

Guidance

GN-06-029 Traffic Calming

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Purpose

1. The purpose of this guidance document is to describe the issues to be considered when implementing traffic calming, or deciding if traffic calming measures are necessary. Highway Services traffic calming policy document should be referred to for details on why traffic calming is needed.
2. This guidance applies to all traffic calming on the island's adopted roads, and proposed roads that are to be built as part of new developments that may be subject to traffic calming features.
3. This document is intended to provide clarity on Highway Services requirements for traffic calming, and it sets out the protocol for achieving this.

Introduction

4. Traffic calming is most commonly implemented by Highway Services for one or more of the following reasons:
 - ◆ To reduce vehicle speeds at or on the approach to a speed limit or outside a school;
 - ◆ To promote highway safety or to address a safety issue that cannot be resolved with other measures;
 - ◆ To reduce the number and severity of traffic collisions where vehicle speed is a contributory factor;
 - ◆ To preserve or improve the environment or amenity of a residential area or local community by reducing the impact of vehicular traffic;
 - ◆ At locations where there is a high number of vulnerable road users;
 - ◆ Outside schools where traffic speeds are too high;
 - ◆ To prevent or reduce the likelihood of routes being used for through traffic where more suitable alternative routes exist;
 - ◆ On new roads in new developments to keep speeds low where there are likely to be high numbers of vulnerable road users or other community uses such as schools and shops;
 - ◆ On existing roads adjacent to new developments or other highway schemes to mitigate the effects of the proposed development or highway scheme; and
 - ◆ To reduce unnecessary vehicle movements in conservation or sensitive areas.
5. **Table 1** below shows the criteria for which types of traffic calming measures can and cannot be introduced for each speed limit:

Table 1: Types of Traffic Calming Measures Suitable for Which Speed Limits

Type of Traffic Calming	20mph	30mph	40mph	50mph and above
Vertical Traffic Calming Measures (only suitable for local access / residential roads)				
Road humps	√	√	X	X
Speed cushions	√	√	X	X
Speed tables / raised junctions	√	√	X	X
Rumble devices	√	√	√	X
Horizontal Traffic Calming Measures (suitable for all roads including primary, secondary, district and local routes)				
Build-outs / pinch points	√	√	√	X
Sheltered parking bays	√	√	√	√
Bus boarders	√	√	√	X
Chicanes	√	√	X	X
Traffic islands	√	√	√	√
Pedestrian refuges	√	√	√	√
Cycle lanes	√	√	X	X
New / widened footways	√	√	X	X
Central hatching	√	√	√	√
Dragons teeth	√	√	√	√
Edge of carriageway markings	√	√	√	√
Overrun areas	√	√	√	X
Other Traffic Calming Measures (suitable for most road types)				
Gateways	√	√	√	√
Mini-roundabouts	√	√	X	X
Severed roads (only applicable to local access / residential roads)	√	√	X	X
Buffer speed limit	X	X	√	√
Count-down markers	X	X	√	√
Interactive / variable	√	√	√	√

message signs				
Signs with backing boards	✓	✓	✓	✓
Speed roundels	✓	✓	✓	✓
Coloured surfacing	✓	✓	✓	✓
Thumps *	X	X	✓	✓

* subject to suitable height of thumps for the speed limit (see **Thumps** section of report below for further details)

6. In specific circumstances, Highway Services has the authority to amend the criteria in **Table 1** above as it sees fit. This will occur when there are particular local conditions that warrant a variation to the above criteria. For example, a more onerous type of traffic calming measures may be needed to provide a greater level of speed reduction than usual to deal with a location with a particularly high accident rate.
7. As **Table 1** demonstrates, traffic calming is often introduced in residential areas and roads subject to a lower speed limit. A large proportion of roads with a 20mph speed limit have traffic calming so the speed limit is self-enforcing. Once implemented it can be difficult to remove as it is likely to result in increased traffic speeds, unless there is a change in circumstances that can justify it.
8. Section 12.8 of the Manual for Manx Roads (MMR) document states that traffic calming can be defined as reducing the adverse effects of vehicular traffic on other road users by adapting the speed, volume and behaviour of vehicular traffic using the road or street. This is done by altering the character of the road or street in a way that changes driver behaviour.
9. The emergency services should be consulted on the introduction of traffic restraint measures as specified in Section 1.9 of the MMR. Traffic restraint measures are raised surfaces, or vertical traffic calming measures, that have vertical deflections such as road humps, road cushions and speed tables. Horizontal traffic calming measures have horizontal deflections such as road narrowings and build outs.

Types of Traffic Calming Measures

10. The different types of traffic calming measures that can be used are listed below. This list is not exhaustive, but it provides an indication of the main type of features that can be introduced depending on the speed limit and local conditions:
 - ◆ Buffer speed limit;
 - ◆ Count-down markers on the approach to the lower speed limit;
 - ◆ Road narrowings, ie. build outs, sheltered parking bays, bus boarders, chicanes;
 - ◆ Gateways;
 - ◆ Traffic islands;
 - ◆ Signage, ie. interactive / variable message electronic signs, fixed signs with yellow backing boards and / or road safety messages;
 - ◆ Road markings, ie. speed roundels, central hatching, dragons teeth, edge of carriageway markings, coloured surfacing, thumps;
 - ◆ Road humps (not on primary, secondary, district and local routes);
 - ◆ Road cushions (not on primary, secondary, district and local routes);

- ◆ Rumble devices (not on primary, secondary, district and local routes);
 - ◆ Speed tables and raised junctions (not on primary, secondary, district and local routes);
 - ◆ Pedestrian crossings (including pedestrian refuges);
 - ◆ Mini-roundabouts;
 - ◆ Severed roads (permanent road closures to stop through traffic routes);
 - ◆ Overrun areas;
 - ◆ Cycle lanes; and
 - ◆ New or widened footways.
11. The type of traffic calming proposed is likely to be influenced by the level of reduction in vehicle speeds required as some measures will be more effective than others at achieving this. For example, vertical traffic calming features such as road humps should give greater speed reduction than horizontal traffic calming measures, such as road narrowings or road markings.
 12. All 20mph speed limits must be supported by appropriate traffic calming measures such as road humps, road cushions, road narrowings, rumble devices and gateway features. This is to ensure that the 20mph speed limit is self-enforcing without the need for extensive police resources to achieve this.
 13. Highway Services speed limit policy and guidance reports deal with when speed limits will be introduced by Highway Services, and when proposed speed limits will need to be supported by associated traffic calming measures. The general rule of thumb is lower speed roads will require vertical traffic calming measures and higher speed roads will predominantly use road markings and signage. Speed limits in between will have more flexibility in the range of measures that can be adopted.
 14. The different types of traffic calming measures are described in more detail below. This includes information on when and where each one can be used, and where it would be inappropriate. The measures have been split into two sections depending on whether or not a TRO / Statutory Notice is required. To introduce certain types of traffic calming, a legal process has to be followed which includes the production of a Statutory Notice that has to be advertised. Alternatively, where traffic calming is installed as part of a range of measures that require a TRO, often as part of a highway scheme or area based highway proposals, then the more onerous TRO process may be used instead of a Statutory Notice. Vertical traffic calming tends to be mandatory and require a TRO / Statutory Notice, and horizontal traffic calming is more commonly advisory that does not need a TRO / Statutory Notice.

Traffic Calming Measures that Require a TRO or Statutory Notice

Road Humps

15. There are two main types of road humps, round topped and flat topped. Round topped road humps are usually the most severe type of hump. They extend across the width of the road and have a rounded type profile across the top. They are the most effective hump in terms of slowing traffic, but the least comfortable to drive over, especially for larger vehicles with long wheel bases.
16. Flat topped road humps are short humps which extend across the full width of the road. They have a flat profile across the top and ramps either side.

17. Road humps are the most common types of traffic calming measures because experience has demonstrated that they have been the most effective at reducing vehicle speeds and can be used on most road layouts. They are only used on lower speed roads where significant reductions in vehicle speeds are needed. Another speed reducing feature is required in advance of the first road hump if it is likely that traffic could approach it at speed. This will avoid the first hump being a severe obstruction that could damage the vehicle and create a road safety problem.
18. Flat topped road humps are often used at pedestrian crossing points to create a flush crossing surface with the footway either side.
19. New round and flat topped road humps will generally not be installed on existing roads unless a new 20mph zone and / or a home zone is proposed, or a high accident record exists that would benefit from a sizeable reduction in vehicle speeds. Road humps can cause problems for snow ploughs and should therefore not be used on traffic routes that form part of the winter gritting highway network. Their use should be considered carefully when placing them close to traffic signal junctions. Drivers may accelerate through the junction to avoid having to stop if the lights suddenly change to red, and then consequently approach the hump at too high a speed.
20. Speed tables, raised junctions and speed cushions are typically the preferred method of slowing traffic where a need for vertical traffic calming has been identified as they are less severe than road humps. However, in situations where there is a need to reduce speeds significantly below 30mph then road humps are more effective.
21. Road humps will not be implemented on higher speed roads, rural or main routes due to the adverse impact they can have on larger vehicles and emergency vehicle response times.
22. Sinusoidal 'S' humps are road humps similar to a round topped hump but with a sinusoidal profile that has a shallower initial rise. They are a less severe alternative to the conventional road humps and speed cushions, and marginally reduce the discomfort for cyclists. Unlike speed cushions, 'S' humps can be used as a pedestrian crossing. However, they are more expensive to install and are therefore not commonly used.
23. An 'H' hump, otherwise known as a combination (or combi) hump, is a combination of a standard hump with outer ramps that are shallower than the inner ramps. They have two longer shallower outer profiles to take large vehicles and a shorter inner profile to take cars. This provides larger vehicles with wider wheel bases, such as buses, with a smoother ride over the hump, with cars and smaller vehicles having to use the steeper part of the hump. However, 'H' humps may have an adverse impact on small ambulances or minibuses with narrower tracks.
24. A mechanical hump is a road hump which has a mechanically variable height, width or length. They adjust according to the speed of vehicles on the approach or passing over them. Their use needs to be carefully considered in terms of highway safety for all road users, particularly for cyclists and in adverse weather conditions. Any failure of mechanical humps could cause a greater threat to road safety than the benefit of the speed reduction achieved. To avoid this, the hump usually needs to return to a position that is flush with the road surface so as not to cause an obstruction. They are expensive to introduce and maintain, and are therefore unsuitable for installation in areas prone to vandalism. Care also needs to be taken to ensure that any fluids or mechanisms used to operate them are not toxic.

Speed cushions

25. Speed cushions (or road cushions) are smaller square road humps which slow cars and vans, but are narrow enough for wider vehicles, such as buses, HGVs and some emergency service vehicles, to pass through without touching them or to a lesser effect. They are similar to flat topped road humps but with gaps in between them and require cars to straddle them. A sufficient number of cushions should be positioned across the width of the road to avoid vehicles by-passing them.
26. Overall lengths of speed cushions tend to vary between 1.7m and 3.7m, but are typically between 2m and 2.5m. A wide cushion (about 2m) will have a slightly higher speed reducing quality than a narrower (1.6m) one. Whilst the wider cushion would be generally appropriate for fire service vehicles, it may not be acceptable on bus routes due to the increased discomfort to passengers. On bus routes, cushion widths are usually around 1.6m to 1.7m wide and up to 2m wide elsewhere. Narrower widths may be appropriate within chicanes. Minimum gaps of 750mm (and ideally 1m) tend to be used between the base of a cushion and the kerb, as well as between adjacent cushions, which are appropriate to accommodate cyclists and motorcyclists.
27. Speed cushions are typically used on bus routes as an alternative to road humps, where a significant reduction in car speeds is sought but not to the detriment of buses and the comfort of bus passengers.
28. They should not be placed near junctions or bus stops which would result in vehicles have to cross them at an angle when performing turning manoeuvres or when the alignment of travel is not straight. They may be inappropriate in areas subject to high levels of unrestricted parking as parked vehicles can obstruct the passage of buses and larger vehicles and their ability to drive through them easily. Build-outs and traffic islands may be a more suitable alternative in these circumstances which are more likely to deter parking.
29. They should be located away from positions where pedestrians are likely to cross the road to avoid them being a potential tripping hazard. They cannot be used within the zig-zag areas of a pedestrian crossing.

Speed Tables and Raised Junctions

30. A speed table (also known as a raised junction) is a junction where a flat-topped road hump is used to raise the whole junction area above the standard carriageway level. They are longer in length than flat topped road humps and usually enable both axles of a vehicle to be on the hump at the same time to provide a smoother ride for vehicles, particularly buses. They also have the added benefit of highlighting the presence of a junction, and can be used to raise a pedestrian crossing point to help pedestrians to cross.
31. The ramp gradients can be uncomfortable and steep for cyclists and motorcyclists. They can also cause vehicle grounding when not specified appropriately, where the height of the speed table is too high or the approach ramp too steep. The spacing of the speed tables, in conjunction with any other traffic calming measures, influences vehicle speeds between the measures. They should be spaced to encourage motorists to drive at a constant speed, rather than speeding up in between measures and suddenly braking before negotiating the feature.
32. Speed tables are usually used on lower speed roads in urban areas where significant reductions in vehicle speeds are required. They often form part of other traffic calming

measures along a particular route or defined area such as a 20mph zone. They will not be implemented on higher speed roads, rural or main routes due to the adverse impact they can have on larger vehicles and emergency vehicle response times.

Rumble Devices

33. Rumble devices (or rumble strips) are measures installed on the road surface to provide noise and vibration within a vehicle and to create a visual effect.
34. Rumble devices are typically used in rural areas to alert drivers to reduce speed or take greater care in advance of a hazard such as a bend or junction. They can also be used in conjunction with a gateway on the entry to a village or a series of traffic calming measures, or at the start of a shared use road (often applicable in new developments). They tend not to be effective in significantly reducing vehicle speeds and are predominantly used on roads subject to medium speeds rather than high or very low speeds.
35. Rumble strips are generally made of thermoplastic material applied to the road surface in strips. They can be installed at a decreasing spacing to provide drivers with the illusion that their speed is increasing.
36. Some types of rumble devices may not be used on residential roads due to the noise and vibration they could cause to neighbouring properties to the detriment of residential amenity. They may also be inappropriate for use on roads likely to be used by cyclists as they can cause discomfort to cyclists. They should not be used on routes used by motorcyclists unless they incorporate adequate skid resistance and are situated away from highway bends or junctions. They should be avoided in conservation or sensitive areas where they could have a negative impact on visual amenity.
37. Rumble devices should be easily visible or sited close to appropriate signing warning of the hazard. The visibility of them at night must also be considered to ensure they can be adequately seen and do not act as a dangerous obstruction. The use of reflective material may be feasible to achieve this.

Traffic Calming Measures that Do Not Require a TRO or Statutory Notice

Road Narrowings

Build-Outs and Pinch Points

38. A build-out is a narrowing on one side of the road which can force drivers to give way to traffic on the opposite side, depending on the remaining available road width. Where only one vehicle can pass, priority signs and give way markings are usually used to reduce vehicle conflicts. However, it can be left up to drivers to give way to each other without either direction of vehicles having priority over the other.
39. A pinch point is a road narrowing formed by two build-outs opposite one another. Pinch points do not have signs or markings to give priority to one direction over the other. They are most effective when there are relatively balanced traffic flows in each direction.
40. Build-outs and pinch points may be implemented on lower speed roads where vertical traffic calming measures are considered inappropriate but a moderate reduction in vehicle speed is still required. They are an effective way of reducing the road width to facilitate pedestrian crossing movements by shortening the crossing distance, and improving highway visibility if parked vehicles or other obstructions currently impede such.

41. Build-outs and pinch points will not be used by Highway Services on routes subject to abnormal loads, and tend to be inappropriate on routes used by a high frequency of buses and heavy goods vehicles. They are unlikely to be used where the availability of on-street parking would be significantly reduced, particularly where parking demand is high, unless there is a highway safety reason to justify it. They should not be used on busy or heavily trafficked routes where vehicle delays would be created from vehicles waiting to pass each other as this would adversely impact on traffic management.
42. If the carriageway is sufficiently wide, a by-pass for cyclists should be provided through the build-out or pinch point to improve cycle safety and avoid conflicts with other traffic on the main traffic lane.

Sheltered Parking Bays

43. Sheltered parking bays (or protected parking) is parking which has build-outs, pinch points or hatching to designate and protect the parking area in a lay-by type facility. The build-outs sometime incorporate end planters or landscaping.
44. If sheltered parking is provided in short lengths along alternate sides of the road, it can form a chicane system which may result in reducing vehicle speeds. It can be used to break up sightlines so pedestrians at pinch points can see and be seen more easily beyond the parked vehicles, making it easier and safer to cross the road.
45. Sheltered parking is desirable for use on streets where there are high levels of on-street parking, and road safety problems or a high accident record, sometimes resulting from pedestrians trying to cross the road from behind parked cars where visibility is limited. It is therefore commonly used on lower speed roads in residential areas. However, it can also be beneficial on main routes, sometimes where medium speed limits apply, to prevent vehicular obstructions to through traffic from parked vehicles and to improve highway safety.
46. Sheltered parking may not be considered appropriate by Highway Services where it would result in the removal of a significant amount of on-street parking, where there is a high demand for such, due to a narrow carriageway width. However, an exception to this may be made where it would resolve or mitigate an existing road safety or accident problem.

Bus Boarders

47. Bus boarders are build-outs at the nearside kerb at a bus stop which act as a road narrowing and allow bus passengers to board and alight more easily.
48. They are often used to provide additional footway width where the existing footway is too narrow to safely accommodate passengers waiting at the stop. They can also be used to improve traffic management for buses by forcing traffic to wait behind the bus when stopped, rather than the bus having to wait at the kerbside or in a lay-by to rejoin the flow of traffic. They are usually only used on bus routes subject to lower speed limits.

Chicanes

49. Chicanes are build-outs on both sides of the road which are staggered so they are not opposite each other.
50. There are two categories of chicanes, single and two-way working. Single-lane working consists of staggered build-outs and narrowing the road so that traffic from one direction has to give way to opposing traffic, as there is only room for one vehicle to pass. In

general, priority is given to one direction, via priority signing and give way markings, to minimise the possibility of vehicle conflicts. Priority should be given to vehicles leaving a traffic-calmed area, so the motorists entering it have to reduce their speed.

51. Two-way working, which also uses build-outs to provide deflection, has lanes separated by road markings or a central island. It takes up more carriageway space as it allows two vehicles to pass in opposite directions at the same time. Where chicanes do not have a central divider, vehicles can encroach into the opposing traffic lane which may result in less speed reduction being achieved and road safety being compromised.
52. Chicanes are unlikely to be introduced on roads frequently used by large vehicles. The length of the stagger to accommodate such vehicles is often too great to have a significant speed-reducing effect on cars and smaller vehicles. They may be implemented on lower speed roads where vertical traffic calming measures are considered inappropriate but a level of speed reduction is still required.
53. Chicanes are not generally appropriate at locations where pedestrian crossing movements take place as drivers may be concentrating more on how to manoeuvre through the feature than on pedestrians. Where possible, a cycle by-pass around a chicane should be considered to avoid cyclists being squeezed by vehicular traffic.

Gateways

54. Gateways (sometimes called entry treatments) are features that are placed at the entrance to an urban area, or at the start of a lower speed limit or traffic calming scheme. Their purpose is to signify a change in the character of the road, and draw the driver's attention to the change in the speed limit or the start of the urban area or traffic calming scheme. They typically consist of enhanced traffic signs, but they can also include road markings, a distinctive change in road surface colour or material or additional measures such as fencing, planting or existing features such as historic arches.
55. Gateways should be visible well in advance, so motorists have the opportunity to reduce their speed before reaching the lower speed limit, urban area or traffic calming scheme they are designed to highlight. They will always be required as part of a traffic calming scheme unless an alternative prominent feature is installed at the start of the scheme.

Traffic Islands

56. Traffic islands are similar to pedestrian refuge islands but they do not accommodate pedestrian crossing movements due to the absence of dropped kerbs and tactile paving. In addition, they are frequently of a narrow width or limited size that cannot accommodate pedestrians waiting on them to cross the next traffic lane.
57. They are primarily used to narrow the available carriageway width, and to prevent or discourage overtaking and vehicle merging. This is designed to improve highway safety and traffic management. They may be introduced to form chicanes, possibly with build-outs or other road narrowing features. In certain circumstances, they may also be used to separate cyclists from other traffic. However, they are typically not used in locations where there are a lot of cycle movements, as they reduce the road width and consequently leave less space for vehicles to safely overtake cyclists.
58. Where a traffic island is likely to be used as a pedestrian crossing facility, a pedestrian refuge should be introduced instead if possible to avoid highway safety problems from pedestrians trying to use it as a refuge island. If this is not achievable, ie. due to an

inadequate road width, then the island should be relocated away from the pedestrian desire line or anti-pedestrian surfacing used to deter pedestrians from using it.

59. If a traffic island requires vehicles to make a relatively sharp deflection, drivers may concentrate their attention on this manoeuvre and be less aware of nearby pedestrians. Islands which substantially narrow the carriageway, particularly at higher speeds, are unlikely to reduce the accident rate and may even increase it, due to the obstruction caused by its presence. In both these circumstances, traffic islands will be considered to be inappropriate for use as part of a traffic calming scheme.

Pedestrian Crossings (including pedestrian refuges)

60. Pedestrian crossings can be used as a traffic calming feature. In the case of signalised and zebra crossings, they force vehicles to stop to allow pedestrians to cross. When pedestrian refuge islands are implemented, they assist pedestrians crossing the carriageway by enabling two separate shorter crossing movements. They also act as a road narrowing to reduce the available carriageway width in the same manner as a traffic island.
61. A pedestrian crossing can be combined with a flat topped road hump to form a humped or raised crossing, provided the hump extends from kerb to kerb across the full road width. This is beneficial where a crossing is to be used as part of a series of road humps or speed tables to maintain similar spacings between them to encourage steady vehicle speeds.
62. A pedestrian refuge should always be used as an alternative to a traffic or splitter island where pedestrians are likely to cross the road. However, their impact on cyclists should be considered as they reduce the available road width. This can squeeze cyclists by discouraging motorists from leaving them with adequate space when overtaking.
63. Highway Services will not introduce zebra or signalised pedestrian crossings unless there is a high pedestrian accident record or surveys have been undertaken to demonstrate that the criteria for introducing a crossing has been met. Further information on the criteria for introducing pedestrian crossings is contained in Highway Services pedestrian crossings policy and guidance documents. A statutory notice must be posted on site and advertised in the local paper by Highway Services to be able to introduce a pedestrian crossing, in accordance with Section 6 of the Road Traffic Regulation Act 1985.
64. As a general rule, zebra crossings will only be installed on roads with a speed limit up to 30mph or an 85th percentile speed below 35mph. Raised tables are appropriate for speed limits up to 30mph. Pedestrian refuge islands tend to be implemented on roads with a speed limit up to 40mph. Pedestrian crossing facilities associated with traffic signal control junctions are typically used where the 85th percentile speed is up to 50mph. For roads with an 85th percentile speed above 50mph, a grade separated crossing should usually be considered (ie. a footbridge).

Mini-roundabouts

65. Mini-roundabouts are small roundabouts that have small central islands, and sometimes overrun areas, that are capable of being driven over by large vehicles when necessary to accommodate large vehicle movements through the junction.
66. Mini-roundabouts are often used at the entry to a traffic calmed scheme as a gateway feature, or within it to slow traffic by forcing vehicles to stop or slow down at the give way markings on the roundabout approaches. The mini-roundabout itself may be flat, domed

or domed with an overrun area depending on the degree of speed reduction required, the space available and the type of vehicles which are likely to use the junction. Mini-roundabouts are typically used in urban areas where the speed limit is 30 mph or less.

67. They are commonly used to improve traffic management and reduce accidents where vehicles have difficulty in exiting from a side road onto a busier and more major route. They can be very effective at reducing right turn accidents at priority junctions.
68. Based on experience and best practice, Highway Services is unlikely to implement mini-roundabouts at junctions with more than three arms and where there is more than one traffic lane on each entry or exit arm.
69. Similar to standard roundabouts, mini-roundabouts tend to be hazardous to cyclists as they often have limited width on the circulatory carriageway which has to accommodate tight turning movements. In addition, they are usually less safe for cyclists than signal or priority junctions as they do not easily cater for right turn movements. To turn right, cyclists either have to travel on the offside of vehicles, or travel on the nearside which can cut across the path of vehicles exiting the roundabout to turn left or travel straight ahead. As a result, Highway Services is unlikely to introduce mini-roundabouts in areas where there are large numbers of cyclists or a history of accidents involving cyclists.
70. Mini-roundabouts can also be hazardous to pedestrians crossing the junction unless there is sufficient space to introduce pedestrian refuges as part of the proposals or alternative crossing facilities exist a short distance away that do not substantially deviate from the pedestrian desire line. Therefore, mini-roundabouts will not be installed unless safe and suitable measures can be incorporated to allow pedestrians to cross.

Severed Roads

71. A severed road is a permanent road closure to stop through traffic when an alternative and more suitable route exists. Roads are usually severed via the use of kerbing across the roads, sometimes including bollards.
72. Rising bollards or retractable bollards can be used where vehicular access is to be denied on a part-time basis rather than permanently, or to deny certain vehicle types access whilst allowing others to pass. For example, in pedestrianised areas it is necessary to allow emergency vehicle access, and delivery vehicles at certain times, while prohibiting general traffic. Rising bollards are sometimes used in pedestrianised areas on the island for this purpose.
73. Highway Services will consider introducing severed roads to improve traffic management where there are known problems with through traffic on local roads subject to lower speeds. This includes locations where vehicles are using side roads and residential roads to by-pass traffic signal junctions on main routes.
74. Severed roads will not be installed where there is no traffic management or road safety benefit as they can reduce emergency vehicle response times. The emergency services will therefore need to be consulted on all proposals to implement severed roads.

Cycle Lanes

75. Cycle lanes can be implemented as an alternative to other road narrowing measures as part of a traffic calming scheme. However, they should not be implemented solely to

encourage a reduction in vehicle speeds as they could create unnecessary conflicts between cyclists and motorists where there is limited space for vehicles to safely overtake cyclists. Consideration should also be given as to how cyclists will enter and exit the cycle lane, and the role of the cycle lane as part of a strategic cycle route within a wider area. Cycle lanes will not be introduced on higher speed roads, as any potential conflicts with other vehicles would be likely to result in serious or fatal injuries.

New or Widened Footways

76. A new or widened footway can be implemented as part of a traffic calming scheme to improve road safety for pedestrians and to act as a road narrowing measure.
77. Highway Services is likely to install a new or widened footway where there is no existing footway and a pedestrian demand exists, if the current footway is inadequate or where there is an accident history due to a lack of suitable footway provision. Sufficient space will need to be available within the adopted highway boundary to achieve this unless additional land-take can be easily acquired.

Buffer Speed Limit

78. A buffer speed limit is a short length of speed limit that is an intermediate transition between two sections of road where a national speed limit and a lower speed limit apply, or two different speed limits.
79. A buffer speed limit can be introduced on the approach to an urban area, town or village which has a lower speed limit. Buffer speed limits are used to provide motorists with a sufficient distance and period of time to reduce their speed to the approaching speed limit, which may be significantly lower than the speed they have been travelling at, especially if in the derestricted area.
80. Highway Services will use buffer speed limits when entering an urban area with a speed limit of 40mph or less from a derestricted or unrestricted area. They may also be used at a transition point where significant differences between the two adjacent speed limits exist, or where there is a history of motorists not reducing their speed sufficiently when entering the section of road covered by the lower speed limit. They will not be used on the approaches to a higher speed limit or on short lengths of road less than 300m in length.

Count-down Markers

81. Count-down markers are sign markers at set distances on the approach to a speed limit or other highway feature. Similar to buffer speed limits, they allow motorists to have a specified distance and period of time to reduce their speed before reaching the approaching speed limit.
82. Count-down markers are usually used on the approach to a lower speed limit, urban area, town, village, gateway feature, roundabout or a series of traffic calming measures. There is a bit more flexibility over the distance they can be used compared to buffer speed limits.
83. They are used as an alternative to a buffer speed limit when entering an urban area with a speed limit of 40mph or less from a derestricted or unrestricted area.

Signage

Interactive / Variable Message Signs

84. Interactive or variable message signs (VMS) are electronic signs that can display road safety information or messages for a temporary period that can be changed as necessary.
85. The signs can be triggered by a vehicle which exceeds a certain pre-set speed limit when being used to display messages to encourage drivers to slow down. Alternatively, the signs can warn of an approaching hazard that occurs temporarily such as adverse weather conditions, or road safety messages such as 'please drive carefully'. The signs may be implemented at a location subject to snow, ice or fog where it is beneficial to inform drivers of such, so they can change their behaviour accordingly to adapt to the hazard.
86. Highway Services will consider using VMS on the approaches to urban areas where a lower speed limit is in force to encourage drivers to reduce their speed before reaching it.

Signs with Backing Boards

87. Yellow backing boards on road signs can better highlight the information on the sign to drivers to provide greater emphasis. They are commonly used at the start of a new speed limit when travelling through a town or village or as part of gateway signage.
88. They should only be used where necessary to minimise the negative visual impact they cause, and where there is sufficient space on the footway or verge to accommodate them as they can be quite large. Highway Services will generally not install them on a frequent basis, as excessive use of backing boards can result in them becoming very familiar to drivers thereby reducing their effectiveness and impact on drivers.

Road Markings

Speed Roundels

89. Speed roundels are white road markings which display the speed limit within an elongated white circle. They are used to remind drivers of the speed limit and to discourage speeding by any drivers who were unaware of the limit and unintentionally speeding.
90. Roundels are typically used in conjunction with speed limit signs, either at the start of a speed limit or where repeater signs are used. They are not used within 20 mph zones as physical measures are already in place to self-enforce 20mph speed limits.
91. Roundels are sometimes placed on a coloured background to make them more prominent to drivers. They can be difficult to see in wet weather, particularly at night when their reflectivity is less noticeable.

Central Hatching

92. Central hatching is placed in the centre of the carriageway, or between traffic lanes, to deter drivers from using the full road width and by making it appear narrower.
93. It is typically promoted to discourage drivers from overtaking and assist in reducing vehicle speeds by creating the impression that vehicles are travelling faster than they actually are due to the road narrowing visual effect. It still permits vehicles to overrun it where necessary (ie. for larger vehicles), provided the edge line is dashed rather than solid.
94. It is unlikely to be used by Highway Services where there are cyclists as it reduces the effective road width which can leave cyclists with less space when being overtaken by

vehicles. The use of cycle lanes as an alternative to central hatching may be a more viable alternative in these circumstances.

95. In areas where there are high levels of on-street parking, central parking is generally ineffective as the traffic lane is obstructed, or partially obstructed, by parked vehicles. This causes vehicles to enter the hatching to pass the parked cars which defeats its purpose in being able to visually reduce the available road width.
96. Hatching will not be introduced in conservation or sensitive areas due to the negative visual impact that would be created.

Dragons Teeth

97. Dragon's teeth markings are triangular road markings perpendicular to the edge of the carriageway. They are often used at gateways to give the visual effect of a road narrowing and make it more conspicuous.
98. As with all road markings, they can have reduced visibility at night and in wet weather depending on the level of reflectivity used in the material. Their use in conservation or sensitive areas is avoided due to the visual intrusion that would be caused.

Edge of Carriageway Markings

99. Edge of carriageway markings are solid white lines placed near the kerb or road edge. They are typically used to give motorists the perception of a slight road narrowing to encourage a reduction in speed. They are also used to highlight the presence of a vehicular access, often on rural roads, as they are a dashed line rather than a solid line across an access.

Overrun Areas

100. Overrun areas visually narrow the road to help slow traffic. They are slightly raised and in a different material to the rest of the carriageway, usually white thermoplastic. These areas tend to be avoided and respected by cars and smaller vehicles due to the difference in texture. They can be easily overrun by large vehicles which need additional space to manoeuvre, and are not subject to the same physical effects as smaller vehicles.
101. Overrun areas (sometimes referred to as ghost islands) can be placed in the centre of the carriageway or to one side. They are most commonly used at roundabouts, road narrowings and chicanes.
102. They can be potentially hazardous to cyclists who can be forced onto them where the available carriageway width is reduced. When thermoplastic material is used, they have reduced skid resistance properties, particularly in the wet which can cause pedestrians or cyclists to slip and fall. They can also have limited visibility at night depending on the level of reflectivity of the material used. On this basis, Highway Services is unlikely to implement overrun areas in areas subject to high cycling numbers, where there has been a history of accidents involving cyclists or where they are situated on a pedestrian desire line to cross the road.

Coloured Surfacing

103. Coloured surfacing, usually red or buff coloured, can be used to highlight particular areas of the carriageway by providing a contrast in its appearance. It is sometimes used beneath other road markings, such as 'SLOW' markings, speed roundels or hatching, to highlight particular highway features or hazards, ie. at sharp bends or on the approach to a junction. Anti-skid (or high friction) surfacing is used to reduce skidding and assist vehicle braking which can be coloured, particularly on the approaches to pedestrian crossings and junctions. The contrasting colour with the other parts of the road network can increase the alertness of drivers to the feature or hazard being highlighted.
104. The use of coloured surfacing, particularly brighter colours, should be avoided in conservation or sensitive areas due to the adverse visual impact that would be created.

Thumps

105. Thumps are road humps made of thermoplastic material and are considerably shorter in length and much lower in height than typical road humps. They are less effective than standard road humps in achieving lower vehicle speeds as a result. However, they are a suitable alternative to road humps where the severity of the measures needs to be reduced.
106. Thumps can cause discomfort to bus passengers and adversely affect emergency service vehicle response times, but to a much lesser effect than standard road humps.
107. They are generally 900-1500 mm in length and 35-45 mm in height but they can be installed at much shorter lengths and heights than this. They are most likely to be used on the island on higher speed roads, with speed limits of 40mph and above. The height of the thumps used at these speeds will usually be up to 12mm to ensure they are not too severe, and to avoid excessive vibration, noise and discomfort to vehicle passengers.

General Requirements for Implementing Traffic Calming

108. Priority for traffic calming measures will be given to locations with a high accident record and where there is a history of injury accidents, particularly those involving pedestrians and cyclists. This is to make the best use of available funding which is limited.
109. It may be appropriate for traffic calming measures to be introduced on a trial basis using temporary materials. For example, red and white water filled plastic blocks can be used as temporary road narrowings. This will enable the impact and effectiveness of the proposals to be monitored before deciding on whether they should be installed on a permanent basis. It will assist in potentially reducing scheme costs where there is a lack of certainty on the benefits of the scheme.
110. Types of traffic calming measures that are expensive to install and require regular and / or costly maintenance are less likely to be introduced than other cheaper alternatives, particularly if they provide similar benefits and levels of speed reduction.
111. The impact on cyclists must be taken into account when considering vertical or horizontal traffic calming measures. Where possible, gaps in the features should be provided to enable cyclists to bypass them. This should improve safety for cyclists and avoid diversions that can increase cycle journey times and discourage cycling.
112. Appropriate traffic signage and road markings are often required on the approaches to ensure that traffic calming measures are clear to motorists well in advance of being reached. It is also a legal requirement for certain types of features, including all vertical

measures. This allows motorists to make good decisions on their choice of speed before arriving at a physical measure that needs to be negotiated. For example, good quality advance signage should avoid the need for vehicles to brake suddenly before having to drive over a road hump. Sudden braking could result in accidents (or rear end shunts) from drivers behind not expecting a change in speed limit.

113. There are environmental benefits in terms of air quality to encouraging vehicles to travel at a relatively constant speed along a traffic calmed route. Vehicle carbon emissions are generally higher where motorists increase speed between measures and brake just in advance of the feature. This is particularly relevant where traffic calming has been introduced for environmental purposes to improve the amenity of a residential area of local community. When implementing TROs or Statutory Notices, the signage to be used must be installed exactly as specified in the relevant legislation. Further information on signage can be found in the Traffic Signs (Application) Regulations 2003 document.
114. Traffic calming signs are mandatory triangular signs with a black road hump symbol on a white background within a red triangular. Other sign types are used for particular traffic calming measures, ie. priority working etc.
115. Chicanes should be made conspicuous both during the day and at night, particularly at kerb build-outs, so they can be seen by approaching drivers and not hit. This is usually achieved through the use of measures such as reflective signs, reflective marker posts, illuminated bollards and hatched road markings on the approaches to the build-outs or traffic islands. These reflective / illuminated measures and markings should also be used where the kerblines are extended out into the carriageway at sheltered parking bays, bus boarders and pedestrian refuge islands.
116. Those introducing traffic calming, and the associated TROs or Statutory Notices, will always be employed by Highway Services as no other organisation has the authority to make changes to the highway network.

Procedures for Implementing Traffic Calming

117. Requests received by Highway Services for introducing traffic calming measures will be assessed against the criteria. Highway Services will also consider the needs of all road users, the type of route, local conditions and the speed limit of the road. This is particularly relevant when identifying the most appropriate type of traffic calming features to propose, if such measures meet the criteria and can be justified.
118. **Appendix 1** shows the process for introducing traffic calming measures. As certain types of traffic calming require a TRO or Statutory Notice, Highway Services TRO policy, guidance and procedure documents should be followed and the Highway Services Statutory Notice for traffic calming procedure document. Highway Services consultation policy and guidance documents should be referred to when determining who should be consulted on the proposals, and which methods of consultation are likely to be the most effective and suitable in each circumstance.

References

119. Highway Services traffic calming policy document that is to be read in conjunction with this traffic calming guidance report, **DP-06-016**
120. Highway Services TRO policy report, **DP-06-012**

121. Highway Services TRO guidance report, **GN-06-024**
122. Highway Services TRO procedure report, **OP-06-039**
123. Highway Services Statutory Notice for traffic calming procedure report, **OP-06-046**
124. Highway Services speed limit policy report, **DP-06-013**
125. Highway Services speed limit guidance report, **GN-06-025**
126. Highway Services consultation policy report, **DP-06-017**
127. Highway Services consultation guidance report, **GN-06-029**
128. Highway Services pedestrian crossings policy report, **DP-06-020**
129. Highway Services pedestrian crossings guidance report, **GN-06-032**
130. Manx Highway Code
131. The Road Traffic Act 1985
132. The Road Traffic Regulation Act 1985
133. The Highways Act 1986
134. Manual for Manx Roads: (MMR) A Design and Construction Guide
135. Traffic Signs (Application) Regulations 2003
136. The UK's Manual for Streets
137. The UK's Manual for Streets 2
138. Local Transport Note 1/07 – Traffic Calming

Definitions

139. **Traffic calming measures** (otherwise known as **speed management measures**) are measures that deliberately slow traffic, usually in residential areas, by constructing road humps or other obstructions.
140. **Traffic Regulation Orders (TROs)**, otherwise known as **Traffic Orders** or **Traffic Management Orders**, are legal processes designed to regulate, restrict or prohibit the use of a road, or any part of a road.
141. A **Statutory Notice** is a legal document used to advertise certain types of proposed traffic calming measures to inform the public, stakeholders and any partnering organisations that they are planned to be introduced.
142. A **buffer speed limit** is a short length of speed limit that is an intermediate transition between two sections of road where a national speed limit and a lower speed limit apply, or two different speed limits.

143. **Count-down markers** are sign markers at set distances on the approach to a speed limit or other highway feature.
144. A **road narrowing** is a point on a road at which the carriageway width is reduced (compared to either side of it) to help slow traffic.
145. A **rumble device** is a rumble strip, or different type of highway surfacing to a usual road surface, designed to slow traffic.
146. A **gateway** is a highway feature, or combination of highway measures such as signs and road markings, at the entrance to a specific zone or area, town or village.
147. **Vulnerable road users** are pedestrians, cyclists, children, the elderly and the mobility impaired.
148. A **road hump** (otherwise called a sleeping policeman) is a hump in the road that is intended to slow traffic.
149. **Road (or speed) cushions** are flat topped road humps with gaps in between them which large vehicles with a wide wheel base can pass through without having to straddle them or pass over them as cars and smaller vehicles have to.
150. **Vertical traffic calming measures** are traffic calming measures which have vertical deflections such as road humps, road cushions and speed tables.
151. **Horizontal traffic calming measures** are traffic calming measures which have horizontal deflections such as road narrowings and build outs.
152. A **primary route** is a strategic route linking urban centres and major routes within built up areas.
153. A **secondary route** is a main route which typically accommodates less traffic than a primary route.
154. A **district route** is an important cross-urban route and key suburban route.
155. A **local route** is a local distributor road linking district routes to local roads.
156. **Interactive signs** or **variable message signs** are electronic signs that can display different messages and provide information to motorists.
157. A **build out** is a road narrowing where a footway or kerblineline is extended into the carriageway to help slow traffic.
158. A **pinch point** is a road narrowing formed by two build-outs opposite one another.
159. A **sheltered parking bay** is a parking bay that has build outs at either end to narrow the road and prevent parked vehicles from encroaching into the road.
160. A **bus boarder** is a build out at a bus stop where bus passengers can board or alight.
161. A **chicane** is a sharp double bend created to form an obstacle on a road to help slow traffic.

162. A **speed roundel** is a road marking that displays the speed limit.
163. **Central hatching** is a hatched road marking in the centre of a carriageway that reduces the width of the traffic lanes to help slow traffic.
164. **Dragons teeth** are a series of triangular shaped road markings on both sides of a road or traffic lane that point inwards and give the perception of narrowing the road or traffic lane to help slow traffic.
165. An **overrun area** (sometimes called a ghost island) is an area slightly raised from the rest of the carriageway and laid in a different material, usually white thermoplastic. It visually narrows the road but still allows large vehicles to pass over it to be able to perform manoeuvres and tight turns where additional space is needed.
166. A **thump** is a thermoplastic road hump, thermoplastic being the material used for road markings.
167. A **speed table** is an artificially raised surface on a road which, in combination with one or more ramps, is designed to control the speed or route (or both) of vehicles.
168. A **raised junction** is a speed table that extends across the extent of an entire junction.
169. A **severed road** is a permanent road closure to stop a rat-running route.
170. A **rising bollard** is a moveable bollard that rises from the ground to prevent vehicular access, and can be retracted or lowered into the ground to create a flush road surface to allow vehicles to pass over them.
171. A **sinusoidal 'S' hump** is a road hump similar to a round topped hump but with a sinusoidal profile that has a shallower initial rise.
172. An **'H' hump** (otherwise known as a combination (or combi) hump), is a combination of a standard hump with outer ramps that are shallower than the inner ramps. It has two longer shallower outer profiles to accommodate large vehicles and a shorter inner profile to take cars.
173. A **mechanical hump** is a road hump which has a mechanically variable height, width or length. It adjusts according to the speed of vehicles on the approach or passing over it.
174. **Tactile paving** is a system of textured ground surface indicator found on footpaths to assist pedestrians who are visually impaired.
175. The **85th percentile** is the speed at or below which 85% of all vehicles are observed to travel.
176. **Anti-skid surfacing** (also called high friction surfacing) is material laid onto the existing carriageway surface, sometimes in a different colour, to increase the skid resistance of a road to reduce skidding and assist vehicle braking.

Appendix 1

Flow Diagram of the Process to Implement Traffic Calming Measures



