Chicanes are used on all types of road, but to a far lesser extent than some of the more popular devices. They can be effective at reducing speed on wide streets. Because of their design, chicanes can cause problems for cyclists when drivers try to squeeze past at the narrow points. The use of central islands also has to be carefully considered, so additional hazards are not introduced into the road.

Chicanes can be viewed as a challenge by drivers who like to race on the road, which can lead to safety and noise concerns.

Platforms

Photo 19

Platforms can be used to provide crossing points for pedestrians, as in Photo 19. They are mainly used on local roads. As with road humps, ramps need to be clearly marked, to maximise the speed-reducing effect.

Intersections

Photo 20

Photo 21

Photo 22

Altering intersections can also help reduce speed. Photo 20 shows a roundabout being used to reduce speed. In Photo 21, the priority at an intersection has been changed and kerb line alterations have been undertaken to emphasise the change. Raising the road level at intersections can also help to reduce speed and minimise any conflicts that may occur, as illustrated in Photo 22.

Provision for cyclists

Photo 23   **Photo 24**

As mentioned previously, traffic calming devices that rely on a reduction in road width can cause problems for cyclists. One remedy is to provide a channel for cyclists, as shown in Photo 23. When channels like this are provided next to the kerb, the location of adjacent gullies must be considered. In Photo 24, the proximity of the gully to the road narrowing negates the usefulness of the channel for cyclists.

Road safety survey series

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RSS 2	*Street lighting*	1995/96
RSS 3	*Treatment of slip lanes at traffic signals*	1995/96
RSS 4	*Stop and give way controls at intersections*	1996/97
RSS 5	*Advisory speed signs*	1996/97
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RSS 7	*Temporary speed limits*	1998
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RSS 11	*Pedestrian platforms*	1999
RSS 12	*Floodlighting pedestrian crossings*	1999
RSS 13	*No passing lines*	2000
RSS 14	*Roundabouts*	2000
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RSS 17	*School crossing facilities*	2002
RSS 18	*Data collection*	2002
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RSS 20	*Vehicle entrances, stock crossing facilities and amenity carriageway surfacings*	2004
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