

Review of Local Area Traffic Management (LATM) Practices

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Biography

Christine Gan joined ARRB Transport Research in 1999. She holds a Bachelor of Psychology and Bachelor of Arts in Sociology from Murdoch University. Since joining ARRB Christine has participated in a number of road safety research projects. Most recently, Christine has aided in updating the Austroads guidelines on local area traffic management, assessing the application and effectiveness of traffic calming devices in Australia and New Zealand. Other studies she has been involved in include optimising speed enforcement in rural areas, fatigue monitoring, graduated licensing for motorcyclists, vulnerable road user crash risk and educational program evaluation.

Abstract

Local Area Traffic Management (LATM) is widely practised in Australia and New Zealand. LATM is concerned with the planning and management of road space within a local traffic area and often involves the modification of streets and street networks. It involves the use of physical devices, streetscaping treatments and other measures to influence vehicle operation, in order to create safer and more livable local streets. The primary aim of LATM is to change driver behaviour, both directly by physical influence on vehicle operation, and indirectly by influencing the driver's perceptions of what is appropriate behaviour in that street. The result is intended to be an improvement in traffic-related safety for all road users of the local street.

This paper presents information on LATM measures used in Australasia and outlines their effectiveness. The review of each measure is based on previous research and findings from numerous national and international resources, as well as knowledge and experience of local government authorities in Australia and New Zealand. This information can be used to assist with the selection of appropriate street modification treatments in order to address specific problems and conditions. Appropriate application for use of specific measures and their effects on speeds, traffic conflicts, traffic volumes and the local area environment are discussed.

1. INTRODUCTION

In the process of reviewing and updating the Austroads Guidelines for Traffic Engineering Practice Part 10: Local Area Traffic Management (Damen, Brindle and Gan, 2002) it became evident that many local governments are trialing and implementing a range of traffic calming devices and are experiencing varying levels of success. Many of these authorities are using completely different practices and some are obtaining different results with the same devices. There appears to be no consistency in the approach taken and it is clear that local government is not sharing information on this topic very effectively nor is it always taking advantage of the experiences of others from around the country.

The purpose of this paper is to highlight the findings of research undertaken that identified recent practices adopted by a number of different local government authorities throughout Australasia. The successes and failures of various traffic calming devices are also explored and discussed.

2. RESEARCH BASIS

The approach used was to contact local government authorities and representatives in each State of Australia and New Zealand. In total, over 50 authorities were approached for information.

All those contacted were asked for input as follows:

- Details of the types of devices that have recently been implemented and the reason for their selection;
- Information on recent successes and failures;
- Details of successful public participation processes that have been used;
- Details of before and after implementation studies that may have been undertaken including any quantification of results; and
- Any lessons learnt or relevant issues that are considered particularly important.

A series of questions was developed in the form of a questionnaire, which was then used to elicit more detailed information from a subset of the group on the use and effectiveness of specific LATM devices.

All of this information was subsequently collated and assessed to identify where approaches and outcomes have been common as well as those instances where differing results have been encountered.

3. RECENT PRACTICE

Based on the research it is apparent that the devices most commonly installed by local government in the last two years include:

- Raised tables/flat-top road humps;
- Road humps;
- Kerb extensions/road narrowings;
- Mid-block/median islands;
- Roundabouts;
- Threshold/perimeter treatments; and
- Central linemarking/flush kerbing.

To a lesser extent devices such as one and two lane slow points and intersection priority changes and channelisation have been implemented. Most recently, there has also been an increase in the installation of speed cushions.

Devices that are rarely being used are 'mobile' speed humps, driveway links, left-in/left-out islands and pavement bars/tactile surface treatments. The feedback generally indicated that road closures were not commonly being considered either.

4. EXPERIENCES FROM LOCAL GOVERNMENTS

The experiences of local government in relation to the implementation of LATM are quite revealing. It is clear that not all experiences are the same and that there are many contradictions in practice. It is not always clear what the reasons are for the different results, particularly where these differences relate to the implementation of the same type of treatments. This finding highlights the need for substantially more research to be undertaken in Australia and New Zealand in a coordinated fashion to identify what are the key success factors pertaining to the implementation of specific LATM treatments.

The following section of this paper summarises some of the more relatable experiences of local government in recent years.

5. EFFECTIVENESS OF DEVICES AND LESSONS LEARNT

Median islands have been found to be effective in slowing down traffic in the City of Upper Hutt. Driveway links have been proven to be effective in municipalities such as the City of Marion, City of Salisbury and the City of Prospect. Roundabouts, threshold/perimeter treatments, and raised tables have all been effective in the City of Latrobe. The City of Marion's experience also indicated that threshold/perimeter treatments have been most effective in slowing down traffic. Roundabouts have been found to be effective in reducing speeds, conflicts and the severity of crashes in numerous local areas.

Kerb extensions/road narrowings and flush kerbing/central linemarking have been found to be very effective in reducing vehicle speeds in municipalities such as the Cities of Palmerston North, Wodonga, Belmont, Launceston, Penrith and Joondalup. This type of LATM treatment is being increasingly used by a large number of local governments as it tends to be a passive device that is more acceptable to the public. The effectiveness of the treatment can be linked at least in part to its continuous integrated nature in comparison to the isolated use of more severe treatments such as road humps and one-lane angled slow points.

Speed cushions are not widely used as yet but have been found to be effective in quite a few locations (Christchurch, Gold Coast, etc). In the City of Marion, speed cushions are currently being trialed and monitored for their effectiveness. So far, it has been established that they are effective in slowing down vehicle speeds where the 85th percentile speeds are less than 80km/hr. In the City of Manningham, speed cushions were installed but have subsequently been removed due to residents' complaints about noise levels.

Round profile road humps are often considered to be too severe on vehicles and are therefore seldom used. For this reason, the City of Ipswich and the City of Palmerston North use raised tables in place of round profile road humps. Other local government authorities such as the City of Rockhampton use raised tables as their experience shows this device to be more effective in reducing vehicle speeds than round profile road humps. Conversely, the City of Stonnington and the City of Launceston have found that in general round profile road humps are more effective in slowing down vehicles than raised tables. Consequently raised tables are not used in these municipalities. Due to public opinion, the City of Marion has not installed any new round profile road humps or raised tables in that municipality in the last five years.

A device that has proven to be unsuccessful in many applications (eg The City of Redcliffe in Queensland) is the left in/left out triangular splitter island placed at intersections to prohibit right hand turning movements. This device has a high level of violation, particularly in those cases where the islands have not been designed to allow larger vehicles to negotiate them. A lesson that can be learnt from this experience is that this type of device is not necessarily very effective on roads used by larger vehicles, for example, areas with a mix of commercial or industrial uses. This highlights the importance of appropriate selection and design of devices.

Two-lane angled slow points have been reported by the City of Caboolture in Queensland as being problematic. It has been found that motorists misusing the device can lose control and crash if they approach at high speeds. Furthermore, signage is not always effective in controlling approach speeds. A lesson that can be learnt from this experience is that devices with large horizontal displacements are not appropriate on roads with high through volumes of speeding traffic.

Two-lane slow points are no longer preferred by many local governments as they do not effectively cater for buses, service vehicles and other large vehicles. Evidence also suggests that they have not always been as successful in reducing vehicle speeds as intended. Conversely, slow points in the form of blister islands are regularly being used throughout Australia and have been found to be very effective where the lane deflection reduces vehicle speeds to below 40km/h.

Experience with the use of road narrowing and slow points also indicates that constricted lane widths will concentrate vehicle loads to an extent that existing pavements may not be capable of withstanding. This finding supports the need for appropriate design and in many cases the need for pavement reconstruction at the time of device installation to prevent the pavement from failing in an accelerated fashion.

Another finding is that speed limit signage schemes have been found to be unsuccessful in the City of Penrith where they have not been installed with other supporting physical devices. This experience reinforces the principle that signage schemes should preferably only be implemented where the speed environment of the road has been lowered with physical devices and other features to be consistent with the reduced speed limits.

In the City of Launceston, a LATM treatment involving flush coloured pavement bands was trialed in an attempt to reduce vehicle speeds on Trevallyn Road. Before and after studies (see Table 1) showed that the treatments were ineffective in that speeds actually increased after implementation of the treatment. This experience indicates that devices that do not incorporate physical displacement may prove ineffective.

Table 1 - Trevallyn Road speed (km/h) survey results, Launceston, 1999.

Location	Prior	2 days later	2 months later
A	52.6	59	55.8
B	58.8	57	58.4
C	64	62	65

6. ACCEPTANCE OF LATM

Road humps are the LATM device most often complained about by residents. The complaints most often relate to the inconvenience factor and the noise issues for adjacent residents, especially the acceleration/deceleration noise derived from vehicles travelling over the humps. For instance, as a result of frequent complaints about raised tables in the City of Salisbury, none have been installed in that municipality in the last several years.

Complaints are received about median islands, as they often restrict motorists movements forcing them to change their driving behaviour. Complaints are also received from cyclists in relation to road narrowings as these type of treatments are not always designed to effectively accommodate them.

The reason most often conveyed for the success of LATM treatments is public acceptance and support of the devices. The amount of public support required to implement an LATM treatment varies quite considerably from Council to Council. Palmerston North requires 75% public support. Many other local government authorities have no specific measure for public support of devices that they use prior to installation (eg Upper Hutt).

Complaints are often received during construction and for up to two months after installation. Complaints are predominantly made by local residents who are concerned about noise, loss of parking and the effectiveness of the treatments. After this initial two month period people often get used to the devices and complaints generally stop occurring.

Decisions about the implementation of LATM are often made by Council elected members that do not have the technical background necessary to make appropriate decisions. The lesson here is that it is quite important that technical staff provide the Council with the appropriate technical solution and justification that best suits the situation.

A common problem experienced is that LATM devices get installed during the development of a subdivision prior to the area being occupied. When residents move into the area they often complain about the location and/or size of LATM devices and request that they be removed or modified. It appears that this situation also occurs when residents are engaged through a consultation process and agree to the installation of a device. Often complaints are received some years later from people new to the area not previously involved in the LATM selection process.

Evidence also indicates that when residents ask for a particular device to be installed those same residents commonly ask for the devices to be removed again. A recent example is the case of the installation of speed cushions in the City of Manningham in Victoria. Speed cushions were installed after consultation with local residents but several months later they had to be removed because residents were complaining about the noise from them.

In a large majority of cases devices have operated successfully regardless of the process used to select and implement them. Often the reason for failure is a result of poor selection and design of the treatments. Very rarely are devices removed by local government authorities. Often devices do not fail entirely but instead have less than the desired level of effectiveness.

Design problems often relate to inadequate or inappropriate deflection and/or width being provided. The most effective devices are those that do not overly inconvenience local residents, that are highly visible, and that provide sufficient horizontal or vertical deflection or diversion that they produce much lower speeds.

7. CONCLUSIONS

It is evident that there is a growing pool of knowledge on the topic of LATM within local government throughout Australia and New Zealand. This information indicates a range of different practices are being employed with variance in experiences. Nonetheless, the experiences that have been gained over recent years are quite valuable and need to be shared. If they are not, they will be lost and the local government community, including new practitioners to the field, may suffer the failed experiences of others.

It is clear that there is a need for substantially more coordinated research and information transfer to be undertaken in Australia and New Zealand in this area to identify what are the key success factors pertaining to the implementation of specific LATM treatments. Funding for research to disseminate this information should be considered so that the entire local government community can benefit from it.

References

Damen, P.J., Brindle, R., & Gan, C., 2002. *Guide to Traffic Engineering Practice Part 10: Local Area Traffic Management*. Draft November 2002. Austroads.

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Keywords

Traffic management, traffic calming, traffic planning, traffic control, local area.