WESTERN SYDNEY REGIONAL ORGANISATION OF COUNCILS

NEIGHBOURHOOD ROAD SAFETY AND AMENITY

A look at barriers to the Implementation of
Local Area Traffic Management Schemes
and Strategies to overcome these

September 1990

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DISCLAIMER

The views expressed and recommendations made in this study are those of the consultants and not necessarily those of the Western Sydney Regional Organisation of Councils (WSROC), the Federal Office of Road Safety, Department of Transport and Communications and the Roads and Traffic Authority of New South Wales.

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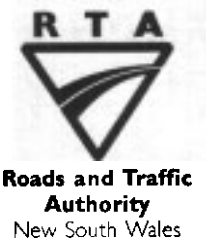
ISBN: 1 862 71 152 6
October, 1990

This project has been funded by the Federal Office of Road Safety, Department of Transport and Communications and the Roads and Traffic Authority of New South Wales.



EXECUTIVE SUMMARY

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Background

The project had two aims:

- to provide an information base on attitudes and other barriers to the implementation of speed control and LATM schemes in Western Sydney which the office of Road Safety and other authorities can use in promoting such schemes;
- to disseminate information on relevant research relating to speed control and LATM Schemes to elected local representatives within Western Sydney and to technical staff.

The following objectives directed the study:

- to identify the present experience of councils in Western Sydney with speed control devices and LATM Schemes;
- to identify political, technical, attitudinal and resource problems councils are faced with in implementing speed control and LATM Schemes; and
- to develop strategies targeted at overcoming these particular problems of implementation.

The approach to the project involved three main tasks, these being; gathering information from Council practitioners in the WSROC region Councils to determine the extent and nature of LATM scheme implementation, a questionnaire survey of all elected representatives of the WSROC Councils to determine the attitudes to and level of knowledge about LATM and a select literature review to place local experience into a broader perspective of experience in LATM in Australia and overseas.

Opinions and policy statements were sought from the RTA – both in the Western Region and Head Office, the Police Headquarters, the Department of Local Government and the Department of Transport.

FINDINGS OF THE PRACTIONER INTERVIEWS

- **No Large Area Schemes fully Implemented**

Most of the experience with scheme implementation in the WSROC region has been with the implementation of street-based schemes or precinct schemes rather than area-wide schemes. To a great degree this has reflected the *ad hoc* response to resident complaints about traffic speed and intrusion along particular routes.

- **Majority of Councils have Devices on the Ground**

Five WSROC Councils have implemented devices either within the context of street or precinct schemes, or partially implemented larger area schemes.

Four Councils have no LATM schemes implemented, however two of these have plans to do so at this stage. One Council has undertaken two studies, and implementation is to begin in 1990, and another is presently undertaking a study.

- **Little Monitoring of Success/Failure of Devices or Schemes**

Very little technical monitoring has been undertaken of implemented schemes, and Councils have tended to gauge the success of schemes by the resident response. This has therefore led to an undocumented experience pattern, which relies on practitioners' personal assessment on the success or failure of schemes.

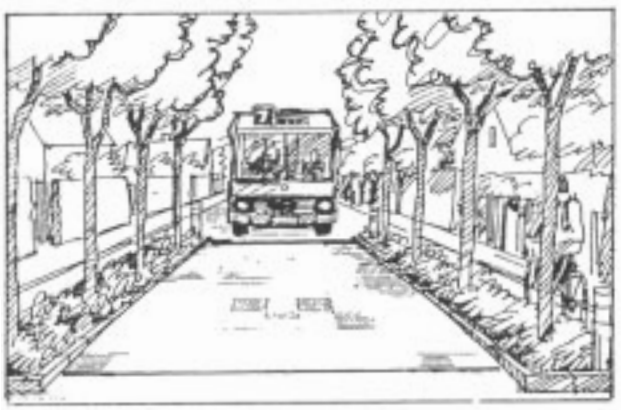
- **Some Failings with the Planning Process**

There would appear to have been significent failings in the planning process of some LATM schemes particularly in relation to the definition of an appropriate study area, secondly in defining the problems closely with residents and thirdly in setting realistic objectives. Where all three have occurred, the schemes have resulted in severe resident unrest and device removal.

- **Public Consultation**

There is no favoured method of public consultation in the WSROC region. Unsuccessful public consultation has caused devices to be removed in two Councils. It is clear that too much consultation with the community cannot do any harm, too little, however can cause total abandonment of a scheme.

All practitioners are aware of the importance of consultation, but some are not sure of the appropriate methodologies to adopt.



- **Private Bus Operators**

The resistance from some bus companies to device implementation on bus routes is a serious barrier in some local government areas, but not in others.

Council practitioners and Department of Transport regional officers require more data on bus performance over devices to liaise with bus operators from an informed basis.

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- **Funding**

Practitioners perceive that the principal barrier to speedier implementation of schemes is funding at this stage and the need to balance LATM funding against other priority works.

- **Materials for Practioners**

Practitioners agreed that a manual of experience with devices in the Sydney metropolitan area would be of greatest assistance to them in planning schemes.

A video and large mounted photographs of devices were established as materials which would assist them in communicating with elected representatives and residents about LATM schemes in general and specific devices in particular.

FINDINGS OF THE ELECTED MEMBERS' SURVEY

- **Understanding of the Meaning of LATM**

The survey revealed important gaps in the understanding of the purpose and nature of LATM schemes as set out in the State Government Guidelines. About half of the members did not appreciate that LATM is an areal concept, and only a minority understood that it can be used to significantly benefit the safety and general lifestyle of residents. There was only minority understanding that physical devices must be used.

LATM schemes are clearly viewed within the framework of traffic control and decrease in accident rates rather than the broader framework of residential life style, amenity or environment. There was no mention, for example, of the potential in the decrease in traffic noise and localised air pollution.

- **Understanding of the alternatives of devices and signs**

There is a good understanding of the operational differences between signage (40km/hr zones, one way streets) and physical devices.

- **Awareness of LATM Schemes in other Council Areas**

About half of the members had viewed LATM schemes/devices in other Council areas. However most members had not visited LATM schemes in their neighbouring WSROC Council areas.

- **Support for Traffic Management Devices**

There was majority support (86%) for the implementation of LATM devices in their own Council area. The main reason given for supporting device implementation was to increase safety.

- **Most Successful Devices**

The roundabout was voted as the most successful device because it managed the flow of traffic, and slowed down vehicles.

The second most successful device was the raised platform or raised threshold because it slowed vehicles, was visible and could be used in conjunction with pedestrian crossings.

- **The Least Successful Devices/Treatments**

The 40km/hr speed zone was rated the least successful due to the fact that it relies on enforcement.

Speedhumps were rated second least successful due to the potential damage they can cause to a vehicle and the noise which is generated by the car crossing over the device. There was a misconception here that a LATM scheme would permit vehicles to be travelling at such a speed that they would enter the device too fast for their own safety.

- **The Overall Rating of Traffic in Residential Streets as a Problem**

Drainage works scored as the most outstanding issue which councils have to confront over the next five years in the WSROC area. Garbage collection/waste management scored the second overall priority followed by 'traffic in residential streets'. If an assumption on expenditure priorities is made on the responses to this survey, traffic management would score third place in the WSROC region.

- **Funding**

A minority (14%) of elected members saw funding as a constraint to LATM implementation.

- **Additional Materials/Implementation Required**

The majority (70%) of members indicated that additional information about LATM would be welcomed.

In order of usefulness, members rated a video on LATM most highly, followed by organised trips to LATM schemes, and thirdly an illustrated brochure.

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THE ROLE OF STATE DEPARTMENTS/ AUTHORITIES AND OTHER INTERESTS

Councils are responsible for the management of traffic on their roads and streets. LATM Scheme implementation is therefore the responsibility of Local Councils. The Local Traffic Committee of which the Police and Roads and Traffic Authority have representative members, endorses LATM scheme proposals. The Police and RTA members can raise formal objections by appealing to the Independant Chairman of the Regional Traffic Committees; no appeals have been lodged to date in the region. Contributions under Section 94 of the *Environmental Planning and Assessment Act 1979* have been used only in one Council area to date to implement devices in areas of medium density redevelopment.

Funding of LATM Schemes is the responsibility of Councils.

- **The Roads and Traffic Authority (RTA)**

The RTA Sydney Western Region covers the WSROC area. Presently the RTA regions have delegated powers to deal with funding pertaining to devices which can assist in LATM schemes. These funding schemes are the 'Road Safety Traffic Flow Programme' and the 'Blackspot Programme' which are directed at solutions at accident-prone locations.

The RTA charter addresses the decrease of accidents on all roads and funds are available for device implementation if Councils can indicate a high Benefit/Cost Ratio rate of return based on accident statistics. While these funds cannot fund a total LATM scheme, they can assist to pay for a device/devices at accident prone locations on Council streets.

- **Department of Transport**

The private bus route licencing function is now vested with the Department of Transport. The Western Metropolitan Regional Office is located in Liverpool. The Department of Transport operations staff negotiate with Council and private bus operators on the subject of routes and traffic management along routes. Presently there is little background data available to these officers and bus operators on the performance of buses over LATM devices. Draft Guidelines have been prepared, but have not yet been released. This is causing some serious delays to LATM scheme implementation in some Council areas where bus operators are opposed to LATM devices.

- **The Police Department**

The role of the Police is directed essentially at enforcement. Where 40km/hr zones or one way streets are implemented, Councils may approach the Police to enforce this traffic management. Human resources are not available to police all traffic management measures of this kind, and this is the reason why LATM device implementation, which is self enforcing, is the only available means to address traffic management problems in local streets.

The LATM Guidelines were developed with the co-operation and representation of the Police and are supported in principle by the Police Department.

THE LITERATURE BACKGROUND

Towards the end of the 1980s the concept of Local Area Traffic Management has become well established and well known in traffic planning circles as a result of documentation at professional conferences and engineering seminars. The influence of increasing needs of safety and amenity has influenced the design of residential subdivisions which are tending toward narrower streets, no four-way intersections and a minimum of long collector streets which encourage speeding.

- **Low Awareness of Safety as an Issue by the Community at Large**

Research in Sydney has indicated that there has been low awareness by the community in the 1980s that residential streets could be safer than they are presently. However the awareness is increasing steadily as state Road Safety Campaigns on speed, Police speed blitzes and the knowledge about the benefits of LATM devices grows.

- **LATM Devices increase Safety in Local Areas**

During the 1980s systematic state monitoring in NSW, Victoria and S.A. proved conclusively that LATM devices do reduce speeds, volumes and accidents, and are most effective in relation to speed control. Further work does not need to be undertaken in this area.

- **Methods of Resident Consultation still being Refined**

Resident satisfaction with LATM schemes has been patchy depending on factors such as:

- **whether the perpetrators of the through-traffic problem or speeding problems were surveyed,**
- whether the problems were clearly defined, at the planning stage,
- whether the objectives of the scheme were inappropriate or too ambitious for the modest treatments proposed.

The resident participation/consultation methods are the challenge of the 1990s.

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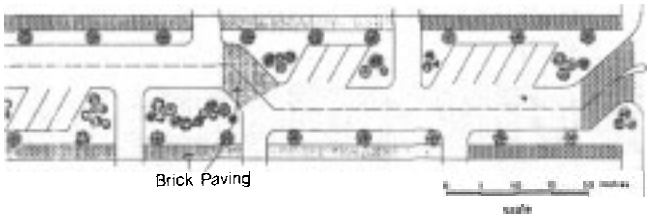
- **Little Understanding of Aesthetics**

Little documentation exists about the aesthetics of devices and the design principles which should govern LATM area-wide schemes both from a perception and psychological perspective. However it has been proven through the study of resale valuation data that LATM increases property values and good design is valued even more in the market place.



- **Benefit Cost Analysis indicates High Returns**

The funding of schemes has been examined in a traditional benefit-cost analysis by a study in NSW which indicated that even peripheral treatment of an area by devices has a positive benefit/cost return if calculated on accident rates, property valuation data and traffic noise data.

- **European Experience**

European experience in the 1980s has centred around the increasing acceptance of a two-tiered residential street speed zone concept – the 15km/hr street and the 30km/hr residential zones. Main roads speed are also being lowered to 40km/hr in trials.

In West Germany, especially, there seems to be a wide-spread acceptance of the need to contain motor vehicle speeds and downgrading the catering to private vehicular needs while up-grading public transport, pedestrian and cycling trips.

In Denmark a laudable scheme of 'Safe Routes to Schools' is creating continuous safe pedestrian networks for school children systematically throughout the whole metropolitan area of one city of 170,000 people.

While problems exist in relation to devices along bus routes as in NSW, however unlike in NSW there has been more experimentation with device types and the implementation of devices designed for the specific configuration of the particular buses on a route.

There is a clear understanding that close consultation with the community is necessary in developing schemes so that they are acceptable to the client community.

There also appears to be a better understanding of the importance of aesthetics, although funding constrains universal redesigning of streetscapes in all cases.

IDENTIFIED BARRIERS TO LATM IN THE WSROC REGION

From the discussions with practitioners and elected members' survey there appear to be **five main barriers** to effective implementation of LATM in the WSROC region.

Barrier 1 – Poor Planning Methods

Experience with LATM implementation in the WSROC region has indicated that unsuccessful schemes have been the result of poor planning methodology which has constituted a barrier to the successful implementation of those schemes. The clear definition of problems, setting of realistic objectives and communication with a large and varied number of residents in the study area are essential.

Barrier 2 – Narrow View of LATM

LATM has been viewed from the narrow perspective of achieving traffic/safety objectives rather than the broader objectives relating to environmental, economic and social gains.

This has constituted a barrier to implementation, in that the narrower definition relating to traffic aims/objectives places LATM planning and funding within the preserve of the engineering departments of councils. In order to justify funding therefore, it is easier to address specific accident locations, rather than problem areas.

Elected members are overwhelmingly supportive of the implementation of traffic devices in their areas, and are likely to allocate funds on an annual basis if additional persuasive arguments were to take place at this time.

Barrier 3 – Lack of Educative Materials

It is believed that the WSROC member Council practitioners are generally still learning about LATM and any assistance in that learning process would be of value at this stage, and would remove one of the barriers to LATM in the region, i.e. the possible sensitivity to community criticism and subsequent hesitancy in undertaking such schemes. Practitioners have voted that a manual on LATM scheme devices in the Sydney region as the most valuable material to assist them in LATM scheme design.

By the production of a relevant video, the distribution of written materials available from the RTA and organising trips to well-researched existing LATM schemes, the lack of knowledge which presently constitutes a barrier to LATM among elected representatives could be redressed.

Barrier 4 – Lack of Local Government Area-wide LATM Strategies

The perception that there are limited funds available for LATM is a strong barrier against undertaking studies, and implementing

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recommended schemes. It is apparent that LATM will not be viewed as a serious commitment by Councils until annual budgets are established. These can only be established if Councils develop LATM strategies which include prioritised programmes of implementation of schemes across the LGA.

Barrier 5 – Impact of Outside Interests

Opposition from bus companies must be addressed by the Department of Transport at this stage. It is encumbent on Councils to communicate and cooperate with bus companies and the T.W.U. however total capitulation to individual operators is not warranted. The Department of Transport should release its 'Guidelines for LATM Devices Along Bus Routes' as quickly as possible to solve this problem which is a serious barrier to effective LATM implementation in some Local Government Areas.

RECOMMENDATIONS

As a result of the above identified barriers the following recommendations are directed at WSROC Councils:

1. that council practitioners recognise the need for more time and effort to be expended in defining the problems in a study area and setting realistic objectives,
2. that the above be undertaken in close consultation with the client community, understanding that this will most likely involve street committees and public meetings rather than just questionnaires and/or calls for submissions by mail,
3. that where consultants are used to undertake the study, sufficient funds are made available for a comprehensive public consultation component especially where it is envisaged that conflicting opinions or lobby groups are evident,
4. that an adequate 'area of study' be defined in order that problems identified in one street are not transferred to another,
5. that practitioners undertake monitoring of schemes so that an effective data base of experience can remain with councils to educate new practitioners and not lose the accumulated experience when staff changes occur.
6. that practitioners avail themselves of the literature review in this study and recommended references to develop the understanding that Local Area Traffic Management has as its principal aim the upgrading of the amenity of an area which includes more than just narrow traffic/device related objectives; this will assist in communicating with the public about LATM,
7. that as a result of the above, practitioners become aware of the importance of design and aesthetics as well as the opportunities afforded for landscaping and total street redesign where opportunities present themselves,
8. that in educating the local community and elected members about the range of objectives of LATM, due consideration be given to discussing the amenity/design components,
9. that all WSROC Councils develop a LATM Strategy Plan for their LGA with a prioritised programme of studies and works funded on an annual basis,
10. that those Councils who have dismissed LATM schemes as unnecessary in their LGAs, review this attitude in the light of overwhelming experience which indicates major benefits to the amenity and safety of the residential community from the implementation of such schemes,
11. that Councils avail themselves of any workshops, seminars and conferences which can upgrade their practitioners' knowledge in the experience of LATM implementation,
12. that the WSROC Councils the Department of Local Government and possibly the Western Sydney Region office of the RTA liaise with the view to holding a workshop on effective public participation techniques for LATM planning,
13. that the WSROC Councils and the Department of Local Government undertake production of a manual of implemented devices in the Sydney metropolitan area for use by Council practitioners,
14. that the WSROC Councils undertake the production of a set of large sized mounted photographs of devices and street treatments which can be shared by all WSROC Councils for public display and consultation purposes,

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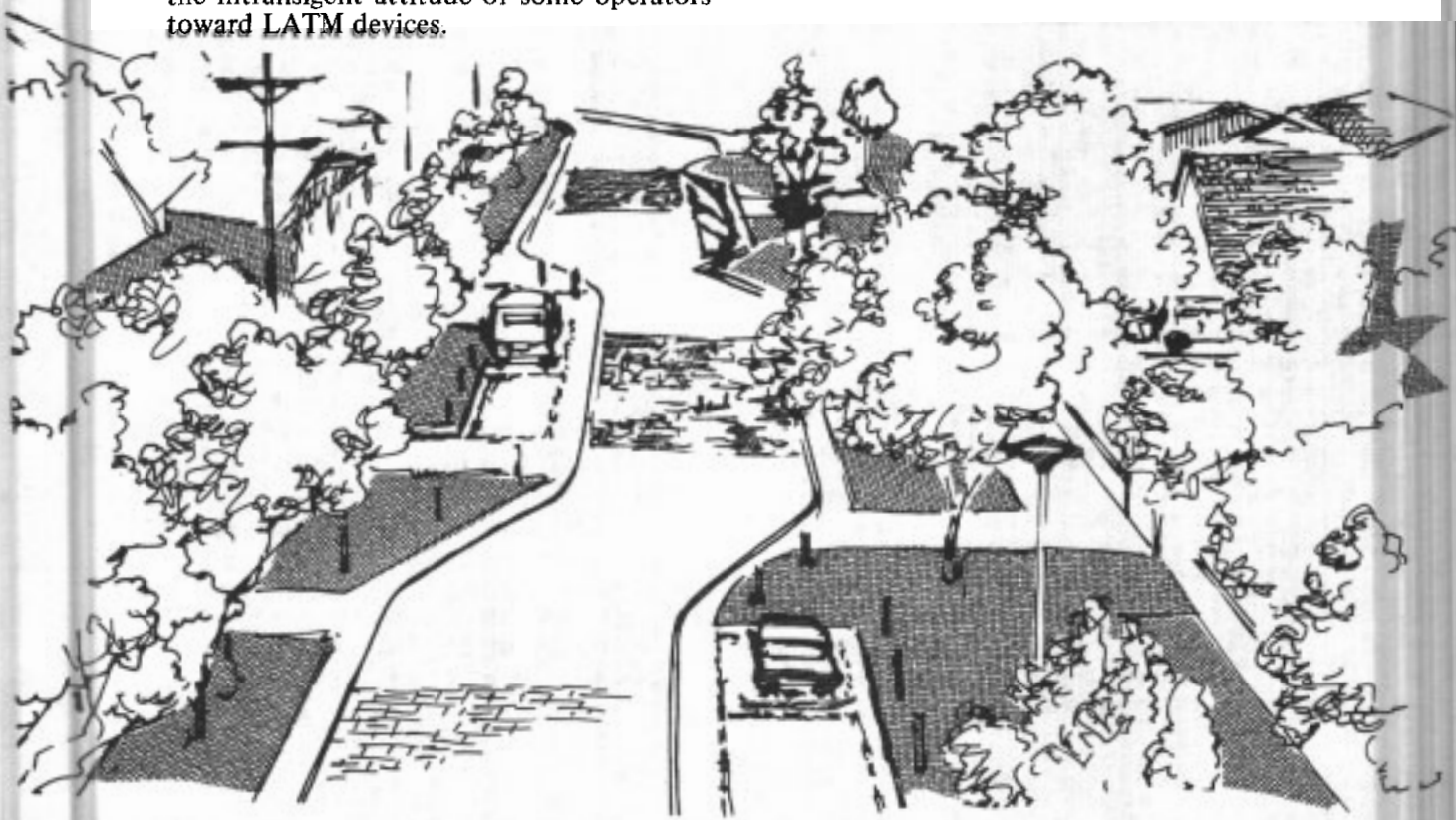
15. that the RTA Central office be approached to make available any existing pamphlets and brochures on LATM, Shared Zones, Neighbourhood Road Safety etc. with a view to having these available for the general public, particularly at initial discussions about LATM schemes,
16. that the WSROC Councils investigate funding sources toward the production of a video on LATM which can be used to educate and market LATM to elected representatives and community groups in the region,
17. that the WSROC Councils organise joint trips of their elected members to a range of LATM schemes in other LGAs on a 'round robin' basis, so that elected members are given more opportunities to undertake a guided tour than is presently possible through the resources of any one Council,
18. that tour notes on the schemes be developed jointly by practitioners of the WSROC Councils in conjunction with officers of the visited Councils, so that an effective educative exercise can be achieved,
19. that WSROC approach the Department of Transport, Service Planning and Co-ordination Branch as a matter of urgency to make available the 'Guidelines for the use of Acceptable Speed Control Devices along Bus Routes'.
20. that WSROC communicate with the Department of Transport regional office (Liverpool) about the difficulties experienced with individual bus operators with a view to solving the intransigent attitude of some operators toward LATM devices.



CONTENTS

1 INTRODUCTION

1.1 BACKGROUND

Geoplan Town Planning was commissioned in November 1989 by the Western Sydney Regional Organisation of Councils to undertake this study.

Two aims were established for the project:

- *to provide an information base on attitudes and other barriers to the implementation of speed control and LATM schemes in Western Sydney which the Office of Road Safety and other authorities can use in promoting such schemes;*

- *to disseminate information on relevant research relating to speed control and LATM Schemes to elected local representatives within Western Sydney and to technical staff.*

Three specific objectives were established:

to identify the present experience of councils in Western Sydney with speed control devices and LATM Schemes;

- *to identify political, technical, attitudinal and resource problems councils are faced with in implementing speed control and LATM Schemes; and*

- *to develop strategies targeted at overcoming these particular problems of implementation.*

1.2 METHODOLOGY

The approach to the project involved three main tasks, these being gathering information from practitioners in the WSROC region Councils with a view to determining the status quo in LATM scheme implementation, a questionnaire survey of all elected representatives of the WSROC Councils to determine the attitudes to and level of knowledge about LATM and a select literature review to place local experience into a broader perspective of experience in LATM in Australia and overseas.

Opinions and policy statements were sought from the RTA - both in the Western Region and Head Office, the Police Headquarters, the Department of Local Government and the Department of Transport.

The practitioners interviewed in relation to local LATM experience were in the engineering departments of Councils and the number of staff to be interviewed was determined by the Chief Engineer.

Questionnaires were posted to all elected representatives in a mail-back survey.

Follow up with telephone surveys were also undertaken. The final number of interviews is believed to be representative of all Councils except one where the response rate was too small for meaningful conclusions to be made in respect of elected representatives' opinions.

The literature review is divided into four principal components based on overseas experience which set the scene of LATM, the developments in LATM in Australia in the 1970s, and the 1980s and developments in Europe in the 'Environmental Traffic Management' in the 1980s.

Appendix B has attempted to present the most up-to-date information on the location of all LATM schemes both installed and approved for implementation in the WSROC region to August 1990. The devices installed in the implemented schemes are also included for reference.

The project was undertaken under the guidance and input of a Steering Committee composed of WSROC practitioners and with the chairperson being the Assistant Director of WSROC.

2. PRACTITIONERS' PERSPECTIVE

2.1 BACKGROUND

Practitioners in the engineering departments of WSROC Councils were interviewed to address systematically issues relating to LATM Schemes in their Council area. These interviews set the background to the survey of elected members which followed after all interviews were completed (see Appendix B.1 for list of discussion topics).

2.2 FINDINGS

2.2.1 Existing LATM Schemes and/or Implemented LATM Devices

Local Area Traffic Management is defined by the Manual on Guidelines for Traffic Facilities 'Green Book' as:

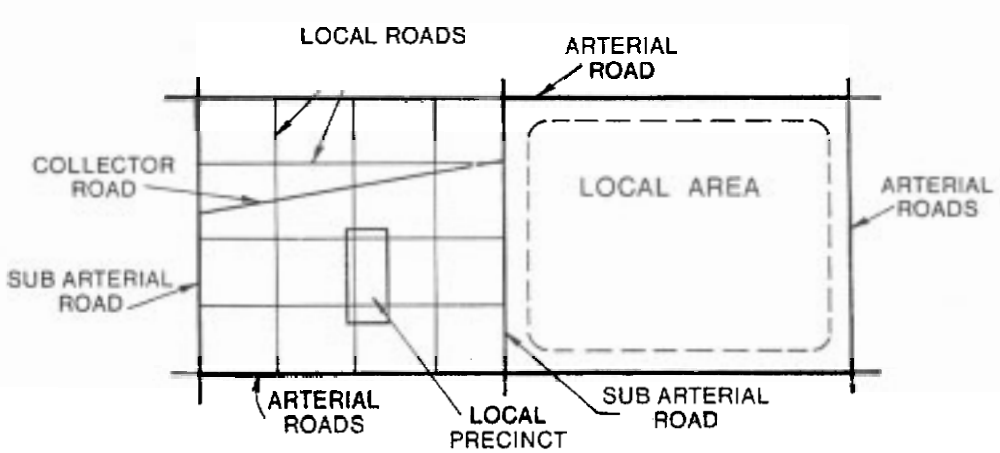
> *'A means whereby various techniques are used in an area to modify traffic conditions.'*

The term Local Area is defined as:

> *'An urban area containing local and collector roads and bounded by arterial and sub-arterial roads or other limiting features such as rivers etc. ... these areas are most suitable for LATM schemes.'*

Local Precincts are defined as:

> *Areas within a local area where specific local problems exist related to the speed of traffic and/or pedestrian crossing difficulties.'*



DEFINITION OF A LOCAL AREA

An examination of the types of LATM schemes in the WSROC region indicates that the overwhelming majority are 'precinct' or 'street' schemes rather than local area schemes. No area schemes have been implemented completely.

In the Holroyd Council area the Macquarie Road LATM Area Scheme which recommends 18 devices in a systematic treatment of a number of streets and the major 'problem' route could conceivably result in a 40km/hr zone. Only Stage 1 has been implemented (5 devices). The Mays Hill LATM has 5 implemented devices (see Appendix B for all scheme plans).

Holroyd -
Macquarie Road LATM area scheme
Mays Hill LATM area scheme

A comprehensive LATM area scheme has been approved for implementation by the Liverpool Council at Chipping Norton but has not yet been implemented. A further LATM area scheme is presently on display in final draft for the Prestons-Casula area.

Liverpool -
Chipping Norton LATM area scheme
Prestons-Casula LATM area scheme

Fairfield Council has a long history of using devices to overcome traffic problems in residential areas and has the greatest number of street or precinct schemes implemented (8). One scheme is under construction, 7 are being investigated and another 6 are to be studied. To complement the Fairfield Mall and assist in the pedestrianisation of the town centre, a 40km/hr zone has been established in the commercial area.

Fairfield -
8 precinct/street schemes in residential areas Town Centre Schemes

Baulkham Hills has undertaken 5 LATM studies and has partially implemented two LATM area schemes. Implementation of further stages at some future date will only take place after extensive review and community participation.

Baulkham Hills -
Partial implementation of two schemes

Penrith LGA has implemented a precinct scheme at Colyton as well as several street schemes (refer to Appendix B.5). Proposed flat topped hump treatments in rural sub-divisions by developers have also been approved.

Penrith -
Colyton area scheme

The Blue Mountains City Council has implemented about five street schemes including various devices: speed humps, road closure, single lane slowpoints and intersection deviations.

Blue Mountains -
street schemes

The Hawkesbury City Council is presently investigating the implementation of LATM devices near the Windsor Town Centre to replace a road closure.

Hawkesbury at planning stage

Local government areas which do not have LATM schemes implemented or plans for implementation either on an area or street basis are Blacktown and Parramatta.

Blacktown and Parramatta favour road closures and roundabouts where traffic problems are indicated.

2.2.2 Monitoring of the Effectiveness of Schemes/Devices

There has been very little 'before' and 'after' implementation monitoring of schemes. While speed, volume, truck volume and/or origin-destination surveys may be undertaken at the problem definition and planning stage, there has been a tendency to rely on citizen reaction to gauge the success or failure of a scheme. As the implementation of many schemes to date have been based on the 'squeaky wheel' approach, this approach is also adopted as a post-implementation monitoring; Councils and practitioners are therefore relying on community reaction to gauge the success or failure of a scheme.

Where 'after' traffic monitoring has been done, this usually takes the form of volume and speed counts, O/D counts are more expensive and are not undertaken.

2.2.3 Problem and Issues Associated with Planning LATM Schemes

Discussions with officers have revealed that if the first scheme is a success in the eyes of the residents, then subsequent schemes are more likely to succeed.

Some of the problems and issues which have contributed to failures can be categorised into:

- the planning process itself,
- the appropriateness of devices selected,
- the public participation process,
- the opposition of the Police representative and bus companies

• THE PLANNING PROCESS

There has been a significant failing in the methodology some practitioners have used in the planning of LATM schemes. This has been associated with the poor definition of firstly the area of influence for study, secondly the problems and issues, and thirdly the objectives set for the schemes, whether area or street-based.

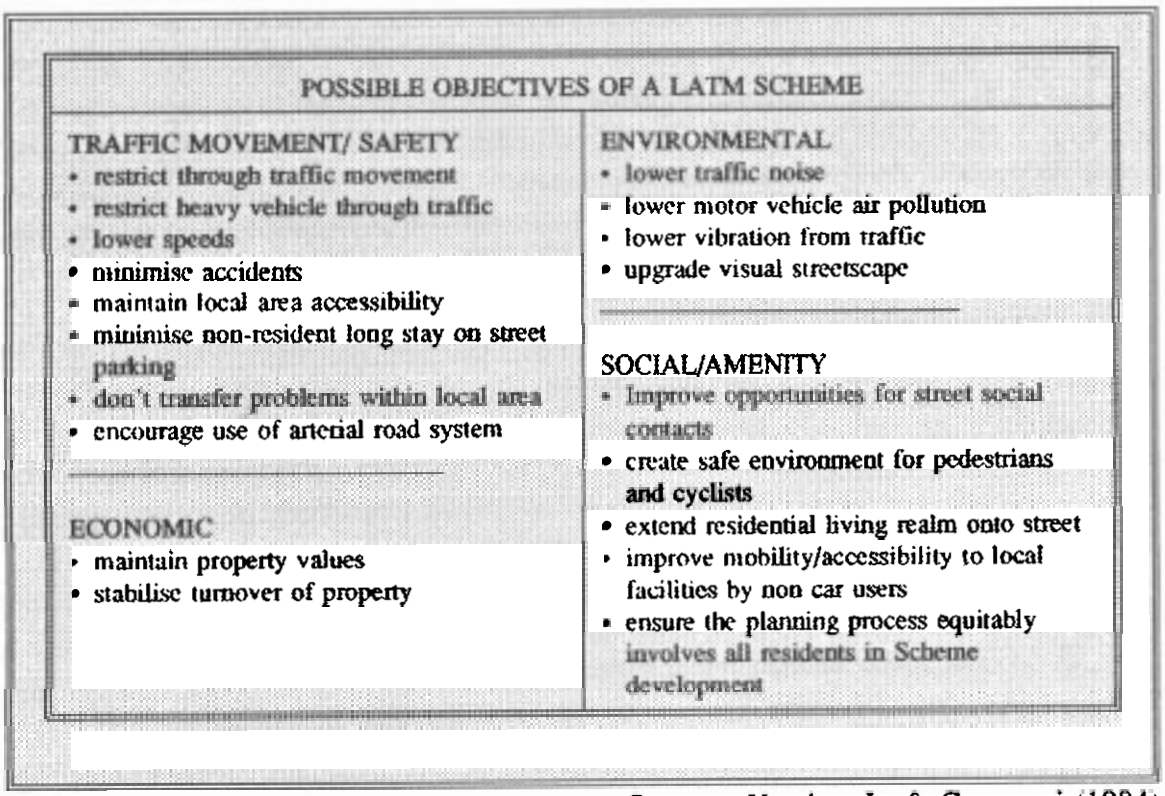
Defining an Appropriate Study Area

Most schemes in WSROC, as elsewhere have originated from community complaints and pressure to solve a specific problem perceived by the residents in a particular street. Although the traffic related problems may be perceived as being street-specific, for study purposes it is necessary to define an appropriate area which may cover a number of streets, often to a boundary formed by a higher hierarchy road. There has been some experience with street-based schemes which indicates that the definition of the study area has been too narrow, and an approach has been taken to treat the 'squeaky wheel' with not enough consideration given to surrounding streets, thus transferring the problem along.

Conversely there have also been some examples of reticence to undertake an investigation because it was street-based, however the possible solutions may need to cover a wider area, thus involving treatment of streets where no-one has complained.

It's not as simple as:
problem - too much speeding
answer - put in speedhumps

The poor definition of problems and issues and setting of unrealistic objectives at the planning stage has also been evident, resulting in inappropriate solutions. A clear definition of problems must involve the whole community within the precinct or local area of study and consultants should be briefed on this important matter. Evaluation studies discussed in the literature review, have shown that there are a very large range of objectives which schemes can address, some of which may be totally unachievable in a given area, e.g. the total elimination of through traffic without the use of road closures. Some objectives may be implied by the community or technician but not stated in any way, thus giving rise to misconceptions, discontent with the scheme and the need to eliminate devices, e.g. the client community assumes no disruption to existing travel patterns however ends up with a diagonal road closure. The table below illustrates the range of possible objectives which could be set for one LATM Scheme.



POSSIBLE OBJECTIVES OF A LATM SCHEME

TRAFFIC MOVEMENT/ SAFETY
- restrict through traffic movement
- restrict heavy vehicle through traffic
- lower speeds
- minimise accidents
- maintain local area accessibility
- minimise non-resident long stay on street parking
- don't transfer problems within local area
- encourage use of arterial road system

ECONOMIC
- maintain property values
- stabilise turnover of property

ENVIRONMENTAL
- lower traffic noise
- lower motor vehicle air pollution
- lower vibration from traffic
- upgrade visual streetscape

SOCIAL/AMENITY
- improve opportunities for street social contacts
- create safe environment for pedestrians and cyclists
- extend residential living realm onto street
- improve mobility/accessibility to local facilities by non car users
- ensure the planning process equitably involves all residents in Scheme development

Source: Hawley, L. & Gennaoui (1984)

Baulkham Hills Shire practitioners pointed out that from their experience if the capacity of the arterial road network is deficient, it is extremely difficult to deter all traffic from travelling on residential streets which act as convenient by-pass routes to the arterial roads. This experience emphasises the need to set realistic objectives, and tailor device selection to those objectives.

A poor understanding and experience of the budget required to implement a scheme was also evident in one council area, where a budget of $50,000 was assumed to be sufficient to create area-wide impacts in a first stage of a staged implementation. It is important that an implementation budget is large enough for the first stage of implementation so that clear benefits can be experienced by residents at the outset rather than cosmetic changes or site-specific benefits.

• APPROPRIATENESS OF DEVICES

Some of the earliest learning experiences were suffered by Fairfield engineers where street closures were created by dumping mounds at one leg of a 4-way intersection and planting small trees only to see the mounds used as BMX tracks with trees destroyed through damage and water run-off. Subsequent designs have been more

expensive with kerbs, gutters and drains with lower mounds and a dished area for trees and continued maintenance by Council. These have proved more successful both in terms of aesthetics and acceptance by immediate residents.

There appear to be no clear reasons why a particular device may be chosen in lieu of another. Essentially there are three types of devices -

- those that slow vehicles by vertical displacement (speedhumps, raised thresholds/platforms),
- those that slow vehicles by horizontal displacement (angled slowpoints, offset neckings, serpentine paths, roundabouts),
- those that restrict movement options entirely (closures and half-closures).

The greatest confusion seems to occur in respect to the vertical displacement-type devices and those that cause horizontal displacement, i.e. is an angled slowpoint directly interchangeable with a speed hump?

Perhaps some of the this confusion could be traced back to a poor definition of objectives for the scheme in the first instance, or on the other hand poor understanding of design principles.

Aesthetics and Device Selection

Practitioners have generally not been trained in aesthetics, and this could contribute to some of the dilemmas about which device would 'look right' and/or be acceptable to the residents. LATM schemes are essentially street-based planning which involves residents, as it were, on their own territory. The appearance of a device may be of great concern to them particularly if it is directly outside their property.

Discussions with practitioners appeared to confirm that in some councils LATM schemes are viewed from a very narrow perspective - physical solutions to traffic problems. As the list of possible objectives in the chart on page 7 shows, the potential of LATM is much broader, and if viewed from a perspective of residential 'quality of life', the device-oriented problems could perhaps be somewhat diffused.

THE PUBLIC CONSULTATION PROCESS

Public consultation can be difficult where residents do not speak English

There appear to be as many approaches to public consultation in LATM scheme development as there are LATM schemes in the WSROC area. Two contrasting methodologies are illustrated by Fairfield and Baulkham Hills Councils. Fairfield Council for example was described as having adopted a 'paternal attitude' toward LATM implementation. Due to the high non-English speaking background (40%) of the population in Fairfield, community feedback is sometimes difficult. While the ethnic press has been used to stimulate community input this has not been extensively forthcoming and council has implemented schemes as a result of technical analysis relying on accident records, volume and speed data, and to a lesser extent than perhaps in some other councils, on resident complaints.

In the Baulkham Hills Shire Council, practitioners noted that residents are vocal and willing to express their opinions, which can result in difficulties in achieving easy consensus.

A representative community view is required

Baulkham Hills Shire Council has had some unsuccessful experiences in public consultation. Practitioners noted that at the planning stage of one LATM scheme an undue emphasis of views from groups which purported to represent the community could have led to the misconception of the degree of acceptability of some devices. Public meetings were held, however did not attract enough of the 'silent majority'. The practitioners believe that a true indication of the general community view was not obtained in that instance.

Time-consuming public consultation for a first scheme pays off

A time consuming but successful methodology was adopted by Liverpool City Council for the development of its first LATM scheme in Chipping Norton which included letter box drops of a questionnaire to determine problems and subsequent evening public exhibitions of proposed devices over four weeks at which time residents were able to study maps and questions could be answered on a one-to-one basis. The practitioners used the exhibition period to 'educate' residents about the purpose of devices. The scheme has been allocated funds for implementation to start in 1990.

Criticism was levelled by one officer at the Traffic Authority LATM Guidelines which were considered inadequate in relation to public consultation.

- **OPPOSITION FROM THE POLICE AND BUS COMPANIES**

A minority of Police Officers on Local Traffic Committees were seen to be reacting from a narrow uninformed base in relation to LATM scheme proposals. Although the majority of practitioners were satisfied with their relationship with Police on these matters, it was pointed out that council practitioners attend courses and are trained in LATM designs to a greater extent than Police and that as a result some Police responses are indicative of the narrow perspective of 'enforcement'.

LATM device implementation along bus routes is a problem

More complaints, however, were levelled at private bus operators, some of whom have threatened to cease services if devices (including rumble strips and double yellow lines) were not removed. Generally practitioners viewed the treatment of bus routes with LATM devices as problematic. This is unfortunate in view of the fact that the bus routes are also routes on which traffic speeding or through traffic intrusion was seen to occur most frequently.

All practitioners were aware of the general guidelines which had been forwarded in a letter to them by the Urban Transit authority (now State Transit Authority) in 1987 in anticipation of the imminent release of the 'Guidelines for the Use of Acceptable Speed Control Devices on Bus Routes'. These guidelines have still not been released, and are contributing to the delays and reluctance in implementing devices on bus routes in some Council areas.

Opposition from the Transport Workers' Union was not raised as an issue by practitioners.

2.2.4 The Concept of a Council Strategy Plan for LATMs

Some officers have realised that the short term approach of reacting to resident street-based problems places major constraints on the funds made available for upgrading residential amenity. Council funds for undertaking studies, and particularly implementation of schemes is severely constrained if Council is to remain reactive to ad hoc resident pressure from various locations in the municipality.

To that end, several Councils have begun the process of preparing a forward plan for LATM study and implementation. This is clearly an important step in rationalising LATM by creating an opportunity to:

- prioritise precinct and area plans on an LGA-wide basis thereby counteracting the reactive nature of present practice,

- coordinate traffic planning and engineering works with the projected council budgets and road maintenance programmes,

- create separate annual budget allocations for LATM works,

keep local communities advised of the relative timing of their LATM study and/or implementation.

The Councils of Fairfield, Penrith, Holroyd and Baulkham Hills are at various stages of developing their local government area-wide strategies.

A promising Neighbourhood Safety Campaign commenced in the Blue Mountains two years ago aimed at developing local government area-wide strategies has floundered, due to lack of funds. That campaign was aimed primarily at raising the awareness of residential amenity through safety on local streets, streetscaping and local solutions to traffic-related problems.

The two Councils which have not undertaken any LATM studies or implementation to date are Parramatta and Blacktown. In Blacktown, it is the view of the city engineer that no areas have been identified to date as requiring LATM treatments; while in Parramatta, it is Council's policy that the RTA should fund all traffic-related devices on main roads and local roads as funds are not available to undertake such works internally at this stage.

2.2.5 Funding and Section 94 Contributions Toward LATM Schemes

Section 94 contributions under the E.P. & A. Act have been used for Town Centre works but not for residential area LATMs. No redevelopments have as yet been

sourced for potential traffic impact in residential areas at this stage, and some Councils are moving toward annual funding commitments toward LATM. This is already evident at Fairfield Council where an annual budget of $150,000 has been established; additional funds have also been made available from the RTA.

Forward commitments have been approved at Holroyd Council for a $140,000 annual budget to match past annual expenditures of $100,000.

Baulkham Hills Shire Council has imposed conditions on developers to contribute to the construction of traffic management devices. Devices have also been included in Development Control Plans for residential subdivisions. Medium density developments are being charged at $1,000/unit for traffic contributions.

LATM Schemes have the potential to upgrade the lifestyle and amenity in an area

LATM schemes fall within the sphere of the engineering budget. Arguments could be mounted for contribution toward LATM from other Council budgets such as community services. For example the St Mary's Social Plan undertaken for Penrith Council which relied on extensive resident input, identified traffic management high on a list of local problems requiring attention. Clearly LATM has major potential in upgrading the amenity and lifestyle of an area, indeed in most cases this is its primary purpose rather than a traffic flow purpose.

The traffic engineering budget is seen as being directed toward more efficient and safer vehicle movement, consequently there is somewhat of a conflict in that LATM is directed at the constraint of vehicular flow to upgrade the ease of other movements in residential areas. Practitioners noted that there were still some overtones of the attitude of 'but speed humps are dangerous for cars' and 'angled slow points can cause accidents' among the public - an attitude which is, to some extent expected, given the nature of most traffic planning to date.

Ongoing residential street reconstruction gives opportunities for redesigning to pedestrian-safe environments

In one Council, where no LATM schemes have been implemented at all, there is a high priority to kerb and seal residential streets. It appears that is being done to traditional specifications to accommodate smoother vehicular movement in residential areas. In this instance, with the knowledge that now exists about road widths and residential street geometry, it is a pity that construction funds cannot be used to design for the desired future behaviour of cars.

2.2.6 Principal Perceived 'Barriers' to LATM by Council Practitioners

LATM funds need to be included in continuing annual budgets

The availability of funds was voted as the principal barrier of LATM implementation. Some council practitioners have taken the view that it is pointless undertaking LATM studies if there is no commitment from Council to allocate funds to implement the recommendations. Other officers are overcoming this by undertaking council-wide strategic plans which will hopefully bring LATM budgeting into the mainstream consideration for annual budget allocations. It would appear at this stage that practitioners need to 'do their homework' in respect to strategic planning to overcome the present ad-hoc approach to funding.

Opposition from Bus companies

The intransigence of some bus companies was also seen as a barrier to the successful implementation of a scheme. There is a clear need for extensive communication and re-education of individual bus company management/staff; the publication by the Department of Transport of the guidelines in respect to LATM devices along bus routes could assist substantially toward resolving this problem.

Due to unfavourable acceptance of the LATM study proposals and the need to take out a device implemented in one scheme, Baulkham Hills practitioners saw the history of confrontationist public participation as a barrier to the implementation fo future schemes. This experience illustrates the need for early schemes to be seen to be successful by residents and elected members alike, otherwise there is a serious reluctance to commit funds to an area of controversy while pending demands for other less controversial works may be just as strong. Council practitioners felt in hindsight, that the consultant's approach in a LATM scheme study had:

> *'given a Utopian view of what could be achieved'.*

2.2.7 Materials of Value to Practitioners

Practitioners evaluated a possible range of materials which might be of benefit firstly to them,

and secondly in informing and marketing LATM to elected representatives and residents.

Practitioners agreed that they require a reference manual of experience at the least in the Sydney metropolitan area which would include device designs, costings, experience with specific devices and contact names of practitioners in other Councils who could expand on information on devices illustrated. The production of such a reference document would need to ensure that there was ongoing updating of material on a regular basis. Documented information on experience with public consultation both successful and unsuccessful was also viewed as valuable, although of lesser value than device information.

The type of material most valuable for public consultation and the education of elected officers was a relevant up-to-date video on LATM more suitable for Sydney metropolitan purposes than the South Australian video presently available. Large display photographs of devices and schemes of AO size which could be used in public meetings and at residents' group meetings were the second most supported material. The latter is suggested as useful for public meetings to give residents an idea of the look of various devices and the impact they could have on their streets.

2.3 SUMMARY AND CONCLUSIONS

2.3.1 Street-based vs Area Schemes

Most of the experience with scheme implementation in the WSROC region has been with the implementation of street-based schemes or precinct schemes rather than area-wide schemes. To a great degree this has reflected the ad hoc response to resident complaints about traffic speed and intrusion along particular routes.
Four Councils have no LATM schemes implemented. Blacktown and Parramatta Councils have not implemented any LATM schemes, nor have any plans to do so at this stage. Liverpool has undertaken two studies, with pending approval to commencing implementation of the Chipping Norton LATM starting in 1990.
Hawkesbury City is presently studying the possibility of implementing devices in a residential area abutting the Windsor Town Centre.

The other five Councils have implemented devices either within the context of street or precinct schemes, or only partially implemented larger area schemes.

2.3.2 Monitoring

Very little technical monitoring has been undertaken of implemented schemes, and Councils have tended to gauge the success of schemes by the resident response. This has therefore led to an undocumented experience pattern, which relies on individual practitioners' personal assessment on what may have gone wrong, or the degree to which solutions have been successful and why. Clearly there is a large margin of subjective interpretation and this leads to a rather unscientific learning process.

2.3.3 Experience with Failures

It is a truism that because LATM schemes are localised solutions, residents can therefore react in a very vocal and emotional way to perceived unsuccessful solutions. This has occurred in two council areas where devices have been removed as a result of resident agitation. It appears that on closer examination, the problem could be traced back to the poor definition of problems/objectives and trade offs that residents were willing to accept.

As a general comment, it is questionable whether any LATM can be successful if it redirects traffic from one local street on to another, as was the case in one of the contentious schemes.

If the capacity of the arterial road network is deficient, strategies aimed at deterring all through traffic from residential streets may not be successful.

THE PLANNING METHODOLOGY

There would appear to have been significant failings in the planning process of some LATM schemes particularly in relation to the definition of an appropriate study area, secondly in defining the problems closely with residents and thirdly in setting realistic objectives. Where all three

have occurred, the schemes have resulted in severe resident unrest and device removal.

• DEVICE SELECTION

There appears to be some confusion as to device appropriateness in various situations. Practitioners have tended to favour devices which have caused them least resident problems. One practitioner has taken the stance that roundabouts are the most acceptable device and therefore should be preferred. The confusion about device selection is probably a combination of the fact that the LATM Guidelines do not set standards in relation to the use of specific devices in certain situations, and therefore the onus is on practitioners to derive this themselves. The poor monitoring of devices both from a technical and attitudinal basis has led to only an anecdotal history of experience, rather than an objective assessment of devices in Council areas and in the region as a whole.

There would appear to be a strong argument for proper objective monitoring of schemes after implementation.

• PUBLIC CONSULTATION

There is no favoured method of public consultation in the WSROC region. It appears that practitioners have been more 'successful' in implementing schemes in those municipalities where residents are less vocal either by virtue of their non-English cultural backgrounds, or have been exposed to LATM schemes and become familiar with. them. Where residents are well-versed in local politics and are aware of their own power base, there needs to be more attention given at the planning stage to the appropriate public consultation process. It is clear that too much consultation with the client community cannot do any harm, too little, however can cause total abandonment of a scheme.

Consultation is important at the problem definition stage, in setting objectives and understanding the trade offs which will or will not be acceptable (e.g. closures) and at the concept plan stage. It is necessary to explain to residents why a particular device is suitable for a particular location and why another is not. Where choices are possible - the implications of various option plans need to be fully explained. The relationship between objectives and traffic device selection options should be clearly stated.

All practitioners are aware of the importance of consultation, but are not sure of the appropriate methodologies to adopt and clearly need more clarification in this respect.

- **PUBLIC AUTHORITIES/PRIVATE COMPANIES**

While there was some mention of the fact that some individual Police still take a narrow view of their interpretation of LATM schemes, this appears to be a minor problem in comparison to the resistance from some bus companies.

The release of the Department of Transport 'Guidelines for the Use of Acceptable Speed Control Devices on Bus Routes' is well overdue. This will aid practitioners and Department of Transport regional officers to liaise with bus operators from an informed base.

2.3.4 Municipal-wide LGA Strategies for LATM

Forward plans are now being prepared for LATM implementation on an area basis with prioritised study and work programmes aimed at forward budget commitments on an annual basis. This is seen as a necessary direction in order to cease the ad hoc responses to resident agitation thereby placing LATM schemes within the normal works of Council.

2.3.5 Main Perceived Barriers to LATM

The principal barrier to speedier implementation of schemes is perceived to be funding at this stage and the need to balance LATM funding against other priority works. This should be addressed by the establishment of the strategy approach summarised above.

Controversy in community consultation has frightened off some elected members and practitioners from undertaken LATM schemes in the near future, however this experience is balanced out by positive experience in other municipalities. There is a need for more education of practitioners in public consultation methods.

2.3.6 Preferred Educational and Marketing Materials

Officers agreed that a manual of experience with devices in the Sydney metropolitan area would be of greatest assistance to them as practitioners. More information or training on public consultation was not perceived as necessary in the main, however it would appear that practitioners do require some assistance in this area.

A video and large size mounted photographs of devices were established as materials which would assist them in educating elected representatives and residents about LATM schemes in general and specific devices in particular.

3. SURVEY OF ELECTED MEMBERS

3.1 BACKGROUND

A questionnaire was distributed to the 125 elected representatives of the nine WSROC local government areas. Follow up with telephone interviews resulted in a total response rate of 63% (excluding a member Council from whom there was a very small response rate). From this response rate we are able to draw reliable conclusions about the elected member opinions in the region. (See Appendix C.2)

3.2 FINDINGS

The questionnaire consisted of ten questions seeking opinions and attitudes toward and knowledge about Local Area Traffic Management Schemes. Responses are summarised for each question. The questionnaire is attached in Appendix C.1

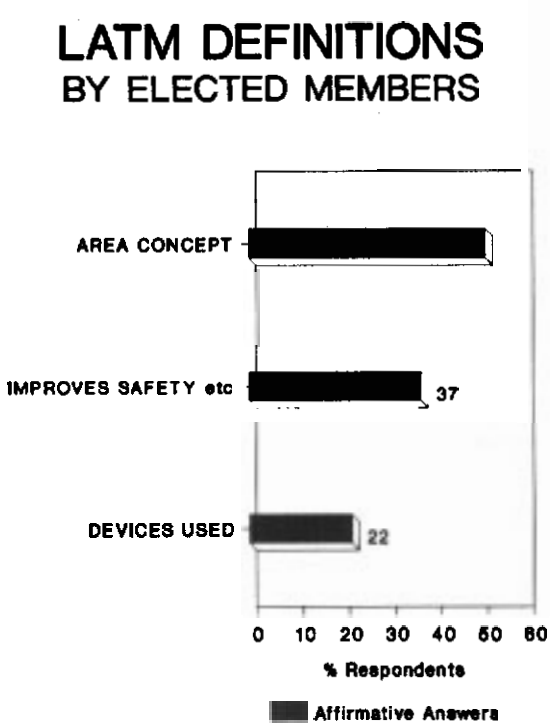
3.2.1 *Can you briefly describe what you understand by the term 'Local Area Traffic Management (LATM) Scheme'*

In this question we established the understanding of the concept as operational in NSW. The three key concepts we required were that LATM Schemes:

- are areal in nature,
- are directed at safety/amenity or environmental improvement of a residential area,
- require the implementation of devices.

There was an even split between those who understood that schemes should be areal in nature and those who didn't appreciate this. Fewer mentioned that LATM schemes are directed at improving safety/amenity (37%) and a very small number mentioned general environmental improvements; and few (22%) appreciated the fact that LATM schemes involve the use of traffic management devices. Understanding of the concept varied significantly between Councils.

It is probably true to say that with probing in the telephone surveys, more respondents would have admitted to knowledge about the purpose (safety/amenity) and the need to implement devices. However the definition



need to implement devices. However the definition which is familiar to technicians is only appreciated by a minority of elected representatives.

3.2.2 *Are you aware of any LATM schemes in your Council area*

Some misunderstandings are indicated

The majority (90%) held that they were aware of LATM schemes in their Council area. However on closer examination of such 'schemes', there appeared to be some confusion in the definition of the concept as commercial malls such as those in Windsor and Penrith were included as examples of LATM schemes, while some mentioned an individual roundabout or series of roundabouts as constituting a scheme. The answers to this question verified that there is widespread misunderstanding of the concept in terms of their own Local Government Area (LGA).

3.2.3 *Have you examined/driven through a LATM scheme in another council area*

East Roseville Scheme viewed by the greatest number

Just over half (55%) of the respondents had viewed a LATM scheme in another LGA. The Willoughby (East Roseville Scheme) appeared to be the most familiar to the respondents with 15% having visited that particular scheme. Smaller numbers ranging from 6-9% had visited the other principal areal schemes in the Sydney Metropolitan area for example in the LGAs of Canterbury, Mosman, Hornsby or Concord. About 37% mentioned other municipalities apart from the above; closer examination of the answers revealed that most elected representatives had <u>not</u> seen easily accessible examples of LATM schemes in Fairfield or Holroyd in the WSROC area.

3.2.4 *Do you support the use of traffic management devices on Council streets and roads*

Support for LATM Schemes is high

There was overwhelming support (86%) for the use of devices, only a minority (5%) indicated 'perhaps'. The major reason given for their support of LATM (by 57% of respondents) was the safety afforded by the devices

particularly in relation to speed and accident reduction (see Appendix C.3 for a full table).

About 35% of respondents also mentioned the decrease in volumes, through traffic and trucks which they believed resulted from such schemes.

Finally, 15% mentioned environmental gains such as 'peace and quiet' and decrease in air pollution.

3.2.5 *From the list below, indicate in order the treatments you consider the most successful:*

- *speed hump*
- *raised threshold or platform*
- *angled slowpoint or chicane*
- *roundabout*
- *road closure or half road closure*
- *concrete median island*
- *street narrowing or necking*
- *light traffic thoroughfare*
- *40km/hr speed limit zone*
- *one way street*

Roundabout voted most successful

Elected members gave the greatest support by far to the roundabout: 85% voted it as the 1st, 2nd or 3rd most successful device with 66% voting it as their first choice.

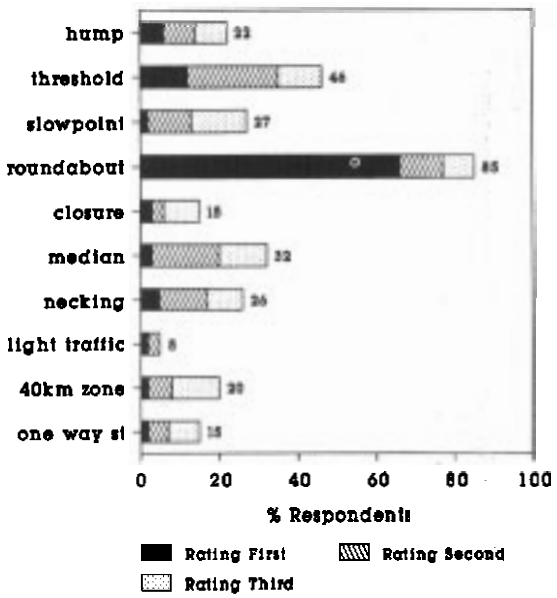
The second most successful device overall is the raised threshold/platform, 46% voted it as the 1st, 2nd or 3rd most successful device.

The median island scored as the third most successful device with 32% voting it 1st, 2nd or 3rd. (Refer to Appendix C.4).

On a LGA basis, there were some noticeable trends: Holroyd Council elected members were more inclined to rate angled slowpoints as a successful device, Penrith elected representatives rated raised thresholds/platforms as more successful than other devices. This appeared to be related to the successful implementation of these devices in their areas.

The reason why roundabouts were considered the most successful device was firstly due to the ability to even the traffic flow and secondly due to the fact that they slow vehicles down.

Raised thresholds/platforms were seen as successful because they primarily slow vehicles down, but also



because they are very visible and can be used in conjunction with pedestrian crossing points.

Median islands were seen as useful traffic separators and affording pedestrians some safety together with lowering accidents and enabling an even flow of traffic (see Appendix C.4A).

3.2.6 ***From the same list, indicate in order the treatments you consider the least successful.***

The greatest number of elected members (53%) rated 40km/hr zones as the 1st, 2nd or 3rd worst treatment device. The speedhump fared only marginally better, as 50% rated it as 1st, 2nd or 3rd worst treatment or device and it was voted as the worst physical device.

40km/hr Zone voted least effective

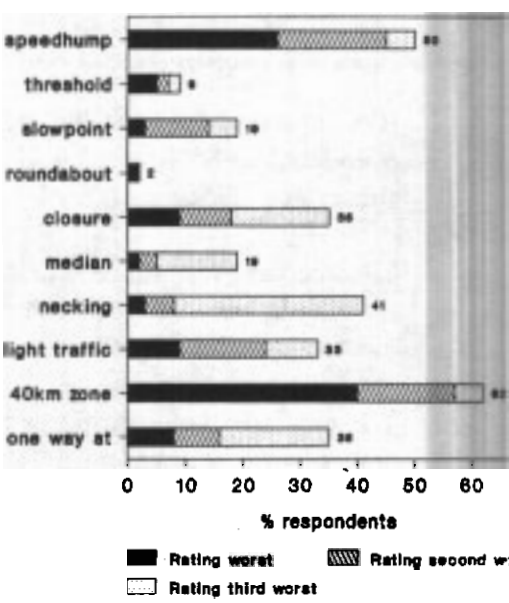
The light traffic thoroughfare scored as the third worst treatment or device, with 33% ranking it worst, 2nd or 3rd worst. (Refer to Appendix C.5)

The 40km/hr speed limit treatment was rated the least successful by elected members from Holroyd, Blacktown and Penrith Councils.

The 40km/hr speed zoning and Light Traffic thoroughfares were viewed as unsuccessful for the reason that they are unenforceable and/or ignored.

Speed humps were perceived as unsuccessful principally because of the danger they pose to vehicle drivers and the damage they cause to cars, and secondly because of the noise they generate when a car passes over them (refer to Appendix C.5A). There was a clear misconception here that vehicles would be travelling at such a speed that they could enter the device too fast; LATM schemes are designed so that low speeds are maintained along a street length and therefore damage to cars should not occur.

LEAST SUCCESSFUL



3.2.7 ***Are you opposed to single lane devices which allow only one car to travel through the device***

More elected members (52%) were in favour of single lane devices than against them (22%). The rest were unsure. The main reasons for support were that they slowed down traffic and discouraged high traffic volumes.

The main reason stated against the concept is that it is confusing. Most of those who were unsure about giving their unequivocal support for one lane devices stated that the specific location in question would determine their attitude.

Majority support for single lane devices but they need to be justified

3.2.8 ***Over the next 5 years, rank the nominated concerns of Council in order of the importance you place on them:***

- ***tree planting***
- ***drainage works***
- ***support for public transport***
- ***traffic in residential streets***
- ***garbage collection/waste management***
- ***kerbing and sealing of streets***
- ***parks and playgrounds***
- ***provision of community facilities***

Where does the problem of traffic in residential streets fit into the priority of elected members of WSROC?

Drainage works scored as the most outstanding issue which councils have to confront over the next 5 years in the WSROC region. Garbage collection/waste management scored the second overall priority followed by 'traffic in residential streets'. If an assumption on expenditure priorities is made on the responses to this survey, traffic management would score third place in the WSROC region, scoring higher than the provision of community facilities. (Refer to Appendix C.6)

3.2.9 *Have you any additional comments about LATM schemes*

There were no negative comments about LATM schemes; however about 14% of respondents mentioned the cost of devices and the fact that funding is a problem. Some felt the State should contribute toward the implementation of schemes.

Mention was also made of the need for appropriate public participation.

There were complaints that in one Council the Traffic Committee made all decisions and elected members could not attend due to work commitments during the day.

There were also some comments about the need to apply LATM principles to new area subdivision design.

COMMENT 1
"You need public participation if it's going to work."
Baulkham Hills

COMMENT 2
"An essential cost which should be borne."
Holroyd

COMMENT 3
"Only brought about by lack of State Government funds to construct bypasses etc."
Liverpool

3.2.10 *Do you require more information about LATM Schemes and how they operate ... indicate how useful the following type of information would be to you ... a video, a brochure, organised trips to existing LATM schemes, an information evening or seminar.*

Nearly 70% of respondents indicated that additional information would be useful. Elected members in the following Councils were more interested in additional information:

- Blacktown
- Blue Mountains
- Holroyd
- Liverpool

In order of usefulness, elected members rated a video on LATM most highly, followed by organised trips to an LATM scheme and then a well illustrated brochure.

- **Video**
- **Trips to LATM schemes**
- **Well-illustrated brochure**

There were differences between responses from various Councils, for example Blacktown, Fairfield and Holroyd elected members were more in favour of a video than other Council members; Hawkesbury City Council members was strongly in support of the usefulness of a brochure on LATM.

3.3 SUMMARY AND CONCLUSIONS

3.3.1 General understanding of the LATM concept

There is some lack of understanding about the concept of LATM by elected representatives - i.e. that a LATM scheme must cover an area rather than a street or location, that it addresses safety and amenity and that physical traffic devices must be implemented. There is therefore a lack of understanding of how the LATM planning procedure works.

The above confusion is further revealed when elected members were requested to give examples of LATM schemes they had viewed either in their LGA or elsewhere. A range of inappropriate traffic facilities such as traffic signals, roundabouts at the intersections of main roads and bridge works were mentioned by some representatives, particularly in those LGAs where LATM devices have not been implemented.

Just over half of the respondents had viewed a LATM Scheme in another LGA and the Willoughby (East Roseville) Scheme had been viewed by the greatest number of respondents (15%). There was however, some misunderstanding of what constitutes a LATM Scheme by some elected representatives who interpreted individual devices as 'schemes' and/or viewed traffic lights as a component of LATM.

Answer 1

LATM SCHEME:
"A system to bring about a realisation in people's minds that they're using roadways maybe to the detriment of people living in streets."

Answer 2

LATM SCHEME:
"Improvement to flow of traffic through suburban streets."

Answer 3

LATM SCHEME:
"A zoning."

3.3.2 Support for LATM Schemes and evaluation of devices

A large majority (86%) of elected representatives were supportive of the implementation of devices in their Council area. Elected representatives supported LATM Schemes principally for the safety afforded by speed restriction and to a lesser extent for through traffic diversion. Only a minority (15%) mentioned wider environmental benefits such as traffic noise reduction, air pollution reduction, safer environment for pedestrians.

Roundabouts were ranked as the most successful device above all others.

The second most successful device was the raised threshold/platform.

Differences between Councils reflected the experience gained with devices in their own LGA.

The least successful traffic management tool was 40km/hr zone which was viewed as unenforceable. Speed humps scored a close second in the 'unsuccessful' rating behind the 40km/hr zone.

It would appear that the majority of elected representatives are aware of the need to constrain traffic movement physically rather than with signs if effective results are to be achieved in speed reduction.

There was majority support for one lane devices with a significant minority (26%) undecided about their support/ opposition as this would depend on individual locational factors.

3.3.3 Where Does Traffic Management Rate in the Totality of the WSROC Councils' Responsibilities?

Within the time frame of five years, 'traffic in residential streets' was ranked as the third most important issue in the WSROC region, trailing 'drainage works' and 'garbage collection/waste management'.

3.3.4 Requirements for More Information

The majority (70%) of elected members were in favour of more information, particularly a video and an organised trip to existing LATM schemes, however there were differences between Council areas in the type of information rated more highly.

3.3.5 Conclusions

The survey revealed important gaps in the understanding of the purpose and nature of LATM schemes as set out in the State Government Guidelines. Elected representatives realise their need for further knowledge by indicating a desire for further reference material.

There is however, a good understanding of the operational differences between signage [40km/hr zones, one way streets] and physical devices.

There was no request for more information on specific devices. Funding is an issue raised by a minority of elected members.

LATM schemes are clearly viewed within the framework of traffic control and decrease in accident rates rather than the broader framework of residential life style, amenity or environment. There was no mention, for example, of the potential in the decrease in traffic noise and localised air pollution

Drainage works scored as the most outstanding issue which councils have to confront over the next 5 years in the WSROC area. Garbage collection/waste management scored the second overall priority followed by 'traffic in residential streets'. If an assumption on expenditure priorities is made on the responses to this survey, traffic management would score third place in the WSROC region.

4. STATE POLICIES

As a component of the study, the following State Government departments and authorities were contacted - Roads and Traffic Authority (Head Office and Sydney Western Region), Department of Transport (Head Office and Liverpool office), Police Headquarters and the Department of Local Government. A submission was also received from the Bicycle Institute of NSW (the bicycle user representative group).

4.1 THE ROADS AND TRAFFIC AUTHORITY (RTA)

The main reference work for practitioners in LATM is the publication entitled 'Guidelines for Traffic Facilities' within which Part 7.2 specifically relates to Local Area Traffic Management. These Guidelines state that:

> *"Councils are responsible for the management of Traffic on the non-classified roads and have been delegated the appropriate powers to carry out this task (originally) under the Traffic Authority Act, 1976."*

The Local Traffic Committee is charged with the approval of a LATM Scheme; the RTA and Police are represented on such committees.

The previous Traffic Authority (now RTA) promoted LATM schemes by establishing pilot projects and monitoring these in order to develop local guidelines. Specific monitoring of speed humps was taken before these were introduced into NSW as a legal device. Further trials of devices suitable for bus routes were also undertaken in conjunction with the Department of Transport (previously (UTA) of Mercedes and Volvo buses. Guidelines are to be produced on these latter trials. The Traffic Authority also produced LATM and Shared Zone brochures, undertook a Neighbourhood Road Safety Campaign which monitored the impact of community publicity about slower speeds and 40km/hr zone signage on the behaviour of vehicle drivers.

Essentially the trial period for LATM schemes and 40km/hr zones is over, and Councils are in a position to undertake LATMs and be responsible for their methodology and funding. Objections can be raised by the RTA member or Police on a Local Traffic Committee

Objections

Appeals

to devices proposed in a LATM scheme. An appeals procedure is available where the RTA or Police can approach an independent Chairman of the Regional Traffic Committees (presently Mr Maurie Egan) to make a ruling on Section 269A (Local Government Act) matters in relation to road closures and LATM devices.

Sydney Western Region funding

The RTA regions have delegated powers to deal with funding pertaining to devices which can assist in LATM schemes. The RTA Sydney Western Region covers the WSROC area. The "Road Safety Traffic Flow Programme" and "Blackspot Programme" are two avenues of funding which are available to Councils for LATM devices. The present RTA charter is to address accidents on all roads, thus local road works can also be funded if certain criteria are met.

The RTA Sydney Western Region is using an accident Benefit/Cost ratio based on the first year rate of return. Councils have been invited to submit projects for funding under the 'Road Safety Traffic Flow Programme'. Where the Benefit/Cost ratio is less than 1.0, pro-rata funding is available. For high rates of return, the RTA has approved funding for the total amount of device construction. Essentially this programme is aimed at addressing accident-prone locations in the Sydney Western region.

In terms of LATM, these RTA funds can be seen as 'seeding' funds for future work undertaken by Councils in a more intense way (through comprehensive LATM schemes). It is unlikely that the Benefit/Cost (B/C) test could justify the RTA funding an area-wide LATM scheme although in the Fairfield Council area, street schemes have been approved for partial funding where the B/C accident ratio has been high.

Accident numbers are derived from Police accident records and accidents involving motor vehicles, bicycles and pedestrians are costed from the point of view of injury and fatal accident. Age group differences are not considered in the costing at this stage.

It must be emphasised that the funds presently available through the RTA Sydney Western region must comply with the B/C test which is related to accident rates only and the proof that a device (or devices) would generate a B/C value of 1.0 or above. Unfortunately LATM schemes are implemented not only in response to documented accident statistics; some of the highest rates

of return can be achieved at intersections where a roundabout or traffic lights can alleviate a traffic flow problem. LATM is an areal concept which addresses amenity and environmental matters as well as traffic-related matters in a local area. It may be that in a LATM area no specific location is accident-prone, but rather the local area is subjected to unnecessary traffic or speeding traffic which, while it may not generate the density of accidents as occurs at an intersection, may nevertheless seriously impact on the amenity of a residential area. RTA funding arrangements do not, at this stage, address these broader issues.

4.2 DEPARTMENT OF TRANSPORT

The Urban Transit Authority (UTA) was replaced in 1989 by the State Transit Authority. The new STA assumed the function of the UTA to operate government-owned buses and ferries in the Sydney and Newcastle metropolitan areas.

The coordination and planning functions for buses were transferred to the Passenger Transport Division of the Ministry of Transport including the route licensing functions of the former Department of Motor Transport.

The Western Metropolitan Region office is located in Liverpool. Staff from this office consult with Councils on planning issues which may impinge on bus operations in the region. In relation to LATM, the Department officers negotiate with Council practitioners and bus operators in relation to objections which may be raised by a bus operator about proposed or existing traffic devices.

Discussions with the Liverpool office, has revealed that the Department is in a weaker position at this stage to argue on behalf or against certain devices due to the lack of background data on the operation of buses over devices. While trials were undertaken of bus performance over LATM devices by the UTA and the Traffic Authority in 1987/88, the subsequent draft guidelines have not yet been produced. It would appear that until these guidelines are made available by the Service Planning and Coordination Branch of the Department of Transport, the valuable experience which was gained in those trials will not be available to Council practitioners, regional operations staff of the Department of Transport and bus operators alike.

4.3 POLICE DEPARTMENT

Contact was made with Traffic Operations at Police Headquarters. The Police Department, as a member of the previous Traffic Authority when the LATM Guidelines were developed, supports, in principle these Guidelines. It was noted in correspondence however that:

> *"support in principle of a guideline should not be taken as general support of any proposed treatment. This department examines each application on its merits, its effect on the surrounding street system and, more importantly, its overall effect on road safety."*

The Police Department has been regionalised into districts - the three districts of Parramatta, Penrith and Liverpool cover the WSROC region. Each District Superintendent has autonomy to interpret the priorities within his district within the Police Department 'Community Policing' guidelines. Officers attend inservice training courses in which a traffic administration course is included.

There appeared to be some reservations about the use of speedhumps from Headquarters, as it was viewed that they can pose a danger to the vehicle. Discussions with Council practitioners revealed that generally there has not been any opposition to proposed speedhumps from Police on the Local Traffic Committees.

As in the case of the RTA, the Police representative is able to appeal to the Independent Chairman of the Regional Traffic Committee in respect of a proposed scheme or device. Contact with Mr Maurie Egan, the Independent Chairman, has revealed that **no appeals have** been lodged by the RTA or Police to date.

4.4 SUMMARY

The LATM Guidelines of the Traffic Facilities Manual are the principal point of reference for practitioners. Additionally, Austroads (previously NAASRA) Guidelines on LATM are also available to practitioners.

The Standards Association of Australia is also preparing a document in relation to LATM devices and signs.

Councils are now responsible for the design and implementation of LATM Schemes in their areas. While Police and RTA members are represented on Traffic

Committees and can offer comment on proposed devices, objections by these members to a LATM scheme must be lodged with the Independent Chairman of the Regional Traffic Committees.

Funding for LATM schemes is the responsibility of Councils, however some funding is available from the Western Sydney Regional Office of the RTA (Blacktown) for devices which meet high road safety criteria.

5. AN INTERNATIONAL AND HISTORIC PERSPECTIVE OF LATM

An overview of experience in Local Area Traffic Management has been undertaken for this study. While the emphasis is on the review of experience in Australia in the last decade, the beginnings of LATM stretch further into the past. The concept of residential living areas protected from the unnecessary intrusion of motor vehicles has been propounded for several decades, coinciding with the accelerated growth of car ownership since the 1960's.

As car ownership has accelerated, so has the incidence of car related accidents in local streets; as the speed of vehicular travel has increased, so has the severity of motor vehicle related accidents. Local streets are now the sole domain of motor vehicles where pedestrians and cyclists must often be wary at their own peril.

In Australia we now have a whole generation of city dwellers who have had access to a car all their lives, and cannot imagine what residential street life was like without the constant whiz of motor vehicles.

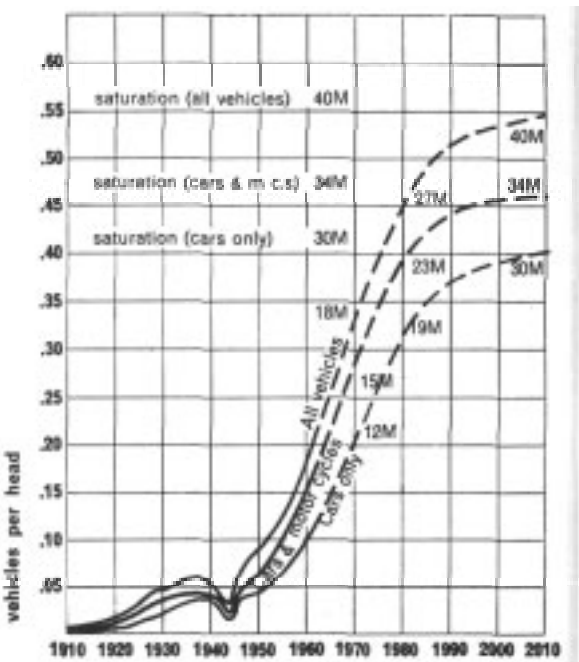
The references which are reviewed in the following sections are located in Appendix D under "List of Key References"

5.1 THE EARLY YEARS - ON TWO CONTINENTS

Post World War II re-establishment in European cities and towns resulted in reconstruction of some areas where physical damage was extensive, but in the main resulted in stabilisation of damaged housing stock along the existing street alignments. The escalating car ownership predicted in the 1950s and impacting on urban environments in the 1960s saw the growth of a new profession - traffic planners/engineers - directing their energies towards accommodating the existing and predicted needs of private vehicular travel patterns in urban areas not planned to accommodate such vehicles.

In the US younger cities had developed with more generous space available for the use of the motor vehicle, and freeway construction on an extensive scale had ensured that private transport in cities would be catered for.

In the US the growth of the impact of the vehicle on residential life was documented by a major work



Buchanan Report 1963

undertaken by the University of California for the Federal Highway Administration.

By the 1970s the private car was making a major negative impact on cities and towns on the European continent. The Dutch tackled the challenge of reversing the impact of the car in residential neighbourhoods by giving pedestrians equal rights and redesigning residential streets and central shopping areas for the use of pedestrians. In respect to city shopping malls, West German was the first to design this concept into its central city reconstruction.

Three seminal works are briefly reviewed in this section.

5.1.1 BUCHANNAN, C. D. et al, (1963), *Traffic in Towns*. Reports of the Steering Group & Working Group appointed by the Minister of Transport, HMSO

The concept of *"Environmental Areas"*

This was a major work produced by a working group to the Transport Minister which suggested remedies in relation to new urban roads, public transport and delineated environmental management areas. Environment management would comprise the delineation of potential 'environmental areas', the removal of extraneous traffic from such areas and the reorganisation of the system for internal movements by vehicles and pedestrians. These were likened to urban rooms from which through traffic would be excluded. The authors said:

> *"The effect of this would be to transfer congestion to the embryo network rather than to let it build up in places where people live and work."*

Residential streets are not relief routes for the main road system

Through traffic filtering through residential areas was recognised even then, as a negative impact in relation to the residential environment.

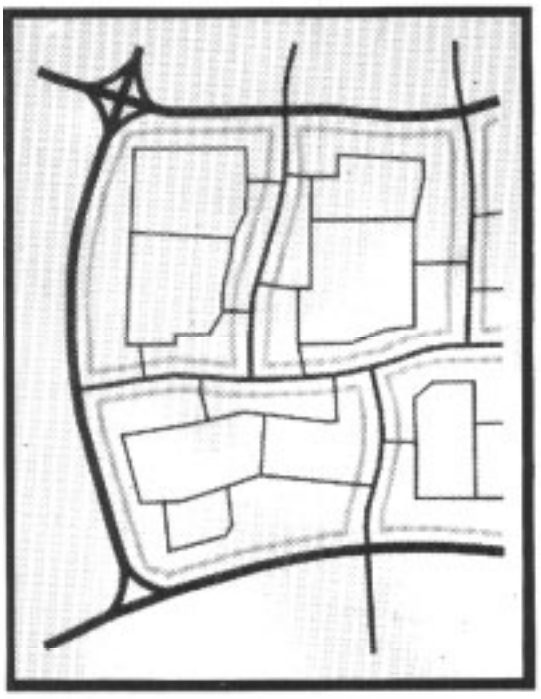
The concept of *"Environmental Capacity"*

Environmental areas were therefore based on the idea that areas and streets of the city should have 'environmental capacity' in which levels of safety, noise, air pollution, visual intrusion and amenable pedestrian conditions would prevail. In these areas pedestrians should not have to adjust their behaviour to that of the car through suffering delays in crossing their street. This concept then had implications for widths of residential streets, and more importantly the amount of traffic on the street.

In residential areas pedestrians should not have to accommodate the car - it should be the other way around

A subsequent study applying this 'environmental capacity' concept in the suburb of Kensington in London, set the limits at 200 vehicles per peak hour or from 2,000 to 3,000 vehicles per day.

By 1973 there were cities throughout the UK, many developed as part of the General Improvement area programme begun by the Housing Act of 1969, which were incorporating the principles outlined in Buchanan's report.



5.1.2 APPLEYARD, D. AND GERSON, M., LINTELL, M. (1976), *Livable Urban Streets: Managing Auto Traffic in Neighbourhoods*. University of California for the Federal Highway Administration, Dept. of Transport, Washington D.C.

This study reported on the effects of auto traffic on street life and residential neighbourhoods, evaluated efforts to manage traffic in residential neighbourhoods and proposed methods for carrying out and evaluating traffic management plans. It reported on about 500 home interviews taken in San Francisco on residential streets with varying volumes, compositions and types of traffic. Some major points and observations made in this report are valid today and applicable to this study.

The study confirmed that traffic was the most important concern of residents surveyed in city neighbourhoods, and was of more concern at that time than crime, although crime received more publicity - 60-70% of the San Francisco sample were annoyed by the effects of traffic.

Appleyard noted that

> *"the effects of traffic permeate the whole fabric of city life."*

Streets were characterised by traffic volumes into Light Traffic streets - <2,000 vehicles per day (vpd), Medium Traffic streets - 2,000-10,000 vpd and Heavy Traffic streets 10-20,000 vpd.

The perceived intrusions of traffic were in relation to the full range of environmental factors: danger, noise, vibration, air pollution, dirt and litter, visual appearance of the street.

Traffic decreases the 'sense of community' in a street

Traffic also had impact on residents' perception of their territory and their control over it, responsibility and privacy. Residents on highly trafficked routes saw their territory as within their own property boundaries, those on lightly trafficked streets expanded their territory into the public street. Traffic therefore interferes severely with outdoor, especially street-based activities and social interaction. Residents who lived on traffic-affected streets were less likely to care about the street they lived in, communicated less with neighbours and had a lessened sense of community in their street.

Traffic volume was the major variable that affected street liveability up to 10,000 vpd, after that the percentage of people disturbed levelled off - people lived their lives differently and the expectations they had about their street were different from those on lighter trafficked routes.

The composition of traffic was also important with the presence of heavy trucks and buses causing severe impacts on street liveability.

The speed of traffic was most worrisome on Light Traffic streets and Medium Trafficked streets.

It was noted that the education of respondents and their residential lifestyle expectations also has an impact on respondents' evaluation of traffic problems, as well as the absence/presence of small children. Families with small children had increased sensitivity of the danger of vehicles while elderly residents seemed to be least disturbed and wanted no change.

Appleyard stated that:

> *"Certain neighbourhoods are more active in demanding traffic control, middle and upper income residents are likely to be most vocal proponents for traffic control schemes but those who might lose must also be taken into account."*

Priority of scheme implementation cannot be determined by traffic data or accident data alone, or on community pressure alone, but a combination of both

The authors noted that the choice of priority neighbourhoods may therefore have to depend on other characteristics than resident demand if an equitable distribution of benefits is to be the goal. However the report did not advocate total dependence on numeric criteria such as accident numbers, volumes and speeds to the exclusion of community pressure and expectations. Appleyard notes:

> *"The indicators may have nothing to do with what is on the residents' minds."*

Medium volume streets can be compared with our Collectors

For example, an interesting finding from the San Francisco surveys was that residents in the Medium Volume streets (2-10,000 vpd) were least satisfied with their street environment as their expectations of their street status as a 'residential' street was higher than that of residents on heavily trafficked routes (>10,000 vpd).

Appleyard was an advocate of close consultation with residents in the planning process for traffic management schemes.

An interesting finding was the value that is placed on the exclusion of through traffic in previously heavy trafficked inner suburban locations.

Traffic Management Upgrades the Value of Property

It was documented in England that with the introduction of traffic management schemes which excluded through traffic from the inner suburbs of Barnsbury and Pimlico, a middle class invasion occurred as the residential environment was upgraded. Similar results occurred in San Francisco's protected neighbourhoods. The social effects of traffic control schemes can therefore be as powerful as other neighbourhood rehabilitation schemes particularly in inner city areas. An Australian study (5.13.4) confirms this.

Environmental Improvement vs minimal traffic control - which one LATM?

Two basic approaches to neighbourhood traffic schemes were noted by this report. One is minimal traffic control, the other is the introduction of broader environmental improvement programmes.

The authors noted:

> *"These alternatives often depend on whether the highway or public works agencies are the proponents or whether the urban planners and designers are the professionals involved."*

Appleyard noted that while cheap barriers and stop signs are relatively inexpensive they may not be acceptable in some areas. More permanent features with paving, landscaping and street lamps can change the townscape significantly. Minimum traffic control schemes have advantages as they can cover larger areas and benefit more people who are blighted by traffic. However the townscape schemes create a more permanent and high quality solution, and once put in they avoid the scepticism that greets experiments. However, in poorer neighbourhoods, townscaping can be seen as an unnecessary luxury.

In Australia as in the U.S. experience has shown that properly designed and (if appropriate) landscaped devices are more acceptable to residents.

The strategies for residential streets were nominated as firstly, "family streets" or light traffic streets as they introduced children to the city. These streets were proposed as sanctuaries for adults, an escape from the bustle of city life, and a place for withdrawal and self-restoration. The traffic volumes were recommended at no more that 2,000 vpd and speeds of less than 30km/hr. The environmental problems of such streets with light traffic were careless and speeding drivers. Slowing the traffic was seen as probably the first strategy for residential streets as speed and surprise often lead to traffic accidents involving children and adults. Keeping the traffic out was a second strategy, a more drastic solution which can dramatically lower volumes and turn previous rat-runs into quiet secluded areas. The third strategy was street maintenance and tree planting, this was seen as particularly relevant in old cities such as San Francisco and in European cities.

Where volumes are low speed becomes a problem in residential streets

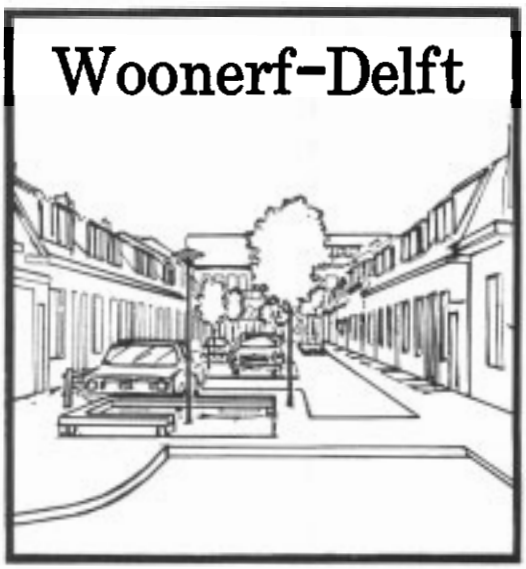
Tackle first
- **speed then**
- **through traffic then**
- **landscaping and maintenance**

5.1.3 MINISTRY OF TRANSPORT, (1977) 'Woonerf', Royal Dutch Touring Club, The Hague.

In Europe, the amenity of residential areas was addressed in an original way by the 'Woonerf' concept which is one where the interaction of traffic and pedestrians is protected by law.

The concept of shared-space street or Woonerf originated in Holland for the purpose of upgrading the amenity of deprived residential areas. The aims of the Woonerf are:

- to provide an island of safety and repose, especially in residential areas surrounded by heavy trafficked routes
- to create residential support facilities within reach of inhabitants
- to add some visual beauty to drab neighbourhoods.



While a woonerf is not a traffic-free area, it is an area within which the pedestrian clearly predominates over any traffic provisions. This concept is established by physical design and supported by law. In the Netherlands, woonerf design, traffic regulations, and boundaries must satisfy basic standards established by the Dutch Ministry of Transport and Public Works and comply with Dutch Traffic Regulations which were established for that specific purpose. Speeds are reduced to 15km/hr.

(The Shared Zone Guidelines in NSW followed the example set in Europe.)

5.1.4 Comment

Taken together the Buchannan report and the Appleyard report present two perspectives of the same problem. Buchannan's study approached traffic management and planning from the perspective principally of the motor vehicle and the need to accommodate it in a rational way in a well defined network which then gives opportunity for 'environmental cells' protected from motor vehicle impact.

The Appleyard report approached the argument from the perspective of the continuing impact of the motor vehicle on the existing lifestyle in residential areas in the U.S. in spite of the extensive network facilities for the car. The end result however of both these major documents was still the same, that there was a need to protect residential environments from unnecessary traffic and from speeding traffic and that this could only be achieved through readjusting the street environment physically so that

vehicles have to behave in a more appropriate fashion relating to the residential land use.

From those early reports to 1990 the arguments have generally been very similar. There has always been some sceptical opposition against the philosophy of restricting vehicular access however this has decreased significantly on a professional level as numerous studies in relation to volumes, speed and accident reduction have documented the benefits of restricting free flow and free speed of traffic in residential areas. While the social impacts were documented by Appleyard, the amenity and lifestyle gains, on the other hand, have not been so broadly documented - perhaps because traffic management has become principally the domain of traffic engineers rather than town planners or urban designers.

5.2 AUSTRALIAN EXPERIENCE IN THE 1970s

5.2.1 VREUGDENHIL, J. (1972), *Residential Street Design with Special Emphasis on the Reduction of Accidents and the Improvements of the Environment'*, Proc. ARRB Conference.

The South Australian Government Committee of Enquiry into Road Safety (1970) stimulated the examination of reducing accidents on local street systems. The City of Woodville was the first municipality to undertake a programme of traffic management techniques (principally road closures) to reduce accidents in grid residential streets used as short-cuts by through traffic. Vreugdenhil documented these closures in the early 1970s and they served as indicative examples for the rest of Australia.

Vreugdenhil's experiments were the first of their kind and subsequent analysis cannot diminish the impact that his thinking had on the local traffic planning in this country.

Road closures to create T-intersections

The Woodville traffic management schemes relied on the road closure and the creation of a T-intersection rather than a four-way intersection. These treatments resulted in a 50% decline in reported accidents in a comparison of three year periods before and after the traffic scheme was carried out.

Not ad-hoc treatment but areal approach

Roundabouts and diagonal closures were included. This was done within the framework of a 'management plan' which delineated an area for treatment. Vreugdenhil

measured the success of the scheme by reduced intersection accident statistics. While this approach might be criticised on amenity and aesthetic grounds, Vreugdenhil believed that the total subjugation of the car to the non-vehicular needs would not be acceptable in Australia to the degree it was in Europe at that time.

Systematic upgrading of public consultation

With successive traffic management schemes in the Woodville area more sophisticated community consultation was included. In the first scheme carried out in 1970 the only information given to the residents was a letter to those residents immediately adjoining the closed street. The second traffic management scheme involved the advice in writing and the forwarding of a plan of the proposal to residents following which the resulting devices were considered. By 1973 all residents in the management area were notified in writing and sent a plant of the proposal, a public meeting was held and consideration was given to internal traffic movement associated with schools, churches, shopping groups and so on.

Road closures have been landscaped and now present a positive addition to the streetscape. The economic gains are reviewed in 5.3.14.

5.2.2 BRINDLE R. E. (1979), *Local Street Management - Some Observations on Implementation Problems*, AARB Victoria.

In 1979 a summary of Australian local street management experience revealed that the most frequently used devices for traffic management were street closures at intersections and round abouts.

Brindle noted that:

Road Closures and Spot Treatments

"Typically street management has response to specific problems on one street or in one small locality. Comprehensive area-wide planning is still relatively rare, although some of the spot improvements have accumulated into substantial network treatments."

Three common problems:
- **unclear objectives**
- **value system of residents**
- **political lobby groups**

In summarising the experience to 1979, Brindle isolated three common problems. Firstly, the lack of clarity of the objectives of local street programmes leading sometimes to lack of positiveness in explaining and defending them; secondly, the different "values" placed

by different parts of the community on changes in safety, amenity and access and thirdly, the selection of those who have a right to be considered in the decision and the various political pressures exerted by those who have an interest.

5.2.3 BRINDLE, R. E., SHARP, K., (1980) *Local Street Traffic and Safety Workshop Papers and Discussions.*

Speedhumps

The 1980 ARRB Conference workshop on local street traffic and safety is summarised in this collective report. At this stage of LATM development, while there appeared to be general experience in speed humps and reportage on these and monitoring of these devices had occurred both in Victoria, specifically in Corio and in Perth in the city of Sterling, there were still major reservations about the use of speed humps and whether signage or road closures could not do the same job.

Public Consultation an Issue

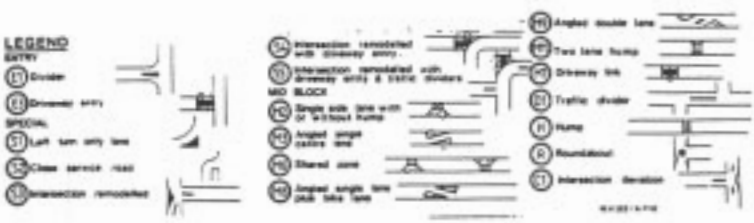
Public consultation was also becoming an issue with there being as many different approaches to the way the residential public should by involved in LATM as there were attempted LATMs themselves. Generally it was becoming clear that traffic practitioners were finding it difficult to communicate with the public on LATM issues and the planning of LATM but were not particularly clear on the methodologies to be used.

Monitoring and Speedhumps

The paper entitled 'The Use of Road Humps in the Residential Streets in the Shire of Corio' by P. McDonald in this collection of papers summarises in great depth the 'before' and 'after' monitoring of speed hump trials. The conclusions in this study were that traffic speeds in streets with speed humps at maximum distances of 110 to 150 metres had decreased by 21 to 24 kilometres at the humps and between 10 and 15 kilometres mid-way between the humps. Travel times in both streets which were about 300 metres long had increased by 60% and traffic flows had reduced by 21-24%.

A majority of the residents of both streets were in favour of the humps and the majority of drivers using the streets experienced no difficulty in crossing the humps and were in favour of their retention. Similarly the various emergency services had no difficulty in crossing the humps and were generally in favour of their retention. The testing of Watts profile hump developed and tested

by the TRRL in the UK and a variation of this design concluded that the Watts profile hump was more successful in slowing vehicles. The Corio on-street application of the Watts profile hump was the first installation and monitoring of the humps in Australia.



5.2.4 Comment

While road closures appeared to be the most frequently used device for regulating traffic they were not without their controversy. In Mosman in Sydney, in Fitzroy in Melbourne and in Burnside in Adelaide road closures were installed and then had to be removed due to pressure either from state authorities or from local residents themselves. Subsequently both in New South Wales and Victoria the State Government acted to removed the ability of local authorities to close streets unilaterally. Guidelines were established by the Traffic Authority in New South Wales and similarly in Victoria for the procedures associated with road closures. In New South Wales road closures had to be approved by the State Government even though they may only affect local streets.

As a result of the controversy surrounding road closures in many cities across Australia, municipalities were faced with problem of constantly escalating traffic in residential streets and the speed and safety problems associated with that behaviour on the one hand and on the other hand not having any effective tool of controlling through-traffic and traffic behaviour. Many municipalities were

experimenting in redesigning street layouts creating off-set intersections at four-way intersections, narrowing carriageways and deviating the carriageway from the straight run. Unfortunately some of these devices or redesigns were generally expensive and could not be implemented on an area-wide basis.

The Watts profile speed hump had been trialled in Victoria but was not as yet in widespread use.

5.3 THE BIRTH OF LATM IN AUSTRALIA IN THE 1980s

The experience of the 70s had caused the term Local Area Traffic management to be coined. Up to that point most schemes were referred to as 'local street traffic and safety schemes' or 'residential street schemes'.

In Victoria slow-point trials were undertaken. In South Australia the concept of Residential Street Management was initiated through a series of discussion papers in order to set the scene for state funding of pilot schemes. Similarly in New South Wales a Provisional Guidelines document was published in 1983 in order to set the scene for pilot schemes in this State.

5.3.1 LODER AND BAYLY, Sandringham - *Local Area Traffic Management and Safety Study* (1982). Office of Road Safety, Victorian Road Safety and Traffic Authority, City of Sandringham.

The concern of this study was ROSTA's interest in a demonstration of an area-wide approach to local street management and safety gains and the Federal Office of Road Safety interest in the process of the study and the applicability of that process elsewhere.

Angled Slowpoint and Necking Trials

The types of devices tested were a single lane hump, two-lane hump, two-lane and one lane angled slow points, a median and kerb extension, and an off-set necking.

Travel speeds through the devices averaged between 15 up to 50 kilometres an hour, travel speeds between the devices were clearly lower where the devices were more closely spaced. At a spacing of 94 metres compared with over 200 metres there was an increase of 10 kilometres per hour. Before the trial about half of the vehicles were

breaking the 60km/hr speed limit but after slow point installation most vehicles travelled at less than 50km/hr. There was a total elimination of very fast cars travelling at 90km/hr or more. Travel times had increased albeit imperceptibly by 37 seconds along the length of the street while the average travel speed had settled at 45km/hr.

Community Assessment

An important aspect of this study was the residents' assessment of these devices. Trials were undertaken on two streets. In one street a clear majority of 61% were for the retention of devices in the street. The devices consisted of two speed humps and two angled slow points. Residents outside the trial area were also in favour of devices, although support here was slightly less than 53%. It is notable that people in streets immediately surrounding the trial street were the ones in least favour of the devices, this was assessed as being due to the fact that they perceived a transfered of traffic problems into their street due to the isolated character of the one street trial.

Families with Young Children Gave Greater Support

In the other trial street which again had a one lane angled slow point and a necking the response was somewhat different. There was a clear polarity between those who supported the devices and those who didn't. It appeared that the families which did support devices were those with young children, those families with children 17+ years or no children in the family were not supportive of the devices. Again there was a majority support for devices (55%) in the general areas outside the trial street.

5.3.2 TRAFFIC AUTHORITY OF NEW SOUTH WALES, *Provisional Guidelines for Local Area Traffic Management* (1983).

These guidelines were produced as a discussion document and in order to set out a general method for the preparation and implementation of area-wide Local Traffic Management Schemes and presented a catalogue of applicable traffic control and management devices.

Planning for LATM Methodology Defined

The procedure for the preparation and assessment of Local Area Traffic Management Schemes was defined. The first step was to establish a local area under study and with the assistance and input of residents identify the problems and define the goals and objectives leading to the preparation of a conceptual scheme. Due to the infancy of these schemes in the state at that time, it was

necessary to present the concept to the Traffic Authority Technical Committee for comment and advice, after which the individual traffic control devices could be designed and presented to the Traffic Committee for concurrence. In the event that the Traffic Committee did not approve the local area traffic management scheme could be referred to the Traffic Authority for approval.

At the time of preparation of the Guidelines, the Belmore/Lakemba Local Area Traffic Management Scheme had been designed and implemented by the Canterbury Council. The East Roseville scheme was also at implementation stage in the Willoughby Council area in which the Willoughby Council and the Traffic Authority were involved. The West Ward Traffic Management Scheme in Mosman was being prepared by consultants for the Mosman Council. In all these three cases the concept of local area was well understood and the areas covered generally lay within the boundaries of arterial and sub-arterial roads covering a large number of streets.

5.3.3 CAMKIN, H. L., (1983), *Report on Overseas Investigations August-September* for the Traffic Authority of New South Wales.

At the time that the Guidelines were released in New South Wales the Chairman of the Traffic Authority undertook an overseas study tour in which he reported upon his return on the Local Area Traffic Management initiatives in North America and Europe.

He noted that by and large the individual control devices used in LATM Schemes overseas were similar to those being implemented in Australia with greater emphasis being placed on different devices in different areas. While slow points and road humps were still a matter of contention in New South Wales at that stage they were taken very much for granted when applied in appropriate conditions in most parts of Europe including the U.K.

U.K. Regulations for Speed Humps

In the U.K., regulations authorising the use of road humps on public roads up to 30 miles per hour speeds were promulgated at the end of 1983. The Department of Transport's press release claimed that research had shown that road humps can cut accidents at black spots by 50%.

Woonerven Expand in Holland

The concept of the shared space or Woonerf was developed in Holland and by 1983 there were 3,000 Woonerven in the Netherlands. Camkin noted that by regulatory reinforcement the designs are not dissimilar to courtyard treatment designs in villa developments only on a much larger scale.

U.S. Lags Behind

Camkin found that in the U.S. Local Area Traffic Management Schemes had not been implemented at the same rate as in the U.K. and in Europe, and many of the schemes had languished in a temporary state for several years, which would not have been acceptable by Australian communities due to the eye-sores that they were presenting.

The acceptability of LATMs in the US may have been a result of the over-use of road closures and diagonal closures which severely restricted accessibility for local residents. The use of roundabouts was becoming more popular both at intersections and mid-block as these tended to slow the vehicles down while at the same time affording accessibility to local residents.

Public Consultation

Camkin summarised the LATM process overseas by saying that an essential feature of all the LATM schemes was the extent of public participation required.

> *"Neither the Dutch nor the Seattle administrations for example will proceed with a local area scheme unless there is a clear mandate from the community in terms of a plebiscite of affected residents. The planning is generally quite interactive with the residents being given opportunity to make an input to the concept, planning and design stages."*

5.3.4 HAWLEY, L., (1982), *The Prospects for Residential Street Improvements in Adelaide, Discussion Papers 1 and 2*, prepared for the Director General of Transport, South Australia.

These Discussion Papers were the first to be produced in South Australia on the subject of residential street redesign and the LATM concept. The Discussion Papers addressed the functions demanded of residential streets and the conflicts that arise in the use of existing residential areas and measures that potentially might be useful for reducing conflicts and achieving desired

functions. The economic and political prospects of introducing these measures were also discussed and the desirability or otherwise of developing a two level residential street hierarchy or street classification in Adelaide.

A Residential Street as a multi-functional place

The discussion on residential street management and redesign emanated from a residential street function perspective rather than from a traffic management perspective. The residential street was seen as a multi-functional place which needs to accommodate not only the moving vehicle but the needs of the pedestrian and the cyclist and the socialisation needs of a residential community.

From a safety point of view it was pointed out that in South Australia 37% of all pedestrian and cyclist accidents occured in the 15 year age group and under, which constituted about 26% of the total South Australian population. This was a result of the significantly different behaviour patterns of children from adults in relation to traffic which has been studied at length by the OECD and the International Federation of Pedestrians. The Discussion Papers pointed out that the mere education of young children in road rules does not necessarily influence their behaviour patterns in residential areas while it may influence their behaviour patterns crossing the road at major roads abutting the school. Elderly people are also vulnerable in traffic as they often have hearing and sight impairments thus affecting the reaction time to a traffic-related stress situations. The Discussion Papers proposed that rather than influencing behaviour of pedestrians in the very young and very old age groups to comply with the characteristics of motor vehicle behaviour in residential streets it would be more sensible to adjust street design and vehicle behaviour to pedestrian behaviour for those age groups particularly.

Pedestrians First, Cars Second in Residential Streets

Land Use Planning vs Traffic Planning

It was also pointed out that a major conflict has been created by our unitary or single purpose planning system: that is one profession and one State Government department dealing with road planning and another dealing with land use planning. This system has resulted in a situation where while everybody knows what a residential street is, there is no official classification of such within any statutes. The land use and road classification terminologies are not inter-related and while land use zoning explicitly states the type and nature of the land use, e.g. 'medium density housing' or 'regional

shopping centre', thereby implying use, scale and density of buildings, there is no mention in the classification of the related movement to and from that land use. Conversely road classifications refer to relative gradations in traffic volumes or funding classifications without making any mention of an adjacent land use along the roads or the generators of the traffic which travels on the roads. Thus a local road classification implies volume and hierarchy but not whether the small volume road is through a residential, industrial, commercial or other land use area.

No consideration in statutes of land use acknowledgment in road hierarchy classifications

The report went on further to say that while planning theory may espouse a 'neighbourhood' concept in the relationship of land uses to each other the types of land uses, the nature of the housing etc., the intrinsic need of a neighbourhood as a safe interactive social environment is often compromised if not completely destroyed by the roads running through it. These roads are inevitably designed for vehicle movement along a heavily sealed and guttered street which perceptually and physically creates neighbourhood barriers.

Residential Streets as 'Barriers'

Since the writing of the Discussion Papers much has been achieved with the restructuring of residential street layout and design in new subdivisions. The problem with old subdivisions of course still exists. The point was made in the reports, that if one were to study a photograph of the non-arterial road with land use on either side blocked out, the motor vehicles and traffic signs removed it would be impossible to differentiate from the physical design of the road the amount of traffic it carries, the nature of that traffic or the land uses on either side. Indeed the design of the road gives no clue as to its intended function. In many existing residential areas it was purported over-design of residential streets was the rule. This constitutes a depletion of resource that could be used more effectively elsewhere.

Finally it was proposed in the report that there ought to be two classifications of roads in Adelaide due to the all-pervading grid system of streets and the well-spaced arterial road system. The single classification for residential streets proposed was the 'Local Residential Street' with an occasional 'Local Residential Crossing Street' implying a slightly higher hierarchy of street but still a residential street while the arterial road system would serve no residential function. It was proposed that residential streets, whether they be crossing streets or local streets, should be access streets wherein low speed

Proposed classifications:
- **Local Residential Street**
- **Local Residential Crossing Street**

limits would apply and where speed limits would ideally be reinforced with directive traffic management techniques such as round abouts, chokers, pavement surface, differentiated slow points, etc. rather than more aggressive devices such as road closures, half road closures and one-way street use. By the use of this residential street classification it would be simple for all vehicle drivers to understand that once they were off an arterial road they were in to a totally different environment and entrance points off arterial roads could be designed to give cues to drivers to that effect.

The second Discussion Paper itemised all the traffic management devices known at that stage with drawings and costs with suggested constraints and dimensions. These reports formed the background to the policy which was adopted by the South Australian Government in establishing demonstration schemes for Local Area Traffic Management and funding these with State funds.

5.3.5 BRINDLE, R. E., (1984), *Traffic and Local Streets - What Are We Learning*, Proceedings ARRB Conference, Volume 12 Part 5.

In this paper Brindle notes that although there were many examples of good LATM practice in Australia, three areas of criticism could be isolated:

- the concentration on devices as ends in themselves;
- the engineering deficiencies of the treatments particularly in terms of design;
- the failure to understand the special nature of residential streets.

Is LATM purely traffic engineering?

He suggested that LATM is not uniquely an engineering matter, although the burden of designing and implementing LATM schemes has been assumed by engineering staff in local government. He also suggested the need to improve the quality of works that was taking place.

Little monitoring of Schemes

While isolated studies at this stage had undertaken monitoring such as the Sandringham studies and Corio studies in Victoria as well as and a study in Perth, generally there were relatively few local authorities that committed resources to the monitoring of the traffic effects of a treatment.

Clear objectives needed

In expanding on the first criticism in relation to the concentration on devices, Brindle said that there appeared to be little evidence of the goals oriented planning which land use, community and traffic problems demand. He said that without a clear definition of problems

> *"appropriate solutions are difficult to select and there are inadequate criteria by which to measure their performance".*

Too Device-oriented

He said that the devices were the focus of attention rather than the scheme as a whole. He mentioned that it was necessary for engineers to recognise the points at which problem identification and solutions cease to be uniquely engineering and require other skills and approaches. Essentially he said Local Area Traffic Management is not an engineering problem but more a community planning problem. He felt there was an underuse of available non-engineering staff or consultant assistance in such areas as planning, design, marketing and social sciences.

Aesthetics under-rated

He also levelled criticism at what he called the engineering deficiencies, these being the appearance largely due to the materials chosen and the construction methods adopted for devices, the preponderance of temporary treatments and the poor handling of kerbs and edges, poor planting and widely varying degrees of design which caused variance in negotiability, treatments out of scale with the street and treatments generally appearing incongruous and unexpected and a use of many signs which in turn create their own visual clutter.

He went on to say that on residential streets the indirect affects must be of principal importance therefore the devices must not be an eye-sore. He even suggested that technical short comings will often be tolerated if the treatment has aesthetic appeal in that the perceived residential territories of households in quieter streets usually extends out beyond the legal boundaries of their dwellings and individuals care about the way their street looks and the way it relates back to their property. He summed up this argument by saying that residents should feel they have adopted the device rather than having it imposed upon them.

No distinction in law between local streets and roads

As in the reports by Hawley (1982), the constraint of the fact that traffic law does not recognise a distinction between local streets and other roads is a problem. This then has implications for the design of the street and the standards used and generally accepted, and the purported

function of the street which is still highly oriented towards servicing the traffic.

Concept of Slow Zones

He suggested the concept of 'slow zones', which implies that some roads are for access only, the concept of a 'by-way' versus the 'highway' which is the public road used for vehicular travel.

He recommended that in order to distinguish between main roads and residential streets where the function of traffic should not prevail, there should be in law a distinction between traffic routes and local access streets which then gives the possibility for visual street design and Local Area Traffic Management can be seen in terms of changing the total environment of streets and areas and not merely installing devices and changing geometric standards.

5.3.6 MEHTA, A., (1984), *Local Area Traffic Management: Lessons to Date*, Traffic Authority of New South Wales.

In this paper Mehta summarised the monitoring on the East Roseville LATM scheme in Willoughby. As a background he mentioned that the Traffic Authority monitored speeds in the late 1970s in the Sydney area and found that speeds on local roads were very high in that more than 40% of vehicles exceeded the speed limit of 60 km/hr. Accident studies showed that 40% of fatal and 50% of casualty crashes occurred on local streets. In terms of pedestrian accidents half the pedestrian fatalities and almost 60% of injuries occurred on local streets. Speed was isolated as the main factor contributing to these accidents and as a result the Authority undertook investigations as to how lowering of speed could be achieved on an area basis in residential areas.

>40% of vehicles in Sydney on local roads exceeded 60km/hr

East Roseville LATM Trial Evaluation

The conclusions of the trial scheme in East Roseville was that it was successful as far as traffic objectives were concerned however it had been deficient in effective public participation and aesthetics.

Redirection of Traffic to untreated streets

The scheme included two road closures. In terms of traffic volumes the scheme reduced traffic volumes substantially from 50-60% on the streets where road closures were installed to over 30% where other devices were installed. There was however, some redirection of traffic onto other streets which had not been treated at all.

There had been an increase in travel time on the surrounding arterial road system although this was not large and varied in terms of 20-40 seconds in peak hours. There was a general decrease in speeds within the precinct, the speed reductions were greatest at roundabouts, speed humps, raised mid-block platforms/thresholds and two-lane slow points where reductions up to 30 kilometres per hour were observed. Smaller reductions of 10 kilometres per hour were observed at single lane slow points and T-intersections. The design of single lane slow points in the trials was found to be deficient. Public consultation resulted in strong objections to the concept of the road closures which however were installed. After installation public consultation showed large objections from those areas which were not treated and were bearing extra traffic.

Arterial road travel time increase was minimal

In terms of accidents, six-monthly before and after accident data indicated a marginal decrease of five accidents on the perimeter roads and a substantial decrease of five accidents from 9 to 4 within the precinct.

A major shortcoming of the scheme was the lack of landscaping. Due to the pilot nature of the scheme it was decided to construct in temporary materials and this resulted in complaints from residents and also from drivers whose tyres were damaged due poor design of the devices.

Aesthetics poor

5.3.7 L. HAWLEY TOWN PLANNING SERVICES AND F. R. GENNAOUI & ASSOCIATES, (1984), *Evaluating Residential Street Management Schemes: Guidelines and Criteria*, prepared for the Director General of Transport S.A.

The purpose of this report was to identify a wide range of objectives that residential street management could address and thereby establish a set of Measures-Of-Effectiveness which could form part of a 'before' and 'after' evaluation of such schemes and enable the monitoring of the effectiveness of LATM Schemes, and the evaluation of affected residents of the scheme. This was done by defining and categorisation of a set of objectives which fell broadly under the headings of

- Safety Objectives
- Traffic Objectives
- Environmental Objectives
- Economic Objectives

- Social/Amenity Objectives

The methodology was developed from the perspective that resident participation and the determination of objectives is necessary in the development of a successful scheme. Misinterpretation of objectives can occur at any stage of scheme development and experience has illustrated that a serious misinterpretation of objectives can cause schemes to be abandoned at the planning stage or devices to be taken out after implementation.

The relationship between objectives was illustrated in a cross-tabulation which indicated whether the objectives were independent of each other, conflicted, were dependent on or complementary. Except for conflict situations the other three relationships are only one way, for example many of the environmental objectives are dependent on the traffic objectives, however the traffic objectives are in most cases independent of the environmental objectives. Many of the traffic objectives were shown to be independent of other objectives such as in the environmental, economic and social and amenity categories. It is therefore possible to pursue a set of traffic movement objectives without being cognisant of any further objectives.

Conflicts would arise between objectives which direct themselves towards maintaining vehicular accessibility and those directed at restricting vehicular through movement, non vehicular safety and multi-functional use of streets.

An extensive list of measures-of-effectiveness was established and cross-referenced with objectives for which they can constitute a measure. Measures-Of-Effectiveness (MOES) were defined as to target and contain a measure either quantitative or qualitative which can be a percentage, a relationship, an index or a rating thus for the objective - "restrict through traffic movement" the following MOES can be used:

- Percentage of through traffic
- Traffic volumes by vehicle types
- Percentage of resident satisfaction

Each measure of effectiveness was described and the surveys relating to the establishment of that measure of effectiveness were costed and described.

The study of the relationship between different objectives indicated that the majority of environmental and socio-economic objectives are dependent for their achievement on traffic and safety objectives. The reverse however is not true. The achievement of the following objectives would in effect set the scene for the social environmental objectives:

Core Objectives are Traffic Related Objectives

1. Restrict through traffic movement
2. Restrict heavy vehicle through movement
3. Lower speed
4. Minimise accidents

These could be called the core objectives of Local Area Traffic Management. Having developed the methodology for systematically evaluating Local Area Traffic Management the next step was to undertake a before and after evaluation of pilot schemes and this was undertaken in South Australia in 1987 and 1988.

FIGURE 3: MOES RELATING TO OBJECTIVES

OBJECTIVE / MOE	1. Percentage of Through Traffic	2. Traffic Volumes by Vehicle Types	3. Percentage Heavy Vehicle Through Traffic	4. Spot Speed by Category of Vehicles	5. Total No. of Accidents by Category	6. Number of Accidents by Category per Million Vehicle Kilometres	7. Travel Time to/from and within Local Area	8. Delay Time at Intersections	9. Level of Parking Utilisation ($)	10. Intersection Capacity	11. Capacity of Arterial Road	12. Travel Time Along Arterial Road System and Through Local Area	13. Noise Levels	14. % of Residents Subjected to Noise Level Exceeding Specified Limits	15. Concentration of Vehicle Pollutants at Different Points	16. Areawide Air Pollutant Concentration Index	17. % of Residents Subjected to Vibration Levels Exceeding Specified Tolerance Levels	18. Scale and Geometry of Street	19. Degree of Visual Intrusion of Utilities and Parked Cars	20. Trends in Property Values	21. Degree of Capital Upgrading of Properties	22. % Turnover of Properties	23. Average No. of Neighbour Contacts (per week)	24. Proportion of Small Children Going to School Unaccompanied	25. Numbers of Children Playing on Street	26. Types/Durations of Activities Undertaken in Local Street	27. Numbers of Cyclist by Category	28. Proportion of Local Trips Undertaken by Foot	29. Number of Residents Participating in RSM Scheme	30. % Resident Satisfaction
1. Restrict Through Traffic Movement	X	X																												X
2. Restrict H. Vehicle Through Traffic		X	X																											X
3. Lower Speed				X																										X
4. Minimise Accidents					X	X																								X
5. Maintain Local Area Accessibility							X	X		X																				X
6. Maintain Public Transport Access.							X	X																						X
7. Maintain Emergency Vehicle Access.							X	X																						X
8. Minimise Non-Resident Long Stay On Street Parking									X																					X
9. Don't Transfer Problems Within Area	X	X	X	X	X	X	X	X	X	X			X	X	X	X														X
10. Encourage Usage of Arterial Road System		X						X		X	X	X																		X
ENVIRONMENT																														
1. Lower Traffic Noise													X	X																X
2. Lower Motor Vehicle Air Pollution															X	X														X
3. Lower Vibration from Traffic																	X													X
4. Upgrade Visual Streetscape																		X	X											X
ECONOMIC																														
1. Maintain Property Values																				X	X									X
2. Stabilise Turnover of Property																						X								X
SOCIAL/AMENITY																														
1. Improve Opportunities for Streetwide Social Contacts																							X			X				X
2. Create Safer Environ. for Peds. & Cyclists					X	X																		X	X		X	X		X
3. Extend Residential Living Realm on to Street																		X							X	X				X
4. Improve Mobility/Access to Local Facilities by Non Car Users																											X	X		X
5. Ensure the RSM Process Equitably Involves all Residents in Scheme Dev.																													X	X

5.3.8 TRAFFIC AUTHORITY OF NEW SOUTH WALES, (1985) *Interim Guidelines for Planning and Implementation of Speed Humps.*

This study reported on speed hump trials undertaken in East Roseville, Municipality of Willoughby. The results of the trials on Watts profile speed humps indicated that speed humps substantially reduce speeds. The mean and 85th percentile speeds at the humps range between 17.5 and 24km/hr and 24 and 31km/hr respectively.

Secondly, the mean and 85th percentile speeds at mid-blocks depend upon spacing between the humps. Mid-block speeds of 40 km/hr may be achieved by humps placed at not more than 100 metre spacing.

Thirdly, a large proportion of residents who lived on streets with speed humps were in favour of the device and felt that the humps had slowed the traffic, improved safety and reduced noise.

Finally, a large proportion of the residents felt the speed humps did not create undue hazards for cyclists and motor cyclists or reduce on-street parking.

These findings were consistent with trials conducted elsewhere. Studies interstate showed that safety problems at humps were unlikely to occur for speeds up to 80km/hr: this speed being three to four times the advisory crossing speed. Studies had also shown that for most vehicles it is most comfortable to cross a hump at speeds up to 20km/hr.

5.3.9 JORDAN, P. W., (1986), *Bicycles in Local Traffic Area*, Proceedings of the Bike-Safe 86 Conference.

This paper summarises the way in which designing and installing LATM schemes should consider the safety and accessibility of cyclists. While cyclists are drivers of vehicles they do not contribute to the speed and volume or noise problems.

The details to which specific attention must be directed were summarised as: cyclist access through street closures, cyclist access via a No Entry street or a half

road closure, creating a cyclist route behind angled slow point devices so that bicycles do not have to share the squeeze point with the vehicle and finally keeping channels and areas where the bicycles are accommodated clean so that cyclists use the facilities provided for them.

5.3.10 GEOPLAN TOWN PLANNING AND RESEARCH INTERNATIONAL AUSTRALIA (1989), *Evaluation of Pilot Residential Street Management Projects in Unley and Enfield areas - South Australia*, prepared for the Director General of Transport, South Australia.

This was a State funded monitoring programme undertaken to evaluate Pilot Residential Street Management (LATM projects) in South Australia which were funded jointly by Councils and the Department of Transport. Evaluation of these pilot projects took the form of 'before' and 'after' studies to assess the effectiveness of LATM projects on an area basis and to test the evaluation metholology. Individual devices were not evaluated, but the scheme as a whole.

Five study areas were evaluated, two in the City of Enfield and three in the City of Unley. The evaluation consisted of two methodologies, in Enfield the collection of survey data 'before' and 'after' the LATM implementation within a local area was compared with survey data obtained at the same time in an untreated control area. In Unley the comparison of before and after data within three local areas was evaluated; these local areas had devices implemented only along the major traffic route.

The evaluation of the impact on the whole local area took into consideration the treated street and the untreated streets. The evaluation was area-based rather than street or device-based with an emphasis on the total combined affect of each scheme on the measured traffic behaviour and resident opinions. The methodology used was outlined in a previous report undertaken for the Department of Transport by L. Hawley and F. Gennaoui (1984) reviewed in section 5.3.7.

There were basically four surveys undertaken 'before' and 'after' LATM implementation. These were:

- origin destination number plate surveys during the two morning and two evening peak hours,

- traffic recorder surveys over a 48 hour period of hourly by directional increments on a number of streets in each local area,

- classified speed surveys mid-device over a 24 hour period on a number of streets in each local area,

- household surveys to ascertain residents' perception of the success of and degree of change in the local areas.

The 'before' surveys were undertaken in November 1986 and the after surveys in April 1988 within twelve months of the implementation of the schemes.

The evaluation involved answering the following question:

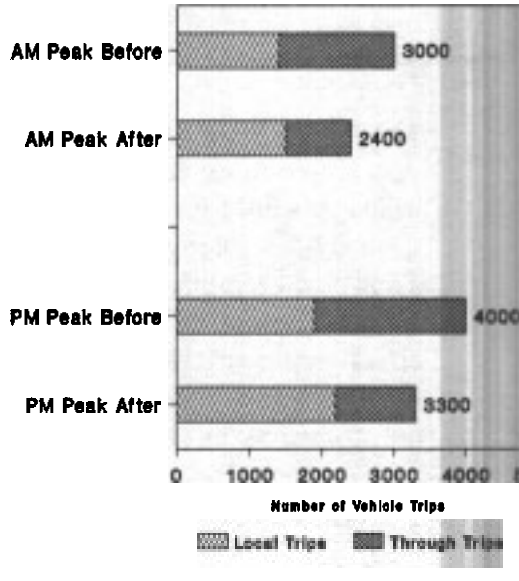
> *"To what degree were the original objectives achieved?"*

Because the objectives were not specific as to quantity, it was implied that the situation had to be improved as to quantity to the extent that it was noticeable and satisfactory to the residents as well as significantly improved in measured terms. This was done by using Measures-Of-Effectiveness which were tested through various surveys.

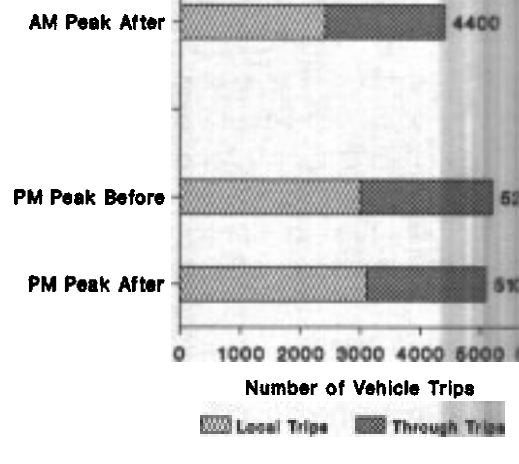
It became apparent that the objectives for the LATM schemes were not clearly defined prior to the implementation of the schemes; as expected, this caused misunderstanding and a higher degree of dissatisfaction than would have been predicted by looking at the technical data alone.

In those local areas where only one street (the major crossing street) was treated, only two of the six objectives were achieved. In two of the streets speed humps were used in 2 series with 6-8 speedhumps in one street; the other street had 3 angled slowpoints and 3 raised flat-topped humps, or platforms. Essentially the greatest benefits accrued to the treated streets and the greatest satisfaction of residents was in the treated streets. While some decrease of speed appeared to have occurred generally in the local areas, this flow-on benefit was not seen by residents living in those streets, as there was in the residents' minds a clear feeling of adverse spill-over

ENFIELD LATM SCHEM
Before/After Through Trips



UNLEY STREET SCHEM
Before/After Through Trips*



*In total LATM Study Area

affects due to the isolated treatment of one street in each of the precincts.

In the local area which was treated in a more intensive way on seven streets with 16 double lane angled slowpoints, 8 thresholds and 4 single lane angled slowpoints.

The objectives again were not clear, indeed there were possibly too many objectives: twelve objectives were inferred for this scheme. Of these only six were achieved and interestingly, even though the technical data showed that generally volumes had decreased together with through traffic and speeds, the residents' satisfaction was not as high as could have been expected. Most importantly, residents felt there had not been enough consultation in the development of the scheme.

- **Too many objectives can be unrealistic unless major street reconstruction occurs**

- **dissatisfaction with the amount of consultation**

Some of the conclusions reached from this major evaluation were:

- LATM schemes are more likely to achieve a greater range of technical objectives if the precinct is treated comprehensively with devices on a range of streets. In the event that only street is treated both traffic surveys and resident opinion surveys confirm that untreated streets are likely not to benefit and traffic diversion may occur.

- traffic data and resident opinions do no necessarily correlate so that in a case where improvements are indicated by measured traffic data, they are not necessarily reflected in proportional increases in satisfaction levels. (This was traced back in these particular surveys to the methodology adopted in implementing the scheme in the first place.)

- in both Municipalities precise objectives were not established before the schemes were installed; instead it appeared that broader aims were inferred, this caused some problems in the evaluation, particularly with respect to resident opinions as it seemed that residents were not always satisfied with traffic behaviour to the extent indicated by the traffic data alone.

- there was a significant dissatisfaction with the extent of public involvement in the LATM scheme development process and it was concluded that

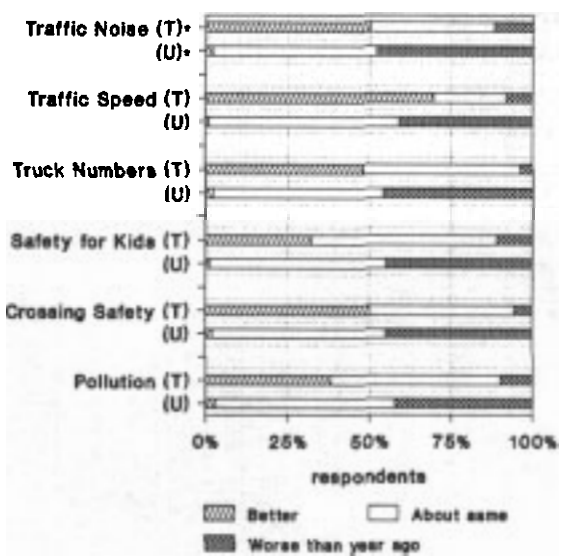
this could have contributed to the general dissatisfaction with the scheme.

- there was an obvious value in holding household surveys in order to reveal differences between perceived and actual changes.

The lesson to be learnt by this extensive monitoring survey was that there is not much value to be gained in treating only one street in a local area and secondly that resident participation or rather the nature of resident participation can serve to explain the satisfaction or dissatisfaction levels with schemes themselves.

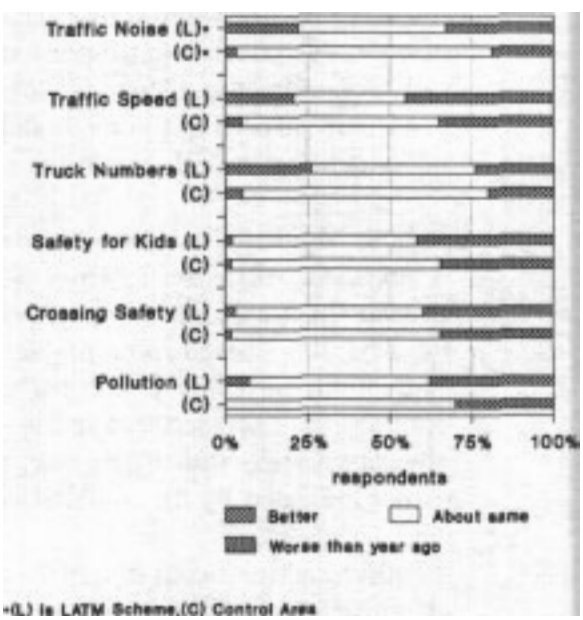
Practitioners are often confused about the reasons why when measured data clearly shows an improvement in the safety and traffic situation generally, this is not reflected in the opinions of residents who are still dissatisfied with either individual devices or the scheme as a whole. Clearly there needs to be more discussion about what the scheme can achieve in the first place, the devices, their expected performance and the alternative devices that can be used and essentially what trade-offs residents are willing to put up with.

UNLEY STREET LATMS
Street Opinions



*(T) is treated,(U) is untreated street

ENFIELD LATM SCHEME
Latm Area/Control Area Opinions



*(L) is LATM Scheme,(C) Control Area

EVALUATION OF THE DEMONSTRATION RSM SCHEMES IN SOUTH AUSTRALIA
BY THE DEGREE OF ACHIEVEMENT OF OBJECTIVES

UNLEY MUNICIPALITY - Three precincts treated only on the Local Crossing Street in each precinct. The results were comparable in all these precincts; only one is illustrated below.

PRECINCT	OBJECTIVE	MEASURE OF EFFECTIVENESS	RESULT	OBJECTIVE ACHIEVED?
Hills Street	1 Restrict cross urban traffic	% through trips	- Decrease from 46-43% in precinct, this is not significant	No
	2 Reduce vehicle speeds	Mean 24 hr speeds,	- Decrease on treated street 65-45km/hr, marginally lower elsewhere	
		% vehicles travelling >60km/hr	- Decrease 22% to 5% in whole precinct	
		% residents indicating 'cars travel too fast'	- Decrease 82% to 59%	Yes
	3 Reduce vehicle volumes	Average daily traffic	- Decrease only on treated street	
		% residents indicating 'too many cars use this street'	- Decrease on treated street only	No
	4 Restrict transfer of problems to other streets	Increase of volumes, speeds and through traffic in precinct	- No increase in these indicators	*
		% residents indicating 'conditions better'	- Increase in dissatisfaction is significant	
	5 Retain local access to facilities	% through and local trips in am/pm peak	- Significant increase in volume and % of local trips (52-65%)	Yes
	6 Ensure RSM planning process equitably involves residents	% residents indicating satisfactory level of consultation	- Majority (60%) indicated dissatisfaction	No

ENFIELD MUNICIPALITY - One precinct was treated with multiple devices on seven streets. The results were compared with before/after in the precinct and with an adjacent untreated Control Precinct. Objectives were evaluated together if the same MOEs were used .

PRECINCT	OBJECTIVE	MEASURE OF EFFECTIVENESS	RESULT	OBJECTIVE ACHIEVED?
Collins Street	1 Restrict cross urban traffic 2 Restrict heavy vehicle through traffic	% through trips	- Decrease from 53-35% in in precinct#	Yes
	3 Reduce vehicle speeds	Mean 24 hr speeds,	- Decrease on all streets 62-54km/hr#	
		% vehicles travelling >60km/hr	- Decrease 37% to 12% in whole precinct	
		% residents indicating 'cars travel too fast'	- Polarisation of answers negative & positive	Yes *
	4 Encourage use of arterial	Average daily traffic	- Decrease greatest (-25%) on main traffic route, but not elsewhere	
	5 Minimise accidents, 6 Create greater safety for pedestrians and cyclists	% residents indicating 'safer for kids playing in street' and 'safer for people particularly elderly & kids crossing street'	- Agreement with statements not significant#	No
	7 Maintain local area accessibility 8 Maintain emergency access	% through and local trips in am/pm peak	- Significant increase in volume and % of local trips (46-65%)#	Yes
	9 Reduce traffic noise	% residents indicating improvement in daytime and night-time traffic noise	- Polarisation of responses in satisfaction/dissatisfaction	
	10 Restrict transfer of problems to other streets	Volumes, speeds and through traffic trends in precinct	- Increase in through traffic in an untreated street used as bypass	No
	11 Upgrade visual landscape	% residents indicating 'plants and shrubs numbers increased'	- Increase in satisfaction#	Yes
	12 Ensure RSM planning process equitably involves residents	% residents indicating satisfactory level of consultation	- Majority (61%) indicated dissatisfaction	No

# Indicates the opposite in the Control Area

* Indicates an inconclusive result due to significant resident dissatisfaction or polarisation of opinions

5.3.11 LATM PLANNERS*, (1986), *Local Area Traffic Management Research Project*, prepared for the Traffic Authority of New South Wales.

This was an evaluation project of individual devices installed in Sydney, undertaken in order to update the Provisional Guidelines for Local Area Traffic Management. The project involved the evaluation of the following:

- vehicle speeds,
- traffic volumes,
- traffic noise,
- public acceptance.

The purpose of the project was to evolve appropriate general criteria for each of the abovementioned parameters and for the devices selected for the investigation.

Devices from the LATM schemes at East Roseville in the Willoughby Municipality, Belmore/Lakemba in Canterbury and the West Ward in Mosman were used in the evaluation process. The speed control devices selected for investigation were one-lane and two-lane angled slow points, T-intersection treatments, mid-block platforms and entry thresholds.

The methodology was device-specific, consequently speeds were recorded by means of a calibrated speed gun during the period of two to four hours at the device at 5m intervals for the first 10m, from the mid-point of the device at 10m intervals up to a distance approximately half-way to the next control device. Only vehicles travelling at free speed were included.

Changes in noise level before and after the installation of the device were interpreted in terms of the response of the communities to the traffic noise as well as noise level measurements undertaken during the early afternoon and the afternoon peak period. Traffic volumes were undertaken before and after implementation in terms of AADT and peak hourly traffic volumes.

* LATM Planners was a consortium of the firms E. Smith & Hone P.L., Transport Environment Consultants and Geoplan Town Planning.

The attitude surveys were undertaken on a street basis at the same time as the technical surveys. Attitudes to the total scheme were only secondary to attitudes directed towards specific devices.

BEFORE & AFTER EVALUATION OF DEVICES - SYDNEY LATM SCHEMES

	DEVICE SURVEYED	% REDUCT. IN DAILY VOLUME*	MEAN SPEED AT DEVICE BEFORE	AFTER
East Roseville	2-Lane Slow Point	-65%	58**	32
	Entry Threshold (Platform)	-53%	-	21
	T-Intersection Treatment	-42%	42**	29
Belmore/Lakemba	2-Lane Slow Point	-17%	56	23
	1-Lane Slow Point	-30%	53	21
West Ward	Mid-Block Threshold (Platform)	-34%	39**	21
Sylvania Waters	Diamond Slow Point	- 4%	57	26

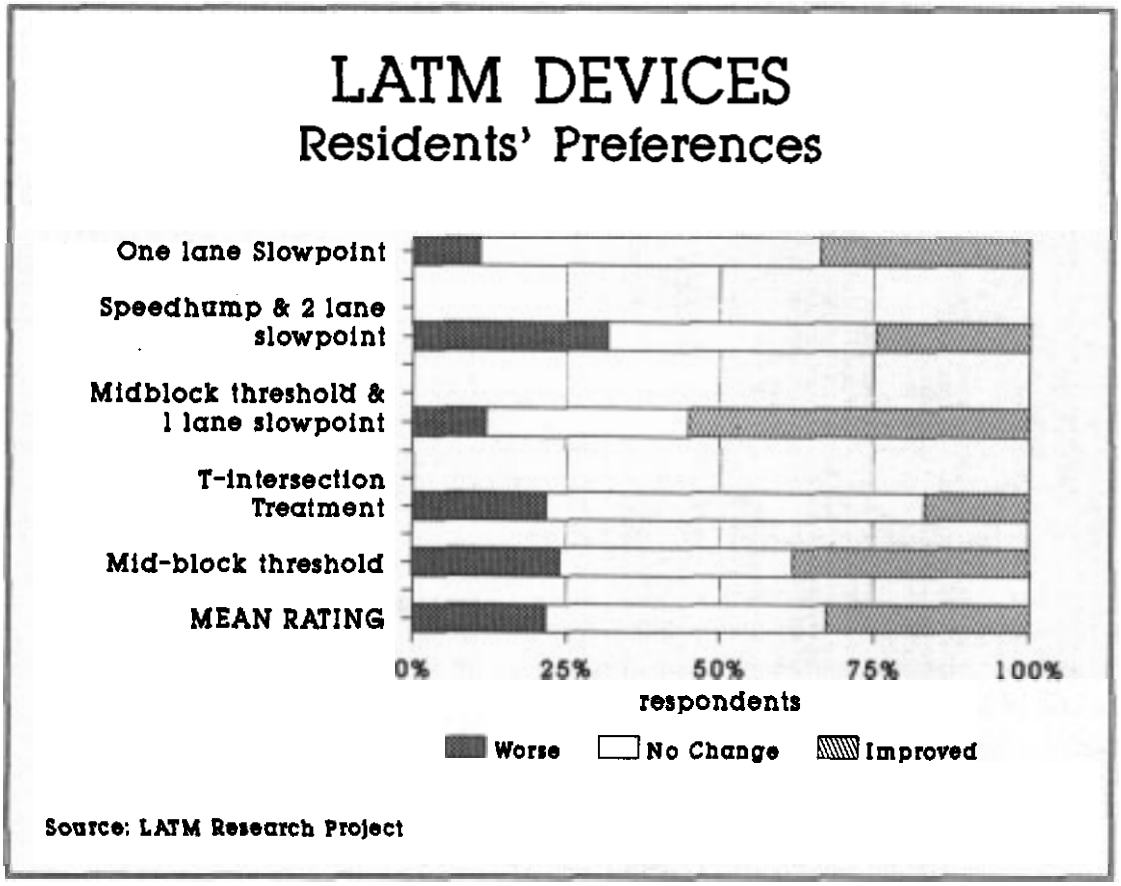
* Percent reduction in daily traffic volumes after installation of device.
** Not exactly at device.

The most effective device in the opinion of the residents was the single lane angled slow point in relation to reduction in speed, volume, noise and improvement in safety and traffic pollution. Statistical significance tests indicated that single lane angled slow points were rated as improving the street environment significantly. The mid-block raised platform also had a high rating for improving the environment.

The worst overall rated device was the speed hump.

The attitude to traffic noise disturbance was requested for both day and night time conditions in the front and back rooms of the house as well as from various vehicle sources. The largest majority of households were most satisfied with the lack of, or little noise associated with single lane angled slow points and secondly, with a T-intersection treatment. The mid-block platform and the speed hump rated worst.

Most residents believed improvements to the operation and safety of the devices could be made by better lighting on the devices, clearer markings leading up to the devices and more warning signs. Most respondents were concerned about the appearance of the devices and were in favour of landscaping them. Most residents did not believe that the devices had made any impact on their property values.



5.3.12 TRAFFIC AUTHORITY OF NEW SOUTH WALES, (1986), *The Neighbourhood Road Safety Programme*, Summary of Findings towards the Campaign Strategy.

This project was concerned with the safety and amenity of local streets as a component of the Road Safety Campaign to be developed for local government areas. Accident statistics and community perceptions including local community and council officer perceptions were established in relation to local street safety. These were established from interviews with state-wide organisations, local council officers and from discussions with various resident groups.

The attitudes and perceptions revealed that in urban areas there is a general awareness by council officers and others as to the fact there is a local street safety problem however responses as to the extent of the problem differed widely. Traffic safety is a relatively important issue before councils by virtue of the fact that organised resident groups frequently petition councils on traffic issues. Council officers at that stage expressed the desire to have further information for planning, designing and justifying local area traffic management schemes, especially in the light of new techniques.

In outer lying urban areas there was a distinction made between safety problems in established neighbourhoods and those in newer estates. Newer estates were perceived as being more safe than established neighbourhoods. The typical concerns were volume, through traffic, speeds and pedestrian safety. In urban areas the appropriate driving speed on local streets was suggested in the inner suburbs as 30-50km/hr and in the outer suburbs as 40-60km/hr. In the outer areas there was a mixed reaction on the issue of lowered speed limits. At that stage it was revealed that roundabouts and road closures were the most prevalent devices used while councils were generally in favour of LATM there was some concern for road humps, one way streets and further road closures.

In conclusion the research revealed that there was a significant traffic safety problem on local streets as evidenced by accident statistics however there was generally a low awareness of local street safety as an issue at various levels of the community. These findings suggested that a campaign aimed at improving community awareness of the issues would be valuable

Low awareness by community that residential streets could be safer

however, there were some other findings working against this, the first being that local street safety was given a lower level of priority by residents relative to other personal safety issues, secondly, residents had largely surrendered the street to cars because of the increasing volume of vehicles on the road and changes in modern lifestyles and thirdly, drivers tended to drive with regard to the roadway design but without due regard to the surrounding environment. It was decided therefore that the primary objective of the Neighbourhood Road Safety Campaign was to change community perceptions of the local street environment, that is that the campaign should emphasise the distinction between local roads and major roads and aim to shift the balance of power on local roads away from the one of driver domination to one in which all users have recognised rights and each behaves with greater mutual consideration.

5.3.13 TRAFFIC AUTHORITY OF NEW SOUTH WALES, (1986), *Forty Kilometre Per Hour Speed Limit Trials in Sydney*, Research Note 6-86, Prepared by Webster, K and Schneering, F.

Selling the 40km/hr speed limit for residential areas

The Traffic Authority initiated Neighbourhood Road Safety Campaign described in the previous article, was undertaken in an effort to improve traffic safety on local streets. The campaign relied on publicity campaigns to change local community perceptions of the local street environment and was a trial of three campaign strategies of different intensities. The main message of each of the strategies was that a speed of 40km/hr or less is appropriate on local streets.

The background to this was that during 1982-84 there were an estimated 19,000 casualty crashes with 27,000 people injured or killed on local streets in NSW. These figures accounted for 25% of all casualty crashes and casualties in NSW. Forty-five percent of cyclist casualties and 28% of pedestrian casualties during that period occurred on local streets and children accounted for many of these casualties with 75% of cyclists and 50% of pedestrian casualties being children.

Speed major contributor to local street crashes

Speed was identified as the major contributing factor to many of the crashes in the crash statistics. Over 90% of drivers exceeded speeds of 40-50km/hr on local streets in surveys undertaken by the Traffic Authority.

Publicity alone did not lower vehicle speeds significantly

An evaluation of this publicity campaign relying on concerned publicity in the local area indicated that the campaign had limited affect. 'Before' and 'after' speed surveys showed small reductions in driving speeds and these were mostly in areas that were subjected to the most intensive publicity campaign. The speed reductions were considered to be too small to be meaningful in the context of safety on local streets. The campaign was successful in modifying attitudes about appropriate speeds on local streets and in focusing attention on speed as a potential safety problem. It was also concluded that the campaign had an affect of increasing the acceptability of some control measures. Finally, it was concluded that the limited affect of the campaign suggested that it may be necessary to instigate physical and legislative changes to reduce driving speeds on local streets.

40km/hr signs and intensive publicity did lower speeds

As a result the 40km/hr zones were introduced on a trial basis in 8 residential precincts in the Sydney area in order to test whether in fact physical and legislative changes impact more on speed in residential areas. The campaign consisted of the placing of signs on the periphery of the trial precincts, this was accompanied by a publicity campaign and the trial was evaluated after three months, by speed surveys, volume surveys and resident attitude surveys. In terms of the speed surveys the 40km trial precincts did show a noticeable and statistically significant decrease in mean speeds and in the proportions of vehicles exceeding 60 and 40km/hr. There was a consistent decrease in speeds across all the groups whether they had LATM devices or not. The lowest speeds were achieved in those precincts where Local Area Traffic Management schemes were in place. The mean and 85th percentile speeds were 44km/hr and 53km/hr and only 2.2% of vehicles exceeded 60km/hr although two-thirds of vehicles still exceeded the posted 40km/hr speed. The conclusion was that LATM schemes appear to produce the greatest effect from 40km/hr speed limits. The number plate volume surveys indicated that there was very little change in traffic volumes before and after the start of the trial.

LATM devices produced the greatest impact in lowering speeds

The attitude survey revealed that the 40km/hr speed limit is regarded as a popular and acceptable means of controlling traffic on local roads and people exposed to the trial reported they had changed their own driving behaviour and they had a feeling that their neighbourhood seemed generally safer. Respondent levels in favour of the introduction of 40km/hr speed limits increased from 39% of respondents strongly in favour to 52% of

respondents strongly in favour. In the 'after' period only 22% of respondents disapproved of the new speed limit.

5.3.14 AMAMOO, S. E. (1987), *Neighbourhood Equity Aspects of the Residential Street Management (RSM) Process*, Local Government Engineering Conference, Perth.

The premise of this paper was that if extensive landscaping and/or street redesign is undertaken, it is possible that the enhanced environment could result in the increment in property values in the project streets. If such property values occur in the 3-5 year period after the completion of a LATM scheme, then an argument could be established that funding from general Council revenue is inequitable as positive capital benefits accrue only locally.

In order to establish whether LATM does in fact impact on property appreciations, two streets were chosen; the first was a street in which a landscaped road closure was implemented, and the second where a major street reconstruction was undertaken including offset alignment, parking bays, significant areas of landscaping on previous road pavement.

Using real mean capital values of residential properties in the treated streets for comparison with mean market values in the suburb in which the project streets were located indicated the following:

- when property values fell as a result of general cyclic market conditions, property values also fell in the treated streets, but the decline was smaller,

- when mean values increased there were significantly higher increases in the treated streets.

Major property value increases indicated

In the road closure street, real property appreciation was 51% greater than for the suburb as a whole, and in the street which was totally redesigned, the increase was 16 times higher than the suburb as a whole.

While the author indicates that there are difficulties in trying to determine the extent of property appreciation directly attributable to the LATM treatments, the research indicated that the market did value the treatments. Indeed the indicative net increase in capital appreciation exceeded project costs by considerable amounts.

This then raises the question whether residents should pay for the devices in their street and/or major street redesign.

The author stated that there are difficulties in attempting to fund LATM projects by imposing charges only on property owners in project streets in that:

> *"The property value appreciations represent unrealised gains. Moreover the unrealised gains may be significantly eroded through changes in interest rates or other factors which have negative effects on property values."*

However, the author suggests that a combination of funding from general revenue and funds raised solely by charging property owners in project streets bears further investigation.

5.3.15 HO, L. K. AND FISHER, A. J., (1988), *Cost Implications of Local Area Traffic Management*, 14th ARRB Conference.

This study relates to council areas within a radius of 50 kilometres of the GPO of the City of Sydney. It included 38 councils in the Sydney Statistical Division. It took into consideration the cost of treating local areas on a per square kilometre basis using a range of intensity of device treatments from intensive to peripheral area device use and compared the costs of undertaking this with the benefits associated with estimated increased safety and amenity.

Safety was derived from accident costs which assumed that about half the crashes occur on the local unclassified roads. Safety costs were associated with casualty costs which were costed at round about $17,000 and property damage costs at about $1,500.

Amenity was valued from two perspectives, the implications and extent of noise reduction which from research indicates may be an average of 3dba if volume is reduced by half and speed is reduced. The second perspective is property value appreciation which from research undertaken in Australia indicated that there were clear property value increments in those areas treated by LATM devices. A 15% appreciation in property values due to LATM was adopted.

Benefit-cost ratios were established for four types of areal treatments, maximum areal treatments including slow point treatments on every road at minimum spacings recommended to reduce mid-block speeds to 25-30 kilometres an hour, moderate treatments, minimal treatments and peripheral treatments which are treatments only on the access to the area off the main road system. On a per square kilometre basis these areal treatments were costed as following: Maximum at $532,000, moderate at $304,000, minimal at $207,000 and peripheral at $118,000. Benefit-cost ratios were maximum 1.5 benefit-cost, moderate 2.63, minimal 3.86 and peripheral 6.78.

Four intensities of LATM treatment were tested

It was concluded that the area cost of LATM is about 10% of the original cost of local roads and about 0.25% of the property value in a local area. Assuming a modest life for a LATM scheme of 10 years and discount costs of 10% per annum, gives rise to a formal benefit-cost ratio for an average type of scheme currently being implemented in Sydney of 3.8. This was seen as good or better than the ratio used for current arterial road projects in Sydney.

The authors determined: ***"Taking in to account the area cost of LATM derived above and the finances available to councils for road works a regional wide LATM treatment can be implemented over 10 years if 4% of the annual road budget is reserved for LATM."***

3.16 CART, (1989), Traffic Calming - The Solution to Route Twenty and a New Vision for Brisbane.

In Brisbane a citizen organisation called Citizens Against Route Twenty (CART) was formed in 1987 as a result of opposition to upgrading of certain roads in the Brisbane metropolitan area.

A working group of residents, university lecturers and other interested persons produced this publication which put forward the arguments against catering to the motor vehicle particularly through-vehicles in existing residential areas and the need to plan for regional public transport and incentives for the protection for local residential areas. This publication relies heavily on information from overseas and experience with Shared Zones and Local Area Traffic Management schemes in Europe. It is extensively illustrated, particularly with European illustrations and lodges an argument against what it considered the traditional traffic and transport planning philosophy, particularly in the State of Queensland.

The publication holds that present traffic transport planning does not decrease accidents but downgrades amenity and encourages people to use the private vehicle for more trips than is necessary. This policy has implications for the environment generally, for non-motorised trips such as bicycle trips and pedestrian trips and has an over all negative impact on communities and on the city as a whole.

This is the first publication emanating from the general public with the support of some academics and practitioners in order to change the status-quo in transport planning towards public transport and so away from private vehicular traffic. Relying on developments in Europe, the authors of this document may be the precursors of a more organised citizen movement with a broader brief encompassing the environment, public transport and LATM.

5.3.17 COMMENTS

Towards the end of the 1980s the concept of local area traffic management has become well established and well known in traffic planning circles as a result of experience being documented at professional conferences and engineering seminars. From the point of view of residents on the other hand and the public in general it is unclear the degree to which the concept of local area traffic management in understood or appreciated.

Generally there has been low awareness by the community in the 1980s that residential streets could be safer than they presently are. However the awareness is increasing steadily as state Road Safety Campaigns on speed, Police speed blitzes and the knowledge about the benefits of devices grows.

LATM Devices do control traffic effectively

During the 1980s systematic state monitoring in NSW, Victoria and S.A. proved conclusively that LATM devices do reduce speeds, volumes and accidents, and are most effective in relation to speed control. Further work does not need to be undertaken in this area.

Resident satisfaction with LATM schemes has been patchy depending on factors such as:

- whether the perpetrators of the through-traffic problem or speeding problems were surveyed,
- whether the problems were clearly defined,
- whether the objectives of the scheme were inappropriate or too ambitious for the modest treatments proposed.

Methods of resident consultation still being refined

The resident participation/consultation methods are the challenge of the 1990s.

Little analysis of aesthetics

Little documentation exists about the aesthetics of devices and the design principles which should govern LATM area-wide schemes both from a perception and psychological perspective. It has been suggested that good design is valued by an examination of market values of properties in locations in Adelaide where property valuation data was studied.

Benefit/Cost analysis indicates high returns

The funding of schemes has been examined in a traditional benefit-cost analysis by one study in NSW which indicated that even peripheral treatment of an area by devices has a positive benefit/cost return.

The environmental benefits of LATM schemes have not yet been realised. The impact of the Greenhouse Effect, the contracting Australian economy and higher petrol prices emanating from the Middle East crisis have not yet had an impact on the psyche of residents. Greater environmental consciousness may lead to an increased questioning of the need to cater to car movements in all locations and at the prevailing legal 60km/hr speed limit.

Resident opposition to the impact of freeway construction is mounting again in Sydney, and public policy is resulting in greater commitment of funds to public transport. Already in Brisbane a resident group has produced a document opposing the present direction of motor vehicle planning and promoting 'traffic calming' on a city-wide basis. While the concept of reducing vehicle speeds on main road systems is foreign to traffic planners in Australia at the moment, the concept is being implemented and monitored presently in Europe by state authorities. The European experience is reviewed in the next section and is of interest in that it probably shows the direction of LATM in Australia in the future.

5.4 DEVELOPMENTS IN EUROPE IN THE 1980s

A comparison between the status of LATM, the concept of environmental traffic management and/or traffic calming in Australia - specifically Sydney and the WSROC region indicates that we are lagging behind in the extent of LATM device implementation, the intensity of device placement along street lengths and the general philosophy toward LATM in Europe.

5.4.1 BRINDLE, R. E., (1986), *Local Street Traffic Management - Is European Practice Really Relevant*, Local Government Engineers' Association of Western Australia, Conference Proceedings.

Three components were dealt with in this paper the first being slow speed signs, the second traffic management techniques and the third monitoring and evaluation.

It is widely accepted in Europe that slower speeds reduce accidents and upgrade amenity. While the Woonerf or the lowest speed Shared Zone treatment was not a general model, lowered speed zones were common, these zones being statutory or advisory 30km/hr neighbourhood speed limits.

German Tempo 30 Zones

In Germany the 'Tempo 30' or 'Speed 30' campaign had built up over 10 years and statutory 30km/hr neighbourhoods in 1985 were widespread. On arterial roads the speed limit was 60km/hr.

Netherlands - Woonerven and 30km/hr streets

In the Netherlands, while Woonerven were in common practice, it was recognised that were are limitations to the Woonerf concept due to its high cost and strict legal requirements, which make it difficult to implement over extensive residential areas. In 1983 a new provision was introduced which allowed a local authority to designate a street or length of street as a 30km/hr street providing it met certain conditions; the conditions basically being that the form of the road, not the signs, should influence driver behaviour.

Denmark - the 30km/hr Zones and 'Rest and Play'

In Denmark general urban speed limits were reduced from 60 to 50km/hr in 1985 and 30km/hr zones were also introduced as well as the 'rest and play' street: basically a shared surface street comparable to the Woonerf in which vehicle speeds are below 15km/hr.

Swedish TRAD Guidelines

- **30km/hr signage reinforced with devices**

In Sweden, there had been a long history of speed reduction with an emphasis on the segregation of vehicles and pedestrians as distinct from the integration model of the Woonerf. The reference speed of 30km/hr on local streets was also adopted. As in other countries, it was necessary to bring the desirable limit about by the design or redesign of the street. Their TRAD guidelines of 1982 (National Board of Physical Planning and Building) specified that on local streets, providing distances are greater than 150 metres, the 30km reference speed should be assisted by specially designed or aligned devices; entrances to the area should be designed and marked so that the attention of road users is drawn to the fact that they are entering an area of special nature in such an area containing speed reducing obstacles; vehicle speed should not exceed 30km/hr and the driver will not be surprised by individual obstacles and supplementary signing as the lower speed would already be established.

On the question of how large an area can be zoned for 30km/hr conditions Brindle has suggested that a rule of thumb of two minutes under lower speed control had been cited, this being one kilometre at 30 kilometres per hour.

While in Europe 30km/hr appeared to be a widespread adopted lower speed limit on residential streets in Australia 40km/hr had been adopted in Corio, Victoria and in trial zones in Sydney.

Similar to the Woonerf in Europe, the Shared Zone concept had also been introduced in to Australia with a speed limit of 10km/hr both in Victoria and in New South Wales.

European experience indicated that 30km/hr signing needs to be reinforced by speed control measures and the converse is also demonstrated, that traffic control measures work best and are most acceptable if they are assisted by lower speed zoning. In Europe vertical displacement devices appeared to be more acceptable than devices involving horizontal displacement, therefore humps and raised thresholds and plateaus were more common than the angled slow points; roundabouts were not at all used in residential areas even in the U.K. where they are used extensively on higher hierarchy roads.

The three vertical displacement devices most in use in Europe were the Watts profile hump, the flat topped humps (i.e. a flat top with a raised length no longer than

a car wheel base) and the raised plateau which has a flat section longer than a car wheel base.

Dual purpose of flat-topped humps

Flat topped humps were used more extensively than in Australia, particularly for the use of footway extension across the minor leg of a T-junction and on approaches to cross intersections. In Scandinavia authorities use them to improve intersection safety and up to 70% accident reduction expected from these installations based on Swedish data which showed that 75% of pedestrian accidents involved vehicles leaving the intersection.

Local distributors treated

The longer plateaus had been installed on local distributors in Cologne and presented no problems to buses.

Closer spacing of devices in Europe than in Australia

Practice in Germany reflected that, unlike in Australia, where control devices were being installed at 120 to 150m intervals, they were being located at about 80 metre intervals so that speeds would remain consistently low along the whole length of the street. European experience indicated that if treatments were 100m apart, then the speed profile along the street would vary as vehicles accelerated and decelerated between the devices.

In Denmark's 30km/hr zones the devices must be no more than 100m apart. In 15km/hr areas the devices were at 50m maximum spacing.

Area speed zoning rather than individual device signing

In contrast to Australia where individual devices tend to be signed for lowered speeds, in Europe the whole area tends to be signed as a lower speed zone and the smaller spacing ensures that operating speeds rarely get to 10km above the signed speed for each device. Brindle mentioned that some Europeans who saw examples of Australian schemes were puzzled by what they saw as ambivalence on our part, for the device spacing and area limits did not reflect the commitment to lower speeds as much as they did in Europe.

Funding

Funding for device implementation was a problem in Europe; in Cologne, street changes were being implemented under maintenance budgets, and in Copenhagen a suburban council required partial funding by residents of the area to fund devices to be installed.

Brindle concluded that European practice was relevant to Australia, and although urban communities in Europe seemed to accept restraints on traffic operation more readily than in Australia, the attitudes and behaviour of

individual drivers seemed to be no less of a problem there than here. He concluded that it was not correct to presume that European authorities could "get away with things" that Australian authorities could not because their drivers were "different".

5.4.2 NIELSEN, O. & RASSEN, J. (1986) *Environmental Traffic Management in Odens, Denmark*, Built Environment, Vol. 12.

This paper reviews the traffic management policy in a city of 170,000 inhabitants, which has developed an Environmental Traffic Management policy in the greater urban area, in the CBD, and a project titled 'Safe Routes to school'.

Environmental Traffic Management

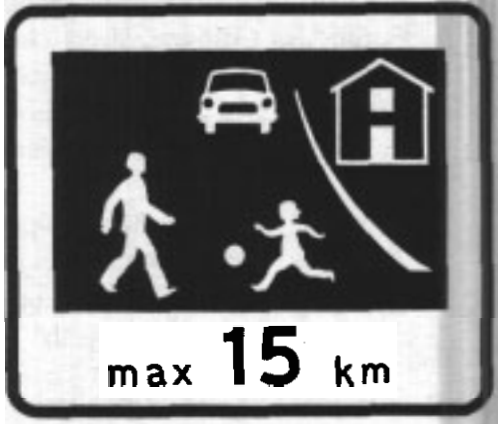
Environmental Traffic Management involved the development of a general road network, footpath network, improved public transport and traffic restraint measures. The transport plan indicated areas in which it was necessary to design detailed plans of traffic restraining measures; these areas are demarcated by major roads which divide the town into local areas. Roads for motorised traffic include separate cycle and pedestrian paths with safe crossing points across carriageways. In the residential areas 'Slow Speed Areas' and 'Residential Play Areas' [similar to Dutch Woonerven] are planned.

Slow Speed Areas

The objectives for Slow Speed Areas is to improve the conditions of pedestrians and cyclists and this is achieved by 30km/hr speed zoning accompanied by speed reducing devices such as speed humps, raised crossings (i.e. midblock platforms which act as pedestrian crossings as well as slowing devices), neckings and 'Verschwenkung' (angled slow points). These devices were planned at a minimum of 100m spacings.

Residential and Play Areas

A network of streets with 15km/hr speeds with pedestrian priority is in implementation. Devices are at 50m spacing.



Since 1976 a large number of areas have been subject to traffic restraint measures which have been planned in close cooperation with the residents. In this way it is believed that schemes for which residents are partially responsible are evolved.

One of the schemes developed in this way was the 'Safe Routes for School Children'.

In 1982 eight schemes were monitored to study the effect they were having on traffic behaviour and residents' opinions. A video film was produced for the purposes of evaluation and to explain the new policy to the public.

Evaluation

Video for evaluation and education

The following table indicates the significant decrease in speeds, volumes and accidents. There has also been a mode-split shift towards public transport (buses +5%) and bicycles and mopeds (+2%).

BEFORE/AFTER COMPARISONS - ODENSE TREATMENTS

TYPE OF TREATMENT		Highest Measured Speed km/hr	Average Speed km/hr	Average Number Vehicles per day	Accidents Reported No.	Period
LOW SPEED ROAD 1	before	58	47	-	1	30mths
	after	58	40	800	1	30mths
LOW SPEED ROAD 2	before	80	53	1000	0	36mths
	after	28	13	400	1	36mths
LOW SPEED ROAD 3	before	72	40	3600	0	36mths
	after	35	25	1800	0	36mths
RESIDENTIAL & PLAY AREA 1	before	33	23	700	0	36mths
	after	22	15	500	1	36mths
RESIDENTIAL &	before	-	-	-	0	24mths
	after	28	20	150	0	24mths
RESIDENTIAL & PLAY AREA LOW SPEED ROAD	before	75	43	3000	1	36mths
	after	38	27	2000	0	12mths

The evaluation concluded that

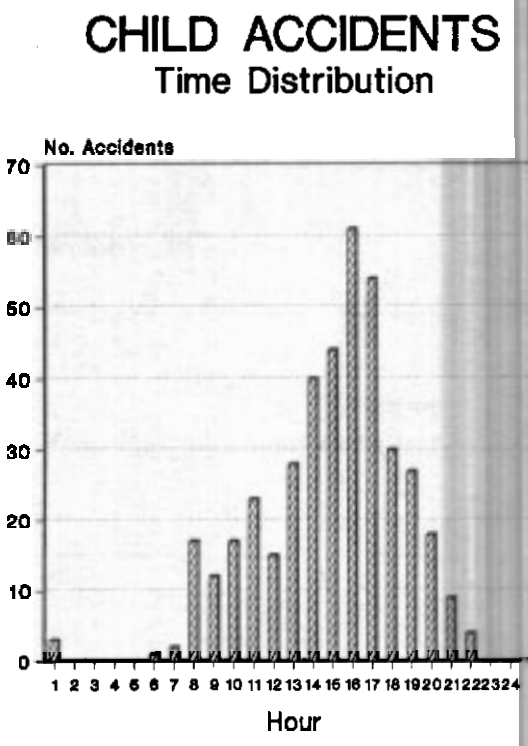
- high traffic volume roads in slow speed areas if reconstructed to permit even flows at speeds up to 30km/hr make intersections safer,
- traffic restraints should not exceed 80m spacings,
- speed humps have a better affect on speed reduction than the slow points which were used and road narrowings,
- in the Residential and Play areas (15km/hr streets) it is better to remove the pavement and reconstruct with landscaping and install better lighting,
- public transport (bus) routes should be accommodated with specially designed devices which include ramps for buses at speed humps,
- devices which are well designed are less subject to vandalism.

The following guidelines were adopted after the evaluation:

- in residential areas in need of redevelopment, traffic restraint would be integrated into the urban renewal,
- in other residential areas, traffic restraint would be developed at the expense of local inhabitants,
- measures to ensure safe routes to schools would be funded by the city.

The 'Safe Routes to School' project was commenced in 1978 as a result of World Health Organisation research which indicated that Denmark had the highest rate of child mortality due to traffic accidents in Western Europe. Accident statistics indicated that the most common child-vehicle accidents occurred midblock, while most cyclist accidents occurred at intersections.

Official (Police records) highly understate the dimension of the child cyclist and child pedestrian accident extent as only deaths are fully accounted for. In Denmark, as in NSW, Police records vary with hospital records.



Safe Routes to School project is city-wide

A large scale survey was undertaken of all school children aged 9-15 years in the city (5,700 persons), and map plots were made of routes to school and nominated dangerous locations.

The new Traffic Act introduced the concept of 15km/hr streets and 30km/hr streets and these have been used together with slowing devices along school routes. Road rebuilding has incorporated traffic speed restraint measures - raised areas just outside the school are a very common measure.

The 30km/hr zones around schools normally cover 200-300m of road, however it has been found that through traffic has avoided these routes (particularly lorries) as average speeds have dropped from 50-55km/hr to 20-25km/hr.

5.4.3 MONHEIM, H. (1986) *Area Wide Traffic Restraint*, Built Environment, Vol. 12.

The author points out that the traditional narrow concept of traffic restraint has addressed itself only to residential areas of low traffic volume while transport planning as a whole has not been affected. This has meant that cars are concentrated onto routes which are dedicated to them and

> *"traffic restraint is used as an alibi for further construction of a main road network."*

In this way, he says, the traffic restraint is

> *"isolated as a transport-technical instrument and it includes only some soft landscape...strongly oriented toward a repertoire of guidelines, recommendations and administrative regulations. Innovation and experimentation are limited, the fear of the 'car lobby' is great."*

He argues that as a result, quiet streets with light traffic are advantaged while traffic problem zones continue to accommodate high traffic flows to the detriment of those residential environments, with high noise levels and accident risks.

To solve the above-defined approach, the broad interpretation of traffic restraint is quoted by the author

as having been adopted by six cities in West Germany (including West Berlin) as well as various towns and cities in Scandinavia, Netherlands, Italy, Switzerland and Japan. The thrust of this policy is to reduce car traffic in general by changes to other transport modes and by reducing

> *"the many privileges and road space which in recent years have been given uniquely to the car."*

Integrated transport planning

Area-wide traffic restraint must also include main roads with clear speed reductions and landuse change at the expense of the carriageway widths. Included in main road planning are the facilities for bicycles and public transport.

Pedestrian networks are addressed rather than pedestrian cells surrounded by high traffic thoroughfares. The use of traffic management (turn bans), upgrading of crossing points by neckings of carriageways on distributor roads, central islands (pedestrian refuges), raised pedestrian crossings etc, 40km/hr speed limits on main roads.

Bicycle networks are addressed through lanes on main roads with coloured surfaces, 30km/hr speeds in residential areas, accommodation through road closures, two way flows on one-way streets and bike lanes through pedestrian mall areas [if extensive], parking for bikes, Bike-and-Ride facilities associated with public transport.

Public transport networks are addressed through a denser cover of public transport particularly in heavily built up areas, separate rights of way, fare policies.

"Domestication" of the car is addressed by reining back the space allocated to it as well as its speed, by cutting down multiple lanes particularly at intersections, design of devices to maintain 30km/hr area-wide speeds and 40km/hr speeds on main roads.

The paper promotes integrated transport planning policies of which LATM devices and local traffic restraint are only one component. Projections to 2000 A.D. based on this policy in the cities of Berlin and Frankfurt in West Germany have estimated a 20% growth in public transport.

5.4.4 KELLER, H. (1986) *Environmental Traffic Restraints on Major Roads in the Federal Republic of Germany*, Built Environment, Vol. 12.

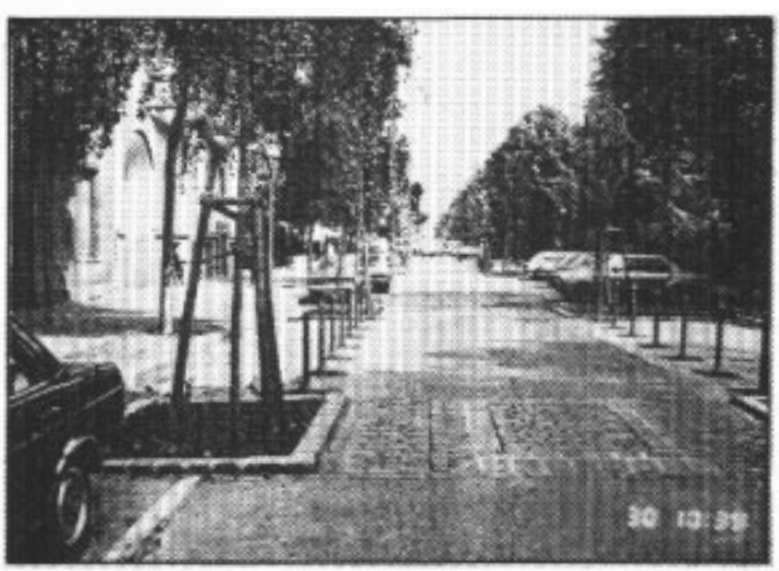
This article reviews in detail the changes which have been made in a test district in Berlin under the policy of environmental traffic restraint.

The area covered, housed 30,000 people as well as commercial areas, schools etc. Redesign of main routes as well as residential streets has been undertaken with special attention paid to the accommodation of buses.

One-way street systems and road closures have been avoided, the philosophy is that all destinations in the area should be accessible but obstacles to speeding have been increased on all roads.

Area-wide traffic restraint, Berlin-Moabit residential street.

(a) Before street alteration in winter 1983.

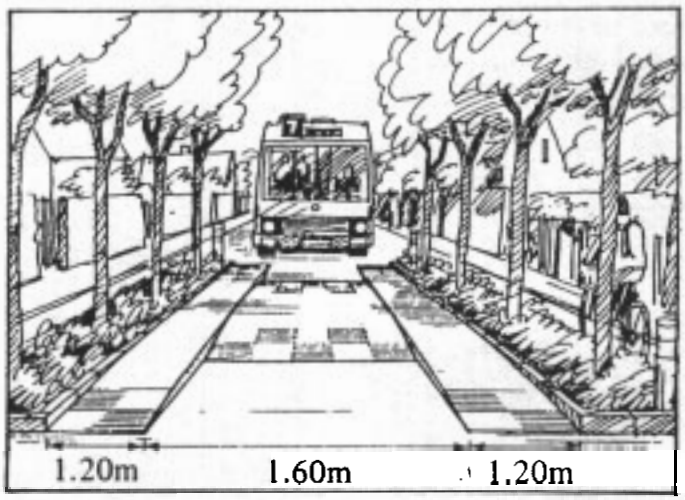


(b) After street alteration, May 1985. (Photo: Höppner)

The average speed on the above redesigned street is now 20km/hr with a design speed maximum of 30km/hr.

Special attention has been paid to the construction of devices which accommodate buses but impede the free speed of cars. This has been achieved by a device which has a 1.6 wide raised platform in the centre but at grade travel paths for the bus wheels - cars are forced to drive at least one set of wheels over the raised section.

Where buses have had to travel over humps or off-set deviations there has been significant opposition from bus companies. Street changes on bus routes have therefore been undertaken with major input from bus operators.



Catering for buses

5.4.5 Comments

European experience in the 1980s has centred around the widespread acceptance of a two-tiered residential street speed zone concept - the 15km/hr street ('Woonerf' or 'Rest and Play' street) and the 30km/hr residential zones elsewhere. Monitoring is now under way of schemes which have redesigned main roads and lowered travel speeds to 40km/hr.

In Germany, especially, there seems to be a wide-spread acceptance of the need to contain motor vehicle speeds and catering to private vehicular needs. The broad-based traffic restraint policies are integrating the upgrading of public transport, facilities for pedestrians and cyclists while at the same time redesigning carriageways to cater to all these users and away from car dominance.

In Denmark a laudable scheme of 'Safe Routes to Schools' is creating continuous safe pedestrian networks for school children systematically throughout the whole metropolitan area of one city of 170,000 people.

While problems exist in relation to devices along bus routes as in NSW, however unlike here there has been more experimentation with device types and the implementation of devices designed for the specific configuration of the particular buses on a route.

There is a clear understanding that close consultation with the community is required in developing schemes so that they are acceptable to the client community.

There also appears to be a better understanding of the importance of aesthetics, although funding constrains universal redesigning of streetscapes in all cases.

6. CONCLUSIONS AND RECOMMENDATIONS

An evaluation of the research undertaken in this project has resulted in recommendations aimed at decreasing the impact of identified 'barriers' to LATM in the WSROC region. The review of literature has attempted to draw a general background of LATM development and direction both in Australia and overseas. It is recommended that practitioners in LATM should read Section 5.

6.1 IDENTIFICATION OF BARRIERS

From the discussions with practitioners and elected members survey there appear to be five main barriers to effective implementation of LATM in the WSROC region. The background to the existence of these identified barriers is discussed in the following sections.

6.1.1 Experience with LATM Schemes in the Region

Planning and implementation of LATM schemes is at various stages in the LGAs of the WSROC region. Two Councils have no experience of LATM at all and practitioners appear not to see the need for LATM in their areas. On the other hand, another two Councils are comfortable with LATM scheme implementation, have successful experience with schemes, and have ongoing annual budgets allocated to that end. The other Councils are at various stages of planning and/or implementing schemes.

Most of the experience with scheme implementation has been with the implementation of street-based or precinct schemes rather than area-wide schemes. This is a symptom of the fact that LATM has been used to patch up problems arising as a result of network inefficiencies, e.g. through traffic avoiding intersections or routes of a higher hierarchy, or as a result of street design inefficiencies, e.g. wide streets, long sight distances etc. on residential streets. While some area-wide schemes are planned, only the first stages have been implemented at this stage.

- **CONCLUSION:**

As a result of the re-active nature of LATM scheme planning and implementation to date, there has been an overemphasis on devices and their performance rather than the broader aims and issues inherent in LATM - i.e. residential amenity and the right to a safe, quiet environment suitable for pedestrianised movement.

There needs to be a clearer understanding among practitioners that LATM is not about traffic engineering alone, and the skills required in effective problem definition, derivation of meaningful objectives and appropriate public consultation is just as important, if not more important than device selection. Unsuccessful schemes have been the result of poor planning methodology which has constituted a barrier to the successful implementation of those schemes.

6.1.2 Perception of LATM

The re-active approach to LATM implementation has probably contributed to the confusion among some elected representatives, evident from the survey, in relation to the concept of LATM itself: some elected representatives defined one device or a number of roundabouts as constituting a LATM scheme.

Because nearly half of the elected representatives had not viewed a LATM scheme outside their own LGA, these elected representatives are reliant on their understanding of LATM from the schemes implemented in their own municipality and/or the information provided to them by Council practitioners. The preponderance of one street treatments has therefore resulted in the evident perception that LATM is a street-based solution for individual traffic problems. There appears to be little or no understanding of the concept that LATM is a powerful residential amenity tool which can be used not only to lower speeds and reduce the possibility of serious accidents in residential areas, but which has wider repercussions in relation to environmental quality of residential areas and the readjustment of the balance away from the needs of the vehicle to the needs of other users - particularly the pedestrians and cyclists most at risk from vehicular traffic - the young and the elderly.

The concept of 'environmental areas', 'traffic calming' or 'livable streets' - all terms used in literature referring to the wider benefits of LATM, were noticeably absent from the discussions with council practitioners about LATM. Only in one Council area the emphasis has been on a

municipal-wide quality of life theme which is less device-oriented and more oriented to residential lifestyle and the right to quiet and safe residential areas.

- **CONCLUSION:**

LATM has been viewed from the narrow perspective of achieving traffic/safety objectives rather than the broader objectives relating to environmental, economic and social gains.

This has constituted a barrier to implementation, in that the narrower definition relating to traffic aims/objectives places LATM planning and funding within the preserve of the engineering departments of councils. There appear to have been no clearcut methods of justifying LATM expenditure versus other traffic/road construction expenditure to date with which LATM funding must compete. A benefit/cost approach has been suggested and has been reviewed.

A benefit/cost ratio relying on accident rates is the simplest methodology to implement in prioritising expenditures for devices and is currently being used by the RTA in fund allocation in the Western Region. However, it is not an appropriate method of justifying LATM schemes as the density of accidents at any one location is not sufficient to support this approach.

It is therefore necessary for Councils to make a policy decision to allocate funds toward LATM schemes on an annual basis. They are unlikely to do this however, if there is confusion about the aims and objectives of LATM. Elected members are overwhelmingly supportive of the implementation of traffic devices in their areas, and are likely to allocate funds on an annual basis if additional persuasive education were to take place at this time.

6.1.3 Need for Additional Information and Materials

From the interviews undertaken with practitioners, it has become apparent that they were generally agreed on the need for more information on devices which have been implemented in the Sydney metropolitan area, their design details and evaluation (if any) of the devices.

There did not appear to be any demand for additional information on how to undertake the LATM study itself and effective public consultation although more information in these two areas would appear to be justified at this stage. While the Traffic Facilities Manual outlines the methodology for LATM and states that public consultation is necessary, it is evident from discussions that this is not sufficient in directing inexperienced practitioners in undertaking a LATM study without possible problems.

- **CONCLUSION:**

It is believed that the WSROC member Council practitioners are generally still learning about LATM and any assistance in that learning process would be of value at this stage, and would remove one of the barriers to LATM in the region, i.e. the possible professional sensitivity to community criticism and subsequent hesitancy in undertaking such schemes.

From the point of view of WSROC elected members, there was a clear majority desire for more knowledge about LATM. The production of a video was the material most supported, while organised trips to existing LATM schemes rated second. It is important however, that given the narrow focus of LATM objectives apparent in the implementation of schemes in the WSROC area, that any education material takes a much broader perspective.

- **CONCLUSION:**

Material promoted to elected members should be carefully designed. A video should therefore not dwell on individual devices and their success or failure, rather should examine the concept of LATM - its philosophical roots, what it is capable of achieving in terms of environmental, economic and social gains as well as the traffic and safety objectives. Devices can be used as examples of how this is achieved on the ground. There should also be reference to overseas developments which point the direction of the future of LATM.

Any trips to LATM schemes in other municipalities should be well understood and documented by the tour leader, as misconceptions can become counterproductive in the educative process. To that end, it would be beneficial for the tour leaders to understand the strengths and weaknesses of the various schemes and their background from the practitioners who were involved in the study and implementation process in the municipality concerned. By the production of a relevant video, the distribution of written materials available from the RTA and organising trips to well-researched existing LATM schemes the lack of knowledge which presently constitutes a barrier to LATM among elected representatives could be redressed.

6.1.4 Need for a LATM Strategy for the Whole Local Government Area

In order to avoid the ad hoc response to community pressure to solve traffic-generated problems in residential areas and the emotions which can be generated thereby, some of the WSROC Councils have commenced prioritisation of LATM scheme works across their LGAs. Clearly Council funds for undertaking studies and

implementing LATM schemes in any one year are severely limited, and there may be difficulty in establishing the priority of one area compared with another. Indeed the perception that there are limited funds available for LATM is a strong barrier against undertaking studies in the first place, as the false expectations can be generated about impending implementation. It is apparent that LATM will not be viewed as a serious commitment by Councils until annual budgets are established.

- **CONCLUSION:**

By developing a municipal-wide strategy which prioritises LATM works allocated on annual budget two objectives can be achieved:

- a technical programme for LATM prioritised works,
- community information on the priority of their scheme within the works programme and the reasons for such priority.

6.1.5 The Impact of Outside Interests

An examination of any opposition to LATM schemes which may be generated by state authorities, private organisations or services, revealed that serious opposition to LATM devices can occur from the local bus service. In the WSROC area, these are private companies, some of which appear to be less cooperative than others. Where a bus operator prejudices a whole scheme by insisting on no devices along their route, their opposition can be viewed as unreasonable. Research undertaken by the previous Traffic Authority and Urban Transit Authority has revealed that devices along bus routes are not prejudicial to the time constraints of the service or the physical comfort of passengers if appropriate devices are used along certain lengths of route.

- **CONCLUSION:**

Opposition from bus companies must be addressed by the Department of Transport at this stage. It is encumbent on Councils to communicate and cooperate with bus companies and the T.W.U. however total capitulation to individual operators is not warranted. The Department of Transport should release its 'Guidelines for LATM Devices Along Bus Routes' as quickly as possible to solve this problem which is a serious barrier to effective LATM implementation in some Local Government Areas.

6.2 RECOMMENDATIONS

As a result of the above conclusions the following recommendations are directed at *WSROC Councils.*

6.2.1 Methodology of LATM Studies

i that council practitioners recognise the need for more time and effort to be expended in defining the problems in a study area and setting realistic objectives,

ii that the above be undertaken in close consultation with the client community, understanding that this will most likely involve street committees and public meetings rather than just questionnaires and/or calls for submissions by mail,

iii that where consultants are used to undertake the study, sufficient funds are made available for a comprehensive public consultation component especially where it is envisaged that conflicting opinions or lobby groups are evident,

iv that an adequate 'area of study' be defined in order that problems identified in one street are not transferred to another,

v that practitioners undertake monitoring of schemes so that an effective data base of experience can remain with Councils to educate new practitioners and not lose the accumulated experience when staff changes occur.

6.2.2 Perception of LATM

i that practitioners avail themselves of the literature review in this study and recommended references to develop the understanding that Local Area Traffic Management has as its principal aim the upgrading of the amenity of an area which includes more than just narrow traffic/device related objectives; this will assist in communicting with the public about LATM,

iii that as a result of the above, become aware of the importance of design and aesthetics as well as the opportunities afforded for landscaping and total street redesign where opportunities present themselves,

iiii that in educating the local community and elected members about the range of objectives of LATM, due consideration be given to discussing the amenity/design components.

6.2.3 LATM Strategies for the WSROC Member Councils

i that all WSROC Councils develop a LATM Strategy Plan for their LGA with a prioritised programme of studies and works funded on an annual basis,

ii that those Councils who have dismissed LATM schemes as unnecessary in their LGAs, review this attitude in the light of overwhelming experience which indicates major benefits to the amenity and safety of the residential community from the implementation of such schemes.

6.2.4 Additional Information and Materials

i that Councils avail themselves of any workshops, seminars and conferences which can upgrade their practitioners' knowledge in the experience of LATM implementation,

ii that the WSROC Councils the Local Government Department and possibly the Western Sydney Region office of the RTA liaise with the view to holding a workshop on effective public participation techniques for LATM planning,

iiii that the WSROC Councils and the Local Government Department undertake production of a manual of implemented schemes with detailed information on devices in the Sydney metropolitan area for use by Council practitioners,

iv that the WSROC Councils undertake the production of a set of large (AO) sized mounted photographs of devices and street treatments which can be shared by all WSROC Councils for public display and consultation purposes,

v that the RTA Central office be approached to make available any existing pamphlets and brochures on LATM, Shared Zones, Neighbourhood Road Safety etc. with a view to having these available for the general public, particularly at initial discussions about LATM schemes,

vi that the WSROC Councils investigate funding sources toward the production of a video on LATM which can be used to educate and market LATM to elected representatives and community groups in the region,

vii that the WSROC Councils organise joint trips of their elected members to a range of LATM schemes in other LGAs on a 'round robin' basis, so that elected members are given more opportunities to undertake a guided tour than is presently possible through the resources of any one Council,

viii that tour notes on the schemes be developed jointly by practitioners of the WSROC Councils in conjunction with officers of the visited Councils, so that an effective educative exercise can be achieved.

6.2.5 Bus Route Guidelines

i that WSROC approach the Department of Transport, Service Planning and Coordination Branch as a matter of urgency to make available the 'Guidelines for LATM Devices Along Bus Routes',

ii that WSROC communicate with the Department of Transport regional office (Liverpool) about the difficulties experienced with individual bus operators with a view to solving the intransigent attitude of some operators toward LATM devices.

APPENDIX A

APPENDIX A

STEERING COMMITTEE

Mr Marzi De Santi, Liverpool City Council
Mr Dennis Hitchin, Blue Mountains City Council
Mr Pintara Lay, Fairfield City Council
Mr Max Tankard, Blacktown City Council
Mr Gordon Trotter, Penrith City Council
Ms Alice Spizzo, Deputy Director, Western Sydney Regional Organisation of Councils
Mr Gary Stapleton, Sydney Western Region of the Roads and Traffic Authority
Mr Rudi Svarc, Baulkham Hills Shire Council

Consultant:
Ms Ludmilla Hawley, GEOPLAN Town Planning

WESTERN SYDNEY REGIONAL ORGANISATION OF COUNCILS

BRIEF FOR CONSULTANTS

BARRIERS TO THE IMPLEMENTATION OF LOCAL AREA TRAFFIC MANAGEMENT SCHEMES IN WESTERN SYDNEY AND STRATEGIES TO OVERCOME THESE

1. BACKGROUND

1.1 The Western Sydney Regional Organisation of Councils (WSROC) is an association of ten local councils in the Western Sydney region. WSROC has been funded by the Office of Road Safety to conduct an investigation into barriers to the implementaion of Local Area Traffic Management (LATM) Schemes in Western Sydney and the development of strategies to overcome these.

The WSROC region offers a diversity of residential environments within which an assessment of speed control and LATM schemes can be made. These residential environments range from old grid pattern subdivisions, through to the subdivisions of the early 1960's and 1970's, where traffic planning principles were first incorporated into subdivision design, to the recent subdivisions following the "streets where we live" concepts. The region's generally heavy reliance on the car, rather than public transport, provides a contrast to inner areas of the city well served by public transport.

1.2 The Need for Research into LATM in Western Sydney

Councils in the WSROC region are experiencing growing pressure from residents to take action to control speeding traffic in residential precincts. This is particularly the case in older more established areas typically with grid street patterns but has also occurred in specific instances in recent subdivisions. Increasing congestion on arterial roads, many of which in Western Sydney are carrying far greater traffic volumes than they were designed for, has created instances where traffic cuts through residential areas at high speed. Residents' greater awareness that speed control devices are possible and have been effective in other areas is also contributing to pressure on councils. Councils have found that once one area is treated with a speed control device or a LATM Scheme, pressure for similar treatment intensifies from residents in other areas with similar problems.

While experiencing this pressure from residents, councils in Western Sydney are faced with enormous demands on limited resources. Rate pegging constrains the amount of funds able to be raised by councils yet there are considerable pressures to meet backlogs in services resulting from rapid urban development. Within this environment, LATM Schemes have to compete with the basic necessities of a growing area such as local road construction, flooding and drainage works, construction of neighbourhood facilities, etc.

Amidst these competing priorities, and the not inconsiderable costs of most schemes, it is understandable that speed control devices and LATM Schemes are frequently regarded with some scepticism by aldermen charged with allocating funds to alternative projects. There appears to be insufficient knowledge at the elected representative level about benefits to be obtained by the implementation of these schemes. Until resident pressure is particularly strong and the case for expenditure is overwhelmingly justified by staff, LATM schemes tend to be postponed.

The result is that while in some instances a large number of residential precincts have been identified by staff as requiring treatment, only relatively few devices or schemes have been implemented to date. In other councils however, there is a policy of not introducing speed reducing devices because of a perception these will in fact aggravate speeding by providing a "challenge" to young drivers.

There is a need, therefore, for a greater understanding of the advantages to be offered by LATM Schemes, for comparative information about previous experience and for an investigation into lower cost solutions than those presently available.

2. AIMS AND OBJECTIVES

The overall aim of this research project is twofold:

(i) to provide an information base on attitudinal and other barriers to the implementation of speed control and LATM schemes in Western Sydney which the Office of Road Safety and other authorities can use in promoting such schemes; and

(ii) to disseminate information on relevant research results relating to speed control and LATM Schemes to elected local representatives within Western Sydney and to technical staff.

Specific objectives of the project are:

(i) to identify the present experience of councils in Western Sydney with speed control devices and LATM Schemes;

(ii) to identify political, technical, attitudinal and resource problems councils are faced with in implementing speed control and LATM Schemes; and

(iii) to develop strategies targetted at overcoming these particular problems of implementation.

3. WORK PROGRAM

3.1 Literature Review

Review of previous research on the issue of speed management/LATM Schemes in NSW, Australia and overseas. This would be a relatively brief compilation of experience and approaches with such schemes in other areas. Much research has already been done and it is important to build on relevant previous experience.

3.2 Documentation of Relevant Traffic Management Policies and Actions

Identification of the present policies and actions of relevant State Government authorities in relation to speed control and LATM Schemes is relevant to a subsequent consideration of local council actions.

3.3 Conduct Interviews with Technical Staff

Individual interviews with the Traffic Engineers and Town Planners of each WSROC council would be held to document the present situation and policies in each council. Issues addressed would include the extent and history of councils' involvement; the location, cost, rationale of present and planned schemes; councils' evaluation of schemes; problem areas and reasons why not treated.

3.4 Questionnaire for Elected Representatives

The attitudes and level of knowledge of elected representatives is vital to the acceptance and consequent implementation of speed control and LATM Schemes. This would need to be explored either through a self report questionnaire for aldermen/councillors or structured discussion with traffic sub-committees of council. The aim would be to identify problem areas such as lack of awareness of possible options, negative views based on incorrect facts, or opposition to particular types of devices.

3.5 Structured Discussions with Traffic Committees

Structured discussions with local and regional traffic committees in Western Sydney and, particularly, with police representatives and parliaments, would also highlight potential impediments to implementation. Identification of the present impediments to council implementation of speed control and LATM Schemes in residential areas. This identification would result from a synthesis of results from the interviews of technical staff, the survey of aldermen and the discussions with traffic committees.

3.6 Identification of Barriers and Development of Strategies

Identification of barriers such as attitudinal, resource constraints and inadequate knowledge would precede the development of strategies to promote the implementation of speed control and LATM Schemes where these are appropriate. These strategies would be targetted at the impediments to implementation identified.

These strategies might include:

* information dissemination of available or additional material to elected representatives and residents;

* identification of low cost physical and non-physical solutions to speeding and through traffic;

* identification of costs and benefits of particular devices or approaches based on experience elsewhere.

3.7 Compilation of Final Report

A report documenting the findings of the research program and the strategies developed will be produced. It is envisaged that this report would act as a reference for councils in Western Sydney in considering the implementation of traffic speed and volume controls in residential areas.

4. BUDGET

The budget for the study is $

5. MANAGEMENT OF THE STUDY

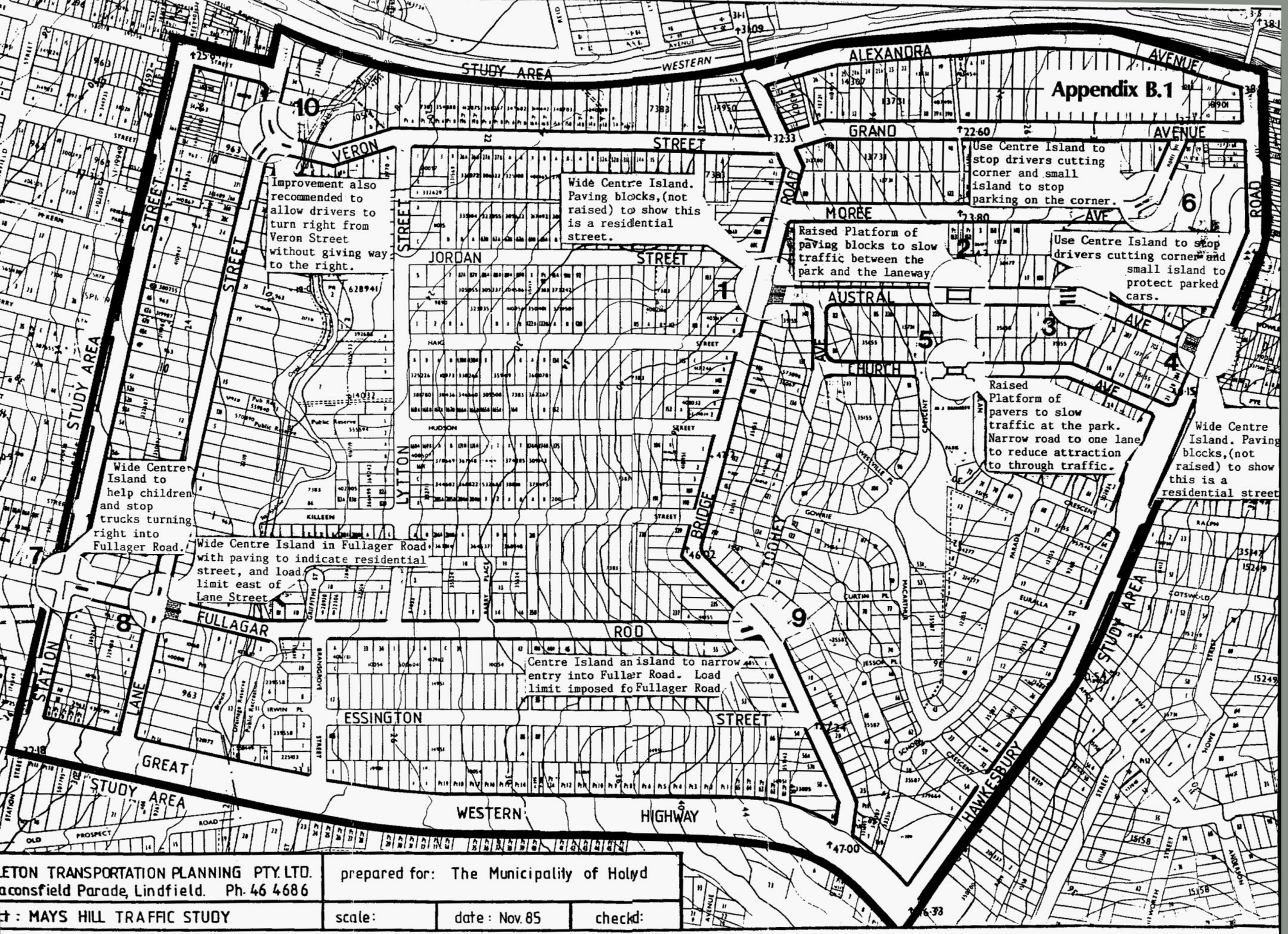
The consultant will be responsible to the Assistant Director of WSROC in undertaking the study. To oversee the study, a steering committee consisting of the Director, together with representatives of Western Sydney councils and the RTA, will be set up. The consultant will be expected to report to the committee two to three times during the study.

APPENDIX B

APPENDIX B CONTENTS


Appendix B.1
ROUNDABOUTS
LATM SCHEMES
ROAD CLOSURES
(EITHER PARTIAL OR FULL)
Approx. 15 Closures
HOLROYD
MUNICIPALITY
SCALE
TOONGABBIE
NORTH PARRAMATTA
GIRRAWEEN
WESTMEAD
PENDLE HILL
WENTWORTHVILLE
PROSPECT
MAYS HILL
PARRAMATTA
SOUTH WENTWORTHVILLE
MERRYLANDS
MERRYLANDS WEST
GRANVILLE
WOODPARK
GUILDFORD
SOUTH GRANVILLE
SMITHFIELD
PARK
YENNORA
OLD GUILDFORD
FAIRFIELD HEIGHTS
FAIRFIELD
CHESTER
-COPYRIGHT-

Appendix B.1



LETON TRANSPORTATION PLANNING PTY. LTD. aconsfield Parade, Lindfield. Ph. 46 4686	prepared for: The Municipality of Holyd		
t : MAYS HILL TRAFFIC STUDY	scale:	date : Nov. 85	checkd:

Macquarie Road Area Treatment

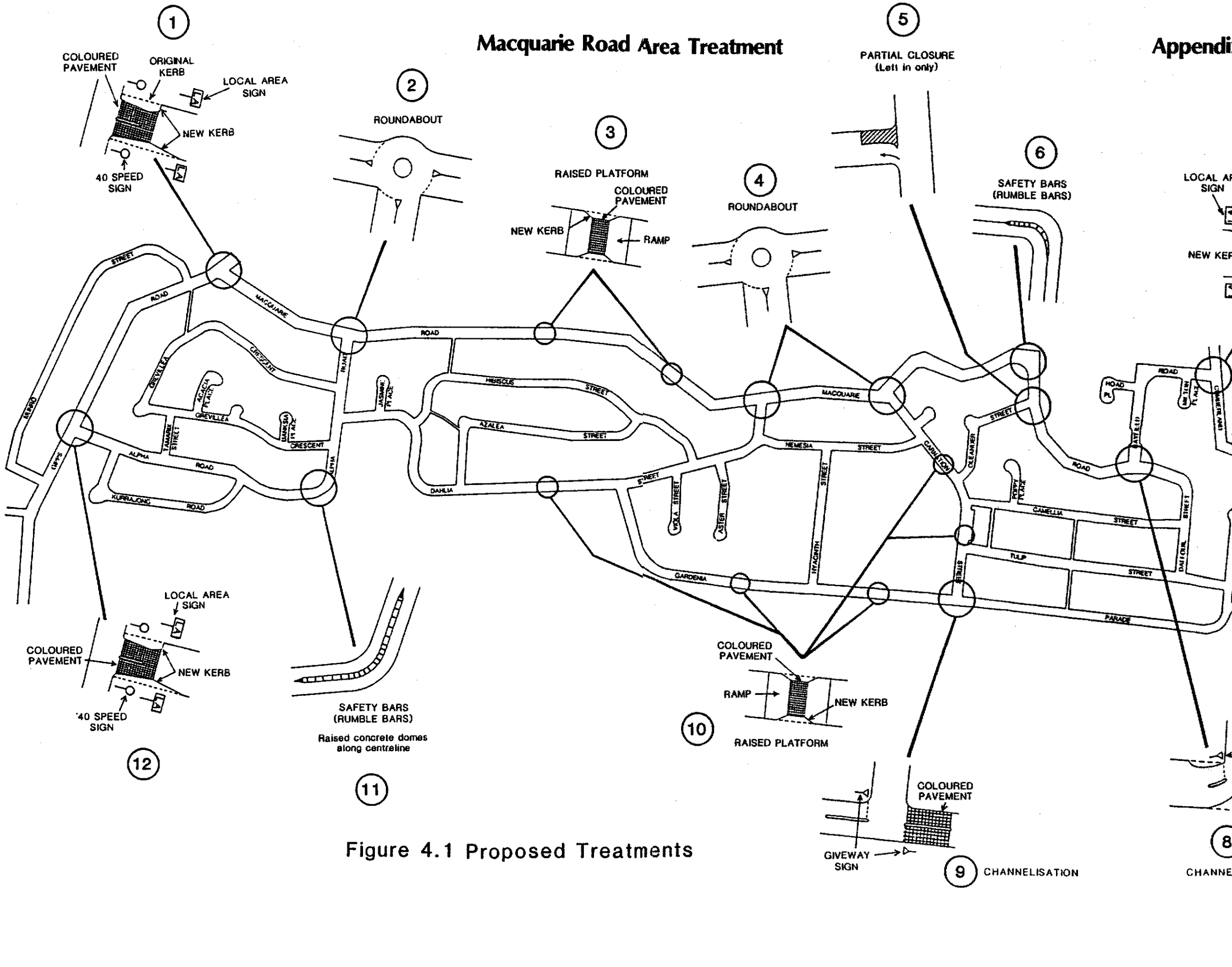
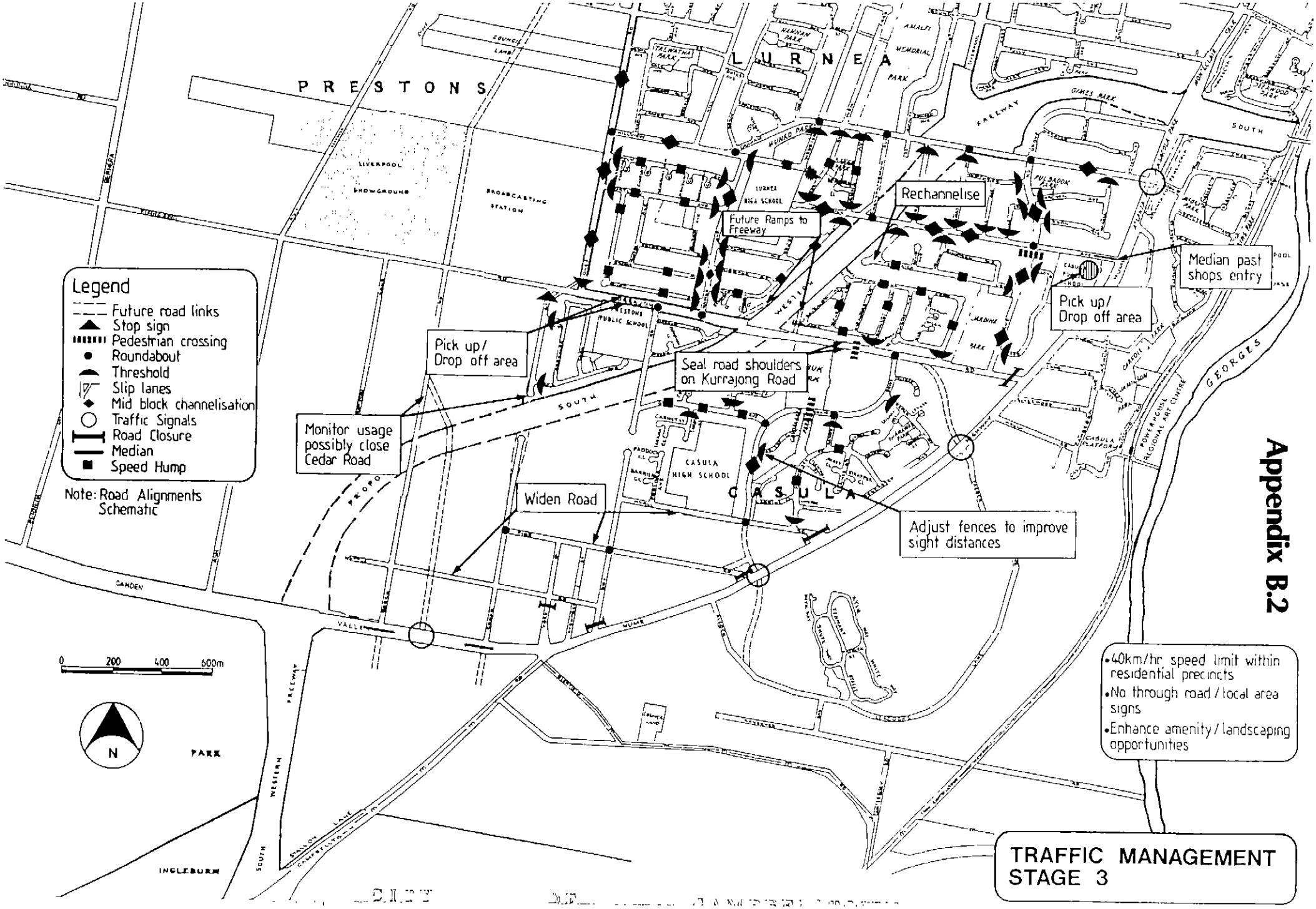
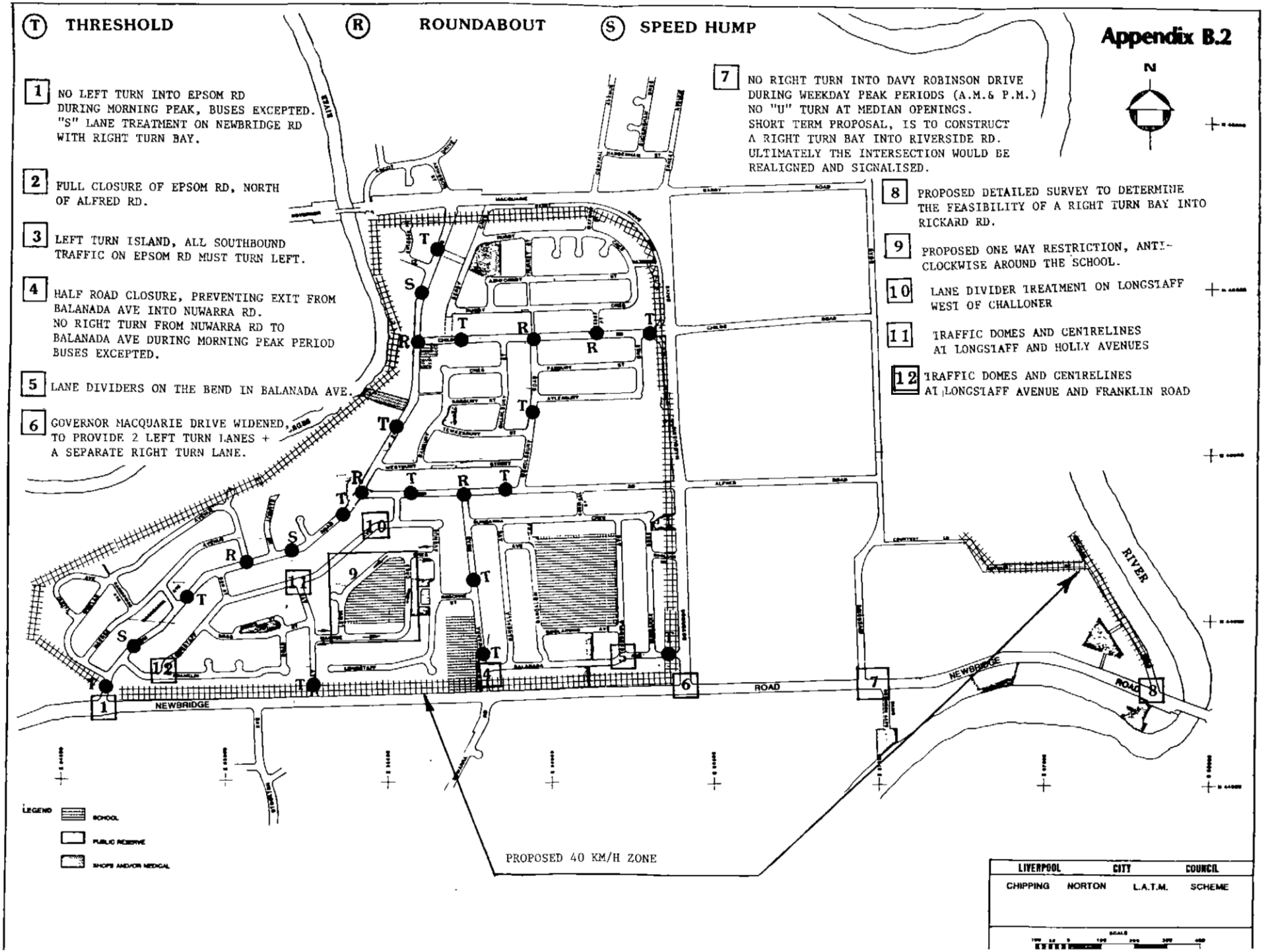


Figure 4.1 Proposed Treatments

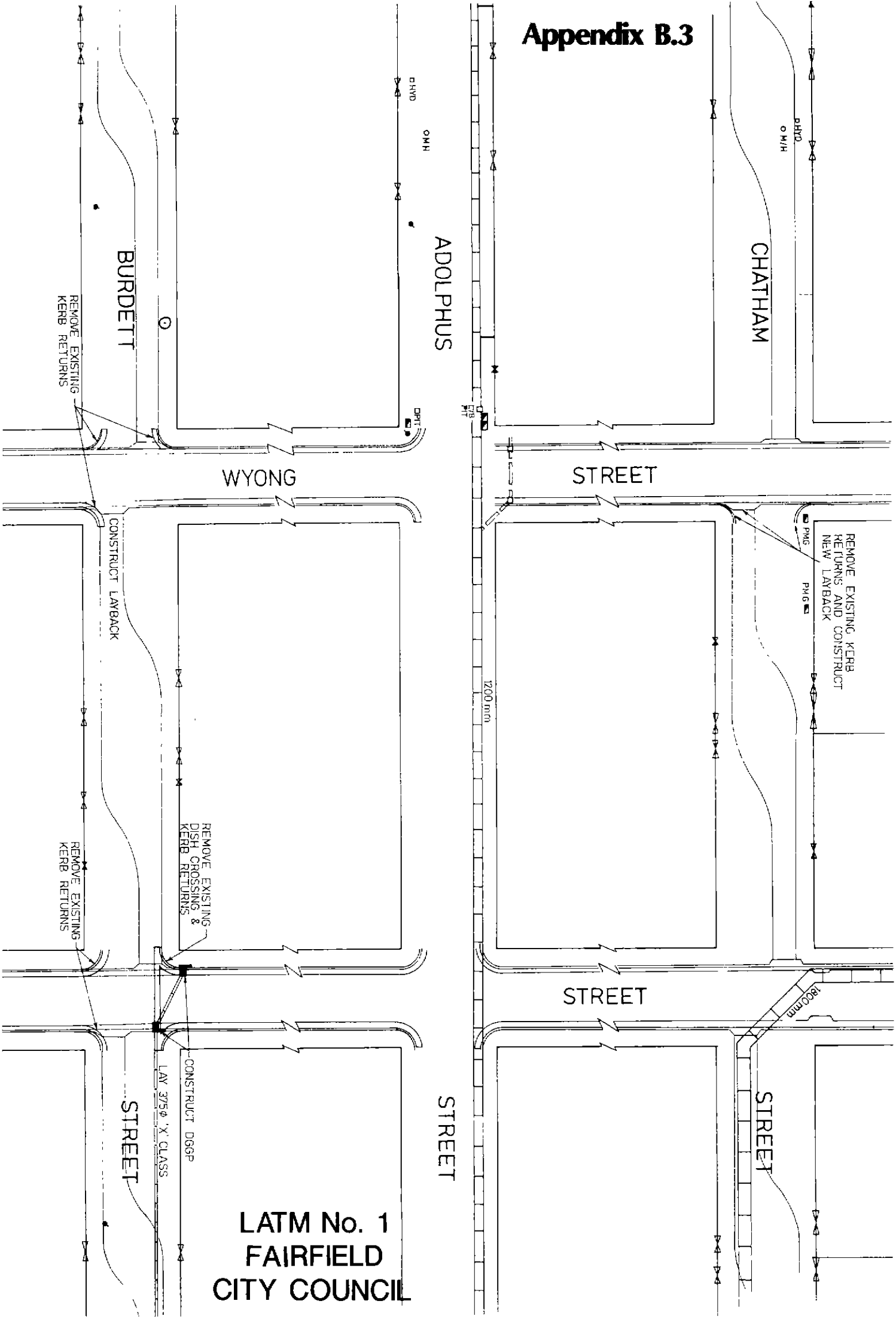

PRESTONS
LURNEA
CASULA
Legend
Future road links
Stop sign
Pedestrian crossing
Roundabout
Threshold
Slip lanes
Mid block channelisation
Traffic Signals
Road Closure
Median
Speed Hump
Note: Road Alignments Schematic
Rechannelise
Future Ramps to Freeway
Median past shops entry
Pick up/ Drop off area
Pick up/ Drop off area
Seal road shoulders on Kurrajong Road
Monitor usage possibly close Cedar Road
Widen Road
Adjust fences to improve sight distances
0 200 400 600m
N
•40km/hr speed limit within residential precincts
•No through road / local area signs
•Enhance amenity / landscaping opportunities
TRAFFIC MANAGEMENT STAGE 3

Appendix B.2

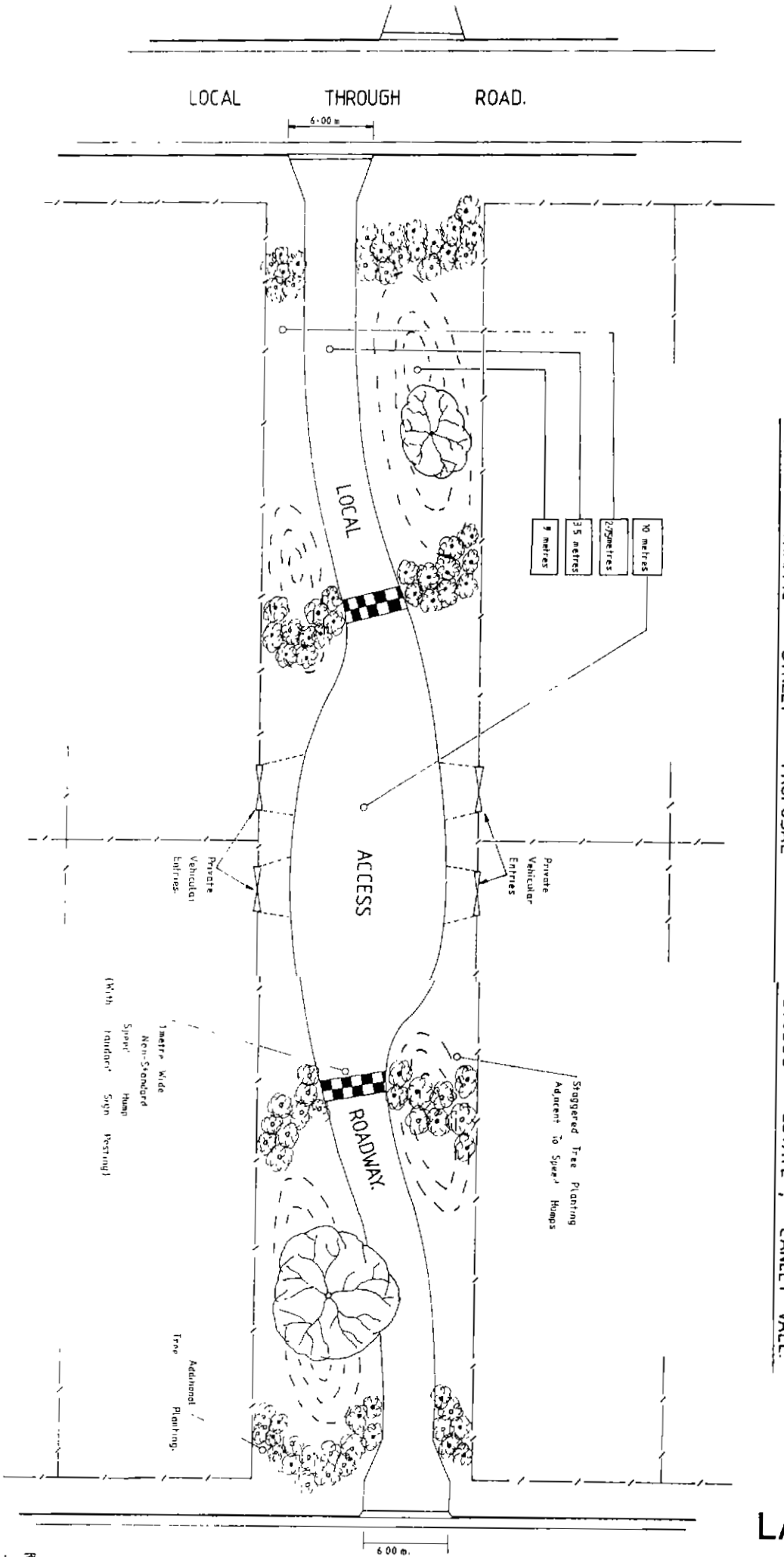
Appendix B.2


T THRESHOLD
R ROUNDABOUT
S SPEED HUMP
1 NO LEFT TURN INTO EPSOM RD DURING MORNING PEAK, BUSES EXCEPTED. "S" LANE TREATMENT ON NEWBRIDGE RD WITH RIGHT TURN BAY.
2 FULL CLOSURE OF EPSOM RD, NORTH OF ALFRED RD.
3 LEFT TURN ISLAND, ALL SOUTHBOUND TRAFFIC ON EPSOM RD MUST TURN LEFT.
4 HALF ROAD CLOSURE, PREVENTING EXIT FROM BALANADA AVE INTO NUWARRA RD. NO RIGHT TURN FROM NUWARRA RD TO BALANADA AVE DURING MORNING PEAK PERIOD BUSES EXCEPTED.
5 LANE DIVIDERS ON THE BEND IN BALANADA AVE.
6 GOVERNOR MACQUARIE DRIVE WIDENED, TO PROVIDE 2 LEFT TURN LANES + A SEPARATE RIGHT TURN LANE.
7 NO RIGHT TURN INTO DAVY ROBINSON DRIVE DURING WEEKDAY PEAK PERIODS (A.M.& P.M.) NO "U" TURN AT MEDIAN OPENINGS. SHORT TERM PROPOSAL, IS TO CONSTRUCT A RIGHT TURN BAY INTO RIVERSIDE RD. ULTIMATELY THE INTERSECTION WOULD BE REALIGNED AND SIGNALISED.
8 PROPOSED DETAILED SURVEY TO DETERMINE THE FEASIBILITY OF A RIGHT TURN BAY INTO RICKARD RD.
9 PROPOSED ONE WAY RESTRICTION, ANTI-CLOCKWISE AROUND THE SCHOOL.
10 LANE DIVIDER TREATMENT ON LONGSTAFF WEST OF CHALLONER
11 TRAFFIC DOMES AND CENTRELINES AT LONGSTAFF AND HOLLY AVENUES
12 TRAFFIC DOMES AND CENTRELINES AT LONGSTAFF AVENUE AND FRANKLIN ROAD
N
NEWBRIDGE
ROAD
RIVER
LEGEND
SCHOOL
PUBLIC RESERVE
SHOPS AND/OR MEDICAL
PROPOSED 40 KM/H ZONE
LIVERPOOL CITY COUNCIL
CHIPPING NORTON L.A.T.M. SCHEME
SCALE

Appendix B.3



LATM No. 1
FAIRFIELD
CITY COUNCIL



SLOW TRAFFIC STREET PROPOSAL — STUBBS ESTATE, CANLEY VALE.

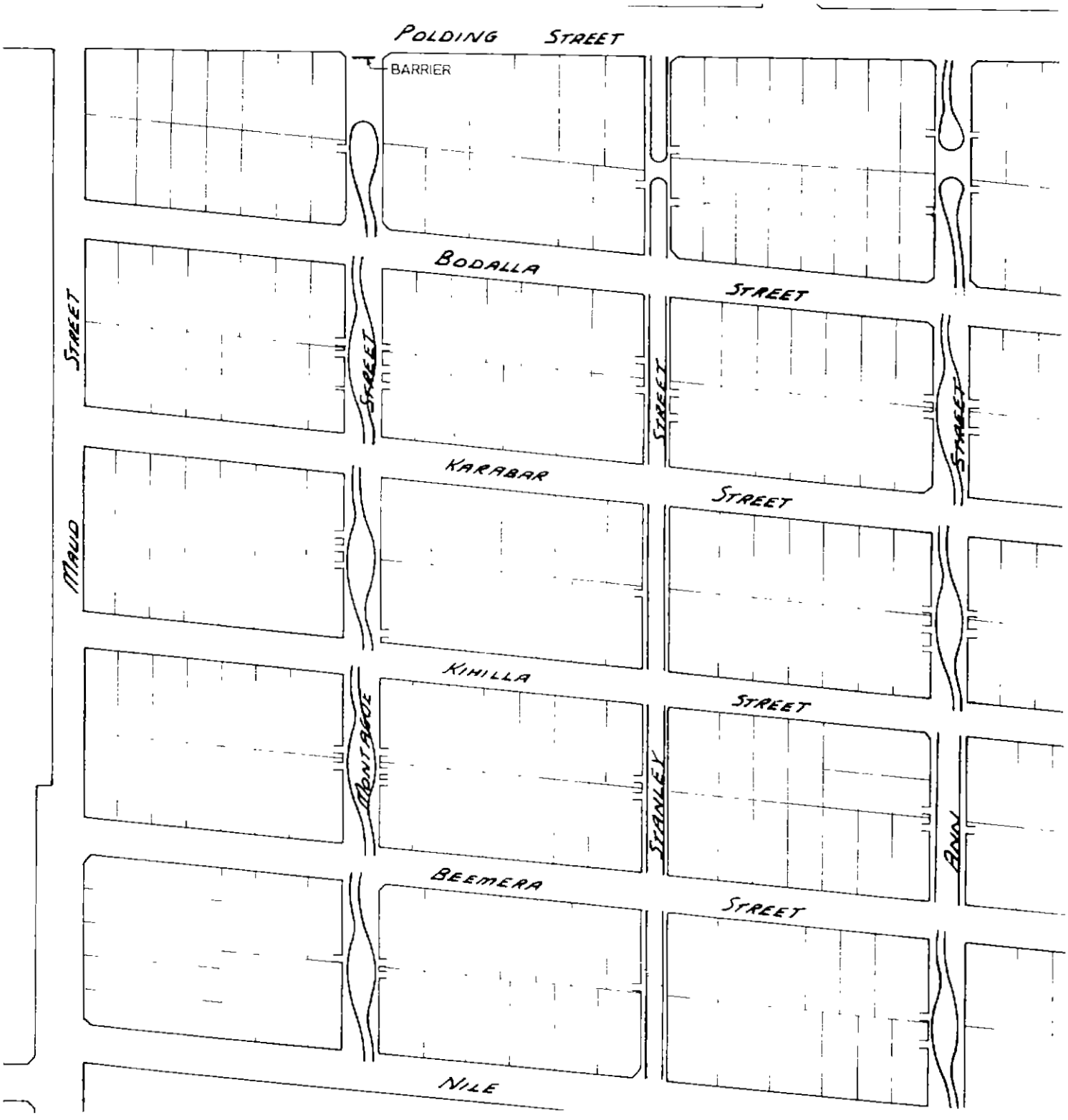
LATM No. 1

FAIRFIELD CITY COUNCIL

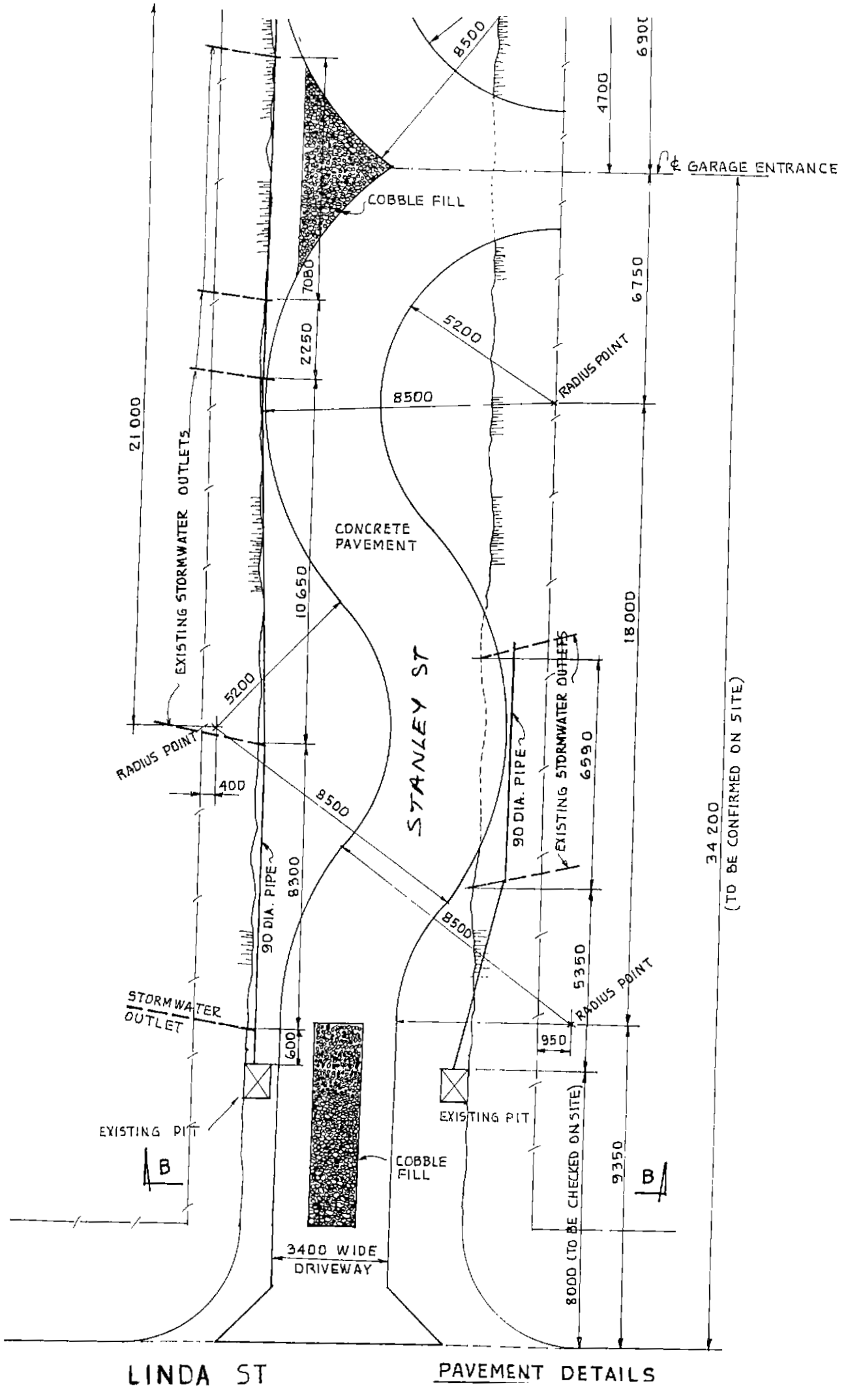
REDUCTION RATIO
DATED: 7/87

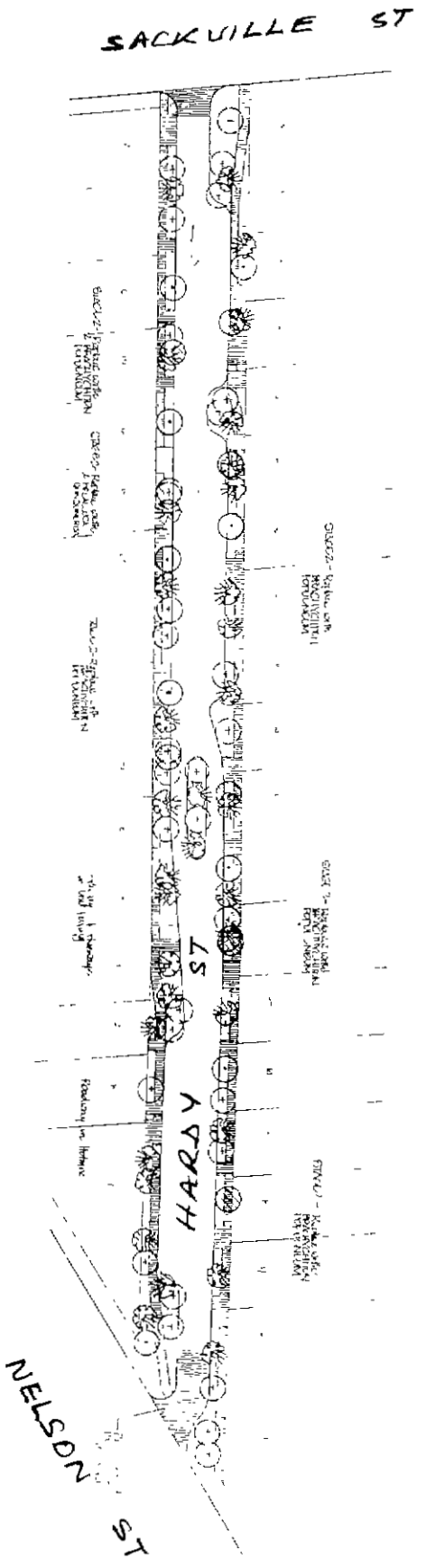
LATM No. 4

FAIRFIELD CITY COUNCIL



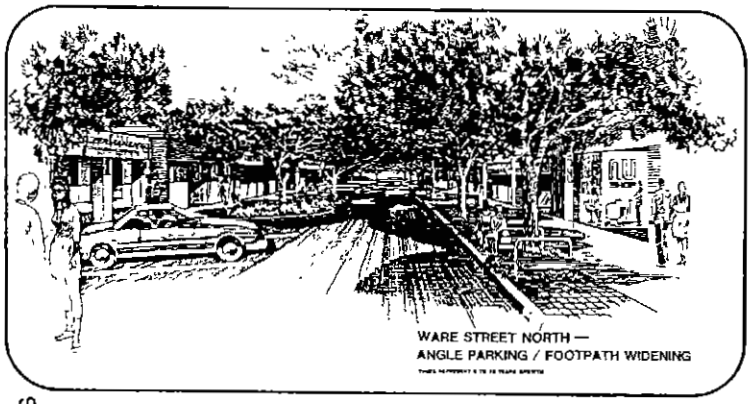
LATM No. 4 FAIRFIELD CITY COUNCIL



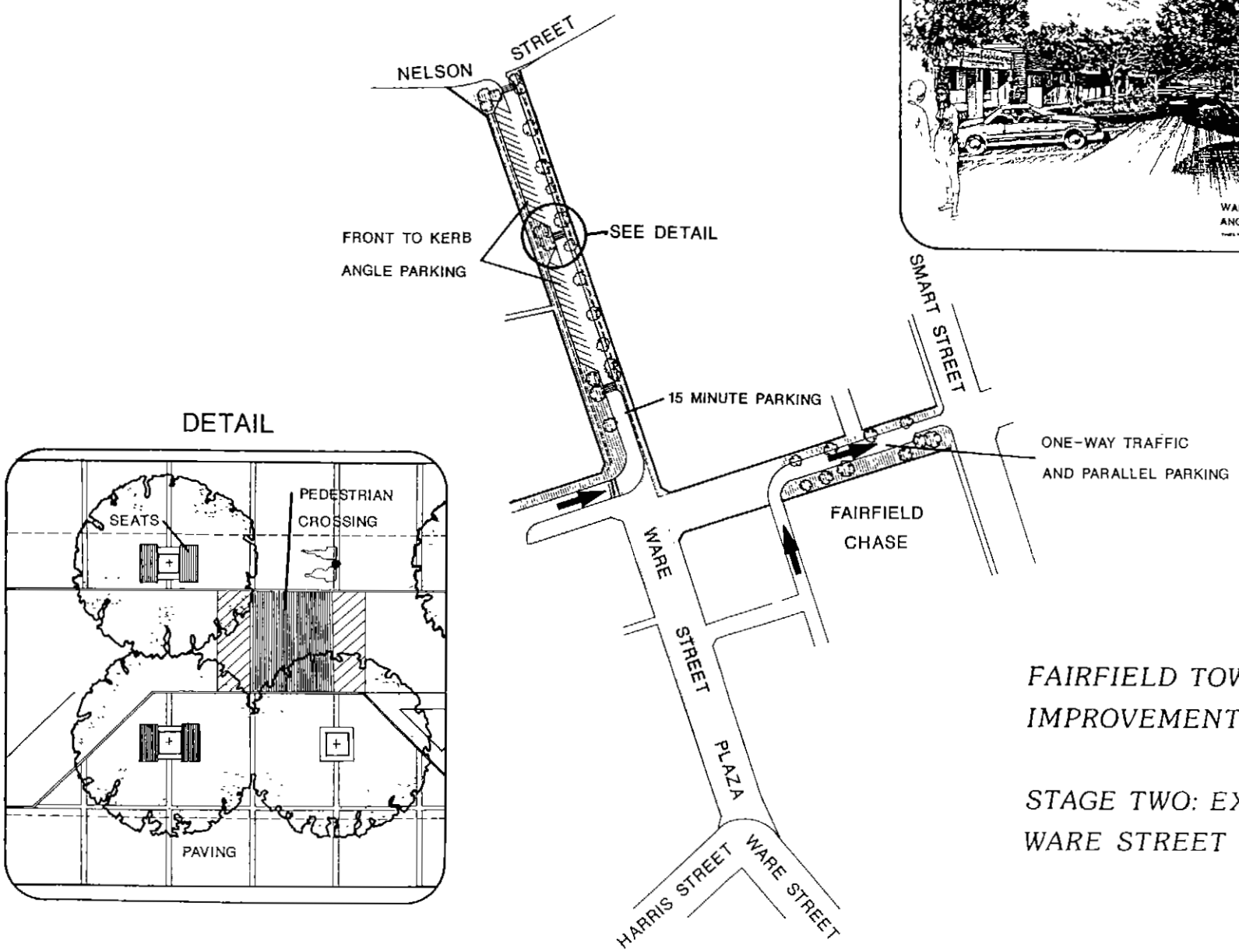


LATM No. 5

FAIRFIELD CITY COUNCIL

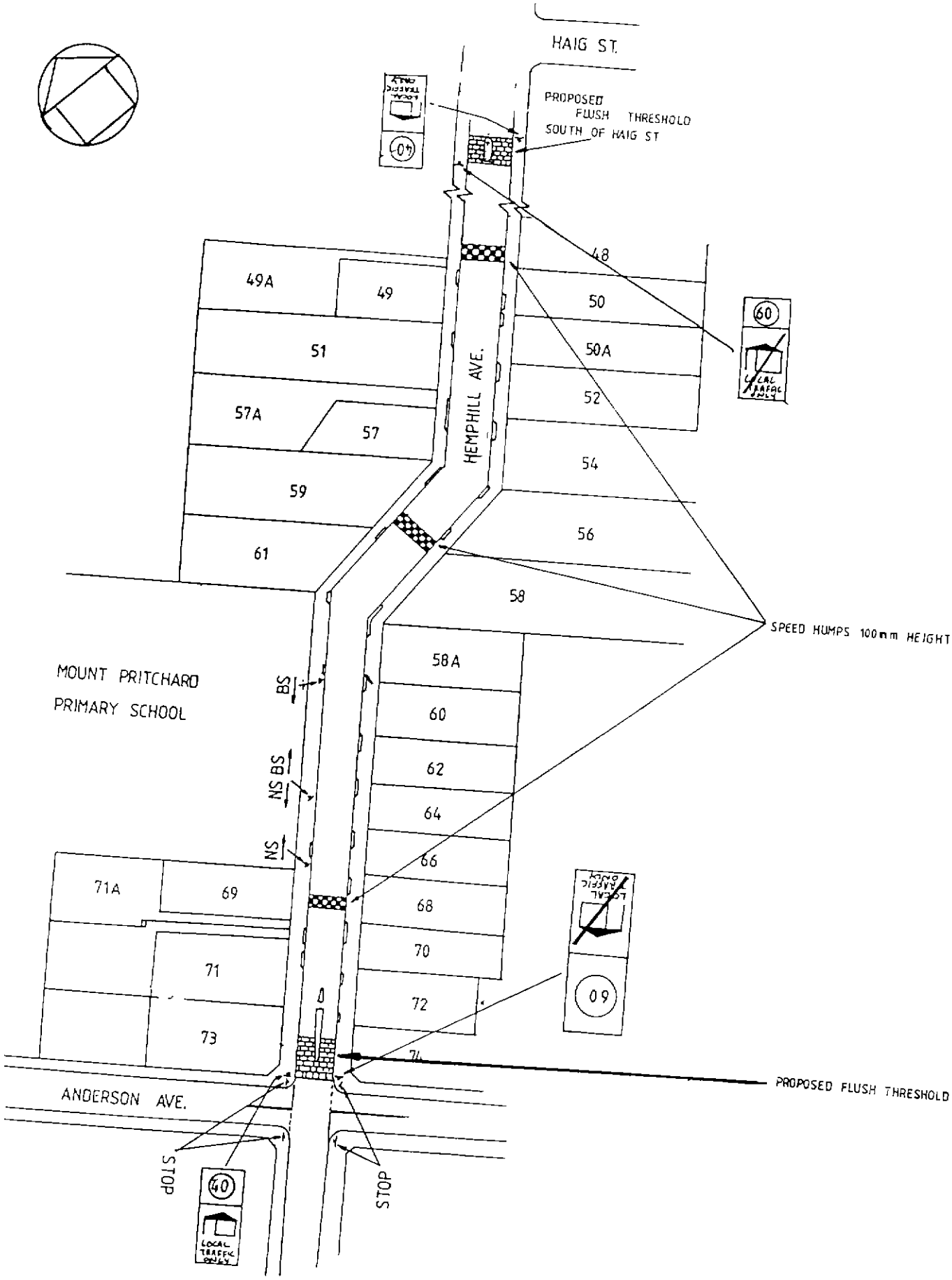


WARE STREET NORTH —
ANGLE PARKING / FOOTPATH WIDENING



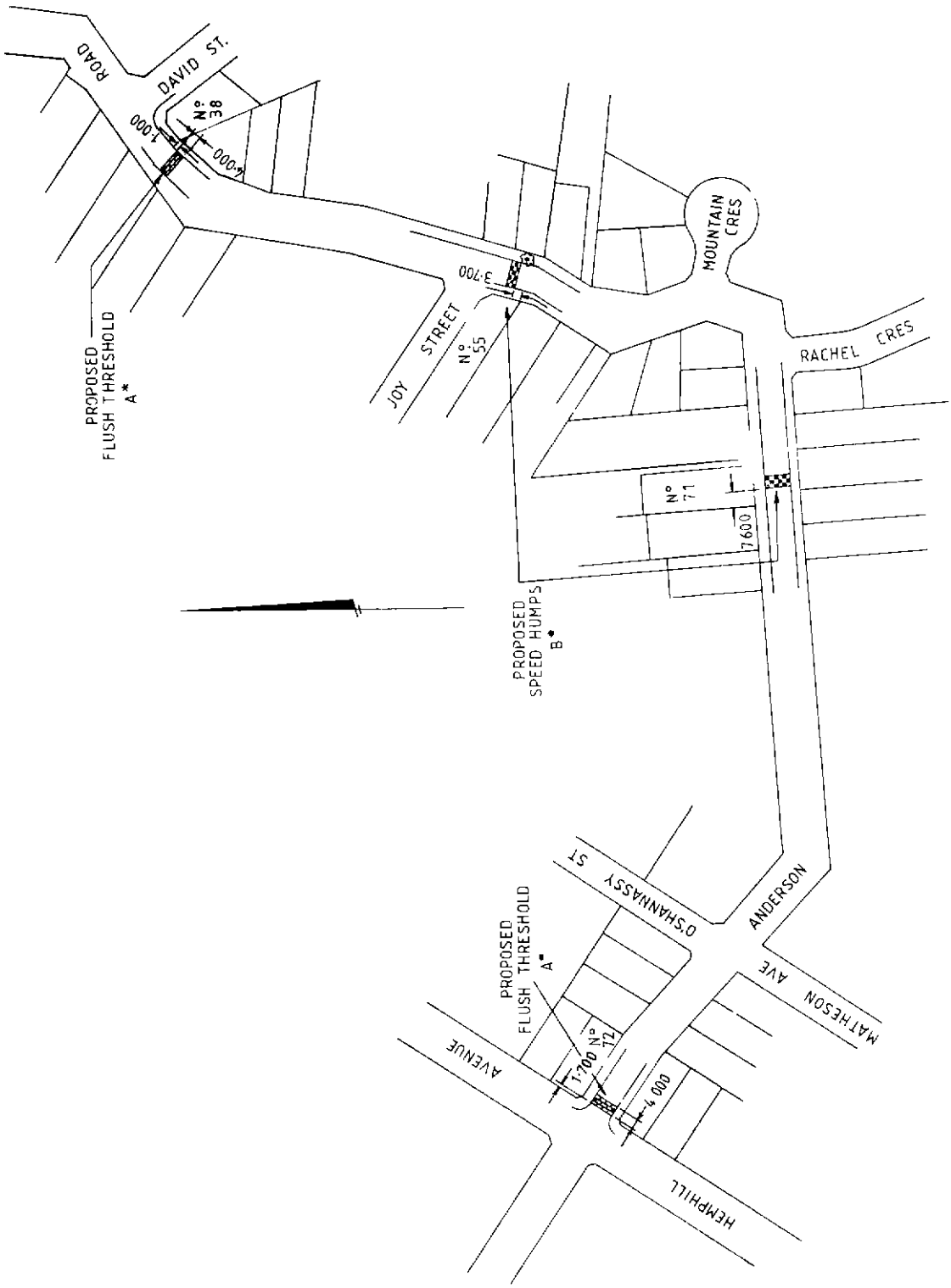
FAIRFIELD TOWN CENTRE IMPROVEMENT PROGRAMME

STAGE TWO: EXTENSIONS TO WARE STREET PLAZA

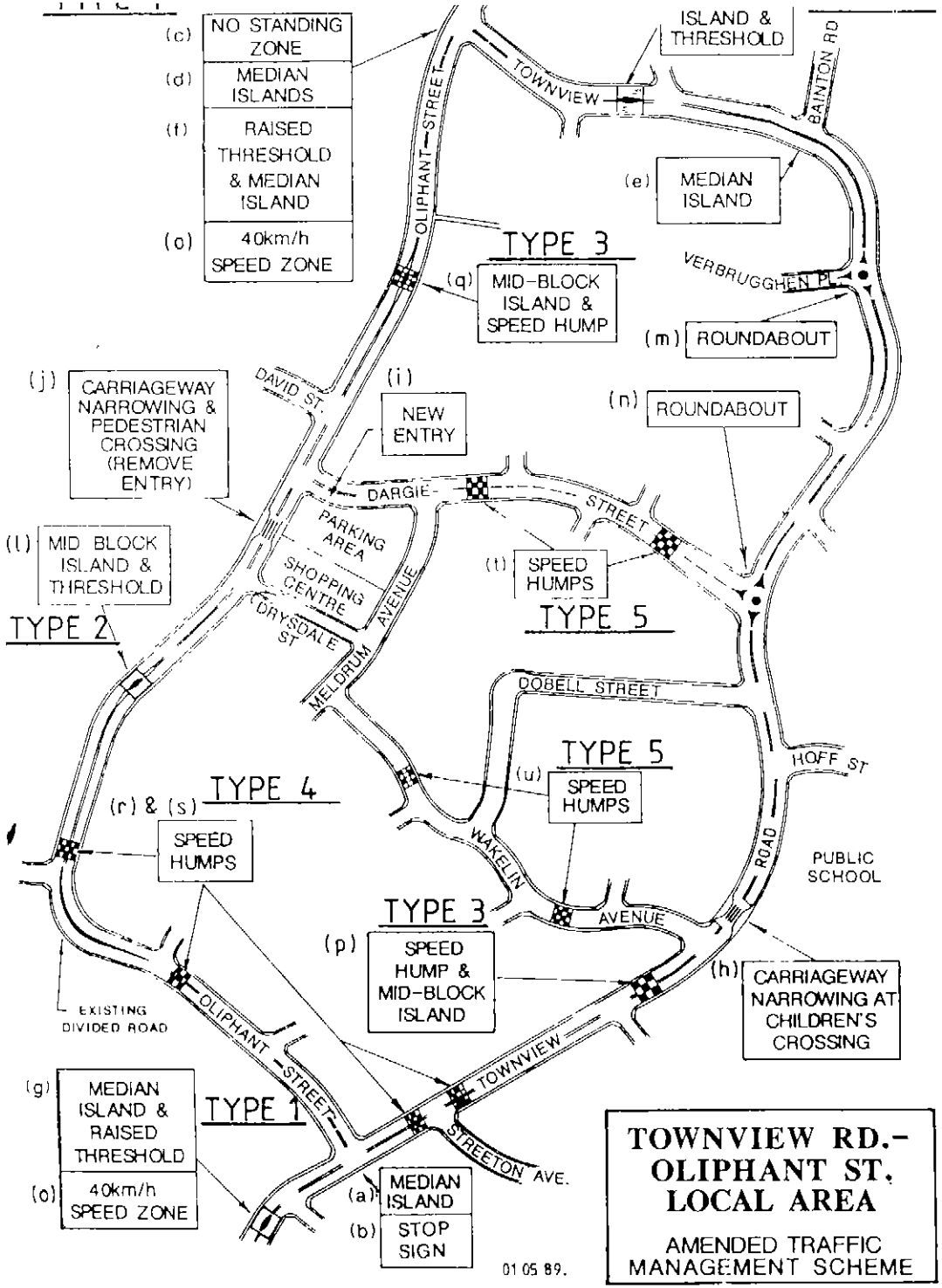


HEMPHILL AVENUE_PROPOSED LOCAL TRAFFIC MANAGEMENT SCHEME No. 14 PART 1

FAIRFIELD CITY COUNCIL



LATM No. 14 PART II
FAIRFIELD CITY COUNCIL



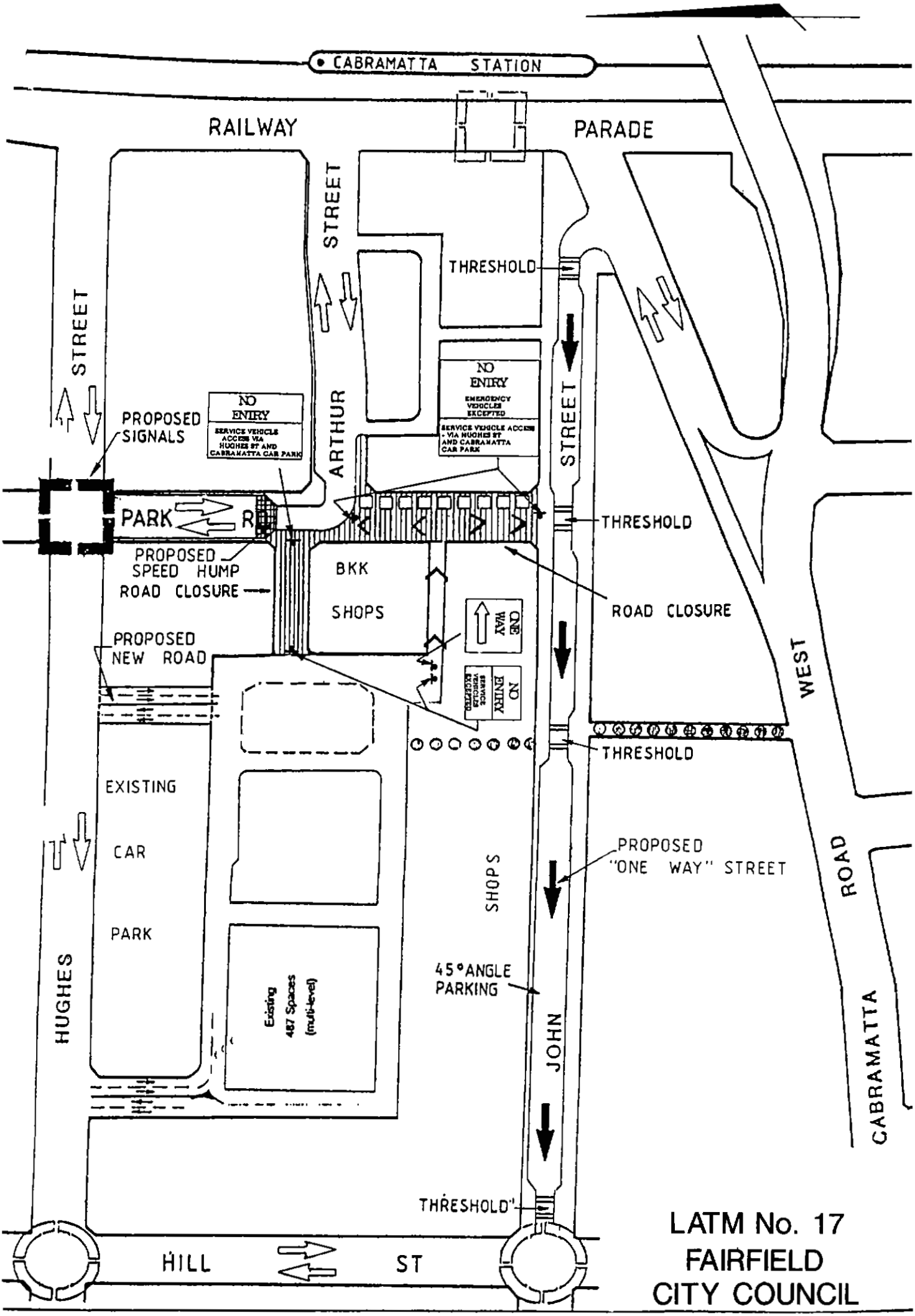
TOWNVIEW RD.- OLIPHANT ST. LOCAL AREA

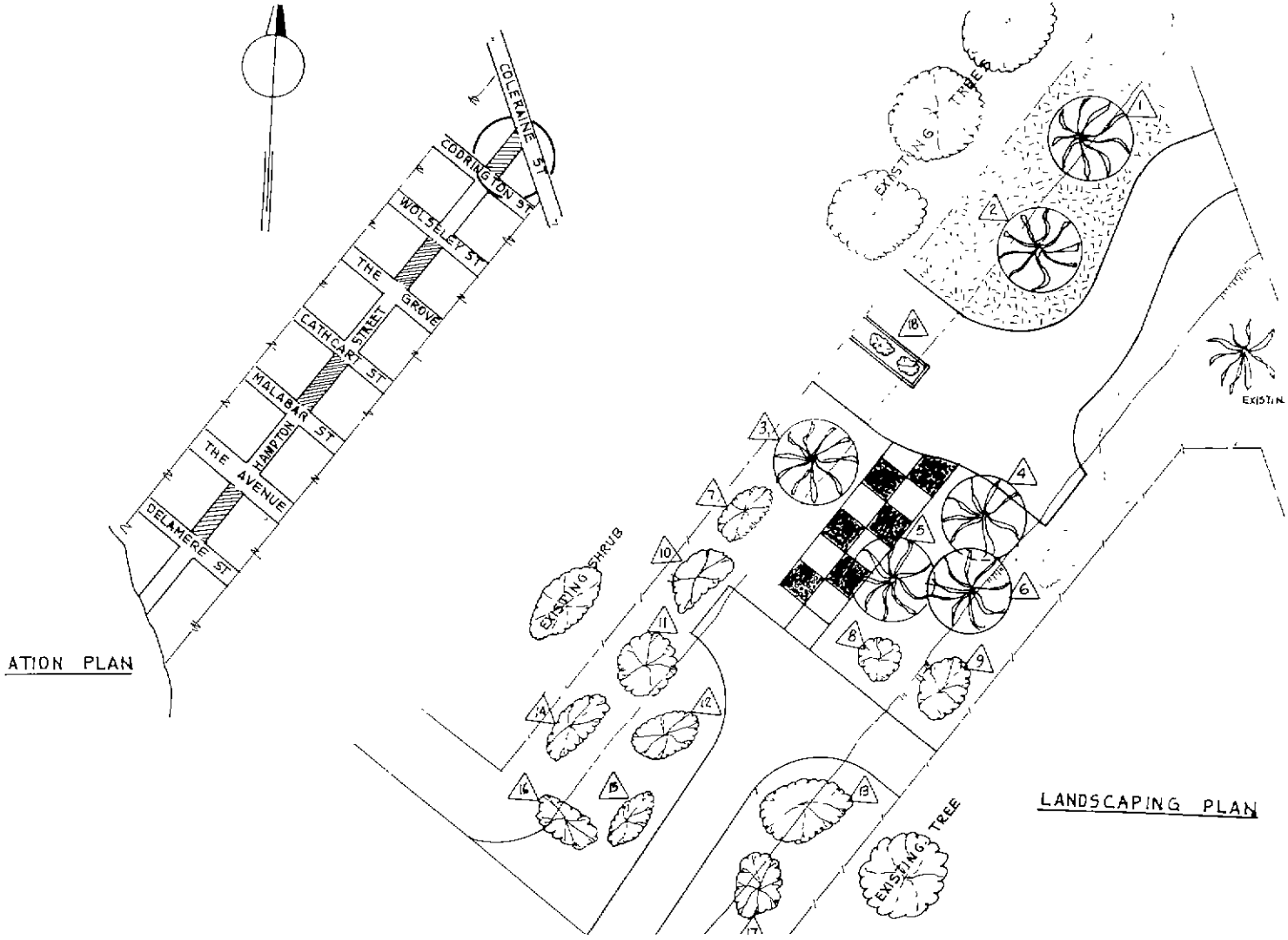
AMENDED TRAFFIC MANAGEMENT SCHEME

LATM No.15

FAIRFIELD CITY COUNCIL

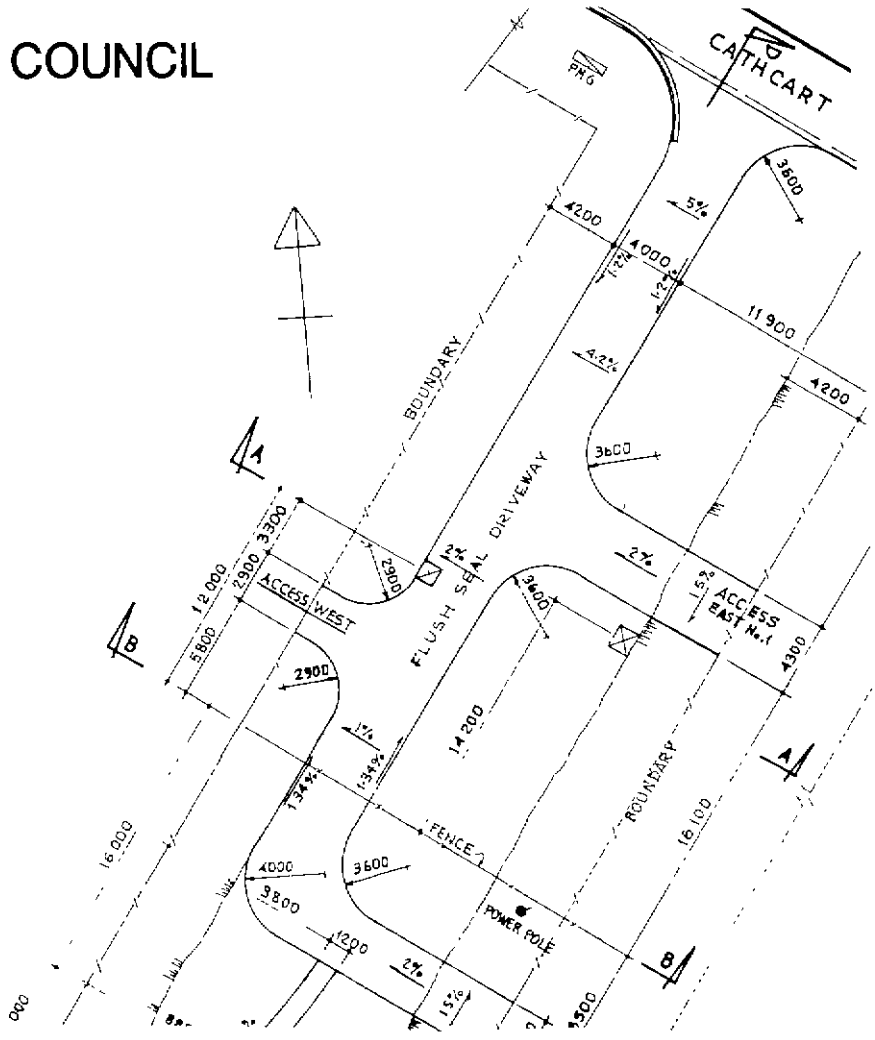
2 in TOWNVIEW RD (near OLIPHANT ST, near CONDOR AVE)	TYPE 1 with Median Island	- Pavers on Concrete Base - 100 mm high - 1 15 ramps - 1.5 m + 8.0 m + 1.5 m long
1 in TOWNVIEW RD 1 in OLIPHANT ST	TYPE 2 with Median Island	- Pavers on existing Bitumen - 100 mm high - 1 : 15 ramps - 1.5 m + 8.0 m + 1.5 m long
1 in TOWNVIEW RD 1 in OLIPHANT ST	TYPE 3 with Median Island	- Bitumen flat top Speed Hump - 100 mm high - 1.5 m + 8.0 m + 1.5 m long
2 in TOWNVIEW RD. 2 in OLIPHANT ST	TYPE 4 no Median Island	- Bitumen flat top Speed Hump - 80 mm high - 0.75 m + 5.5 m + 0.75 m long
2 in DARGIE ST 2 in WAKELIN AVE 1 in HUTCHENS AVE. 1 in BAINTON RD.	TYPE 5 no Median Island	- Bitumen Speep Hump (Watts Profile) - 100 mm high - 3.7 m long
2 in TOWNVIEW RD. (near HUTCHENS AVE., near HITTER AVE.)	TYPE 6 with Median Island	- Pavers on 200 mm FCR Base - Level with road pavement - 0.3 m + 8.0 m + 0.3 m long

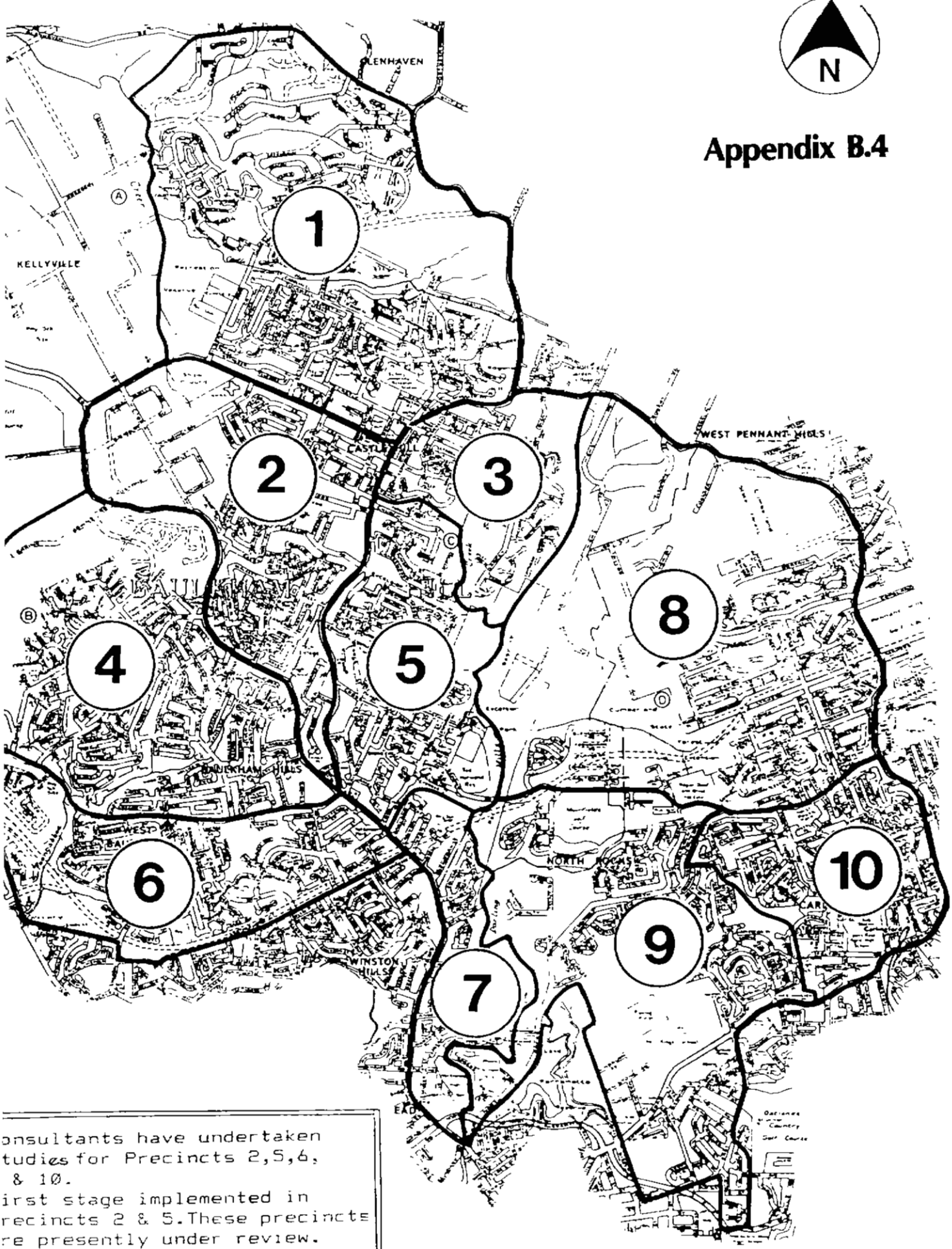

CABRAMATTA STATION
RAILWAY
PARADE
STREET
ARTHUR
STREET
STREET
THRESHOLD
NO ENTRY
EMERGENCY VEHICLES EXCEPTED
SERVICE VEHICLE ACCESS - VIA HUGHES ST AND CABRAMATTA CAR PARK
NO ENTRY
SERVICE VEHICLE ACCESS VIA HUGHES ST AND CABRAMATTA CAR PARK
PROPOSED SIGNALS
PARK
R
THRESHOLD
PROPOSED SPEED HUMP
ROAD CLOSURE
BKK
SHOPS
ROAD CLOSURE
ONE WAY
NO ENTRY
PROPOSED NEW ROAD
WEST
THRESHOLD
EXISTING
CAR
PARK
SHOPS
PROPOSED "ONE WAY" STREET
ROAD
HUGHES
Existing 487 Spaces (multi-level)
45° ANGLE PARKING
JOHN
CABRAMATTA
THRESHOLD
HILL
ST
LATM No. 17
FAIRFIELD
CITY COUNCIL



LATM

IRFIELD CITY COUNCIL

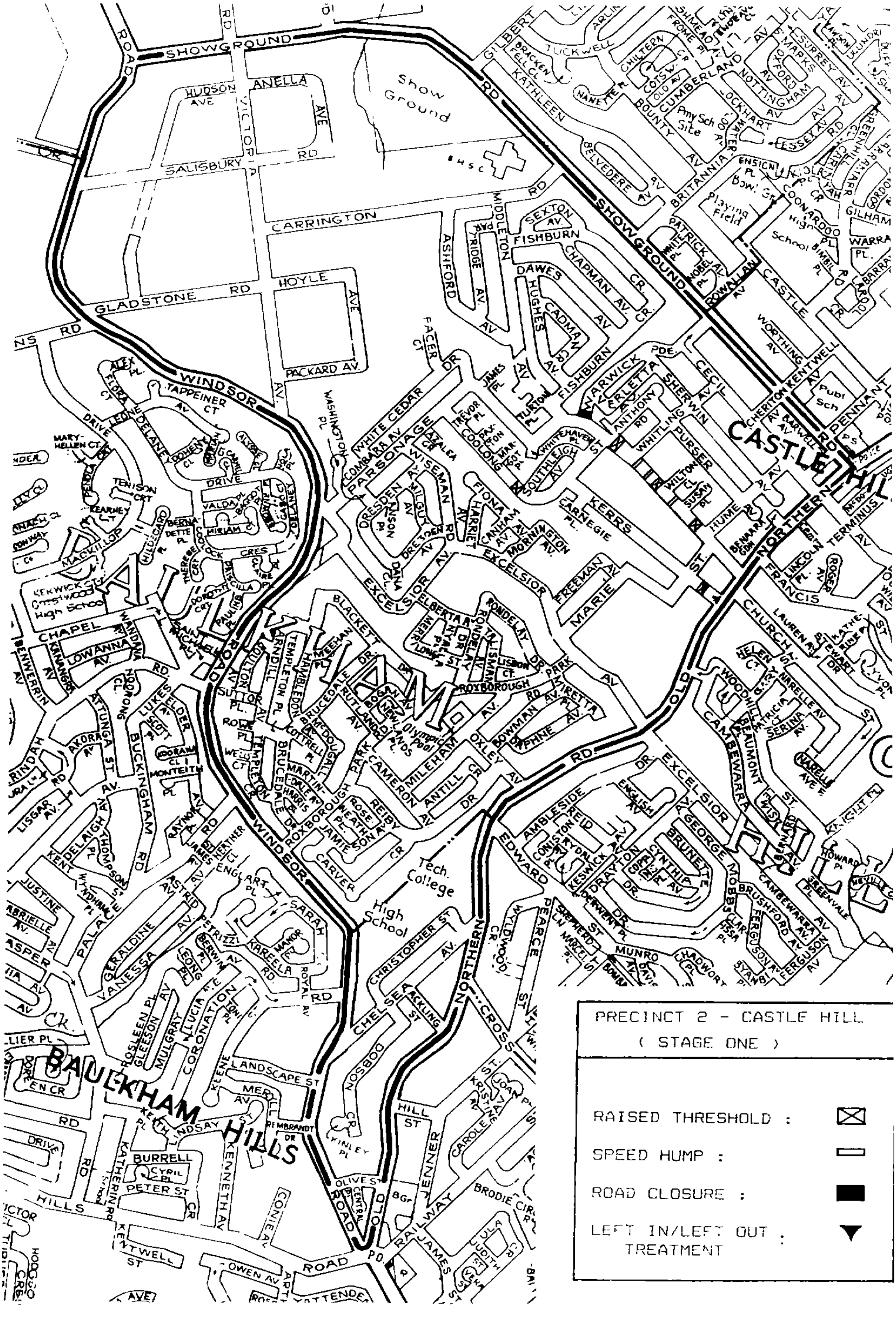


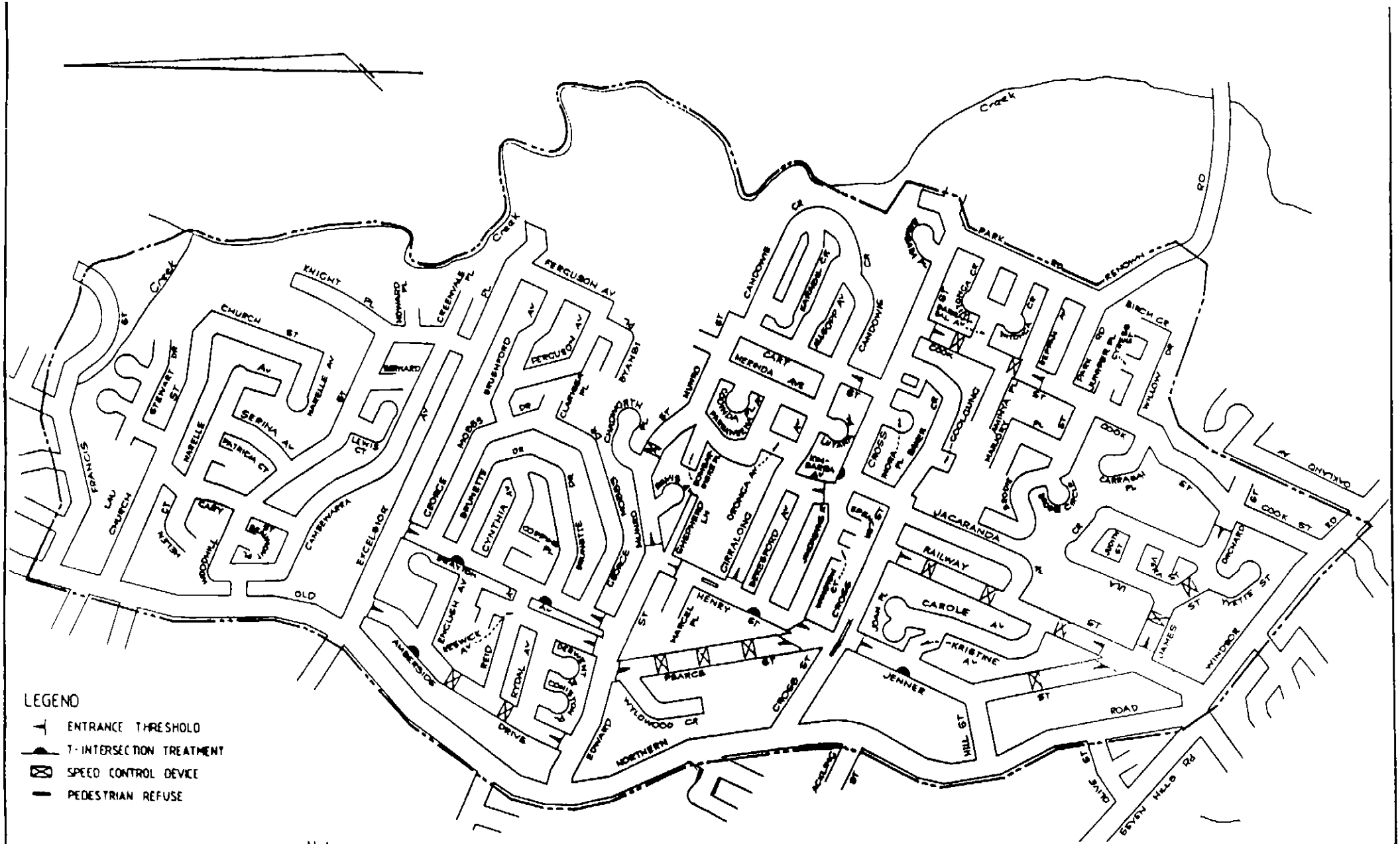


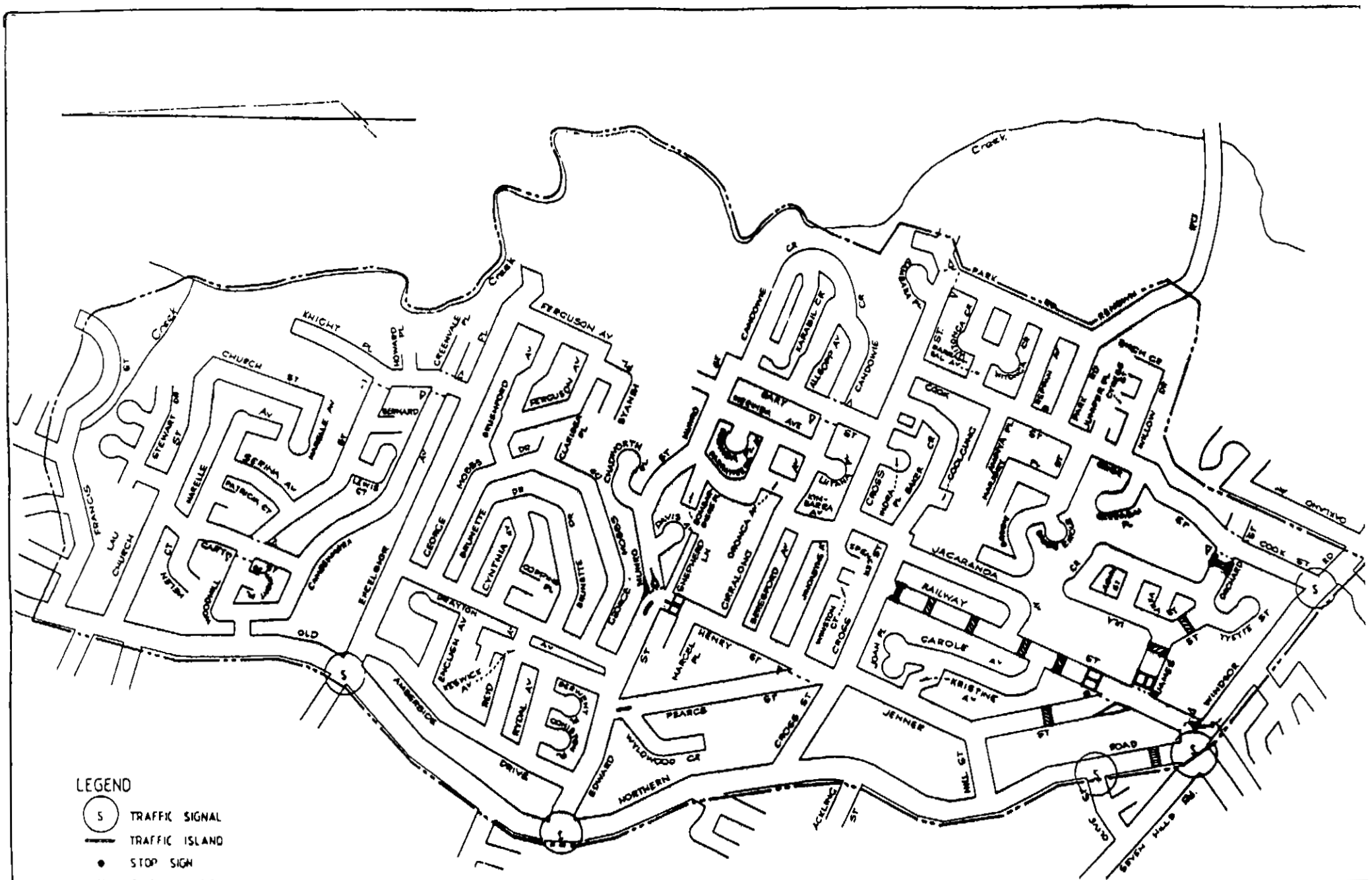
Appendix B.4

onsultants have undertaken
tudies for Precincts 2,5,6,
& 10.
irst stage implemented in
recincts 2 & 5.These precincts
re presently under review.

PRECINCT BOUNDARIES **4**


PRECINCT 2 - CASTLE HILL
(STAGE ONE)
RAISED THRESHOLD :
SPEED HUMP :
ROAD CLOSURE :
LEFT IN/LEFT OUT TREATMENT :
CASTLE HILL
BAULKHAM HILLS
Show Ground
Tech. College
High School
SHOWGROUND RD
WINDSOR RD
OLD NORTHERN RD


LEGEND
ENTRANCE THRESHOLD
T-INTERSECTION TREATMENT
SPEED CONTROL DEVICE
PEDESTRIAN REFUSE
Note.
- Exact location of devices to be subject to final design
- Introduce 40 Km/h speed limit within precinct, excluding arterial, sub-arterial, and major collector roads
PLAN
N.T.S.
FIGURE 8
PRECINCT 5
DRAFT CONCEPT SCHEME
TRANSPORTATION ENVIRONMENT CONSULTANTS

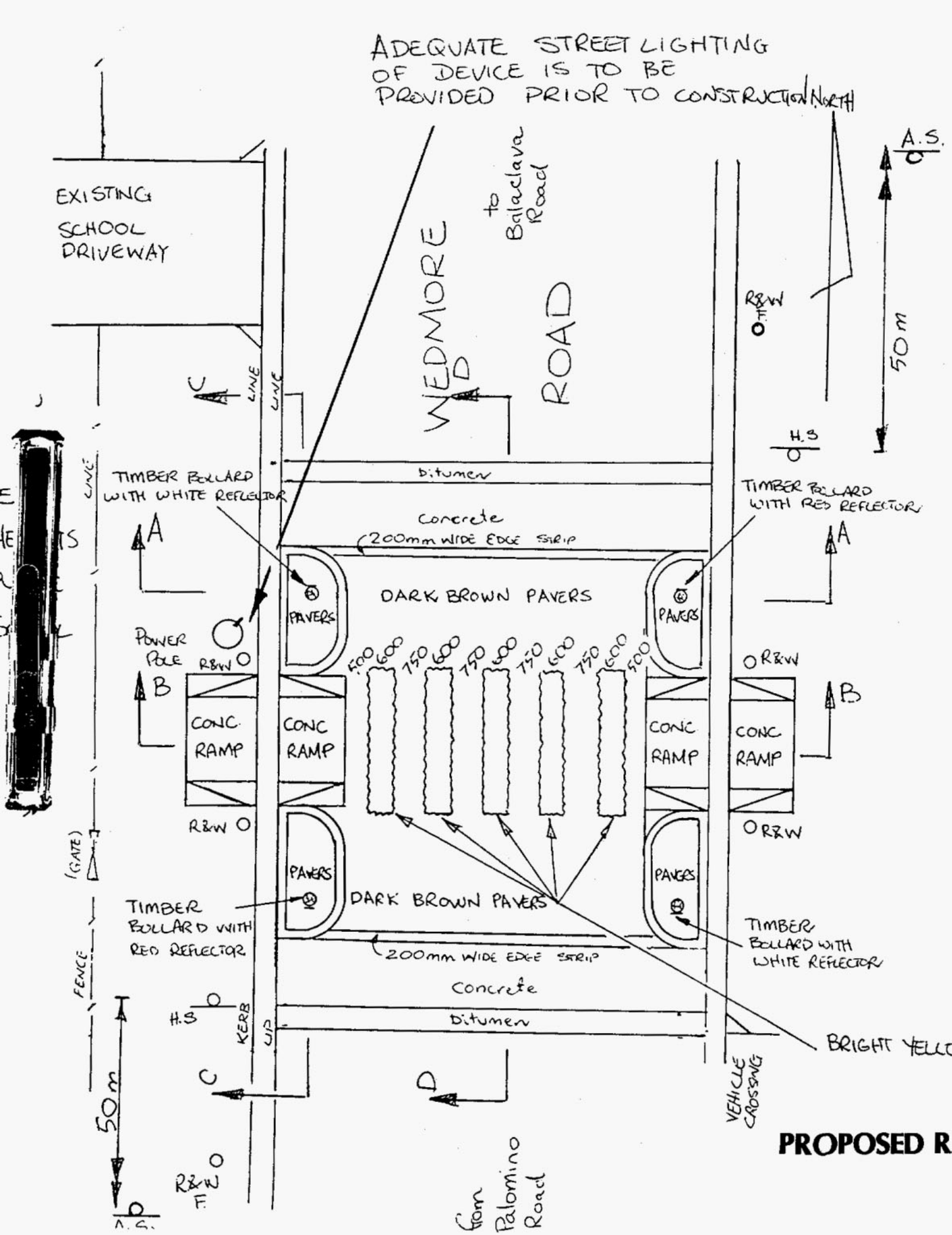

LEGEND
TRAFFIC SIGNAL
TRAFFIC ISLAND
STOP SIGN
GIVE WAY SIGN
BANNED TURN
THRESHOLD
SPEED HUMP
PLAN
N.T.S.
FIGURE 2
PRECINCT
First Stage Devices Installed.

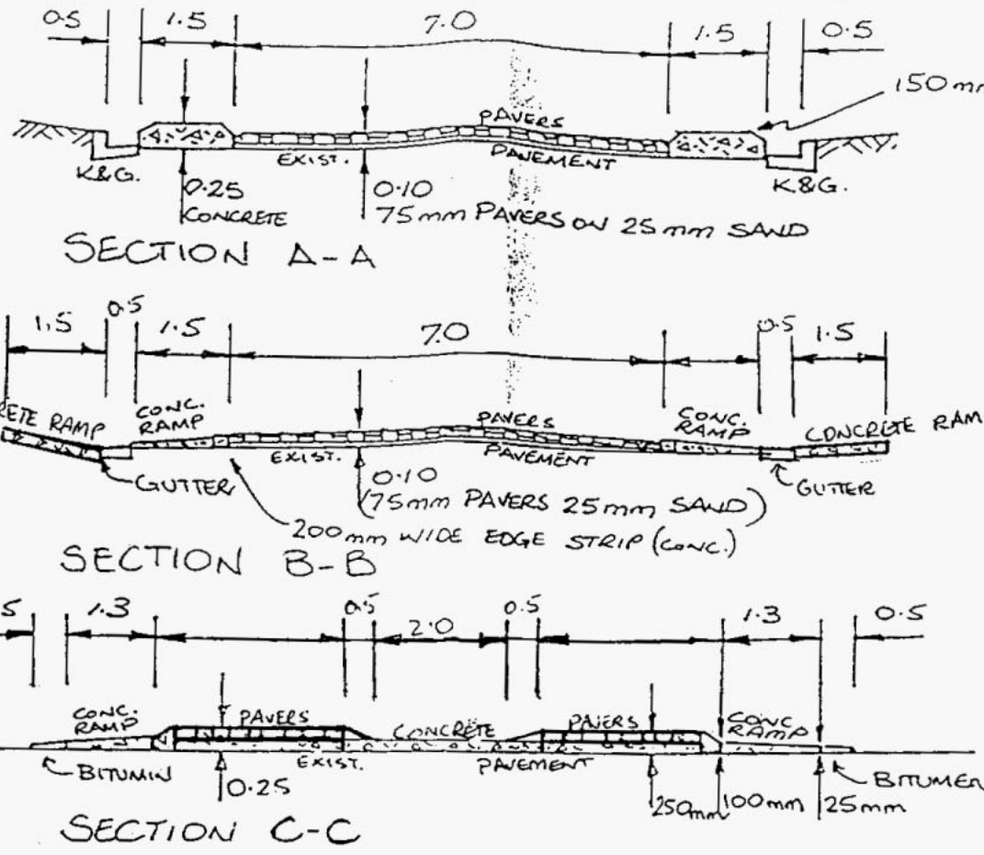
Appendix B.5

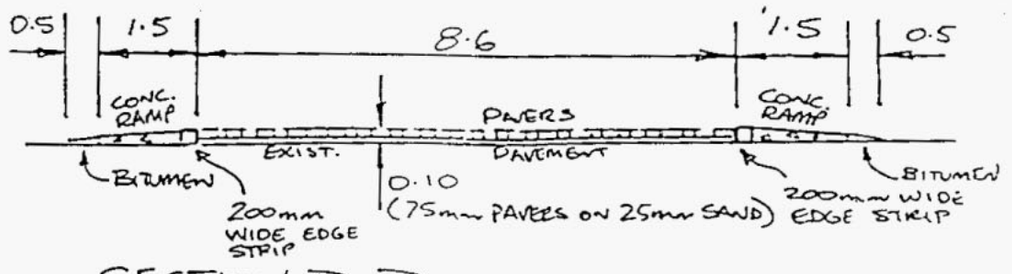
STREET MAP OF PENRITH — ST. MARYS

LATM SCHEMES

TO ACCOMODATE BUSES:— ISOLATED DEVICES.



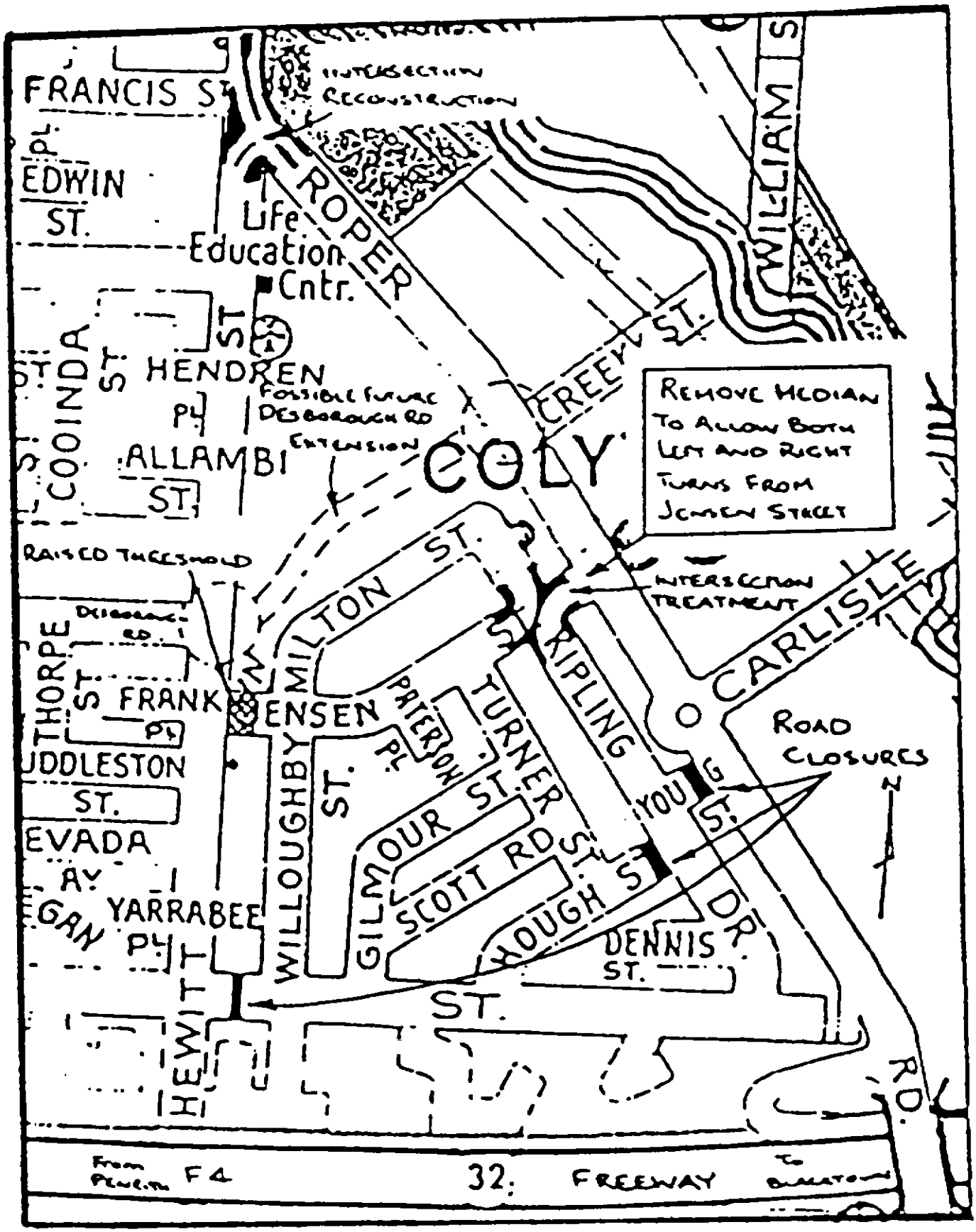




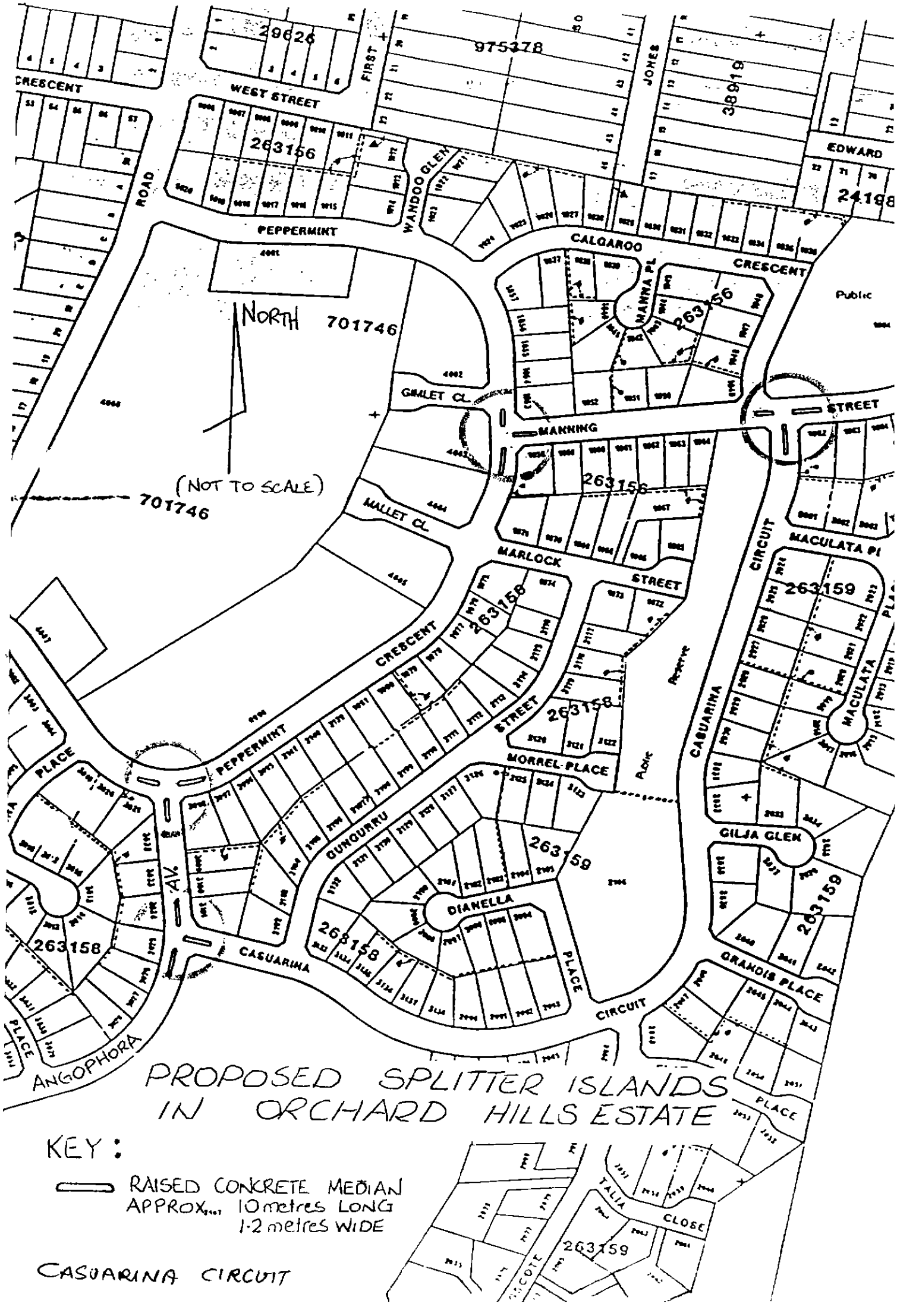
KEY:

- oR&W — Red & White Post
- oR&W F — Red & White Post with Flag
- H.S — Proposed Hump Sign with Advisory Speed Sign (25 km/h)
- A.S. — Proposed Advance Warning Sign (AHEAD)

PROPOSED RAISED PAVED AREA IN WEDMORE ROAD, EMU HEIGHTS



Advertised Colyton Traffic Management Scheme

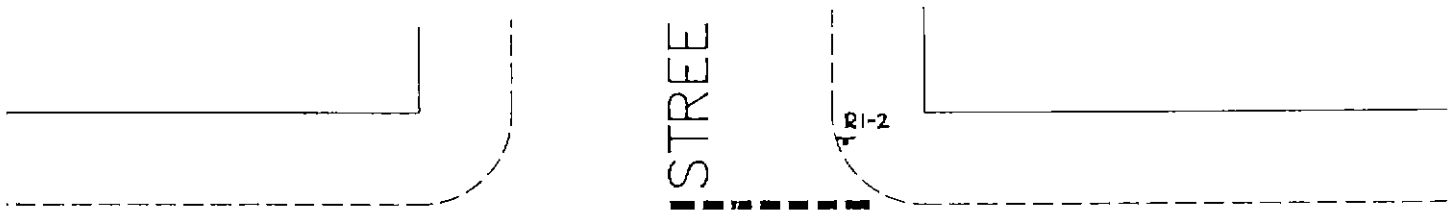


PROPOSED SPLITTER ISLANDS IN ORCHARD HILLS ESTATE

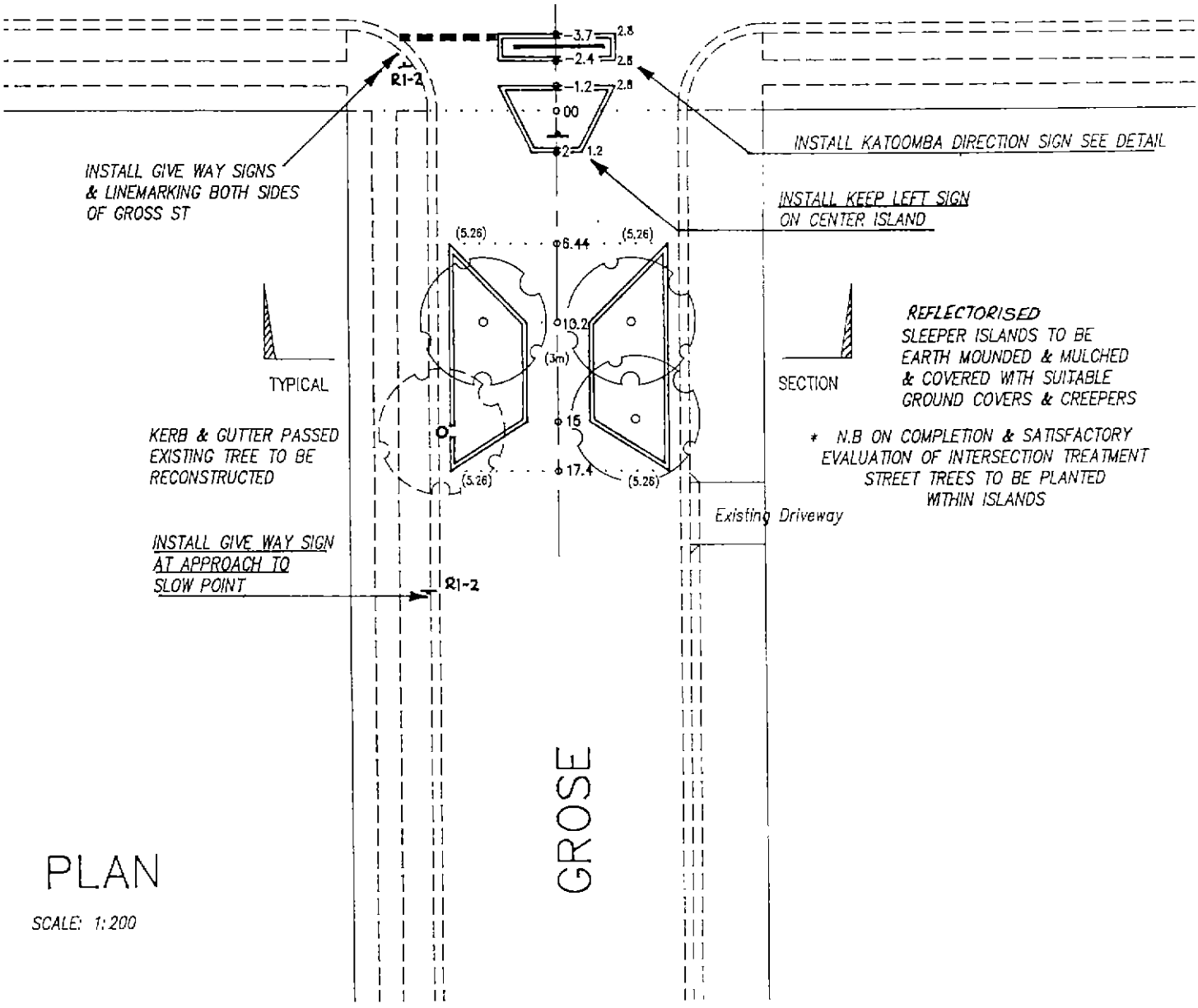
KEY:

RAISED CONCRETE MEDIAN
APPROX. 10 metres LONG
1·2 metres WIDE

CASUARINA CIRCUIT



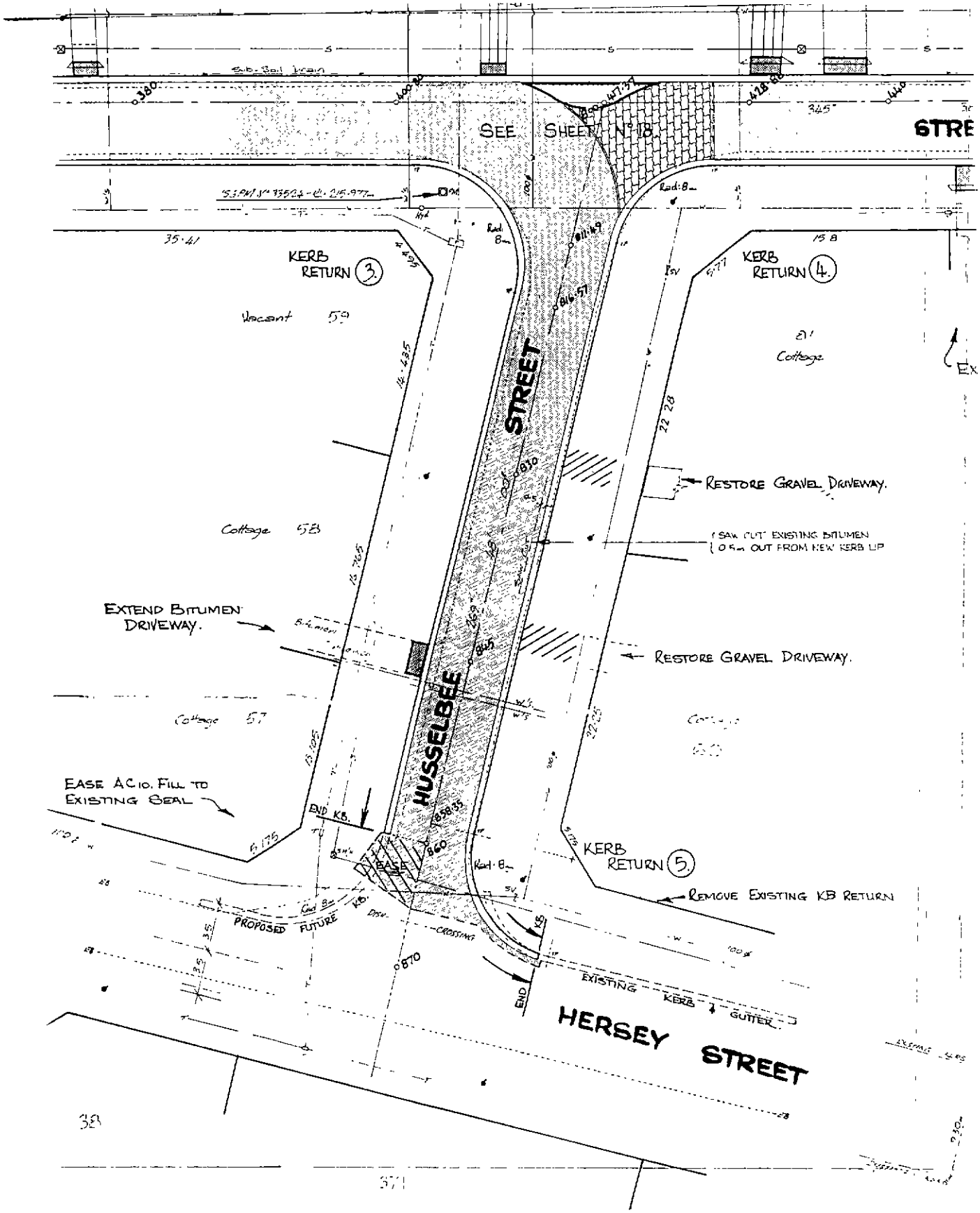
MEGALONG STREET



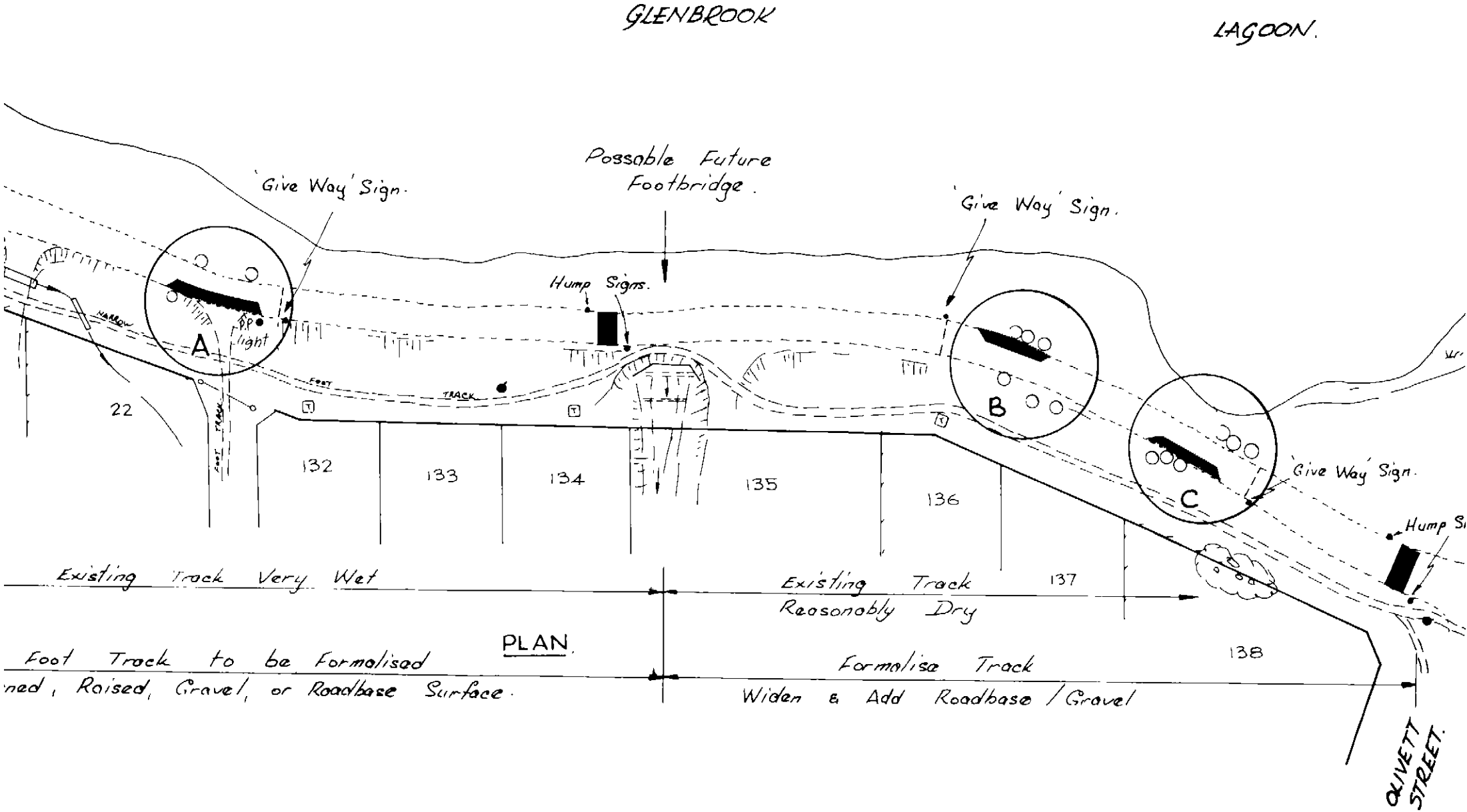
PLAN

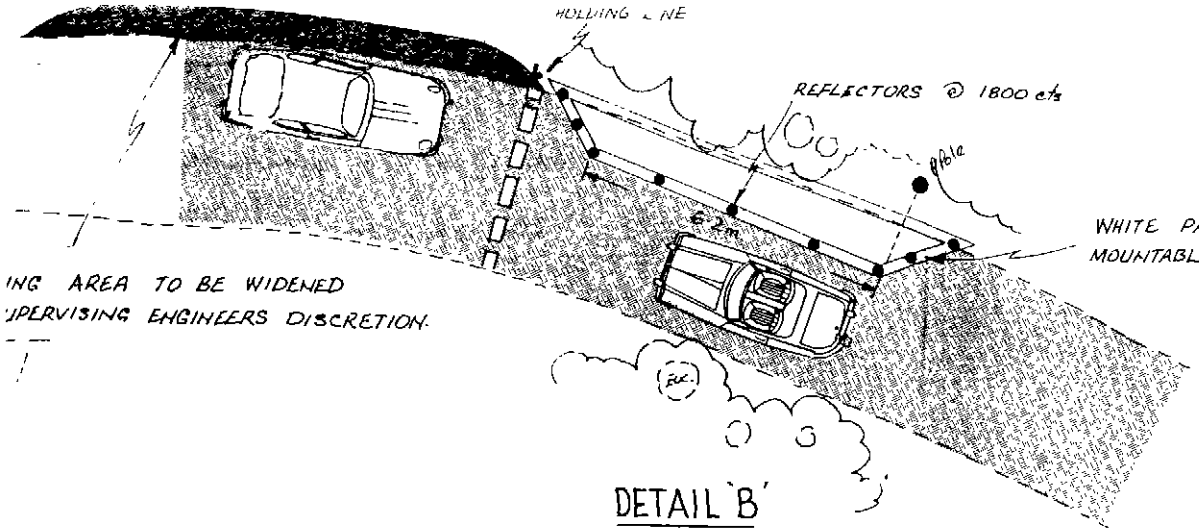
SCALE: 1:200

PLAN OF PROPOSED RESTRICTED ACCESS
TO GROSE STREET
INTERSECTION OF MEGALONG, GROSE STREETS
LEURA



PLAN OF MURPHY AND HUSSELBEE STREETS BLAXLAND


GLENBROOK
LAGOON.
'Give Way' Sign.
Possable Future Footbridge.
'Give Way' Sign.
Hump Signs.
A
B
C
BP light
HARROW
FOOT TRACK
22
132
133
134
135
136
137
138
'Give Way' Sign.
Hump Si
Existing Track Very Wet
Existing Track Reasonably Dry
PLAN.
Foot Track to be Formalised
ned, Raised, Gravel, or Roadbase Surface.
Formalise Track
Widen & Add Roadbase / Gravel
OLIVETT STREET.

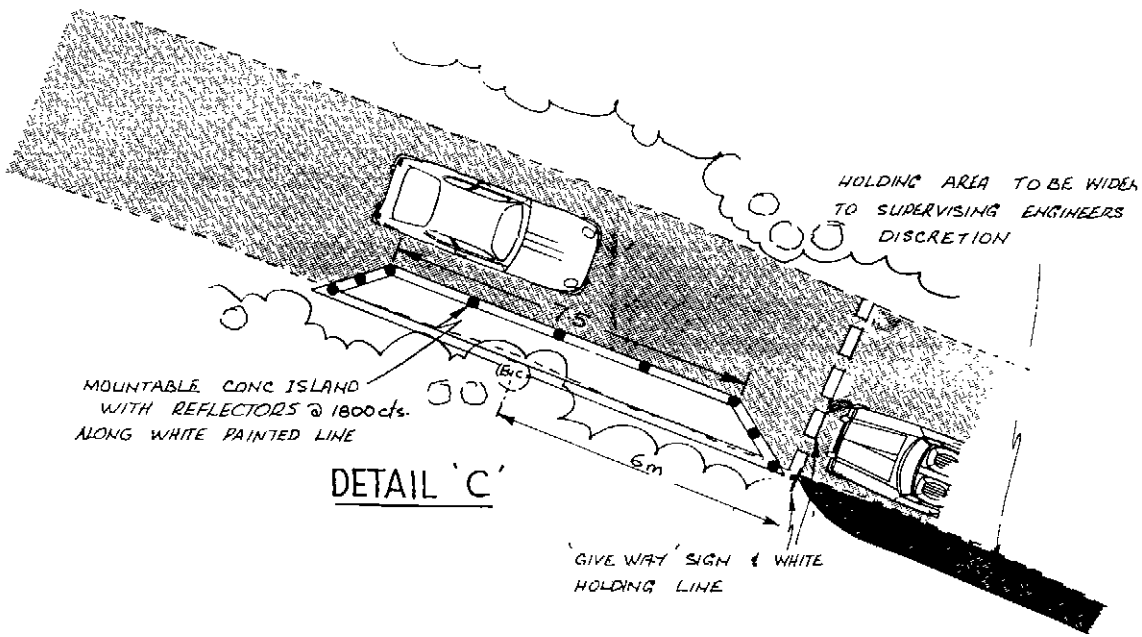


DETAIL 'B'

PROPOSED SLOW POINTS
GLENBROOK ROAD,
GLENBROOK

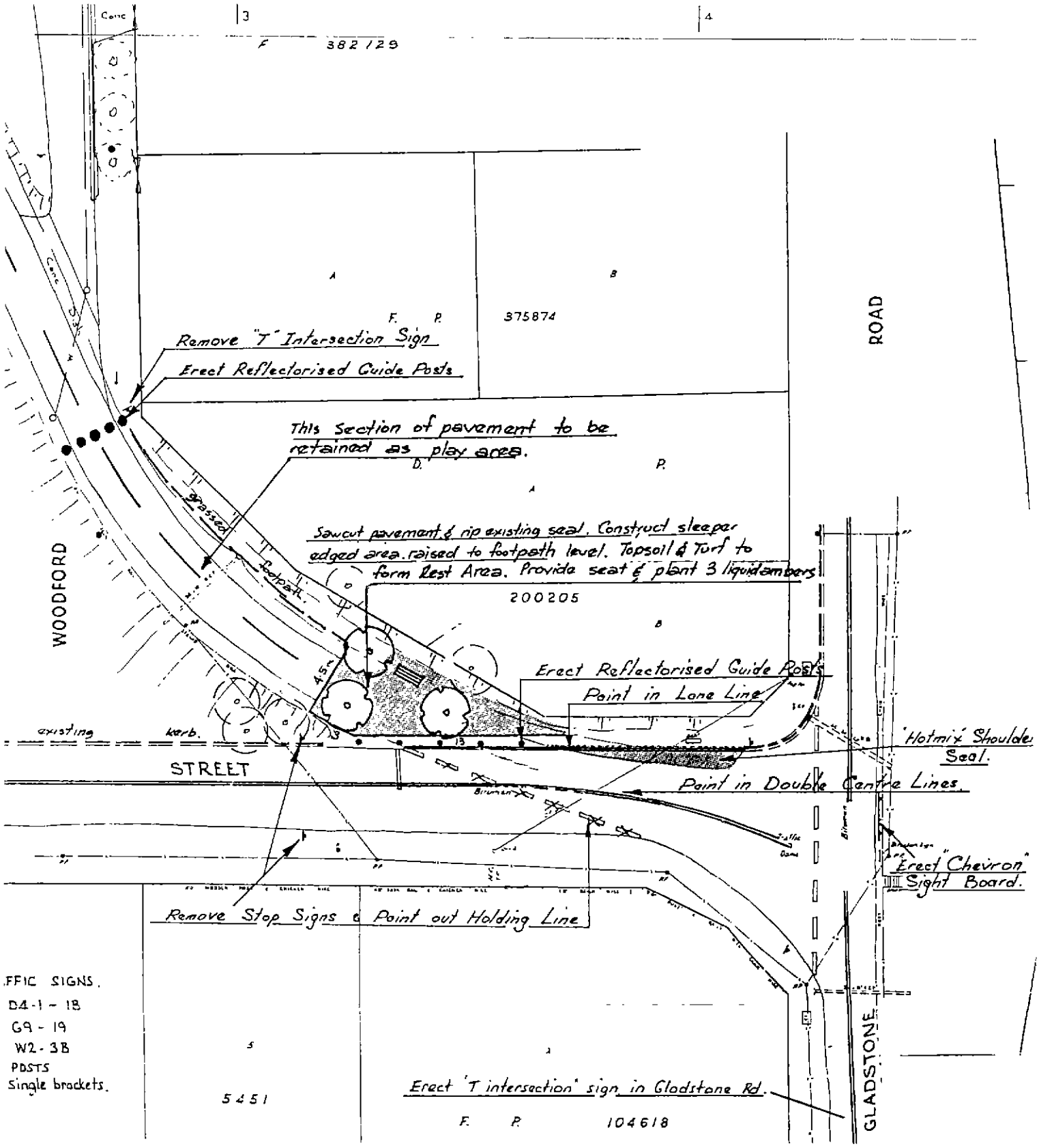
SIGNS REQUIRED.

3 x R1-2
8 x W5-10
6 x W8-2
2 x R4-202



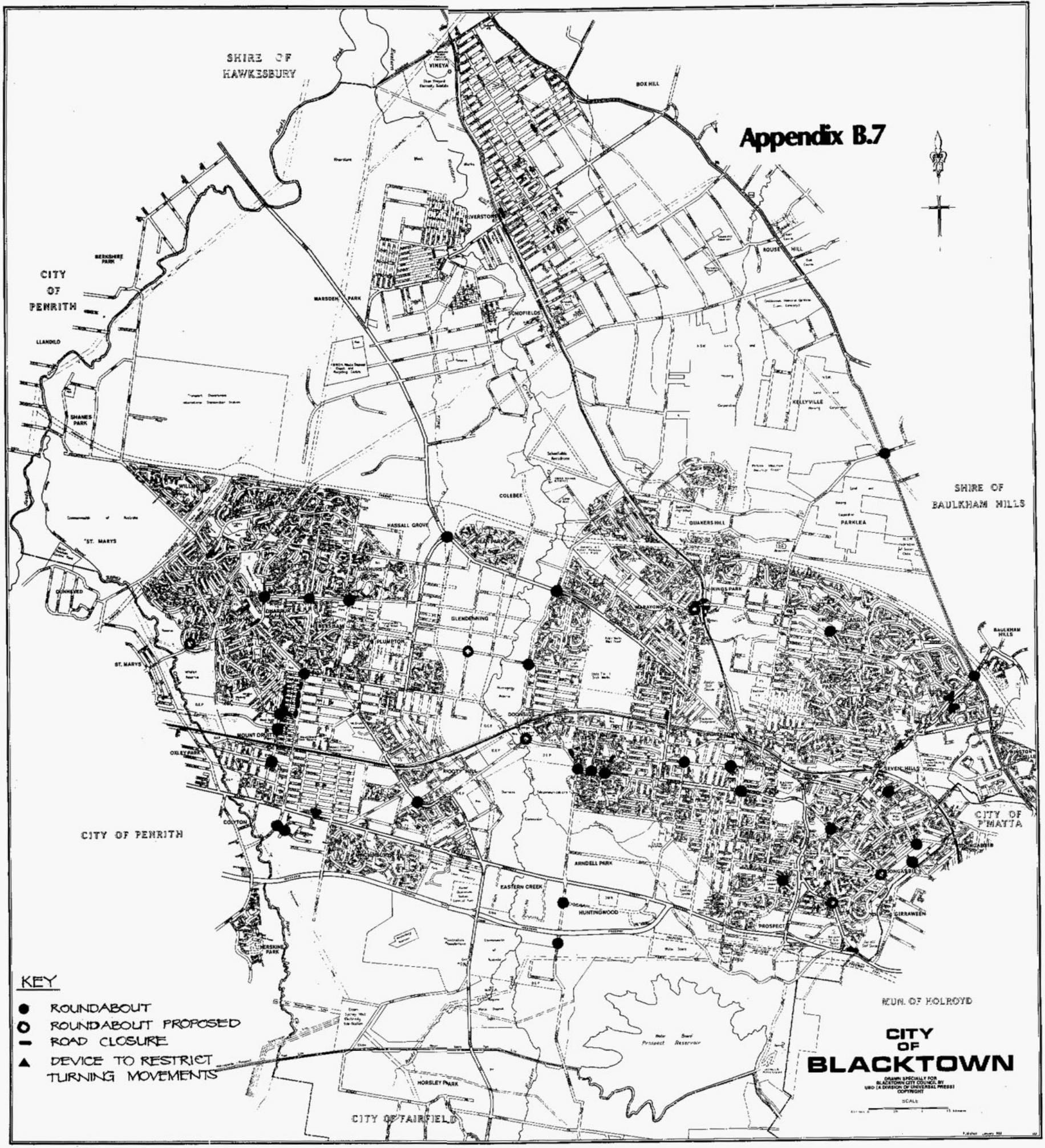
DETAIL 'C'

50 60 70 80 90 100 110 120 130 140 150m



PLAN SHOWING PROPOSED CLOSURE OF LACHLAN AVENUE AT INTERSECTION WITH CRAIGEND STREET, LEURA

Appendix B.7


SHIRE OF HAWKESBURY
VINEYA
BOX HILL
RIVERSTONE
ROUSE HILL
BERKSHIRE PARK
CITY OF PENRITH
MARSDEN PARK
SCHOFIELDS
LLANDILO
SHANES PARK
KELLYVILLE
SHIRE OF BAULKHAM HILLS
COLEBEE
HASSALL GROVE
QUAKERS HILL
PARKLEA
ST. MARYS
DUNHEVED
GLENDENNING
KINGS PARK
BAULKHAM HILLS
PLUMPTON
MOUNT DRUITT
OXLEY PARK
COLYTON
SEVEN HILLS
CITY OF P'MATTA
CITY OF PENRITH
ARNDELL PARK
EASTERN CREEK
HUNTINGWOOD
PROSPECT
GIRRAWEEN
HERSKINE PARK
HORSLEY PARK
CITY OF FAIRFIELD
MUN. OF HOLROYD
Prospect Reservoir
KEY
ROUNDABOUT
ROUNDABOUT PROPOSED
ROAD CLOSURE
DEVICE TO RESTRICT TURNING MOVEMENTS
CITY OF BLACKTOWN
DRAWN SPECIALLY FOR BLACKTOWN CITY COUNCIL BY UBD (A DIVISION OF UNIVERSAL PRESS) COPYRIGHT
SCALE

Appendix B.8

BLACKTOWN

HORNSBY

BAULKHAM HILLS

RYDE

HOLROYD

AUBURN

FAIRFIELD

BANKSTOWN

PARRAMATTA RIVER

DUCK RIVER

- EXISTING ROUNDABOUT
- PROPOSED ROUNDABOUT
- FULL ROAD CLOSURE
- PARTIAL ROAD CLOSURE
- PEDESTRIAN REFUGE ISLAND
- STREET TREES RETAINED BETWEEN K & G
- RECENT ROADWORKS IN GRANVILLE

THE CITY OF PARRAMATTA

BILL MURPHY TRAFFIC ENGR.
PH. 689.9275

SCALE

REVISED SEPTEMBER 1986

Appendix B.9

HAWKESBURY

Creek

EXISTING ROUNDABOUT

PROPOSED ROAD CLOSURE

WINDSOR MALL

HOWE PARK

EXISTING ROAD CLOSURES

PROPOSED ROUNDABOUT CONSTRUCTION.

PROPOSED ROAD OPENING

PROPOSED LAND CONSTRUCTION.

THOMPSON SQUARE

BRIDGE

BAKER STREET

KABLE STREET

FITZGERALD STREET

TERCE

JOHNSTON

TERRACE

DSOR

JAMES RUSE CL

CLOSE

PRIMROSE PLACE

ELIZABETH STREET

CATHERINE STREET

CHURCH STREET

TEBBUTT STREET

LITTLE

JAMES STREET

NEW TERRACE

SUFFOLK STREET

CHRISTIE STREET

MAIN ROAD No 184

HOSPITAL

WINDSOR PUBLIC SCHOOL

UNION STREET

GEORGE STREET

MACQUARIE STREET

ROSS STREET

ANSCHAU CRES

COURT

EASEMENT (TRANSMISSION LINE) 15.24 WD

EASEMENT 3.66 WD

ACCESS 3.66 WD

D.E. 4.0 WIDE D.P. 632086

Creek

APPENDIX C

GEOPLAN

APPENDIX C.1

WESTERN SYDNEY REGIONAL ORGANISATION OF COUNCILS

LOCAL AREA TRAFFIC MANAGEMENT

April 1990 ELECTED REPRESENTATIVES' QUESTIONNAIRE

office use only

On completion please mail to:
GEOPLAN Town Planning
P.O. Box 166
ST IVES 2075

LGA
A

CAN YOU BRIEFLY DESCRIBE WHAT YOU UNDERSTAND BY THE TERM 'LOCAL AREA TRAFFIC MANAGEMENT' (LATM) SCHEME?

.....

.....

.....

.....

ARE YOU AWARE OF ANY LATM SCHEMES IN YOUR COUNCIL AREA

NO ☐ YES ☐

IF YOU INDICATED YES, INDICATE WHICH SCHEMES YOU HAVE INSPECTED

.....

.....

.....

HAVE YOU EXAMINED/DRIVEN THROUGH A LATM SCHEME IN ANOTHER COUNCIL AREA?

NO ☐ YES ☐

IF YES, CAN YOU INDICATE THE COUNCIL AREA AND LOCATION WHERE YOU HAVE VIEWED SUCH A SCHEME

.....

.....

.....

.....

GEOPLAN Town Planning

4 DO YOU SUPPORT THE USE OF TRAFFIC MANAGEMENT DEVICES ON COUNCIL STREETS AND ROADS ?

YES ☐ NO ☐ PERHAPS ☐

GIVE THE REASON FOR YOUR ANSWER BELOW

.....

.....

.....

.....

5A PLEASE INDICATE FROM THE LIST BELOW, THE 3 TREATMENTS YOU CONSIDER THE MOST SUCCESSFUL BY PLACING A 1, 2 OR 3 IN THE BOX NEXT TO THE TREATMENT

SPEEDHUMP	☐
RAISED THRESHOLD OR PLATFORM	☐
ANGLED SLOWPOINT OR CHICANE	☐
ROUNDABOUT	☐
ROAD CLOSURE OR HALF ROAD CLOSURE	☐
CONCRETE MEDIAN ISLAND	☐
STREET NARROWING OR NECKING	☐
LIGHT TRAFFIC THOROUGHFARE	☐
40KM/HR SPEED LIMIT ZONES	☐
ONE WAY STREET	☐

5B INDICATE BELOW WHY YOU BELIEVE THE 3 TREATMENTS YOU HAVE CHOSEN ARE THE MOST SUCCESSFUL IN YOUR OPINION

DEVICE 1.....

.....

DEVICE 2.....

.....

DEVICE 3 .....

.....

9A USING THE SAME LIST OF TREATMENTS AS ABOVE, PLEASE INDICATE THE TREATMENTS WHICH YOU CONSIDER THE **LEAST** SUCCESSFUL BY PLACING A 1, 2 OR 3 IN THE BOX NEXT TO THE TREATMENT (1 MEANING THE LEAST SUCCESSFUL ETC)

SPEEDHUMP	
RAISED THRESHOLD OR PLATFORM	
ANGLED SLOWPOINT OR CHICANE	
ROUNDABOUT	
ROAD CLOSURE OR HALF ROAD CLOSURE	
RAISED CENTRE MEDIAN	
STREET NARROWING OR NECKING	
CONCRETE MEDIAN ISLAND	
STREET NARROWING OR NECKING	
LIGHT TRAFFIC THOROUGHFARE	
40KM/HR SPEED LIMIT ZONE	
ONE WAY STREET	

B INDICATE BELOW WHY YOU BELIEVE THE 3 TREATMENTS YOU HAVE CHOSEN ARE THE **LEAST** SUCCESSFUL IN YOUR OPINION

DEVICE 1.....

.....

DEVICE 2.....

.....

DEVICE 3.....

.....

ARE YOU OPPOSED TO SINGLE LANE DEVICES WHICH ALLOW ONLY ONE CAR TO TRAVEL THROUGH THE DEVICE AT ANY TIME

NO ☐ YES ☐ UNSURE ☐

CAN YOU STATE THE THE REASON FOR YOUR REPLY BELOW

.....

.....

.....

.....

.....

☐☐☐☐☐

COUNCILS HAVE THE ABILITY TO CREATE SAFE, ATTRACTIVE AND FUNCTIONAL RESIDENTIAL AREAS. IN ANY ONE YEAR ONE ISSUE MAY BE MORE IMPORTANT, HOWEVER OVER THE NEXT 5 YEARS OR SO, PLEASE RANK CONCERNS OF COUNCIL IN ORDER OF THE IMPORTANCE YOU PLACE ON THEM BY NUMBERING THEM FROM 1 FOR THE MOST IMPORTANT, 2 FOR THE NEXT AND SO ON.

1 TREE PLANTING ☐

2 DRAINAGE WORKS ☐

3 SUPPORT FOR PUBLIC TRANSPORT ☐

4 TRAFFIC IN RESIDENTIAL STREETS ☐

5 GARBAGE COLLECTION/WASTE MANAGEMENT ☐

6 KERBING AND SEALING OF STREETS ☐

7 PARKS AND PLAYGROUNDS ☐

8 PROVISION OF COMMUNITY FACILITIES ☐

DO YOU HAVE ANY COMMENTS YOU WOULD LIKE TO MAKE ABOUT LATM WHICH HAVE NOT BEEN ADDRESSED IN THIS QUESTIONNAIRE?

.....

.....

.....

.....

.....

0 DO YOU REQUIRE MORE INFORMATION ABOUT LATM SCHEMES AND HOW THEY OPERATE?

NO ☐ YES ☐

IF YES, INDICATE HOW USEFUL THE FOLLOWING TYPE OF INFORMATION WOULD BE TO YOU

(tick appropriate box)

	VERY USEFUL	USEFUL	NOT USEFUL
1 A VIDEO ON LATM			
2 A WELL-ILLUSTRATED BROCHURE			
3 ORGANISED TRIPS TO EXISTING LATM SCHEMES			
4 INFORMATION EVENING/SEMINAR ON LATM PLANNING & EXPERIENCE			
5 OTHER (specify).....			

.1 PLEASE INDICATE YOUR AGE GROUP

UNDER 30 YEARS	
31-40 YEARS	
41-50 YEARS	
51-60 YEARS	
OVER 60 YEARS	

12 HOW MANY YEARS HAVE YOU SERVED ON COUNCIL

LESS THAN 4 YEARS	
5-8 YEARS	
9+ YEARS	

13 PLEASE FILL IN YOUR NAME (optional)

.....

AND THE COUNCIL YOU REPRESENT

.....

Thankyou for your cooperation.

APPENDIX C.2

RESPONSE RATE BY LOCAL GOVERNMENT AREA

	LGA	NO. RESPONSES	TOTAL IN LGA	% RESPONDING
1.	B. Hills	5	12	42
2.	Blacktown	9	15	60
3.	Blue Mountains	6	12	50
4.	Fairfield	9	15	60
5.	Hawkesbury Sh.	9	12	75
6.	Holroyd	8	12	67
7.	Liverpool	7	12	58
8.	Parramatta	1	20	5
9.	Penrith	12	15	80
	TOTAL	66	125	53

PPENDIX C.3

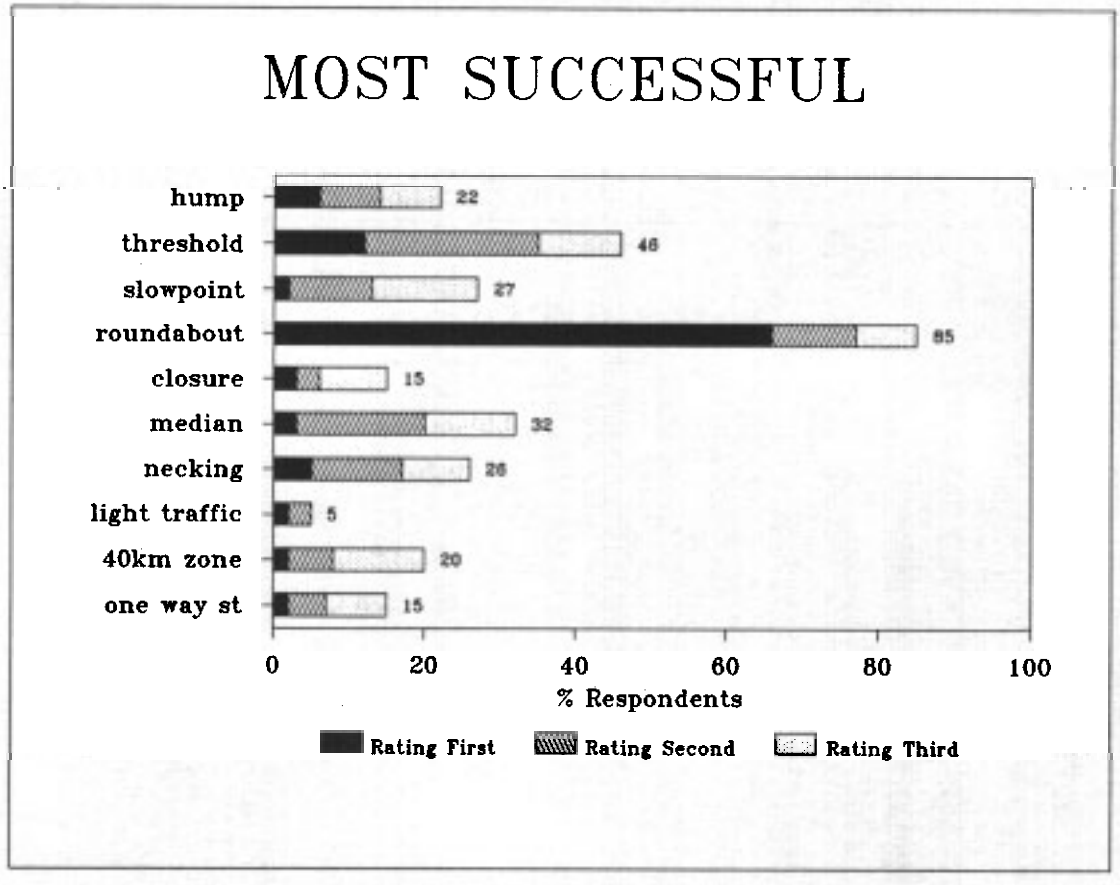
REASONS WHY TRAFFIC DEVICES IN AREA SUPPORTED OR OPPOSED

	NO. RESPONSES	% TOTAL RESPONSES
SUPPORTED DUE TO:		
SAFETY (speed accidents)	37	57
AMENITY (volumes, through traffic trucks)	23	35
ENVIRONMENT (peace & quiet, air pollution)	10	15
OPPOSED DUE TO:		
DANGER (to drivers, cause accidents)	2	3
INCONVENIENT (to drivers)	2	3
TOO EXPENSIVE	0	0) not mentioned

APPENDIX C.4

SUCCESS RATING OF VARIOUS NOMINATED LATM DEVICES

	% RATED 1ST	% RATED 2ND	% RATED 3RD	% RATING 1, 2, 3	OVERALL SUCCESS RATING
Roundabout	66	11	8	85	1
Raised Threshold or Platform	12	23	11	46	2
Median Island	3	17	12	32	3
Angled Slowpoint	2	11	14	27	4
Speedhump	6	8	8	22	5



APPENDIX C.4A

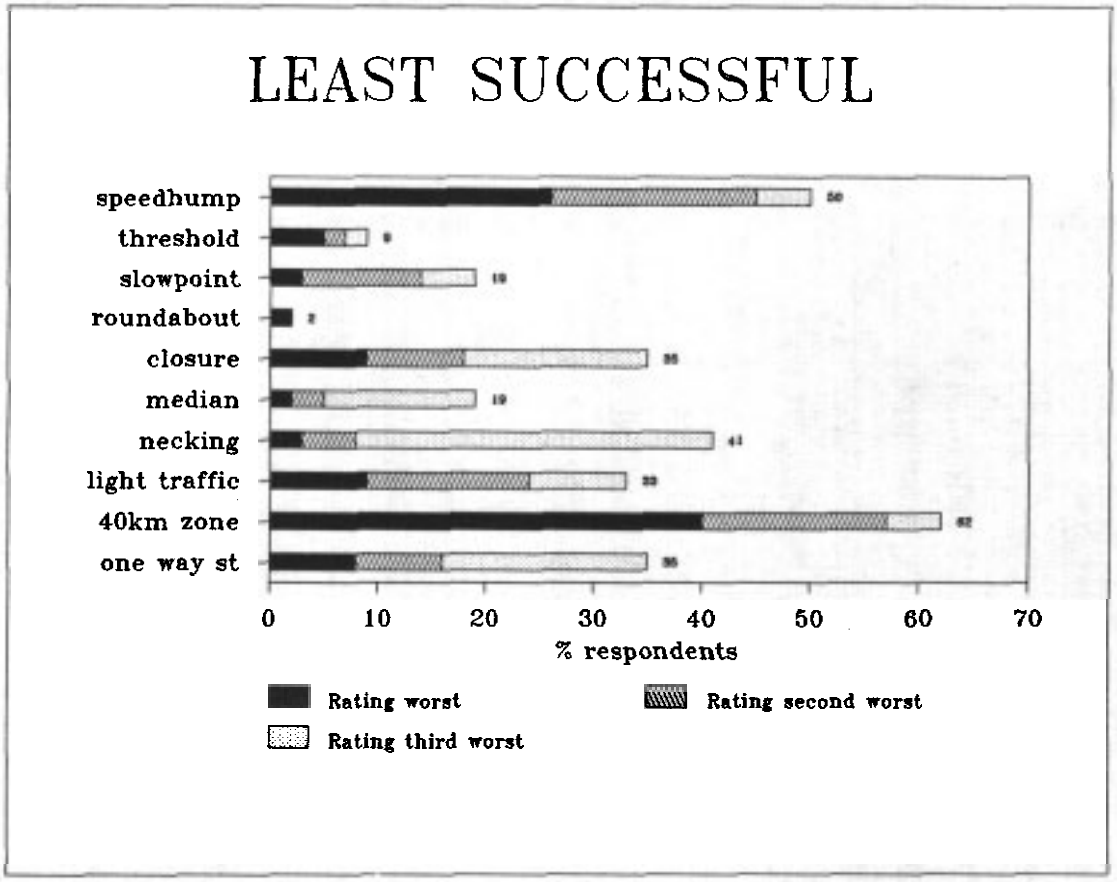
REASONS WHY DEVICES/TREATMENTS JUDGED AS SUCCESSFUL

	DEVICE		REASON	(% CHOOSING THAT REASON)
1.	Roundabout	1.	Rationalises flow of traffic, evens traffic flow out	(48%)
		2.	Slow traffic, reduces speed	(19%)
		3.	Safe, reduces accidents	(16%)
		4.	Cost effective	(15%)
2.	Raised Threshold/Platform	1.	Slows traffic, reduces speed	(60%)
		2.	Very visible	(14%)
		3.	Safer for pedestrians/can be used for pedestrians	(14%)
3.	Median Island	1.	Separates traffic streams	(50%)
		2.	(Safer for pedestrians	(15%)
			(Lowers accidents	(15%)
			(Evens out traffic flow	(15%)
4.	Angled Slowpoint	1.	Slows traffic, reduces speed	(62%)
		2.	Lowers volume	(14%)
5.	Speedhump	1.	Slows traffic/reduces speeding	(80%)

APPENDIX C.5

RATING OF VARIOUS NOMINATED AS LEAST SUCCESSFUL

	% RATING LEAST	% RATING 2ND LEAST	% RATING 3RD LEAST	% RATING 1ST, 2ND, 3RD LEAST SUCCESSFUL	OVERALL NEGATIVE RATING
40km/hr Speed Zone	31	17	5	53	1
Speedhump	26	19	5	50	2
Light Traffic Thoroughfare	9	15	9	33	3
Road Closure	9	9	17	35	4



]'PENDIX C.5A

REASONS WHY DEVICES/TREATMENTS JUDGED AS UNSUCCESSFUL

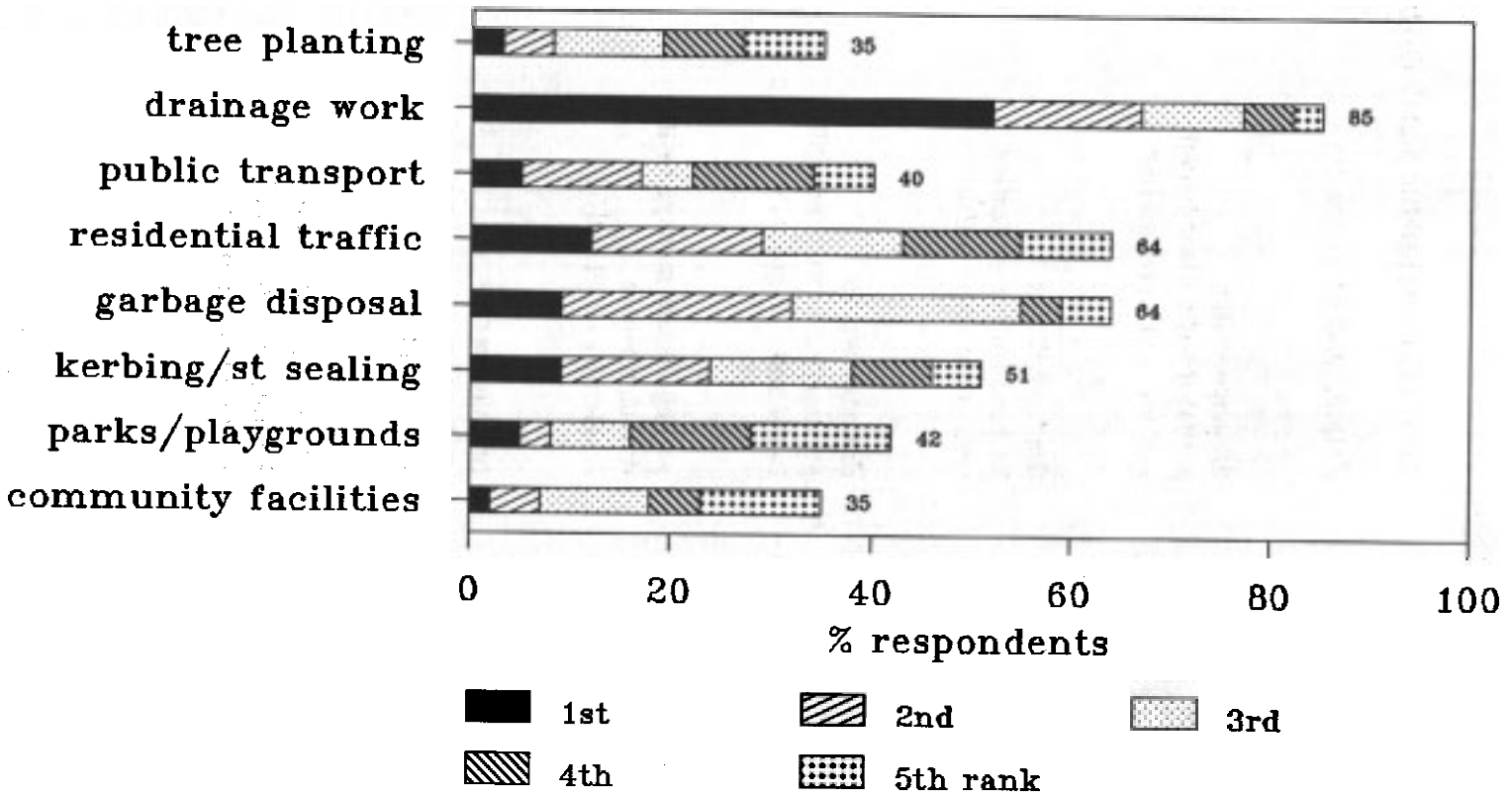
DEVICE		REASON	(% CHOOSING THAT REASON)
40km/hr Speed Zone	1.	Unenforceable	(100%)
Speedhump	1.	Dangerous/does damage to cars	(55%)
	2.	Noisy	(20%)
	3.	Bad design	(15%)
Light Traffic Thoroughfare	1.	Unenforceable/ignored	(100%)
Road Closure	1.	Motorists/residents become irate	(30%)
	2.	Increase travel distance	(22%)
	3.	Transfers problem elsewhere	(22%)

PPENDIX C.6

RANKING OF TOP THREE COUNCIL CONCERNS BY LGA

GA		ISSUE	
.	Baulkham Hills	1.	**Residential street traffic** and drainage works
		3.	Kerbing and street sealing
.	Blacktown	1.	drainage works
		2.	garbage/waste management
		3.	kerbing and street sealing
.	Blue Mountains	1.	drainage works
		2.	kerbing and street sealing
		3.	residential street traffic
.	Fairfield	1.	drainage works
		2.	garbage/waste management
		3.	parks and playgrounds
.	Hawkesbury Shire	1.	garbage/waste management
		2.	drainage works
		3.	residential street traffic
6.	Holroyd	1.	drainage works
		2.	garbage/waste management
		3.	tree planting
7	Liverpool	1.	residential street traffic
		2.	kerbing and street sealing
		3.	community facilities
8.	Parramatta		
9.	Penrith	1.	drainage works
		2.	kerbing and sealing streets
		3.	residential street traffic

WESROC REGION
RANKING OF COUNCIL ISSUES

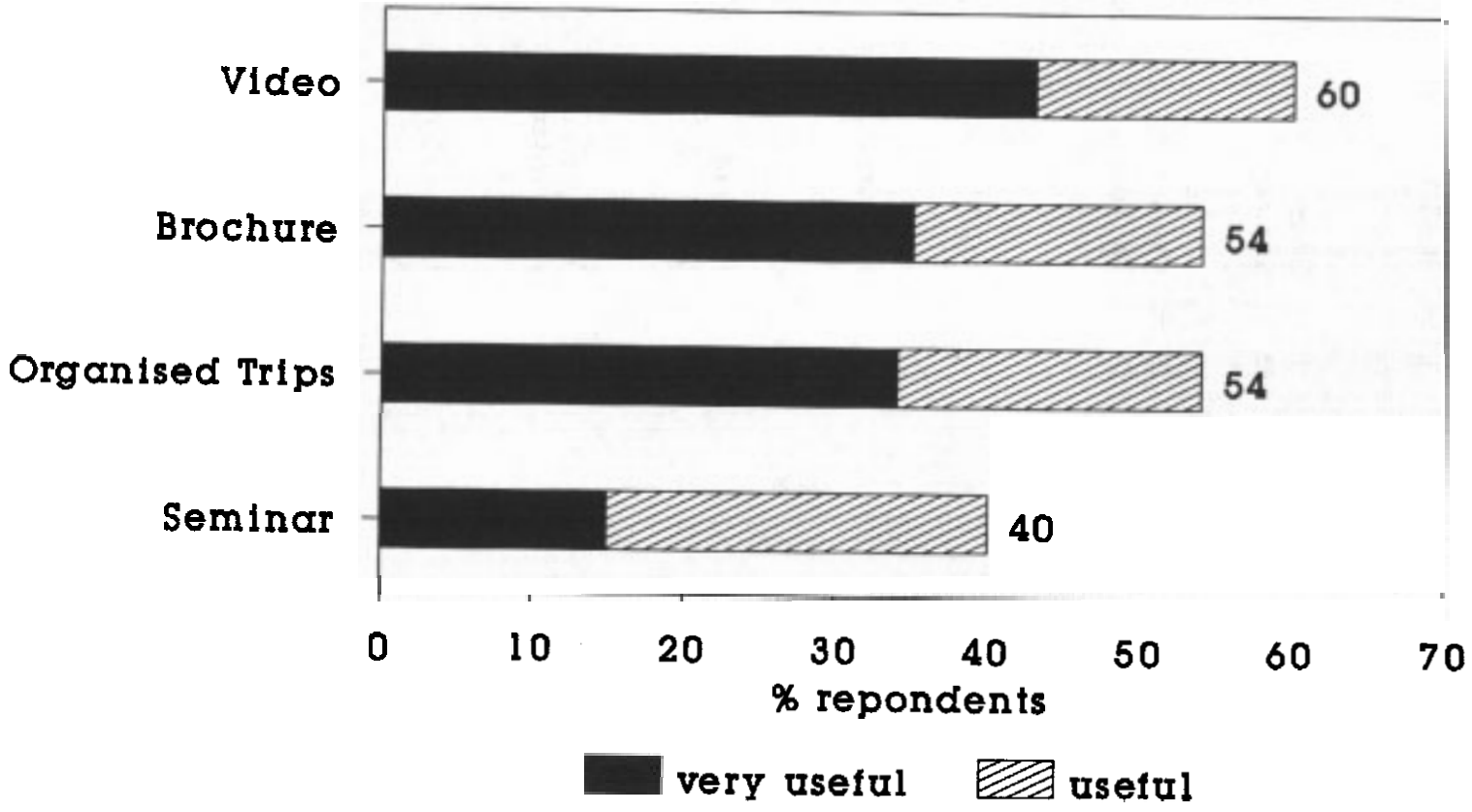


APPENDIX C.7

NEED FOR MORE INFORMATION BY LGA

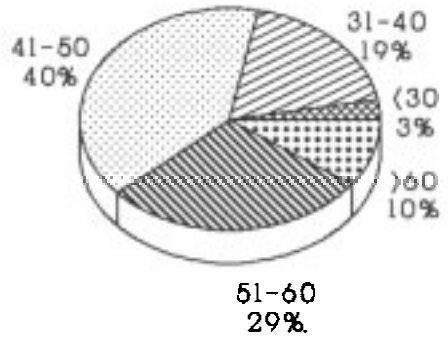
		YES %	TYPE MOST USEFUL	
1.	Baulkham Hills	50	1. 2.	Organised trip Seminar
2.	Blacktown	89	1. 2.	Video Brochure
3.	Blue Mountains	83	1. 2.	Video Organised trip
4.	Fairfield	67	1. 2.	Brochure Video
5.	Hawkesbury Shire	50	1. 2.	Brochure Video
6.	Holroyd	88	1. 2.	Video Organised trip
7.	Liverpool	86	1. 2.	Organised trip Video
8.	Parramatta	-		-
9.	Penrith	42	1. 2.	Organised trip Video

WESROC REGION
MEMBERS NEED FOR INFORMATION

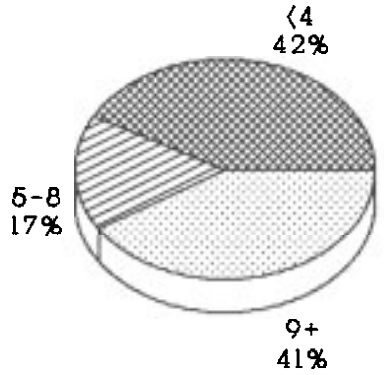


ELECTED MEMBERS

Age and years on Council



AGE IN YEARS



YEARS ON COUNCIL

APPENDIX D

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