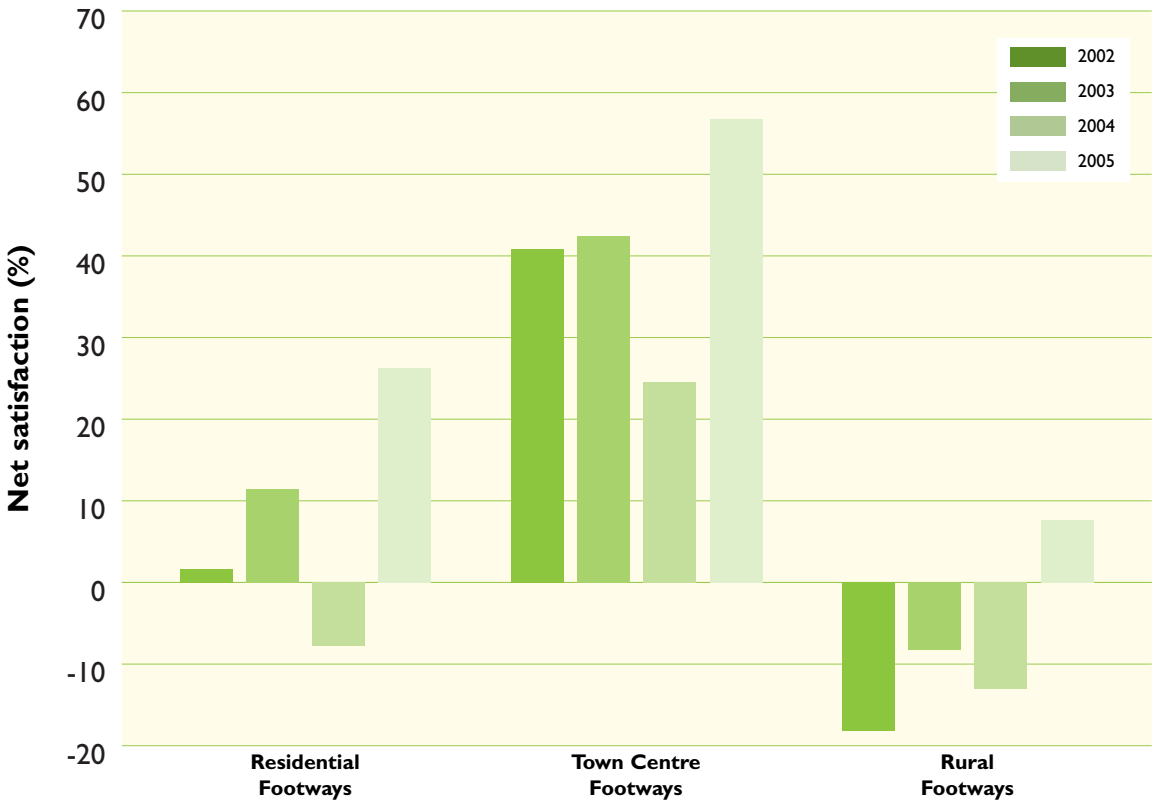
Figure E12b: Net customer satisfaction with footway maintenance by type



road and footway maintenance work. Technical condition data for the A, B and C road network will be collected by automated means as from 2005/06. The new method called SCANNER will ensure comprehensive data collection of road defects, thus enabling BVPI calculations and development of maintenance programmes.

Road casualty data will be used to prioritise sites to fulfil the Council's statutory duty to maintain carriageways and to keep the highways safe. For example, casualty data will be used to establish roads (in particular bends) where the surface may need replacing to improve skidding resistance.

6.5.2 Potholes

Potholes are the most frequently cited complaint received through Highways on Call (see Figure E3) followed by problems with trees and carriageway defects. In 2004/05 we have increasingly focused our efforts and resources into responding to this need and customer and Member satisfaction results, illustrate that this work has been well received. The business process re-engineering approach detailed in 6.3.2 has been used to improve our processes in this area, and this work will be continued and expanded throughout the course of this plan, whilst changes in customer priorities are monitored.

6.5.3 Winter Maintenance

Winter maintenance is undertaken within the county as it is our duty to maintain the highway in a safe condition. It is a high profile activity of great interest to our customers and currently satisfaction is higher in comparison to other maintenance activities.

To date we have developed a highly responsive winter maintenance service in partnership with our contractors. Our service levels are published in our Winter Maintenance Operational Plan, which consists of a prioritised network of precautionary and secondary salting routes. These are promoted to the public through information leaflets.

Precautionary salting is completed to prevent the formation of ice on key routes within Buckinghamshire. Currently salting takes place on approximately 44% of the total road network in

the county, which is above average in comparison to other similar authorities. Roads salted in this way include:

- All A and B class roads
- Important C class roads
- Unclassified roads, which are important as local interconnecting roads

During prolonged periods of cold weather additional (secondary) routes are salted and during snow conditions snowploughs and manual labour are used to keep roads and key pedestrian routes open.

The secondary network has been planned as a hierarchy of roads and footways to take into account usage and risk. The higher risk areas, such as footways in main shopping areas and key footways in major urban areas, are treated within 24 hours, with the remainder of the secondary network salted over a period of days according to risk and need. Weather forecast information and local traffic conditions are used to inform decisions about when to salt and how much is required for optimum effect. Salt spread rates and start times are determined locally and the whole process takes up to two and a half-hours to complete.

Road casualty data is taken into consideration to assess the priority of salting routes and the location of ice warning signs. This process is carried out with the intention of helping to reduce casualties during frost / ice conditions on the county's road network.

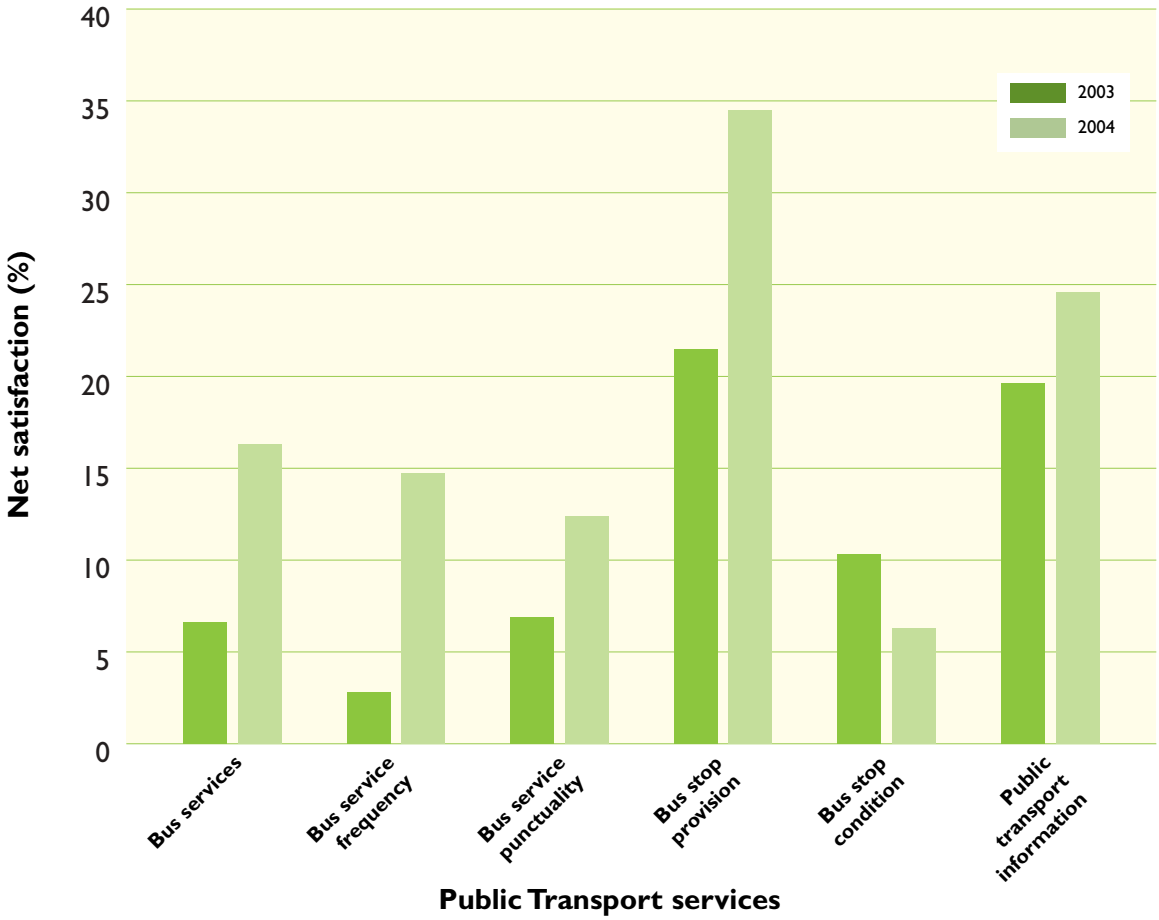
Our approach to winter maintenance is well managed, highly efficient and well accepted by the vast majority of our customers. We plan to continue working in this way in future years, but will further concentrate on providing public information sources about winter maintenance programmes and develop specialised literature to address lower satisfaction levels amongst industry users (i.e. taxi and HGV drivers). From a technical, best value perspective, efficiencies in route coverage and the cost benefits of introducing 'pre-wetted' salt application methods will also be considered.

6.5.4 Public transport infrastructure

Bus users and potential bus users expect transport infrastructure to reflect the standard of service provided. A well-maintained bus stop enables customers to feel confident waiting for public transport and this is particularly important in rural areas where buses are less frequent. Up to date timetabling available alongside prominent, well-maintained stops is also vital. Customer expectation for this area of work is high (see Figure E13, showing relatively low satisfaction with bus stop condition). Therefore, the cost of maintaining bus stops is offset by the need to provide a high level service to customers.

We are beginning a process of upgrading bus stop infrastructure (as described in 6.4.4), which involves the inclusion of a bus stop name and direction of travel on each flag to increase customer confidence in services. Cost savings are being made on the routine maintenance of this infrastructure through the Quality Parish initiative and other partnership working. The development of new and Quality Bus Partnership services also provides the opportunity to develop a quality product, which will not need continual maintenance, enabling costs to be kept low. Overall, public transport infrastructure and the condition of that infrastructure is key to securing increased public transport use and confidence with the public transport network.

Figure E13: Net customer satisfaction with bus stop condition



6.5.5 Traffic signs, road markings and similar highway assets

Traffic signs and road markings are a considerable asset within the County, which is increasing year on year due to changes to the road network (e.g. through traffic management and road safety improvement work). It is one of the most visible transport assets making it a high priority for customers, coming second to bumpy roads. Satisfaction with this area of work is primarily influenced by the cleanliness of signs.

Maintenance is required in this area due to general wear and tear, damage, vandalism, theft or obstruction caused by vegetation and leaf fall. Currently the maintenance of regulatory and warning signs and road markings are given priority and information and direction signs are maintained on a needs and/or demand led basis, often as part of other road improvement work. Maintenance of illuminated signs is carried out following night time inspections and road studs (cats eyes) are also maintained on the basis of needs following routine inspections.

The maintenance of signs and road markings can assist in reducing casualties in Buckinghamshire. For example, ECODYN surveys show whether the reflectivity of road markings meet the required standards. Subsequent improvements can improve their conspicuity and in turn lead to a reduction in road casualties.

The District Councils, as part of decriminalized parking responsibilities, carry out the maintenance of yellow lines and waiting restriction signs where they exist. Specialist contractors undertake the bi-annual area-by-area maintenance of this asset, which allows for economies of scale efficiencies to be achieved. Maintenance of this asset will continue to be prioritised and improved in line with customer priorities and need, whilst ensuring our statutory duty and wider transport policy objectives are achieved.

6.5.6 Vegetation and grass verges

The effective maintenance of vegetation and grass verges is also a priority for the residents of Buckinghamshire. Satisfaction with this area of work is currently high, which is partially attributable to the joint grass cutting agreements with District, Town and Parish Councils. A different approach exists for the maintenance of urban and rural verges, which is described in Table E2.

Work in this area has been extremely successful in achieving value for money services, whilst responding to customer need. Shared contracts have been developed, which allow for economies of scale, through reducing actual costs and overheads. Savings have also been made in response to customer opinion. For instance, the desire for longer grass in rural areas has allowed us to reduce the amount of full width cutting, although care is taken to ensure that safety is not compromised at junctions and bends where good vision splays are necessary. As with traffic signs and road markings maintenance, this area of work will continue to be prioritised for its customer satisfaction benefits. Our statutory duty and wider transport objectives will also be taken into account such as improving safety through increasing vision splays at junctions and forward visibility on bends by maintaining vegetation.

Table E2: Approaches taken to urban and rural hedge maintenance

Urban verges	**Definition**	All highway verges within towns and villages in the limits of the built up area are classified as urban verges - this is our high profile 'green' asset
	Contracts	Grass-cutting arrangements are made with each of the District Councils (and some Town/Parish Councils) whereby they have lead responsibility for the maintenance of all urban highway verges, public open space, and cemeteries
	Standard	High standard of maintenance is achieved through these joint arrangements (e.g. 10 – 12 cuts per growing season) and a single point of contact is provided for the public
Rural verges	**Definition**	All highways outside the built up areas of towns and villages are classified as rural verges
	Standards	Rural verges are cut to a minimum width of 1 metre adjacent to the edge of the road using flail mowers, 3 times per growing season, which is in keeping with what customers consider appropriate in the rural environment. Additional cutting is carried out at road junctions and around bends to ensure visibility splays are not obstructed by long grass. In sensitive areas mowing is delayed to protect the foodstuff of rare species, such as the Striped Lychnis moth
Hedges	**Ownership**	Frontage landowner – BCC normally first point of contact
	Contracts	Contractors to carry out work to our own hedges and also deal with other hedges where highway safety, such as vision splays at busy junctions, is acutely affected through 'hedge cutting notices'
Highway trees	**Numbers**	A large number mostly located in the south of the County (e.g. the Chilterns and Burnham Beeches)
	Contracts	Most highway trees do not present any real problems for us and we have a Highways Tree Policy that describes our approach towards their management and maintenance. All maintenance work is carried out under the guidance of arboriculturists using qualified tree surgeons

6.6 Objective Three - Meeting wider transport objectives

A separate locally derived maintenance strategy for Buckinghamshire has been developed primarily due to technical and customer requirements for this area of work. However, the role this work plays in meeting the wider local transport objectives of this plan is equally important and is further explained within this section. Maintenance work frequently adds value to a range of local transport objectives and this section categorises work under the main strategy areas affected.

6.6.1 Accessibility

Maintenance also has an important role to play in securing accessibility improvements within the county. Transportation schemes currently strive to ensure that local access groups are engaged within the development of schemes and it is essential that future work ensures the access needs of all groups (e.g. young, old, disabled, ethnic minorities) are further considered. To date all our pedestrian crossings have been altered to disability regulation standard. We are rated top quartile in this area and were the first County Council to achieve 100% rating for crossings with disabled facilities. The impact of accessibility on maintenance schemes will be dependent on locally determined accessibility action plans.

The table below illustrates how accessibility and maintenance is likely to be reconciled.

Maintenance type	Contribution to accessibility
Street lighting (6.4.2)	• Street lighting has a direct impact on improving accessibility. Accessibility is not always limited by physical restrictions; it is often influenced by a lack of knowledge, information, or a fear for personal safety. Appropriately placed street lighting will improve accessibility for many residents within the county
Bridges, subways and retaining walls (6.4.3)	• As with street lighting, subways can reduce accessibility due to the community fear associated with them. A review of these structures will help to improve accessibility
Public transport infrastructure (6.4.4 and 6.5.4)	• Well-maintained public transport infrastructure increases confidence with the network, and hence improves individual accessibility. • Improved information about public transport services can also improve accessibility
Winter maintenance (6.5.3)	• Precautionary salting of cycleways and footways (based on updates to the Highways Act 2003), will enable all methods of transport to be more accessible in the winter months
Footpath maintenance and Rights of Way (6.5.1)	• Footpath maintenance will not only be prioritised on the basis of customer and technical needs. It will also be prioritised on the basis of what contribution it can make to improve accessibility (e.g. linking schools and footway surfaces to key bus stops). • Urban Rights of Way footpaths, which contribute to accessibility objectives, will be maintained with hard surfacing and became the responsibility of transportation. Rural footways will be hard surfaced also, where they can meet accessibility objectives
Intelligent Transport Systems (6.4.5)	• Intelligent Transport Systems allow prioritisation of the road network based on mode users and prioritising road space for sustainable transport will improve access opportunities for many

6.6.2 Congestion

Our congestion strategy, which is very much focused on the provision of infrastructure to improve travel choices, is resource intensive and provides certain pressures on the maintenance of the network. The links and contribution of maintenance to the congestion strategy is detailed below.

Maintenance type	Contribution to congestion
Street lighting (6.4.2)	• Improved, appropriately placed and well maintained street lighting (e.g. on urban footways and bus stops to encourage use)
Public transport infrastructure (6.4.4 and 6.5.4)	• As with street lighting, well placed and maintained public transport infrastructure will encourage the use of sustainable modes and support the objectives of the congestion strategy
Principal and non-principal roads (6.4.1)	• Prioritised maintenance of these routes and the linking of work to the Strategic Network, will allow for strategic traffic routes to be used appropriately
Roads and footways (6.5.1)	• As with principal and non-principal roads the maintenance of roads and footways needs to be line with the objectives of the congestion strategy (i.e. encouraging walking in urban areas and ensuring vehicle traffic is using appropriate routes)
Intelligent Transport Systems (6.4.5)	• Intelligent Transport Systems are the cornerstone of the congestion strategy. Adequate resources need to be made available to ensure the reliability of this technology

6.6.3 Environment

Protecting the environment and associated quality of life factors are key requirements of this plan and a great deal of on going work ensures that environmental issues are fully considered within maintenance schemes.

Low noise surfacing materials have been used at all noise sensitive locations throughout the County since 2001, which has been prioritised by traffic flows and proximity of properties. This has improved ride quality by removing surface inequalities; thus reducing noise levels.

The recycling of road materials has also taken place, through reuse in pothole repairs, the base course for material in footways and for high quality surfaces on our Rights of Way network.

We have reduced the amount of materials disposed of at landfill sites and also the amount of new materials imported from quarries for this type of work. This has had multiple environmental benefits as new quarry material is not required as readily and less construction traffic is found upon local roads.

Soil stabilisation techniques have also been used for carriageway reconstruction and great care is taken ensuring natural resources (i.e. flora, fauna, soil and water) are conserved as far as possible. The table below illustrates how this environmental approach will be further progressed over the next five years.

Maintenance type	Contribution to the environment
Street lighting (6.4.2)	• Reducing light pollution through the use of flat glass light fittings in rural and some urban areas • Use of low energy bulbs and recycled material lamp shades • Use Intelligent Road Studs where appropriate to reduce energy consumption
Public transport infrastructure (6.4.4 and 6.5.4)	• Improving the quality of life of local community
Principal and non-principal roads (6.4.1)	• Use of recycled material on roads
Roads and footways (6.5.1)	• Use of recycled material in potholes and footways • Well-maintained provision of this infrastructure can improve quality of life of local residents • Continue to use low noise surfacing on appropriate routes within the county
Vegetation and grass verge maintenance (6.5.6)	• Develop differential cutting frequencies in rural areas to achieve efficiencies and further protect flora and fauna • Co ordinate rural grass cutting and litter picking to enhance the appearance of the rural area • Devolve grass-cutting responsibilities where appropriate, to Parish and Town Councils as part of the Quality Parish initiative
Traffic signs, road markings and similar highway assets (6.5.5)	• Street scene audits (District, Parish and Town Councils) to reduce street clutter • Quality parish initiative allowing the development of Parish and Town Council local cleaning arrangements
Intelligent Transport Systems (6.4.5)	• The use of LED fixtures to provide environmental benefits
Bridges, subways and retaining walls (6.4.3)	• Bridges will be repaired appropriately to maintain the existing character of the bridge and its surroundings

6.6.4 Safety

Out of all our transport strategy areas, maintenance work can most effectively contribute to the needs of our safety strategy. All areas of maintenance described in section 6.4 and 6.5 can add value to the safety strategy. Their contribution is described below.

Maintenance type	Contribution to safety
Street lighting (6.4.2)	• This will improve community safety in areas of concern (i.e. disadvantage) and reduce fear of crime • This will help reduce night time casualties at collision hotspots
Bridges, subways and retaining walls (6.4.3)	• Physical safety of structures, will improve the safety of the network of transport users • An improved environment associated with structures (i.e. subways) will improve actual and perceived safety concerns
Public transport infrastructure (6.4.4 and 6.5.4)	• Community safety implication associated with the quality maintenance of public transport infrastructure
Winter maintenance (6.5.3)	• Precautionary salting of roads to reduce skidding risk • Precautionary salting of cycleways and footways to re-address the balance between roads and footways • Collision data to be used to assess the priority of salting routes and the location of ice warning signs
Road and footway maintenance, including pothole maintenance (6.5.1 and 6.5.2)	• Measurement of surface treatments (Using SCRIM and Griptester) to improve skidding resistance • Application of high friction surfacing at pedestrian crossings and other high risk sites • Identify potential skid collision sites and take appropriate measures to minimise the risk of such collisions • Investigate skid resistance at reported collision sites involving skidding, identifying the cause and taking appropriate measures to remedy the situation where found necessary
Traffic signs and road markings (6.5.5)	• The application and use of TA 89/04 - passively safe lower case signposts (BS EN 12767), for new and replaced sign and signal installations. An inventory of existing columns is to be prepared to prioritise sites for remedial action • The use of Intelligent Road Studs to either delineate carriageways where there is poor forward visibility or as an early detection of bends, to reduce collisions during the hours of darkness • Keep signs clean and clear of vegetation, especially at sites where collisions are high • Carry out ECODYN surveys to prioritise the replacement of road markings and improve reflectivity
Vegetation and grass maintenance (6.5.6)	• Achieve casualty reduction targets through ensuring clear vision splays. This is especially important at rural junctions and bends during the growing season

7 SUMMARY

7.1 Our strategy

Policies	Our policies and practices will be subject to regular review to strike the right balance between statutory duties, technical requirements, customer priorities and meeting wider transport objectives (e.g. through the Scheme Assessment Matrix)
	Once developed, the Transport Asset Management Plan will be used to prioritise maintenance activities on the highway network
	The six sigma business process re-engineering will be used to deliver continuous improvements in the management and delivery of maintenance activities
Actions	During the Second LTP period we will: • Develop our Transport Asset Management Plan • Introduce the Quality Parish / Town Council scheme where appropriate across the county

7.2 Objective one – Maintaining the transport asset

Performance Indicators ***(Targets)*** **Policies**	BVPI 223 Principal road condition *(38%)* BVPI 224a Non principal road condition *(Target/baseline not set for final LTP)* BVPI 224b Unclassified road condition *(5%)*
Actions	All statutory undertakers and contractors will be required to adopt a consistent and co-ordinated approach to highway work during the course of the Second LTP
	During the Second LTP period we will: • Continue the regime for routine testing of all street lighting columns • Investigate replacement of lamps with white light bulbs, particularly in deprived areas or where community safety problems are identified • Seek to replace all street lighting lamps with flat glass light fittings • Seek to replace street lighting lanterns with recycled versions • Seek to replace SOX bulbs with SON bulbs • Undertake a data collection exercise to identify which retaining walls are a County Council responsibility • Complete the inspection and assessment of all County maintained retaining walls • Continue the review of all subways

7.3 Objective Two – Meeting customer priorities

Performance Indicators ***(Targets)***	BVPI 224a Non principal road condition *(5%)* BVPI 224b Unclassified road condition *(Target/baseline not set for final LTP)* BVPI 187 Footway condition *(15%)* LM11 Dangerous potholes repaired within 24 hours *(99%)*
Policies	The emerging Strategic Network Hierarchy and casualty data will be used to prioritise and determine the annual winter maintenance programme
Actions	During the Second LTP period we will: • Seek to meet customer priorities to maintain our top quartile performance for the maintenance of unclassified, residential and minor country roads and footways • Work to exceed our standard for pothole repairs • Develop targeted winter maintenance leaflets for different road user groups • Review all bus stops to identify where replacements or upgrades are required

7.4 Objective Three – Meeting wider transport objectives

Performance Indicators *(Targets)*	LM12 Number of collisions at sites where maintenance has been identified as a contributory factor *(15% reduction)*
Policies	Passively safe sign posting will be considered as part of the replacement and provision of new signage
	Precautionary salting of routes will be prioritised using the emerging Strategic Network Hierarchy and casualty data
	Footway maintenance will be prioritised using identified accessibility, technical and customer needs
	Recycled materials will be used in the repair of roads and footways, wherever possible
	Flora and fauna in rural areas will be protected by developing differential grass cutting frequencies
	LED fixtures will be used to provide environmental benefits, wherever possible
Actions	During the Second LTP period we will: • Regularly maintain junctions in rural areas to ensure that vision splays are kept clear • Apply high friction surfacing to all pedestrian crossings and in other appropriate areas • Hard surface Rights of Way that serve an accessibility function • Use recycled materials in routine and structural maintenance, where possible • Work with District and Parish Councils to complete a street scene audit and reduce street clutter • Use the Quality Parish / Town Council initiative to establish local cleaning arrangement programmes