

Meeting:	Traffic and Road Safety Advisory Panel
Date:	26 November 2008
Subject:	INFORMATION REPORT - Traffic Calming Measures
Key Decision: (Executive-side only)	No
Responsible Officer:	John Edwards – Divisional Director Environmental Services
Portfolio Holder:	Councillor Susan Hall - Environment and Community Safety
Exempt:	No
Enclosures:	Appendix A – GLA Transport Committee report foreword Appendix B – Review considerations Appendix C - Process for developing local safety schemes Appendix D – Outline of traffic calming techniques

SECTION 1 – SUMMARY

This information report is presented to members to inform them about:

- traffic calming measures and techniques available
- the guidance and regulations that govern their use
- the factors and implications that need to be taken into account when applying them to new schemes, or reviewing existing schemes
- emergency services and transport operator considerations

SECTION 2 – REPORT

2.0 Introduction and Background

1. The Council has considerable experience of traffic calming schemes involving road humps and 21 schemes, covering some 62 streets, were introduced between 1992 and 2000. Many lessons have been learned both locally and nationally and many of the measures and techniques have been refined in the light of experience. As well as applying these lessons to new schemes, an increasing number of authorities are also reviewing existing traffic calming measures when the opportunity arises. An example of this was the partial resurfacing earlier this year of Kingsfield Avenue and some adjoining roads as part of the resurfacing programme, which resulted in a residents' action group asking for the road humps to be removed. This is referred to in the course of this report in order to help illustrate the issues and implications that need to be considered.
2. We have learned from experience at local level, from revised DfT guidance and by monitoring developments and new techniques and we have adapted our approach accordingly. The use of traffic calming measures in more recent schemes is more considered and better focused than it was in some of the earlier schemes where road humps in one form or other were often the first option because they were quick, cheap and effective.
3. More recently an incremental approach to traffic calming has been adopted to ensure the most appropriate solution is reached. For example, depending on the location we do not exclusively look at introducing road humps; we may well consider alternative solutions such as mini roundabouts, new surfacing, kerb build-outs, chicanes etc.
4. Rather than devising a separate process for reviewing existing schemes, it is suggested that the debate should essentially be about continuing to determine the use of appropriate traffic calming measures and consultation in the light of current knowledge and experience. Having done that, then the same criteria should apply both to new schemes and to the review of existing schemes when the opportunity arises.
5. In practice, the opportunity to review existing traffic calming schemes will be limited by the carriageway resurfacing programme and its priorities and timescale, which is itself governed by available funding. This is likely to result in individual reviews taking place infrequently and over a fairly long timescale and therefore reinforces the need to keep traffic calming techniques under review and apply those that are most appropriate at the time.
6. As referred to earlier, a increasing number of local authorities are taking opportunities to review existing schemes. The LB Barnet is perhaps the most notable example and they have removed a number of road hump schemes. To put the L B Barnet situation into context, their review of existing traffic calming schemes was linked to a substantial carriageway resurfacing programme.
7. However, it is suggested that whilst some lessons may be learned from other boroughs' experiences, it is important that any policy changes reflect this borough's objectives and priorities, particularly in relation to maintaining our excellent casualty reduction achievements. We currently have the second lowest accident rate per head of population of all the London boroughs.

London Assembly Scrutiny:

8. Before looking at the local context in more detail, it may be helpful to start by looking at some of the key messages that came out of the 2004 GLA London Assembly Transport Committee – “London’s got the hump – a scrutiny on the impact of speed humps on Londoners’ lives”. This was sparked by the increasing controversy about road humps and the public statement by a senior officer from the London Ambulance Service that road humps were delaying ambulances and costing lives (which proved to be unsubstantiated). It took evidence from all parties and sought to balance the arguments on both sides and draw conclusions. It should be noted that the Committee decided to concentrate on traditional full width road humps, rather than cushions, tables and other forms of traffic calming, although these were explored to some extent as alternative measures.
9. The foreword by the Chair, Lynne Featherstone, sums up the report and is shown in Appendix A. A copy of the report is available at:
http://www.london.gov.uk/assembly/reports/transport/speed_humps.pdf
10. The key messages from the report were:
 - The evidence is overwhelming in terms of the success of humps in reducing death and serious injury.
 - Road humps are only one option in the hierarchy of traffic calming measures. Better use needs to be made of the range of speed reduction alternatives that now exist.
 - The Boroughs and the emergency services must work together to create a local strategic road plan for each borough. And we need accurate monitoring of the effectiveness of each scheme and the dissemination of results and best practice across London.
 - It is hoped that the report sends out a strong message to London that humps save lives and that any borough removing humps must replace them with an equal or better alternative but – at the same time – that road humps are neither the only nor necessarily the best tool in the box.

General comments, considerations and implications:

11. Every scheme we have implemented has reduced vehicle speeds and accidents. The average reduction in casualties for schemes involving vertical deflections (humps, cushions and/or speed tables) in Harrow is approximately 60%. This level of casualty reduction is typical across London and confirmed by the Department for Transport (DfT) and the Transport Research Laboratory (TRL).
12. Where consideration is to be given to removing or modifying existing traffic calming measures, then the implications and consequences must be considered very carefully, including:
 - the potential legal/liability implications of removing measures that were put in as accident reduction measures (as in the case of the Kingsfield Avenue area have been demonstrably successful)

- the need to re-consult residents and emergency services, including the cost and timescale involved
 - the effect on the highway maintenance budget and programme. (N.B. removal of traffic calming in only part of a street would result in not complying with the legislation)
 - the cost of modifying existing measures, or replacing them with some other form of traffic calming
 - the view of TfL in relation to schemes funded by them
13. These are not necessarily in any priority order, nor exhaustive. It is suggested, however, that the accident reduction implications are the most significant and great caution needs to be exercised to avoid the very real potential for road casualties to increase.
 14. Apart from the human and economic costs associated with personal injuries, we should be conscious of Harrow's very successful and consistent record in reducing casualties. We need to be careful to not adversely affect BVPIs and CPA rating.
 15. It should be borne in mind that some residents may well have lost sight of the original need for the traffic calming measures and/or become complacent about the benefits they have achieved; or else they were not living there when the residents lobbied for measures in the first place. We continue to receive requests for traffic calming, whereas the only request for removal was the recent case in Kingsfield Avenue. Similarly, we get an increasing number of complaints about vehicle speeds and request for measures to deal with it.
 16. Also, some traffic calming schemes have been introduced on an area basis. This means that although some individual roads may not have had a specific accident record, there was a need to introduce measures to reduce the risk of displacement from nearby roads where accident remedial measures were needed. In other words, there was a need to avoid the risk of transferring a problem to streets where it did not previously exist.
 17. We now have some 24 traffic calming schemes and nine 20 mph zone schemes in the borough and each has demonstrated a clear majority of respondents in favour. Schemes such as Kings Road and Charlton Road that have had traffic calming for some years were re-consulted and both have supported retention of the vertical features. Recently Harrow on the Hill, and Grimsdyke 20 mph zones had a clear majority of respondents in favour of the schemes, which included speed cushions and raised speed platforms.
 18. Vertical deflection schemes are relatively cheap and easy to design and install. Alternatives to vertical deflection, such as kerb build outs and chicanes are often not appropriate for Harrow's residential roads because they reduce kerb side parking space. Almost invariably, we receive strong objections from residents in the immediate vicinity of proposed chicanes or narrowings.
 19. It should also be acknowledged that there is usually more than one traffic-calming option available that may be effective in dealing with a specific problem. As referred to in para.3 above, we currently ensure options are considered and we do not look exclusively at road humps, but instead may well consider alternative solutions such as mini roundabouts, new surfacing, kerb build outs, chicanes etc.
 20. We also modify initial proposals in the light of consultation wherever possible, but there is often a balance that has to be struck so that the aims and objectives of the scheme are

not compromised. This requires understanding and a degree of compromise by all the relevant parties.

21. In the case of Kingsfield Avenue, the speed cushions were reinstated. This was because only part of the road was being resurfaced and it was a case of having to remove all the speed cushions in the road, for which there was no highway maintenance budget, or to reinstate them to ensure compliance with the regulations.
22. Partial removal of speed cushions in a particular road would result in non-compliance with the legislation and also reduce their effectiveness. This would give the Council a potential liability, however small the risk may be, for example in the event of a speed related accident. There is also a danger that if part of the area scheme were to be removed, traffic may be attracted from other adjoining streets in the area.
23. The speed cushions in Kingsfield Avenue were introduced in May 1997 as part of an area wide traffic management scheme to address the high level of personal injury casualties in the area. Since the implementation of the scheme personal injury accidents have dropped significantly from the previously recorded 19 in the 3 years prior to the scheme going in, to 3 in the last three years (2004 –2007).
24. The Council has a statutory duty to consult the Police when road hump schemes or traffic calming works are proposed or removed. It is unlikely that the Police would support the removal of self-enforcing measures to reduce accidents or vehicle speeds because of the need for additional police enforcement.

Legislation, design standards and guidance

25. The Council is responsible for ensuring all traffic calming measures meet legislative requirements and current Government regulations and design standards. The regulations and guidance are provided by the DfT and are based on the findings of research and other studies into a wide range of traffic management issues and provide details of signing requirements, heights, the distance between speed reducing features etc.
26. The DfT's traffic calming policies and guidance are evidence based. That is to say each form of traffic calming undergoes vigorous tests and trials before they are introduced nationally. The DfT has published guidance on a wide range of issues relating to road humps, including discomfiture, noise and the effect on the emergency services.

Vehicle occupant risk and vehicle damage

27. Research commissioned by the TRL has analysed the effect on vehicles and their occupants of repeatedly crossing road humps and has also carried out research into allegations that road humps cause pain and discomfort. The report concluded that drivers and passengers are very unlikely to be injured as a result of single or repeated traversing of road humps constructed to the dimensions recommended by the DfT, but accepts that those with pre-existing bone weakness, or other relevant conditions, could be more vulnerable.
28. The report also states that road humps do not damage vehicles if they are driven over at the appropriate speed and recommends that highway authorities continue to use them as an effective way of improving road safety.

Increase in emissions and pollution

29. There appears to be limited consensus on the effects of traffic calming on vehicle emissions. Area-wide studies (in a number of countries) have shown a decrease in NO_x (nitrous oxide) emissions as a result of traffic calming. NO_x emissions are part of the National Air Quality Strategy and hence arguably the most important type of exhaust emission. The area-wide studies were less conclusive on the effects on CO (Carbon Monoxide) and HC (Hydro Carbon) emissions. Studies based on single sections of road have shown a wide range of results with a wide variation in the changes of NO_x and CO levels. They did however; show a reasonably consistent increase in fuel consumption and HC emissions due to traffic calming, albeit with only a small number of studies covering the latter (TRL Report 482).

Camera enforcement technology

30. Since April 2002 all speed cameras on the public highway in London are installed and operated by the London Safety Camera Partnership and not the by council as is often assumed. The council does not receive any revenue generated as a result of the fixed penalty notice. It has been proved nationally that traffic cameras can reduce the number of traffic accidents and protect road users by encouraging people to drive more slowly.

The London Safety Camera Partnership consists of: Transport for London; Metropolitan Police Service; City of London Police; Her Majesty's Courts Service; and London Councils. By operating a combination of fixed speed, mobile speed and red light camera sites across London, its aims are:

- Reduce death and serious injury caused by speeding and red light running in London.
- Raise awareness about the dangers and consequences of speeding and red light running.
- Meet the Government and the Mayor's 2010 targets for casualty reduction.

All speed camera locations have to meet strict Department for Transport guidelines and are only located at sites where there have been three or more fatal or serious speed related personal injury collisions within in the last three years. There are fourteen speed cameras and three red light cameras located in this borough.

31. Trials are being conducted currently in Camden regarding the possibility of enforcing 20 mph speed limits with time over distance cameras. At the moment, however, this is type of technology does not currently have Home Office approval for use on the public highway in residential areas. Speed enforcement camera system (SPECS) cameras utilise state of the art video systems with Automatic Number Plate Reading (ANPR) digital technology. Consisting of a minimum of two cameras each fitted with infra red illuminators fitted on gantries above the road, so they can work day or night. SPECS speed cameras work out a vehicle's average speed between the two camera positions. SPECS are commonly used to enforce speed limits on dual carriageways and motorways and at road works in temporary situations.

We are keen to pursue this option in the future should Home Office approval be granted and have made TfL aware. The DfT is also conducting trials with speed limiters in vehicles, although research is still on going and it may have limited application.

Emergency services and public transport operators:

32. The effect of traffic calming on the emergency services and transport operators has long been recognized and schemes are discussed with them at the regular Traffic Liaison meetings that are held. However, in order to ensure that their views were fully reflected in this report a meeting was held with representatives on the 21st October. TfL Buses were not able to attend that meeting but discussions took place subsequently. The meeting and discussions were helpful and constructive and the comments are summarised below:

33. Public Transport Advisor:

- It was suggested that we need to go back to basics and assess the purpose of traffic calming and consider whether there are alternative methods available to reduce vehicle speeds.
- The perception is that road humps increase emergency services response times, damage vehicles and create a more uncomfortable ride for vehicle occupants.
- Speed cushions in the main are more acceptable to bus operators because they are designed to allow vehicles such as buses or fire appliances to pass relatively unhindered. However, it was questionable whether they were effective in slowing down smaller wheelbase vehicles, such as a car, which would have to have at least one set of wheels on the hump to slow the vehicle down.
- The preferred traffic calming option to bus operators would be speed cameras, speed activated signs and non vertical deflections. (N.B. The position regarding speed cameras is discussed later in this report)

34. London Fire Brigade (LFB)

LFB stated that attendance times recorded in Harrow were the third worst in London in terms of meeting statutory emergency response times.

- The LFB aim to get a fire engine to an emergency incident within a 5-minute response time on 65% of occasions and within 8 minutes on 90% of occasions. In 2007/08 in this borough the first fire engine arrived within 5 minutes on 58.8% occasions and arrived within 8 minutes on 90% of occasions.
- It was confirmed that there are factors other than traffic calming that influence response times, including congestion, traffic levels, parking (legal and illegal) and the time of day. As a result, it was difficult to accurately quantify the time delay incurred as a result of the traffic calming features.
- A personal view was put forward that speed cushions are ineffective in slowing down cars and vans, whereas full width road humps were effective.
- The LFB confirmed that they would, as a matter of course, object to any proposed traffic calming scheme which included vertical deflection.

35. London Ambulance Service (LAS)

- Some types of traffic calming schemes cause, by virtue of their design, difficulties for ambulance crews in treating patients while en-route to hospital and discomfort or pain to patients, many of whom are seriously ill or injured, although there is no direct evidence to support this.
- The LAS stated that they now use less ambulances and rely more heavily on new purpose built MPVs and consequently these vehicles are affected by traffic calming features, such as speed cushions
- The LAS national performance target is to reach 75% of Category A (immediately life threatening) calls within eight minutes. The average response time in Harrow was 75.2% (for the six month period Feb 08 – Jul 08) this compares favorably with neighboring boroughs.

- There should be early and meaningful consultation with the LAS at the appropriate level for each scheme where traffic calming schemes are proposed.
- They would like to understand more about the process the council goes through when considering traffic calming requests. For clarification the process is described in **Appendix C**

36. **Metropolitan Police Service (MPS)**

- Do not generally support vertical traffic calming because of adverse effect on response times, but recognise it as a means to reduce personal injury accidents.
- The MPS has a 12-minute response time to attend emergency incidents. Unlike the Fire / Ambulance Service the MPS will be able to respond quicker as they may have patrol cars in the area and therefore are not responding from a fixed base.
- The MPS would support alternative forms of traffic calming other than vertical deflections such as chicanes, kerb build outs or vehicle activated signs. (**Appendix D** details examples of traffic calming measures)
- The MPS welcomes early involvement in the development of Local Safety Schemes.
- The MPS confirmed that many of the Safer Neighbourhood Teams (SNT) in the borough have access to speed radar guns. Members of the public in partnership with the SNT carry out speed surveys at identified hot spots by recording the registration numbers of speeding motorists. These details are provided to the MPS for potential follow up action.

37. **TfL (Buses)**

- TfL buses confirmed that they understood the rationale behind the introduction of traffic calming measures and welcomed early engagement in the development of traffic schemes along their routes.
- Only a few bus routes such as Harrow on the Hill and Kings Road included vertical deflections and all of the vertical features conform to current guidelines.
- TfL provide guidance detailing the most appropriate traffic calming measures to be considered along bus routes. BP2/05 Traffic calming measures for bus routes provides guidance to authorities in London which we adhere to.
- Speed cushions were generally preferred on bus routes, although speed platforms would also be acceptable in certain circumstances, for example at junctions where there are speeding problems.

38. It is recognised good practice for highway authorities to establish a meaningful dialogue with the fire, ambulance, police services and bus operators affected by proposals at an early stage of scheme development. Their early input will help decisions on the purpose and appropriate type of measures to be installed. To that end we hold regular Traffic Liaison meetings with representatives of London Buses, The MPS, LFB and the LAS to discuss proposals in advance of public consultation.

39. In most cases we are aware of their “in principle” views, which are essentially that they would prefer not to see any measures that, limit or adversely affect their service targets. Whilst the importance of emergency services response times, for example, is recognised, this has to be balanced against the wider aims of a traffic management scheme, particularly one that is intended to reduce vehicle speeds and the associated link to personal injury accidents. This is not just a local issue, of course, and this judgement has to be made in designing and implementing traffic schemes throughout London and indeed nationally.

40. It is clear from the discussions that particular types of vertical deflection schemes are likely to delay the emergency services. Full width speed humps and tables will slow emergency service vehicles and could be problematic for injured passengers/patients as they 'bump' over the humps or tables. However, this is much less so for speed cushions, which their vehicles can straddle.
41. The disadvantages for emergency service vehicles have always been acknowledged but the approach London-wide and probably nation-wide has been to avoid vertical deflection on strategic routes. However, the emergency services do not publish their strategic routes and so it is dealt with on a case by case assessment.
42. On residential access roads we generally recommend overruling formal objections from the emergency services because of the need to balance potential adverse effects on their response times against the wider benefits to the public at large of traffic management measures designed to reduce casualties.
43. As referred to earlier in this report, there is often a need to strike a balance so that the needs of the emergency services and others are met as far as possible aims, but the objectives of the scheme are not unduly compromised. This requires understanding and a degree of compromise by all the relevant parties and a clear recognition that reducing casualties in road traffic accidents is in all or interests.

Review considerations:

44. Following on from the principles referred to earlier in this report, Appendix B outlines the process whereby existing traffic calming features will be reviewed in roads included in the ongoing carriageway resurfacing programme. It is illustrative rather than definitive and along with **Appendix C**, which shows the process for delivering Local safety Schemes, and **Appendix D**, which shows a range of traffic calming techniques available, will help inform any future debate and decisions on individual schemes.

Summary:

45. It is hoped that this report informs members of the key issues and implications in relation to traffic calming measures and the process for reviewing existing measures in the future.
46. It will be apparent that the opportunities to review existing traffic calming measures will be limited by the constraints of the carriageway resurfacing programme. Any review may have significant resource implications and this will need to be considered carefully in relation to other priorities and budget allocations, including the delivery of the highway maintenance programme. The financial implications of specific reviews will be reported at the time they are considered for approval.

SECTION 3 - CONTACT DETAILS AND BACKGROUND PAPERS

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Background Papers:

None

IF APPROPRIATE, does the report include the following considerations?

1.	Consultation	YES/ NO
2.	Corporate Priorities	YES / NO

APPENDIX A

GLA Transport Committee report in 2004 – Foreword

Humps saved lives and serious injuries. They were cheap and quick to implement and spread like rashes across our boroughs.

We are some years on now from the first appearance of the hump on our streets. As they have proliferated - questions have begun to arise about their effectiveness, the possibility that they cost lives through slowing down emergency vehicles, damage to cars and property, noise, pollution and discomfort caused to vulnerable passengers.

The clamour has grown to fever pitch as the Borough of Barnet has begun to remove humps from their roads and the London Ambulance Service has claimed that they could probably save more lives if the overall traffic flow were to be improved.

The purpose of the London Assembly's investigation is to examine the available evidence and bring some analysis and fact into a debate that has appeared at times to be more heat than light.

The evidence is overwhelming in terms of the success of humps in reducing death and serious injury. The challenge for this scrutiny has been to make recommendations that will help improve the design and implementation of traffic calming schemes in future years.

Humps are only one option in the hierarchy of traffic calming measures. Better use needs to be made of the range of speed reduction alternatives that now exist. The Boroughs and the emergency services must work together to create a local strategic road plan for each borough. And we need accurate monitoring of the effectiveness of each scheme and the dissemination of results and best practice across London.

I hope that this report sends out a strong message to London that humps save lives and that any borough removing humps must replace them with an equal or better alternative but – at the same time – that humps are neither the only nor necessarily the best tool in the box.

2.2.5 Para 3.5 of the report makes specific reference to LB Barnet's policy of "removing speed humps and relying on improved traffic flows on the main road network to prevent rat-running on residential roads.", and concludes with:

Recommendation 4

Given the overwhelming evidence of the reduction in deaths and serious injuries resulting from the presence of speed humps, any removal of speed humps by the boroughs should be accompanied by equivalent or more effective alternative speed reduction measures. If speed humps were not to be replaced then the boroughs should provide independent research to show that it was safe for their removal. However, we would argue that improved safety is due to traffic calming measures and if they were removed then this would jeopardise the safety and lives of Londoners.

APPENDIX B

Review Considerations

The following questions should be considered in turn when reviewing vertically traffic calmed streets located within the council's resurfacing programme.

1: Is there a higher casualty history or excessive speeding history at the site?

Some sites have a history of casualties which have led to measures then being implemented. Care should be taken at these sites to avoid re-creating a casualty hotspot. Other sites may have been treated as part of an area and may not have a high casualty history but have nevertheless resulted in casualty reductions across the area, provided additional facilities (e.g. crossing points) and reduced road danger and other negative effects of vehicular dominance in streets.

2: Is the road on an Emergency Service Key Route or bus route?

If yes, then the Council shall give weight to the needs of emergency vehicles and buses and the possibility of amending or removal of traffic calming measures.

3: Are there schools/nurseries/day centres etc. in the vicinity?

If yes, then the Council shall give weight to the safety needs of these vulnerable road users.

4: Is the road within a 20mph zone? If so is it on the edge of the zone?

Under current statute, if a road is within an existing zone there are criteria that must be met in order for the 20mph Zone Traffic Management Order and signage to be legal – this means that there must be a minimum set of physical traffic calming measures regardless of existing traffic speeds. A road on the edge of the zone could potentially be removed without affecting the overall zone although the Traffic Management Order (TMO) making the zone would have to be re-made excluding that street.

If measures were removed from roads within a zone to the point where the criteria are not met, officers would have to advertise to revoke the TMO for the whole zone, and remake a new order excluding that street. This becomes very problematic in terms of having a zone with "holes", each of which would require zone exit and entry sign plates. This is a situation that we have avoided with regard to CPZs and officers recommend that we do the same for 20mph zones. Such zones are currently geographically coherent with clear and obvious boundaries. The only sensible option is all or nothing and thus the only option would be a review of the zone as a whole. The resource implications are considerable. In addition the casualty history for the area as a whole would then need to be considered. 20 mph zones are designed to address more diffuse casualty patterns in mainly residential areas.

Individual Request Received and Officer Response

When we receive correspondence questioning traffic calming, in the first instance the traffic management section write back explaining the rationale behind the traffic calming and any relevant information (e.g. accident data, speeds, volumes, resident's responses to consultation).

Petition Request Received and Officer Response

Petitions or groups responses to remove traffic calming would be considered by the Portfolio Holder for Environment with a short accompanying report from officers setting out the context and information background. This will include:

- the background to the introduction of the traffic calming
- data on the accident stats before and after the measures were introduced
- any data on speed surveys

If, following the above, traffic calming measures are still being considered for modification or removal the following steps should be considered:

Step 1: Consider speeds and volumes

Previous survey data is not likely to be available for all roads but officers will be able to provide a technical view in addition to commissioning new surveys.

Step 2: Consider if the measures could be repaired or modified.

For example, there may have been subsidence and wearing of asphalt around speed humps that causes a problem. Some speed humps may have been built to an earlier specification of 100mm high and they could be reconstructed at 75mm. There may be rocking of utility covers or kerbs at the bottom of speed table ramps. In some cases minor re-alignment may be desirable, perhaps from outside a residence to a partition wall.

Step 3: Consider if measures could be replaced by alternatives.

In some cases an alternative measure may be installed at the same location. For example, instead of a road hump, platform or speed cushion we consider appropriate signing or road markings. Note, measures within 20mph zones can be any of: tables, humps, cushions, buildouts, chicanes, gateway structures, traffic islands, overrun areas (different colour/texture surfacing that makes the carriageway feel narrower), pinch points, pedestrian refuges, reduced carriageway width and bends more than 70 degrees.

Step 4: Consider if spacing between measures can be increased.

The location of measures will typically have been designed to cause vehicles to travel at steady reduced speeds. In the case of 20mph zones the aim is for the measures to make the zone "self enforcing". Increasing the spacing between measures may well result in overall faster speeds as well as more "racing" between the measures. However the law allows for spacing of up to 100 metres within zones and it may be possible to increase spacing without compromising the regulations.

Step 5: Consulting local people.

If members decide to consider replacing, modifying or removing traffic calming, a consultation exercise should in most circumstances be carried out with local people explaining the original purpose of the measures, the rationale for considering the removal or amendments, and the implications (e.g. 20mph speed limit may have to be revoked for an edge of zone street). For very minor amendments this step may not be considered necessary.

As noted above, for streets in the middle of a zone, the only option is to review and re-consult on the zone as a whole.

APPENDIX C

Process when developing Local Safety Scheme (LSS)

With regard to progressing local safety schemes the current process for formulating and implementing LSS is as follows:

- Investigate the accident /casualty data provided by the London Accident Analysis Unit from the Stats 19 data base.
- Look at worst 20 accident/casualty sites (accidents along whole routes and clusters from previous year).
- Analyse data to assess the cause/s and possible remedial action.
- Select sites which show the best first year rate of return in terms of reducing casualties.
- Investigate cause/s of accidents (lighting, signing, surfacing problems etc).
- Undertake speed/volume of traffic surveys where considered appropriate.
- Look at the scheme costing.
- Bid for funding to TfL through the Borough Spending Plan process.
- Report the award to TARSAP at the start of the financial year and include the schemes in the global programme.
- Develop outline proposals and resolve any conflicts that may arise with other work programs i.e. surfacing schemes.
- Consult with the emergency services, bus operators (where appropriate) through discussion and / or Traffic Liaison meetings.
- Consult local members and residents
- Consider the outcome of the consultation and consider amendments accordingly.
- Implement the scheme.
- Monitor and review the scheme where necessary after implementation.

APPENDIX D

Outline of traffic calming techniques

It is clear that not all forms of traffic calming are universally popular with some drivers and that the views of the emergency services and bus operators are not always supportive. For these types of traffic calming measures expressed by some members are listed in the following order:

1. *Chicanes.*

Chicanes are intended to reduce traffic speed by reducing the available carriageway width throughout a short length. Chicanes introduce a physical deflection into the vehicles' horizontal path, thereby further reducing the vehicle speed. Signing can give priority to one direction of flow or alternatively no signed priority relies on inducing driver caution to achieve speed reduction. Not popular in areas where parking is at a premium because they removed on street parking capacity.



2. *Raised junction tables*

These take the form of a continuous raised hump across the majority of the road width – generally there is a gap adjacent to the kerb to allow channel drainage and the passage of cycles. These humps have a vertical deflection in the order of 75mm and prove to be very effective in slowing traffic. However, they affect all traffic and have been criticised by Bus Companies (for causing an uncomfortable ride) and by the Emergency Services because they delay response times (the Ambulance service are also concerned about distress caused to patients). Tables are much larger and have a large flat top. They are generally used to raise the road level at a pedestrian crossing location, or where roads meet at a junction.



3. *Speed Cushions.*

These are a form of speed control hump, which are wide enough to allow a wide wheelbase vehicle to pass unhindered. They do not affect buses, fire engines or powered two wheelers, whereas a smaller wheelbase vehicle, such as a car, would have to have at least one set of wheels on the hump. Thus cars are slowed, whereas other traffic is generally unaffected. These are intended to overcome the objections of the emergency services and bus companies. They make possible speed reduction measures in roads that would otherwise not have them introduced.



4. *Road Humps.* Road humps are preferred where there is high-speed traffic. However they will affect emergency service response times. The shape of speed control humps are strictly regulated by the Department for Transport. They must be between 50mm and 100mm high, at least 3.7m long and extend over the full width of the road, except for a drainage channel at either end. They may have either flat tops or round tops. Many local authorities have adopted

the 75mm high hump as a standard. This is because it has been found to be effective in reducing traffic speeds.



5 Mini Roundabouts

Mini roundabouts can be a means of reducing accidents by slowing traffic because of the roundabout rule "give way to traffic from the right". They also assist right turning movements. Their advantage over full size roundabouts is that they can often be accommodated within the existing road space without expensive road widening and don't interfere with pedestrian routes too much. However, where drivers are not forced to slow down they can become an accident site. They are unsuitable therefore for use on roads where vehicle speeds are much above 30mph.



6 Traffic islands / Pedestrian refuges

Where a formal pedestrian crossing is not justified these can be of great assistance to pedestrians by letting them cross the road in two stages. The major restriction to the use of this measure is the width of the carriageway. It must be at least 7.8m wide to allow for a 1.8m wide island and two lanes of traffic. It is preferable to install more than one island to form a series of refuges. In this way they are less vulnerable to collisions and provide a number of relatively

safe crossing points along a length of road. They can also have a mild traffic calming effect and can prevent overtaking accidents.



7 Variable speed signs

Variable speed signs have been shown to be effective in reducing speeds, but their effectiveness tends to decrease over time.

The evidence indicates that variable speed signs are not suitable as replacements for permanent restraint measures, such as physical engineering or safety cameras, but can be useful as part of an area-wide speed management programme. In response to Borough wide safety concerns these signs have been introduced at a number of locations throughout Harrow. The sites have been chosen because local residents have raised concerns about the speed of traffic in the area or where there is a history of speed related problems. It is planned to move the signs around the borough and monitor their effectiveness in reducing traffic speeds and accidents at these chosen sites. Research is on going.



8 Road markings

Carriageway markings are a cheap and cost effective way of reducing accidents. At junctions they provide an indication of priorities and, when depicting centre or lane lines, they indicate boundaries for vehicle movement. White markings are generally advisory. Lane arrows are used on the approaches to traffic signalled junctions to indicate which lane should be used for turning and straight ahead movements. Lane arrows are generally not permitted on the approaches to roundabouts. SLOW markings are often used on the approach to a hazard.



Areas of central cross hatching, commonly called "ghost island" markings, are useful as a means of reducing accidents by separating on-coming traffic, reducing traffic speed and providing safe right turning areas. These, along with central traffic islands, have been shown to play a major part in reducing motorcycle accidents.



9) *The Speed enforcement camera system (SPECS) cameras*

Trials being conducted at the moment in Camden are looking at the possibility of enforcing 20 mph speed limits with time over distance cameras. At the moment however this type of technology does not currently have Home Office Approval for use on the public highway in residential areas.

SPECS average speed camera systems utilise state of the art video system with Automatic Number Plate Reading (ANPR) digital technology. Consisting of a minimum of two cameras each fitted with infra red illuminators fitted on gantries above the road, so they can work day or night. SPECS speed cameras work out the vehicles average speed, given the time it takes to drive between the two camera positions. SPECS are commonly used to enforce speed limits on dual carriageways and motorways and at road works in temporary situations. This is because one SPECS gantry can monitor up to four lanes of traffic at any one time. The Home Office is expected to approve the technology some time next year.



10) *Speed Cameras*

The purpose of safety cameras is to change driver behaviour - they are only used when people break speed limits. The responsibility for the implementation of speed cameras in London lies with the London Safety Camera Partnership (LSCP). All cameras installed by the LSCP since April 2002 has to met strict Department for Transport guidelines. Fixed speed cameras are located where three or more fatal or serious speed related personal injury collisions have occurred in the last three years. A three-year period of study is the standard nationally, by which traffic engineers assess the frequency of road accidents and identify particular accident trends for the purpose of assessing road safety and for making comparisons with other areas.