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# Essex Highway Maintenance Strategy

*Maintenance Policy  
and Standards*

April 2008





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# Chapter 1 - Executive summary

## 1. Review of maintenance strategy and practice

The Essex Highways Maintenance Strategy has been fundamentally reviewed with maintenance engineers, inspectors and other practitioners to take account of the recommendations and best practice set out in the Code of Practice for Highway Maintenance Management published in 2005.

## 2. Structure of the Maintenance Strategy

This document contains maintenance strategy and practice set out in 18 sections as summarised below:

### Introduction

- **Purpose and scope of highway maintenance:** the objectives of the Maintenance Strategy; terminology; purpose and core objectives of highways maintenance; maintenance activity by group.
- **Strategy framework: strategic,** service and integrated transport strategy objectives and the contribution the Maintenance Strategy can make to these.
- **Legal framework:** statutory powers and duties relating to highway maintenance activities.
- **Service delivery:** management of the Essex network and associated contractual arrangements.
- **Maintenance strategy and hierarchy:** principles and objectives of highway maintenance management; current maintenance strategy; prioritisation of maintenance based on network hierarchy; network referencing and maintenance types and categories.
- **Inspection, assessment and recording:** safety inspections; service inspections and condition surveys.
- **Condition standards:** maintenance standards by asset type.
- **Programming and priorities:** allocation of priority; balancing priorities; programmed maintenance.

- **Designing for maintenance:** considering future maintenance requirements of proposed new infrastructure.
- **Sustainable highway maintenance:** materials, products and treatments; environmental management; waste management and recycling; pollution control; nature conservation and biodiversity and dealing with noxious weeds.
- **Winter service:** winter service policy and winter standards.
- **Weather and other emergencies:** plans and procedures to deal with major and minor emergencies.
- **Financial management: sources of funding;** basic and special maintenance; budget setting process; budget allocation; financial planning; financial procedures; accounting principles and financial control; monitoring and accountability.
- **Performance management:** performance indicators and targets; customer perceptions; accountability and reporting processes and maintenance contract performance.
- **Customer involvement:** identifying customer need; provision of information and customer surveys.
- **Training and development:** key areas for training and development of staff who will deliver the Maintenance Strategy.
- **Monitoring, review and reporting:** importance of information recording and reporting for appearing in court and defending claims and monitoring implementation of maintenance strategy and practice.

The Maintenance Strategy is supplemented by a practice document relating to the inspection process.

## Chapter 2 - Introduction

National recommendations for the provision of the highways maintenance service were updated in the 2005 Code of Practice for Highway Management, as developed by bodies representing Central Government and local authorities. Whilst this document is not statutory, it comprises a framework of guidance and standards about the service and emphasises the linkages between the highway maintenance service and the asset management philosophy. As a national document, the Code reflects the need for local discretion and diversity in service provision. Such flexibility is key in recognising that local service users' priorities will differ, as will the levels of funding available to different authorities.

The recommendations made in the Code of Practice and the changing agenda identified that the Essex Highways Maintenance Plan adopted in 2003 required amending and updating. This 2008 Maintenance Strategy takes regard of changes in recommendations and best practice and supersedes the 2003 Maintenance Plan.

This Maintenance Strategy will be adopted and used in a consistent manner across Essex.

The Essex Highways Maintenance Strategy 2008 sets out Essex County Council's approach to providing the highways maintenance service in accordance with statutory duties, whilst implementing the philosophy of the Code of Practice. This Strategy has been developed alongside the Essex Transport Asset Management Plan (TAMP) and will evolve as the TAMP is implemented.

The maintenance of street lighting, structures (bridges, culverts and retaining walls) and passenger transport infrastructure within the highway is not included in this document.

Amendments to or deviations from this document will be undertaken via an executive decision process. Any requests for amendments or deviations should be sent to the Principal Officer Asset Management at County Hall.





## Chapter 3 - Purpose and scope of highway maintenance

The objectives of the Essex County Council Maintenance Strategy 2008, which reflect the objectives within the Code of Practice for Highway Maintenance Management 2005, are:

- to encourage the adoption of asset management planning as a means of demonstrating value for money in the delivery of highway maintenance;
- to encourage the development, adoption and regular reviews of policies for highway maintenance, consistent with the wider principles of integrated transport, sustainability and best value;
- to encourage a focus on the needs of users and the community, and their active involvement in the development and review of policies, priorities and programmes;
- to encourage harmonisation of highway maintenance practice and standards, where this is consistent with user's expectations, whilst retaining reasonable diversity consistent with local choice;
- to encourage the adoption of an efficient and consistent approach in the collection, processing and recording of highway inventory, highway condition and status information for the purpose of both local and national needs assessment, management and performance monitoring;
- to encourage the adoption and regular review of a risk management regime in the determination of local technical and operational standards, rectification of defects arising from safety and serviceability inspections, and investment priorities.

The recommendations in the Code of Practice have been used as a benchmark against which Essex County Council highway maintenance strategy and practice has been developed.

Local variations have been made where necessary as the recommendations in the Code are not mandatory on authorities. Where policies, procedures or standards deviate from the Code of Practice the reasoning for the differences have been highlighted and explained.

The Code is based on the assumption that available funding for highway maintenance will continue to provide some flexibility for authorities to pursue a regime of assessment and rational planning of programmes and priorities.

This 2008 Maintenance Strategy supersedes the 2003 Maintenance Plan and its policies and practices will be followed consistently across Essex.

## 1. Terminology

The main relevant definitions in the Maintenance Strategy are:

- **carriageway** – facilities used by motor vehicles, motorcyclists and cyclists;
- **footway** – segregated surfaced facilities used by pedestrians which is immediately adjoining a carriageway;
- **remote footway** – segregated surfaced facility used by pedestrians not immediately adjoining a carriageway;
- **footpath** – a highway over which the public have a right of way on foot only – excludes motor vehicles, horses, carriages and cycles (meaning a type of Public Right of Way – PRow, and not a footway);
- **cycle route** – collective term for all segregated facilities used by cyclists;
- **running surface** – collective term for all hardened surfaces within the highway, including carriageways, footways and cycle routes;
- **pavement** – collective term for the construction of all running surfaces, particularly carriageways;
- **byway** – A PRow open to all traffic including motorists and motorcyclists.
- **restricted byway** – A right of way on foot, on horseback or leading a horse; and in vehicles other than mechanically propelled vehicles, with or without the right to drive animals;
- **bridleway** – A PRow open to all traffic except motorised vehicles and motorcycles;
- **note** – The Maintenance of Byways and Bridleways is not covered in this document, please refer to the Public Rights of Way Maintenance Policy.

## **2. Purpose of highway maintenance**

The main purpose of highway maintenance is to maintain the highway network for the safe and convenient movement of people and goods. The core objectives of highway maintenance are to deliver a safe, serviceable and sustainable network, taking into account the need to contribute to the wider objectives of asset management, integrated transport, corporate policy and continuous improvement.

### **Core objectives**

#### **Network Safety**

- Complying with statutory obligations
- Meeting user's needs for safety

#### **Network Serviceability**

- Ensuring availability.
- Achieving integrity.
- Maintaining reliability
- Enhancing condition

#### **Network sustainability**

- Minimising cost over time
- Maximising value to the community
- Maximising environmental contribution

#### **Customer service**

- Promoting user and community involvement
- Obtaining information from customers to inform future strategy and the development of levels of service
- Improving information available to the public regarding the service

### **3. Scope of highway maintenance**

Highway maintenance is a wide ranging function, including the following general types of activity:

- reactive maintenance responding to inspections, complaints or emergencies;
- routine maintenance providing works or services to a regular consistent schedule, generally for cleaning and landscape maintenance;
- programmed maintenance providing larger schemes primarily of resurfacing, reconditioning or reconstruction to a planned schedule;
- regulatory maintenance inspecting and regulating activities of others (much of this work will be undertaken by the Traffic Manager under the new statutory duty for network management);
- winter service providing salting and clearance of snow and ice;
- providing a planned emergency response for adverse weather conditions and other emergencies.

### **4. Related activities**

There are a number of related functions, which are not dealt with in detail in the Maintenance Strategy, but which could affect or be affected by highway maintenance activity. They also have the potential for value to be added in Essex through joint working, co-operation and co-ordination. These functions include:

- Asset management
- Network management
- Highway development control
- Street cleansing, including integrated street management
- Town centre management, including use of public space
- Maintenance of sustainable drainage systems.
- Operation of public transport services

When maintenance activity is being planned and programmed the potential for joint working and co-ordination with others will be explored.

## Summary of key points

### **The key points for purpose and scope of highway maintenance are:**

- the objectives of the Code of Practice for Highway Maintenance Management 2005 have been adopted as the objectives of this Maintenance Strategy;
- the recommendations in the Code of Practice have been used as a benchmark against which Essex County Council highway maintenance strategy and practice has been developed;
- local variations have been made where necessary as the recommendations in the Code are not mandatory on authorities. Where policies, procedures or standards deviate from the Code of Practice the reasoning for the differences have been highlighted and explained;
- this 2008 Maintenance Strategy supersedes the 2003 Maintenance Plan and its policies and practices will be followed consistently across Essex;
- the main purpose of highway maintenance is to maintain the highway network for the safe and convenient movement of people and goods;
- the core objectives of highway maintenance are to deliver a safe, serviceable and sustainable network, taking into account the need to contribute to the wider objectives of asset management, integrated transport, corporate policy and continuous improvement;
- when maintenance activity is being planned and programmed the potential for joint working and co-ordination with others will be explored.



# Chapter 4 - Strategy framework

## 1. Introduction

This chapter of the Maintenance Strategy summarises the high level, service and integrated transport objectives and the contribution that the Maintenance Strategy can make to these in Essex.

Strategy integration is an important principle of Best Value, and this has been further strengthened by the new Comprehensive Performance Assessment (CPA) regime. The CPA requires the County Council to define, in consultation with the community of Essex, overall strategic objectives.

The Local Government Act 2000 required the production of Community Strategies. The strategies address transport and highways investment. A community strategy should, through engagement with local communities:

- set out a vision for an area focusing on improving the quality of life;
- contain economic, social and environmental objectives to ensure that the vision contributes to sustainable development objectives;
- produce action plans explaining how the long term vision will be delivered;
- develop a shared commitment to implementing action plans.  
Set out arrangements for monitoring and reviewing strategies and reporting progress to communities.

## 2. Strategic and service objectives

The delivery of the Maintenance Strategy, objectives and practices will make a significant contribution to the Corporate Plan strategic objectives and long term vision of:

- ensuring service improvement – creating safer roads and improving road maintenance;
- strengthening community leadership – improving the quality of life for Essex residents;
- caring for our environment – Improving our towns and countryside;
- guaranteeing value for money – cutting unnecessary processes and costs to invest in services.

The priority 'Putting our customers first' stands alone as an over-arching priority for the County Council reflecting all four objectives.

The delivery of the Strategy also contributes to the delivery of the following key Development, Highways and Transportation priorities and objectives for 2007/08 to 2010/11:

- improving road condition;
- promoting road safety;
- improving quality of life and our environment;
- improving our service.

The main focus for the future in highways maintenance is linked to the current Highways Maintenance Initiative.

The Highways Maintenance Initiative (HMI) began in 2005/06 and combined a new maintenance strategy with an injection of capital funds.

The new maintenance strategy switched the focus from treating red roads (those not in good condition) to primarily treating amber roads (those deteriorating towards the red band) and less red roads. This allowed the use of cheaper, preventative treatments to stop roads from becoming "red" and to achieve the aim of arresting the deterioration of the network. This approach has also helped to improve value for money through the use of these lower cost treatments.

This new approach has proved to be very successful, and the focus for the coming years is to build on and develop this strategy further, to achieve even greater benefits for the future.

### **3. Integrated transport strategy**

The second Essex Local Transport Plan (LTP) is a statutory document detailing transport strategy for the County for the period April 2006 to March 2011. The LTP has five key objectives:

- delivering accessibility;
- tackling congestion;



- promoting better air quality;
- safer roads;
- enhancing maintenance.

These transport objectives are set within the context of broader Essex County Policy issues such as improving the quality of life and encouraging economy and growth.

The Maintenance Strategy has a significant contribution to make to the key objective of 'enhancing maintenance' as well as contributions to the other 4 objectives.

#### **4. Integrated network management**

Transport users, whatever their mode, do not distinguish between categories of road, or types of work, whether maintenance or improvement. It is irrelevant to them who is undertaking the work, whether the County Council, contractor or utility. They expect the network to be managed and maintained holistically to provide consistent and appropriate levels of service and the ability to change modes as easily as possible.

The Traffic Management Act 2004 now provides a legal basis for this expectation. The Act requires that all works on the highway network, including maintenance, improvement, and new construction, are planned and managed integrally and also have regard to other influences on the network.

The County Council will, where possible and where funds allow, take the opportunity to incorporate added value to the safety, priority, integrity or quality of the following when key maintenance schemes are planned and programmed:

- footways and crossing facilities;
- cycle routes and crossing facilities;
- riders of motorcycles;
- horse riders and crossing facilities;
- facilities for public transport and users;
- facilities for freight movement.

Planning for highway maintenance will also take into account and add value to other elements of local transport strategy, wherever possible including:

- Quality Bus Partnerships
- Quality Freight Partnerships
- Quality Taxi Partnerships
- Accident Reduction and Prevention Programme
- Safer Routes to School and Travel Planning
- Routes to Stations and Other Interchange Facilities
- Urban and Rural Regeneration Programmes

## **5. Highway asset management**

The County Council has produced its first Transport Asset Management Plan (March 2007). This will ensure that arrangements for the management of highway maintenance are set within the context of an overall asset management regime.

### **Summary of key points**

#### **The key points for strategy framework are:**

- strategy integration is an important principle of Best Value, and this has been further strengthened by the new Comprehensive Performance Assessment (CPA) regime. The CPA requires the County Council to define, in consultation with the community of Essex, overall strategic objectives;
- the delivery of the Maintenance Strategy, objectives and practices will make a significant contribution to the Corporate Plan strategic objectives and long term vision of:
  - ensuring service improvement – creating safer roads and improving road maintenance;
  - strengthening community leadership – improving the quality of life for Essex residents;
  - caring for our environment – Improving our towns and countryside;
  - guaranteeing value for money – cutting unnecessary processes and costs to invest in services.

- the delivery of the Strategy also contributes to the delivery of the following key Development, Highways and Transportation priorities and objectives for 2007/08 to 2010/11:
  - improving road condition;
  - promoting road safety;
  - improving quality of life and our environment;
  - improving our service.



# Chapter 5 - Legal framework

## 1. Introduction

Much of highway maintenance activity is based upon statutory powers and duties contained in legislation and precedents developed over time, as a result of claims and legal proceedings. The most important aspects of these statutory powers and duties are summarised in this chapter of the Maintenance Strategy and developed in more detail, where appropriate, in subsequent chapters.

The issue of risk management in assessing the implications of investment decisions for asset management purposes and in determining appropriate responses to highway deficiencies has become very important in recent years.

It is important that everyone involved in highway maintenance at the County Council, including Members, have a clear understanding of their powers and duties, and the procedures used to manage and mitigate risk.

Even in the absence of specific duties and powers, the County Council has a general duty of care to users and the community to maintain the highway in a condition fit for its purpose.

## 2. Highway definition

A highway is a way over which the public at large has the right to pass and re-pass without let or hindrance. A highway is, by definition, public.

## 3. Risk management

The management of highway maintenance, including establishing regimes for inspection, setting standards for condition, determining priorities and programmes for effective asset management, and procuring the service should all be undertaken against a clear and comprehensive understanding and assessment of the risk and consequences involved.

#### **4. Health and safety**

The Health and Safety at Work Act 1974, together with the Construction (Design and Management) Regulations 2007 provide for a requirement for highway, traffic and street authorities to carry out work in a safe manner and establish arrangements for the management of construction works.

In Essex all those involved in the planning, management and delivery of highway maintenance services will receive training and regular updating, as necessary, in health and safety requirements of the service.

#### **5. Management systems and records**

The efficiency, accuracy and quality of information and records are crucial to the effective management of the service and to the defence of claims against the County Council for alleged failure to maintain. Chapter 19 of this Strategy provides detail on processes and information for the effective storage and management of information.

#### **6. Powers and duties**

In addition to a general Duty of Care, there are a number of specific pieces of legislation which provide the basis for powers and duties relating to highway maintenance.

##### **Highways Act 1980**

The Highways Act 1980 sets out the main duties of highway authorities in England and Wales. Section 41 imposes a duty to maintain highways maintainable at public expense, and almost all claims against the County Council relating to highway functions arise from the alleged breach of this section of the Act.

The Act contains powers to carry out functions/tasks on or within the highway such as improvements, drainage, acquiring land, authorising skips, scaffolds, banners and so on.

Section 58 provides for a defence against action relating to alleged failure to maintain on grounds that the County Council has taken such care as in all the circumstances was reasonably required to secure that the part of the highway in question was not dangerous to traffic.

## **Traffic Management Act 2004**

The Traffic Management Act 2004 introduced a number of provisions:

- Highways Agency Traffic Officers;
- local authority duty for network management;
- permits for work on the highway;
- increased control of utility works;
- increased civil enforcement of traffic offences.

The most important feature of the Act is Section 16(1) which establishes a new duty for local traffic authorities 'to manage their road network with a view to achieving, so far as may be reasonably practicable having regard to their other obligations, policies and the following objectives:

- securing the expeditious movement of traffic on the authority's road network;
- facilitating the expeditious movement of traffic on road networks for which another authority is the traffic authority'.

Section 31 of the Act specifically states that the term 'traffic' includes pedestrians, so the duty requires the authority to consider all road users.

The Traffic Management Act 2004 has also strengthened the regulatory regime with regard to works of utilities and others within the highway including permit schemes, new conditions, and fixed penalty notices. The Act changes significantly the provisions of the New Roads and Street Works Act 1991, but much of the guidance may still be valid.

## **Maintenance and management of Public Rights of Way**

Essex County Council has a duty under the Wildlife and Countryside Act 1981 and the Highways Act 1980 to maintain and keep the definitive map and statement of Public Rights of Way (PROW) and to ensure that ways are adequately signposted, maintained and free from obstruction.

The Countryside and Rights of Way Act 2000 (Section 60) introduced a new duty for authorities to prepare Rights of Way Improvement Plans (ROWIPs). The Essex ROWIP is to be completed by November 2007. The Plan will provide an assessment of the need to

which rights of way meet the present and future needs of the public; an assessment of the opportunities provided by local rights of way for exercise and recreation; and an assessment of the accessibility of local rights of way to all members of the community.

The Land Reform Act provides a duty for an authority to assert, protect and keep open and free from obstruction and encroachment on any route. It also establishes powers for the delineation, creation and maintenance of existing and new paths either by path 'agreements' or path 'orders'.



### **Other related powers and duties relating to highway management**

The following is a summary of other powers, duties and standards relating to highway management that readers of this Maintenance Strategy may need to be aware of:

- Road Traffic Regulation Act 1984, and the Traffic Signs and General Directions 2002;
- Road Traffic Act 1988. This provides a duty for highway authorities to promote road safety, including a requirement to undertake accident studies and take such measures as appear appropriate to prevent such accidents occurring;
- Road Traffic Reduction Act 1997 which requires each local authority to prepare a report detailing levels of local traffic in the area and forecasts of anticipated growth levels. The report should also contain targets and plans for reducing levels of local traffic and reducing growth of local traffic;



- The Local Authorities (Transport Charges) Regulations 1998 which provide a power for the traffic authority to impose a charge for a number of its functions;
- The Transport Act 2000 under which any authority may designate any road as a quiet lane or a home zone;
- The Environmental Protection Act 1981. This provides a framework of legislation relating to environmental and Countryside issues with which highway maintenance operations must comply;
- European Directive 2001/42/EC, also known as the SEA Directive. This was implemented in England through the Environmental Assessment of Plans and Programmes Regulations 2004. This requires Strategic Environmental Assessment of specified plans and programmes including Local Transport Plans;
- European Water Framework Directive. This came into force in December 2000 and requires all inland and coastal water bodies to reach defined water quality standards by establishing a river basin district structure;
- The Noxious Weeds Act 1959. This Act places a responsibility on the highway authority to take action to inhibit the growth and spread of injurious weeds growing within the highway. Weed spraying operations are regulated by the Environment Agency and also by the Health and Safety Commission Code of Practice;
- The Clean Neighbourhoods and Environment Act 2005. This Act set out Council's powers to deal with crime and disorder, as well as how to deal with vehicles causing a nuisance on the highway, abandoned and illegally parked vehicles and litter on the highway.

### **Summary of key points**

#### **The key points for legal framework are:**

- much of highway maintenance activity is based upon statutory powers and duties contained in legislation and precedents developed over time, as a result of claims and legal proceedings;
- it is important that everyone involved in highway maintenance at the County Council, including Members, have a clear understanding of their powers and duties, and the procedures used to manage and mitigate risk;
- even in the absence of specific duties and powers, the County Council has a general duty of care to users and the community to maintain the highway in a condition fit for its

purpose;

- in Essex all those involved in the planning, management and delivery of highway maintenance services will receive training and regular updating, as necessary, in health and safety requirements of the service;
- the efficiency, accuracy and quality of information and records are crucial to the effective management of the service and to the defence of claims against the County Council for alleged failure to maintain the highway;
- the Highways Act 1980 sets out the main duties of highway authorities in England and Wales.

# Chapter 6 - Service delivery

## 1. Introduction

Responsibilities for highway maintenance in Essex are divided between Department for Transport (DfT), Essex County Council and the unitary authorities of Southend and Thurrock.

The DfT Highways Agency is responsible for the maintenance of all trunk roads and motorways in the county and the unitary authorities are responsible for all other highway maintenance in the administrative areas of Southend and Thurrock respectively.

Service delivery for all other highway maintenance in Essex is the responsibility of the County Council. Although the service is primarily managed and commissioned by County Council staff there are Local Service Agreements with 10 of the 12 Borough/District Councils in Essex which allow a degree of local decision making by Borough/District Councils on roads defined as Local Roads. A limited number of highway functions are commissioned directly by Borough/District Councils under these Local Service Agreements where there are synergies with Borough/District Council functions resulting in improved value for money.

## 2. Statutory duties

It is the statutory duty of the highway authority to maintain that part of the highway defined as being maintainable at public expense. This duty is consolidated in Section 41 of the Highways Act 1980. Under Section 56 of the Act any person may apply to the courts for an order requiring the highway authority to take remedial action in cases of alleged non-repair by that authority that may also face action for damages resulting from failure to maintain the highway. Section 58 of the Act provides that in the event of an action it shall be a defence to show that the road was kept in a reasonable state of repair having regard for the traffic using it, the standard of maintenance appropriate to its use and public safety.

Section 150 of the Act requires the highway authority to clear obstructions from the highway resulting from the accumulation of snow or from the falling down of banks on the side of the highway, or from any other cause. Section 41 of the Highways Act was amended to expressly include snow and ice in a Highway Authority's statutory duty to maintain the highway. Section 41(1A) states 'In particular, a highway authority are under a

duty to ensure, as far as is reasonably practicable, that safe passage along a highway is not endangered by snow or ice.’

Road openings in the highway executed by or on behalf of statutory undertakers under the provisions of the New Roads and Street Works Act 1991 (NRSWA) are backfilled and maintained by the organisation making them. The role of the highway authority is mainly that of co-ordinating and controlling road works and designating traffic sensitive routes and structures of special engineering difficulty.

There is a wide range of other legislation affecting highway maintenance, either directly or indirectly, imposing powers or duties on highway authorities.

### **3. Management of the Essex network**

The transportation network in Essex is managed by the Development, Highways and Transportation Service Group through three key functional/policy streams which reflect different operations of the network. These are:

Highways Management – responsible for the management of and maintaining the condition of the asset, setting and developing treatment strategies, policy and targets, as well as control and management of the use of the highway network.

Planning and Transportation – long term strategic transport planning and the Essex Local Transport Plan, road, railways and public transport major schemes, transport strategies and measurement of the transportation impact of development.

Passenger Transport – development and implementation of passenger transport policies, co-ordination, promotion and purchasing of passenger transport and its infrastructure and operation of a fleet of passenger transport vehicles.

Strategic functions, policy development, bridge and major capital schemes are managed on a countywide basis from County Hall in Chelmsford. The Council has four Area Offices in Colchester, Harlow, Chelmsford and Basildon responsible for delivering programmes of maintenance and minor improvements at a local level, in line with current strategy and policy as well as being the customer interface for the service. The Area Offices are managed centrally by the Head of Programme and Project Management and team.

#### **4. Contractual arrangements**

The Council uses consultants and contractors to deliver the highway maintenance service using a range of contracts, the principal ones of which are listed below:

##### **Client Support Contract**

A long term partnering consultancy contract delivered by Mouchel covering a range of services which support the management and development of the service undertaken by the Council's own staff. The element of the contract directly applicable to this Maintenance Strategy is the provision of highway assessments, storage of condition survey and inventory information and management of the United Kingdom Pavement Management System.

##### **Improvement and Maintenance Works contracts**

There are a number of separate contracts delivering improvements and maintenance works in the county:

- basic structural maintenance up to £500,000 per scheme carrying out minor repairs, winter service and surfacing works. This work is delivered by May Gurney who cover the West Area, the South Area and the A127 and Balfour Beatty Infrastructure Services Ltd. who cover the Mid and East Areas of the County;
- highway improvements up to £500,000 per scheme. This work is delivered by T.E Beach for the whole of the County;
- The contracts run for a period of five years from 1 April 2006, and is a schedule of rates contract based on the NEC terms and conditions 1995. Works are ordered via the Confirm System and are passed between the County Council and the Contractor via an automated process. Returns are made from the contractor to verify the completion of works in the same manner;
- surface dressing programme. The contract for the whole of the County runs for three years. The contractor is May Gurney;
- street lighting maintenance. The contract for the whole of the County runs for three years from 1 April 2006 with a possible two year extension and is placed with Cartledge. The contract is based on an 'in light' price, which is a unit price for a basket of work to keep

the units in lighting. This allows the routine maintenance costs to be known at the beginning of each year;

- electrical testing. The contract for the whole of the County runs for three years from 1 April 2006 with a possible two year extension and is placed with Electrical Testing Ltd. This contract is based on a schedule of rates. A sixth of installations are structurally and electrically tested each year within an exception of non metallic columns which are tested on a three year cycle;
- gully cleansing. The contract for the whole of the County runs for three years. The contractor is Bagnall and Morris;
- structures maintenance. Works up to £50,000 are ordered through the dedicated structures maintenance contractor, Fitzpatrick. Works in excess of £50,000 are tendered.



### **Roles of the respective parties**

The roles of the County Council, the consultant and the contractors are as follows:

#### **County Council**

- Develop and review the Transport Asset Management Plan.
- Develop and review the Maintenance Strategy and Practice.
- Identify works and set priorities.
- Long term programming of work.

- Manage funding issues.
- Manage public enquiries and act as a customer interface.
- Monitor and manage the performance of the service.
- Appoint and manage consultants and contractors.
- Audit.
- Review.

### **Consultant**

- Provide detailed design services and transportation studies.
- Support the client on managing major road projects, bridge services and intelligent transport systems.
- Manage discrete elements of the service on behalf of the County Council such as NRSWA responsibility and the Highway Records Service.
- Manage the collection and analysis of carriageway, footway and cycleway condition data.
- Manage the collection and analysis of inventory data.

### **Contractors**

- Undertake programmes of highway works.
- Ensure work quality and satisfy defect liability requirements.

### **Summary of key points**

#### **The key points for service delivery are:**

- Responsibilities for highway maintenance in Essex are divided between Department for Transport (DfT), Essex County Council and the unitary authorities of Southend and Thurrock.
- The DfT Highways Agency is responsible for the maintenance of all trunk roads and motorways in the county and the unitary authorities are responsible for all other highway maintenance in the administrative areas of Southend and Thurrock respectively.
- Service delivery for all other highway maintenance in Essex is the responsibility of the

County Council.

- It is the statutory duty of the highway authority to maintain that part of the highway defined as being maintainable at public expense. This duty is consolidated in Section 41 of the Highways Act 1980.
- The transportation network in Essex is managed by the Development, Highways and Transportation Service Group through three key functional/policy streams which reflect different operations of the network: Highways Management, Planning and Transportation and Passenger Transport.
- The Council uses consultants and contractors to deliver the highway maintenance service using a range of contracts including the Client Support Contract and Improvement and Maintenance Works Contracts.



# Chapter 7 - Maintenance strategy and hierarchy

## 1. Introduction

The general principles and objectives of highway maintenance management and issues relating to hierarchy, network referencing and definitions of maintenance type and maintenance categories are included in this chapter.

## 2. Principles and objectives of highway maintenance strategy

Principles of highway maintenance strategy

Highway maintenance strategy should be based on a systematic logical approach in accordance with the principles of best value and continuous improvement. It is an important part of the Essex County Council Transport Asset Management Plan (TAMP). Maintenance management focuses on the network infrastructure and the TAMP on the service provided by the infrastructure.

Maintenance strategy should be aimed at optimising the maintenance contribution to the service provided by the infrastructure. The principles of highway maintenance strategy are to:

- Deliver the statutory obligations of the authority.
- Be responsive to the needs of users' and the community.
- Contribute to effective highway asset management and maintain the asset value.
- Support effective delivery of the statutory network management duty.
- Support and add value to local transport objectives.
- Support and add value to wider corporate policy objectives.

## **Core objectives for maintenance strategy**

The four core objectives and associated sub-objectives for maintenance strategy are:

### **Network safety**

- Complying with statutory obligations.
- Meeting users' needs for safety.

### **Network serviceability**

- Ensuring availability.
- Achieving integrity.
- Maintaining reliability.
- Enhancing condition.

### **Network sustainability**

- Minimising cost over time.
- Maximising value to the community.
- Maximising environmental contribution.

### **Customer service**

The core objectives of network safety, network serviceability, network sustainability and customer service together with risk management, needs based budgeting and competitive service delivery, provide the basis for highway maintenance strategy. They also provide the framework for establishing outcomes against which the maintenance service and asset performance should be measured.

Every aspect of highway maintenance for each element of the network has the potential to contribute to some extent to a number of the core objectives. For example, the contribution to the network safety objective of the carriageway is affected by:

- the actual condition of the surface;
- the response time for attending to inspections and user concerns;
- the quality of management and service delivery;

- the effectiveness of materials and treatments used.

### **Components of highway maintenance strategy**

The foundations of a highway maintenance strategy are:

- a detailed inventory of all components to be maintained;
- a defined hierarchy for all elements of the network;
- a robust framework of levels of service.

It is important to ensure that highway maintenance strategy is co-ordinated with that of neighbouring authorities for both locally and nationally maintained networks. Inter-authority co-ordination can bring benefits in terms of cost and resource management, levels of service and user perception.

### **Network inventory**

The County Council has collected robust network inventory information on carriageways and footways in Essex as well as a significant number of related features. The information was collected on video over a four year period then extracted using bespoke software. The information is stored on the UKPMS and will be available in report format from 1 April 2008.

### **3. The County Council's highway maintenance strategy for the future**

The main focus for the future in highways maintenance is linked to the current Highways Maintenance Initiative.

The Highways Maintenance Initiative (HMI) began in 2005/06 and combined a new maintenance strategy with an injection of capital funds.

The new maintenance strategy switched the focus from treating red roads (those not in good condition) to primarily treating amber roads (those deteriorating towards the red band) and less red roads. This allowed the use of cheaper, preventative treatments to stop roads from becoming "red" and to achieve the aim of arresting the deterioration of the network. This approach has also helped to improve value for money through the use of these lower cost treatments.

This new approach has proved to be very successful, and the focus for the coming years is to build on and develop this strategy further, to achieve even greater benefits for the future.

#### 4. Prioritisation of maintenance/network hierarchy

The system of road classification ('A', 'B', 'C' and unclassified roads) used by Central Government does not reflect the needs, priorities and actual use of each road in the Essex Highway Network. A number of factors relate to the maintenance need such as:

- importance of a route such as, road leading to a major hospital;
- environment – whether the route is in an urban or rural area, is a busy shopping street or a residential area;
- usage – amount of traffic flow and type of traffic using the route, bus routes and so on.

It is therefore important that the maintenance strategy reflects these factors and priorities for roads, footways and cycleways for maintenance treatment accordingly. Roads, footways and cycleways are assigned to a defined hierarchy as shown in the tables below:

### Hierarchy tables

**Table 1 - Carriageway hierarchy**

Category	Hierarchy description	Type of road General description	Description	Km in Essex (approx.)
1	Motorway	Limited access motorway regulations apply	Routes for fast moving long distance traffic. Fully grade separated and restrictions on use. These are not maintained by Essex County Council.	0km
2	Strategic Route	Trunk and some Principal 'A' roads between primary destinations	Routes for fast moving long distance traffic with little frontage access or pedestrian traffic. Speed limits are usually in excess of 40 mph and there are few junctions. Pedestrian	287km

Category	Hierarchy description	Type of road General description	Description	Km in Essex (approx.)
			crossings are either segregated or controlled and parked vehicles are generally prohibited.	
3a	Main Distributor	Major Urban Network and Inter-Primary Links.  Short – medium distance traffic.	Routes between Strategic Routes and linking urban centres to the strategic network with limited frontage access. In urban areas speed limits are usually 40 mph or less, parking is restricted at peak times and there are positive measures for pedestrian safety.	895km
3b	Secondary Distributor	Classified Road (B and C class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions.	In rural areas these roads link the larger villages and HGV generators to the Strategic and Main Distributor Network. In built up areas these roads have 30 mph speed limits and very high levels of pedestrian activity with some crossing facilities including zebra crossings. On-street parking is generally unrestricted except for safety reasons.	1246km
4a	Link Road	Roads linking between the Main and Secondary Distributor Network with frontage access	In rural areas these roads link the smaller villages to the distributor roads. They are of varying width and not always capable of carrying two way traffic. In urban areas they are	971km

Category	Hierarchy description	Type of road General description	Description	Km in Essex (approx.)
		and frequent junctions.	residential or industrial inter-connecting roads with 30mph speed limits, random pedestrian movements and uncontrolled parking.	
4b	Local Access Road	Roads serving limited numbers of properties carrying only access traffic.	In rural areas these roads serve small settlements and provide access to individual properties and land. They are often only single lane width and unsuitable for HGVs. In urban areas they are often residential loop roads or cul-de-sacs.	4196km
				Total km (approx.)  7595km

**Table 2 - Split of carriageway hierarchy by district**

The table below provides information on the split of carriageway hierarchy by area and district in Essex (note the lengths provided are approximate only):

Area and District	km Strategic Route	km Main Distributor	km Secondary Distributor	km Link Road	km Local Access Road	Combined Total km
West						
Uttlesford	22	83	194	66	305	671
Epping	22	89	175	33	441	760
Harlow	11	22	22	0	212	267
Brentwood	1	53	101	0	207	363
Sub Total	56	246	492	99	1166	2060
East						

Area and District	km Strategic Route	km Main Distributor	km Secondary Distributor	km Link Road	km Local Access Road	Combined Total km
Colchester	10	106	98	144	403	761
Tendring	6	165	107	194	392	865
Sub Total	15	271	205	339	795	1626
Mid						
Chelmsford	43	120	131	63	547	904
Maldon	0	52	128	93	265	539
Braintree	64	80	126	306	447	1023
Sub Total	107	253	385	461	1259	2465
South						
Basildon	22	83	85	4	537	731
Castle Point	21	3	36	19	248	327
Rochford	1	38	42	50	190	322
Sub Total	43	125	163	72	975	1379
A127	65	0	0	0	0	65
Sub Total	65	0	0	0	0	65
Combined Total	287	895	1246	971	4196	7595

**Table 3 - Footway hierarchy**

Category	Category name	Description	Km in Essex (estimated)
1(a)	Prestige Walking Zones	Very busy areas of towns and cities with high public space and streetscene contribution.  There are no Prestige Walking Zones in Essex.	0km
1	Primary Walking Routes	Busy urban shopping and business areas and main pedestrian routes.	860km
2	Secondary Walking Routes	Medium usage routes through local areas feeding into primary routes, local shopping centres and so on.	
3	Link Footways	Linking local access footways through urban areas and busy rural footways.	

Category	Category name	Description	Km in Essex (estimated)
4	Local Access Footways	Footways associated with low usage, short estate roads to the main routes and cul-de-sacs.	7000km
			Total estimated km 7860km

**Table 4 - Cycleway hierarchy**

Category	Description
A	Cycle lane forming part of the carriageway, commonly 1.5 metre strip adjacent to the nearside kerb. Cycle gaps at road closure point (no entries allowing cycle access).
B	Cycle track, a highway route for cyclists not contiguous with the public footway or carriageway. Shared cycle/pedestrian paths, either segregated by a white line or other physical segregation, or un-segregated.
C	Cycle trails, leisure routes through open spaces. These are not necessarily the responsibility of Essex County Council, but may be maintained by an authority under other powers or duties.

The hierarchy for carriageways, footways and cycleways in Essex is based upon guidance in the Code of Practice for Highways Maintenance Management 2005.

### **Public Rights of Way hierarchy**

There is no established formal hierarchy for Public Rights of Way in Essex for the purpose of assigning maintenance and improvement priorities.



## **County Routes and Local Roads**

In the addition to the use of defined hierarchies the network is managed through a division of the network into County Routes and Local Roads. County Routes are of primary importance for the movement of goods and people across the county. Local Roads ensure that all households and businesses have adequate access to the County Route network. These principles underpin the way the network is managed and how a significant proportion of funding is allocated. Funding for routine and cyclic maintenance is allocated to each Area Office on the basis of weighted road length of County Routes and Local Roads built up on a district by district basis.

## **Network referencing**

Effective management of the highway network is facilitated by good and easy access to information about the network. A network referencing system is used to enable data associated with the highway network to be accurately located within the network. This information can be accessed using the Pavement Management System (PMS) computer which contains data on the condition of the network, inventory information and maintenance treatments that have been carried out. The PMS is managed and maintained on behalf of the County Council by Mouchel Parkman consultants.

Asset management and maintenance information is added to and available from the Confirm Asset Management System. The system currently records all works (on included asset types), manual condition observations, inspection history and customer enquiries as well as information on a variety of asset attributes such as type, hierarchy and length. The system will be used to produce management reports across its module range allowing delivery of defined business intelligence in textual, graphical or GIS formats.

## **5. Maintenance type and maintenance categories**

There are six main types of highways maintenance carried out in Essex:

- 1. Reactive maintenance** – responding to safety inspections, complaints or emergencies.
- 2. Routine maintenance** – regular consistent schedule, generally for patching, cleaning, grass cutting and landscape maintenance.

3. **Programmed maintenance** – flexibly planned schemes primarily of resurfacing, reconditioning or reconstruction.
4. **Regulatory maintenance** – inspecting and regulating the activities of others.
5. **Winter Service.**
6. **Weather and other emergencies.**

Within each of the six types of maintenance there are a number of sub-categories as shown in the table on the following page:

**Table 5 - Maintenance type**

Maintenance type	Sub-categories
Reactive	<ul style="list-style-type: none"> <li>• All assets – sign and make safe for safety purposes</li> <li>• All assets – provide initial temporary repair for safety purposes</li> <li>• All assets – provide permanent repair for safety purposes</li> </ul>
Routine	<ul style="list-style-type: none"> <li>• Carriageways, footways and cycle routes – minor works and patching</li> <li>• Drainage systems – cleansing and repair</li> <li>• Embankments and cuttings – stability</li> <li>• Landscaped areas and trees – management</li> <li>• Verges – grass cutting</li> <li>• Fences and barriers – tensioning and repair</li> <li>• Traffic signs and bollards – cleansing and repair</li> <li>• Road markings and studs – replacement</li> <li>• Lighting installations – cleansing and repair</li> <li>• Bridges and structures – cleansing and minor works</li> </ul>
Programmed	<ul style="list-style-type: none"> <li>• Carriageways – minor works, resurfacing or</li> </ul>

Maintenance type	Sub-categories
	reconstruction <ul style="list-style-type: none"> <li>• Footways - minor works, resurfacing or reconstruction</li> <li>• Cycleways - minor works, resurfacing or reconstruction</li> </ul>
Regulatory	<ul style="list-style-type: none"> <li>• Maintenance of Highway Register and Definitive Map</li> <li>• Co-ordination of road and street works (Traffic Manager responsibility)</li> <li>• Charging schemes and permits for highway occupation (Traffic Manager responsibility)</li> <li>• Other regulatory functions – encroachment, illegal signs, parking</li> </ul>
Winter service	<ul style="list-style-type: none"> <li>• Pre-treatment</li> <li>• Post-treatment</li> <li>• Clearance of ice and snow</li> </ul>
Weather and other emergencies	<ul style="list-style-type: none"> <li>• Flooding</li> <li>• High winds</li> <li>• High temperatures</li> <li>• Other emergencies</li> </ul>

The proportion of the maintenance budget that is allocated to each of the maintenance categories is in the order of:

- Reactive maintenance: 34%
- Routine maintenance: 11%
- Programmed maintenance: 50%
- Regulatory maintenance: <1%
- Winter service: 5%

Please note that figures shown are for 2007/08 and are not fixed proportions.

## Summary of key points

### The key points for maintenance strategy and hierarchy are:

- Highway maintenance strategy should be based on a systematic logical approach in accordance with the principles of best value and continuous improvement.
- The four core objectives and associated sub-objectives for maintenance strategy are:

#### 1. Network safety

- Complying with statutory obligations.
- Meeting users' needs for safety.

#### 2. Network serviceability

- Ensuring availability.
- Achieving integrity.
- Maintaining reliability.
- Enhancing condition.

#### 3. Network sustainability

- Minimising cost over time.
- Maximising value to the community.
- Maximising environmental contribution.

#### 4. Customer service

The foundations of a highway maintenance strategy are:

- a detailed inventory of all components to be maintained;
- a defined hierarchy for all elements of the network;
- a robust framework of levels of service.

The main focus for the future in highways maintenance is linked to the current Highways Maintenance Initiative.

The Highways Maintenance Initiative (HMI) began in 2005/06 and combined a new maintenance strategy with an injection of capital funds.

The new maintenance strategy switched the focus from treating red roads (those not in good condition) to primarily treating amber roads (those deteriorating towards the red band) and less red roads. This allowed the use of cheaper, preventative treatments to stop roads from becoming “red” and to achieve the aim of arresting the deterioration of the network. This approach has also helped to improve value for money through the use of these lower cost treatments.

This new approach has proved to be very successful, and the focus for the coming years is to build on and develop this strategy further, to achieve even greater benefits for the future.

- Roads, footways and cycleways are assigned to a defined hierarchy as shown in the tables on this chapter as well as the use of a County Routes and Local Roads split.
- There are six main types of highways maintenance carried out in Essex:
  1. **Reactive maintenance – responding to safety inspections, complaints or emergencies.**
  2. **Routine maintenance – regular consistent schedule, generally for patching, cleaning, grass cutting and landscape maintenance.**
  3. **Programmed maintenance – flexibly planned schemes primarily of resurfacing, reconditioning or reconstruction.**
  4. **Regulatory maintenance – inspecting and regulating the activities of others.**
  5. **Winter service.**
  6. **Weather and other emergencies.**



# Chapter 8 - Inspection, assessment and recording

## Introduction

The establishment of an effective regime of inspection, assessment and recording is the most crucial component of highway maintenance. Information obtained provides the basic information for addressing the core objectives of highway maintenance: network safety, network serviceability and network sustainability. It will also provide the basic condition data for the development of programmes for maintenance in conjunction with the Transport Asset Management Plan.

All elements of the inspection and assessment regime should be applied systematically and consistently in Essex.

There are three types of inspections and surveys in Essex which will be covered in detail in this chapter of the Maintenance Strategy:

- **safety inspections** – designed to identify all defects likely to create danger or serious inconvenience to users of the network or the wider community. These are regular inspections of the highway, which generate the bulk of remedial works;
- **service inspections** – detailed inspections tailored to the requirements of particular highway elements, for example, safety fencing, to ensure that they meet requirements for serviceability. These inspections may require more specialist knowledge;
- **condition surveys** – machine based and visual surveys to identify deficiencies in the highway fabric which, if untreated, are likely to adversely affect its long term performance and serviceability. These surveys provide the data for the overall assessment of the highway network in the County via Best Value Performance Indicators. They also demonstrate the effects of maintenance strategies on the overall network.

Recording and monitoring of information is covered in detail in Chapter 19 of this document.

# Safety inspections

## 1. Introduction

The County Council undertakes a system of regular highway safety inspections of all its adopted highways in order to comply with its statutory duty to maintain highways pursuant to Section 41 of the Highways Act 1980, and to provide a special defence under Section 58 of the Act. This allows us to provide defence against actions brought by third parties for damages resulting from failure to maintain the highway provided there is an efficient and effective highway inspection regime and that thorough and detailed inspection records are kept plus that there is a reasonable system for repair and maintenance.

Safety inspections are designed to identify all defects likely to create danger or serious inconvenience to users of the network or the wider community. The risk of danger is identified by a highways inspector on site, and the defect categorised in terms of an appropriate priority response. The establishment of an effective regime of inspection, assessment and recording is a key component of highway maintenance. This regime provides the basic information required to address the core objectives of highway maintenance; network safety, network serviceability and network sustainability as well as providing basic condition data for the development of maintenance programmes as part of the Transport Asset Management Plan.

An effective inspection regime has clearly defined:

- assessment procedure based on risk probability;
- inspection frequencies;
- items to be recorded;
- degree of defect;
- nature of response.



Inspections shall be carried out by trained personnel on foot or from a slow moving vehicle. Teams of two operatives should be used where a risk assessment has shown this to be necessary. Additional safety inspections of specific defects shall also be carried out in response to:

- reports or complaints from Essex Police and other organisations;
- community concern – reports or complaints from members of the public;
- the result of minor incidents;
- extreme weather conditions.

All inspection records shall include details of the surface conditions and any unusual features of the method of inspection.

This Strategy and Code of Practice for Highway Safety Inspections has been developed to provide guidelines and guidance to personnel involved in undertaking highway safety inspections. It specifically covers the risk assessment procedure to enable prioritisation of defects and determination of an appropriate response.

Essex County Council has been following recommended good practice in the carrying out of safety inspections for many years and this has been reviewed in the light of practical experience, current contract arrangements and recommendations made in the Code of Practice for Highway Maintenance Management 2005. This review has identified the need to amend the priority of response given to a defect in the highway. Essex will continue to respond to very dangerous defects within two hours from the defect being assessed on site and notified to the contractor by an inspector, which is more than is required in the Code of Practice and to respond to serious defects by the end of the next working day.

The seven calendar days response in the 2003 Maintenance Plan will no longer be applied, changing to an up to 28 day response which provides greater flexibility for both the County Council and its contractors. The up to 28 day response takes into account the practicality of inspection and order raising times and the need to obtain information on the location of Statutory Undertakers equipment before work can take place. This is a departure from the recommendations made in the Code of Practice to make a defect safe or carry out a repair within five working days which has proved to be difficult to achieve for both practical and financial reasons.

## **2. Defect categories**

Defects are defined in two categories:

Category 1 – those that require urgent or prompt attention because they represent an immediate or imminent hazard or because there is a risk of short-term structural deterioration.

Category 2 – all other defects

All Category 1 defects will be repaired. Category 2 defects will be repaired in priority order as within the resources allocated for highway maintenance.

### **2.1 Category 1 defects**

Category 1 defects are to be made safe or repaired by the end of the next working day from the time that the defect is assessed on site by an inspector and notified to the contractor although this type of defect should be corrected or made safe at the time of the inspection, as the situation dictates. This may involve displaying warning notices or coning off or fencing off to protect the public from the defect. Wherever possible, a permanent repair should be made to a Category 1 defect to save a repeat visit and inconvenience to the road user. Where a temporary repair is made to a Category 1 defect permanent repair should then be carried out within 28 days.

Some defects will be assessed using a risk based approach as being potentially so dangerous to the public that they require immediate attention and will be made safe or repaired within two hours from the time that the defect is assessed on site by an inspector and notified to the contractor. Typical defects that fall under this category may include (but are not limited to):

- collapsed or missing covers or gratings in carriageways or footways;
- potholes of 75mm deep or above, spalling, ridge, hump, depression, sunken covers or gap/crack in the wheel track of a carriageway;
- a 40mm wide open joint on a footway;
- substantial running water on a principal derestricted road;
- substantial standing water on a principal derestricted road;

- significant loss of stop/give way markings or solid centre line on a carriageway;
- dangerous tree;
- oil spill or hazardous debris.

Some Category 1 defect repairs may be due to the activities of the utilities, which are governed by the requirements of the New Roads and Street Works Act 1991, or a failure of their apparatus. If the reinstatement is still within the guarantee period and is outside its specified tolerances due to settlement, plucking out or other reasons, and within Category 1 criteria, any costs incurred in making safe, and or repair, must be recovered from the Statutory Undertaker. However, the Undertaker must be informed by first contacting the NRSWA team who will raise a Section 81 and therefore be given an opportunity to carry out their own repairs.

## **2.2 Category 2 defects**

Category 2 defects are those defects which, following a risk assessment, are deemed not to represent an immediate or imminent hazard or risk of short term structural deterioration. These defects may have safety implications, although of a far lesser significance than cat 1 defects, but are more likely to have serviceability or sustainability implications.

These defects are not required to be urgently rectified and those for which repairs are required shall be undertaken within a planned programme of works. The time scale for repair will depend on the amount and type of traffic using the road. Roads such as the A127, A13 and A130 are likely to require repair within seven days.

Other more minor defects may be either repaired during the next available programme, investigated more thoroughly through a detailed inspection, monitored through more frequent inspections or no immediate action taken and the condition reviewed at the next scheduled inspection.

The appropriate action to be taken will be determined by the highway inspector at the time of inspection.

### **3. Priority response times**

The degree of observed deficiency or defect and consequent nature of response are dealt with through the risk assessment procedure. Defects should be dealt with in priority order.

Priority response times in Essex relevant to the particular categories of defect and level of hierarchy as assessed by the likely impact and probability of the risk have been categorised as:

#### **Priority 1**

Immediate - two hour make safe or repair, from the time the defect is assessed on site by an inspector. (Category 1 defect).

#### **Priority 2**

High – Make safe or repair by the end of the next working day from the time the defect is assessed on site by an inspector. (Category 1 defect).

#### **Priority 3**

Medium – up to 28 days repair (Category 2 defect).

#### **Priority 4**

Low – more than 28 days repair (Category 2 defect). Repair within the next available programme, schedule a more detailed inspection, monitor through more frequent inspections or review condition at next inspection, based on an assessment of risk of deterioration before the next visit.

The table below shows the changes in response times in comparison to those in the previous maintenance plan:

**Table 6 - Maintenance Strategy 2008**

Maintenance Strategy 2008			Maintenance Plan 2003		
Priority Response	Response time	Defect category	Priority Response	Response time	Defect category
P1	2 hour	Cat 1	P1	2 hour	Cat 1
P2	End of next working day	Cat 1	P2	24 hour	Cat 1
P3	Up to 28 days	Cat 2	P3	7 days	Cat 2
P4	More than 28 days	Cat 2	P4	28 days	Cat 2
			P5	More than 28 days	Cat 2

**Note: the response times relate to calendar days not working days except where stated.**

Priority 3 defects will receive a medium response time of up to 28 days. This allows a decision to be made on how quickly the defect will need to be repaired. For example, highly trafficked roads in Essex such as the A127 will require a much quicker response time, normally of seven days.

#### **4. Contractor response time**

Contractor response times must reflect the overall priority response time stated in the strategy and therefore need to take into account the time Employer may take to raise a task order, file transfer delays, completion of the CDM Pre-Construction checklist and the overall target to be met by both the Employer and the Contractor from the time that the defect is assessed on site by an inspector.

It is the responsibility of the officer, at the time of assessing the defect to notify the contractor immediately regarding urgent (Category 1) works, and to specify the exact date/time by which the defect must be made safe and/or repaired. This contractor response time must take into account the need to ensure that work is completed within the overall priority response time identified for that defect. The 'clock started ticking' when the defect was first assessed on site by the inspector and then notified to the contractor, hence the requirement for immediate notification to achieve response times.

Clear and accurate records must be kept by both the Employer and Contractor to include:

- date and time the defect was visited and assessed on site by the inspector;
- date that the contractor is commissioned to make the defect safe or carry out a repair;
- date and time the defect is made safe;
- date and time the defect is repaired.

This is in addition to the performance data that is recorded by the Contractor.

## 5. Risk assessments

Any item that when inspected has a defect level which corresponds to, or is in excess of, the stated defect investigatory level (see Section 9 of the Safety Inspections strategy) is to be assessed for likely risk.

The risk assessment covers:

- **Risk identification** – an inspection item for which the defect investigatory level is reached or exceeded is identified as a risk.
- **Risk evaluation** – assessing the likely impact should the risk occur and the probability of it happening
- **Risk impact** – quantifying the impact of a risk occurring on a scale of 1 to 4. Relates to assessing the extent of damage likely to be caused should the risk become an incident:
  - 1 = minor or low impact
  - 2 = noticeable impact
  - 3 = major, high or serious impact
  - 4 = extremely high or dangerous impact

In general, the greater the extent of the defect the higher the impact will be as well as amount of traffic and type of road.

For example: a 20mm pothole along the centre line of a carriageway subject to a speed limit of 30mph may have little impact, whereas a 20mm pothole in the cycle lane at the nearside edge of the carriageway could have a major impact.

- **Risk probability** – assessing the probability of a risk occurring on a scale of 1 to 4:

1 = low probability (up to 40%)

2 = medium probability (41 to 60%)

3 = high probability (61 to 80%)

4 = very high probability (over 80%)

The probability is quantified by assessing the likelihood of users passing by or over the defect encountering the risk. Consequently the road hierarchy and defect location are important considerations in this assessment.

In general, the greater the traffic flow, the higher the probability of a risk occurring.

For example: considering the previous scenario, the risk probability in the cycle lane of the carriageway where there are numerous cyclists is likely to be high whereas the probability along the centre line may only be medium as the traffic density should be lower.

- **Risk factor** – this is a value derived by multiplying the number assigned to risk impact by the risk probability figure. This will give a value in the range of 1 to 16. This factor identifies the overall seriousness of the risk and the appropriateness of the speed of response to remedy the defect. The priority response time for dealing with the defect can also be determined by reference to the risk management table.
- **Risk management** – having identified a risk, assessed it's likely impact and probability and calculated the risk factor, the following risk matrix can be referred to to identify the priority response:

**Table 7 - Risk Matrix/Risk Management Table**

Probability → Impact ↓	Low (1)	Medium (2)	High (3)	Very high (4)
Minor/low (1)	1	2	3	4
Noticeable (2)	2	4	6	8
Major/high or serious (3)	3	6	9	12
Extremely high/dangerous (4)	4	8	12	16

The colours in the matrix identify a priority response as follows:

Risk factor	1- 3	4- 6	8- 12	16
Defect category	Category 2	Category 2	Category 1	Category 1
Response category	P4	P3	P2	P1
Priority Response	More than 28 calendar days Repair during next available programme	Up to 28 calendar days Repair	End of next working day Make safe or repair	2 hours Make safe or repair

**6. Risk register**

Although it is not possible to identify every risk, the risks identified in the Essex Risk Register for Highway Safety Defects cover a wide range of risks likely to be encountered. (The risk register is contained within the Maintenance Practice and Guidance document)

The risk register is a key component of the risk management process in that it incorporates, in respect of each risk:

- risk description;



- extent of defect;
- assessment of impact;
- assessment of probability;
- risk factor;
- defect categorisation;
- priority response.

This document is for guidance only and the risks contained in the register are based on the highest assumed risk attributable to the type of defect, position and assessed type of usage. Local knowledge could assess the risk differently.

An inspector can assess risks from first principles with the benefit of local knowledge, and this could result in a different risk factor from that contained in the risk register. In such cases, an inspector must record the reasons for the variation.

The basic principles for risk impact and probability in the register are:

- the greater the extent of defect, the higher the impact;
- the greater the traffic flow, the higher the probability.

The position of the defect on the highway is also of significance.

The register incorporates defects which may not be the responsibility of the highway authority such as utility trench reinstatements and iron works, as well as hazards caused by third parties such as obstructions in the highway or dangerous scaffolding. Although the inspector must ensure that all relevant information is notified directly to the third party concerned or to the appropriate person or section dealing with the matter, they must also satisfy themselves that the authority's obligations in respect of duty of care are fully met. This means that when such hazards are deemed dangerous, the inspector or maintenance engineer must ensure that the site is made safe within two hours by the highway authority.

## Defect recording

All safety related defects meeting or exceeding investigatory levels must be recorded on Confirm. It is vital that this information is accurate and complete as it may be used as an audit trail at some future date, particularly if there are proceedings in respect of a third party claim against ECC.

The following information must be recorded:

- date of inspection;
- time of inspection;
- road name/street name;
- location;
- surface state;
- defect reference;
- defect description;
- location of defect;
- extent of defect;
- priority response;
- job number (if job raised);
- presence of defective Utility apparatus (classed as an external defect on CONFIRM);
- general rating of the condition of the road and footway respectively (1 = new condition, 2 = good condition, 3 = fair condition, 4 = poor condition and 5 = unsatisfactory condition)

Note (1): priority 3 and priority 4 responses relate to calendar and not working days.

Priority 2 responses recorded on a Friday must be responded to by Saturday lunchtime at the latest. Appropriate arrangements need to be made for working at weekends and public holidays. Out of hours emergency response operates seven per week 365 days a year.

Note (2): Where a defect has been identified on a bridge the Senior Bridge Engineer at County Hall should be notified of the defect by e-mail.

Note (3): Passenger Transport Infrastructure related faults identified during an inspection should be notified to Passenger Transport Infrastructure Team Manager on 01245 435772.

## 8. Frequency of inspection

Frequency of safety inspection relates to the relative importance of the feature and the category of road. Some additional ad hoc inspections of specific defects will be required in response to reports or complaints from the Police, other organisations and the public, as a result of minor incidents or extreme weather conditions.

Frequency of safety inspection is based on the network hierarchy (these are the minimum frequencies at which inspections should be carried out) and are shown in the table on the following page:

**Table 8 - Frequency of inspection**

Feature	Description	Category	Frequency
Roads	Strategic Route	2	1 month
	Main Distributor	3(a)	1 month
	Secondary Distributor	3(b)	3 months
	Link Road	4(a)	6 months
	Local Access	4(b)	12 months
	Minor Access		12 months
Footways	Prestige Area	1(a)	1 month
	Primary Walking Route	1	1 month
	Secondary Walking Route	2	3 months
	Link Footway	3	6 months
	Local Access Footway	4	12 months
Cycleways	Part of Carriageway	A	As for roads
	Remote from Carriageway	B	6 months
	Cycle Trails	C	12 months

Note: the frequency of inspection deviates from that recommended in the Code of Practice for Highway Maintenance Management for Secondary Distributor roads (frequency of every three months instead of every month) and Link Roads (frequency of every six months instead of every three months). This departure from the recommendation in the Code is due to insufficient resources being available to carry out more frequent inspections.

The inspection frequencies may be more frequent where special criteria may apply. Factors to take into account when deciding if a more frequent inspection is required are:

- access route to school/hospital and so on;
- special environmental considerations – noise, appearance and so on;
- special traffic zone – traffic calming and so on;
- winter service route;
- vulnerable users or with special needs – old people’s homes and so on;
- lorry route;
- public transport route;
- cycle network.

If a decision is made to alter the inspection frequencies the County Roads Manager must be informed and the alteration needs to be described and highlighted on the Safety Inspection Schedule.

**9. Items for inspection and investigatory levels**

The list of highway inventory to be observed for possible defects in a safety inspection together with the defect investigatory levels are as follows:

**Table 9 - Items for inspection and investigatory levels**

Item	Defect	Investigatory Level
Carriageway and cycleway	Pothole/spalling Ridge or rutting Depression/sunken cover Gap/crack	50mm depth (75mm across in any horizontal direction) 50mm depth 50mm 50mm depth (> 20mm width)
Footway	Trip/pothole/sunken cover Rocking slab/block	20mm depth (75mm across in any horizontal direction) Identifiable rocking
Kerbs	Misaligned / chipped/cracked Loose/rocking Missing	50mm Missing kerb

Item	Defect	Investigatory Level
Verges	<p>Sunken area adjacent to and running parallel with carriageway edge</p> <p>Sunken area adjacent to and running parallel with footway edge</p> <p>Obstruction</p>	<p>Depth 150mm</p> <p>Depth 100mm</p> <p>Obstruction present (comply with Policy Practice Note 13)</p>
Iron works	<p>Gaps within framework (other than designed by manufacturer)</p> <p>Level differences within framework</p> <p>Rocking covers</p> <p>Cracked / broken covers</p> <p>Worn / polished covers</p> <p>Missing covers</p>	<p>50mm carriageway, 20mm footway</p> <p>Defect present</p> <p>Defect present</p> <p>Cover missing</p>
Flooding	<p>Standing water two hours after cessation of rainfall 1.5m from edge of c/way</p> <p>Substantial running water across carriageway</p> <p>Substantial running water across footway</p> <p>Property inundation as a result of defective highway drainage</p>	<p>Defect present</p> <p>Defect present</p> <p>Defect present</p> <p>Defect present</p>
Drainage	<p>Substantial standing water adjacent to edge of c/way</p> <p>Blocked gully (silted above outlet)</p> <p>Collapsed/blocked/ settled items or systems</p>	<p>Defect present</p> <p>Defect present</p> <p>Defect present</p>
Road markings	Faded or worn markings	30% loss of effective markings

Item	Defect	Investigatory Level
Road studs	Missing hole left in c/way Displaced item on c/way Defective item	Defect present Defect present Defect present
Signs/bollards/lights/ traffic signals	Damaged/misaligned item causing a hazard (including sign fixings)  Missing item causing a hazard (including sign fixings)  Lights/signals not operating Correctly/malfunctioning signals pointing the wrong way  Signal lamp failure Exposed wiring Missing door to lamp column Item missing Item obscured/dirty/faded	Defect present  Defect present  Defect present Defect present  Defect present Defect present Defect present  Defect present Defect present
Safety fencing and barriers	Item damaged or misaligned causing a hazard  Unstable item or section	Defect present  Yes/no
Hedges and trees	Unstable tree causing danger of collapse onto highway  Overhanging tree leading to loss of height clearance over carriageway, footway or cycleway	Yes/no  < 2.1m over footways < 2.4m over cycleways < 5.1m over carriageways

Item	Defect	Investigatory Level
<b>Highway structures – safety inspection items</b>		
Carriageways and cycleways over/on structures	<p><i>Inspection items as per carriageways and cycleways not crossing structures</i></p> <p>Slipperiness of surfacing</p> <p>Failure of carriageway/cycleway joints</p> <p>Subsidence of carriageway/cycleway adjacent to structure</p>	<p>Surface is slippery</p> <p>Presence of loose material/bolts, and so on that potentially could become dangerous missiles</p> <p>Subsidence evident</p>
Footways, ramps and stairs	<i>Inspection items as per footways and so on not crossing structures</i>	
Kerbs	<i>Inspection items as per kerbs not on structures</i>	
Flooding	<p><i>Inspection items as per flooding on all carriageways</i></p> <p>Blockage of waterway resulting in flooding of adjacent properties or ground</p> <p>Flooded subways following pump failure/drain blockages</p>	<p>Defect present</p> <p>Defect present</p>
Parapets	Displaced, and missing components through damage and theft – rail, mesh, posts, bolts, and so on.	Defect present

Item	Defect	Investigatory Level
Vandalism	Deliberate damage Offensive graffiti Fire damage	Defect present Defect present Defect present
Deterioration damage to bridge structures	Concrete, bricks and other material fallen from structure  Water leakage from structure	Defect present  Defect present
Bridge strikes: - Superstructure (Bridge deck impacts) - Substructure (Pier & column impacts)	Damage  Damage	Defect present  Defect present
Bridge signs: - Weight restrictions - Low clearances - Width restrictions	Missing, damaged or obscured  Missing, damaged or obscured  Missing, damaged or obscured	Defect present  Defect present  Defect present
Highway general	1. Oil/debris/mud/stones and gravel likely to cause a hazard  2. Street furniture missing/ damaged likely to cause a hazard  3. Illegal signs  4. Obstructions in the highway	Defect present (ECC/District)  Defect present (ECC/District/Parish)  Defect present (ECC/District)  Defect present (ECC)



Item	Defect	Investigatory Level
	5. Obstructed sight lines	Defect present (ECC)
	6. Ramps in carriageway to aid vehicular movement	Defect present (ECC)
	7. F/way damage caused by vehicular access where no vehicle crossing	Defect present (ECC)
	8. Scaffolding likely to cause a hazard	Defect present (ECC/District)
	9. Skips likely to cause a hazard	Defect present (ECC)
	10. Unprotected building materials on the highway	Defect present (ECC)
	11. Abandoned vehicles likely to cause a hazard	Defect present (ECC)
Other dangers to the public	Anything else considered dangerous	Dangerous item present

*Note – responsibilities for defects are shown in blue*

In regard to defects specified in the above table, particularly those covered under the “highway general” heading, many are the responsibility of individuals or organisations and not the highway authority. If urgent action is required the inspector shall take the necessary steps required to make the defect safe and shall then, pass on the relevant information to the section or department or organisation which is responsible for overseeing that particular activity. A record of passing the defect should be held on Confirm, and should also be followed up by the inspector to ensure that remedial action has been taken in an appropriate timescale.

In addition there are other works undertaken by third parties, including both authorised and unauthorised operations, which are clearly the responsibility of the third party. It shall be the responsibility of the Inspector, wherever practicable, to ensure that the third party is made aware of the problem and undertakes all necessary remedial action to resolve the problem. If the third party is unwilling or unable to rectify the problem, any costs incurred in remedial action shall be re-charged to the third party, if their identity is known.

The procedure for dealing with knockdowns is also being revised and once complete will be added to the Maintenance Practice and Guidance suite of documents.

Where defects are identified on highway structures the inspector should contact the Bridges Team at County Hall if they identify any defects that they are unsure about.

## **10. Details of items to be inspected**

The particulars of the items to be inspected are as follows:

### **Carriageways**

- Central island
- Central reservation
- Carriageway
- Hard shoulder
- Crossover (central reserve)
- Lay-by
- Cycleways (forming part of carriageway)

### **Footways and cycleways**

- Footway
- Paved footpath
- Cycleways
- Kerbs
- Edgings

- Channels
- Verge

### **Iron works**

- Manholes
- Catchpit
- Gullies
- Kerb outlet
- Utilities covers and frames

### **Drainage**

- Culvert
- Highway ditch
- Filter drain
- Grip
- Gully
- Piped grip / kerb offlet

### **Road markings**

- Stop lines
- Give way lines
- Other road markings

### **Road studs**

- Non-reflective road studs (zebras and pelicans)
- Depressible reflective road studs (halifax cats eyes)
- Non-depressible reflective road studs

### **Signs/bollards/lights**

- Signs
- Bollards
- Illuminated signs
- Pedestrian crossing lights
- Lighting columns
- Wall mounted street lighting
- All other lighting units

### **Traffic signals**

- Traffic signals
- Traffic signal installation
- Traffic signal furniture

### **Safety fencing/barriers**

- Fences and barriers
- Pedestrian guardrails
- Safety fencing
- Boundary walls and fences

### **Street furniture**

- All items of furniture not covered elsewhere

### **Hedges and trees**

- Hedges
- Trees and shrubs
- Other vegetation

## **Structures**

- Carriageway crossing structure
- Footway crossing structure
- Cycleway crossing structure
- Parapets
- Movement joints
- Drainage
- Vandalism/graffiti
- Damage
- Safety fencing
- Rivers/streams (flooding)

## **Scavenging**

- The full extent of the highway.

## 11. Summary of key points

### The key points for safety inspections are:

- a. Defects are defined in two categories:
  - Category 1 – those that require prompt attention because they represent an immediate or imminent hazard or because there is a risk of short-term structural deterioration.
  - Category 2 – all other defects.
- b. Some defects will be assessed as being potentially so dangerous to the public that they require immediate attention and will be made safe or repaired within two hours from the time that the defect is assessed and reported to the contractor. Typical defects that fall under this category may include (but are not limited to):
  - Collapsed or missing covers or gratings in carriageways or footways.
  - Potholes of up to 75mm deep or above, spalling, ridge, hump, depression, sunken covers or gap/crack in the wheel track of a carriageway.
  - A 40mm wide open joint on a footway.
  - Substantial running water on a principal derestricted road.
  - Substantial standing water on a principal derestricted road.
  - Significant loss of stop/give way markings or solid centre line on a carriageway.
  - Dangerous tree.
  - Oil spill or hazardous debris.
- c. Where a temporary repair is made to a Category 1 defect permanent repair should then be carried out within 28 days.
- d. Priority response times in Essex relevant to the particular categories of defect and level of hierarchy as assessed by the likely impact and probability of the risk have been categorised as:

**Priority 1** = Immediate: Two hour make safe or repair (Category 1 defect).

**Priority 2** = High: Make safe or repair by the end of the next working day (Category 1 defect).

**Priority 3 = Medium:** up to 28 days repair (Category 2 defect).

**Priority 4 = Low:** more than 28 days repair (Category 2 defect). Repair within the next available programme, schedule a more detailed inspection, or review condition at next inspection, based on an assessment of risk of deterioration before the next visit.

- e. Response times relate to calendar days not working days except where stated. This means that a Priority 2 response recorded on a Friday must be responded to by Saturday lunchtime at the latest. Appropriate arrangements need to be made for working at weekends and public holidays.
- f. Priority 3 defects will receive a medium response time of up to 28 days. This allows a decision to be made on how quickly the defect will need to be repaired. For example, highly trafficked roads in Essex such as the A127, A13 and A130 are likely to require a much quicker response time, normally of 7 days.
- g. Contractor response times must reflect the overall priority response time stated in the strategy and therefore need to take into account the time Employer may take to raise a task order, file transfer delays, and the overall target to be met by both the Employer and the Contractor from the time that the defect is assessed on site by an inspector.
- h. Clear and accurate records must be kept to include:
  - Date and time the defect was visited and assessed on site by the inspector.
  - Date that time the contractor is commissioned to make the defect safe or carry out a repair.
  - Date and time the defect is made safe.
  - Date and time the defect is repaired.
- i. Any item that when inspected has a defect level which corresponds to, or is in excess of, the stated defect investigatory level is to be assessed for likely risk.
- j. All safety related defects meeting or exceeding investigatory levels must be recorded on Confirm. It is vital that this information is accurate and complete as it may be used as an audit trail at some future date, particularly if there are proceedings in respect of a third party claim against ECC.

## Service inspections

### 1. Introduction

Service inspections are carried out to ensure that the network meets the needs of its users by providing more detailed inspections of particular highway elements to ensure that they meet the requirements for serviceability. Service inspections also include inspections for regulatory purposes including NRSWA which relate to network availability and reliability as well as other inspections for network integrity.

Defects identified during safety inspections should be assessed as Category 1 or Category 2 defects and rectified in accordance with the requirements of the safety inspection regime and assignment of priority response time (see Safety inspections for detail). Most service related defects are expected to be Category 2 and repairs will therefore be made as part of a programme or absorbed into special maintenance schemes.

Service inspections will be carried out on foot from a slow moving vehicle with a dedicated driver and an inspector except where a specialist contractor has been procured to carry out the inspection. The method for carrying out the inspections will need to be the subject of a risk assessment with the final decision being dependent upon the outcome of the assessment. The risk assessment shall establish whether there are any perceived hazards such as parked vehicles which will prevent the satisfactory completion of the inspection. Where the use of a slow moving vehicle is identified as suitable the inspection will be carried out by a team consisting of a dedicated driver and an inspector, at speeds not exceeding 15-20 mph.

### 2. Frequency of inspection

The Code of Practice for Highway Maintenance Management recommends that the scale and scope of service inspections is optional and may be determined by the authority's approach to asset management planning. The Code also goes on to state that the extent of the service inspection regime adopted by authorities is discretionary.

Essex County Council will adopt two different approaches and therefore frequencies of service inspections as follows:



**a. An enhanced safety inspection**

The enhanced safety inspection includes service related elements and is a more thorough inspection and will be carried out by Development, Highways and Transportation inspectors annually on the whole network on Essex. Please refer to the enhanced safety inspection observation list in the Maintenance Practice and Guidance documents for items to be included in these inspections.

**b. A detailed service inspection**

A programme of detailed service inspections is currently being developed for implementation by 2008/09. This will focus primarily on an initial survey of safety fences which will give a prioritised list of areas of the network that may require further investigation.

It is envisaged that a five year rolling programme of inspections can then be developed, to include (but not limited to) inspection of the following attributes:

- mounting height;
- structural condition;
- tensioning where applicable;
- damage or deformation of the fencing;
- corrosion of surface or posts.

The following asset groups will not receive any form of proactive detailed service inspection but will be covered by the routine safety inspections and a reactive approach will be taken to rectifying problems:

- embankments;
- trees and hedges;
- highway drainage systems.

Service inspections of street lighting and bridges and structures are not dealt with under the Highway Maintenance Plan, but are covered in separate documents.

### 3. Summary of key points

#### Key points for Service Inspections:

- Defects identified during safety inspections should be assessed as Category 1 or Category 2 defects and rectified in accordance with the requirements of the safety inspection regime and assignment of priority response time.
- Service inspections will be carried out on foot for from a slow moving vehicle with a dedicated driver and an inspector except where a specialist contractor has been procured to carry out the inspection.
- Essex County Council will adopt two different approaches and therefore frequencies of service inspections as follows:
  - An enhanced safety inspection to include service related elements will be carried out by Development, Highways and Transportation inspectors on an annual basis and will cover the whole network.
  - Development of detailed service inspections initially of Safety fencing
- Embankments, trees and hedges and highway drainage systems will not receive any form of proactive detailed service inspection but will be covered by the routine safety inspections and a reactive approach will be taken to rectifying problems.

## Condition surveys

### 1. Introduction

The most significant financial investments in highway maintenance are the repairing, reconditioning and reconstruction of highway pavements, in particular those of carriageways. Condition surveys identify the current condition of the network and from this condition; both long-term and short-term maintenance funding decisions can be made. Repeatable machine surveys allow trend analysis to be used to confirm the original decisions, assess rates of deterioration and allow for changes to be made in strategy and approach as a result of the changing network condition.

There are a number of types of survey used in Essex, each providing information from a different perspective, and which in combination can provide a comprehensive picture of the condition of the asset.

## **2. Data collection and storage**

Data is collected using Department for Transport (DfT) accredited survey methods which employ DfT accredited surveyors and data collection software. The surveys are procured through the Client Support Consultant, Mouchel Parkman, with an external provider – WDM Ltd.

The condition data is stored on the Essex County Council United Kingdom Pavement Management System (UKPMS) computer which also conforms to DfT standards. This standard methodology is applied nationally and provides Essex with the opportunity to compare condition data results with other authorities.

The UKPMS holds a record of each section of carriageway in the County, as well as each section of Category 1, 1(a) and 2 footways, and accordingly holds condition data relating to each of these sections. This condition data is used to calculate Best Value Performance Information required by the DfT and management information used by the County Council to assess performance.

The performance information and detailed condition information is also referenced by Maintenance Engineers, Maintenance Policy Officers, Asset Managers, Senior Managers and Members (County Councillors) to monitor the condition (levels of service) on the networks and to help determine allocation of funding.

The County Council is committed to targeting maintenance in order to maximise resources, and the results of the surveys provide valuable information about surface and structural condition which highlights the areas of greatest need. Results from annual condition surveys enable:

- sections of carriageway/footway that require further or detailed investigations to be identified with a view to implementing remedial maintenance measures;
- engineers to use the information to support their local maintenance planning process and engineering knowledge;
- data to be used in higher level decision making such as target and budget setting.

**a. Survey types**

Currently Essex County Council carries out annual condition surveys on the network. The data strategy consists of:

**SCRIM survey**

This is a machine based, annual survey, which measure the ‘skidding resistance’ of the principal carriageway network. The survey is carried out at traffic speed and is applied to 100% of the principal carriageways. The data is used to investigate sites where skidding resistance is below a defined level.

**SCANNER survey**

This is a relatively new, machine based survey, introduced in 2004/05 for principal carriageways only, and extended by the DfT in 2005/06 to include coverage to B and C carriageways. It is a traffic speed survey which measures a number of characteristics of the carriageway such as rutting, longitudinal and transverse profile, cracking and texture. This survey method is designed to replace CVI surveys. 100% of the A, B and C network are covered by SCANNER.



### CVI survey

This is a 'coarse visual survey', subjective in its very nature. It is a driven survey (approximately 20 km/hour), whereby observations of certain categories of defect are recorded in a lap top computer. The computer records position, extent and severity of defect against the network section in question. The current programme in Essex for 2007/08 includes a 100% survey of A, B and C carriageways, as well as 50% of the unclassified carriageways. 100% of the unclassified network is therefore covered in a two year period. The coverage of this type of survey is likely to be reviewed following the end of the current Highways Maintenance Initiative, HMI (The HMI is reported on using the CVI survey on A, B and C Carriageways).

### DVI survey

This is a 'detailed visual survey', also subjective in its very nature. It is a walked survey, whereby observations of certain categories of defect are recorded in a palm top computer by survey personnel. The computer records the position, extent and severity of the defect against the network section in question. A DVI survey is applied to 50% of the Category 1, 1a and 2 footways annually (in this way 100% coverage occurs every two years).

The table on the following page provides a summary of the data collection programme in Essex for 2007/08 (It should be noted that this may be subject to change for future years):

**Table 10 - DVI Survey in Essex for 2007/08**

Asset sub group	Survey method(s)	Coverage	Frequency	Data stored	Data used for	Confidence level in data
Principal Carriageways	SCRIM	100%	Annually	UKPMS	Identifying sites where skidding resistance is below a defined level	High
Principal Carriageways	CVI, SCANNER	100% for each method	Annually	UKPMS	BVPI's and identifying sites for maintenance funding	Medium

Asset sub group	Survey method(s)	Coverage	Frequency	Data stored	Data used for	Confidence level in data
					needs	
B & C carriageways	CVI, SCANNER	100% for each method	Annually	UKPMS	BVPI's and identifying sites for maintenance funding needs	Medium
Unclassified carriageways	CVI	50%	Annually – 100% coverage every two years	UKPMS	BVPI's and identifying sites for maintenance funding needs	Medium
Classified network	NRMCS	61 sites	Annually	UKPMS	Trend data	Medium
Category 1, 1a and 2 footways	DVI	50%	Annually – 100% coverage every two years	UKPMS	BVPI's and identifying sites for maintenance funding needs	Medium

#### b. Reliability of data

Condition data is not a replacement for sound engineering knowledge but as an enhancement to it. It is widely acknowledged that visual surveys are subjective in nature and therefore have a relatively wide tolerance. Machine based surveys are more repeatable and remove subjectivity from measurement. There are currently a number of issues with these techniques that means that the output from these surveys can not be fully relied upon and must be subject to appropriate scrutiny and reality checking by experienced staff. It is expected that the quality of the data provided by machine based surveys will improve over time.

The machine surveys will only be carried out using accredited machines and this accreditation is repeated annually.

### **Summary of key points**

#### **The key points for condition surveys are:**

- The most significant financial investments in highway maintenance are the repairing, reconditioning and reconstruction of highway pavements, in particular those of carriageways. Condition surveys identify the current condition of the network and from this both long-term and short-term maintenance funding decisions can be made.
- Currently Essex County Council carries out annual condition surveys on the network using SCRIM, SCANNER, Coarse Visual Inspection and Detailed Visual Inspection surveys.
- Condition data is not a replacement for sound engineering knowledge but as an enhancement to it.
- All surveys will have an accompanying audit certificate to show that they have been carried out to specific standards and will also be subject to random checking.
- The machine surveys will only be carried out using accredited machines and this accreditation is repeated annually.





# Chapter 9 - Condition Standards

## 1. Introduction

This chapter of the Maintenance Strategy sets out the maintenance condition standards for the following assets:

- Carriageways
- Footways
- Cycleways
- Public Rights of Way
- Highway verges
- Trees and hedges
- Drainage
- Traffic signs and bollards
- Road markings and road studs
- Fences and barriers

The standards are those considered necessary to meet the requirements for safety, serviceability and sustainability.

Investigatory levels and standards set for response times to inspections and user concerns are covered in Chapter 8 of this document.

## 2. Maintenance standards by asset

### a. Carriageways

The condition of the carriageway can contribute to the core objectives as follows:

#### Safety

- Nature, extent and location of surface defects
- Nature and extent of edge defects

- Nature and extent of skidding resistance.

### **Serviceability**

- Nature and extent of surface defects
- Ride quality of the surface.

### **Sustainability**

- Surface noise attenuation characteristics
- Nature and extent of surface defects
- Nature and extent of carriageway deflection.

Condition standards and targets for the A, B and C and Unclassified roads in Essex are set annually based on available funding, public priority, condition data and engineering judgement. Targets for carriageway condition are set out in the Transport Asset Management Plan and Local Transport Plan.

Investigatory levels for surface and skidding resistance are set out in the Materials Policy and Practice document.

## **b. Footways**

The condition of footways can contribute to the core objectives as follows:

### **Safety**

- Nature, extent and location of surface defects
- Nature and extent of kerbing and edge defects.

### **Serviceability**

- Nature and extent of surface defects
- Extent of encroachment and weed growth
- The slipperiness of the surface
- Integrity of the network.

## **Sustainability**

- Convenience and ease of use
- Nature and extent of surface defects.
- Extent of damage by over-running and parking.

Condition standards and targets for the Category 1, 1a and 2 footways in Essex are set annually based on available funding, public priority, condition data and engineering judgement. Targets for footway condition are set out in the Transport Asset Management Plan and Local Transport Plan.

### **c. Cycleways**

The condition of cycleways can contribute to the core objectives as follows:

#### **Safety**

- Nature, extent and location of surface defects
- Nature and extent of edge defects.

#### **Serviceability**

- Nature and extent of surface defects
- Extent of encroachment and weed growth
- The slipperiness of the surface
- The quality of the surface
- Integrity of the network.

#### **Sustainability**

- Convenience and integrity of the network
- Nature, extent and location of surface defects
- Extent of damage by over-running and parking.

There are currently no condition standards set in Essex for cycleways. These will be determined in association with work being carried out on the Transport Asset Management Plan in the autumn.

#### **d. Public Rights of Way**

The condition of Public Rights of Way (PRoW) can contribute to the core objectives and the broader quality of life objectives associated with leisure and recreation.

The standards and targets for PRoW in Essex are set annually based on survey data which assesses whether they are easy to use by members of the public. Condition standards for PRoW will be determined later this year as part of a Rights of Way Improvement Plan (ROWIP), in consultation with the Local Access Forum established by the Countryside and Rights of Way Act 2000.

#### **e. Grass cutting**

##### **Safety**

Grass is cut for safety purposes to maintain visibility for highway users and to ensure that road and footway widths are not reduced by overgrowing vegetation. In areas where no footway exists there may be a need to provide a safe refuge on the highway verge for pedestrians, particularly on busy roads.

##### **Serviceability**

Grass cutting in urban areas, and on housing estates, is carried out jointly by Essex County Council and Borough/District Councils. Condition standards are specified for safety, but additional cuts are carried out for amenity purposes. On average seven cuts per year are carried out per district. Of these seven cuts, an average of two per district are funded by the County Council with the remainder funded by Borough or District Councils.

##### **Sustainability**

There is the potential for conflict of interests between grass cutting and conservation issues, with wild plants being mown before they have flowered and seeded. Since the 1970's over 100 sites covering more than 44km of roadside habitat in Essex have been designated as Special Roadside Verges. These are linear grassland habitats which have a valuable wildlife resource, providing shelter and food for a variety of species which need to be treated differently to other verges in the County.

##### **Standards**

Full highway verge widths are cut along most urban and rural verges.

The table on the following page sets out the details of numbers of cuts per year assuming average growth rates. Limited additional cutting may be required at times of exceptional growth when road safety may become a factor.

**Table 11 - Number of grass cuts per year**

Location	Standard of grass cutting for safety purposes
Urban areas: sections of road subject to speed limits of 30mph or less, and primarily at visibility splays, sight lines and traffic signs.	Full highway verge width – one cut a year. Additional cuts may be undertaken, based on risk assessments, when grass exceeds 150mm height. Particular consideration should be given to visibility splays, sight lines and traffic signs.
Rural verges: sections of road subject to speed limits greater than 30mph, and primarily at visibility splays, sight lines and traffic signs.	Full highway verge width – one cut a year. Additional localised cutting may be undertaken where required for safety reasons. Particular consideration should be given to visibility splays, sight lines and traffic signs.
Special Verges	Single cut of first 1 metre swathe in the Spring plus other cuts at other times of the year timed to benefit particular plants, to encourage a diversity of grassland plants and prevent overgrowth of scrub. See Chapter 12 of this document for further advice and contact information.

#### **f. Weed control**

##### **Safety**

Weed growth can impair safety for highway users by reducing available road and footway widths. The Weeds Act 1959 lists a number of weeds which can be injurious to human and animal health. It places a duty on controllers of land to eliminate the following scheduled weeds from their land to prevent seeds contaminating their neighbour's land:

- Spear thistle;
- Creeping or field thistle;
- Curled dock;

- Broad leaf dock;
- Common ragwort.

The Wildlife and Countryside Act 1981 specifies control of certain plants such as giant hogweed or Japanese knotweed. The Ragwort Act 2003 and associated code of practice gives further information on treating the growth of this weed.

### **Serviceability**

Weeds can cause structural damage to the highway, disrupt drainage, obstruct pedestrians and appear unsightly.

### **Sustainability**

The following legislation controls the use of herbicides:

- Food and Environment Protection Act 1985
- Control of Pesticide Regulations 1986
- Health and Safety at Work Act 1974
- Control of Substances Hazardous to Health Regulations 1988.

### **Standards**

All weed spraying should be carried out using approved pesticides all in accordance with the Control of Pesticides Regulations 1986. For all highway operations, a non-residual contact herbicide must be used, and currently the only weed killer which conforms to the Health and Safety Commission's Code of Practice and with the Environment Agency's requirements is glyphosate. Essex keeps abreast of new developments by exploring and evaluating the use of new chemicals and techniques for weed control.

**Table 12 - Weed control**

Location	Frequency
Footways and immediately adjacent kerbed channels	To be determined locally, best practice indicates that 3 applications of glyphosate should adequately control weed growth.
Noxious weeds	Where a problem is identified then a one off treatment, or series of treatments, will be arranged.

**g. Trees and hedges****Safety**

Trees and hedges growing on or alongside the highway can become a serious hazard to highway users if they become unstable or decay or if they encroach onto footways, carriageways and visibility splays. They can also produce root damage to footways and adjoining property. Leaf fall from trees can cause slippery surfaces.

**Serviceability**

Trees and hedges are an important amenity. Significant pruning or felling, even for safety reasons, can be the subject of strong local concern. In urban areas if left unchecked trees may outgrow their location giving rise to structural damage to roads, footways or drainage systems or to adjacent property. Hedges may restrict widths of footways or carriageways. Requirements for maintenance can be greatly reduced by careful selection of trees when planning planting or replacement programmes.

**Sustainability**

Routine maintenance under expert guidance provides a valuable amenity for the public and wildlife. With the exception of urgent safety work, work to trees and hedges should be undertaken in Essex outside the bird nesting season. This means that maintenance work should ideally be carried out in the autumn during September and October or early February. No hedge cutting should be carried out in Essex from March to July to avoid disturbance to nesting birds. It is important to note that it is an offence to disturb nesting birds under the Wildlife and Countryside and CROW Act.

## **Standards**

Almost all hedges are owned by the adjacent property owner. Where a problem is identified the property owner will be contacted and asked to cut back branches which are overgrowing the highway. If the owner fails to undertake this work within 28 days then the Council may, by serving notice in accordance with the provisions of Section 154 of the Highways Act, require the owner to undertake the work. If this work is then not completed within 14 days then the Council may undertake the work themselves and seek to recover any costs from the property owner concerned. In both urban and rural areas work to highway trees is reactive, in response to safety concerns.

During regular inspections, any obvious signs of imminent danger, immediately apparent to the inspector, such as hanging or dangerous limbs or signs of disease and damage are noted, where observed. This applies to trees on the highway as well as those outside but within falling distance of the highway.

Issues of immediate danger should be treated as Category 1 defects, other Category 2 defects should be reported to the County Council's Natural Environment Team based at County Hall. Work to trees in Conservation Areas and trees subject to Tree Preservation Orders will require the authorisation of the relevant Borough/District Council.

Once a detailed inventory and condition survey can be undertaken the Council will move towards a proactive programmed approach to maintaining highway trees and hedges.

### **h. Drainage systems**

#### **Safety**

Accumulations of water on carriageways, footways and cycleways can increase risks to the safety of highway users, or frontagers, particularly on high speed roads and when standing water exists in freezing conditions.

Displaced covers and frames can be a hazard to pedestrians and a potential hazard to drivers and cyclists. Damaged covers may collapse leaving a void in the highway.

#### **Serviceability**

Accumulations of water can lead to a weakening of road pavement foundations and damage to adjacent properties due to spray thrown up by passing vehicles. In extreme



cases ineffective or non-existent drainage systems can lead to flooding of adjacent properties.

### **Sustainability**

Inadequate drainage will reduce the effective life of road pavements and may cause nuisance to adjoining land owners.

Pollution of roadside watercourses can occur due to contaminated run off from carriageways.

Gully arisings may contain pollutants and should be disposed of at licensed landfill sites.

### **Standards**

Cleansing is undertaken to remove the build up of detritus that occurs in gully sumps and other drainage channels.

**Table 13 - Drainage**

<b>Drainage feature</b>	<b>Inspection and cleansing standard</b>
Gullies	To be determined locally, previous practice indicates gullies should be cleansed once per year.  Gullies prone to regular silting or blocked by leaves and at high risk locations are cleansed at more frequent intervals, by local prioritisation.
Kerb offlets	Cleansed with gullies – detritus cleaned from mouth of offlet, and adjacent carriageway and piped connection checked by flushing.
Roadside grips	Recut as required.
Piped drainage systems and culverts under roads	Inspected and cleaned out when blockages are identified or reports of flooding are received.
Catchpits and soakaways	Inspected and cleaned out when blockages are identified or reports of flooding are received.
Highway Authority ditches	Cleared of vegetation and dug out when blockages are identified or reports of flooding are received.
Other ditches	Owner requested to undertake clearance when blockages are identified or reports of flooding are

Drainage feature	Inspection and cleansing standard
	received.
Covers and gratings	Covers and gratings inspected as part of safety inspection and during scheduled cleaning. Missing or damaged covers replaced.
Linear drainage systems, kerbs, path channels	Inspected and cleansed when blockages identified.

**i. Traffic signs and bollards**

**Safety**

Regulatory and warning signs contribute to road safety by assisting highway users to identify safety risks, and separating potential traffic conflicts.

Clear direction signing can contribute to safety by reducing driver confusion and keeping traffic to appropriate routes.

**Serviceability**

Direction signs contribute to the ease of use of the road network.

**Sustainability**

Signing can contribute to the local economy (tourist signs, signing for events) and avoid users getting lost and travelling unnecessary distances.

Signing can support sustainable transport modes such as cycling, walking and bus services.

Routeing of heavy traffic can reduce the need for repairs on minor roads.

However, signing can be intrusive, especially signs in poor repair situated in environmentally sensitive areas, and confusing if too much signing is present.

**Standards**

The primary objective is to keep signs visible and legible at distances which will allow them to be read by highway users, as they pass at speeds appropriate to the type of road.

**Table 14 - Traffic sign feature**

Traffic sign feature	Maintenance standard
All signs	<p>Signs are inspected as part of safety inspections and in response to reports from the public or Police. There is no proactive maintenance programme.</p> <p>For sign cleaning, priority will be given to illegible signs, on the basis of road hierarchy.</p> <p>Repairs will be undertaken to keep signs legible, clear of vegetation, and to repair signs that have been damaged and have become unsafe. Priority will be given to mandatory and important warning signs on higher category, higher speed roads and those in place for safety reasons, such as accident reduction.</p>

**j. Road markings and road studs**

**Safety**

Road markings and studs assist in delineation especially in darkness and poor visibility.

Loose road studs can present a hazard to road users.

**Serviceability**

Road markings and studs help with ease of use of the highway in darkness and poor visibility.

**Sustainability**

Support to sustainable transport – delineation of bus and cycle lanes and traffic calming schemes.

Edge markings can reduce damage to carriageway edges.

**Standards**

Road markings and road studs will be maintained, renewed or replaced as a result of a safety inspection or reports from the public or the Police. Defects that will be considered for treatment are where road markings are worn causing loss of reflectivity or where

markings are substantially worn or missing. There is currently no proactive maintenance programme in Essex for road markings and road studs. Refer to the risk register in the Maintenance Practice and Guidance document for suggested priority repair times.

Fences and barriers

**Safety**

Safety fences and barriers provide separation for traffic and vulnerable road users from each other and other hazards for example, watercourses.

Unstable fences, walls and barriers adjacent to the highway can present risks to the safety of highway users.

**Serviceability**

Breaches in boundary fencing may lead to the risk of stock escaping onto the highway.

**Sustainability**

Fences and barriers in poor repair may be detrimental to the appearance of environmentally sensitive areas. Appropriate designs of barriers should be used in such areas.

**Standards**

**Table 15 - Fences, barriers and other fences**

Feature	Maintenance standard
Safety fences	Damaged safety fences (such as, deformed, missing or projecting components) are to be assessed according to severity and risk and either; Made safe within two hours Effect immediate permanent repair (in the event of major damage, for example significant lengths of damaged safety fence) Programmed repairs; Deformed, missing or projecting components are to be permanently repaired within 28 days where practicable. All other defects are to be assessed for their risk to the

	<p>integrity of the system and programmed for repair accordingly.</p> <p>Note: Severity and risk are determined by the length and location of the damaged safety fence.</p> <p>If an Inspector has any doubt about how a defect should be prioritised he should consult a member of the Highway Management team at County Hall who can refer the Inspector to a member of staff that has received specialist training.</p>
<p>Pedestrian barriers</p>	<p>Damaged pedestrian barriers protruding into the carriageway or footway and causing a hazard to users will be made safe within two hours or by the end of the next working day depending on an assessment of risk.</p> <p>If these defects then require further attention to affect a permanent repair and to ensure that the asset is fulfilling its function, this should be completed within 28 days.</p> <p>If the pedestrian barrier does not present a hazard and is still fulfilling its function, works should be programmed as a priority 4.</p> <p>If an inspector requires clarification about whether the damaged barriers can be removed rather than repaired, he should contact the Safety Engineering Team at County Hall advising location and approximate age of the barrier. The Safety Engineering team will assess accident statistics prior to and after installation and advise accordingly.</p>
<p>Other fences</p>	<p>In most cases this fencing will be owned by the adjacent property owner. The owner will be contacted where possible and be requested to make the fence safe. If the owner cannot be contacted it will be made safe within two hours or by the end of the next working day depending on an assessment of risk.</p>

Once a programme of detailed service inspections of safety fences has been funded and introduced a proactive maintenance programme and corresponding maintenance standards will then be developed in Essex.

### 3. Levels of Service and condition standards

Levels of service form a key part in the management of the asset. In order to successfully manage the asset it is vital to have defined levels of service that clearly reflect users and stakeholders demands and expectations for each asset group, balanced with the cost of providing the specified level of service. Levels of service also take account of the statutory duties of the Council as a highway authority and the authority's strategic transportation goals.

Levels of service that the public can expect for each of the major asset groups is being developed as part of the Transport Asset Management Plan Improvement Plan. This will include the cost of providing a range of levels of service from minimum standards to satisfy requirements for safety through to higher standards designed to meet local requirements for serviceability and sustainability. The work will be completed in autumn 2007.

#### Summary of key points

##### The key points for condition standards are:

- condition standards and targets for carriageways and footways in Essex are set annually based on available funding, public priority, condition data and engineering judgement;
- condition standards for PRoW will be determined in autumn 2007 as part of a Rights of Way Improvement Plan (ROWIP);
- full highway verge widths are cut along most urban and rural verges on an annual basis;
- a single cut of first 1 metre swathe of Special Verges is to be carried out in the spring plus other cuts at other times of the year timed to benefit particular plants, to encourage a diversity of grassland plants and prevent overgrowth of scrub;
- in both urban and rural areas work to highway trees is reactive, in response to safety concerns. Once a detailed inventory and condition survey can be undertaken the Council will move towards a proactive programmed approach to maintaining highway trees and hedges and setting condition standards;
- highway gullies are cleansed according to local requirements;
- signs are inspected as part of safety inspections and in response to reports from the public or Police. There is no proactive maintenance programme;
- there is currently no proactive maintenance programme in Essex for road markings and road studs;

- safety fences are inspected as part of safety inspections and in response to reports from the public or Police. Once a programme of detailed service inspections of safety fences has been funded and introduced a proactive maintenance programme and corresponding maintenance standards will then be developed in Essex;
- levels of service that the public can expect for each of the major asset groups is being developed as part of the Transport Asset Management Plan Improvement Plan.





# Chapter 10 - Programming and priorities

## 1. Introduction

Priorities can be allocated at three different levels:

- strategic level – between corporate priorities and objectives and between areas of authority;
- transport level – between Local Transport Plan objectives and targets, between Best Value Performance Indicators (BVPI) and targets and between maintenance, network management and other local transport services;
- maintenance level – between the core objectives (customer service, safety, serviceability and sustainability), between maintenance service type or between maintenance service category.

The Maintenance Strategy will focus on maintenance level programmes and priorities as the strategic level and transport level are beyond the scope of the document.

Safety objectives relating to fulfilling minimum statutory duties is the highest priority for the maintenance service and must be met. The cost of undertaking this work must take first call on the maintenance budget. All remaining objectives can be programmed and prioritised with account being taken of:

- safety implications;
- risk assessments;
- corporate and service group policies and objectives;
- maintenance policies;
- views of highway users and the public;
- size of the maintenance budget.

## 2. Balancing priorities

The priorities for each type of highway maintenance are determined by the outcome of safety and service inspections and condition surveys. Priorities and programmes are established for each of the following:

- reactive maintenance – attending to Category 1 defects and other urgent safety matters arising from inspections or reports from the Police or members of the public;
- routine maintenance – providing defined standards of service, including attending to Category 2 defects;
- programmed maintenance – providing co-ordinated sustainable schemes and projects to meet the serviceability requirements of the network;
- regulatory matters – regulating occupation, interference or obstruction of the network;
- winter service – providing defined standards of salting and clearance of ice and snow;
- weather and other emergencies – planning for emergency response.

Reactive, routine and programmed maintenance should follow a structured approach to programming and prioritisation. The budget setting cycle should take account of the relative priorities of these types, having regard to historical conditions, and seek to increase the proportion of programmed to reactive maintenance, where possible, which should lead to a corresponding decrease in reactive maintenance in the longer term.

### **Priorities for reactive maintenance**

Reactive maintenance involves dealing with Category 1 defects and other matters requiring urgent attention that have been identified either during safety inspection or as a result of a report from the Police or a member of the public.

Priority of response is determined on the basis of a risk assessment (see Chapter 8 for detail) and a decision is made to sign and make safe, provide a temporary repair or provide a permanent repair. The selection of one of the three options is based on operational practicalities or whether the site is subject to a programme of treatment in which case a temporary repair may be a more appropriate course of action.

### **Priorities for routine maintenance**

Routine maintenance is primarily for the purpose of providing defined standards of network serviceability, maximising availability, reliability, integrity and quality. The priorities and programmes are determined largely from Category 2 defects identified during safety inspections that do not require urgent attention or from more detailed service type inspections as well as from user requests. Priorities and programmes need to be

determined for all types of routine maintenance and consideration given to combining a number of operations into a co-ordinated programme.

### **Priorities for programmed maintenance on carriageways and footways**

Programmed maintenance is undertaken in the interests of providing a sustainable outcome, seeking to minimise cost over time, to add community value to the network or the environment. It can also be for safety purposes to improve skidding resistance.

Priorities and programmes should be developed for carriageways, footways and cycleways in respect of condition of the structure, the surface and the edge. Whilst programmed maintenance schemes may be more expensive than routine or reactive treatments they can be designed to have a lower whole life cost, therefore providing value for money.

In Essex programmed maintenance schemes, such as those under the current Highways Maintenance Initiative, make use of condition survey data as well as engineering judgement, anticipated budget, local priorities and targets to determine schemes to be included in the five year rolling programme.

The maintenance strategy is underpinned by a model of deterioration of the network which divides the highway network into three groups of roads based on their measured condition and makes use of a traffic light system to separate out the categories.

Red roads are sections of roads which are in the worst condition, their level of deterioration, especially their structural deterioration, exceeds a nationally recognised 'threshold level' beyond which sections of road are deemed 'not in good condition'. Treatment of roads is aimed at restoring them to 'good condition'.

Amber roads are sections of road which although not in as bad condition as the red sections are close to red 'threshold level'. If left untreated, these sections of road will deteriorate into the red category. As the structural integrity of these roads is relatively sound their average cost of treatment is substantially less than that required to treat red sections of road. Treatment of these roads is aimed at arresting deterioration.

Green roads are roads that are in relatively good condition. They will require some treatment to make sure they stay in good condition but this will be at lower cost and aimed at prolonging their life.

Maintenance programmes are reviewed and updated annually with reference to:

- new condition data;
- changes in anticipated budgets;
- changes in corporate priorities;
- changes in current and desired levels of service;
- changes in public perception of priority;
- changes in procurement.

### **Priorities for maintenance activities on Public Rights of Way**

#### **Programmed maintenance**

Maintenance of the Public Rights of Way network in Essex follows a proactive managed approach. This approach ensures the meeting of Best Value Performance Indicator targets and the identification of improvements for inclusion in scheduled works programmes. The programming of work will be detailed in the Rights of Way Improvement Plan which will come into effect in November 2007.

The proactive inspection and maintenance programme covers 20% of the network each year on a rolling programme basis. Inspections are carried out by Public Rights of Way officers based at the Area Offices. In addition a random 5% inspection of paths is carried out by the County Hall based Community Action Team and this information is used for reporting against target for the Best Value Performance Indicator as well as identifying problem areas for rectification.

#### **Routine and reactive maintenance**

Standard cutting programmes are carried out on an annual basis as well as reactive maintenance. However, the amount of reactive maintenance required is expected to reduce over time through the proactive approach to inspection and maintenance.

## Summary of key points

### **The key points for programming and priorities are:**

- safety objectives relating to fulfilling minimum statutory duties is the highest priority for the maintenance service and must be met. The cost of undertaking this work must take first call on the maintenance budget;
- the priorities for each type of highway maintenance are determined by the outcome of safety and service inspections and condition surveys;
- reactive, routine and programmed maintenance should follow a structured approach to programming and prioritisation.



## Chapter 11 - Designing for maintenance

### The expanding highways asset

With current rates of new development, the County Councils highway assets are increasing in size each year. As the County Council is looking to adopt a total asset management approach of the Development, Highways and Transportation asset in the future it is important to be clearer on the longer term options for management of a growing asset. This includes the introduction of value for money options such as value management appraisal of schemes and new developments and the need to be clearer on future maintenance costs of the new asset and where possible to keep these to a minimum. The County Council therefore needs to be designing with future maintenance in mind.



## **Designing for maintenance**

The good practice identified in the Code of Practice for Highway Maintenance Management makes clear that as new and improved highway schemes and facilities form an increasing proportion of the network over time future maintenance costs of such new infrastructure are of prime consideration. LTP guidance also states that 'authorities should consider carefully the future maintenance requirements of a proposed new infrastructure'.

It is important to note that creativity should not be inhibited and that high quality or relatively expensive materials may provide appropriate, low maintenance and cost effective treatments in terms of their contribution to wider regeneration objectives, for example in improving the quality of public space and streetscape. It may also be appropriate to use environmentally sensitive materials in certain locations, despite the possibility of higher future maintenance costs.

However, there are many cases where careful consideration of maintenance implications at the design stage would have provided an equally effective outcome, but without maintenance complications either increasing costs or introducing practical difficulties which may in fact compromise the effectiveness of the feature.

Scheme design that does not take future maintenance into account can result in practical difficulties and increased maintenance costs as follows:

- materials requiring a disproportionately high frequency of maintenance;
- access difficulties for routine maintenance such as drain clearance and cleansing;
- inappropriate treatments and planting on narrow verges;
- maintenance requiring disproportionate traffic management costs;
- traffic calming and safety features with high rates of deterioration.

Disproportionately costly, inconvenient or impossible maintenance can inhibit or prevent programmed maintenance taking place.

## **Maintainability audits**

Introducing a process whereby developers/designers would be asked to answer a number of key questions when submitting a scheme would help deal with the issue of getting maintenance need and maintenance practicalities considered early on in the planning



process and achieve a fit for purpose scheme. A maintainability audit would include the requirement for developers/designers to ensure that what is built in the highway meets the CDM regulations relating to ease and safety of future maintenance and also provide advice on material use and the implications and cost for maintenance.

Questions that may be asked as part of the audit are summarised below (this list is not exhaustive):

### **1. Scope and scale**

- Is the design compatible with the existing infrastructure?
- What is the expected traffic use? – is it a through route, bus route commercial/HGV and so on.
- Is the scheme a “unique” high profile, prestigious project?

### **2. Design aspects**

- Do footways and cycle routes fit the actual paths used?
- Is the footway likely to be over-ridden by HGV refuse vehicles or other parked vehicles?
- Are grassed and planted areas of a size and position to be effectively maintained?
- Have trees been selected and positioned to avoid future problems with roots, obstruction or leaf fall?
- Do traffic signs need to be illuminated or can they be reflectorised?

### **3. Maintenance operations**

- Does the scheme require a specialist maintenance regime?
- Does the scheme require a specialist cleansing regime?
- Can the surfaces be cleaned?
- Will maintenance require special traffic management?
- Is there safe and convenient access for plant and personnel carrying out maintenance activities?

#### **4. Materials and products**

- Are the materials used for the scheme of standard or specialist nature?
- Does the durability of the materials provide substandard, oblique, sufficient or excessive life?
- How will the material/product approach failure condition – slowly/quickly?
- Are the materials liable to fading or discolouration?
- Can the materials be readily replaced throughout the design life?
- Are there any processes which could be used to extend useful service life at economic cost?
- Are there likely to be any difficulties in replacing failed sections or sourcing the material in the future?
- Is the cost of replacement likely to be disproportionately high?
- Can the materials be satisfactorily re-laid after utility works?
- What is the scope for use of recycled materials?

The introduction of a maintainability audit process in Essex is desirable and at the time of writing the Maintenance Strategy work is underway to develop such a process. This audit process will include clear guidance on the early involvement of County Council highway engineers by Borough/District Council planners at the early stage of a development proposal. Sharing of good practice and raising awareness of maintenance issues resulting from design decisions will also be introduced.

## Summary of key points

### **The key points relating to maintainability audits are:**

- every new road that is adopted brings additional pressure on maintenance budgets;
- scheme design that does not take future maintenance into account can result in practical difficulties and increased maintenance costs;
- introducing a process whereby developers/designers would be asked to answer a number of key questions when submitting a scheme would help deal with the issue of getting maintenance need and maintenance practicalities considered early on in the planning process and achieve a fit for purpose scheme;
- work is underway to develop a maintainability audit process for Essex.



# Chapter 12 - Sustainable highway maintenance

## 1. Introduction

This Chapter follows, where possible, the recommendations made in the document 'Sustainable Highways – A Short Guide' produced by the TRL in 2006. The document is a daughter document to 'Well-maintained highways', the Code of Practice for Highways Maintenance Management 2005.

Highway Maintenance and new construction has a direct effect on the four priority areas of sustainable consumption and production, climate change and energy, natural resource protection and environmental enhancement and sustainable communities in the following ways:

- they consume large quantities of aggregates and generate large quantities of waste;
- the extraction, processing and transporting of these materials is a significant source of greenhouse gas emissions, particularly in the production of cement and asphalt;
- use of primary aggregates in preference to recycled or secondary aggregates results in depletion of irreplaceable natural resources and damage to the environment where the aggregates are located;
- incorrect use of materials can result in pollution of the environment.

For highway maintenance and construction to be sustainable, there needs to be a focus on recycling arisings from the existing road wherever possible, using imported recycled or secondary aggregates where appropriate, and choosing techniques that minimise the production of greenhouse gases.

Decisions made and the approach taken by highway engineers at Essex County Council and maintenance contractors are therefore crucial to achieving sustainability in highway maintenance and construction.

Sustainability in highway maintenance and construction means living within our environmental limits whilst achieving a sustainable economy.

## 2. Strategic objectives of the County Council

The County Council has four strategic objectives one of which is 'Caring for our Environment'. There are four key priorities within this overall objective as follows:

- reducing Essex's carbon emissions - including stimulating changes in transport patterns and individual behaviour to reduce congestion and carbon emissions;
- reducing, reusing and recycling waste - including working with partners and Essex residents to increase the countywide recycling and composting rates;
- improving our towns and countryside - including minimising the environmental impact of new roads and waste and minerals developments;
- reducing our own environmental impact including changing our behaviour to make significant reductions in the carbon emissions from our own operations (street lighting, buildings and transport) by 10% by 2011 and by 60% by 2050.

The Development, Highways and Transportation Service will contribute to the Corporate Plan Objective by committing to improve quality of life and our environment.

Highway maintenance has a significant role to play, and impact to make, in the achievement of sustainable development.

Where possible the following should be taken into account when planning new developments, new road construction or undertaking major maintenance schemes:

- Will the development/scheme improve the vitality and viability of the local community?
- Does the development/scheme make use of opportunities to use local materials?
- Are all opportunities realised to minimise noise pollution?
- Do the design process and criteria facilitate the designing out of waste?
- Does the design process encourage the use of re-used materials as the first option?
- Does the design process encourage the use of recycled materials as the second option?

Highway maintenance is not just about repairing and replacing things as they were but seeking to gain value, or environmental benefit from the scheme. This is the approach that should be taken when planning 'fence to fence' schemes.

### **3. Materials products and treatments**

It is essential to ensure that materials, treatments and processes meet consistent standards of quality.

It is important to set standards at levels which are sustainable and appropriate for the circumstances – specifications should be carefully considered and not set too high.

The maximisation of the environmental contribution to highway maintenance strategy and practice will assist in pursuing the core objective of network sustainability.

The Materials Policy and Practice contains information on the use of appropriate materials in highways maintenance, decision making processes and an assessment of the cost effectiveness of each treatment type.

### **4. Environmental management**

In order for the core objectives of safety, serviceability and sustainability to be achieved, it is essential to ensure that materials, treatments and processes meet consistent standards of quality.

One of the key issues is to maximise the environmental contribution made by highway maintenance strategy and practice and address the following:

1. Noise
2. Materials utilisation
3. Waste management and recycling
4. Pollution control
5. Nature conservation and biodiversity
6. Environmental intrusion

## **5. Noise reduction**

Wherever running surfaces are to be renewed or resurfaced during highway maintenance activities, the option of a lower noise surface should be evaluated, and in cases where there would be a significant benefit to the local community they should be carefully considered.

## **6. Materials utilisation**

Wherever practicable, the use of the following should be maximised:

- products made from recycled materials to develop and support local markets;
- local materials to minimise transport costs, support the local economy, and to maintain local character.

The Materials Policy and Practice contains the County Council's policy and practical guidance on the use of recycled materials in Essex.

## **7. Waste management and recycling**

The County Council has rigorous statutory indicators and targets relating to waste disposal and it is important that activities associated with highway maintenance contribute to the achievement of these targets.

The County Council will, wherever practicable:

- retain and re-use materials on site, in order to avoid the environmental implications of transport and disposal;
- maximise the value of re-used material rather than utilise for low grade fill;
- make use of 'recycle in place' processes in appropriate situations;
- support recycled market development through the purchase of recycled products wherever possible;
- ensure that any material that cannot be re-used or recycled is disposed of to licensed sites in accordance with statutory requirements. This includes silt and other solids arising from gully emptying and cleansing of oil interceptors.

The Materials Policy and Practice contains the County Council's policy and practical guidance on waste management and recycling in Essex.



## **8. Pollution control**

Maintenance activities on the network have the potential to cause either noise, air or water pollution and those planning and carrying out maintenance need to take account of statutory requirements and advice from the Environment Agency and Borough/District Council's Environmental Health Departments.

The effects of maintenance activities should be mitigated wherever possible by:

- phasing works to avoid sensitive periods and potentially difficult weather conditions;
- siting of storage areas should take account of the possibility of pollution particularly those with the potential to pollute water courses or groundwater;
- diesel storage areas, both in depots and on site, should be carefully sited and have procedures for dealing with spills.

## **9. Trees**

Trees are a valued part of the Essex Landscape, culture and history and their presence helps to meet a number of objectives of the County Council's Corporate Plan.

Highway trees help soften the highway, creating visual sensory interest, as well as contributing to people's quality of life and sense of wellbeing. Alongside these aesthetic qualities, they also deliver many other benefits including:

- clean the air we breath, by removing and filtering of atmospheric pollutants including ozone, nitrogen oxides, sulphur dioxides, carbon monoxide, smoke and dust;
- reducing global warming, by storing carbon;
- can help reduce noise;
- traffic calming;
- reducing traffic speeds: tall trees can give the perception of a street being narrower than it is and consequently reducing traffic speed;
- providing shelter and shade;
- providing a habitat to wildlife.

Whilst the council recognises the many benefits trees provide, it also recognises it has a duty of care to provide a safe environment, and that in order to achieve this duty, its trees require regular inspections and, where considered appropriate, management through tree surgery work.

Care must be taken to preserve existing trees, through careful design and maintenance.

New planting is essential to ensuring highways are sustainable. New planting should be carried out in locations that allow each tree to grow to maturity, require minimal maintenance and a species appropriate to a local sense of place. Consideration should also be given to the potential impact on adjacent buildings, footways and buried services.

Enquiries relating to tree safety, planting or works in proximity to trees should be referred to Matt Searle, in the Natural Environment Team at County Hall.

## **10. Nature conservation and biodiversity**

Highway verges and the wider 'soft estate' have implications for conservation and biodiversity and management of these areas requires specialist advice. A balance needs to be sought between safety, amenity, nature conservation and value for money. Where landscape management plans, biodiversity action plans, or environmental databases exist they should be consulted before any work is carried out.

Works to highway trees will only be done to maintain highway safety or to deal with a legally actionable nuisance. The authority will also ensure replacement trees are planted to replace any trees removed from the highway and proactively identify suitable places within the public highway for the planting of new trees.

Certain species and habitats are protected under UK and EC legislation and all highway works must comply with these requirements. Where statutory designated sites are within or adjacent to the highway boundary, advice should be sought from Natural England. Where they are adjacent to a Local Wildlife Site advice should be sought from Essex Wildlife Trust.

In the management of highway verges, consideration should be given to:

- balancing the need to preserve to preserve the natural habitat with the need to preserve road safety;

- requirements in the vicinity of a statutory wildlife site for example Site of Special Scientific Interest (SSSI) or Local Wildlife Sites;
- the Essex Biodiversity Action Plan, which can be found at [www.essexbiodiversity.org.uk](http://www.essexbiodiversity.org.uk)
- establishing new Special Roadside Verges where suitable areas exist and managing existing Special Verges to benefit wildlife;
- areas of verge where no routine cutting is carried out, that could benefit wildlife;
- the timing of cutting operations on all verges to take account of the flowering and seeding of wild flower plant species;
- management of trees in urban areas to take account of landscape and environmental considerations.

### **Special Roadside Verges**

Since the 1970's over 100 sites covering more than 44km of roadside habitat in Essex have been designated as Special Roadside Verges. These are linear grassland habitats which have a valuable wildlife resource, providing shelter and food for a variety of species. Special Verges are important remnants of old grasslands and are often the only remaining sites where certain species can flourish. Their grassland habitats are to be included in the new Grassland Essex Biodiversity Action Plan. The Special Verges Project is a partnership between the Natural Environment Team at Essex County Council and Essex Wildlife Trust and aims to maintain and enhance the biodiversity of Special Verges in Essex.

Management of Special Verges aims to ensure that rare plant species are conserved and a wider variety of plants are able to thrive. With sensitive management, road verges can support a wide variety of threatened and declining species. The Special Verges Project depends on the goodwill and help from the network of Wildlife Trust volunteer verge representatives who provide on-the-ground help to monitor the verges. Verge Reps are a valuable local contact, speaking to landowners where necessary and monitoring the verges regularly. The areas of Special Verge are reviewed annually and potential additions are assessed according to biodiversity and safety criteria.

The CONFIRM system now contains the locations of all 'Special Verges' in Essex and must be referred to before maintenance activity takes place. Anyone raising a job on a 'street' containing a Special Verge will be presented with a self explanatory risk

assessment warning directing them to the map layer to check the location of the verge against that of the proposed works. An opportunity will then be provided to update the risk assessment and add relevant notes.

The Special Verges are marked with posts and white plaques on site positioned at either end of the Special Verges, and the centre too if they are very long. If any works are proposed that might affect a Special Verge it is the responsibility of the maintenance engineer to contact the Natural Environment Team at County Hall, Telephone: 01245 437655.

Alternatively, contact the Development, Highways and Transportation designated initial point of contact for each district.

The spring safety cut is carried out on the Special Verges at the same time as the rest of the verges in Essex but Special Verges should be omitted from the wider autumn cut. It is also important not to store any materials on these verges.

Special Verges do receive cuts at other times of the year timed to benefit particular plants, to encourage a diversity of grassland plants and prevent overgrowth of scrub. It is difficult but essential to get the management balance right for the wildlife and the verges are monitored to ensure that they are reaching their full potential. The Natural Environment Team can advise on the correct timing of cuts for each Special Verge. Ways of collecting and recycling cuttings are currently being investigated.

When new verges are created through new road schemes it would be preferable to do some without topsoil. This would produce a slower rate of growth and encourage wild plants.

## **10. Dealing with noxious weeds**

The control of injurious and noxious weeds is a statutory responsibility for highway authorities under the Weeds Act 1959 and the Wildlife and Countryside Act 1981. Where injurious weeds on highway land are a nuisance to adjacent landowners, officers should work with the adjacent landowner to ensure that weed control measures are undertaken simultaneously to avoid recontamination across the highway boundary.

The prescribed weeds are:

- Ragwort
- Broad leaved dock
- Curled dock
- Creeping thistle
- Spear thistle
- Giant hogweed

### **Summary of key points**

**The key points for sustainable highway maintenance are:**

- highway maintenance is not just about repairing and replacing things as they were but seeking to gain value, or environmental benefit from the scheme. This is the approach that should be taken when planning 'fence to fence' schemes;
- the Materials Policy and Practice contains information on the use of appropriate materials in highways maintenance, decision making processes and an assessment of the cost effectiveness of each treatment type;
- wherever running surfaces are to be renewed or resurfaced during highway maintenance activities, the option of a lower noise surface should be evaluated, and in cases where there would be a significant benefit to the local community they should be carefully considered
- wherever practicable, the use of the following should be maximised:
  - products made from recycled materials to develop and support local markets;
  - local materials to minimise transport costs, support the local economy, and to maintain local character;
- the Materials Policy and Practice contains the County Council's policy and practical guidance on the use of recycled materials and waste management in Essex;
- the effects of maintenance activities should be mitigated wherever possible by:
  - phasing works to avoid sensitive periods and potentially difficult weather

conditions;

- siting of storage areas should take account of the possibility of pollution particularly those with the potential to pollute water courses or groundwater;
  - diesel storage areas, both in depots and on site, should be carefully sited and have procedures for dealing with spills.
- works to highway trees will only be done to maintain highway safety or to deal with a legally actionable nuisance. The authority will also ensure replacement trees are planted to replace any trees removed from the highway and proactively identify suitable places within the public highway for the planting of new trees;
  - landscaping on new roads should be managed in a sustainable manner – the design should include a management plan to facilitate the perpetuation of the landscape feature and this should be sustainable in the long term;
  - the CONFIRM system now contains the locations of all ‘special verges’ in Essex and should be referred to before maintenance activity takes place;
  - if any works are proposed that might affect a Special Verge it is the responsibility of the maintenance engineer to contact the Natural Environment Team at County Hall, Telephone: 01245 437655, or a local Verge Representative.

# Chapter 13 - Winter service

## Introduction

The Winter Service makes an important contribution to the core objectives of safety, serviceability and sustainability.

The Winter Service comprises operations to apply salt or other de-icing materials to the highway in anticipation of, or to assist, the removal of snow or ice. This also includes the use of snow ploughs in the removal of snow.

Following introduction of the amendment to Section 41 (1A) of the Highways Act 1980 Highway Authorities now have a duty to ensure as far as is reasonably practicable, that safe passage along a highway is not endangered by snow or ice'. There is also a duty upon authorities under Section 150 of the Act to remove any obstruction of the highway resulting from 'accumulation of snow or from falling down of banks on the side of the highway, or from any other cause'. It is important to note that due to funding availability and the level of specialist plant and staff that have to be maintained on standby for infrequent weather events it is not practicable to provide the service to all parts of the network and ensure/guarantee that all running surfaces are kept free from ice or snow including those parts of the network that receive treatment.

In regard to post salting operations necessary to deal with snow, Essex County Council has to demonstrate that it acted reasonably, as the existence of snow or ice is not necessarily evidence of failure to carry out its obligations, and it is likely that many minor roads, cycleways and footways will thaw naturally before resources can be employed to deal with them.

The County Council recognises the importance of the Winter Service and that it is a normal function of highway authorities.

The main aims and objectives of the service are to:

- minimise delays caused by the presence of snow or ice on the highway;
- minimise delays to the Emergency Services and Police in carrying out their functions;
- maintain a network of highways as detailed in the policy where the risk of an incident, where snow and ice is a contributory factor, is reduced.

Working procedures have been adopted to ensure that these objectives are met in a cost effective and efficient manner as detailed in the Development, Highways and Transportation 'Winter Service Plan'. This Plan is available electronically to staff and is updated annually. The plan is also included in the Maintenance Practice and Guidance document.

### **Winter Service policy**

The policy is as follows:

1. Precautionary salting for frost and ice will be undertaken on:
  - carriageways of secondary distributor status and above;
  - access routes to hospitals, fire stations and ambulance stations;
  - public service bus routes carrying a total of four or more buses per day in both directions for at least five days of the week;
  - sites where there have been four or more personal injury accidents within a three year period and frost/ice on the road surface was a contributory factor;
  - other high risk sites where a full risk analysis has been carried out by the County Council;
  - the Winter Access Rural Network (WARN) – the access route to the main settlement of a parish of 50 or more households not already on the precautionary salting route.

No other highways will receive treatment for frost and this operational network is termed the 'Precautionary Salted Network' or Plan A.

2. Salting for snow that has settled on the highway, but is not of significant depth, or its presence is expected to be short lived will be limited to the Precautionary Salted or Plan A network.
3. For snow that has settled on the highway in significant amounts, or in the event of severe and persistent frost and ice, operations may be expanded to highways as detailed in the Development, Highways and Transportation 'Winter Service Plan'. This operational network is termed Plan B.
4. Funds to be allocated for the Precautionary Salting network for a standard winter of 43 salting actions, the allocation to include funds for a short period of snowfall of 24 hours.



5. To use an ice prediction system and meteorological consultant and other technologies as an aid to prediction or forecasting.
6. To co-ordinate with adjoining authorities for the procurement of services and the sharing of forecast information.

The need for possible treatment is assessed through the prevailing conditions, weather reports and forecasts with the information being supplied through the ice prediction system 'ICECAST' and the meteorological consultant.

### **Winter standards**

The winter standards are included in the Winter Service Plan and include:

- responsibilities for operations and decision making;
- arrangements and source of weather operation;
- operational standards;
- winter service operational procedures.

The operational procedures will contain the following:

- priority order of treating the Precautionary Salting Network (Plan A);
- priority order for clearing snow from the carriageway, footways and cycleways and network (Plan B);
- route plans with specific details of treating large roundabouts and junctions;
- target times for completion of pre-salting;
- action necessary to centralise control of all resources in the event of snow or severe weather;
- minimum stores of salt to be maintained;
- any special action required on thaw after snow;
- contacts with other bodies including the media;
- co-ordination with adjoining authorities.

The Winter Service Operational Plan incorporates a risk management strategy in line with the recommendations in the Code of Practice to establish which routes should be included in the programme of treatment.

### **Summary of key points**

#### **The key points for Winter Service are:**

- following introduction of the amendment to Section 41 (1A) of the Highways Act 1980 Highway Authorities now have a duty 'to ensure as far as is reasonably practicable, that safe passage along a highway is not endangered by snow or ice';
- there is also a duty upon authorities under Section 150 of the Act to remove any obstruction of the highway resulting from 'accumulation of snow or from falling down of banks on the side of the highway, or from any other cause';
- it is important to note that due to funding availability and the level of specialist plant and staff that have to be maintained on standby for infrequent weather events it is not practicable to provide the service to all parts of the network and ensure/guarantee that all running surfaces are kept free from ice or snow including those parts of the network that receive treatment;
- salting for frost and ice will be undertaken on specific routes with the operational network known as the 'Precautionary Salted Network' or Plan A;
- salting for snow that has settled on the highway, but is not of significant depth, or its presence is expected to be short lived will be limited to the Plan A network;
- for snow that has settled on the highway in significant amounts, or in the event of severe and persistent frost and ice, operations may be expanded to highways as detailed in the Development, Highways and Transportation 'Winter Service Plan'. This operational network is termed Plan B;
- winter standards are listed in the Winter Service Plan.

## Chapter 14 - Weather and other emergencies

This section of the Strategy relates to the plans and procedures that are in place to cope with the effects of the following:

- high winds;
- high temperatures;
- flooding;
- other emergencies.

The emergency response depends on the nature and extent of the emergency. The emergency situation will be classed as either a major or a minor emergency.

### **Major emergencies**

The process for handling all major emergencies are covered in the Development, Highways and Transportation Service Emergency Response Plan.

The aim and purpose of the plan is to provide detailed information on the role and responsibilities of the Development, Highways and Transportation Service Group in the event of a major emergency occurring within Essex or one occurring elsewhere such as London, which significantly affects and/or impacts upon the people living, working or travelling through the County. Nominated personnel within the plan have responsibilities for making decisions relating to the service's response to the emergency, and the Service Group Emergency Planning Liaison Officer will head the response for Development Highways and Transportation. Depending on the scale of the emergency, the County Emergency Group will also be activated, and the Development, Highways and Transportation Emergency Planning Liaison Officer will form part of the County wide group, along with representatives from all other service groups.

The Emergency Response Plan is circulated to the emergency plans department, as well as managers within Development, Highways and Transportation, the Cabinet Member and Deputy Cabinet Member.

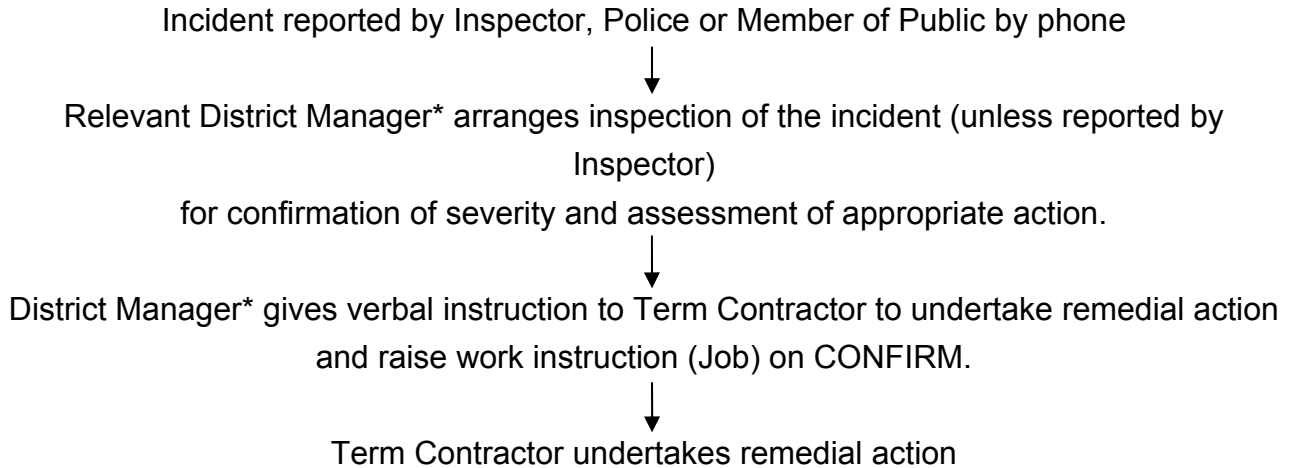
## **Minor emergencies**

Minor emergencies are those that do not need to involve agencies other than those that would be expected to respond to an incident affecting the highway, for example trees blocking roads caused by high winds, melting roads caused by high temperatures or localised minor flooding.

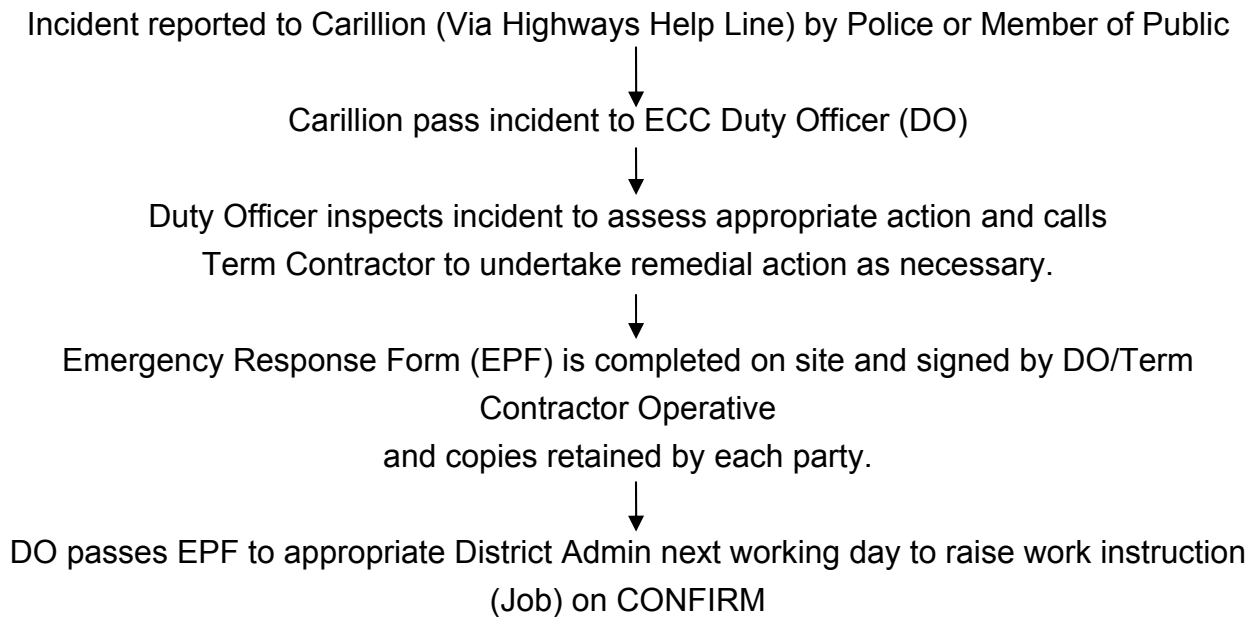
The flow charts on the following pages show the approach that is taken to dealing with minor emergencies both during and after normal working hours.

## Localised Emergencies

### (1) During Normal Working Hours (08:30 to 17:00)



### (2) After Normal Working Hours (17:00 to 08:30 and Weekends/Bank Holidays)



District Manager\* = appropriate officer/team member of a District with delegated authority



# Chapter 15 - Financial Management

## 1. Sources of funding

The funds used to provide the highways maintenance service are split between capital and revenue. Capital funding is that which is used to add to the highway asset or significantly increase its remaining life such as, major resurfacing schemes. Revenue funding is used for the day-to-day recurring activities required to maintain the County's highway network such as, pothole repair, grass cutting and gully emptying.

The Development, Highways and Transportation Service Group maintenance budgets are derived from two sources:

- Annual revenue funding provided by the Government Grant and topped up by the County Council resources derived mainly from the Revenue Support Grant provided by the government or from Council Tax.
- Annual capital maintenance allocation provided by the Department for Transport linked to the Local Transport Plan and annual performance results, including Government Grant and topped up by Essex County Council funding.

Additional funding of £15 million per year has been provided from County Council funds for the Highways Maintenance Initiative for the period 2005/06 to 2007/08 inclusive.

The revenue and capital funding is then allocated into basic maintenance and special maintenance.

### Basic maintenance

Basic maintenance is smaller scale reactive or routine/cyclic highway maintenance works. This category includes:

- basic structural maintenance;
- winter service;
- safety and environmental maintenance – tree maintenance, verge maintenance, carriageway sweeping, including litter and other hazard removal, maintenance and replacement of existing road markings and studs.

Basic maintenance works are funded from the revenue allocation.

### **Special maintenance**

Special maintenance comprises larger scale programmed structural maintenance works in respect of reconstruction, overlay and resurfacing where a specific need has been identified, works can be planned and the estimated cost of the necessary works separately quantified.

Special maintenance also includes surface treatments as a separate category. These are non structural treatments including:

- surface dressings;
- slurry sealing;
- high friction surfacing;
- resin bonded surfacing;
- other bituminous bonded surfacing;
- re-texturing.

## **2. Budget setting process**

The current budget setting process has been represented in four flowcharts. The processes represented occur simultaneously with involvement from various staff members in the County Council.

**Flowchart 1** shows the high level budget setting process representing the County Council, Cabinet Member, Service Director, Officers and Contractor roles.

The remaining processes are referenced in this flowchart, and the subsequent flowcharts show further detail for key elements of the high level process.

**Flowchart 2** illustrates the process for determining programmes of work at group level and is carried out by Officers.

**Flowchart 3** represents the process of budget setting at Service Group level (Development, Highways and Transportation), and is carried out by the Cabinet Member



and Service Director, based upon the information submitted by Officers in the process illustrated in flowchart 2.

Flowchart 4 details the process of assessing value for money which is used in the process of determining programmes of work by Officers.

**Figure 1 - Flowchart 1 - Overview of the budget setting process**

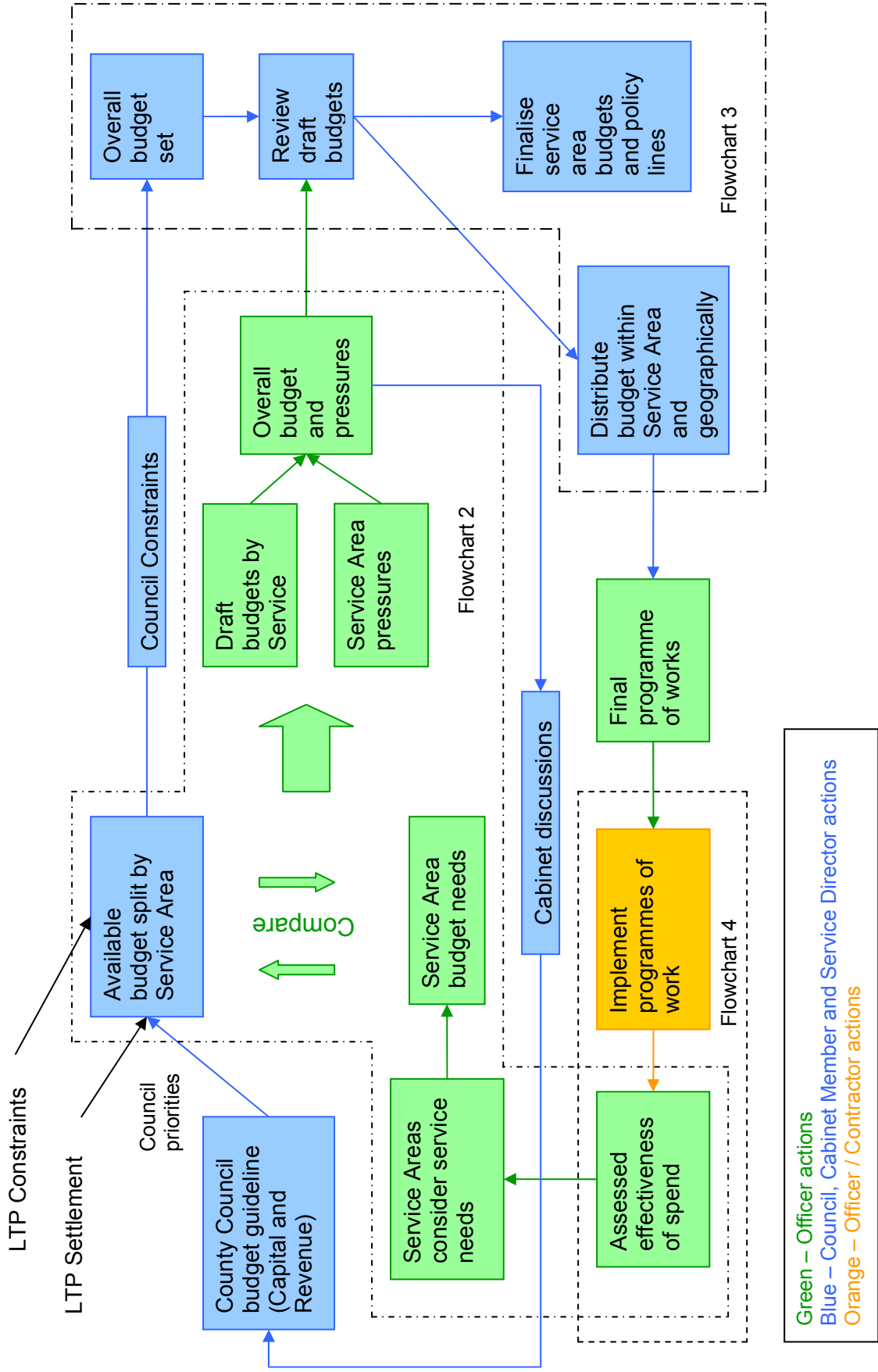
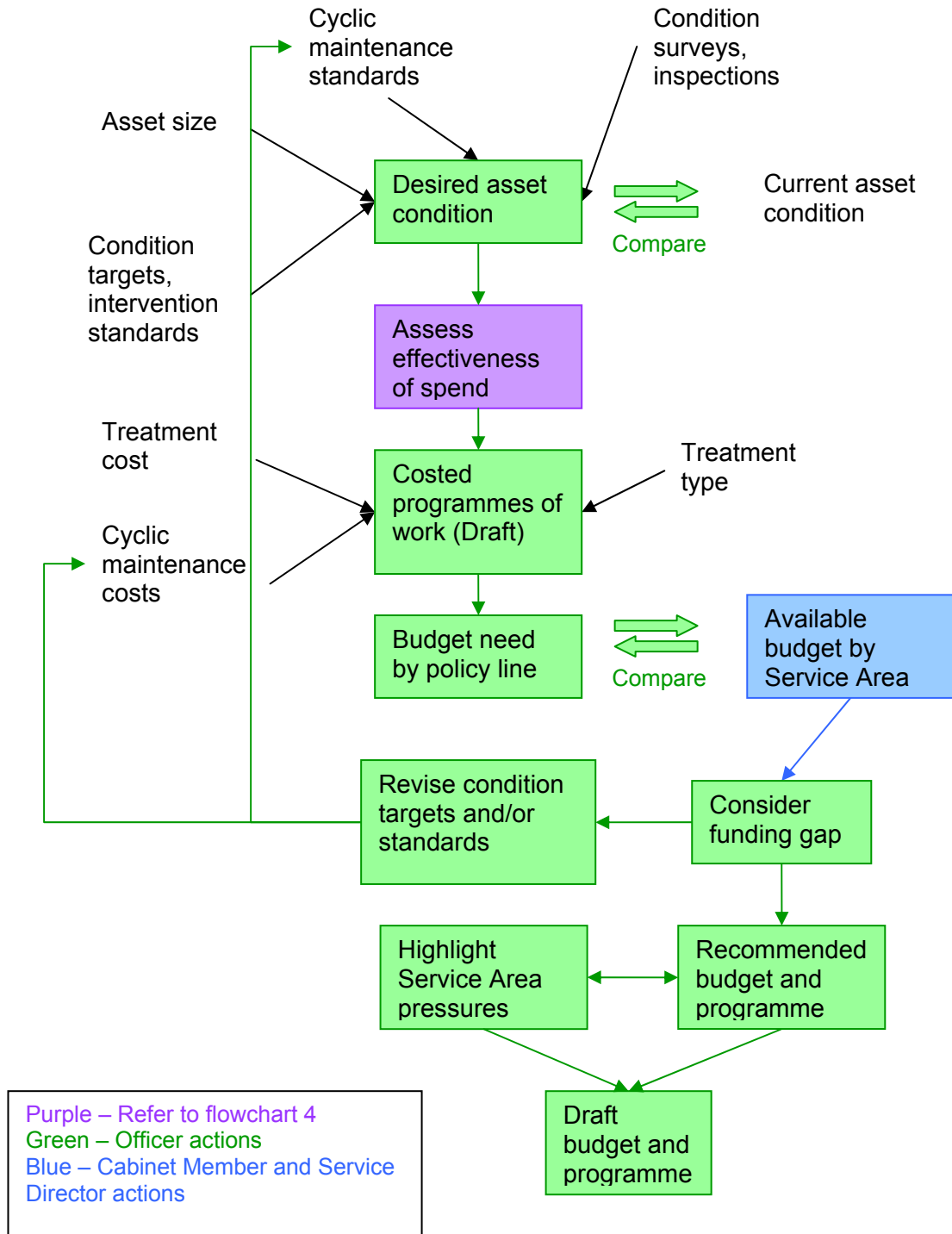


Figure 2 - Flowchart 2 Drafting budget requirements and programmes of work



**Figure 3 - Flowchart 3 Assessing budget requirements for the Service**

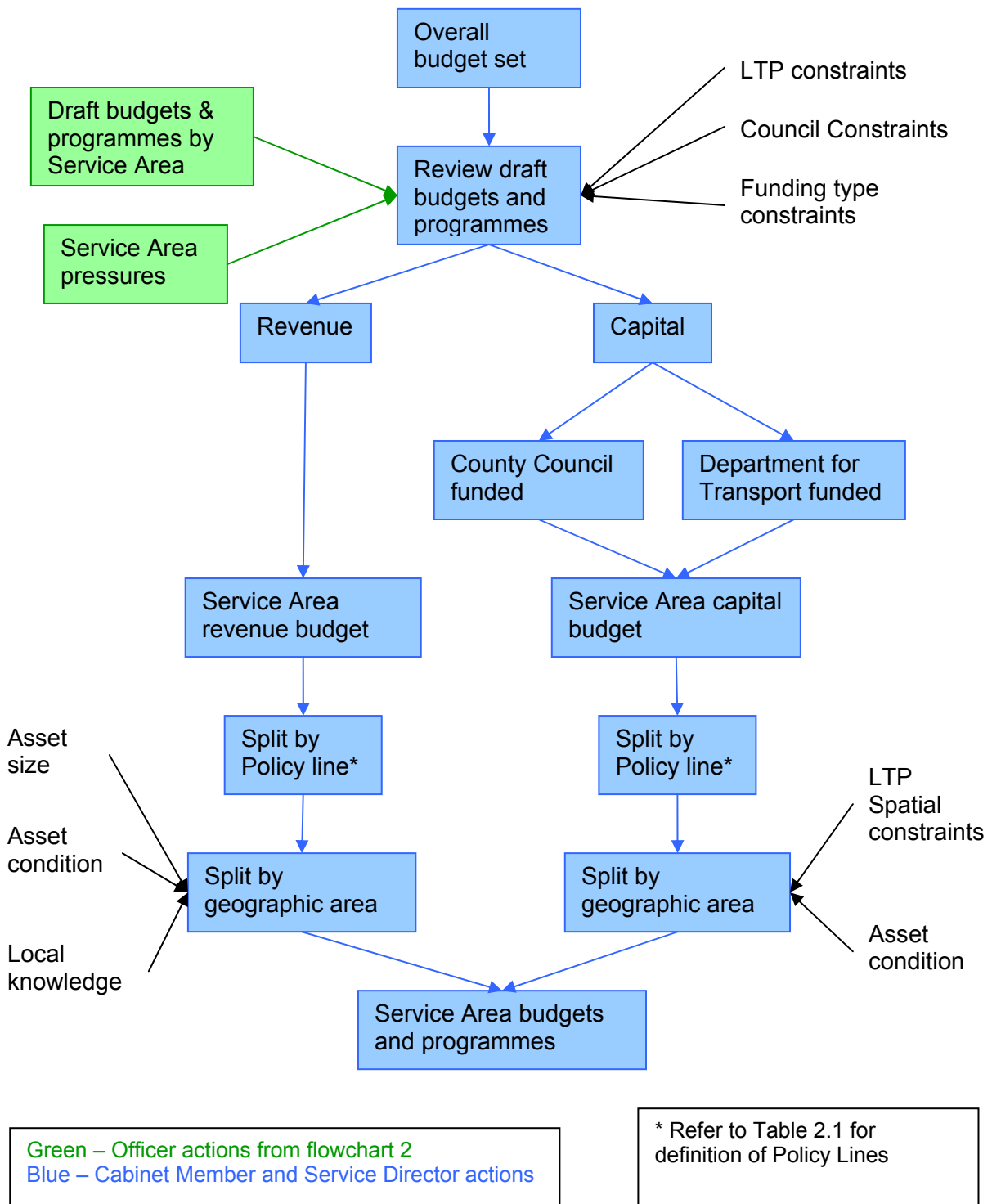
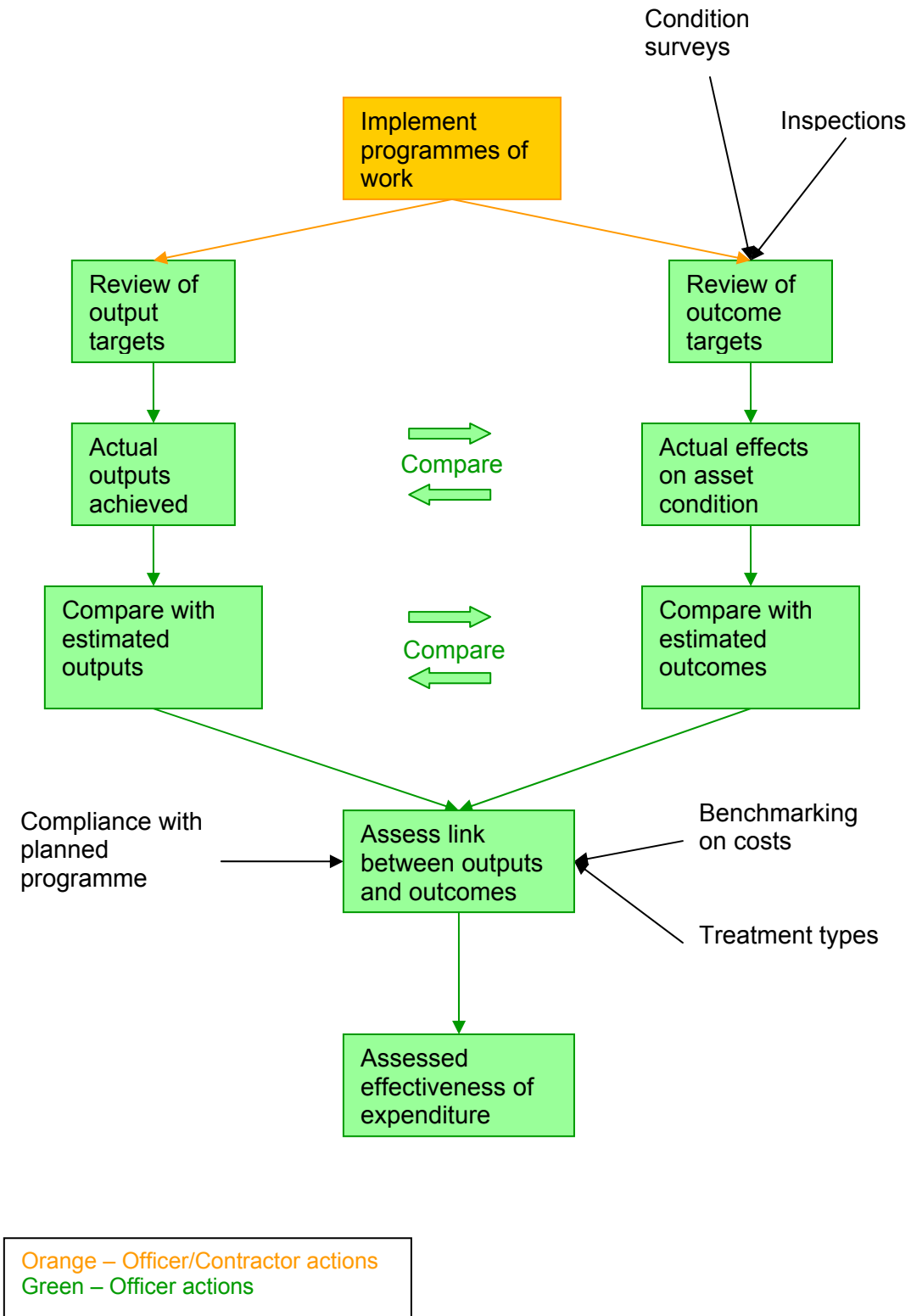


Figure 4 - Flowchart 4 Assessing value for money



Formalisation of budget requirements is an iterative process in which the Service Director and Senior Management Team work closely with the Cabinet Member as the Council's budget setting process develops each year. The process is designed to enable Members and Officers to challenge budget assumptions and establish fully the technical implications of any proposed changes.

Informal discussions take place between the Cabinet Member and Service Director of Development, Highways and Transportation. In parallel with these discussions, detailed reports are produced for each service area, containing various options and costs, using financial information and projections of achievement, and improving condition options and proposals. These reports are then reviewed by the Development, Highways and Transportation Senior Management Team (SMT) to ensure they reflect a service wide view of priorities at Officer level.

The Cabinet Member receives the report directly and in addition, these are discussed at monthly Business Performance Meetings and additional ad hoc meetings as appropriate.

### **3. Budget allocation for maintenance**

#### **Revenue Budget**

The Highways Revenue budget is devolved from the County Council resources. The government in allocating its specific funding takes into account maintainable road lengths, traffic flows, and winter maintenance requirements. The Highways Revenue budget has historically been largely based on the previous year's allocation plus an annual increment to account for inflation but in 2007/08 was actually reduced. The budget allocation for highways will also be affected by overall County Council priorities and service group pressures.

The Revenue budget is used for routine, reactive basic maintenance. The apportioning of the Revenue budget for different service functions is based on a formula which was approved by the Cabinet Member for Development, Highways and Transportation for the 2003/04 allocations onwards.

The formula is based on splitting the road hierarchy into County Routes and Local Roads. The total County Route km is multiplied by three and Local Roads by two to arrive at a total weighted km. The budget is divided by this overall weighted km to produce a £ allocation per weighted km. This £ allocation is then multiplied by the weighted km in each

District to provide each District's budget. These budgets can be further sub divided by service priority and the levels of service that can be sustained. Funding supply generally dictates that these service levels are set to the minimum which can sustain network user safety.

### **Capital Budget**

The annual Highways Maintenance Capital Budget settlement provided by the DfT is an integral part of the settlement regarding the LTP bid, and is derived from a government formula which takes into account network condition as identified via the BVPIs reported to the DfT annually. Additional funding can at times be provided by the DfT for specific capital maintenance schemes as a result of specific funding bids (for example the DfT may invite bids for emergency funding for extreme weather damage). The Capital budget has been topped up to a significant extent in recent years by County Council resources.

The distribution of the Capital Budget for Highways Maintenance is driven by:

- current condition (service level) of each class of carriageway or footway;
- predicted levels of deterioration;
- desired condition (service level) of each class of carriageway or footway;
- improvement km required to 'bridge' the performance gaps between current and desired Service Levels (refer to 'Performance Gaps');
- scheme types and associated costs;
- public perception of priorities (incorporated in Area priorities);
- statutory obligations to maintain a safe Highway;
- option most appropriate to deliver maximum use of resources and take account of all the above.

## **Budget allocation groupings**

The highway groupings that comprise the budget allocations are:

### **a. Basic maintenance**

- Basic structural maintenance
- Patching and minor repairs
- Drainage
- Footways and cycle tracks
- Fencing and barriers
- Remedial earthworks

### **Environmental**

- Verge maintenance
- Scavenging

### **Safety**

- Drainage cleaning/cleansing
- Non illuminated signs and bollards
- Other road markings

### **Winter Service**

- Precautionary salting
- Snow clearance
- Special maintenance



## Carriageways

- Reconstruction
- Overlay
- Resurfacing
- Drainage
- Fencing and barriers and so on.
- Remedial earthworks
- Surface dressing

## Footways

- Footways and cycle tracks – includes surface treatments to footways and cycle tracks

The proportion of the 2007/08 budget for the road and footway network allocated by maintenance category is as follows;

Reactive	34%
Routine	11%
Programmed	50%
Regulatory	1%
Winter	5%

## 4. Financial planning

The Essex Transport Asset Management Plan (TAMP) identifies the investment required in the maintenance of the highway assets, the value of the asset and its depreciated value. It will increasingly be used as a tool for assisting in the financial planning of maintenance in Essex. The Plan encourages the use of whole life costing which is consistent with the requirements of value for money in the Local Transport Plan. Whilst reactive maintenance still needs to be funded the long term aim is to continue to develop a pre-planned proactive regime based on the principles of asset management. This will be achieved by:

- developing and presenting detailed options on the effects of different treatment types on the whole life cost of the asset and results on asset condition;
- assessing deterioration rates of assets more accurately;

- having long term scenarios supported by robust data, which clearly demonstrate the benefits of maintenance treatments;
- including new assets within the budget setting process and therefore an evaluation of future maintenance requirements.

## **5. Financial procedures**

Various procedural rules govern the way the maintenance programme is delivered. These include the County Council's Financial Regulations, the County Council's Procurement rules and the Development, Highways and Transportation Service's Scheme of Delegation.

## **6. Accounting principles**

Accounting principles for highway maintenance should be in accordance with CIPFA requirements with particular reference to:

- CIPFA Code of Practice on Accounting for Capital 1994;
- CIPFA Statement of Recommended Practice on Accounting for Capital 2000 which supplements the 1994 Code.

The CIPFA 2000 document provides the following relevant advice in respect of highway maintenance:

- expenditure that should be capitalised includes acquisition, construction, enhancement or replacement of roads, buildings or other structures;
- enhancement means carrying out works which are intended to lengthen substantially the useful life of the asset, increase substantially the open market value of the asset or increase substantially the extent to which the asset can or will be used for the purposes of or in conjunction with the functions of the authority. To increase substantially the life of the asset relates to major works such as, resurfacing a whole stretch of road;
- under this definition improvement works and structural repairs should be capitalised, whereas expenditure to ensure that the fixed asset maintains its previously acquired standard of performance should be recognised in the revenue account as it is incurred.

Unless expenditure meets these criteria to be capitalised, it should be treated as revenue - routine repairs (basic structural maintenance), environmental maintenance and safety maintenance are all revenue expenditure. The exception to basic structural maintenance being revenue expenditure is if the expenditure on patching is part of the preparation works to a larger overlaying or resurfacing works they should be included within the capital scheme.

Special maintenance of carriageways could be classified as revenue or capital so the de-minimus rule applies – if the total cost of the scheme exceeds £10,000, then it will be capital, if it does not, then it is revenue.

## **7. Financial control, monitoring and accountability**

### **Financial management**

Financial management is more than just a record of what has been spent and what has been received. It is also:

- ensuring that there is stewardship of public resources;
- ensuring that statutory and regulatory standards are met;
- ensuring value for money;
- identifying, evaluating and managing risk;
- supporting good decision making through the provision of financial information and advice to decision makers;
- analysis of service activity costs and trends to feed into performance information;
- aligning resource allocations with business objectives;
- maximising income sources without being diverted from business priorities.

The Comprehensive Performance Assessment (CPA) puts an emphasis on financial management. Without proper financial management it will be impossible for the County Council to achieve the highest CPA score of four stars and improving strongly. All staff and Members have a duty to abide by the highest standards of probity in dealing with financial issues. This is facilitated by ensuring that everyone is clear about the standards to which they are working and by the controls that are in place to ensure that these standards are met.

Financial management is made up of:

- setting a reasonable budget;
- budgetary control;
- maintaining records;
- closing the accounts.

Good budgetary control procedures based on high standards of corporate governance are essential to sound financial management. This should include regular reviews of:

- possible problems in under or overspending when comparing actual expenditure transactions to budget;
- possible need to redefine objectives against budget provision;
- possible need to delegate specific areas of larger budgets, enabling greater control;
- possible need to adjust budgets in the light of performance monitoring.

### **Accountability**

Within Development, Highways and Transportation it is the Director's responsibility as a Level One Budget Holder to:

- take an active part in the budget setting process, including budget bilateral meetings and service planning;
- allocate resources across the service in line with objectives and priorities;
- ensure that financial risks are identified and managed in a structured way;
- maintain effective budgetary control within their area to ensure spending remains within their annual cash limited budget;
- ensure no expenditure is incurred without appropriate budget provision being in place.

The Service Director reports on financial management of the service to the Chief Executive and Portfolio Holder for Development, Highways and Transportation. In addition they will be required to provide information to the Portfolio Holder for Finance and Property, as the Cabinet Member with responsibility for finance.

Budgets are devolved down through senior management to the officers that are best placed to identify the needs of the service. These budget holders are identified as either Level Two or Level Three Budget Holders.

Level two budget holders report to level one budget holders and have responsibility for:

- allocation of budgets and responsibilities to lower level budget holders;
- monitoring of spend and income against budgets allocated by the level one budget holder;
- reporting on performance against budget, forecast outturn and possible budget pressures to level one budget holders;
- working with level one budget holders to identify corrective action plans for areas of concern;
- regular meetings with Financial Services;
- alerting the level one budget holder of any potential financial problems;

Level three budget holders report to level two budget holders and have responsibility for:

- monitoring of spend and income against budgets allocated by the level two budget holder;
- checking of transactions charged to individual budget lines to ensure there are no errors or emissions;
- authorisation of payments, in line with Procurement Rules;
- ensuring all orders placed are in line with financial regulations and other guidance, and that there is sufficient budget provision to pay for them;
- monitoring employee budgets;
- authorisation of invoices to be raised for income;
- maintenance of local commitment records;
- provision of information to higher level budget holders on commitments and future spending to allow them to forecast spend to the end of the financial year and, where appropriate, into the future;

- provision of information on goods and services received and not yet paid for via Creditor forms at the end of the financial year;
- provision of information on goods and services provided and not yet charged for via Debtor forms at the end of the financial year;
- provision of information to be included in disclosures to the Statement of Accounts at the end of the financial year;
- reconciliation of local records to the general ledger;
- ensuring all debts are collected.

### **Monitoring and budgetary control**

Budget monitoring and budgetary control are important elements of financial management. They relate to monitoring actual spend and income against planned budgets and predicting what the total spend and income will be at the end of the financial year. By carrying out this process the County Council can identify as soon as possible obstacles to achieving its goals.

Once the budget is approved by Council, Directors are authorised to incur expenditure in accordance with the estimates that make up the budget. Directors must maintain effective budgetary control within their Service to ensure that spending is contained within the annual cash limit.

The budget programme and performance targets are monitored by the means of a monthly budget performance meeting involving the Group Managers, Service Director and Cabinet Member. The forecast outturn position will be discussed at the meeting as well as budget pressures and variances. A quarterly report is made to the whole of Cabinet.

### **Audit trails**

There must be a clear audit trail that links transactions charged to capital against orders, invoices and specific time records. The audit trail must be capable of standing up to scrutiny from the County Council's external auditors, and it should be stored in an appropriate format to allow this to happen as a standard part of the accounts production process.

## Summary of key points

### The key points for financial management are:

- the funds used to provide the highways maintenance service are split between capital and revenue. Capital funding is that which is used to add to the highway asset or significantly increase its remaining life for example major resurfacing schemes. Revenue funding is used for the day-to-day recurring activities required to maintain the County's highway network such as, pothole repair, grass cutting and gully emptying;
- improvement works and structural repairs should be capitalised, whereas expenditure to ensure that the fixed asset maintains its previously acquired standard of performance should be recognised in the revenue account as it is incurred;
- the exception to basic structural maintenance being revenue expenditure is if the expenditure on patching is part of the preparation works to a larger overlaying or resurfacing works they should be included within the capital scheme;
- special maintenance of carriageways could be classified as revenue or capital so the de-minimus rule applies – if the total cost of the scheme exceeds £10,000, then it will be capital, if it does not, then it is revenue;
- the Comprehensive Performance Assessment (CPA) puts an emphasis on financial management. Without proper financial management it will be impossible for the County Council to achieve the highest CPA score of four stars and improving strongly;
- all staff and Members have a duty to abide by the highest standards of probity in dealing with financial issues;
- there must be a clear audit trail that links transactions charged to capital against orders, invoices and specific time records. The audit trail must be capable of standing up to scrutiny from the County Council's external auditors, and it should be stored in an appropriate format to allow this to happen as a standard part of the accounts production process.





# Chapter 16 - Performance management

## Introduction

The County Council has a robust performance management system in place to measure, monitor, assess and compare Best Value Performance Indicators, Local Transport Plan indicators and internal Corporate Scorecard and Key Development, Highways and Transportation indicators.

## Highways Maintenance Service performance indicators and targets

Performance information that is relevant to the highway maintenance service currently takes the form of:

- Best Value Performance Indicators (BVPI's) measuring the condition of the asset. These are outcome indicators as they give a measure of condition resulting from maintenance strategy and therefore activity. Performance against these indicators and targets is reported quarterly (where information is available).

These are statutory indicators that every Local Authority has to report against target on annually. There are a number of BVPI's that measure the condition of both the carriageway and footway asset. Condition surveys are carried out following government requirements. 100% of the principal and non principal classified road network is surveyed each using a repeatable machine survey known as SCANNER and 50% of the unclassified road network is surveyed by a means of a driven coarse visual inspection.

A 50% sample of the Category 1, 1a and 2 footways in Essex is surveyed annually by carrying out a walked detailed visual inspection and a 2 year rolling 100% condition result is reported.

The condition of cycleways on the A, B and C cycle route network were determined for the first time in 2006. A bicycle was used to video record the cycleway and defects were then assessed by reviewing the video footage.

The condition of Public Rights of Way is assessed for a BVPI from a detailed walked survey and is reported as the total lengths of footpaths and other Public Rights of Way which are easy to use by members of the public.

Best Value Performance Indicators (BVPI's) measuring the provision of facilities for disabled people. Performance against these indicators and targets is reported quarterly;

- Local Transport Plan Performance Indicators measuring the achievement of actions identified in the Local Transport Plan. Performance against these indicators and targets is reported annually;
- Comprehensive Performance Assessment (CPA) Indicators measuring the performance of the County Council in its own right and in comparison with others. Performance against these indicators and targets is reported annually.

The strategies, activities and targets of the highways maintenance service contribute to the following CPA indicators:

- condition of unclassified roads;
  - condition of Category 1, 1a and 2 footways;
  - percentage of footpaths and other Public Rights of Way that are easy to use;
  - percentage of pedestrian crossings with facilities for disabled people.
- Corporate Scorecard Indicators measuring progress against corporate objectives. Performance against these indicators and targets is reported quarterly (where information is available)

There are two corporate scorecard indicators that measure the success of the highways maintenance service; the composite condition of A, B and C roads and number of miles of road fixed;

- Key Development, Highways and Transportation Performance Indicators measuring progress against indicator and target for the performance indicators that the Service Director and Cabinet Member consider to be of high importance to the service and require a strong focus. Performance against these indicators and targets is reported quarterly (where information is available).

The following are reported as Key PI's:

- condition of unclassified roads;
- condition of category 1, 1a and 2 footways;
- composite condition of A, B and C roads;
- number of miles of road fixed;
- percentage of footpaths and other Public Rights of Way that are easy to use.

The table below shows performance measures against indicator type to demonstrate that one indicator can provide information for more than one indicator category:

**Table 16 - Performance measures**

<b>Asset group</b>	<b>Performance indicator description</b>	<b>Indicator type and reference number</b>
Carriageways and footways	Condition of A roads as measured by SCANNER (machine) survey	BVPI (BV 223) LTP2 (LTP19)
	Condition of B and C roads as measured by SCANNER (machine) survey	BVPI (BV 224a) LTP2 (LTP20)
	Condition of Unclassified roads as measured by Coarse Visual Inspection	BVPI (BV 224b) LTP2 (LTP 21) CPA Key PI
	Condition of category 1, 1a and 2 footways as measured by Detailed Visual Inspection	BVPI (BV 187) LTP2 (LTP 21) CPA Key PI and HM12
	Composite condition of A, B and C roads as measured by Coarse Visual Inspection	LTP2 (LTP 6) Corporate Scorecard (ECC 163) Key PI

<b>Asset group</b>	<b>Performance indicator description</b>	<b>Indicator type and reference number</b>
	Condition of A roads as measured by Coarse Visual Inspection	Local PI (HM 7)
	Condition of B and C roads as measured by Coarse Visual Inspection	Local PI (HM 8)
	Number of miles of road fixed	Corporate Scorecard Key PI (ECC 162)
	Percentage of dangerous damage repaired within 24 hours	Local PI (HM 2)
Public Rights of Way	Percentage of footpaths and other Public Rights of Way which are easy to use by the public	BVPI (BV 178) LTP2 (LTP 24) CPA Key PI

**Table 17 - Key to indicator type in table**

BVPI	Best Value Performance Indicator
LTP2	Local Transport Plan Indicator
CPA	Comprehensive Performance Assessment Indicator
LAA	Local Area Agreements Indicator
Corporate Scorecard	Corporate Plan Indicator
Key PI	Key Development, Highways and Transportation Service Indicator
Local PI	Local Development, Highways and Transportation Service Indicator

**Customer perceptions**

A two yearly survey of public perceptions of the highways maintenance service is carried out by Ipsos-MORI and progress reported in terms of net satisfaction with the highways service.

Two repeatable surveys have now been carried out in 2004 and 2006 which have provided valuable information on public perception in terms of satisfaction and also priorities. Satisfaction in road maintenance services increased by 10% between 2004 and 2006 and by 8% for pavement maintenance services. The repair of potholes is of the highest importance to Essex residents and where residents feel that the greatest amount of funding should be directed.

The survey information will be used by the Service Director and Senior Management Team, Cabinet Member and Maintenance Engineers to:

- assess and measure satisfaction;
- shape maintenance strategy;
- determine priority.

**Summary of performance Indicators to be used to monitor highway maintenance outputs and outcomes and the success of maintenance strategy**

The table below sets out the performance indicators that will be used to measure progress against highway maintenance strategy, standards and targets. The performance indicators are divided into the four categories of customer service, safety, serviceability and sustainability:

**Table 18 - Performance indicators**

<b>Customer service</b>
<ul style="list-style-type: none"> <li>• % net satisfaction with the service (2 yearly reporting from repeat Ipsos-MORI survey) – new Maintenance Strategy indicator</li> </ul>
<b>Safety</b>
<ul style="list-style-type: none"> <li>• % Cat 1 defects repaired on time (HM 2)</li> <li>• % safety inspections completed on time – new Maintenance Strategy indicator</li> </ul>

- % principal roads SCRIM surveyed in current year at or below investigatory level – new Maintenance Strategy indicator
- % third party claims repudiation rate over three years – new Maintenance Strategy indicator

**Serviceability**

- Number of days with temporary traffic controls or road closure on traffic sensitive roads caused by road works per km of traffic sensitive road (BV 100)
- % total length of PRow that are easy to use (BV 178)
- % pedestrian crossings equipped with facilities for disabled people (BV 165)
- % principal network where maintenance should be considered (BV 223)
- % non principal classified network where maintenance should be considered (BV 224a)
- % of unclassified network where maintenance should be considered (BV 224b)
- Number of miles of road fixed (ECC 162)
- Composite condition of A, B and C roads as measured by CVI (ECC 163)
- Condition of A roads as measured by CVI (HM 7)
- Condition of B & C roads as measured by CVI (HM 8)
- % of the Cat 1, 1a and 2 footway network where maintenance should be considered - 50% sample (BV 178)
- % of the Cat 1, 1a and 2 footway network where maintenance should be considered - 100% sample – 2 year rolling result (LTP 22)
- % of the Cat A and B cycle route network where maintenance should be considered

**Sustainability**

- Annual reactive maintenance expenditure as % planned maintenance – new Maintenance Strategy indicator
- Annual highway related claim costs as % planned maintenance – new Maintenance Strategy indicator
- Average recycled content for bulk material imported for use on site – new Maintenance Strategy indicator

## **Accountability and reporting processes**

All officers involved in the development of maintenance strategy, management of the asset and delivery of the maintenance work on the ground have a part to play in the achievement of performance targets.

Information on progress against BVPI, LTP, CPA, Corporate Scorecard and Key Development, Highways and Transportation performance indicator targets is entered into the Performance Management System (PMS) by a designated data manager on a quarterly basis. This information is then used to aid discussion at a performance meeting attended by the Service Director and Senior Managers. The data manager is required to provide reasons for current performance, assess the impact of this level of performance, identify any corrective action required to get back on track and any budget implications. Where actions are needed to get back on track the process or funding required to achieve this will be discussed and agreed at the performance meeting.

Annual formal reporting of performance of BVPI's and LTP2 performance indicators is also required.

Annual reporting to Cabinet/SMB is required to inform on progress against targets set for the Highways Maintenance Initiative (or any future maintenance strategy).

The other measures of performance, providing a year on year comparison of outputs and therefore progress will be reviewed by the Head of Highway Management and his management team on an annual basis.

## **Maintenance Contract performance**

The Employer (Essex County Council) assesses the performance of the maintenance contractors - Balfour Beatty Infrastructure Services and May Gurney using a framework of key performance indicators. Results for each of the Key Performance Indicators are aggregated to give a score against a benchmark for each performance area. Monthly reports on progress against the performance indicators are provided to the County Roads Manager.

These key performance indicators are as follows:

- programme delivery – measured by contractor originated delays and adherence to the programme;

- quality of work – measured by defects for individual schemes and two quality indicators;
- financial processes – measured by adherence to estimate, accuracy of final claim, accuracy of invoicing and speed of invoicing;
- customer perception and standards – measured by contractor complaints/compliments and annual customer survey results;
- Health and Safety – measured by two indicators;
- environment – measured by waste to landfill, waste recycled, waste reduced and average recycled content for bulk material imported for use on site;
- responsiveness – measured by average emergency response time, reports submitted on time and category 1 repairs;
- winter service – measured by precautionary salting and snow clearance;
- contract relationship management – measured by business approach, approach to commercial issues, problem resolution, early warning system and communication and information flow.

### **Summary of key points**

#### **The key points for performance management are:**

- all officers involved in the development of maintenance strategy, management of the asset and delivery of the maintenance work on the ground have a part to play in the achievement of performance targets;
- the two yearly Ipsos-MORI survey to assess public perceptions of the highways maintenance service will continue with the next survey scheduled for autumn 2008;
- performance against the targets set for maintenance related performance indicators - BVPI's, LTP , CPA, Corporate Scorecard and Development, Highways and Transportation performance indicator targets will be entered onto the Performance Management System on a quarterly basis;
- progress against target will be discussed and any corrective action required to get back on track agreed at a quarterly performance meeting attended by the Service Director and Senior Managers;
- progress against BVPI targets and audit trail information will be provided to the Business



Service Unit annually;

- progress against LTP2 targets will be provided on an annual basis to the Planning and Transportation Group;
- other measures of performance, providing a year on year comparison of outputs and therefore progress will be reviewed by the Head of Highways Management and his management team on an annual basis.



# Chapter 17 - Customer involvement

## 1. Introduction

Public and stakeholder consultation is well developed in the County Council and the Council is committed to ensuring an inclusive approach to understand the real issues for people in Essex and ensure effective public consultation.

There are four levels of user and community involvement:

- **informing** – providing clear information to which a response is not sought;
- **consulting** – seeking structured responses to a defined series of questions with or without supplementary briefing;
- **participating** – involving in generalised discussions about services including the provision of unstructured views and perceptions to assist with the development of issues and scenarios for further consultation;
- **empowering** – providing encouragement and support for the devolvement of certain decisions or aspects of service delivery for example planned parish visits.

User and community involvement is a high priority and an ongoing aspect of highway maintenance. There is an identified need to obtain and use more customer information to develop levels of service and shape future strategy and practice for maintenance and management of the highway asset. Informing the public and stakeholders on how decisions are made and what can be delivered with the available budget will help achieve a better understanding of how Development, Highways and Transportation resources are used and to help shape how they are used in the future.

## 2. Identifying customer need

Customer need is identified both through formal consultation processes and regular contact direct from key stakeholders – members of the public, interest groups, elected members and parish or town council representatives.

### **3. Provision of information**

#### **County Council website**

The County Council website is currently undergoing improvements to make information more accessible to the public. Information provided on the website relating to maintenance strategy and practice will be reviewed and improved during 2007/08 to provide some or all of the following:

- our successes – how many miles or kilometres of road and footway have been improved;
- what the public think – summary of results from customer consultation;
- how the County Council decides which roads to repair;
- how decisions are made on what type of work needs to be carried out;
- how much funding is provided and how this is divided;
- policies and standards;
- level of service/condition of the network and how this is affected by funding levels;
- what surface dressing is;
- resurfacing roads and skid resistance;
- who is allowed to dig up the roads and what controls are in place;
- why potholes and other defects are sometimes only temporarily repaired;
- how quickly defects are likely to be repaired;
- why some roads receive treatment quicker than others;
- how to report a problem.

#### **Signs notifying of work in advance**

Advance information allows users of the network in Essex to change their travel plans, and for local residents and businesses to adjust their arrangements to accommodate the works, with minimum inconvenience and disruption.

Signs will be provided at sites where major work is to be carried out to warn of works at least one week in advance. The signs are usually large with yellow backing and black

lettering. Signs should include information on location (may just say 'here'), date of start of work, duration of the work and the reason for the work for example road resurfacing, drainage improvements or footway improvements.

### **Letters and leaflets notifying householders and businesses of work in advance**

Residents immediately affected by works are to be notified by hand delivered letter of all large maintenance schemes in advance for example, footway and kerb works or surfacing.

For major schemes advance warning may be provided by any one or combination of the following as appropriate for the scheme:

- letter drop to all residents in the area where the work will be carried out;
- advance warning signs on site at least one week in advance;
- notices in papers;
- notices on lamp columns and other suitable street furniture.

Where there is a possibility of congestion, delays and disruption parish/town councils and local communities will be notified with specially prepared leaflets.

District and County Councillors must also be kept informed of schemes/works in their area in advance. County Council Members can be notified using the Members Local Link Alert via the Intranet.

The Traffic Control Centre should be provided with information on works sufficiently in advance so that they can keep local media informed.

### **Press releases**

Schemes that are to be carried out on strategic routes and/or are likely to affect large numbers of people as well as local businesses need to be publicised well in advance. Press releases will be used to warn the public and provide information on the scheme.

Keeping the public informed about work that is carried out, the reasons why we are doing the work and how it may affect them, may lead to the public having a greater understanding of the maintenance service.

### **Customer comment following work completion (post completion surveys)**

Where time and resources allow residents affected by a major scheme should be given the opportunity to comment on schemes in terms of the information they received, the standard of the work and the contractor's performance.

### **Consultation/planning of work with adjoining authorities and service providers**

Ongoing consultation with authorities adjoining Essex and service providers is required as part of the new network management duty in order to ensure consistency and integrated programming of works. Consultation is also required with utilities, public transport operators and other key stakeholders.

Consultation should take place with adjoining authorities and agencies in the development of programmes and to look at the possibilities of joint or cross boundary working.

### **Corporate policy and guidance on 'Customer Excellence'**

The policy on provision of information to the public and key stakeholders will be reviewed and finalised following the release of guidance from Corporate Communications at the end of June 2007. The approach that Development, Highways and Transportation take to engaging with the public will be further reviewed after this date.

## **4. Customer surveys**

A two yearly survey is carried out by Ipsos-MORI for the Development, Highways and Transportation Service to determine views on highways maintenance and satisfaction with maintenance activities. The latest survey carried out in November 2006 showed an increase in satisfaction from 2004.

The results showed that:

- Essex has achieved a 'real and significant' improvement on the results from 2004, especially in the north of the county;
- Essex is top of the Ipsos MORI County 'league table';
- people are happy with the condition of roads and pavements in the county;

- people are happier with highway maintenance than they were in 2004 – satisfaction with road maintenance services has increased by 10% and 8% for pavement maintenance services;
- 23% of Essex residents think that the general condition of roads and pavements in Essex has improved over the last three years;
- 71% of residents consider that major county roads are in good condition;
- We communicate more effectively than in 2004;
- Potholes continue to be an important issue for residents and they consider that the greatest amount of funding should be directed to their repair;
- Residents still consider that a high priority should be given to improving conditions on major county roads in Essex.

A repeat survey will be carried out in autumn 2008 and two yearly thereafter.

Regular customer surveys also help shape Winter Service Policy. A questionnaire was sent to a number of key stakeholder groups in May 2006, including all the Parish Councils, to gain and assess views on whether the winter service programme is about right, where efforts and funding should be targeted and precautionary salting of footways and cycleways. The questionnaire repeated a number of questions posed in 2004 to provide a comparison of any changing views on the Winter Service. 396 questionnaires were distributed with 117 responses received.

The responses indicated that in comparison with the last survey results in 2004, that respondents are more satisfied with the winter service programme – an increase from 48% satisfied to 73%. There is, therefore, a high level of satisfaction with the winter service programme.

The top four priority areas for to receive winter treatment namely major routes, access to accident and emergency hospitals, fire and ambulance stations, regular bus routes and isolated villages have not changed and reflect the priorities covered by the existing policy.

## Summary of key points

### The key points for customer involvement are:

- USER and community involvement is a high priority and an ongoing aspect of highway maintenance;
- there is an identified need to obtain and use more customer information to develop levels of service and shape future policy and practice for maintenance and management of the highway asset;
- the County Council website is currently undergoing improvements to make information more accessible to the public. Information provided on the website relating to maintenance policy and practice will be reviewed and improved during 2007/08;
- signs will be provided at sites where major work is to be carried out to warn of works at least one week in advance. Signs should include information on location (may just say 'here'), date of start of work, duration of the work and the reason for the work for example, road resurfacing, drainage improvements or footway improvements;
- residents immediately affected by works are to be notified by hand delivered letter of all large maintenance schemes in advance for example footway and kerb works or surfacing;
- where there is a possibility of congestion, delays and disruption parish/town councils and local communities will be notified with specially prepared leaflets;
- District and County Councillors must also be kept informed of schemes/works in advance. County Council Members can be notified using the Members Local Link Alert via the Intranet;
- the Traffic Control Centre should be provided with information on works sufficiently in advance so that they can keep local media informed;
- schemes that are to be carried out on strategic routes and/or are likely to affect large numbers of people as well as local businesses need to be publicised well in advance. Press releases will be used to warn the public and provide information on the scheme;
- where time and resources allow residents affected by a major scheme should be given the opportunity to comment on schemes in terms of the information they received, the standard of the work and the contractor's performance;



- ongoing consultation with authorities adjoining Essex and service providers is required as part of the new network management duty in order to ensure consistency and integrated programming of works. Consultation is also required with utilities, public transport operators and other key stakeholders;
- a survey to seek views on highways maintenance and satisfaction with maintenance activities will be carried out in autumn 2008 and two yearly thereafter.



# Chapter 18 - Training and development

## Introduction

Well trained and knowledgeable staff are vital to ensure that the Maintenance Strategy can be implemented and policies and practices followed.

## Key areas for training and development

### 1. Highway inspection

#### a. Inspection standards and practice

Highway inspectors need to be clear on the requirements for safety and service inspections and the practice that is to be followed in Essex as well as being kept informed of changes in policy and legislation.

This will be achieved by:

- an annual meeting for highway inspectors with staff from the County Roads Unit at County Hall as well as interim updates if any changes need to be made during the year. This meeting will cover inspection policy and practice and provide inspectors with the opportunity to discuss practical amendments that may be needed and to discuss practice and approach with colleagues at other Area Offices;
- updates/teach-in sessions at the Area Offices facilitated by the Senior Inspectors and Maintenance Engineers;
- an annual meeting with staff from the Legal Team from County Hall to discuss current claim and repudiation rates, areas where claims are high as well as the approach to be taken to defending claims and current legislation;
- teach-in/update sessions from specialist teams such as the Natural Environment Team who are responsible for landscape, ecology and trees who will provide information such as what to look for when carrying out safety inspections, hedge cutting and verge conservation and special verges.

## **b. Inspection legal**

Every highway inspector will receive legal training and be offered refresher courses where a need is identified. Legal training will be achieved by the provision of expert witness training from a specialist organisation such as Bond Solon who are a legal training consultancy. The training includes:

- key skills of presenting effective highways evidence;
- how the adversarial system works;
- preparation and personal presentation;
- the importance of records, statements and reports;
- who to speak to in court and what to call them;
- the roles of various people in court;
- taking the oath or affirmation with confidence;
- techniques lawyers use in cross examination and how to handle them;
- using notes, photographs and statements to good effect;
- giving confident, clear testimony under difficult cross examination;
- getting across the strongest points of the evidence.

## **c. Inspection technical/formal qualifications**

The County Council will aim to offer all highway inspectors the opportunity to achieve a formal qualification. As well as improving knowledge the gaining of a qualification will also be regarded as a positive example of an inspector's ability and a demonstration of their competence when presenting evidence in court.

The most appropriate course and qualification is City and Guilds 6033 – Environmental Services Highway Inspection and Monitoring. The units that can be included in study and assessment are:

301 – Health and Safety

311 – Safety Inspection of the Highway

312 – Monitoring Street Cleansing

321 – Inspection of Final Reinstatement

- 322 – Visual Highway Deterioration Assessment
- 331 – Coarse Visual Inspection of Highway
- 332 – Detailed Visual Inspection of Highway
- 333 – Initiation of Reactive Highway Maintenance
- 334 – Inspection of Completed Reactive Highway Maintenance

The units most appropriate for Highway Inspectors are unit 301 and 311. Unit 301 provides appropriate basic Health and Safety training to give highway inspectors an appreciation of how to carry out a basic risk assessment and to work safely on the highway. This is a mandatory core unit.

Unit 311 is designed to confirm a candidate's ability to satisfactorily carry out Highway Safety Inspections in accordance with the National Code of Practice for Maintenance Management and also the County Council's local standards.

## **2. Materials recognition and use**

It is important for maintenance engineers and inspectors to keep up to date with new materials technology, materials policy and practice. This will be achieved by:

- An annual meeting arranged by the County Roads Unit to which a materials expert will be invited to present information on material use, new materials available and answer questions. Maintenance Engineers from other counties will also be invited to attend so that best practice can be shared.
- In-house training courses facilitated by experts in the materials field covering some of the following subjects:
  - failures in road surfacing, why they occur, treatment options available and the relationship between failure types and treatment options;
  - skid resistance and early life skid resistance;
  - road pavements – introduction to design and specification and pavement assessments;
  - bituminous materials and non asphalt pavements.

### 3. Sustainability and recycling

All maintenance engineers need to have a good understanding of sustainability and recycling. This will be achieved by:

- half yearly meetings of the Development, Highways and Transportation ReCycling and Sustainable Materials Group (RCSMG). This group includes staff from the County Roads Unit, Area Engineers and contractors;
- an annual meeting arranged by staff from the County Roads Unit at County Hall to update engineers and inspectors on the use of recycled materials and sustainability. Experts in this field will also be invited along to provide information on latest developments and policy.

#### Summary of key points

**The key points for training and development are:**

- highway inspectors need to be clear on the requirements for safety and service inspections and the practice that is to be followed in Essex as well as being kept informed of changes in policy and legislation;
- updates on inspection policy and practice will be achieved through annual meetings and teach-in session;
- every highway inspector will receive legal training and be offered refresher courses where a need is identified;
- all highway inspectors will be offered the opportunity to achieve a formal qualification. As well as improving knowledge the gaining of a qualification will also be regarded as a positive example of an inspector's ability and a demonstration of their competence when presenting evidence in court;
- it is important for maintenance engineers and inspectors to keep up to date with new materials technology, materials policy and practice. This will be achieved by an annual meeting to discuss policy and practice and in-house training courses facilitated by materials experts;
- all maintenance engineers need to have a good understanding of sustainability and recycling. This will be achieved by half yearly meetings of the Development, Highways and Transportation Recycling and Sustainable Materials Group and annual update on policy and practice as well as latest developments in sustainability and recycling.

# Chapter 19 - Monitoring implementation of strategy and processes – focusing on inspections and handling claims

## 1. Introduction

The monitoring of the implementation and workability of strategy and practices is an important element of the introduction of an amended strategy and practice. The Maintenance Strategy will be reviewed annually by maintenance engineers and maintenance policy staff at the Maintenance Policy Conference and on a more frequent basis where a change to policy or practice is required.

It is vital that the Maintenance Strategy is adopted Essex wide and consistent practice followed.

Monitoring of implementation of strategy and practice ensures that:

- All officers are working to the same strategy and practice.
- Consistency is being achieved across the County which reduces confusion for both the public and contractors.
- Officers understand what is expected of them.
- If a highway related claim is made that the County Council is able to defend it. This will save the County money by a achieving a reduction in the amount that is paid out in claims.

## 2. Monitoring inspections, claims and success in handling claims

82% of insurance claims for accidents on the highway are successfully defended. This compares favourably with other authorities. However there are increasing numbers of claims being made and the 18% of claims that could not be defended were because:

- the Council could not provide reasonable evidence of, and adherence to, a reasonable system for inspection;
- the Council could not provide reasonable evidence of, and adherence to, a reasonable system for repair and maintenance.

Analysis of claims received from January – July 2007 show that the split of claims between carriageways and footways is roughly 50%.

An independent report produced by Gallagher Bassett in August 2005 made a number of recommendations that would help improve the rate at which claims could be defended. A number of the recommendations have been put into place and are likely to be the reason why the defence of claims has improved in the last two years.

Further measures that need to be put into place will further increase the ability to defend claims:

- workshops/teach-in sessions for all staff involved in the maintenance function to introduce the policy and practice requirements in this Maintenance Strategy;
- agree and implement a formal Claims Handling protocol for all highways staff with claims related responsibilities at the Area Offices in order to ensure a consistent approach is achieved. The protocol will be communicated to all relevant staff, in clear written form and through a programme of training;
- review operational forms and electronic systems being used. Through a consultation process involving highways staff and the Legal Department, a consensus needs to be arrived at as to the exact forms to be used and that the use be made mandatory throughout the department, without variation;
- have a clear written down procedure for how claims should be handled and what information is required to defend a claim (flow diagram and tick box type approach when the information is to be submitted to the Legal Department);
- ensure that uniform systems for recording claims and all actions taken should be employed throughout the department;
- set standards for claims response times and so on, and who should handle the claim (and provide cover if that person is absent) – define what is a ‘timely response’;
- establish effective systems to ensure that unscheduled and planned absences by the admin staff responsible for claims management functions do not result in a detrimental impact on the timeliness and quality of the organisations claims management and response. Arrangements must be made to ensure these positions are covered effectively at such times;



- review inspection backlogs and the reasons behind the shortfall as they may harm defence of a claim by failing to adhere to reasonable systems of inspection and maintenance;
- review the current systems for reporting and recording claims related data to assess how to allow for improved identification of problematic areas and targeting of maintenance funding. The data should include accurate information on the location and circumstances surrounding each incident;
- improved monitoring of claims in terms of location, type of claim to identify trends and problematic areas that require a focus of funding – including annual reporting of numbers of claims and repudiation rates to Group Managers, Service Director and Cabinet Member;
- awareness raising sessions for all staff involved in inspections, engineers who use the inspection information and staff who handle insurance claims when policy or process change and also as part of an induction session for new inspectors;
- production of an inspector's handbook that includes photographs of defects, a clear description of what constitutes a defect requiring a two hour turnaround and photographs of materials/surfacing types;
- clearly identify training needs, qualifications and competencies expected for each type of role involved in highways maintenance from Highways Inspector to Maintenance Engineer;
- identify costs and fund a programme of formal inspector's training;
- set up a system to assess competence and consistency in inspection on a regular basis using staff from another Area Office to review each other;
- carry out an investigation/review each time a claim cannot be defended to see what can be learnt from it;
- learn from other authorities who have a better success rate at defending claims
- regular meetings six monthly involving County Hall maintenance policy staff and Legal and Risk and Insurance staff with Area claims handling staff to share good practice, explore claims success and failures, issues, difficulties and solutions;
- sharing of practice, experience and issues between Area Maintenance Engineers and Maintenance Policy staff at the Maintenance Policy Conference meetings;

- hold a quarterly (or six monthly) meeting for all inspectors from all four Area Offices (or a representative number from each Area) to share practice, experience and issues with each other. This provides an opportunity to pick up on consistency of approach, identify issues with implementing policy and finding solutions and sharing and developing ideas for improving practice or amending policy. Summary of key points.

**The key points for monitoring implementation of policy and processes**

- The Maintenance Policy will be reviewed annually by maintenance engineers and maintenance policy staff at the Maintenance Policy Conference and on a more frequent basis where a change to policy or practice is required.
- Further measures need to be explored and put into place to further increase the ability of the County Council to defend claims.