Appendix A –Type of Traffic Calming Measures – Engineering Solutions

PHYSICAL MEASURES

Central Hatching

The major consideration of this feature is that, these markings can only be laid down the centre of roads which are 7 metres wide or more. They work on the principal of appearing to reduce the width of the running lanes. Speeding can therefore be inhibited to a degree, as overtaking will be discouraged.
If the road is 8 metres wide or more, right turn lanes may be incorporated to assist vehicles turning right. They will also provide an element of personal security for pedestrians because they act as refuges.

Pros
- Inexpensive.
- Provide lane guidance to drivers.
- Solid hatchings are enforceable by law.
- Will provide added protection when turn lanes or central refuges are incorporated.

Cons
- Not as effective when used in isolation.
- A minimum road width of 7m is required for basic lining.
- Constant over-running of lines will lead to maintenance problems.
- On-street parking will cause the over-running of lines
- Use of white edge lining may increase driver speed.

Removing markings and signs

Several surveys have indicated that the clearer the road marking layout, the more positive drivers are in their actions and general behaviour. This approach has been applied successfully in a number of locations but considerable judgement is required to minimise any risks resulting from removing signage and road markings.
Consideration has to be given to traffic flows, existing vehicle speeds, location and numbers of vehicles using the road. This philosophy is still undergoing trials and it is not yet clear how effective adopting this style of traffic calming is.

Pros
- Inexpensive.
- Removal of unnecessary lines and signs
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Cons
- Not as effective when used in isolation.
- Over-provision of lines and signs can have a detrimental impact on the environment
- Over -provision of signs can dilute more important messages

Mini Roundabouts

Mini roundabouts will have a calming effect but should only be installed in 20/30mph zones at three armed junctions, which have equal and/or substantial traffic flow on each approach. The mini roundabout itself must be greater than 1m in diameter but less than 4m and must not exceed 125mm in height.

The alignment of the road may need adjustment to slow traffic on the approaches together with appropriate street lighting and illuminated signs. Doming of the roundabout centre is recommended.

Pros

- Reduces speed on all arms.
- Easy to install if no other works are required.
- Can be seen as an alternative to re-designing junction layout.

Cons

- Costs can escalate drastically depending whether lighting, and or road realignment is required.
- Very strict design guidelines.
- Creates extra signage.
- Has produced mixed results as a speed reduction measure.
- Any underground services may need to be diverted.

Vehicle Activated Sign (VAS)

A Vehicle Activated Sign (VAS) is an interactive sign designed to light up at a predetermined speed when approached by drivers. The sign lights up a specific message warning of a hazard or as a reminder of the speed limit in force. The signs are advisory and effective only if used sparingly. VAS's reinforce existing traffic signs and are only activated to alert drivers who are travelling above a speed set in the device. VAS signs can have a combined message such as 'slow down'/'bend' or 'slow down'/'school' in additional to the speed limit.

Pros

• Have proved effective when traditional signs have failed.
• Alternative to full-scale engineering which may be inappropriate for the style of road or area.
• Dual message can be displayed.
• Renewably powered option is available.

Cons

• Can be expensive if a power supply has to be installed.
• Suitable length of road is required. This allows the radar to pick up on on-coming vehicle and display the message long enough to be of sufficient impact.
• Should only be used when traditional signs have failed to remedy the problem.
• May prove to be less effective over time as drivers become familiar with the signs.
• On-going maintenance costs.

HORIZONTAL MEASURES

Narrowings - Priority Workings

This style of scheme reduces the width of the carriageway, which is then controlled by a “Priority” system, i.e. vehicles going in one direction have to give way to traffic from the other. They should be lit and can significantly reduce vehicle speeds. Similar to traffic islands, narrowings can create problems for cyclists.
They are most effective if traffic flows exceed 500 vehicles per day and are not heavily biased in one direction. However, they may cause sudden braking or acceleration and can reduce available parking space. Priority Workings are often difficult to site in residential areas where they conflict with accesses and on street parking.

Pros

- Significantly reduces vehicle speeds.
- Works well with high traffic flows.
- Relocation of road space reduces the dominance of motor vehicles.

Cons

- Expensive.
- Must be illuminated.
- Minimum carriage width of 3m required.
- Potential hindrances to emergency vehicles and public transport.
- Will cause noise due to sudden accelerating and braking of some drivers.
- Will reduce available parking space

Central Traffic Islands

Central traffic islands restrict two-way traffic flow into narrower lanes or provide a refuge for pedestrians/cyclists. In general, a minimum of 3 metres lane width must be maintained on either side of an island, where the island is a pedestrian refuge it must be a minimum of 2 metres wide and they must be illuminated.
Traffic Islands can create problems for cyclists or the emergency services where access may be hindered. This may mean that road widening is required. Islands are often difficult to site in residential areas where they conflict with accesses and on street parking. Central traffic islands can reduce vehicle speeds by 2-5mph depending on the lane widths.

Pros
- Can be effective in reducing vehicle speeds and injury crashes.
- Can be tailored to fit different road widths and conditions.
- Encourages lane discipline.
- Can be designed as a pedestrian refuge.

Cons
- Can be expensive depending on number of islands installed.
- Must be illuminated.
- Can be difficult to site in residential areas as minimum road width is required.
- Can cause problems for cyclists.
- Collisions with Island can occur.
- May receive objections from larger vehicle users & emergency services.

VERTICAL MEASURES

Each request for all types of vertical measure need to be considered on an individual basis, bearing in mind the collision history, the road layout and the gradient of the road, as it is inadvisable to install vertical measure on steep gradients. Vertical measures should only be considered where other less obtrusive and cost-effective measures have not been successful in calming the road.

Road Humps

Road (Speed) humps come in various forms and are constructed in tarmac for cost effectiveness in a round form or in blocks where a flatter profile is required. They can be effective in reducing speeds to about 20mph. Their height and frequency are controlled by Regulations. It is recommended that a "slowing" feature, e.g. roundabout, a sharp bend or a road narrowing, should exist or be introduced on the approach to the section where the humps are placed.

Pros

• Can be very effective in reducing vehicle speeds and personal injury accidents.
• Can provide pedestrian crossing places if flat topped.
• Continue across the full width of the road and can be installed without effecting on-street parking.

Cons

• Can only be used in areas with a speed limit of 30mph or less.
• Must be illuminated to 'highway lighting standard'.
• Cause discomfort to bus passengers and patients in ambulances and effect response times for emergency services.
• Cannot be installed on emergency gritting routes.
• Braking and acceleration noise plus vibration can make them unacceptable to residents.
• Not cycle friendly.
• Drainage when raining for flat top style humps need to be considered.

Speed Cushions

Similar to road humps and the same constraints apply to them such as height, frequency, and lighting. Their effectiveness will depend on the width, height and profile of the cushion. The narrower the cushion the more acceptable to buses and emergency service vehicles which are then able to straddle them. Wider cushions are more effective in reducing speeds.

Pros

• Can be very effective in reducing vehicle speeds and personal injury accidents.
• Can be tailored to fit different road widths and conditions.
• Cycle friendly.
• Bus and HGV friendly.
• Better access for Emergency Service vehicles.

Cons

• Can only be used in areas with a speed limit of 30mph or less.
• Must be illuminated to 'highway lighting standard'.
• May cause discomfort to bus passengers and patients in ambulances if the vehicle unable to straddle cushions.
• Braking and acceleration noise plus vibration can make them unacceptable to residents.
• May cause drivers to weave or mount the kerb to avoid them.
• May not slow HGV's or motorcyclists.
• Cannot be installed on emergency gritting routes.
• May require waiting restrictions to prevent parking within 20 metres of the cushions. This will allow larger vehicles that straddle humps enough space to negotiate these measures.

Raised Tables

Similar to road humps and the same constraints apply to them such as height, frequency, and lighting. Raised tables are traffic calming devices that raise the entire wheelbase of a vehicle to reduce its traffic speed. Raised tables are longer than similar to road humps and flat-topped, with a height of 3–3.5 inches. These are speed humps with a long flat section that are generally used at junctions and can also improve crossing facilities for pedestrians. Raised tables require signing and roadway markings to make their presence known to motorists and other roadway users.

Pros

• Can be very effective in reducing vehicle speeds and personal injury accidents.
• Can be tailored to fit different road widths and conditions.
• Bus and HGV friendly.
• Better access for Emergency Service vehicles.

Cons

• Can only be used in areas with a speed limit of 30mph or less.
• Must be illuminated to 'highway lighting standard'.
• May cause discomfort to bus passengers and patients in ambulances if the vehicle unable to straddle cushions.
• Braking and acceleration noise plus vibration can make them unacceptable to residents.
• Cause discomfort to bus passengers and patients in ambulances and effect response times for emergency services.
• Cannot be installed on emergency gritting routes.
• Not Cycle Friendly.
• Drainage when raining for raised tables need to be considered.

OTHER MEASURES
20 MPH Limits/Zones

20 mph limits/zones are currently only considered as part of a Traffic Management and Accident reduction scheme a School Travel Plan scheme or a 20 mph scheme around schools. This is due to the need for extensive traffic calming to be incorporated onto the road network to keep average speeds below 20 mph.

The Department for Transport (DfT) advice emphasises the need for caution to be exercised when considering 20 mph limits. Experience suggests that signed-only limits have little or no effect on reducing speeds.

Width Restrictions

Width restrictions are a self-enforcing means of restricting road access for large vehicles. Posts or bollards are placed in the road about 7 feet (2.1 metres) apart so that vehicles wider than this cannot pass between them. As an alternative route must be available for large vehicles such as refuse collection vehicles, their use in residential areas may be limited.

Many residents mistakenly ask for width restrictions to be introduced as a means of slowing traffic. Width restrictions do not, and are not intended to, reduce traffic speed.

Sometimes a gate is provided for use by fire engines and other emergency vehicles. The gate is kept locked but emergency vehicles carry the key.