

5. CHRISTCHURCH CITY COUNCIL'S PHILOSOPHY AND POLICY ON TRAFFIC CALMING

RR 9074

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This report is submitted as background information to refresh the Councillors with respect to the Council’s philosophy and policy on traffic calming. It is also intended to inform the Council about the processes used by the City Streets Unit to identify sites requiring installation of traffic calming measures and to confirm the current policy on traffic calming.

The report was produced primarily to prepare the Committee to receive the petition regarding issues related to traffic calming submitted by Mr A W Sparrow of 14 Vienna Street.

MANAGING THE ROAD NETWORK

There are two basic options for managing the road network in general. The first is the “sponge” approach where traffic is allowed to travel *without restraint* along any street. This essentially requires all roads to be built to a similar design standard. Given the extremely high level of motor vehicle usage and rapid growth in vehicle numbers in New Zealand, this approach is simply unaffordable in larger cities and certainly here in Christchurch where the number of streets per unit area is relatively high. The second management option is the “**rooms and corridors**” approach. Here traffic is encouraged to use particular roads that are purposely designed to a higher standard to cope with heavy traffic, larger traffic volumes and speeds and **discouraged** from using local residential streets for any purpose other than access.

The city has adopted the “rooms and corridors” approach through its City Plan and continues to develop a hierarchy of roads in which each road is generally classified with respect to its actual or planned traffic function and the requirements of the surrounding land uses.

The highest classified roads (major arterials) provide for the greatest level of vehicular movement, mobility and traffic volume while local roads carry low volumes and primarily provide access and amenity to the residents living adjacent to them. In this way the hierarchical network provides for the efficient and safe movement of people and goods while reducing the conflicts that arise between vehicular traffic demand and the people living in the surrounding environment.

The hierarchy of roads is further classified into two broad categories: the primary road network and the secondary road network. The primary road network is part of the region-wide network and comprises of motorways, major arterial roads, minor arterial roads and limited access roads.

The secondary road network has little regional significance other than the loads it places on the primary road network. It comprises collector roads and local access roads. The function of the collectors is to collect and distribute traffic within and between neighbourhoods, whereas the local roads provide access to properties and have little or no function in providing for through traffic. In most cases the collector roads provide ideal routes for passenger transport services and cyclists.

It is within the secondary road network environment that the so-called “rooms” are created and local roads and their intersection with other order roads are usually the focus of traffic calming.

THE “ROOMS AND CORRIDORS” NATURE OF CHRISTCHURCH

In order to reinforce the principles of the “rooms and corridors” approach as well as to encourage safer and higher quality residential environments, the Council has made a commitment to undertake special planning initiatives within community areas bounded by arterial or collector roads. (*Council’s Traffic Calming Policy attached*). These planning initiatives are designed to purposely involve the local community in identifying and prioritising deficiencies, issues and improvement opportunities related to traffic or the street environment. The result of these initiatives is the production of Neighbourhood Improvement Plans (NIPS) or Local Area Traffic Management Schemes (LATMS) to address these. The LATMS in particular provide one of the bases for determining the future traffic engineering and amenity works on the roads in each specific community’s locality. A number of plans have already been completed throughout the city and more are being produced each year. These schemes are invariably initiated following ongoing dialogue between local community boards and residents groups.

The other major opportunity to implement improved local neighbourhood environments through roadworks is offered through the Asset Management Plan’s kerb and channel renewal programme. The planning for kerb and channel renewal projects also includes consultation opportunities for the community.

TRAFFIC CALMING MEASURES

Each LATMS generates for that neighbourhood several specific traffic calming projects designed to act together as a system for improving traffic safety and enhancing the street environment. The most common issue that arises through most of the LATMS planning is that of speeding vehicles on local roads. This along with high through traffic volumes and associated noise and pollution gives rise to the necessity for management measures to “calm” the traffic. Traffic calming (the reduction of adverse traffic impacts) is usually achieved through the application of a three-pronged approach using engineering, education and enforcement techniques. The City Streets Unit has a direct responsibility for the engineering aspects, has ongoing active programmes developing and promoting traffic safety education and liaises regularly with the law enforcement authorities to coordinate traffic management throughout the city.

The necessity for traffic calming is associated with the rapid increase in number and usage of the motor vehicle and as a phenomenon has occurred recently in time on a global scale. As a result, various traffic calming measures and techniques have been developed, researched and applied throughout the world’s major cities and improvements in safety as well as other results are reported regularly. A guideline that describes the entire LATMS process (similar to the guidelines of North Shore City and Auckland City) has also been developed and will shortly be available for input from the Council’s Committees.

BENEFITS AND COSTS OF TRAFFIC CALMING

This section gives a very brief summary of the benefits and costs experienced in practice. For more details in this regard please refer to the separately circulated paper by Todd Litman of the Victoria Transport Policy Institute entitled “*Evaluating Traffic Calming Benefits, Costs and Equity Impacts,*” April 1998.

Areas that have been traffic calmed tend to provide the greatest benefits to pedestrians, cyclists, local residents and property owners, while people who are intensive car users, especially vehicle drivers, can experience disbenefits.

Potential benefits include: increased traffic safety (typically reductions in collision frequency of 40% and more are achieved); reduced traffic noise and air pollution; increased comfort and mobility for pedestrians and cyclists; increased non-motorised travel; increased street social activities, positive neighbourhood interaction and more livable communities; increased property values as well as decreased crime rate.

Besides the project's planning and construction costs, traffic calming disbenefits can include: vehicle travel delays; traffic spillover onto adjacent streets; manoeuvring difficulties for buses, emergency and service vehicles; driver frustration and; minor problems for cyclists and visually impaired pedestrians in certain circumstances.

An acute awareness of the costs and where these potential disbenefits can typically occur, together with the community's input helps the engineer to limit the adverse impacts through good system design.

ADDRESSING SPEEDING ON LOCAL STREETS

This section has been included to illustrate the fact that usually more than one option exists to achieve a site-specific traffic calming objective. The objective of addressing the problem of speeding vehicles along a residential street is selected for this purpose because almost every community consulted in the LATMS planning process raises it.

Worldwide research as well as local experience has shown that vertical shifts in the roadway (typically achieved by speed humps) have a greater impact on reducing vehicle speeds and through traffic than any other measure. If speed humps are built to a height of 100 mm and spaced no greater than 60 m apart an 85 percentile speed of less than 30 km/h is achievable (i.e. the speed below which 85% of all vehicles are travelling). However generally the Christchurch City Council installs speed humps to reinforce the 50 km/h limit and reduce the number of serious speedsters. This results in them being installed at spacings in the range of 90m to 150m with average speeds of 37 km/h and 85 percentile speeds of 43 km/h being achieved. It must be remembered at this point that the severity of any collision is a direct function of the **square** of the vehicle's speed (e.g. the probability of pedestrians receiving fatal injuries when hit by a motor vehicle is: 3.5% at 24 km/h; 37% at 50 km/h and; 83% at 70 km/h).

The following table based on European experience gives an indication of the relative speed reductions achievable from a number of traffic calming measures for a road with a 50 km/h speed limit.

Traffic Calming Device Option	Upper Limit of Maximum Speed (km/h)		85 Percentile Speed (km/h)		Range of Average Speed (km/h)	
	Before	After	Before	After	Before	After
Vertical shifts in the carriageway	100	40	75	30	45-65	18-25
Lateral shifts in the carriageway	100	65	75	45	45-65	22-35
Road narrowing to a single lane	100	65	75	45	45-65	22-35
Roundabout	100	65	75	45	45-65	22-35
Road narrowing to a reduced width	100	95	75	70	45-65	40-55
Central islands	100	95	75	70	45-65	40-55

Where the residents of a particular street are clearly in favour of achieving a definite reduction in speed and are prepared to accept the disbenefits that go hand in hand with these devices, speed humps are installed. They are significantly cheaper than any of the other devices for reducing speed and extremely effective. There are many streets in Christchurch where other traffic calming devices have been selected to achieve a measure of speed reduction. There has been a degree of success with some while others have had only a marginal effect in reducing the upper limits of speeding but do discourage through traffic.

NARROWING OF CARRIAGEWAY WIDTH

According to researcher *Peter Swift*¹, analysis of 20 000 recorded vehicle accidents on local residential streets in Canada have shown conclusively that the collision frequency can be reduced by as much as 18 times by narrowing the carriageway width down from 14m to 7m. This factor, along with more efficient asset maintenance costs and the amenity opportunities afforded by the wider road reserves it creates, has resulted in the Council's adoption of the policy to narrow carriageway widths for local roads to 9m where appropriate. (Transfund New Zealand base their subsidy for carriageway maintenance on a local road width of 8m but have made an exception in the case of Christchurch because of the higher number of cyclists.)

1 Paper Entitled "Residential Street Typology and Injury Accident Frequency", 31 March 1998.

CONCLUSION

Clearly, based on local, national and international experience, traffic calming primarily benefits the local residents within a community. Contrary to the view that some people may hold, the City Streets Unit has sufficient other work of higher significance to the transport network to get on with and undertakes most traffic calming projects at the request of the residents or Community Boards. Each year many requests are received for traffic calming and every effort is made to accommodate these within the limitations of a strained budget. Towards this end, the Unit has recently introduced a prioritisation process for LATMS works and other local roading projects in a bid to ensure sound economic efficiency and has ongoing research to refine its procedures for ranking projects. It is committed to continually improve its application of traffic calming techniques.

The effectiveness of a traffic calming scheme is purely a function of community consultation, good design and the securing of sufficient funding to implement the planned scheme in its entirety. The City Streets Unit acknowledges that within these schemes some sites do have minor problems. However on the whole, there is a silent majority of residents who are reaping a range of benefits.

- Recommendation:**
1. That the Council's Traffic Calming Policy be confirmed;
 2. That traffic calming in local residential streets only take place under the following conditions:
 - (a) in accordance with the above-mentioned Policy;
 - (b) where a clear majority of residents are in favour of the Scheme's objectives;
 - (c) after consultation with local residents and road user groups on specific design elements chosen to achieve the objectives.
 3. That a copy of this report, together with its recommendations, be forwarded to Mr A W Sparrow in response to the petition received by the Committee.
 4. That Mr David Ingram be invited to address Councillors and staff on traffic calming and related issues when he visits Christchurch for the New Zealand Traffic Institute Conference in August.
 5. That the design standards for traffic calming be reviewed and reported to the Committee.