

LOCAL AREA TRAFFIC MANAGEMENT: NEW FINDINGS FROM LOCAL GOVERNMENT IN AUSTRALIA AND NEW ZEALAND

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Abstract:

For decades, Local Area Traffic Management (LATM) has improved the safety, amenity, liveability and environmental capacity of local areas and roads in Australia and New Zealand. As part of a 20-year-long study, extensive research has been undertaken with local government throughout Australia and New Zealand to identify common, innovative and revised approaches to the application of traffic management in local communities. The research was extended in 2018 to capture local government experiences across a wider range of areas. This paper provides a summary of the latest key findings and presents comparisons to earlier practice as it has changed over time.

Key words:

Traffic calming, speed management, local area traffic management, traffic planning, community road safety, traffic control devices, local government practice, LATM

Introduction:

The purpose of local streets is primarily to provide a place for the local community – both to access their homes and other local destinations, and to provide an active place to walk, cycle, play, relax and interact. Local streets support local land use and community activity and are part of the public open space network where people come together with their neighbours. Naturally the speeds on local streets should be low, consistent with their form and function. Local streets differ from roads, which provide a through traffic movement function for those travelling outside the local community. It is in this local street context that local area traffic management applies.

Local area traffic management (LATM) is a constantly evolving and widely applied practice. It is involved with the planning and management of traffic on local streets using physical devices, street scaping treatments, placemaking and other measures. The purpose of LATM is to reduce traffic volumes and speed in local streets, to increase amenity and sense of place, and to improve safety and access for residents and visitors, especially vulnerable road users such as pedestrians and cyclists. It is described in further detail in the Austroads Guide (Damen et al. 2016).

LATM is essentially system based and area-wide. It considers neighbourhood traffic-related problems and their proposed solutions in the context of the local area or a group of streets within it, rather than only at isolated locations. In addition, it requires that physical traffic measures be seen as a sequence of interrelated devices rather than individual treatments (Damen et al. 2016).

In order to identify common practices and emerging trends, extensive research was undertaken in 2018 to identify new, innovative and revised approaches to the application of

traffic management practice in Australia and New Zealand. This research forms part of a 20-year longitudinal research project focussing on local government practices that commenced in 2006 and has been updated every 4 years.

The research that was undertaken employed an online survey, which was distributed to local government practitioners in Australia and New Zealand. The analysis focussed on comparing the most recent results obtained in 2018 with those obtained in earlier years, i.e. 2006, 2010 and 2014 (Damen 2007; Damen and Rodwell 2011; Damen and Ralston 2015).

Local government practitioners were consulted on a broad spectrum of different topics ranging from the types of devices that are in common use, device effectiveness, through to LATM planning, implementation and monitoring processes. Survey respondents were also given an opportunity to provide additional information/comments.

It should be noted that survey responses were based on the experiences of the survey participants rather than in-field or laboratory evaluation studies. The results were therefore relatively subjective and required multi-criteria analysis and interpretation to draw useful conclusions.

Contact was made with a total of 615 local governments and extensive survey responses were received from 116 of those representing a sample size of just under 20%. The distribution of responses was well spread across jurisdictions and local government classifications consistent with actual geographic distributions.

Discussion:

In order to improve the processes used for local area traffic management within local government, identifying trends within the industry is crucial. Based on the research undertaken between 2006 and 2018, the most effective traffic management treatments were compared to the most commonly used treatments. In this respect, as in many others, the practices used throughout Australia and New Zealand vary quite considerably.

In our latest research in 2018, the top 5 most commonly used traffic management devices were:

Table 1 The effectiveness of the top 5 most commonly used traffic management devices

Rank	Device	Perceived Effectiveness
1	Stop, give-way or one-way signs	54%
2	Speed limit signs	31%
3	School zones	74%
4	Standard roundabout	80%
5	Lane narrowing/ Kerb extension	40%

Speed limit signs, which were one of the most commonly used devices in 2018, were actually classified as one of the least effective devices overall at 31%. This may be because signage is a complementary device which works best in conjunction with other devices. Of the top 5 most commonly used devices in 2018, two were perceived as not being very effective (speed-limit signs and lane narrowing/kerb extensions). Stop, give-way or one-way signs

which are still considered effective traffic management devices by many were the most commonly used devices overall.

Table 2 The top 5 most effective traffic management devices

Rank	Device	Perceived Effectiveness
1	Standard roundabout	80%
2	School zones	74%
3	Wombat crossing	71%
4	Flat topped road hump	63%
5	Full road closure	63%

Standard roundabouts were classified as the most effective traffic management device in 2018 but only the fourth most commonly used. This reflects a downwards trend in their use over time despite their perceived effectiveness remaining relatively similar to the levels reported between 8 and 12 years ago.

School zones, wombat crossings, flat topped road humps and full road closures were the other devices considered most effective in 2018. Interestingly, despite full road closures being one of the most effective devices, they were one of the least commonly used at only 3%. This reflects the severity and cost of the treatment.

Of the top 5 devices considered most effective in 2018, the standard roundabout and school zones were the only devices among the top 5 most commonly used. This reveals that for varying reasons, the devices which are used most commonly, are not necessarily perceived to be the most effective devices. The research also shows that outside of the top 5 most commonly used LATM treatments, other devices were used less than 25% of the time.

The Findings

The key findings from the research conducted in 2018 reveal that local area traffic management practice remains largely unchanged over the past 12 years.

Speeding is still the highest-ranked traffic-related issue in local areas

The 2018 research findings indicate that the top traffic related issues impacting local communities ranked by local government from highest to lowest were:

- Speeding
- Road crashes
- Compatibility for pedestrians and bicycle movement
- 'Hoon' behaviour

Speeding has continued to be the highest-ranking traffic-related concern by local government overall. In comparison to earlier results in 2014, there has been a significant

increase in the importance of road crashes, and a decrease in the significance of ‘through traffic’ and ‘hoon’ behaviour as traffic-related issues.

Bicycle facilities within local area traffic management schemes are considered increasingly effective but they are being used less than before

The research shows that bicycle facilities incorporated within local area traffic management schemes have been rated by local government as increasingly effective but they are being used less than before. Figure 1 illustrates this relationship over time.

Despite a 19 percentage point rise in the reported effectiveness of bicycle facilities incorporated into LATM schemes since 2014, there has been an equivalent decrease in their use within local area schemes over the same time period. In fact, quite a few large metropolitan local governments state that they never build bicycle facilities into local area traffic management schemes. If these facilities are as effective as reported, this outcome would seem counterintuitive and would appear to provide strong justification for using more of them.

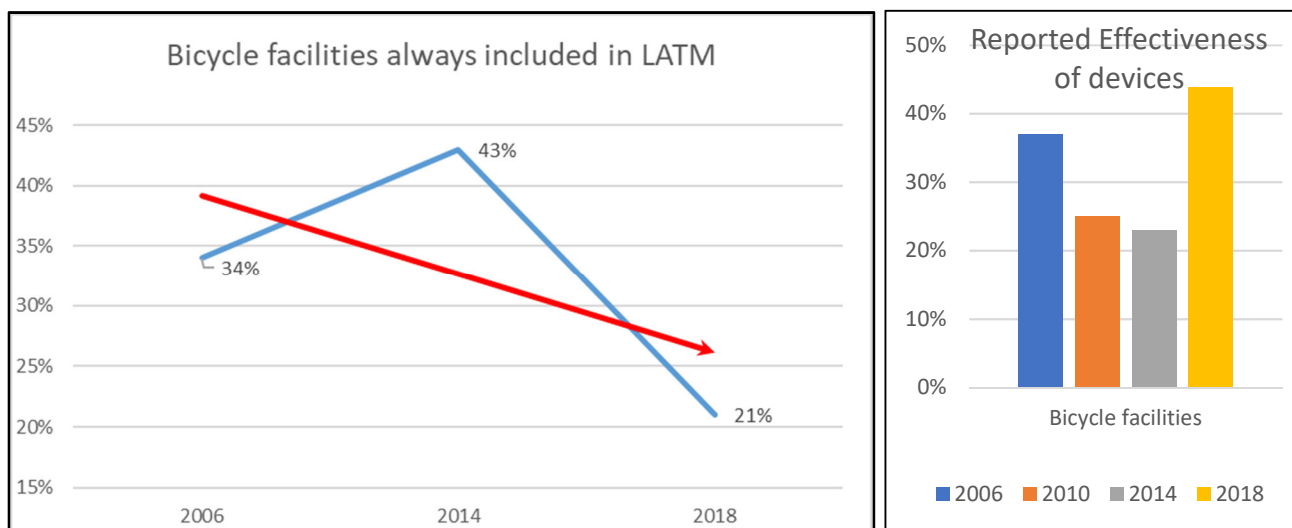


Figure 1: Amount that bicycle facilities are being used within LATM relative to their effectiveness

Effective traffic management devices are being removed due to complaints

Traffic management devices within local area schemes that have been deemed “effective” by local government practitioners, are often the ones receiving the most complaints. These complaints have led to a large number of device removals.

Devices which were considered effective but were most commonly removed in 2018 were road cushions, road humps, and one-way, stop or give-way signs. Complaints from residents have led to:

- About half of road cushion removals (out of the 20% of LGAs removing them)
- Half of round profile road hump removals (out of the 14% of LGAs removing them)
- About 40% of one-way, stop and give way sign removals (out of the 10% of LGAs removing them)

Figure 2 illustrates the relationship between road cushion removals, complaints and their perceived effectiveness. Whereas the perceived effectiveness of road cushions has tended to decline over time, device removals have steadily grown over the same period of time. Complaints spiked in 2010 and have remained at similar levels again in 2018 (NB: there is no 2014 data for available for complaints). It appears that removals grew steadily once complaints spiked and this has also led to a reduction in their perceived effectiveness.

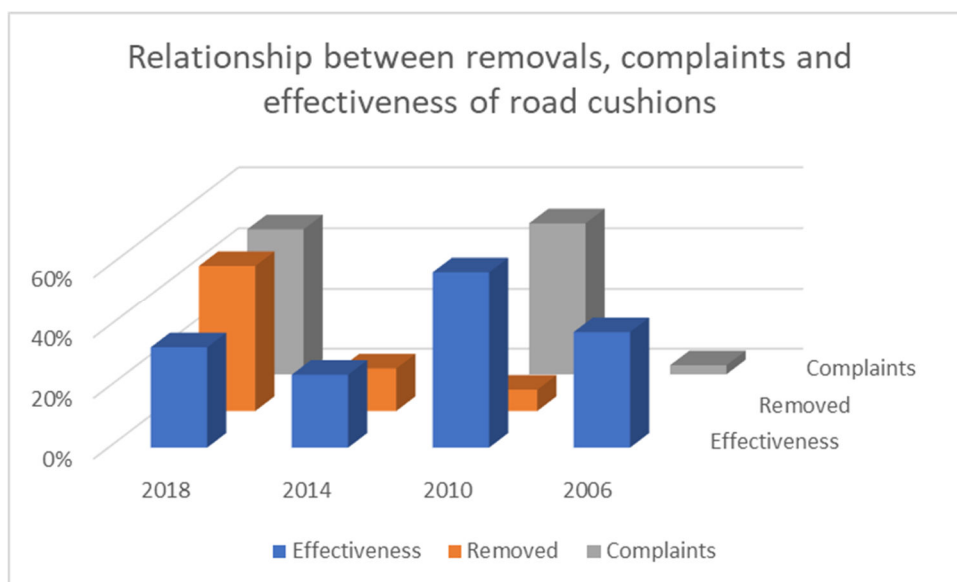


Figure 2: Relationship between removals, complaints and effectiveness of road cushions

The use of road cushions has dropped dramatically

Research shows road cushion use as a traffic management technique spiked in 2014 at 35% of local governments but has decreased significantly by 26 percentage points over the past 4 years to just 9%. New types of more flexible and cost effective rubber formed road cushions were introduced to the market around 20 years ago, and between 2006 and 2014 there was a marked increase in their use. During their initial introduction they were viewed as highly effective, but this view has since changed.

Roundabouts are being used less on local streets

While roundabouts are consistently rated by local government as the most effective traffic management device being deployed in local communities, their use is declining.

Despite being rated as the most effective traffic management device in 2018 by local government (80%), the research indicates that the usage of standard roundabouts in local streets in Australia and New Zealand has steadily decreased by 21 percentage points in the past 12 years.

From 2006 to 2014 roundabouts were the second most commonly used device within local area traffic management schemes. In 2018 roundabouts fell to fourth place in terms of popularity of use.

Budget constraints are the most common reason local governments are not implementing traffic management schemes

Local governments claim the most common reason they are not implementing local area traffic management is due to budget constraints. In fact 14% of local governments indicate that they are always constrained from undertaking any LATM by their budgets. Other reasons for schemes (or elements of schemes) not proceeding include political pressure, community opposition, state government intervention, service utility conflicts, and schemes or devices being contrary to policy requirements. Interestingly, the research showed that consultation with the community is the most widely used (77%) local government traffic management process. One local government commented that devices are not implemented because processes are always stuck at the community level.

There has been an overall decrease in the use of post construction monitoring in recent years

Data indicates a significant decrease since 2006 in the amount of post-construction monitoring of residential attitudes following the implementation of local area traffic management schemes. In comparison to 2014 results, there has been a particularly large decrease (48 percentage points) in public engagement post construction.

The most commonly used post construction monitoring method is speed surveys. The least commonly used monitoring method reported is origin-destination surveys. While this method of monitoring used to be costly and time consuming there are now new ways to obtain the data. New technology such as in-vehicle GPS probe data monitoring systems allow this information to be more easily reported than in the past and should allow local governments to increase the extent of monitoring of traffic origin destinations that is done post construction in the future.

There has been a decrease in the number of local governments using local area traffic management warrant systems

Local governments were asked if they have a process for determining whether local area traffic management is warranted, and if so, what criteria are used. A major finding is that there has been a marked decrease in the number of local governments using formal warrant systems over time. Nearly 33% of local governments reported not having a formal warrant system in place in 2018 to support traffic management decision making in their local communities.

The most commonly used warrant system reported in 2018 was the priority ranking system. But there was also a very clear trend towards local government using more simplified non-analytically based warrant systems including qualifying warrants.

Conclusions:

While Australian and New Zealand LATM practice has certainly progressed over the last 12 years it has not significantly evolved as a discipline. While innovation in LATM continues to occur in Australia and New Zealand it would appear that there continues to be very little change to what is well-accepted practice.

Many treatments are considered effective by local government but are being used less than they were in the past. Examples include roundabouts and bicycle friendly LATM facilities – use of the latter has reduced despite an increase in perceived efficiency.

More research is needed in this space as traffic usage patterns and technology solutions change over time. In addition, increased dissemination and sharing of knowledge would help increase awareness, and the effectiveness of future LATM practice.

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Peter Damen is the Principal and Chief Executive Officer of Level 5 Design Pty Ltd. Peter is responsible for leading all activities of the company from strategy through planning, design and implementation. He believes that innovation is the key to Australia's future – in making better investment decisions and accomplishing more for the community.

Peter is considered a national and international expert in emerging transport technologies, automated vehicles, parking and traffic management and operations, road safety and future transport planning. He is a qualified civil engineer with over 25 years' experience in the industry including both government and the private sector. He has been involved in some of Australia's largest transport infrastructure projects and he has an industry network that extends across the globe.

Peter has chaired or participated in numerous industry associations, state advisory committees, accreditation panels, and learned societies and amongst other roles he is currently the Chairman of the Board of Directors of Innovate Australia and an Executive Director with the Australian Asphalt Pavement Association (AAPA). Prior to establishing Level5design, Peter was the Chief Operating Officer of Australia's national road and transport research agency, where he was responsible for all operations nationally including programs such as the National Road Safety Partnership Program and the National Assets Centre of Excellence. Peter was also instrumental in establishing the Australia and New Zealand Driverless Vehicle Initiative (ADVI), to address the challenges and future requirements of emerging connected and automated vehicle technologies in Australia and NZ. He went on to become the inaugural Chair of that national peak body.