



## Manukau City Local Area Traffic Management (LATM) Policy Guidelines (2004)

Minute Number: 1418/04

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Minute No. CL/AUG/1418/04

That the undermentioned recommendations (Minute Nos. 1370/04 and 1371/04) made at a meeting of the Environmental Management Committee held on 12 August 2004 be adopted.

### Minute No. 1371/04

#### MANUKAU CITY LOCAL AREA TRAFFIC MANAGEMENT (LATM) POLICY AND GUIDELINES

1. That the Manukau City Local Area Traffic Management (LATM) Policy and Guidelines attached as Appendix 'F' be adopted by Council.
2. That the Traffic Calming Policy (1998) be rescinded.



*Te Kaunihera o*  
**MANUKAU**  
*City Council*

# **LOCAL AREA TRAFFIC MANAGEMENT (LATM) POLICY AND GUIDELINES**

**PREPARED BY  
ENVIRONMENTAL MANAGEMENT DIVISION**

**August 2004**

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Te Kaitiaki o  
**MANUKAU**  
City Council

# PART ONE

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## 1. Executive Summary

Traffic flows on many urban roads have been steadily increasing due to such influences as increased population, increased levels of motor vehicle ownership and trade. As traffic demand has built up on arterial roads, motorists have used, and continue to use, local roads to avoid the most congested areas. This has led to a gradual increase in traffic in many local streets causing a reduction in the amenity to residents throughout the area. As traffic flows have increased, people's 'quality of life' expectations have also grown, thus lowering perceptions of acceptable levels of traffic intrusion. This intrusion has seen affected communities look to Council for action, typically by means of localised traffic management measures commonly referred to as Local Area Traffic Management (LATM) or traffic calming. Such requests have to be considered against the need to provide an appropriate level of accessibility for levels of traffic demand that are compatible with the road's planned role within the roading hierarchy.

In response to the increasing number of requests for traffic calming on the secondary road network throughout the city, Council adopted a "Traffic Constraints Policy" in September 1998 to address requests in a more structured way. The 1998 Traffic Calming Policy was largely based on speed and tended to assess whether or not speed humps should be installed. A subsequent review identified that the evaluation criteria for traffic calming needed to be extended to take into account both road safety and amenity issues that relate to traffic volumes and the type of traffic. The LATM Policy and Guidelines has been developed with the objective of planning the usage of road space within a local residential area so as to achieve improvement of the residential environment whilst still meeting transportation objectives and recognises that a street may serve many functions to a greater or lesser degree with some of the functions being at least partially incompatible.

The purpose of this LATM Policy and Guidelines is to :

- Outline Council's policies and objectives in respect of local area traffic management;
- Outline criteria and guidelines which will determine whether LATM measures are appropriate in any particular circumstance;
- Identify the process for evaluating requests for LATM measures;
- Provide guidance on the types of LATM measures available and their effectiveness in addressing the identified problems;
- Provide technical and objective criteria to be used in the assessment of proposed LATM measures;
- Provide a more formal and consistent basis for determining whether proposed solutions meet specific technical criteria;
- Provide a ranking system to enable each LATM scheme to be prioritised on a city wide basis;
- Outline timeframes and processes for assessing the effectiveness of any LATM measures implemented.

Council wishes to acknowledge the assistance from both the Auckland City and Christchurch City Councils for providing their LATM Policy and Guidelines that have been utilised within the Manukau City LATM Policy and Guidelines.

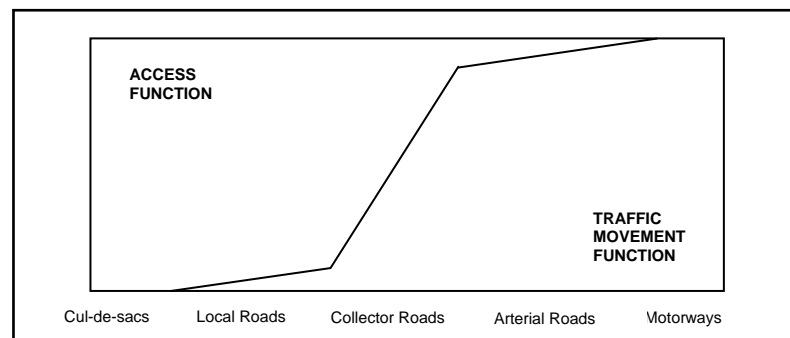


## 2. Introduction

### a. General

The prime determinant of the management of any given road within the overall network is that road's function, and its relationship to other roads to which it connects. The road network serves a multitude of purposes, but from a road function point of view, there are essentially two needs which the road network allows :

- The **traffic movement function**, i.e. the role of roads in providing a means by which people and goods can get from one place to another; these roads constitute the **arterial or primary road network**
- The **access function**, i.e. the role of roads in providing access to abutting properties and land uses; these roads or streets constitute the **local or secondary road network**



In an ideal situation, each and every road would perform only one of these functions, but in practice, many roads perform both functions and are sometimes referred to as '**mixed function**' roads as shown above. Such roads create a major challenge for traffic management. On one hand, those living and working along them seek to use them for access purposes, exiting and entering properties, parking in the street, having visitors park nearby, and in residential areas, having significant pedestrian and sometimes bicycle activity. These activities can all be satisfactorily carried out if the traffic flow is light and vehicle speeds are low. On the other hand, those using the road to satisfy the movement function (even if they live close by), want to travel at higher speeds, and if there are a lot of them, then traffic volume also increases.

As a result, roads can be distinguished by whether or not 'the improvement of living and environmental conditions' acts as a principal determinant of traffic management actions on them. The more restrictive traffic calming measures clearly do not apply to roads on which the improvement or protection of the traffic function is accepted as the principal determinant. However, on the secondary road network, the access function is accepted as the principal determinant and living and environmental conditions are generally more important. It is this aspect of the secondary road network that traffic calming or Local Area Traffic Management (LATM) seeks to address.

LATM is concerned with planning the usage of road space within a local residential area to achieve goals aimed at improvement of the residential environment but recognises that a street may serve many functions to a greater or lesser degree with some of the functions being at least partially incompatible.

The purpose of this Policy and Guideline is to provide a systematic approach to assessing requests for LATM measures. It focuses only on those roads that comprise the secondary road network – collector roads and local roads. While it is fundamentally a technical document, it identifies the process for evaluating requests for LATM measures, it provides guidance on the types of LATM measures available and their effectiveness in addressing the assessed problems, and it briefly outlines timeframes for assessing the effectiveness of any LATM measures implemented.

## **b. Definitions**

### **Road Classification**

a) Collector Roads - these roads distribute traffic between the primary road network and local roads providing local through connection between arterial roads as well as access to adjoining properties. They typically carry traffic volumes between 2,000 to 10,000 vehicles per day and are often used as bus routes.

b) Local Roads – these roads are not arterials or collectors and their primary function is to provide access to adjoining property. These roads typically carry less than 2,000 vehicles per day. However, some local roads can carry flows up to 5,000 vehicles per day.

**Local Area** - an urban area containing only local and collector roads, which is bounded by arterial roads or features such as rivers, coast lines, railway lines or the limit of urban development.

**Local Area Traffic Management (LATM) or Traffic Calming** – the introduction of physical measures aimed at enhancing amenity and safety, especially through speed reduction. There are two types of traffic calming – the first is related to management of vehicle speeds and the second is related to management of traffic volumes. Traffic calming measures are generally self-enforcing.

**Minor Safety Improvements** - low cost improvements (typically less than \$150,000) to address clearly identified safety problems at a particular site e.g. installation of signs, new roadmarkings, roundabouts or refuge islands etc.

## **c. The need for local area traffic management**

Traffic flows on many urban roads have been steadily increasing due to such influences as increased population, increased levels of motor vehicle ownership and trade. The route capacity of traditional traffic arteries has often been, and continues to be, fully utilised during peak periods. As traffic demand has built up on arterial roads, motorists have

used, and continue to use, local roads to avoid the most congested areas. This has led to a gradual increase in traffic in many local streets causing a reduction in the amenity to residents throughout the area.

Growing public awareness of the need for safe residential streets has also increased concern at traffic speeds in even low volume roads. These roads may carry predominantly local traffic but controls on speed may be as necessary as volume constraints in other areas.

Over the years, local communities have sought to obtain relief from unwanted traffic intrusion from Council. Traffic flows have increased while at the same time, people's 'quality of life' expectations have also grown, thus lowering perceptions of acceptable levels of traffic intrusion. The pressure to minimise traffic intrusion will continue to increase as long as this growth pattern continues.

#### **d. Review of 1998 traffic constraints policy**

In response to the increasing number of requests for traffic calming on the secondary road network throughout the city, Council adopted a "Traffic Constraints Policy" in September 1998 to address requests in a more structured way. The 1998 Traffic Calming Policy was largely based on speed and tended to assess whether or not speed humps should be installed. Following a review, it was identified that the evaluation criteria for traffic calming needed to be extended to take into account both road safety and amenity issues that relate to traffic volumes and the type of traffic. The LATM Policy and Guidelines has been developed with the objective of planning the usage of road space within a local residential area so as to achieve improvement of the residential environment whilst still meeting transportation objectives and recognises that a street may serve many functions to a greater or lesser degree with some of the functions being at least partially incompatible.

#### **e. Implications for arterial roads**

Any systematic approach to local area traffic management schemes involving the removal or redirection of through traffic from local areas must assess the external effects this would have, especially on adjacent roads. Where traffic intrusion into local areas is small, or where there is spare capacity on the arterial roads, the effects on arterial road level of service may be insignificant. Where existing traffic intrusion is high, or where there is limited capacity on the arterial roads, then it is usually necessary to achieve a compromise between local interests and the wider requirements for mobility and accessibility. Consequently, it may be necessary to conduct arterial road traffic management studies before or in conjunction with local area studies.

If overall road space is reduced by restricting travel on the secondary road network, congestion on the arterial roads will generally be increased. The resulting congestion increases the cost of travel and motorists must make a decision as to whether to travel at such times. The appropriate action to reduce the impact of this interaction is generally to upgrade or otherwise improve the efficiency of the arterial road network. However, insufficient arterial road space to meet the traffic demand should not necessarily prevent the introduction of LATM measures.

## **f. Traffic management in new areas**

Careful consideration must be given to developing a safe environment where new developments with roads are being created. Freedom of design and a planned street hierarchy affords opportunities for shared use in local streets and cul-de-sacs.

In the evaluation of such developments, LATM measures must be given consideration and if seen to be suitable, taking into account Council Policy, become a condition of consent for the development. Proper attention to these future problems at the subdivision planning stage will avoid the need for future remedial action.

### 3. Local Area Traffic Management

#### a. Objectives

The main objectives of Local Area Traffic Management schemes are :

- To reduce the number of crashes and potential for future crashes;
- To provide a higher level of safety for all road users;
- To attain appropriate acceptable levels of speed, volume and composition of traffic throughout the roading network;
- To provide a reasonable level of convenience to all users;
- To enhance the street environment whilst minimising the impact on traffic;
- To manage or avoid adverse traffic effects arising from new developments and subdivisions, or particular land uses; and
- To support other objectives such as cycling and walking routes;

In addition to the above objectives there is a need to ensure that any Local Area Traffic Management schemes are appropriately designed and cost effective to install and maintain.

#### b. Advantages and disadvantages

Below are some of the advantages and disadvantages LATM schemes can possess once implemented. However these are only general and will depend greatly on the type and design of the measure installed, and its location.

##### ADVANTAGES

- Greater safety for traffic, pedestrians and property by integrating them at relative low speeds;
- Reduced traffic volume and noise;
- Improved environment e.g. landscaping & lighting;
- No requirement for traffic enforcement;
- Reduced heavy vehicle traffic;
- Improved cyclist/pedestrian facilities.

##### DISADVANTAGES

Within the street/area

- Increased travel time for motorists;
- Frustration for frontage owners (noise, signs etc);
- Excessive acceleration & deceleration and associated noise particularly with heavy vehicles;
- Creation of an uncomfortable ride for passengers on bus routes and may discourage patronage of public transport;
- Reduced or loss of kerbside parking, especially adjacent to controls;
- Restricted access to properties adjacent to the location of devices;
- Some road front property owners may be dissatisfied with the placement of devices;

- Increased response times for emergency and service vehicles depending on the measures installed;
- Increased road maintenance costs particularly in pavement failure as traffic paths are concentrated along a single line.
- Impacts on drainage overland flow paths if not designed to accommodate them.
- Restriction on access to utility services if the design of measures impacts on the location of existing services.

Within adjacent streets/area

- Shifting the problem to adjacent streets where traffic is equally undesirable and no measures have been provided;
- Increased traffic volume and noise and possibly traffic queues;
- Reduced safety for traffic, pedestrians and property;
- Requirement for traffic enforcement;
- Some road frontal property owners may be dissatisfied with their street environment due to devices outside their property;
- Possible re-routing of buses to other streets to avoid LATM measures.

### **c. Managing expectations**

It is important the community takes into account both their own considerations and the needs of other users and the adjacent street network in order to develop a compromise between local interests and the wider community's need for mobility. This is to ensure that the problem is not transferred to neighbouring streets. It is important that the disadvantages do not outweigh the advantages and that residents understand and accept them at the outset.

One important consideration before any scheme proceeds is the balance required between what the residents perceive the scheme will achieve and the actual likely outcomes. There is no guarantee that a scheme will satisfy the expectations of all residents, particularly in terms of the types of traffic calming devices used, the landscaping and planting, and the extent to which safety can be addressed by LATM measures. For example no LATM scheme can eliminate every crash or necessarily address loss of control crashes at 2am resulting from drunken drivers. It is also unlikely that a LATM scheme that is technically sound and has produced speed and volume reductions, will necessarily satisfy all the other needs a community may desire as such schemes need to moderate driver social behaviour in order to achieve the level of success desired. A LATM scheme has many elements to it with the LATM measures being the engineering aspect of such schemes. Consultation early in the process may assist with the managing of expectations.

## **4. Types of LATM Devices**

This section is to provide background information on the common types of controls available and their effects only. It does not recommend the controls that should be used, as each situation is different and should be assessed on an individual basis using earlier case studies as a base.

LATM devices should not be used as isolated treatments and should be installed as a consistent area-wide traffic management scheme in a local area. The devices used should be forgiving on those drivers that misjudge them and they should be designed and constructed so that both their presence and message is clearly evident to all road users. In locations where normal street lighting may provide inadequate illumination, the need to provide additional lighting at LATM devices must be considered. There is a need to ensure that all LATM devices are clearly visible at all times. Good local street design should aim to provide good short distance visibility, especially between knee and head height and reduce long distance visibility which encourages higher speeds, and must take into account the needs or requirements of special interest groups such as emergency or public transport services.

LATM measures can be identified as addressing either speed issues or traffic volume issues and can be fitted into three basic categories which are discussed in further detail later in the document:

- **Controls and Signage**
- **Vertical Displacement devices**
- **Horizontal Displacement devices**

Signs are lower in cost, but they are not self-enforcing and may be disregarded by a proportion of road users.

Both vertical and horizontal devices are largely self-enforcing and create a visual impression that the street is not intended for fast and through traffic. There are disadvantages in their cost (implementation as well as maintenance) and they can have an effect on emergency vehicles, bus operators and off-street parking creating disbenefits to the community. Vertical displacement devices are not suitable for collector roads.

LATM schemes may include a combination of the three categories depending on the outcome sought. Table 1 on the following page indicates the relative effectiveness of each type of LATM measure in managing speed and traffic volumes.

It should be noted that speed cameras are likely to be installed only where speed has been identified as a major contributing factor in injury crashes in the most recent five year period. They require the support of Police who fund them and the Land Transport Safety Authority. Each request received is evaluated and experience to date indicates that speed cameras would not be justified on local roads.

LATM MEASURE	Effectiveness Of LATM Measure In Managing :	
	Speed	Traffic Volume
<b>Controls and Signage</b> <ul style="list-style-type: none"> <li>• Stop and Give Way Controls</li> <li>• Prohibited Movement Controls</li> <li>• One Way Streets</li> </ul>	<p style="text-align: center;"><b>C</b></p> <p style="text-align: center;"><b>X</b></p> <p style="text-align: center;"><b>X</b></p>	<p style="text-align: center;"><b>C</b></p> <p style="text-align: center;"><b>B</b></p> <p style="text-align: center;"><b>A</b></p>
<b>Vertical Displacement Devices</b> <ul style="list-style-type: none"> <li>• Speed Humps</li> <li>• Speed Cushions</li> <li>• Raised Tables or Platforms</li> </ul>	<p style="text-align: center;"><b>A</b></p> <p style="text-align: center;"><b>A</b></p> <p style="text-align: center;"><b>A</b></p>	<p style="text-align: center;"><b>X<sup>(1)</sup></b></p> <p style="text-align: center;"><b>X<sup>(1)</sup></b></p> <p style="text-align: center;"><b>X<sup>(1)</sup></b></p>
<b>Horizontal Displacement Devices</b> <ul style="list-style-type: none"> <li>• Parallel Slow Points</li> <li>• Angled Slow Points or Chicanes</li> <li>• Lane Narrowing using Kerb Extensions, Solid Medians, Refuge Islands</li> <li>• Lane Narrowing using Edgelines, Flush Medians, Centrelines</li> <li>• Driveway Links</li> <li>• Entry or Threshold Treatments</li> <li>• Roundabouts</li> <li>• Road Closures</li> <li>• Shared Zones</li> <li>• Channelisation</li> </ul>	<p style="text-align: center;"><b>B</b></p> <p style="text-align: center;"><b>B</b></p> <p style="text-align: center;"><b>B</b></p> <p style="text-align: center;"><b>C</b></p> <p style="text-align: center;"><b>B</b></p> <p style="text-align: center;"><b>B</b></p> <p style="text-align: center;"><b>A</b></p> <p style="text-align: center;"><b>A</b></p> <p style="text-align: center;"><b>B</b></p> <p style="text-align: center;"><b>B</b></p>	<p style="text-align: center;"><b>X<sup>(2)</sup></b></p> <p style="text-align: center;"><b>B</b></p> <p style="text-align: center;"><b>X<sup>(2)</sup></b></p> <p style="text-align: center;"><b>X</b></p> <p style="text-align: center;"><b>B</b></p> <p style="text-align: center;"><b>X</b></p> <p style="text-align: center;"><b>C</b></p> <p style="text-align: center;"><b>A</b></p> <p style="text-align: center;"><b>C</b></p> <p style="text-align: center;"><b>C</b></p>
<p><b>Legend</b></p> <p>A Will be an effective treatment</p> <p>B May be an effective treatment</p> <p>C May be an effective treatment when combined with other LATM measures</p> <p>X Not likely to be an effective treatment</p> <p><b>Notes</b></p> <p>(1) Vertical displacement devices are only effective in reducing traffic volumes when the travel time through the treated area is greater than that of the nearest alternative route. These measures are used only on Local Roads.</p> <p>(2) Effectiveness will be dependent on traffic lane width.</p> <p><b>Spacing of Vertical and Horizontal Displacement Devices</b></p> <p>Practice has shown that devices placed not less than 40 metres apart can achieve a speed reduction of some 40% while devices placed no more than 120 metres apart can achieve a speed reduction of some 25%. Spacings greater than 120 metres will usually have little impact on speeds other than at the devices themselves.</p>		

**Table 1 : Effectiveness of LATM Measures**

**a. Controls and signage**

i. STOP AND GIVE WAY CONTROLS

The basic purpose of Stop and Give Way controls is to assign and indicate the right-of-way at intersections.

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>* Loss of priority may be a discouragement to motorists if connecting intersections are controlled and this may lead to a reduction in volumes.</li> <li>* Safety will be improved with the better definition of right of way priorities.</li> <li>* Safety will be improved with speed reductions at and within the intersection.</li> </ul>	<ul style="list-style-type: none"> <li>* Controls may also reduce safety by drivers disregarding the control if the approach is used on a regular basis.</li> <li>* Limited value as a measure for reducing speeds along a street with lengthy distances between intersections.</li> <li>* Give Way and Stop controls have little or no overall effect on achieving a reduction on volumes in the street.</li> </ul>

ii. PROHIBITED MOVEMENT CONTROLS

Prohibited movement controls, such as the No Right Turn/No Left Turn/Turn Left/Turn Right/No U Turns/No Turns, are used to prevent undesirable turning movements into and from residential streets.

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>* They are best used on arterial or collector roads on the outskirts of a neighbourhood to stop traffic entering into the area.</li> <li>* Banning certain movements can effectively reduce volumes.</li> <li>* Speed may be reduced adjacent to the turn, if traffic was using the road as a short cut.</li> <li>* Safety will improve where conflicting movements are removed.</li> </ul>	<ul style="list-style-type: none"> <li>* Acceptance of these controls will depend on the user and will be less effective if they seem illogical or where convenient alternatives are not available.</li> <li>* Enforcement is a problem, and may lead to an increase in abuse.</li> <li>* Mobility of residents may be affected if they have to take longer alternative routes.</li> <li>* Will not lower speeds along the road.</li> <li>* Ban likely to result in users making turns at less safe places or manoeuvres such as "U" turns.</li> </ul>

iii. ONE WAY STREETS

These may be used to protect local roads. Careful planning and signage is required to ensure a reasonable amount of access is maintained and that problems are not transferred to another street in the area.

<b>Advantages</b>	<b>Disadvantages</b>
* Generally accepted by the public.	* May be ignored if there is no traffic in the opposite direction.
* Can reduce the volume of traffic in streets effectively.	* Residents are the main offenders of ignoring the one-way system due to the loss of accessibility and increase in travel times.
* Elimination of shortcuts may reduce the number of motorists who used the road as a fast alternative route leading to an overall speed reduction.	* Speeds tend to be higher due to the removal of conflict from approaching vehicles.
* Safer than two way due to no opposing traffic conflict.	* Emergency vehicles may have to travel the wrong way in emergencies.
* Can accommodate additional on street parking.	

**b. Vertical displacement devices**

i. SPEED HUMPS

These are the best known, and most widely used form of control for speeds and are the most commonly requested measure. Speed humps have a curved profile and rise to 100 millimetres in height with a total length of 3.7 metres (Watts profile).

Speed humps should be installed at right angles to the path travelled and should extend as close to the kerb as possible but leave sufficient opening for drainage. They should be clearly visible to approaching motorists by the use of pavement marking on the hump surface and where practicable, be illuminated by street lighting.

It is important that the first speed hump crossed by motorists is placed so that it can be clearly seen and where the approach speed is naturally low. If low speeds are required over an appreciable length of road, more than one hump may be required. The spacing of further humps should be as uniform as possible with allowance for side roads and property access.

When correctly designed and placed, speed humps can be very effective in reducing vehicular speeds. If poorly implemented, they may cause damage to vehicles and or the road surface. Noise and vibration may impact on adjacent residents. Consideration needs to also be given to accommodating cyclists by the provision of an appropriate bypass at the side of the hump.

**NB:** Speed humps are NOT appropriate for collector roads or for roads which form part of a bus route.

Advantages	Disadvantages
* Reduces vehicle speeds in the vicinity of the hump if correctly designed and positioned.	* May increase noise due to braking, acceleration and vertical displacement of vehicles.
* When used in a series it reduces speeds over the entire length of the street.	* Can impact on passenger comfort when used on bus routes.
* Through traffic is often discouraged from using the street where a large number of humps are installed.	* Heavy vehicles can cause vibration in adjacent buildings.

ii. SPEED CUSHIONS

A speed cushion is a form of road hump occupying part of the traffic lane in which it is installed. Speed cushions were specifically developed in England to cause less interference to larger vehicles such as buses and emergency vehicles, while still reducing overall vehicle speeds. These cushions can be located on a lane-by-lane

basis and can be complimented by side islands or a central refuge island.

A minimum gap of 750 millimetres between the base of the cushions and the kerb as well as between adjacent cushions is recommended in order to accommodate cyclists and motorcyclists. Each cushion should be 3.0 metres long, 1.8 metres wide and have a minimum height of 75 millimetres.

It appears that to gain maximum reductions in speed, the speed cushions need to have the appearance of being more formidable than they actually are. Using a colour for the cushions that contrasts with the adjacent roadway surface will help create this effect. Studies have shown the achieved speed reductions to parallel those for speed humps. Experience has shown that bus companies tend to be supportive of the use of speed cushions.

<b>Advantages:</b>	<b>Disadvantages:</b>
* Cyclists can bypass the cushions by riding between them or between the cushion and the adjacent kerb.	* Speed cushions are less effective at slowing motorcyclists.
* Bus passenger discomfort is minimal providing buses straddle the cushions centrally.	* Vehicle parking can prevent cyclists using the kerb side gap.
	* By traversing the cushions with only two wheels, motorists can reduce the speed reducing effect.

### iii. RAISED TABLES OR PLATFORMS

These incorporate 5 to 10 metres of length of road and are raised up to 100 millimetres, with 1 in 10 ramps on the approaches. These differ from the standard speed hump in that the raised section is flat and not curved. Another variation is to use raised tables at intersection in order to lower speeds at the intersection.

This type of control is more suitable than speed humps where the street being treated is also used as a bus route.

<b>Advantages:</b>	<b>Disadvantages:</b>
* Cause a reduction in volumes as they lower speeds and create longer travel times.	* May increase noise due to braking, acceleration and vertical displacement of vehicles.
* A reduction in speed of 10km/h may occur with greater reductions nearer the table or platform.	* Heavy vehicles can cause vibration in adjacent buildings.
* Lower speeds and volumes will see a reduction in crashes and their severity.	

**c. Horizontal displacement devices**

These refer to the horizontal realignment of the kerblines over a short length of road with an aim to eliminate long, wide straight sections of road. This is generally achieved by kerbside islands and or central islands. The carriageway within the control may have a different texture such as cobblestone paving. Vertical displacement may also coincide with horizontal deflection. Traffic flows can be restricted to one-way flow in the proximity of the device, with priority given to one direction and alternated by successive controls.

**i. ENTRY OR GATEWAY THRESHOLD TREATMENTS**

Thresholds physically narrow the road at or near the entrance to emphasise the road is local and enhance the residential nature of the area. They are similar to slow points as they narrow the roadway by extending the kerb or by introducing a central median island. Thresholds can be positioned on the street adjacent to the intersection or along the route to indicate the start of the treated area.

Raised threshold treatments are placed at the perimeter of a local area to inform road users that they are entering a slow speed environment (LATM scheme), and they can expect other devices in the area. Motorists should modify their speed and driving behaviour to compliment the local nature of the street. In the majority of cases, this device is the first LATM measure in the street encountered by a motorist.

Australian practice is to ensure that LOCAL TRAFFIC AREA signs are installed to impose a local area speed limit (40km/h) and to clearly define the boundary between the arterial and non-arterial roads.

<b>Advantages</b>	<b>Disadvantages</b>
* Traffic volumes may be reduced when used adjacent to an intersection as they discourage motorists to enter the street.	* Low speed turns from the arterial roads may affect traffic flow on the arterial roads.
* Some reduction of speed may be expected at the entrance to the special area.	* Will have little effect on the speeds along the route unless other measures installed.
* Better visibility between both motorist and pedestrian.	* Will have a minor impact on improving overall safety of the street.
* Provide a positive indication that a driver is leaving the arterial road system and entering a local area.	
* Provide a useful staging for pedestrians by reducing the width.	
* Provide a landscaping opportunity.	

ii. PARALLEL SLOW POINTS

Slow points are designed to provide a visual and physical break-up of the continuity of the street and to reduce vehicle speeds. They are usually formed by mid-block kerb extensions and designed to create a carriageway reduction equivalent to two vehicles parked on opposite sides of the street. Traffic travels through the control parallel to the centreline or kerbline. The more controls along the road the more likely there is a reduction in traffic. In some cases, a central median island may also be included to separate opposing traffic.

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>* Can reduce volumes as they force drivers to travel more slowly.</li> <li>* Lower speeds and volumes will see a reduction in crashes and their severity.</li> <li>* Can be used to create parking bays.</li> <li>* Can visually enhance the street through landscaping.</li> <li>* Make pedestrian crossing points more visible to motorists.</li> </ul>	<ul style="list-style-type: none"> <li>* If one-way flows are employed then they can increase congestion and travel time.</li> <li>* Increase in noise due to braking and accelerating actions when negotiating the control.</li> <li>* Loss of on-street parking and restricted access to nearby properties can be expected and may require redesign and relocation of driveways.</li> <li>* May make it difficult to accommodate full bicycle lanes.</li> </ul>

(1) One lane parallel slow points

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>* Reduces speed near the device or if used in a series it reduces the overall speed.</li> <li>* Discourages through traffic.</li> <li>* Imposes minimal inconvenience to local residents.</li> <li>* Increases pedestrian safety.</li> <li>* Provides landscaping.</li> </ul>	<ul style="list-style-type: none"> <li>* Landscaping needs to be maintained so as to not block motorists visibility.</li> <li>* May be an increase in noise.</li> <li>* Can be hazardous for vehicular traffic and cyclists if not designed correctly.</li> <li>* Confrontation between opposing drivers arriving simultaneously could create problems.</li> </ul>

(2) Two lane parallel slow points

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>* Causes only minor inconvenience to local users.</li> <li>* Regulates parking and serves to protect parked vehicles.</li> <li>* May be used to produce landscaping schemes.</li> </ul>	<ul style="list-style-type: none"> <li>* Not very effective in reducing speeds or as a visual obstruction.</li> </ul>

iii. ANGLED SLOW POINTS OR CHICANES

Angled slow points or chicanes consist of kerb islands or kerb extensions protruding into the road leaving a gap that is angled to the centreline. If two way flow is permitted, a central median island must be included to separate opposing traffic. This will also provide greater visual restriction as well as providing a form of pedestrian refuge.

These controls are the most difficult to locate without adversely affecting drainage and frontages due to their length. They also reduce the amount of on street parking.

<b>Advantages:</b>	<b>Disadvantages:</b>
<ul style="list-style-type: none"> <li>* Dual purpose - one to reduce speeds, second to deter through traffic.</li> <li>* Ideal location for pedestrians to cross.</li> <li>* Scope for improving the street environment, may offset the disadvantages to residents who have the controls adjacent to their property.</li> <li>* Landscaping helps emphasise the control and create a more restrictive environment.</li> <li>* Recommended on streets that have low traffic volumes otherwise congestion may occur or increase.</li> </ul>	<ul style="list-style-type: none"> <li>* Need careful designing if pedestrians are crossing so that the priority between motorist and pedestrians is not confused.</li> <li>* Planting of shrubs should be carefully planned to avoid restricting visibility.</li> <li>* May restrict emergency vehicles and buses.</li> <li>* Can provide challenges for some motorists who seek to travel through them at speed.</li> </ul>

(1) One lane angled slow points

<b>Advantages</b>	<b>Disadvantages</b>
* Reduces speed near the device or if used in a series it reduces the overall speed.	* Landscaping needs to be maintained so as to not block motorists visibility.
* Discourages through traffic.	* May be an increase in noise.
* Increases pedestrian safety.	* Can be hazardous for vehicular traffic and cyclists if not designed correctly.
* Provides landscaping.	* Confrontation between opposing drivers arriving simultaneously could create problems.

(2) Two lane angled slow points

<b>Advantages</b>	<b>Disadvantages</b>
* Causes only minor inconvenience to local users.	* Not very effective in reducing speeds or as a visual obstruction.
* May be used to produce landscaping schemes.	

iv. LANE NARROWING

Motorists tend to drive more slowly on narrower roads and traffic lanes because they feel they are being constricted, and believe that they do not have sufficient lateral room to pass other vehicles or travel in their only lane at higher speeds. The extra space created by road narrowing is generally used to provide some combination of widened footpaths, parking that is protected by kerbs and made more attractive with planting, and dedicated cycleways. Narrowing from the centre of the road can be achieved through the use of painted or solid medians, edgelines and centrelines, pedestrian refuge islands or kerb extensions. Road narrowing improves the safety of pedestrians as a result of creating shorter distances to cross the road depending on the measures installed.

(1) Kerb Extensions

A kerb extension is a concrete island that is located on the side of the road.

<b>Advantages</b>	<b>Disadvantages</b>
* May visually enhance the street through landscaping.	* May require parking removal.
* Reduce the crossing distance for pedestrians.	
* May reduce vehicle speeds.	

(2) Solid Medians

A median is a concrete kerb or island that is located on the centreline of a road.

<b>Advantages</b>	<b>Disadvantages</b>
* Physically separate opposing traffic flows.	* May require parking removal.
* Prevents vehicles from passing other vehicles.	* May prohibit or restrict vehicle movement to and from driveways.
* May improve safety through access restrictions.	* May have a negative impact on emergency services because of access limitations.
* May visually enhance the street through landscaping.	
* Provide pedestrians with a place to pause while crossing opposing traffic flows.	
* May reduce vehicle speeds.	
* Physically reinforce turn prohibitions.	

(3) Pedestrian Refuge Islands

These operate in a similar fashion to solid medians.

<b>Advantages</b>	<b>Disadvantages</b>
* Physically separate opposing traffic flows.	* Onus is on the pedestrian to select a safe gap in the traffic flow in order to cross.
* Provide pedestrians with a place to pause while crossing opposing traffic flows.	* May have a negative impact on emergency services because of access limitations if placed poorly.
* Can be used at intervals along a flush median to ensure that the median is not used as an additional lane by motorists or for overtaking.	
* A series of refuge islands ensures that pedestrians who choose to cross between the refuge locations benefit from the 'shadow effect' of the refuges.	

(4) Edgelines

Edgelines are the markings to clearly define the left hand side of the traffic lane.

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>* Separate opposing traffic flows.</li> <li>* Reduce the crossing distance for pedestrians.</li> <li>* May reduce vehicle speeds.</li> <li>* Clearly define kerbside parking areas.</li> </ul>	<ul style="list-style-type: none"> <li>* Limited at reducing vehicle speeds if used without other measures.</li> </ul>

(5) Flush Medians

Flush medians are white diagonal lines painted along the centre of some roads along the majority of its length.

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>* Separate opposing traffic lanes</li> <li>* Provide pedestrians with a place to pause while crossing opposing traffic flows.</li> <li>* Provide a refuge for traffic turning into and out of sideroads or driveways.</li> </ul>	<ul style="list-style-type: none"> <li>* Can be used incorrectly as passing lanes.</li> </ul>

(6) Centrelines

Centrelines are the markings to identify the right hand side of the traffic lane and are typically marked along the centre of the road. They may be white or yellow and supplemented with Reflective Raised Pavement Markers (RRPMs).

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>* Separate opposing traffic lanes</li> <li>* May reduce vehicle speeds.</li> </ul>	<ul style="list-style-type: none"> <li>* Limited at reducing vehicle speeds if used without other measures.</li> </ul>

v. DRIVEWAY LINKS

This is an extended form of a single lane mid-block slow point often extending for at least two to three residential frontages. Driveway links provide an even greater visual and physical break-up of the continuity of the street as well as providing a greater potential for landscaping. Passing points may be required along the link if it is either of excessive length, or curved so that approaching drivers cannot see to the far end.

<b>Advantages</b>	<b>Disadvantages</b>
* Reduces speed near the device.	* May restrict emergency vehicles.
* Provide greater visual obstruction than slow points.	* Residents may have increase in maintenance.
* Discourages through traffic.	* High cost involved.
* Increases pedestrian safety.	* Best done when street is due for reconstruction.
* Can provide opportunity for landscaping.	* Reduces on-street parking.

vi. ROUNDABOUTS

Roundabouts visually define an intersection at the same time as reducing speeds and simplifying the allocation of priorities. The central island indicates to the approaching motorist of the need to reduce speed while the circular central island forces a reduction in speed when travelling through the intersection. The central island can provide the opportunity for planting which can enhance the environment.

<b>Advantages</b>	<b>Disadvantages</b>
* Reduces the number of conflict points in an intersection.	* May be restrictive for some larger service and emergency vehicles unless the roundabout is mountable.
* Reduces vehicle speeds through the intersection.	* May involve considerable construction costs especially if land needs to be acquired.
* Provides orderly and continuous flow of traffic.	* May increase noise due to gear changing.
* Increases visibility of the intersection.	* Can be difficult to accommodate pedestrian movements where there are higher traffic volumes.

vii. ROAD CLOSURES

These are usually used to inhibit or prevent the use of some streets by through traffic. They may also be used to eliminate or modify intersections that have a crash history or where other treatments are not practicable or appropriate. Types of road closures include :

- a) *Partial closure* - access across the closure is restricted both by kerb arrangement and regulatory control to one direction only.
- b) *Diagonal closure* - diagonal barrier is placed across a cross-intersection, converting it into two separate curved streets with intersection conflicts eliminated at that point.
- c) *Full closure* - a street with access at both ends is converted into a cul-de-sac.

<b>Advantages</b>	<b>Disadvantages</b>
* Eliminates or restricts through traffic dependent on type of closure.	* May inconvenience residents in gaining access to their properties.
* Provides landscaping opportunities.	* Can shift traffic volumes to adjacent streets.
* Reduces conflict points if used at an intersection.	* May restrict access by emergency vehicles.
* Increases pedestrian safety.	

viii. SHARED ZONES

These are generally constructed in areas where there are competing demands of pedestrians, moving vehicles and parking e.g. areas of high commercial activity, medium to high-density residential areas or recreational areas (lightly trafficked areas). They provide for maintaining complete pedestrian mobility whilst at the same time enhancing pedestrian safety. A speed limit of 10km/h is considered appropriate in shared zones. Due to the high cost involved, shared zones are normally developed when major pavement reconstruction is being undertaken. In new subdivisions, shared zones can be provided as part of the subdivision as costs would not be much higher.

The important requirement in shared zone design is to alter the environment to make it significantly different from other streets. This can be achieved by the use of different coloured and/or textured paving, by the use of full width flush paving between property lines and by aesthetic placement of planters and/or landscaping.

<b>Advantages</b>	<b>Disadvantages</b>
* Provides a low speed environment which is safer for pedestrians and cyclists.	* High cost due to removal of kerbs & modifications of surface drainage and repaving etc.
* Can improve amenity without affecting access.	
* Provides for flexibility of parking layouts.	

ix. CHANNELISATION

Channelisation is the use of road markings, raised kerbs, traffic islands or bollards to guide motorists along a specific path on the approach to and exit from an intersection. These measures are used where there is the need to clearly define priorities or where alternative treatments (e.g. a roundabout) are not appropriate,

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"><li>* Reduces vehicle speeds in the vicinity of the device.</li><li>* Lowers vehicle speeds along the length of the street when placed in series with other measures.</li><li>* May discourage through traffic.</li><li>* May be used to reinforce changes in priority resulting from alterations to signs.</li></ul>	<ul style="list-style-type: none"><li>* Can be hazardous for vehicular traffic and may cause confusion regarding intersection priority if not correctly designed.</li><li>* Can add to congestion.</li></ul>



## **PART TWO**

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### **5. PROCESSING REQUESTS**

The ten key questions that need to be addressed in processing a Local Area Traffic Management request are :

- 1 Is there an accident history in the street?
- 2 Is there a speeding problem in the street?
- 3 Are there problems with the type of traffic using the street or area e.g. heavy vehicles or industrial traffic in a residential street, the street being used as a short cut by non-local traffic?
- 4 Why do residents want traffic calming?
- 5 Is the installation of a LATM measure or scheme an appropriate solution?
- 6 Is the proposed solution supported by the local residents and other affected parties such as the police, emergency services, public transport operators and utility service providers?
- 7 Is the scheme technically feasible?
- 8 Does the scheme stack up against other similar schemes vying for limited budgets?
- 9 Will the establishment of features or devices implemented result in an acceptable level of service for both traffic and residents and be consistent with the road hierarchy?
- 10 Is the road due for reconstruction or kerb and channel replacement anyway?

With each request it is important that each request be evaluated on a fair and consistent basis taking into account both the road users and the affected community. A key consideration is what is the most cost effective solution to address any issues that may exist.

## 6. Procedures for LATM Requests

### a. Stage A – Initial phase

#### i. STEP 1 - INITIAL REQUEST AND ASSESSMENT

**Aim** *To assess the merits of a formal request and to determine whether a LATM treatment is the appropriate solution.*

The need for a LATM scheme generally arises from a request by a resident or residents of a street or area where they perceive that the traffic characteristics of their street or area (i.e. accident history, speed, volumes) are making the neighbourhood a less pleasant or less safe place to live. Such requests can be received by Council from a resident or residents' group, or through submissions at Community Board meetings or the Annual Plan process. While many of the requests come from residents, there will be times when Council identifies the need for LATM measures in a street or area in order to reduce potential problems in the future.

Council's Rooding Network Manager will carry out an initial assessment by considering accident statistics, speed and volume counts and undertaking a site inspection, when the problem is described at its worst, to determine whether :

- a) safety improvements can be made to address the problem, and
- b) the topography and traffic characteristics of the street are suited for LATM measures.







The initial assessment is necessary to determine the necessary course of action to be taken by Council and will provide one of the following outcomes :

1. If the initial assessment shows little or no merit for the proposal and no localised safety problem exists, the applicant (and/or residents affected) will be informed accordingly that no further action will take place.
2. If the initial assessment identifies a site specific safety problem, Council will address the problem in the most cost effective manner through its minor safety works programme and the applicant (and affected residents) will be notified accordingly.
3. If the initial assessment indicates that there is a problem that could be addressed by installing LATM measures, Council will then seek support from the residents.
  - (a) If there is little support from the community, no further action will be taken and the applicant (and affected residents) will be notified accordingly.
  - (b) If there is the required support from the community, Council will then undertake further investigation in association with the community.

(1) INITIAL  
ASSESSMENT  
CRITERIA

Certain minimum values for margins above the speed limit, peak hour traffic volumes, and length of street or section under construction, etc have been established to assist in preparing proposals for the installation of traffic calming measures.

The street or area **must** :

-  not be part of the primary road network as designated in the Manukau City Council District Plan.
-  be within a gazetted speed zone of 50km/h or less.
-  ideally have adjacent arterial or collector routes to absorb diverted traffic.
-  carry more than 600 vehicles per day with peak hour volumes of at least 60 vehicles per hour.
-  have a recorded accident history over a five year period of the type that could be addressed by the physical measures considered for implementation.
-  have a known speeding problem (15% of vehicles, or 85th percentile level, are travelling over 60km/h).

Notes

1. Use available volume and speed count data if less than 2 years old and no significant traffic generators have been created, otherwise volume and speed count to be undertaken. The count site is to be that where speeds are considered to be the worst.
2. When requests re-occur for the same street/area, reassessment of the initial criteria and benefit value needs to be undertaken when ;
  - the request is over 2 years from the first assessment, or
  - a significant new traffic generator has been created e.g. a new development or subdivision.
3. Accidents at intersections (particularly collector/arterial) at either end of the section being investigated are not to be included. Only those within the street are to be included.

ii. STEP 2 – COMMUNITY SUPPORT

***Aim*** *To assess whether a potential LATM scheme has the necessary community support to proceed further.*

For a scheme to be successful from this point forward, it must have the community's support. In order to achieve this, it is necessary that 60% of all properties in the affected area or street have responded and of these, 85% are in favour in order for the full technical assessment as described in the following section is to be undertaken. If this level of community support can not be achieved, then no further major work will be undertaken.

If the level of community support is achieved, a leaflet outlining the advantages and disadvantages of LATM will be sent out to each of the affected residents. The leaflet will include a form that is to be completed by affected residents and which should include specific concerns before being returned to Council within the timeframe specified.

If the level of support for LATM measures meets the criteria identified above, Council's Road Network Managers will carry out a more detailed assessment of a LATM scheme. If however, the level of support is below that required to proceed further, the residents will be informed accordingly and no further investigation will occur.

## **b. STAGE B - The Study Phase**

### **i. STEP 3 - TECHNICAL ASSESSMENT**

**Aim** *To undertake a technical assessment of the merits of the proposed LATM scheme, to ensure that the scheme is technically feasible and to determine the type and extent of treatment required.*

The technical assessment is to be undertaken by Council's Road Network Manager and carried out in the following broad areas :

- Define study area
- Identify traffic and environmental problems
- Set objectives
- Data collection
- Develop suitable strategies
- Performance measurement.

The data required for the assessment includes:

- Crash history
- Traffic volumes
- Speed profiles
- 85th percentile speeds
- Traffic composition data
- On-street parking behaviour
- Traffic generation from adjacent developments
- Existing travel/delay times on the network
- Pedestrian and cyclist counts if expected with land use type
- Bus routes
- Streetlighting
- Emergency vehicle routes
- Measures of geographical groupings, e.g. schools, shops
- Age distribution (from census data)

This data is important to determine the severity of the problem before developing a solution and later evaluation of the scheme implemented. (Before and after studies).

ii. STEP 4 - DEVELOPING STRATEGIES

**Aim** *To develop strategies for addressing operational problems identified during the technical assessment.*

Once data has been collected it is necessary to develop suitable strategies, or a combination of, which may be grouped under four main headings.

- 1 Traffic safety strategies.
- 2 Traffic volume strategies.
- 3 Driver behaviour strategies.
- 4 Non-traffic strategies.

**Reactive approach :** Investigating schemes if requests are received from residents etc.

**Pro-active approach :** Identify potential areas that would benefit from these schemes and programmes prior to requests received. There is a need to look at LATM measures associated with new developments or subdivisions which have more than a minor traffic impact.

**Four types of strategies to develop:**

- 1 Traffic Safety**
  - Reduce conflicts at intersections.
  - Reduce relative speeds between different road users.
  - Reduce non-intersection conflicts, i.e., vehicle-vehicle.
  - Relate pedestrian and vehicle networks to the function of the local area e.g. school, shops.
  - Improve safety on adjacent arterial roads.
- 2 Traffic Volume and Traffic Type**
  - Minimise total travel time.
  - Reduce the volume of through traffic.
  - Eliminate or reduce heavy vehicles.
  - Improve where possible the traffic operation on surrounding arterials.
- 3 Driver Behaviour**
  - Improve driver discipline.
  - Reduce speeds (at points or along routes).
  - Increase driver awareness.
  - Create shared area and streets (shared zones - traffic and pedestrians).
- 4 Non-Traffic**
  - Reduce the area of road pavement.
  - Improve the streetscape (e.g. lighting and landscaping).
  - Provide pedestrian/cycle paths.

When developing any strategy it is important not to overstate any one element without taking into account all other above considerations.

In terms of the problem of traffic displacement, when considering that significant volumes or traffic movements will be transferred to the primary road network, care is to be taken that this will not generate safety or capacity problems. The cost of any remedial works required to resolve displacement problems on the primary road network should be allowed for in the LATM project budget. In some cases waiting for main road improvements to be implemented first before carrying out any LATM measures is appropriate.

iii. STEP 5 - LATM PRIORITISING (Acceptance Ranking)

**Aim** *To provide a formal and consistent basis to determine whether the proposed solution meets the specified technical criteria and to report the findings to the Community Board.*

A ranking procedure is required so LATM schemes can be assessed in a consistent manner and to ensure that those with the greatest public benefit are undertaken first.

The results of the investigations should be categorised and ranked depending on their severity and/or benefits and a "Ranking Value" calculated.

Each factor will be ranked with the most desirable features given the highest grade and the less desirable features at the lower end of the scale. The ranking will give a total known as a "Ranking Total". The request with the highest "Ranking Total" will appear at the top of the LATM Priority Listing. The "Ranking Total" is calculated using the formula below:

**Ranking Total = Sum of the factor values for each criterion**

The maximum potential factor values for each criterion are shown below :

Speeds	(6.2.3.1)	F= 25	
Crashes	(6.2.3.2)	F= 20	
Volumes	(6.2.3.3)	F= 15	
Through Traffic	(6.2.3.4)	F= 10	
Passenger Transport/Heavy Vehicles	(6.2.3.5)	F= 10	F= 10
Development Rating	(6.2.3.6)	F= 10	
Vulnerable Age Group	(6.2.3.7)	F= 10	

**Total Possible Ranking R=100**

*Ranking Total Greater Than 65*

- Indicates that LATM measures will provide significant improvements in terms of safety and amenity
- Listed as a HIGH PRIORITY project in LATM Priority Listing
- A draft proposal should be developed and an estimate prepared for budgeting purposes

*Ranking Total Between 50 and 65*

- Indicates that LATM measures will provide some improvements in terms of safety and amenity
- Listed as a MEDIUM PRIORITY project in LATM Priority Listing

- Proposal reassessed within 5 years

**Ranking Total Less Than 50**

- Indicates that LATM measures are unlikely to provide any marked improvements in terms of safety and amenity
- Listed as a LOW PRIORITY project in LATM Priority Listing
- Proposal reassessed within 10 years

**(1) Vehicle Speeds**

Roads to be treated must have a regulatory speed of 50km/h or less, with the 85th percentile speed measured at greater than 60km/h. Roads that have 85th percentile speeds of less than 60km/h will be unlikely to benefit significantly from the introduction of LATM measures, although there will be some streets where 50km/h is at the upper level of acceptance in terms of safety.

Speed at 85th percentile	Factor Value
< 50	0
51 to 55	5
56 to 60	10
61 to 65	15
66 to 70	20
>70	25

**(2) Crashes**

The objective is to improve road safety by reducing the both the number and severity of crashes. The greatest benefit to the community is to treat locations where crashes are known to have occurred and a documented history of crashes of a type that could benefit from a LATM scheme is necessary. This information is available from the Land Transport Safety Authority crash database.

Crash details are required for the formulation and design of the appropriate treatment e.g. if motorists are losing control on a bend due to high speeds then LATM measures may be beneficial, however if the crashes are occurring at low speeds, then the road surface, lighting or signing may need improving.

Crashes (in last 5 years)	Factor Value
No known crashes	0
No reported crashes but recorded local knowledge of non-injury crashes	4
1 or 2 reported non-injury crashes	8
3 or more reported non-injury crashes or 1 reported injury crash	12
2 reported injury crashes	16
3 or more injury reported crashes or 1 or more fatal crashes	20

**(3) Traffic Volumes**

The street should not be a link between other important routes without alternative routes being available. If the street network does not provide alternative routes it is important to retain the link and a LATM scheme may not be appropriate. If the street however is considered to be carrying a high volume of traffic and alternative routes are available, then the street may benefit from LATM measures. This would generally be where the street is being used as a "rat run" to avoid congestion and delays on the major road.

Local residential streets should not be expected to carry significant volumes of traffic. It is generally accepted that the threshold seems to be 3,000 vehicles per day for residents and any increase in traffic volumes becomes noticeable to affected residents. With volumes less than 600 vehicles per day it is doubtful that the size of the problem will warrant any form of treatment other than low level measures such as signage and roadmarking.

<b>Volume (vehicles per day)</b>	<b>Factor Value</b>
<600	0
601-1200	3
1201-1800	6
1801-2400	9
2401-3000	12
>3000	15

(4) Through Traffic

Through traffic can make a significant additional load on a local road. An objective of traffic calming is to reduce the use of such streets for short cutting between network roads. This section enables an allowance to be determined.

For the purposes of calculating the typical total daily flows on local roads, each household unit will be deemed to generate on average 10 vehicle trips per household per day.

<b>Through Traffic</b>	<b>Factor Value</b>
<30%	0
31%-60%	2
61%-90%	4
91%-120%	6
121%-150%	8
>150%	10

(5) Public Transport/Heavy Vehicles

**Public Transport**

Schemes along bus routes may become uncomfortable to passengers and drivers especially if they travel over the route a number of times. If the route includes several streets with LATM devices installed this will increase the journey times and may make the economical timetable difficult to adhere to. The use of public transport should be encouraged at all times. While motorists can make decisions to take an alternative route if necessary, public transport cannot. Therefore LATM schemes on bus routes need to be carefully considered and vertical displacement controls are not generally appropriate.

**Heavy Vehicles**

The street in question should cater for a low volume of heavy and commercial vehicles. Local and collector roads provide access and servicing of abutting properties and are not designed to carry large quantities of heavy traffic. Commercial or heavy traffic should be encouraged to use arterial roads given it can create noise, fumes and vibration causing discomfort to residents. If heavy vehicle use is high and the street is used as a "rat run" then the LATM scheme will be beneficial.

LATM schemes may be appropriate where the street has two distinct sections, e.g. residential and industrial. In these cases a short cut may be used through the residential section to the industrial section and the solution would be to restrict the number of heavy vehicles using this route.

Heavy Vehicles in Residential Streets	Heavy Vehicles in Streets with Industry or Commercial Business	Factor Value
<2.5%	<10%	0
2.5%-5%	10%-20%	5
>5%	>20%	10

(6) Development Rating

This category allows a judgement to be made on the impact of the frontage development in terms of both traffic and pedestrian generation and attraction. The appropriate category representing the predominant development on the street is to be selected. However, some streets may have two or three clear categories in which case the factor value will be calculated using the percentage of frontage for each category multiplied by the category factor value from the table below e.g. street with 60% houses frontage and 40% school frontage will have a factor value of 5.2 (60% x 2 + 40% x 10).

Category	Factor Value
Land to be developed	0
Flats, houses, church, small hall	2
Small shop, large hall, cinema, business or office with less than 10 employees	4
General store, takeaway shop, bank, service station, business or office with 10 to 30 employees, hotel, restaurant	6
Large shop, post office, hospital, business or office with more than 30 employees, tertiary education establishment.	8
Schools/kindergarten/playground/active reserves	10

(7) Vulnerable Road Users

This category recognises those age groups most at risk in terms of safety and mobility on a ward basis. The comparison to determine the appropriate factor value arises for the following table.

Ward	Age Group	Percentage of population less than 10 years of age	Percentage of population more than 60 years of age	Percentage of population less than 10 years of age and more than 60 years of age
Clevedon		16.31	14.12	30.43
Howick		13.55	14.09	27.64
Pakuranga		12.43	16.00	28.43
Otara		23.36	7.80	31.16
Papatoetoe		17.33	14.64	31.97
Mangere		21.96	9.72	31.68
Manurewa		20.39	9.62	30.01
Manukau City		18.17	11.85	30.02

Percentage Population by Age Group and Ward (001 Census Data)

Category	Factor Value
If both % population under 10 and over 60 less than Manukau City average	0
If % population under 10 greater than Manukau City average but % population over 60 less than Manukau City average	5
If % population over 60 greater than Manukau City average but % population under 10 less than Manukau City average	5
If both % population under 10 and over 60 greater than Manukau City average	10

**c. Stage C - implementation phase**

i. STEP 6 - PRIORITY LISTING

**Aim** *To provide a listing of all suitable schemes in order of priority so that they can be compared on a citywide basis and the schemes that have the greatest public benefit are undertaken first.*

All schemes with a ranking greater than 50 will be included on the list of LATM projects in order of their "Ranking Total". The estimated cost and design of each scheme is not considered in the ranking process.

These rankings are to be reviewed each year by Council officers prior to being considered for funding. Each Community Board will be provided with a list of recommended schemes within their particular ward(s). The Community Board may change the order of priority of each scheme in their ward as they consider appropriate. These priorities will then be taken into account when putting forward schemes for consideration against competing projects identified in other areas.

**NB:** The inclusion of a scheme on the list of LATM projects **does not** guarantee that the project will be allocated a budget in any particular year. Whether any scheme proceeds is dependant on its cost, its benefit value and the level of funding available in the annual budget.

Implementation may be looked at in three ways ;

- 1) Trial or temporary schemes
- 2) Staged implementation
- 3) Full implementation.

ii. STEP 7 – CONSULTATION AND DETAILED DESIGN

**Aim** *To carry out consultation in order to develop a detailed design for implementation.*

The schemes identified as having the highest priority on the list and within the funding limit will be nominated for implementation during that particular year. Each Community Board will be advised of such schemes. If the scheme is not successful in obtaining funding in the

minor safety works programme, it will remain on the priority list until funds are made available.

Those schemes that are successful will then proceed to the design stage. At this stage, it is important to involve residents, Police and other interested parties in order to develop a final design that is workable and acceptable. A number of consultation methods are available and one method that is suitable for one area or street may not be appropriate for another. It should be noted that the design stage will take some time due to the need to be proactive and to ensure that all affected residents have their say given that a large number are likely to be indifferent with the remainder falling into polarised groups. Design must also take into account maintenance requirements and the stormwater network.

The parties will work together to develop a LATM scheme that accommodates the necessary objectives sought of the scheme.

iii. STEP 8 - SAFETY AUDIT

**Aim** *To ensure the proposed scheme is safe for all road users.*

The LATM scheme developed is to be safety audited to ensure that anything that may create a safety problem for road users is addressed and to ensure that no aspects of safety have been omitted or overlooked e.g. ensuring that LATM measures are clearly visible by day and night or ensuring that proposed planting does not obscure visibility.

The level of safety audit required will be dependent upon the extent of the scheme. For an individual street, the safety audit can be undertaken by Council officers whereas for area wide schemes, the safety audit should be carried out by an independent party.

It may be such that the design requires some additional changes as a result of the safety audit. If so, any revised design must involve those involved in the consultation and design process.

iv. STEP 9 – REPORTING AND APPROVAL

**Aim** *To inform the Community Board of the final LATM scheme design developed from the consultation process.*

Once all consultation has been completed and the final design agreed upon, Council officers will report to the Community Board outlining :

- the scheme developed as a result of the consultation process,
- the residents' opinion of the proposal,
- potential problems that may result from the scheme's implementation given that the final outcome will generally be a compromise,
- any recommendations on the appropriate course of action, and
- ongoing operational and maintenance costs after the scheme is implemented.

Residents will be forwarded copies of the final plans and invited to attend the Community Board meeting at which the final design will be presented.

It should be noted that citywide measures will be reported to a standing Committee of Council and to each of the Community Boards for information.

v. STEP 10 - PROJECT IMPLEMENTATION

**Aim** *To implement the agreed LATM scheme.*

Once the Community Board or Committee has approved the LATM scheme in accordance with their delegated authority, the scheme can be implemented.

Adequate advice of the LATM scheme and its impacts on both local and through traffic is necessary prior to implementation of the scheme. This will avoid any surprises for residents and motorists at the construction stage.

vi. STEP 11 - EVALUATION

**Aim** *To ensure the works have been implemented successfully and to analyse the project so the results can be utilised in future works.*

The performance of the scheme should be evaluated after the traffic network has settled down and when meaningful results can be obtained. A general guide is shown below:

Speed surveys - 3-6 months after implementation  
Diversion effects - 3-6 months after implementation  
Crash analysis - 12 months & 24 months after implementation  
Public acceptance - 12 months after implementation.

The scheme should be fully evaluated at least 12 months after implementation to see if it has been successful and the initial objectives met. Crash records should be analysed and the latest traffic speeds and volumes measured along with 85th percentile speeds in order to compare any changes.

Consultation with the residents on their perspective of the scheme should be carried out. If the schemes original objectives or set criteria have not been met, further investigation should be carried out. Feedback to residents, residents' spokesperson and the Community Board should be undertaken at least 12 months after implementation.

## **7. Summary**

Works associated with Local Area Traffic Management Schemes may be implemented providing there is a need for them and the procedures and criteria discussed above are met. Proper planning and evaluation of LATM schemes require the application of engineering expertise and judgement.

Projects shall be implemented on a ranking basis (Ranking Total) and will be dependent on funding available. This ranking system will give highest priority to those schemes showing the greatest benefit to the community. Ranking should be reassessed on a regular basis and preferably at the same time as the Annual Plan budgeting process.

The physical design guidelines as discussed above may be used to show the application of the various devices available and these may be used in a series or in a combination to develop wider objectives along the total length of the street.

The evaluation process is important as it will identify any problems with the LATM measures implemented. It can also provide a basis for future schemes in that it will identify which measures or schemes provide the greatest benefit value to the community.



## **8. Bibliography**

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Transport South Australia, Residential Street Management Manual, May 1987





# APPENDIX A

## TRAFFIC CONSTRAINTS POLICY (1998)





Te Kaunihera o  
**MANUKAU**  
City Council

## TRAFFIC CONSTRAINTS POLICY

- (i) The proposed device should not be located on an arterial road.
- (ii) Council will not initiate a site assessment until requested by the local Community Board, which is satisfied that there is substantial support from affected property owners on the street and that there will be a clear benefit to the community from such works.

Unless special circumstances apply, traffic constraints will be installed only after at least 75% of affected property owners agree, having been informed of potential adverse effects, the use of warnings signs, pavement markings and restricted parking.

- (iii) At least 15% of traffic is exceeding 60km/hr in instances where speed has been identified as an issue.
- (iv) Traffic constraints should be located an appropriate distance (generally 100m) from traffic controls, to avoid potential safety problems.
- (v) The proposed device should not be located where adverse characteristics of the site (ie steep grades or sharp corners) may create a safety hazard.
- (vi) The proposed device should not lead to adverse effects on communities and the environment from diverted traffic.
- (vii) The proposed device should not be located on a bus route. Where significant traffic safety considerations require that traffic constraints be implemented on a bus route, special regard must be given to an appropriate design, location and any effects on communities and the environment.
- (viii) The proposed device should be safely constructed within the following minimum requirements:
  - a) A minimum of two devices must be installed.
  - b) Where appropriate, the devices should be no more than 80 metres apart.

- c) The design and location of the device must provide motorists with adequate lighting and visibility of the device and of any vehicle movements within the vicinity of the device.
- d) The device must not impede the visibility or access needs of vulnerable users, such as pedestrians, cyclists or people using mobility scooters.
- e) The device should, where practicable, be harmonious with local features.
- f) Appropriate parking controls should be installed with the device.
- g) Appropriate signage should provide adequate warning of the device to motorists.
- h) The following maintenance issues should be addressed:
  - (i) Surfaces should be easily maintainable and constructed to Council standards.
  - (ii) Overland flowpaths should not be impeded and the stormwater network should not be disrupted by the device.
  - (iii) Any plantings must not obstruct motorist visibility and should be of a Council approved species.
  - (iv) Utility services (power, water, sewerage, communications, etc.) should not be unduly affected by the construction or location of the device, and should continue to be able to access their network infrastructure.



# APPENDIX B

## FLOWCHART OF PROCEDURES



