

PUBLIC



TRAFFIC CALMING AND VISUAL AMENITY ENVIRONMENTAL CODE OF PRACTICE

March 2020

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Document Information

Title Traffic Calming & Visual Amenity Environmental Code of Practice
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Document Issue Status

Table of Amendments

NO	APPROVAL DATE	SECTION	DETAILS	AUTHOR
1	Pre 2019	First Issue		
2	13/03/2020	See Review Schedule 1	First Review	BT
3	21/01/2022	See Review Schedule 2	Second Review	BT
4	12/02/2024	See Review Schedule 3	Third Review	BT

FOREWORD

This document aims to show how highway schemes may be designed to minimise visual damage to the environment

The document does not cover the complex technical aspects of traffic calming and as such only deals with one aspect which needs to be considered in the design of schemes. It should be noted that in particular circumstances technical constraints may drastically restrict the measures which can be used effectively. In these cases the overriding aim of creating a safe highway must obviously take priority.

This document will be reviewed on a biennial basis and additional updates will be provided should legislation and guidance change.

Traffic calming is far from being a new, innovative solution to highway problems. It has been discussed since the pioneering 'Woonerf' design was developed in the Netherlands. In this country, during the 80s and 90s, traffic calming schemes have become even more popular as the Department for Transport (DfT) has gradually relaxed its rules allowing certain restrictive features to be more readily used.

Many publications concerning traffic calming have been produced. This publication looks at the issue afresh specifically considering the visual impact schemes have on our environment. It attempts to explain the process and features in visual terms, giving the pros, cons and preferences, and prioritises the use of particular features in environmental terms, whenever possible.

The **problem** is too many people drive too fast,

Research points to a worrying conclusion that too many motorists take every opportunity to travel as fast as they can with little regard for speed limits. Improvements in vehicle safety and performance (brakes, air bags, side impact bars, noise suppression, steering, suspension, tyres, etc) has, many believe, simply encouraged motorists to drive at greater speeds. Even 'safety' improvements to our roads such as carriageways widening or the reduction in severity of a road bend have, unfortunately, made it easier for motorists to speed.

Speed is a significant factor in collisions in the United Kingdom and a contributory factor in the vast majority. At an impact speed of 40mph 85% of pedestrians die from their injuries, conversely at 20mph only 5% of these die.

In appropriate circumstances it is clear, from numerous studies carried out throughout the country, that traffic calming is an effective method of reducing both the speed of traffic and accidents causing injury.

At **present** traffic calming offers a specific, practical solution. It must be said however, traffic calming schemes aim simply to remedy the symptoms locally, but do not solve the overriding problem. The long term view must be to dissuade inconsiderate drivers from driving too fast. This is a national problem which causes a large number of deaths every year. The following statement lies at the heart of the problem :-

"Today is it, unfortunately, commonplace and even socially acceptable to break speed limits."

Government initiated action has made a real difference to the number of drink-driving related offences, to the extent that today driving after drinking is seen as socially unacceptable

behaviour. A national campaign and heavy penalties handed down by the courts is potentially the most effective and environmentally sensitive means to solving the real problem. Technology may also hold better means of addressing this issue. Likewise car manufacturers need to be persuaded to play down performance figures and focus advertising onto other aspects.

Insurance companies could substantially increase premiums for those convicted of speeding offences. There are many strategic measures which would address this problem nationally, however, as yet, the government has made little progress. Traffic calming, although presently playing an important role, needs to be recognised as a relatively short term measure that in all probability will be superseded in the future.

Disadvantages may accompany traffic calming. Even in the short term it is by no means a panacea. Problems generated by traffic calming schemes throughout the country can include:- noise generation, reduced parking facilities, restriction on bus services, transfer of traffic and problems to alternative routes, increase in traffic pollution, discouragement of the use of cycles, delay of emergency services, loss of passing retail trade, inconvenience to local residents and visual intrusion into the environment.

Cost is an important factor in every scheme. Visual amenity considerations need not increase costs, but often merely direct where money is best spend. Traffic calming schemes have on occasions been reported in the press to be “an extravagant waste of public resources”. It is fair to say that all schemes take up a great number of hours of council officers’ time while increasing maintenance costs – over and above the more obvious capital costs. It is clear, however, from the number of outstanding requests from the public for traffic calming schemes and they think more should be spend. With the goal of saving lives it is extremely difficult to put a cost to such an initiative. It is worth noting the immense cost collisions have on the taxpayer. Costs will be considered regularly throughout this document. Money spent on environmental aspects must be cost effective, particularly when maintenance implications are considered.

A **great variety of features** may be considered for use in traffic calming schemes including measures one would not use as a traffic calming feature, for example, a pedestrian crossing can often calm a short section of road, reducing traffic speeds. For this document, features considered are limited to those used most commonly.

Speed Cameras have been shown in recent research to be a particularly effective method of reducing traffic speeds. In this publication, however, it is not considered a traffic calming measure as such, but a related traffic measure which when appropriately employed will improve highway safety. Other such measures include, for example, non-slip road surfacing, radii alterations, improved street lighting, new speed limits, new traffic orders, new traffic signals traffic management measures and major highway improvement schemes. All these safety measures and others will usually have been looked at prior to a traffic calming scheme being considered necessary.

Key considerations required to consider the appropriateness of an introduction of a traffic calming scheme

- Number and type of accidents occurring
- Speed at which vehicles are travelling
- Traffic levels
- Appropriateness of type and configuration of highways
- Support of local residents, emergency services and bus operators
- Visual effect upon an environmentally sensitive area
- Availability of funding.

CONTENTS

FOREWORD.....	3
INTRODUCTION	8
What are innovative and traditional features?	8
Table 1: Traffic Calming Comparison	10
Childrens Posters Initiatives	11
Image 1: Examples of Childrens safer road posters	11
ENVIRONMENTAL SENSITIVE MEASURES	12
Signs	12
Table 2: Example of a signage environmentally sensitive measure	12
Road Markings	12
Image 2 Example of road markings as a traffic calming measure	13
Table 3: Example of a road markings environmentally sensitive measure	13
Managed Parking	13
Image 3: Example of managed parking as traffic calming measure	14
Table 4: Example of a managed parking environmentally sensitive measure	14
Road Narrowing	14
Image 4: Example of Road Narrowing as traffic calming measure	15
Table 5: Example of a road narrowing environmentally sensitive measure	15
ENVIRONMENTALLY PREFERRED MEASURES.....	15
Road Management Changes	15
Junction Priority Changes	15
Table 6: Example of a road management change (inc junction management changes) environmentally preferred measure.....	16
Rumble Devices	16
Table 7: Example of a rumble devices environmentally preferred measure.....	16
Vertical Deflections.....	16
Table 8: Example of a vertical deflections environmentally preferred measure	17
Image 4 Example of a Round Top Road Hump	18
ENVIRONMENTALLY UNDESIRABLE MEASURES.....	18
Gateways	18
Table 9: Example of gateways environmentally undesirable measure	18
Image 5: Example of a gateway environmentally undesirable measure	18
Mini Roundabouts	19
Table 10: Example of mini roundabouts environmentally undesirable measure	19

Image 6: Example of mini roundabouts environmentally undesirable measure	20
Traffic Islands	20
Table 11: Example of traffic island environmentally undesirable measure	20
Image 7: Example of traffic island environmentally undesirable measure.....	21
Protected Parking Bays.....	21
Table 12: Example of protected parking bay environmentally undesirable measure	21
Image 8: Example of protected parking bay environmentally undesirable measure	22
ENVIRONMENTALLY DAMAGING METHODS	22
Coloured Surfacing.....	22
Table 13: Example of coloured surfacing environmentally damaging measure	23
Image 9: Example of coloured surfacing environmentally damaging measure	23
Horizontal Deflections including: pinch points, build outs and chicanes	23
Table 14: Example of horizontal deflections environmentally damaging measure.....	24
Image 10: Example of build-out environmentally damaging measure.....	24

INTRODUCTION

In visual terms the design of traffic calming schemes can usually be thought of as a damage limitation exercise.

In any initiative related to collisions the issues raised can be highly emotive and require sensitive handling. In this difficult and often confrontational situation design guidance given need to be clear and consistent.

As well as measurable, technical benefits there are other perceived benefits arising from traffic calming schemes. While aiming to reduce collisions and lower speeds, traffic calming schemes foster a sense of security and safety in the community and can be thought of by many simply as an enhancement scheme in themselves.

The assumption that traffic calming schemes enhance an environment needs further explanation and clarification. There are obvious environmental benefits, other road users are empowered and lives are saved. It has however already been mentioned that there can be environmental disadvantages, such as a reduction in parking facilities. From a visual viewpoint many traffic calming schemes have damaged the environment. Experience has shown attempts to combine visual enhancement works with traffic calming does not work. This approach should be avoided.

Traffic calming has specific technical objectives related purely to driver behaviour. The criteria considered for these features bears no relationship with the normal aims of work for environmental enhancement. Monies allocated for environmental enhancement would usually be better spend on other environmental initiatives. Visually, badly conceived schemes have been made even worse through so called “enhancement measures”, such as the addition of block paving or raised planters.

Some traffic calming features present particular design dilemmas, especially those which aim to reduce speeds through the introduction of extraordinary so-called ‘innovative’ physical features. Environmental designers on the other hand wish to see speed reducing features designed to fit sensitively into their surroundings. These opposing views are a recipe for confrontation and in fact do not address the core issue; the reduction of speed and consequently collisions. Both ‘innovative’ and ‘traditional’ features can either be effective or fail miserably. **The goal is to identify effective affordable solutions which cause the least visual damage to the environment.**

What are innovative and traditional features?

Traditional features are those which have been on the highway for many years, such as signs, white lining, parked vehicle etc.

Innovative features are those which are relatively new and usually more substantial structures such as horizontal deflections, chicanes, build outs, coloured surface features etc. They are usually more expensive to construct, more difficult to reverse and create a greater maintenance liability.

There are also features which are difficult to classify and hence difficult to allocate to the above categories.

There is rarely one obvious single solution, even for an apparently simple traffic calming scheme. Many solutions can usually be considered, and therefore it is often possible to opt

for traditional rather than innovative features. Such features can be highly effective while retaining the familiar form of the highway, avoiding the introduction of visually alien, inharmonious features.

Highways have become very cluttered in comparison to earlier times but usually still retain the simple visual form* they always had. Even after years of alterations, the introduction of street furniture, lighting, signs etc the basic framework has usually survived intact. Innovative changes to that basic framework threaten the essential character of the highway and while possibly slowing traffic down, can unnecessarily damage the harmony of the traditional scene.

Innovative features often impose high maintenance liabilities, compared to schemes incorporating traditional features. It is vitally important that the maintenance implications of proposed features are properly taken into account. Features which need continual maintenance inevitably look unsightly for much of the time and cause an unfortunate drain on diminishing finances. It is also important to recognise that most innovative features are only effective while they remain unfamiliar. The proliferation of such schemes and increasing familiarity with these features will inevitably reduce their effectiveness.

Early consultation with residents, parish councils, bus route operators, emergency service, etc, is almost taken for granted today. However, many coordinating consultations have only recently realised that environmental design guidance cannot be tacked on at the end of the scheme's formation. Visual design criteria is a fundamental aspect which affects the basic nature of the scheme and can only be considered properly in the very early stages. Unfortunately in the past, 'designers', have been as much to blame as 'engineers'. Designers have encouraged this attitude by falling into the trap of trying to prettify environmentally obtrusive features. Materials, colours and other details will never alleviate environmentally badly conceived features but will usually make matters worse by drawing even more attention to visually inappropriate measures, while inevitably inflating the financial costs. While money can help it is rarely a solution to the environmental concerns in itself.

Traffic calming schemes can, and often do, have a devastating effect on the form and, consequently, character of our highway and the wider environment. The only way this can be avoided is for the basic features to be chosen with the benefit of environmental design guidance early in the development of the scheme. Solutions should be kept as simple, visually, as possible. They should not look over-engineered or fussy in design. Familiar, traditional traffic management features should be considered first. [Table 1](#) overleaf compares traffic calming options. Traditional features do not jar visibility but can create extremely effective traffic calming measures.

***The word 'form' in this document refers to basic visual structure of the highway.**

This document will develop a commentary on specific features discussing their environmental pros and cons, attempting to prioritise their use, explaining why they are better in visual terms compared to other features. A common sense approach is invaluable as there are no hard and fast rules, just visually preferable solutions. Even though the bulk of this document considers individual features, it should be mentioned that every scheme proposed will contain a package of measures, which must complement each other to produce the desired technical and visual effect.

The categories in which features are placed, such as 'Environmentally Sensitive Measures' are names and discussed in the context that a traffic calming scheme has already been agreed for an area for sound technical reasons. For example, a pair of large signs with

yellow backing boards marking the start of a scheme. If carefully positioned, can in this context be considered environmentally sensitive when compared with the alternative features which could be employed such as 'chicane' feature. **This advice should not be taken out of context and can only be considered appropriate when discussing the visual implications of a traffic calming scheme.**

Essentially, the guide aims to limit the visual damage caused by the introduction of effective traffic calming features. In our opinion there are no "quick fix" solutions to this issue only carefully considered schemes.

Table 1: Traffic Calming Comparison

Environmental Category	Cost	Effectiveness
Sensitive Measure		
Signs	Low	Low
Road Markings In White	Low	Low/Medium
Managed Parking	Low	Medium
Road Narrowing	Medium	Medium
Preferred Measure		
Road Management Changes	Medium/High	Medium/High
Junction Priority Changes	Low/Medium	Medium/High
Vertical Deflections (road humps etc)	Medium	High
Rumble Devices	Medium	Medium
Undesirable Measure		
Gateways	Low/Medium	Low
Mini Roundabouts	Medium/High	High
Island Refuges/Traffic Islands	Medium	Medium
Protected Parking Bays	Medium	Medium
Damaging Measure		
Coloured Surfacing	Low	Low/Medium
Horizontal Deflections including: Pitch points, Build Outs and Chicanes	Medium	Medium

The table above is based on the generalisation of the basic measures without additions or complications. Effectiveness is judged where the measures are chosen appropriately for the circumstances.

Childrens Posters Initiatives

Initiatives involving posters created by children aimed at encouraging safer driving can have a positive effect on driving behaviour. Examples are in image 1 below.

Image 1: Examples of Childrens safer road posters



ENVIRONMENTAL SENSITIVE MEASURES

Signs

Within traffic calming scheme signs have a relatively low environment impact if carefully employed.

Factors which need to be considered in environmental terms include:

- Position
- Height
- Number
- Size
- Fixing

If these are appropriately handled signs provide a low cost, environmentally sensitive, measure. In these circumstances, where signs may need, for example, to be larger than usual the other 4 environmental factors particularly position and height become even more critical.

Table 2: Example of a signage environmentally sensitive measure

Issue	The 5 environmental factors are not given proper consideration particularly 'position'
Cost	Low
Maintenance	Low

Road Markings

If in white they are, like signs, a familiar highway feature and as such provide a low cost, visually sensitive, solution. However, they do have a short life before they need renewing. Therefore, from both a maintenance and environment viewpoint they should be used economically.

The colour of road markings is important from an environmental aspect. White hatching presents a strong visual image without violently clashing with its surroundings.

The traditional highway scene is dominated by light and dark grey finishes. Historic highway surfaces, such as compacted earth, hoggins, crushed aggregate, etc were not far removed in finish from today's tar based solutions. Most standard forms of highway construction have neutral surface finishes.

The introduction of coloured road surfaces clash harshly with this neutral palette and has a particularly damaging visual effect. The use of various coloured road surfaces or markings also cause maintenance complications and expense. The improved effectiveness of a measure which includes coloured markings or surfaces does not usually outweigh the visual damage and maintenance burden it creates, particularly when markings in white provide an adequate alternative.

Image 2 Example of road markings as a traffic calming measure**Table 3: Example of a road markings environmentally sensitive measure**

Issue	Colours are not limited to white or the amount of markings are excessive.
Cost	Low
Maintenance	Requires regular but relatively low cost maintenance. Also offers the opportunity on wide carriageways to spread road wear from one area to another.

Managed Parking

Traffic orders determining where vehicles may park along a street can also position vehicle to act as build outs or chicane features. This introduces few physical features other than the cars themselves offering an environmentally sensitive solution.

Parking within the highway is often a necessity and, if it can be arranged to create a traffic calming device, the opportunity, if appropriate, should be capitalised upon. Care obviously needs to be taken when assessing periods when parked vehicles would be in position against times which require the full effect of traffic calming.

Experience has shown that while drivers are willing to slow down and let opposing traffic pass parked vehicles they react far more aggressively towards imposed features such as pavement build outs, where they seem reluctant to give way to other traffic.

Managed Parking has obvious cost benefits both in construction and maintenance. As with the measures mentioned earlier the physical features introduced into the highways (signs and road markings) through this measure are of relatively low visual impact and can easily be reversed if circumstances change.

Image 3: Example of managed parking as traffic calming measure**Table 4: Example of a managed parking environmentally sensitive measure**

Issue	More parking may be included within the street scene than that which is necessary
Cost	Low
Maintenance	Low

Road Narrowing

This measure, through the re-alignment of the road, pulls the kerb line out, decreasing the width of the carriageway, while increasing the width of the pavement or verge. The measure should not be confused with features such as Build Outs and Pinch Points which create physical obstacles along the carriageway. Traffic Islands which can also be considered to narrow the road are again a different nature and are considered later.

The reduced width carriageway impose the need for greater care when opposing traffic passes, thus slowing vehicles speeds. If carried out in appropriate locations and sensitively detailed, it is visually impossible to tell that this measure has taken place. When appropriately handled offers a particularly sensitive environmental solution.

Road narrowing is often carried out where pavements are narrow and vehicles pass at speed extremely close to pedestrians. It can effectively reduce vehicle speeds and accidents while improving the quality of the environment can be relatively low although drainage and other complications can significantly increase costs.

Image 4: Example of Road Narrowing as traffic calming measure**Table 5: Example of a road narrowing environmentally sensitive measure**

Issue	Joints between old and new surfaces are often badly detailed. Note. Drainage and other services may cause complications. Cyclists and parking facilities need consideration
Cost	Can be good value option if few complications
Maintenance	Low maintenance solution which may save money over time

ENVIRONMENTALLY PREFERRED MEASURES

Road Management Changes

These include measures such as road closures, creations of one – way systems, access restrictions along certain routes, part – time speed limit restrictions, etc. All of which, if appropriately chosen, will introduce few additional physical features into the highway and present an environmentally preferred solution.

Signs and road markings in white are usually introduced into the street scene as a consequence of this measure. However, if bollards, build outs and other more substantial features are required this is usually a good indication, that from an environmental viewpoint a road management change would be unsuccessful. Other approaches should be considered and environmental design advice should be sought.

Road management in the form of a traffic order usually takes some time in processing but if appropriately utilised often produces a positive solution, effectively reducing collisions and speeds, causing little impact on the environment, at relatively low capital cost and resulting in low maintenance liabilities.

Junction Priority Changes

These are particular forms of road management which has been used in Derbyshire to good effect. The vital aspect that needs satisfying is whether this measure fits ‘naturally’ into the highway layout. In other words would anyone new to the area recognise that this measure

had ever taken place? If the criteria of 'natural fit' is not satisfied the effect on the environment will be damaging. Note: A technical effectiveness of the scheme is also usually damaged by this criterion not been satisfied. A 'natural fit' solution however does provide an effective and environmentally preferred solution.

Table 6: Example of a road management change (inc junction management changes) environmentally preferred measure

Issue	Does not fit 'naturally' into the existing highway layout consequently introducing inappropriate 'add-on' features
Cost	If a 'natural fit' situation exists costs are held to a reasonable level
Maintenance	'Natural fit' solution equates to a few 'add-ons' and therefore a low maintenance burden.

Rumble Devices

In environmental terms Rumble Devices have much the same effect as Road Markings. If the colour of these devices can be limited to a neutral colour such as grey then the positive aspects mentioned under 'Road Markings in White' will be achieved. The use of white Rumble Devices however do not satisfy Department for Transport regulations. The use of yellow would be visually acceptable as we have been conditioned over many years to expect lines in this colour to be present on our roads. These should be applied in a more neutral 'primrose' yellow that is now universally used throughout the county in maintenance works. The use of more vibrant colours such as red or orange should not be employed. The use of Rumble Devices is limited but the noise nuisance which they can cause. Department for Transport advice says that these should not be used within 200 metres of residential properties.

The term Rumble Device for this exercise includes 'Rumble Strips', 'Rumble Area's', 'Jiggle Bars' and 'Thumps'. 'Rumble Areas' usually introduce areas of contrasting materials. This generally has a visually damaging effect on the environment. The use of natural materials within these features such as stone setts, bricks, etc does not compensate for the fact that in environmental terms this is an inappropriate solution. Use of such materials simply increase the cost and creates an unnecessarily high maintenance burden.

Table 7: Example of a rumble devices environmentally preferred measure

Issue	Inappropriate colours and materials are used. Note. The noise nuisance caused by this feature unfortunately restricts its use.
Cost	Low cost measure
Maintenance	Relatively low maintenance burden

Vertical Deflections

These offer a particularly effective speed reducing feature which visually causes little damage to the environment, providing no surface colouring or contrasting materials are used and the recognition treatment is kept to a minimum.

Department for Transport advice has changed over recent years removing the need for the clutter of recognition 'add ons' that once made this measure obtrusive. Signs can now be minimal, simply announcing the presence of the measure at the start and finish or the area covered. White triangular markings are necessary however, the use of white lining to the sides of vertical deflections where regulations allow should be avoided particularly those that step inwards over features themselves.

The term 'Vertical Deflection' covers an array of varied alternatives on the theme, including, 'Round Top Road Hump', 'Flat Top Road Hump', 'Speed Table', 'Plateau', 'Platform', 'Raised Junctions' and 'Speed Cushions'.

Vertical deflections often appear to be an attractively simple and effective measure but they do have practical limitations. Bus operators, emergency services, heavy goods vehicle operators and local residents can raise objections. Careful negotiations particularly with bus operators and emergency services often produce an acceptable solution for all. Alternative routes may be identified, restricted use of the feature agreed the use of Speed Cushions or Plateaus, may all be the means of making the measure acceptable. The amount and nature of the use the road gets will often determine whether this measure is appropriate or not. Major traffic routes and routes used regularly by heavy vehicles are unfortunately not appropriate technical locations for this measure.

'Speed Cushions' are available as precast concrete or rubber units and ensure consistency in the construction of these features. However, they are in visual terms odd and unsightly features which stand out unnecessarily. Speed Cushions can be properly constructed, at a lower cost than precast items, to rise out of the carriageway itself creating a far better environmental solution. Precast units should preferably not be used.

The layout of vertical deflections should be such as to discourage drivers from accelerating and decelerating between features. This is obviously desirable technically but also reduces the amount of noxious fumes and noise generated by vehicles.

'Plateaus and Raised Junctions' (flat top humps) have been seen in the past as areas to include contrasting colours or more expensive materials such as natural stone setts. This practice can be damaging to the environment and generally should not be adopted. See notes on 'Rumble Devices'.

Care should be taken, when using Flat Top Humps, to consider how pedestrians will perceive who has right of way, vehicles or themselves. Plateaus or Speed Cushions, if sensitively designed in accordance with the advice given above on Vertical Deflections, provide an 'Environmentally Preferred Measure', which can often solve the problems raised by bus operators, etc.

Table 8: Example of a vertical deflections environmentally preferred measure

Issue	Coloured surfacing or other contrasting surface material used, Recognition 'add-ons' can be over used. Note. Use can be restricted by road use requirement such as access to bus operators, emergency services, heavy vehicles etc.
Cost	Medium cost measure
Maintenance	Medium maintenance burden

Image 4 Example of a Round Top Road Hump

The red aggregate in the one image would be seen as a lesser preferred environmental measure due to the damage this causes to the surrounding area visually.

ENVIRONMENTALLY UNDESIRABLE MEASURES

Gateways

These are perhaps the most problematic and controversial measures in environmental terms. A Gateway feature conjures up an array of architectural images to entice designers. Unfortunately those who are enticed inevitably produce peculiar, contrived structures. These should be resisted as they cause unnecessary damage to the environment. A straightforward approach which focusses on the highway effects of the feature should be adopted.

The position where a gateway is located is of critical importance. Ideally they should occur at points where the wider environment changes character, for example, from rural countryside to a predominately build environment. Existing gateway features such as, an avenue of trees, a bridge, a cattle grid, a group of buildings enclosing the carriageway, etc are obvious opportunities which can be utilised to good effect. However, if there are no naturally occurring features one should not be contrived. The folly created by such action is not only undesirable within the environment, but will also create a costly maintenance burden and create a feature which may be difficult to remove if no longer required in the future. It is also simply a bad use of scarce capital resources.

Where a gateway feature is considered a necessity and a natural feature does not exist, very low mounted but bold signs carefully positioned, it can be considered appropriate and necessary. Other measures should not be used unless they fall into Environmentally Categories: Environmentally Sensitive or Preferred Measures.

Table 9: Example of gateways environmentally undesirable measure

Issue	The creation of contrived features. Note: These measures are most effective environmentally where a natural feature can be simply capitalised upon.
Cost	Usually low cost, but a contrived feature can be expensive
Maintenance	Contrived features can impose a large and unnecessary maintenance burden

Image 5: Example of a gateway environmentally undesirable measure



Mini Roundabouts

These unfortunately have to be accompanied by a great number of signs and road markings which usually make this feature very obtrusive, much in the same way as road humps did under the old regulations. However, if this measure is located where it naturally fits into the existing carriageway layout with few physical alterations, and the signs and road markings are carefully incorporated, then this measure can form an acceptable feature within the environment. Signs are better positioned as far from the roundabout junction as the regulations and professional judgement allow. The addition of island refuges are on many mini-roundabout installations considered technically essential. However, if these can be avoided the visual impact will be greatly reduced. If the use of 'Give Way' priorities can be avoided on entry to the feature, stacking of signs does not occur and the environment benefits visually.

The most damaging use of this measure to the environment occurs when these features are imposed upon a straight length of carriageway. Additional measures of kerb line Build Outs and Island refuges are employed to emphasize to motorists that this measure should be properly used and not driven over and ignored as many are in these contrived circumstances. Unfortunately, all the clutter the signs, etc also become very prominent in the street scene when this approach is taken.

It follows that a 'natural fit' solution is not only environmentally friendly, but technically more effective, costs less and imposed less of a maintenance burden. Where a 'natural fit' solution is not present other features already covered within this document should be considered in preference to Mini Roundabouts.

Table 10: Example of mini roundabouts environmentally undesirable measure

Issue	The creation of contrived features. Note: These measures are most effective environmentally where a natural feature can be simply capitalised upon.
Cost	Usually low cost, but a contrived feature can be expensive
Maintenance	Contrived features can impose a large and unnecessary maintenance burden

Image 6: Example of mini roundabouts environmentally undesirable measure

The above example is a good example of a mini roundabout due to the limited signage associated with it.

Traffic Islands

Features positioned in the centre of the carriageway are obviously in highly prominent locations. Unfortunately, signs and usually illuminated bollards (a technical requirement) make these features in these prominent locations, environmentally undesirable. The situation can be made worse by the introduction of even more clutter such as lamp posts.

Pedestrian Refuges are used to make it easier for those on foot to cross the road. Within a traffic calming scheme Traffic Islands are often used simply to narrow the carriageway and have no pedestrian use. Where there is an identified point which pedestrians do desire to cross the road the use of a Pedestrian Refuge had much greater justification.

Traffic Islands should not be used purely to narrow the carriageway unless more visually appropriate solutions have been ruled out or technical circumstances dictate their necessity. It is worth noting that in many cases White Road Markings are often adequate to effectively narrow a carriageway cost far less to apply, reduce maintenance costs and cause far less visual damage.

Table 11: Example of traffic island environmentally undesirable measure

Issue	Used unnecessarily where road markings would suffice. Note: Feature is environmentally more positive when there is a need for pedestrians to cross the road and a Pedestrian Refuge is used.
Cost	Lighting requirements usually increase construction costs.
Maintenance	Relatively high maintenance burden

Image 7: Example of traffic island environmentally undesirable measure

An island refuge which is obtrusive in the street scene but is positively acting as a pedestrian crossing point

Protected Parking Bays

These features are far from ideal in environmental terms. Managed Parking measures provide a much more environmentally sensitive solution. A Protected Parking Bay measure looks its best when the extended kerb line which encloses the parking bay flows naturally into the adjacent, existing line of kerbs. Even when a 'natural fit' solution, as described above occurs, the presence of cars is highlighted within the environment by this feature. Parked vehicles are often a necessity. It is however, environmentally undesirable to highlight this circumstance when cars are not present.

When a 'natural fit' solution can be achieved clutter such as bollards, signs, etc. In these cases the result will be visually obtrusive, but if absolutely necessary should be limited to a single bollard or if possible a piece of 'necessary' street furniture.

When considering a 'natural fit' Protected Parking Bay solution refer to the notes on Road Narrowing. Surface treatment to the parking bay should match either the road or preferably the pavement. It should not be highlighted with the introduction of a contrasting surface finish or colour.

Table 12: Example of protected parking bay environmentally undesirable measure

Issue	No 'natural fit' solution consequently creates two build outs which house cars between them.
Cost	Medium cost solution
Maintenance	Medium to high maintenance burden

Image 8: Example of protected parking bay environmentally undesirable measure

ENVIRONMENTALLY DAMAGING METHODS

Coloured Surfacing

The character of Derbyshire highways is dominated by light and dark grey finishes. Historically carriageways were constructed in simple natural materials. Compacted earth or crushed aggregate were the most commonly used. Visually finishes today have changed surprisingly little from those finishes first used. Tar has, however, been added to the mix which, when aged over a short period, gives a grey finish. The fundamental aspect is that throughout the passage of time carriageway surface finishes have consisted of neutral colours.

Highways allow us access to both rural and urban areas. While they are of vital importance to be given prominence in the landscape or townscape. The neutral colour of our road surfaces provides a suitably subservient backdrop to both buildings and the open countryside. Consider the damage the use of bright, eye-catching road surfaces would have upon the character of any place for which you may care?

It may be in the future, the Department for Transport will consider the use of various coloured surfaces or road markings to provide drive information. We may in the future be told to never drive into a 'red box', for example. Cycle lanes are now often constructed in bright coloured surface finishes to highlight their use. Bus lanes, parking areas, junctions, etc, have all already on occasions been picked out using coloured surface treatment. It is a real concern that roads may in the future resemble patchwork quilts.

Traffic calming schemes throughout the country regularly include coloured surface finishes. Even in small areas coloured surfacing is extremely eye-catching and visually damages the surrounding environment. In addition coloured surfacing capital and revenue costs are

higher and the complexities of changing surface finishes are time consuming and create a maintenance burden. This is compounded by the fact that coloured surfaces fade, wear and become dirty very quickly, greatly reducing any technical advantages in their use while consequently demanding constant maintenance attention.

Coloured surfacing should only be used in traffic calming schemes as a last resort. In this case colours such as contrasting grey finish or beige should be used in preference to red and more vibrant colours. It is important to consider the alternative options available not least the use of [Road Markings in White](#) before using coloured surfacing.

Table 13: Example of coloured surfacing environmentally damaging measure

Issue	So eye-catching that your attention is drawn from all else to focus on the colour of the road. Note. It can often be badly constructed and unfortunately has no particular use but is seen as a possible addition to many other measures
Cost	Relatively low cost solution
Maintenance	Relatively high maintenance burden

Image 9: Example of coloured surfacing environmentally damaging measure



White lining is the preferred option from an environmental perspective

Horizontal Deflections including: pinch points, build outs and chicanes

Horizontal Deflections have the most damaging effect of any measure on our environment. They alter more than any other feature the basic visual form of our highway scene is often cluttered with additions (signs, lamp posts, street furniture etc) and substitutions (concrete kerbs for stone, tarmacadam for cobbled streets, modern lampposts for cast iron lamps) but usually retains the basic framework around which character of the highway is formed and which is recognised as constant and familiar.

Horizontal deflections create such unusual features. Experience has shown that drivers are unwilling to give way at these contrived obstacles. Another technical concern is that a potential hazard is introduced directly in to the path of vehicles. This would usually be considered extremely undesirable. To alleviate these problems such measures are usually accompanied by an enormous amount of clutter which can include signs, bollards, lights and even raised planting containers.

These highly visible structures, containing collections of ugly streetscape clutter, are located where least expected, within the carriageway itself, towards the centre of any view along the street. It is therefore not surprising that such measures are particularly damaging to the environment.

In addition horizontal deflections are usually relatively expensive. They create a high maintenance liability, can cause technical problems such as impeding cyclists, are difficult and costly to reverse if circumstances change, but most importantly from an environmental viewpoint, they introduce an ugly, eye-catching feature into the most unfortunate location corrupting the familiar form of our highway environment.

Our 'Goal' mentioned within the Introduction is, 'to identify effective, affordable solutions which cause the least visual damage to the environment.' There is little doubt of the damage caused to the environment through the use of this measure. Fortunately, in environmental terms, this measure is not one of the most technically effective solutions and involves a relatively high installation and maintenance cost. Consequently this type of measure should be given the lowest priority and left only to be used when other measures cannot be employed.

If however features are used they should be kept as plain and simple as possible. Materials should match adjoining pavements and verges. Radius kerbs should be used creating curved kerb junctions as opposed to the sharp angled junctions which are often employed. Whenever possible kerb lines should taper outwards as far as the situation allows to try and blend the feature into the existing kerb line. Bollards and other street furniture should be kept to the minimum that technical judgement will allow.

Table 14: Example of horizontal deflections environmentally damaging measure

Issue	Damages the basic visual structure of our highways consequently causing great environmental damage
Cost	Relatively high cost solution
Maintenance	High maintenance burden

Image 10: Example of build-out environmentally damaging measure

