

**Forward Plan reference number:** FP/430/05/19

<b>Report title:</b> ECC Highways Maintenance Policies	
<b>Report to:</b> Cabinet	
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<b>Date:</b> 23 July 2019	<b>For:</b> Decision
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<b>County Divisions affected:</b> All Essex	

## 1. Purpose of Report

- 1.1 This report asks the Cabinet to adopt a new framework for highway maintenance policies, and the main policies forming part of that framework. It also proposes that Deputy Leader should adopt the new policies which sit under the high level policies as part of the framework.

## 2. Recommendations

- 2.1 Agree that the Council should adopt new highways maintenance policies consisting of those policies set out in paragraph 3.5, and general principles and associated strategies which will be introduced from August 2019 as shown in the diagram at appendix 1.
- 2.2 Adopt the Highways Maintenance Policy and General Principles (2019), the ECC Maintenance and Inspections Strategy: Carriageways, Footways and Cycleways (2019) and the ECC Maintenance and Inspections Strategy: Structures (2019) in the form at appendices 2-4) with effect from 1 August 2019.
- 2.3 Adopt the Revised footway and structures hierarchies in the form at appendix 5 with effect from 1 August 2019
- 2.4 Note that Cabinet Member for Infrastructure to agree future revisions to the ECC Highways Maintenance Policy and General Principles and associated strategies in consultation with the Leader of the Council.
- 2.5 Note that the Cabinet Member for Infrastructure will be adopting the strategies listed in phase 2 (see 3.6) and to approve a public facing summary document to complement the new policy and strategies.

## 3. Summary of issue

- 3.1 The Council has a duty to maintain the highway network. A list showing the number of types of various highway assets is at appendix 6. In order to provide

a high-quality service and ensure that resources are directed to the highest priorities we need to have policies setting out what the public can expect. At present the main policy was adopted in 2008 although it has been changed significantly by the Cabinet Member during that time, to reflect resources made available to the portfolio.

- 3.2 Since that time there have been changes in what the public and the courts expect and new national guidance has been produced. The national guidance, is called the UK Code of Practice: Well Managed Highway Infrastructure 2016 (the New Code).
- 3.3 It is proposed that a whole new set of policies are produced. The proposed high level document is the new ECC Highways Maintenance Policy and General Principles which is at Appendix 2. It is proposed that other documents will sit beneath this document. Cabinet are asked to adopt the following documents with the main policy
  - ECC Maintenance and Inspections Strategy: Carriageways, Footways and Cycleways (2019), appendix 3. This document outlines the inspection frequencies, and then how identified issues will be classified. The strategy gives a repair time for each type of defect.
  - ECC Maintenance and Inspections Strategy: Structures (2019), appendix 4. This document provides the requirements for inspection types, frequencies and defect categorisation.
- 3.4 The remaining documents are currently being finalised and it is proposed that the Cabinet Member will be asked to adopt these at a later date. The future documents are:
  - \* **ECC Maintenance and Inspections Strategy: Public Rights of Way.** This is a new document, which will provide the hierarchy, inspection frequencies and defect categories and repair times. This document will be the subject of consultation with the Local Access Forum and will therefore be finalised next year.
  - \* **ECC Maintenance and Inspections Strategy: Street Lighting** This document contains inspection and defect repair times along with items for inspections.
  - \* **ECC Maintenance and Inspections Strategy: Winter Maintenance** It is proposed that this document will be finalised before the start of the 2019/20 gritting season.
  - \* **ECC Maintenance and Inspections Strategy: ITS** This is a new document which is currently being drafted and will be implemented later this year.

### General Changes

- 3.5 The draft strategy and associated documents will align ECC's highway maintenance activities and provide more succinct documentation to support the risk based approach advocated by the New Code. No changes are proposed to the investigatory levels or inspection frequencies for carriageways from those in the current policy.

## **Maintenance of Footways**

- 3.6 The Council proposes to implement a new footway hierarchy which prioritises inspections to those which are more heavily used by pedestrians. As a result of this decision, some inspection frequencies for footways may be increased or decreased depending on their position within the revised hierarchy.
- 3.7 The proposed footway hierarchy replaces the existing hierarchy and provides additional guidance of usage within the county to classify footways into the appropriate hierarchy category.

## **Maintenance of bridges and other highway structures**

- 3.8 The proposed structures policy introduces a hierarchy for resources prioritisation which is based on usage (the amount of traffic the structure carries) and access requirements, for example, a structure providing the only access to a property would be given a higher priority than another on the same type of road that doesn't provide a single access point. The structures hierarchy is not used to determine inspection frequency, but is used to influence priority order for maintenance activities arising as a result of inspection or assessment results.
- 3.9 The highways service helps achieve the following aims of the Organisational Strategy:

- **Help create great places to grow up, live and work**

Secure sustainable development and protect the environment

- Reduce the environmental impact and cost to the taxpayer of dealing with waste, by working effectively with partners to minimise waste.
- Improve the image of the county, by promoting the benefits of Essex Highways and the County Council.
- Reduce carbon emissions and energy costs for Essex Highways by supporting the development of new strategies that promote clean growth and the use of affordable energy.

- **Transform the council to achieve more with less**

Limit cost and drive growth in revenue

- Optimise revenue from services, by charging appropriately and realising commercial benefit
- Drive out inefficiency, by reducing costs, increasing productivity and adopting lean methodology.
- Work collaboratively with partners to deliver maximum value for taxpayers' money that is spent through Essex Highways.

## **4. Options**

### **4.1 Option 1:**

#### **4.1.1 Implement the new ECC Highways Maintenance Policy and General Principles and associated strategies from August 2019.**

4.1.2 This will enable the authority to bring documentation in line with the new Code of Practice. Additionally, the implementation of the revised footway hierarchy and the new Structures hierarchy will also help to direct maintenance activities to reflect usage and strategic importance.

#### **4.2 Option 2:**

##### **4.2.1 Continue with the existing Maintenance Strategy**

4.2.2 Not refreshing the Maintenance Policy and associated documents would mean that we are not working to the updated Code of Practice: Well Managed Highway Infrastructure which was released in October 2016. If we are operating at a standard lower than the national code of practice there is a risk that a claim for disrepair will not be defensible.

### **5. Issues for consideration**

#### **5.1 Financial implications**

5.1.1 The proposed changes present a neutral impact upon ECCs Highways budgets. The timescales for the relevant works to be carried out have not been altered and the adoption of a risk based approach to maintenance enables ECC to comply with all legislation. By utilising the proposed approach ECC are ensuring that it utilises its resources in the optimum manner whilst ensuring its asset base is maintained as required.

#### **5.2 Legal implications**

5.2.1 The Council has a legal duty to maintain those highways and associated structures for which it is responsible. If anyone brings legal proceedings against the Council based on a claim that the Council has failed to maintain then it is important that we demonstrate strong policies and inspection. These policies help us to do this and to ensure that resources are prioritised to repairs where there is greatest need.

### **6. Equality and Diversity implications**

- 6.1 The Public Sector Equality Duty applies to the Council when it makes decisions. The duty requires us to have regard to the need to:
- (a) Eliminate unlawful discrimination, harassment and victimisation and other behaviour prohibited by the Act. In summary, the Act makes discrimination etc. on the grounds of a protected characteristic unlawful
  - (b) Advance equality of opportunity between people who share a protected characteristic and those who do not.



- (c) Foster good relations between people who share a protected characteristic and those who do not including tackling prejudice and promoting understanding.

- 6.2 The protected characteristics are age, disability, gender reassignment, pregnancy and maternity, marriage and civil partnership, race, religion or belief, gender, and sexual orientation. The Act states that 'marriage and civil partnership' is not a relevant protected characteristic for (b) or (c) although it is relevant for (a).
- 6.3 The equality impact assessment at appendix 7 indicates that the proposals in this report will not have a disproportionately adverse impact on any people with a particular characteristic.

## **7. List of appendices**

Appendix 1 – Diagram showing the proposed policy hierarchy

Appendix 2 - Highways Maintenance Policy and General Principles (2019)

Appendix 3 - ECC Maintenance and Inspections Strategy: Carriageways, Footways and Cycleways (2019).

Appendix 4 - ECC Maintenance and Inspections Strategy: Structures (2019)

Appendix 5 - Revised footway and structures hierarchies (plan)

Appendix 6 – Numbers of different types of Highways and Transportation Assets 2017/18

Appendix 7 - Equality Impact Assessment

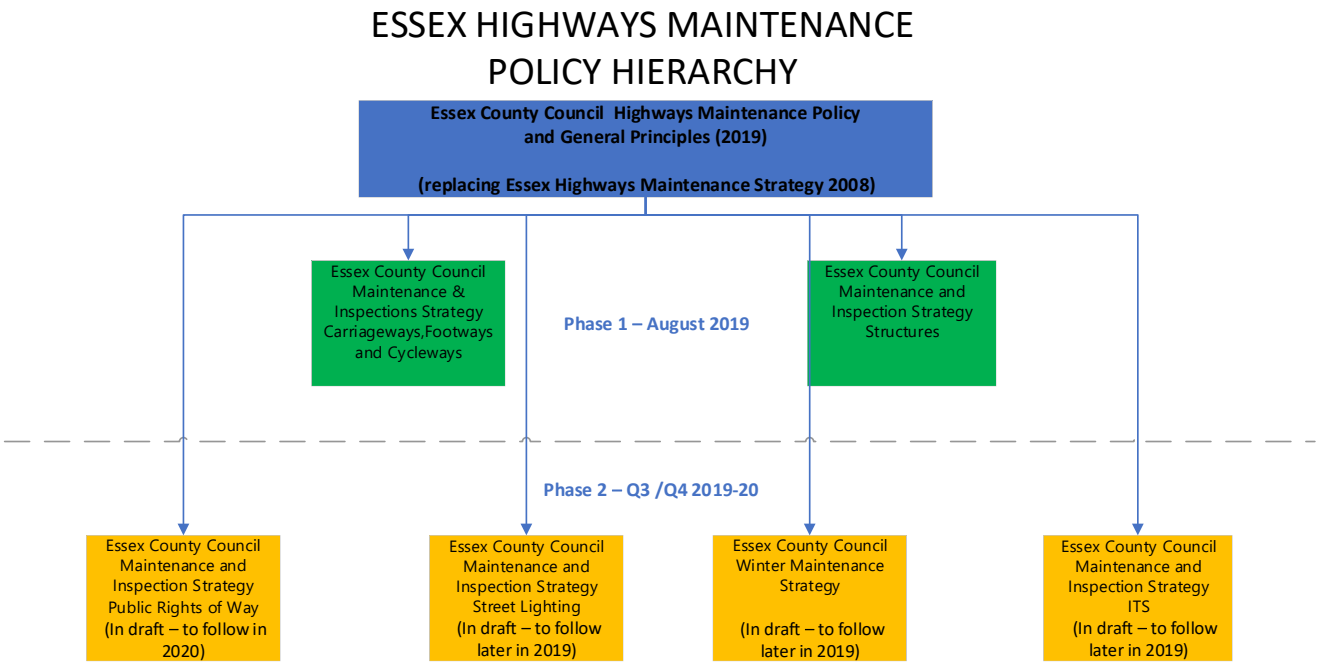
## **8. List of Background papers**

ECC Highways Maintenance Policy and General Principles (2019)

ECC Maintenance and Inspections Strategy: Carriageways, Footways and Cycleways (2019)

ECC Maintenance and Inspections Strategy: Structures (2019)

**Appendix 1:** FP/430/05/19 ECC Highways Maintenance Policy and General Principles (2019) and associated maintenance / inspection strategies





# Highways Maintenance Policy

## & General Principles

May 2019

<b>Document Title</b>	Highways Maintenance Policy
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# Essex Highway Maintenance Policy

## 1.1 Introduction

The Essex County Council Highways Maintenance Policy and 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 October 2016 “Well-managed Highway Infrastructure: A Code of Practice”. The Code was developed by the UK Road Liaison Group and is supported, endorsed and recommended by:

Department of Transport  
SCOTS  
CSS Wales  
Department of Infrastructure  
ADEPT  
(Association of Directors of Environment, Economy, Planning and Transportation)  
HMEP  
(Highway Maintenance Efficiency Programme)

The code is not statutory but provides Highway Authorities across the UK guidance on management of the highway. Adoption of any recommendation or deviations from the code is a matter for each Authority. Development of the authorities own standards or level of service will match their local need, priorities and environment.

This Policy, on adoption supersedes the “Essex Highway Maintenance Strategy – Maintenance Policy and Standards”, April 2008.

The 2016 Code of Practice moves away from specific guidance and recommendations as used previously, replaced by the promotion of a risk based approach. It says that Authorities will need to determine and evolve their own standards and levels of service though this approach to deliver maintenance standards appropriate for their own unique Authority.

The code also promotes liaison and collaboration between neighbouring Authorities, to determine levels of service and provide consistency across boundaries. Essex County Council (ECC) is an active member of the Eastern Highway Alliance (EHA)

Other members include;

- Cambridgeshire County Council
- Bedford Borough Council
- Buckinghamshire County Council

- Cambridgeshire County Council
- Central Bedfordshire Council
- Hertfordshire County Council
- Leicester City Council
- Leicestershire County Council
- Luton Borough Council
- Norfolk County Council
- Northamptonshire County Council
- Northumberland County Council
- Oxfordshire County Council
- Peterborough City Council
- Southend Borough Council
- Suffolk County Council
- Worcestershire County Council

The Council recognises the vital role that its Highway Network plays in the lives of its residents, as well as the travelling public and local businesses.

Effective management of the Highway Network and its infrastructure is fundamental in supporting the Council's Vision of Essex and in contributing to the Council's Strategic Aims:

- **Enable inclusive economic growth**
- **Help people get the best start and age well**
- **Help create great places to grow up, live and work**
- **Transform the council to achieve more with less**

This leads to a safe, accessible, serviceable and sustainable Highway Network which is vital for providing the foundation for plans of growth and prosperity, as well as providing access to key services such as employment, healthcare, education, social services, sports and leisure facilities. It is also an integral part of supporting key services such as the police, ambulance, fire and other emergency response services.

The Priority Routes within Essex provide the main arteries for the flow of commerce, goods and people, and therefore carries high volumes of traffic through and around and through the County. However, ECC recognises that although these routes are economically important, so are the local routes that its residents travel on each and every day.

A balanced approach to investment promotes choice as to where people wish to travel and how people wish to travel, by walking, cycling, driving or using public transport. The Highway and Public Rights of Way Network also affords opportunities for exercise and improves wellbeing through walking, cycling, horse riding and access to the countryside.

## 1.2 Objective, Purpose and Scope

The objectives of this Policy are:

- To adopt an asset management approach to highways maintenance. Through this approach the Council shall be able to compare and determine the best methods of achieving; value for money, long term maintenance need, environmental best practice, and public safety.
- To adopt a framework of strategies, service levels and operational practices that are flexible and adaptable to changing needs, legislation, funding, available resources, methods of service delivery and technologies.
- To move away from prescriptive national standards and adopt standards and service levels more suited to local needs and the environment of Essex.
- To continue a risk based approach to operational decision making.
- To adopt an appropriate, efficient and consistent approach in the collection and processing of highway inventory, condition and operational data.
- To work with other Authorities to compare, harmonise, share data and resources.
- To carry out regular reviews and updates as required. These will be generated by changes in legislation, financial situations, resources and service delivery experience

Where possible all strategies, service standards and operational practices shall be backed up with evidence and supporting data. This could be in any form and from a variety of sources.

Where there is little or no available supporting evidence or data, assumption and reasoning may be applied, and this will also be recorded

### 1.2.1 Purpose of highway maintenance

The main purpose of highway maintenance is to maintain a functioning network of Roads, Cycleways, Footways, and Public Rights of Way, as well as other highway assets for the expeditious and safe movement of people and goods.

Functioning is defined as the acceptable standard in order for the highway to operate for the user's needs but achieving:

A level of **safety** that reduces or minimises the risk of accidents and harm, as well as complying with statutory duties. The level needs to be practical and balanced without being an unnecessary burden in cost and resources.

A level of **serviceability** where the network is considered to be available to highway users, as well as reliable and integrated.



A level of **customer service** in that the highway user is informed, can obtain information and can be involved, and is satisfied with how this is carried out.

Is **sustainable**, minimising cost over time, maximising both value to the community and environmental contribution.

### 1.2.2 Scope of Highway Maintenance

This Policy applies to all maintenance activities carried out in the highway, maintaining the pavement structure, the drainage, any related structure, street lighting, other street furniture and apparatus, providing these assets are maintained by the Council.

Responsibilities for the maintenance of all highway assets in Essex is delivered by the following organisations:

- Essex County Council
- Department for Transport (DfT) – Highways England (A12, A120, M11, M25)
- CountyRoute (A130, between A12 & A127)
- The unitary authorities of Southend and Thurrock
- Private roads (various owners such as housing associations, housing developments and residents.)

This Policy document covers only the assets that are managed or maintained by ECC.

ECC Highways are responsible for the maintenance and management of many different asset types. This Policy document covers the following:

- Carriageways
- Footways
- Cycleways
- Structures
- Vehicle Restraint Systems (VRS) eg crash barriers
- Public Rights of Way (PRoW)
- Street lighting
- Intelligent Transport Systems (ITS)
- Winter maintenance

This Policy is supported by a suite of Strategies that cover the wide and varied asset inventory.

Each asset group has its own individual set of requirements and needs. This is addressed through separating the Strategies between relevant supporting documents. Where the needs of one asset are similar to another they may be managed within the same strategy document.

The Strategy documents are listed below:

- Carriageway, Footway and Cycleway Maintenance & Inspections Strategy
- Public Rights of Way (PRoW) Maintenance & Inspections Strategy
- Structures Maintenance & Inspections Strategy
- Vehicle Restraint Systems (VRS) Maintenance & Inspections Strategy
- Street Lighting Maintenance & Inspections Strategy
- Intelligent Transport Systems (ITS) Maintenance & Inspections Strategy
- Winter Maintenance Strategy

### **1.2.3 Related Activities**

Because of the nature of some minor asset groups they are better suited to be included and picked up on the routine safety inspections or when reported by a member of the public. A reactive risk-based approach will be taken to rectifying problems relating to:

- Embankments
- Signs
- Trees and hedges
- Bus stops
- Bus telematics
- Highway drainage systems

There are a number of other highway activities listed below which are outside the scope of this Highway Policy that would influence directly or indirectly the delivery of highway maintenance.

- Large capital and infrastructure projects
- New housing and business developments
- Network management
- Utility infrastructure works and services
- Rail network operations and activities
- Public transport services
- Flood prevention operations and projects
- Town centre management
- Street cleansing and environmental protection.

### 1.3 Terminology and Glossary

The main relevant definitions used in this Policy and supporting documents are:

**Highway** – The term used to describe all roads, carriageway, footways and Public Rights of Way maintained at public expense.

**Carriageway** – Is the paved running surface and facilities used by motor vehicles.

**Cycleway** – Is the paved running surface and facilities designed to be used by cyclists but could be used by pedestrians and other forms of transportation as exempt and defined by law (i.e. Mobility scooters, or similar)

**Footway** – A paved running surface and facilities designed for used by pedestrians but it can within exceptions of law or legislation or reason, be used by other forms of transportation (i.e. mobility scooters or motor vehicles for specific purposes such as maintenance)

**Remote footway/cycleway** – A paved surface and facilities used by pedestrians and/or cyclists, but are independent of or not immediately adjoining, a carriageway.

**Shared Surface** – A paved running surface and facilities used by all traffic including motor vehicles and motorcycles and pedestrians. Examples would be areas used for residential parking or passage but which do not have a footway or separate area designated for footway traffic. It could also be used for heavily pedestrianized areas where vehicle traffic has not been segregated.

**Public Right of Way (PRoW)** – A collective term used for routes or highways where a right of way has been established. Generally, the surface will be un-made or constructed of loose or unbound material, but there may be cases where the surface is paved. Sub groups are:

**Byway** – PRoW open to all traffic.

**Restricted Byways and Bridleways** – A PRoW open to all traffic except motorised vehicles and motorcycles.

**Footpath** – A highway over which the public have a right of way on foot only.

There are a number of industrial and technical terms that may or may not be used in this document and/or supporting documents, but they are referenced for completeness. They are:

**Running Surface** – A collective term for all surfaces used in the highway for the passage of all highway uses.

**Paved Surface** – A collective term for all hard surfaces.

**Pavement (Construction)** – A term used to described the collective layers and materials used to constructed the paved surface.

**Surface Course** – The top layer of the pavement construction used to receive the highway traffic.

**Binder/base Course** – Structural layer below the surface course. Usually constructed using a bitumen or cement bound material.

**Sub-base/foundation/capping** – The base of the pavement construction usually using un-bound materials.

**Modular Paving** – A surface course constructed using pre-formed paving units, such as modular block, or concrete paving slabs and flag stones.

**Flexible Pavement** – A pavement constructed from bitumen bound material, thus will flex under traffic loading.

**Rigid Pavement** – A pavement constructed from cement bound materials that will not flex under traffic loading.

**Composite Construction** – A pavement with a cement bound base and bitumen bound surface course.

## 1.4 The Maintenance Policy Hierarchy

- Much of highway maintenance activities are based upon statutory powers and duties contained in legislation. It is further detailed and clarified by legal precedents and case law over time. These will continue to evolve over the life time of this Policy. Therefore amendments or changes within the supporting documents will have to be implemented as these develop.
- The most important headline powers and duties are summarised in this Policy. Where appropriate the supporting documents should set out the relevant legal framework in greater detail alongside how this affects the way ECC has to operate. Being contained within the supporting documents, these services can be adjusted quickly and easily as the law and legislation evolves.

The risk based approach to highway maintenance will be more dynamic. This will result in changes or adaptations to experience gained, legal rulings, changes in legislation, changes in procurement, contract or service delivery.

**Essex Highways Maintenance Policy and General Principles**– This document sets out the aims and main principles of the service area. It is envisaged that the document will need no regular reviews unless there is a fundamental or high level change in the Council's structure or role that impacts these principles. It will be the only document that requires Member's approval.

This Policy document is supported by the Strategies below:

**Maintenance and Inspections Strategies (as listed in 1.2.2)**– These documents will detail how the service will be delivered and the standards and service levels they will work to. These shall be regularly reviewed and any amendments shall be signed off by the Cabinet Member.

## **1.5 Inspections**

### **1.5.1 Routine Inspections**

The Council undertakes a system of routine highway safety inspections of all of its maintainable assets in order to comply with its statutory duty to maintain highways pursuant to Section 41 of The Highways Act 1981, and to provide a special defence under Section 58 of the Act. This allows the Council 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.

Inspection intervals vary depending on the asset type and assessed risk of the asset, further details on routine inspection intervals can be found in the relevant supporting strategy documents.

### **1.5.2 Reactive Safety Inspections**

In addition to planned-inspection regimes, the Council receives reports and enquiries from a number of sources regarding its highway assets. The Council operates systems that allow these to be received either electronically or via traditional methods, for example Letter/telephone call. It also operates a system to receive reports or enquiries of an emergency nature out of hours.

### **1.5.3 Special Inspections**

Some assets require bespoke inspections, these are known as Special Inspections. The purpose of a Special Inspection is to provide detailed information on a particular part, area or defect that is causing concern, or inspection of which is beyond the requirements of the Routine Inspection's remit. Special Inspections are carried out when a need is identified. For example, based on the specific characteristics of the asset, identified by a competent team member. The Council carries these out in order to ensure public safety and the frequency can be found in the relevant supporting strategy documents.

## **1.6 Duty of Care**

Even in the absence of specific duties and powers the Council has a general duty of care to users and the community to maintain the highway in a condition fit for its purpose. This duty extends also to ensuring its operations carried out in its name either directly or through contractors, agents or providers are executed in a safe and appropriate manner. For example it needs to ensure, to the best of its abilities that

- Its contractors and their workforce are working in a safe manner.

- Materials are procured appropriately from sustainable and ethical sources.
- Waste materials are disposed of or recycled safely and sustainably.

### **1.6.1 The Main Highway Provision**

The **Highways Act 1980** sets out the main powers and duties of a Highway Authority.

The most important duty is set out in Section 41. This imposes a duty on the Authority to maintain the highways maintainable at public expense for which it is the local highway authority.

Sometimes people suffer damage or injury as a result of travelling on the highway and they may seek to argue that ECC or its contractors is liable for failing to comply with the duty to maintain. In such cases ECC may seek to rely on a defence against such actions which is set out in section 58, on the basis that they had taken reasonable measures to ensure that the part of the highway network in question was not dangerous to the highway user.

The Policy and associated Strategies cover the Highway as defined in the highway record which can be found on the Essex County Council Website.

## **1.7 Risk Based Approach**

Neither legislation nor the Code of Practice has set out or prescribed the minimum standards to be employed. It is up to each Authority to establish and implement their own levels of service to suit their circumstances.

ECC, along with a number of other Authorities, has for some time operated a risk based approach in their maintenance operations. Mainly assessing the level of risk present by highway defects, and then determining the level of response. The recommendation is that ECC ensure the risk based approach is applied to all aspects of the highway service.

The risk based approach can be operated at:

- Operational levels, such as determining risks events in the field so that a course of action could be determined, or at a;
- Strategic level in determining an acceptable level of service or standard to be employed.

Corporate risks are those at a high level that could affect the whole authority. Either financial, political, reputation or legal. These risks are beyond the scope of this Policy.

#### **1.7.1 Application of the risk based approach**

The risk based approach shall be applied using the principles set out in the Code of Practice and the Highway Infrastructure Asset Management – Guidance documents.

For the majority of highway assets, the risk based approach shall be applied through the formulation of a hierarchy, inspection frequencies, risk based defect assessments and corresponding repair times.

Supporting documents shall detail how the level of service or standard at a strategic level was formed. This may be in the form of an Appendix detailing the supporting evidence and reasoning, leading to the assessment and evaluation and final conclusion. These may be updated and adjusted as more information, studies, or data become available.

## **1.8 Sustainability, Recycling and Designing for Maintenance**

As well as providing a value for money service for highway users the Council has an obligation to make sure service delivery is sustainable, protects natural resources, protects the environment and local communities, and reduces future maintenance needs. Wherever practicable, the Council will aim to implement sustainable solutions for Highways activities, in balance with achieving the best value in terms of a long term solution and financial cost.

The key considerations to be made are:

- Waste streams from highway operations are, wherever practicable and efficient, recycled, ideally back into highway.
- Landfill should only be used if there is no other viable alternative.
- Re-use of materials or products that are already in situ.
- Use of products and materials that have a low energy usage in their production
- Employing processes that minimise transportation or haulage
- Using products and materials that have a low energy usage or could be self-sustained or “off grid”.
- Using products and materials that require little or no maintenance
- Using products and materials that could be sustained over a long service life with ease of maintenance and replacement
- Designing for ease of maintenance and the safety of operatives carrying out maintenance operations.

The above principles are applied across the entire service. It is, however, recognised that in some cases, the implementation of the most sustainable solution, may lead to an increase in cost, or reduction in longevity or quality. In such cases, engineering judgement and knowledge will be used to determine the best solution for each particular site.



## **1.9 Competencies, Training and Development**

The Code of Practice (Well Managed Highway Infrastructure 2016) recognises the importance of competency in relation to highway activities. Different highway functions require different skills and competencies for inspection, repair and the like. Each inspection plan will detail the relevant skills and competencies required.

## **1.10 Functional Hierarchy**

The historical system of road classifications (A B C and unclassified) and associated footways does not reflect the actual needs, priorities and highway usage in Essex. This is not just for Carriageways and footways but many other asset types.

In line with the Code of Practice suggestions, functional hierarchies have been developed for the majority of asset types and are also in development for other asset types. Details of these can be found within the supporting strategy documents.

Some of the types of characteristics that are taken into account when creating a functional hierarchy are listed below:

- Character and volume of traffic
- Link to critical infrastructure
- Its importance to maintain economic movement of traffic
- Congestion and traffic sensitivity
- Environment it is within or serves
- Ability to be used as a diversion route

These differ for each asset type due to the unique elements and aspects relevant to that asset.

## 1.11 Finance and Funding

Funding for highway maintenance is split into two types.

**Revenue** – Is for the day to day costs of maintenance or servicing of the highway asset. Revenue funding is typically used for urgent, safety related maintenance issues. The aim is to maintain the state of the highway to get the maximum usage or life from the asset.

**Capital** – Is typically used for the programmed works aimed at renewing part of the highway asset that have reached the end of their service life, or extending the life of the asset by applying preventative maintenance treatments.

Scope of both revenue and capital works will be determined in line with available budgets each year.

## 1.12 Procurement and Service Delivery

The main function of the Highway Authority is to maintain the highway network. To achieve this the Authority has to access a range of services, skills and materials, some of which are of a specialist nature.

The Highways Service is presently delivered via a Strategic Partnership which covers all highway services, encompassing delivery of works as well as supporting and strategic functions.

The Council also has options to procure works via other means such as Local and Regional Frameworks. Regular benchmarking of the service is completed in order to verify that the Partnership is delivering best value.

## **1.13 Performance Management**

Performance management is the means to measure the outputs of the service. The outputs can then be used to:

- Monitor if the agreed levels of service are being met.
- Determine if the intended outcomes are being achieved.
- The effects or impact of changes to the service both internally and externally.
- A tool to forecast future demands or pressures.

When carrying out performance management there are a number of key points that are considered in order to be useful and effective.

- The measures are meaningful and relevant to aims and objectives that need to be achieved.
- Data collection should be simple and not a burden, providing additional benefits where possible.
- The cost and resources applied to collecting data shall be proportional to the overall cost of the service.
- Where possible they should be comparable with other Authorities for benchmarking locally or nationally.

### **1.13.1 The Performance Management Framework**

The above is developed annually and sets out the measures that are monitored throughout the service. The measures may be linked to national or regional indicators or are specific to the service delivery in Essex.

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# Maintenance & Inspections Strategy:

## Carriageways, Footways & Cycleways

May 2019

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# Maintenance & Inspections Strategy: Carriageway, Footway and Cycleway

## 1.1. Introduction

The Essex County Council Highways Carriageway, Footway and Cycleway Maintenance & Inspections 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 October 2016 “Well-managed Highway Infrastructure: A Code of Practice”.

The Code of Practice is designed to promote the adoption of an integrated asset management approach to highway infrastructure based on the establishment of local levels of service through risk-based assessment.

This document supports the overarching Essex County Council Highways Maintenance Policy sets out and describes the service levels relating to our risk-based approach to managing how it organises, inspects and maintains the Carriageway, Footway and Cycleway Network it is responsible for.

Alongside this strategy will be supporting documents that sets down the process & procedures to be operated.

This strategy covers the following key areas:

- Network Hierarchies
- Inspections
- Defect Investigatory levels
- Items for Inspection
- Defect Assessments
- Response times

## 1.2. Network Hierarchies

### 1.2.1. Carriageway Hierarchy

The functional route hierarchy (County Road Network) placed the roads under the responsibility of Essex County Council Highways into three hierarchies:

- Primary Route 1 (PR1)
- Primary Route 2 (PR2)
- Local Roads

These routes created a network that better reflected the asset usage in Essex compared to the national classifications, that enables the Council prioritisation of maintenance and network decisions with greater accuracy ensuring a better flow for commerce, goods and people.

Overleaf is a table outlining the national carriageway classification types and how they transpose into the County Road Network hierarchies



County/Local Route	County/Local Hierarchy	Category	Hierarchy Description	Type of Road General description	Description
County Route	PR1 – These are routes that we acknowledge are our busiest in Essex. The roads that form this network are those that carry large volumes of higher speed traffic through and around the County. It is essential that traffic on these routes remains free flowing, that they are maintained to the higher standards, and that unnecessary obstructions are removed promptly.	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.
			Radial Feeders	Final journey route into or out of town centres	These routes feed traffic to and from the inter-urban routes (to their final destination) and carry large volumes of traffic during the peak hours when people are trying to access/leave town centres. They will normally be developed areas in towns and village centres. It is essential that traffic on these routes remains free flowing, that they are maintained to the highest standards, and that unnecessary obstructions are removed promptly. They will normally have car park guidance systems and traffic signals to aid the flow of traffic and manage areas of conflict between the different modes and hierarchies. Therefore it will be necessary to check and, if required, adjust the systems regularly.
		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 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.

		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.
PR2 - The remaining County Routes as defined in the LSA. Although not as important as the Priority 1 routes, the Priority 2 routes still perform an essential traffic management distributary function between the local network and Priority One County Routes. They will be accessed by a number of different types of user including local buses. Therefore, motorised vehicular traffic will generally take precedence over the other modes on these routes.		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 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.
		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.
		4a	Link Road	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions.	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 residential or industrial inter-connecting roads with 30mph speed limits, random pedestrian movements and uncontrolled parking.

Local Route	<p>Local Roads - Local roads will comprise all roads not defined as County Routes. These roads will be diverse in nature and use but will fall into one of the following descriptions:</p> <p>Urban – normally residential roads. These roads will be in towns and some residentially developed parts of villages. Their functional use is similar. i.e. mixed priority use, carrying local traffic only, routes leading to amenities and through residential areas.</p> <p>Rural - all other roads will be in this category. They will generally be unclassified roads linking small areas of development such as hamlets, farms and tourist attractions to each other and the strategic vehicle routes. Their use will be local in a transportation function but these roads are likely to form parts of important cycling, horse riding or walking leisure routes.</p>	4a	Link Road	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions.	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 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.

### 1.2.2. Footway Hierarchy

The Essex Footway Network is a tailored functional route hierarchy that places the footway assets that the Council are responsible for into three hierarchies. These are:

- Primary Footway 1 (PF1)
- Primary Footway 2 (PF2)
- Primary Footway 3 (PF3)

The PF1 and PF2 hierarchies combined create the County Route Footway Network, this is the high footfall network of footways. PF3 footways create the Local Route Footway Network and are the low footfall footways in the County.

This hierarchy ensures all areas of the network are addressed appropriately, and allows the flexibility for the network to evolve, influenced by the changing needs of Essex and the highway users.

Below is a table outlining the national footway classification types and how they transpose into the Essex Footway Networks hierarchies.

	Essex Footway Hierarchy	Code of Practice Category	Category Name	Code of Practice Description	Essex Description
County Route (High Footfall)	PF1	1a	Prestige Walking Zones	Very busy areas of towns and cities with high public space and street scene contribution.	Very busy areas of towns and cities with high public space and street scene contribution. Area not solely filled with shops or businesses, has other attraction for public.
		1	Primary Walking Routes	Busy urban shopping and business areas and main pedestrian routes.	Busy urban shopping and business areas and main pedestrian routes.
	PF2	2	Secondary Walking Routes	Medium usage routes through local areas feeding into primary routes, local shopping centres, etc.	Medium usage routes through local areas feeding into primary routes, local shopping centres, railway stations, bus stations, schools, hospitals, public gardens, sports centres, and other public spaces, etc.
Local Route (Low Footfall)	PF3	3	Link Footways	Linking local access footways throughout urban areas and busy rural footways.	Linking local access footways through urban areas and busy rural footways.
		4	Local Access Footways	Footway associated with low usage, short estate roads to the main routes and cul-de-sacs.	Footway associated with low usage, short estate roads to the main routes and cul-de-sacs.

### **1.2.3. Cycleway Network/Hierarchy**

Cycleways are currently inspected at the same time as the carriageway they are on and to that same frequency. If they are on or adjoining a footway they are inspected at the same time as and to the frequency of that footway.

A review is in progress of the full cycleway network and a functional hierarchy is being created that will allow the Council to take a much more tailored and prioritised approach to the network.

## **1.3. Safety Inspection – Strategy and Service Levels**

### **1.3.1. General Principles for completion of Safety Inspections**

The council shall carry out safety inspections using trained personnel in the manner deemed appropriate for the particular inspection route. The safety of the highway Inspector will always be of paramount consideration in determining the method of inspection.

Inspections are either walked or driven. If driven, the inspection will be completed from a slow moving vehicle and will be double manned with a driver and an inspector, who is the passenger and observer. Where safe to do so, the vehicle speed shall not exceed 20 mph. Where this is unsafe, multiple passes can be made until the inspector is satisfied that all defects meeting investigatory level have been identified and recorded. Driven routes are identified within the Asset Management system, typical examples where inspections may be carried out from a slow moving vehicle are;

- Roads with no footway or pedestrian facilities
- Roads of a significant length where inspections on foot would not be practical.

On some roads the carriageway and adjacent footway will be of differing inspection frequencies. The inspections will be undertaken at frequencies appropriate for both carriageway and footway.

All driven inspections shall be driven in both directions where road traffic regulations permit.

Where there are footways or isolated sections of carriageways due for inspection but not visible from the vehicle these shall be walked at the appropriate inspection frequency. This may be carried out either at the start, end or during the inspection when it is practical and safe to do so.

Walked inspections of roads with footway facilities on both sides shall also be inspected in both directions.

In the event of severe conditions e.g. snow or emergency conditions that effect business continuity like outbreaks of illness the inspections may be suspended at the decision of the Inspections Manager.

The methodology and procedures for carrying out safety inspections are set out in supporting documents.

### 1.3.2. Safety Inspection Frequency

The inspection frequency (table below) is aligned with the network hierarchy. The hierarchy has been developed and assigned based on the nature and usage of the asset.

Feature	Hierarchy	Inspection frequency
Carriageway	County Road PR1 County Road PR2 Local Route	Monthly 3 Monthly 12 Monthly
Footway & Cycleway	County Route Primary Footway PF1 County Route Primary Footway PF2 Local Route Footway PF3 Cycleway PC	Monthly 3 Monthly 12 Monthly 12 Monthly

As far as possible Inspections are planned to maximise efficiency with all inspections undertaken within the calendar month that they are due. However, the programme will need to remain flexible due to holiday, sickness or other unforeseen events.

### 1.3.3. Ad Hoc Inspections

In addition to the safety inspections the council receives reports and enquiries from a number of sources regarding its highway assets. The Council operates systems that allow these to be received either electronically or via traditional methods, for example a letter/telephone call. It also operates a system to receive reports or enquiries of an emergency nature out of hours.

An enquiry is not considered to be a defect meeting the investigatory levels until it has been assessed on site by an inspector. Until that time it remains a query from the public. Reports can be taken online or via a phone call. Due to their nature urgent reports cannot be reported online. The website provides the contact number for the customer to call to report anything that in their opinion is urgent.

On receipt of the report the unconfirmed defect will be triaged, based on the information received, and assigned to one of the following two categories.

Urgent	Urgent enquiries will be assessed the same working day. *
Standard	Our aim is to have an average assessment response time of 28 days including site visit if required.

*\*During periods of high demand such as the period after severe weather it may not be possible to comply with these response times.*

## 1.4. Items to be inspected and their Investigatory Levels

The main purpose of a safety inspection is to identify defects that are likely to be a source of danger or of inconvenience to the highway user. The inspection can also be used to identify non-safety defects that have an impact on long term serviceability and sustainability of the highway asset.

Recording every minor defect or blemish on the highway network would not be reasonable or practical. Therefore lists of the common items that are inspected with their investigatory levels are set out below.

All defects listed below that meet or exceed the investigatory levels are recorded.

The items to be assessed during an inspection and the corresponding investigatory levels are set out below.

Item	Defect	Investigatory level
Carriageway/ Cycleway Surface	Pothole 100mm across in two perpendicular directions	≥ 50mm depth at lowest point
	Depressions or deformations or < 400mm in any width)	± 50mm depth from designed level
	Wheel track Rutting	± 50mm depth from designed level
	Longitudinal or transverse cracking (in carriageways of composite or ridged construction or at other construction joints)	50mm deep, ≥40mm in width
	Sudden Changes in level (i.e. at joints in composite or ridged construction joints) Defects found within a designated pedestrian crossing area within a carriageway (such as zebra crossing) will be recorded at the corresponding footway investigatory levels. All other areas will be treated as per the carriageway investigatory levels.	≥50mm
	Dedicated cycle lanes 75mm across in two perpendicular directions	≥50mm depth at lowest point
Footway Surface, (including Cycleway	Surface defect 75mm across	≥20mm



and shared surfaces)	Displaced Slab/block paving, Trip/Sudden level difference	≥20mm
	Rocking slab or block paving	≥20mm (of vertical movement)
	Gradient changes in surface levels e.g. due to iron works, tree roots	±30mm (from designed finished level)
	Broken or cracked flag paving (but still restrained)	Defect present
Kerbs (adjacent to Carriageway and Footway)	Missing/ displaced (unrestrained)	Defect present
	Loose/rocking (unrestrained movement when pressure is applied)	≥20mm of movement in any direction.
	Misaligned (but still restrained)	≥20mm in a vertical alignment and ≥50mm in horizontal alignment
	Chipped/damaged with a trip or sudden level difference on the top face	≥20mm
Kerbs (adjacent to Carriageway only)	Missing/displaced (unrestrained)	Defect present
	Loose/rocking (unrestrained movement when pressure is applied)	≥50mm of movement in any direction.
	Misaligned (but still restrained)	≥50mm in a vertical alignment and ≥50mm in horizontal alignment
	Chipped/damaged with a trip or sudden level difference on the top face	≥50mm depth and 75mm along the length of the kerb

Verges Soft Verges- Grass or Mud	Over run or sunken area adjacent to the edge of the carriageway pavement construction.	≥150mm in depth
	Over run or sunken area adjacent to the edge of the footway/cycleway pavement construction.	≥100mm in depth
	Damaged area of non-footway or non-carriageway area adjacent to a carriageway	≥150mm in depth
	Damaged area of non-footway or non-carriageway area adjacent to a footway	≥100mm in depth
Iron Works – in Carriageways	Gaps in framework (other than designed and manufactured)	≥40mm in width.
	Level differences between covers and frame	± 40mm depth from designed level
	Rocking/noisy covers Cracked/broken Cover	Defect present
	Worn/polished covers	≥25% worn/polished
	Missing Cover	Defect Present
	Material reinstatement/surround failure	50mm deep, 100mm across in any horizontal direction
Iron Works – in Cycleways, Shared surfaces and Footways	Gaps in framework (other than designed and manufactured)	≥25mm in width.
	Level differences between covers and frame	± 20mm depth from designed level
	Rocking/noisy covers	Defect present
	Cracked/broken Cover	Defect Present

	Worn/polished covers	≥25% worn/polished
	Missing Cover	Defect present
Flooding/ Drainage	Substantial Standing water/flooding 2 hours after cessation of rainfall 1.5 meters from edge of carriageway	Defect Present
	Substantial Running water across the highway (other than by design i.e. Ford)	Defect Present
	Collapsed/blocked drainage system	Defect Present
	Blocked gully (silted above outlet)	Defect Present
Road Markings	Faded or worn markings - regulatory markings (Give Way, Stop, Zebra Crossings etc)	25% loss
	Faded or worn marking – all others	50% loss
Road Studs	Missing, displaced, lose or defective	Defect Present
Traffic Signs	Missing, damaged signs	Defect Present
	Dirty, faded or worn signs	25% loss
Vehicle Restraint Barriers, Pedestrian Barriers and fencing	Damaged, moving or misaligned.	Defect Present
Bollards	Damaged/missing or misaligned	Defect Present
	Dirty, faded.	25% loss
Street Lighting and lit items	Not operating, malfunctioning,	Defect Present
	Damaged or misaligned posts and other furniture,	Defect Present
	Exposed wiring	Defect present
Traffic Signals and other	Signals not operating, malfunctioning	Defect Present

electronic items	Damaged or misaligned posts and other furniture	Defect Present
	Exposed wiring	Defect present
	Obscured/dirty/faded signal lights	25% loss
Trees, Hedges and vegetation	Unstable tree (or hedge) fallen or in danger of falling onto the highway	Defect present
	Overhanging tree leading to loss of height clearance	≤ 2.1m over Footway ≤ 2.4m over Cycle Way ≤5.1m over Carriageway
	Encroachment on to the highway	Defect Present
	Obstructing visibility spays/lines	Defect Present
	Obstructing signs, lighting and traffic signal	Defect Present
Highway general condition	Oil/fuel/debris/mud/stone/gravel at a level likely to be a hazard	Defect Present
	Fire Damage	Defect Present
	Damaged/missing street furniture	Defect Present
	Illegal signs	Defect Present
	Obstructions	Defect Present
	Obstructed sight lines	Defect Present
	Offensive graffiti	Defect Present
Other	Illegal vehicle crossing	Defect Present
	Other issues that an inspector identifies during an inspection that they consider should be recorded as part of the inspection.	Defect Present

## **1.5. Defect assessment**

Recorded defects are risk assessed during the inspection on a site specific basis. This allows other considerations that the inspector feels relevant to be factored into the risk assessment and is used to determine the level of response.

The process and methodology applied by the inspector is set out below.

When a defect meets investigatory level, it is risk assessed. The risk shall be assessed in two parts;

### **1.5.1. Consequence**

The Inspector will conduct an assessment which considers the most likely outcome if there is an interaction by a highway user with the defect.

Examples of factors that an Inspector will consider are:

- The type of highway user likely to interact with the defect e.g. a pedestrian or cyclist, who would be more vulnerable to be caused personal injury
- Any other circumstances that would increase the likely consequence of an interaction e.g. a trip defect located at the top of steps

The likely consequence of an interaction by a highway user will be quantified by the Inspector using their experience and judgement on a scale of 1 to 4:

1. Negligible consequence e.g. minor jarring to the occupants of a vehicle
2. Minor consequence e.g. dented or scuffed wheel rim on a vehicle
3. Noticeable consequence e.g. a burst tyre on the vehicle
4. Serious consequence e.g. vehicle incurs major damage

### **1.5.2. Likelihood**

The likelihood of a highway user interacting with the defect shall be quantified on a scale of 1 to 4.

Considerations will include the following;

- Its location in the highway, considering all highway users
- Local facilities e.g. schools, hospitals
- Other factors within the knowledge of the inspector

1. Very Low likelihood (up to 40% of users)
2. Low likelihood (41 to 60% of users)
3. Medium likelihood (61 to 80% of users)
4. High likelihood (over 80% of users)

		Likelihood			
Consequence		Very Low 1 (up to 40%)	Low 2 (41-60%)	Medium 3 (61-80%)	High 4 (over 80%)
	Negligible 1	1	2	3	4
	Minor 2	2	4	6	8
	Noticeable 3	3	6	9	12
	Serious 4	4	8	12	16

### 1.5.3. Risk Factor Score

The risk factor is the combination of likelihood and consequence assessments multiplied together. This will produce a range of scores from 1 to 16. It is this score that identifies the seriousness of the risk and consequently that appropriate level of response.

The level of response can be correlated with the risk factor scores via the Risk matrix overleaf.

## 1.6. Defect response times

Defects will be defined as follows;

Priority 1 and 2 defects are those that following risk assessment may be potentially so dangerous to the public that they require urgent attention because they represent an immediate or imminent safety hazard or because there is a risk of short-term structural deterioration.

Priority 3 and 4 defects are those that following risk assessment are of low risk of causing harm, and are considered to be defects that impact long term serviceability and sustainability of the highway asset. These defects will be addressed in a planned manner as resources permit.

Response time is defined as the time taken to deliver a make safe or permanent repair from the time the defect is assessed on site by an inspector.

County Route carriageways or footways		Local Route carriageways or footways		Non-carriageway or non-footway assets	
Priority response	Response Time	Priority response	Response Time	Priority response	Response Time
<b>S1</b> (score 16)	2 hours*	<b>S1</b> (score 16)	2 hours*	<b>S1</b> (score 16)	2 hours*
<b>S2</b> (scores 8-12)	2 working days*	<b>S2</b> (scores 8-12)	5 working days*	<b>S2</b> (scores 8-12)	If an S2 defect is in the carriageway the response time will be inherited from the carriageway hierarchy S2. If the S2 defect is in the footway the response time will be inherited from the footway hierarchy S2.
<b>S3</b> (scores 4-6)	Defect to be considered for repair as part of a planned maintenance programme	<b>S3</b> (scores 4-6)	Defect to be considered for repair as part of a planned maintenance programme	<b>S3</b> (scores 4-6)	Defect to be considered for repair as part of a planned maintenance programme
<b>S4</b> (scores 1-3)	Presumption not to undertake repair within a stated time period	<b>S4</b> (scores 1-3)	Presumption not to undertake repair within a stated time period	<b>S4</b> (scores 1-3)	Presumption not to undertake repair within a stated time period

\*Where a S1 defect may require follow up treatment to affect a permanent repair, this will be undertaken as Priority 3 (S3) defect.

### **1.6.1. Guidance and monitoring**

This type of assessment by its nature is subjective and therefore every Inspector attends regular training sessions. In addition there is an audit regime in place to check the quality and consistency of defect identification and recording.

The Highway Inspection manual contains information about how inspectors undertake this function.

### **1.6.2. Exceptions**

There will be occasions where the inspector will be faced with exceptional situations or when having completed the defect assessment the Inspector feels a higher priority is warranted. In such situations the inspector may use their discretion to increase the priority of a defect.

In these cases the inspector will record this increase on the notes relevant to the defect summarising their reasoning. Supporting evidence in the form of extra photographs, etc., may be linked or attached within the asset management system.

### **1.6.3. Recording of inspections and defects**

All routine safety inspections are to be electronically recorded with the following information.

- Date and time of inspection
- Identity of the lead inspector
- Weather conditions and highway surface state
- Type of inspection
- Identity of secondary inspector (if applicable)
- Notes of any issues or concerns noted by the inspector.
- General photographs of the road or highway that was inspected.

Defects will be recorded with the following information.

- Date and time that the defect was recorded
- Identity of the inspector
- Description of the defect (including any measurements)
- Location of the defect
- The assessment scores and Risk factor score
- The defect priority
- Linked photographs



#### **1.6.4. Performance Management**

In order to assess and manage the delivery the following measures and indicators will be recorded and assessed:

1. Monitoring and reporting each year the level of missed inspections, split by cause
2. Monitoring and reporting each month the level of defects being recorded, split by priority

The reports shall be maintained and presented as Safety Inspection Performance Measures.

#### **1.6.5. Key roles and Competencies**

There is a dedicated team whose main function is undertaking Highway Safety Inspections and reactive Inspections in accordance with this Strategy. All members of the team will be assessed against the Highway Inspections Competency Framework to ensure they meet the minimum standards for their role.

The Competency Framework will set out the expected knowledge level against the relevant tasks or requirements for each role in the team.

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# Maintenance & Inspections Strategy:

# Structures

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# Maintenance & Inspections Strategy:

## Structures

### 1.1 Introduction

The Essex County Council approach to Structures Maintenance & Inspections has been fundamentally reviewed with maintenance engineers, inspectors and other practitioners to take account of the recommendations and best practice set out in the October 2016 “Well-managed Highway Infrastructure: A Code of Practice” and those from the Design Manual for Roads and Bridges.

The Code of Practice is designed to promote the adoption of an integrated asset management approach to highway infrastructure based on the establishment of local levels of service through risk-based assessment.

This document supports the overarching Essex County Council Highways Maintenance Policy and describes the service levels relating to the Council’s risk-based approach to managing how it organises, inspects and maintains the Structures that it is responsible for. The document will also set out the service levels and details of its risk based approach.

Alongside this strategy will be supporting documents that detail the processes & procedures to be operated.

This strategy covers the following key areas:

- Network Hierarchies
- Inspections
- Defect Investigatory levels
- Items for Inspection
- Defect Assessments
- Response times.

### 1.2 Network Hierarchies

The Council have produced a tailored, risk-based functional route hierarchy that organised the structures that Essex County Council Highways are responsible for into four hierarchies:

- Structures Priority 1 (STR1)
- Structures Priority 2 (STR2)
- Structures Priority 3 (STR3)
- Structures Priority 4 (STR4).

This hierarchy ensures that all structures on the network are addressed appropriately, based on their unique factors. The hierarchy allows the flexibility for the network to evolve along with the industry, commerce, habits and needs of Essex and the highway user.

Table outlining the Essex Structures Hierarchy.

Structures Hierarchy	Hierarchy Description title	Description
<b>STR1</b> - Structures that are the highest priority of the network. The majority of these structures endure a higher amount of usage through frequency of traffic and loads or provide essential links. They are vital to ensure the continued unhindered flow for commerce, goods and people.	All of the PR1 Network	All structures that either support or span a PR1 route are classified as an STR1 structure due to the volume of fast moving, long distance traffic and commercial use of the network. As a result of prioritising the structures on the PR1 routes this will maintain the safety, availability and resilience of the network. This will ensure ECC's robust resilient approach towards prioritising and maintaining free flowing traffic on the Essex network (can include Footbridges.)
	Highways England High and Heavy Routes (Abnormal loads transporting transformers)	Prioritising the availability on selected routes of the network for Abnormal load vehicles and all structures that are on Highways England High and Heavy routes must be safe and sustainable to allow for applicable vehicles to use the network.
	Single access to residential and commercial properties	Structures that are the only available access to properties will be treated as a high priority.
	Critical economic developments (Abnormal load routes)	Keeping selected Abnormal load routes in the county accessible to promote critical industrial and commercial developments.
	Highways England diversion routes	Ensure that Highways England diversion routes are kept available for suitable traffic.
	Access points for Abnormal loads	Maintain access points to known heavy Abnormal loads users. (E.g. Railway Museum, Barracks and boat yards etc.)

	Road over rail	To reduce the risk to road rail incursion and prevent disruption to rail users.
	Non-vehicular access into town/city centre where there is no safe alternative	Pedestrian/cyclist specific structures that provide the only available access to the city/town centre will be treated as a STR1.
	Emergency services	All applicable structures that are necessary for emergency services to gain access in and out of depots will be treated as an STR1 structure.
	Supporting key public services (e.g. Hospitals, Ports, Airports and Bradwell)	All applicable structures that are necessary for key public services to gain access in and out of will be treated as an STR1 structure.
	High-risk structures (materials/construction type)	Due to the unique material properties and construction of cast iron, half-joint and post-tensioned structures they are prioritised as STR1.
	Monitoring List	Structures that are on the monitoring list as an interim protection measure following assessment by a competent officer, are included as STR1. These structures will remain as STR1 until relevant remedial works, interim protection measures, full asset replacement or permanent works have been carried out and the structure has been reassessed and no longer requires monitoring.
<b>STR2</b> - Structures that are of a high importance to ensure the continued unhindered flow for commerce, goods and people.	All PR2 Network + relevant local access structures	Structures on PR2 routes will be part of interconnecting or links with PR1 or further PR2 routes. Relevant local access routes with a structure/ structures will often lead off or onto a PR2 route. This can be the only link between two rural villages.
	Filler beam construction type	Since their last assessment, the codes that the filler beams were assessed to have been re-examined and less conservative assessment methods have been developed.



<p><b>STR3</b> - Structures located mainly on the local road network.</p>	<p>Remaining Road Structures</p>	<p>All remaining road structures that have not been categorized as being part of the STR1/ STR2 network. All of the remaining road structures will be located on local roads.</p>
<p><b>STR4</b> - The lowest priority structures assets on the network.</p>	<p>Footbridges and PRow</p>	<p>Footbridges and Public Rights of Way will serve as one of many ways to access further Public Rights of Way or Local Road footpaths. These areas will be mostly rural.</p>
	<p>Noise Barriers</p>	<p>Noise Barriers are minor ancillary assets managed by the structures team that reduce noise pollution to nearby properties.</p>

## **1.3 Safety Inspection – Strategy and Service Levels**

### **1.3.1 General Principles for completion of Structures Inspections**

The Council shall carry out structures inspections undertaken by suitably experienced and competent staff in the manner deemed appropriate for the particular inspection site. The safety of the Structures Inspector will be paramount in determining the method of inspection.

Prior to undertaking any inspection, the inspector must review the structure records to familiarise themselves with the characteristics of the structure, any hazards, the condition at the time of the last inspection and any significant maintenance/modifications since the last inspection.

According to BD 63/17 there are five types of structures inspection that are undertaken;

- Routine Inspections;
  - General Inspection (GI)
  - Principal Inspection (PI)
- Reactive Inspections;
  - Safety Inspection
  - Special Inspection
  - Inspection for Assessment

#### **1.3.1.1 Investigatory Levels**

Throughout this document investigatory levels are not referred to. Structures are a complex asset group and similar defects have entirely different consequences on each individual structure. Therefore it is not possible to assign generic investigatory levels. Instead the Structures Inspector/Engineer will determine the appropriate response at the time of inspection.

#### **1.3.1.2 General Inspection (GI)**

The purpose of a General Inspection is to provide information on the physical condition of all visible elements on a highway structure and is scheduled to be undertaken biennially. A GI comprises of the visual inspection of all parts of the structure that can be inspected usually without the need for special access equipment or extensive traffic management arrangements.

#### **1.3.1.3 Principal Inspection (PI)**

The purpose of a Principal Inspection is to provide information on the physical condition of all inspectable parts of a highway structure. A PI is more comprehensive and provides more detailed information than a GI. A PI comprises a close examination, within touching distance of all inspectable parts of a structure. A PI should utilise as necessary suitable inspection techniques such as; access and/or traffic management works.

Suitable inspection techniques that should be considered for a PI include hammer tapping, paint thickness measurements and material testing. Testing is not a requirement for a PI however, will only be undertaken when there is concern regarding; condition, age, current assessment scores or the previous inspection score of the structure.

PIs are required to be undertaken every six years unless an altered inspection interval has been agreed, providing the proposal is supported by a risk assessment. Where a risk assessment has not been approved to increase the PI interval beyond six years, intervals shall remain at six years. PI intervals determined through risk assessment shall not exceed twelve years.

When a General Inspection coincides with a due Principal Inspection only the latter is undertaken.

In the event of conditions that affect business continuity for example, severe weather events, the inspections may be suspended and re-programmed at the decision of the Inspections Manager.

Further details on the methodology and procedures for carrying out safety inspections are set out in supporting documents.

#### **1.3.1.4 Routine Inspection Frequency**

The inspection frequency guidance that sits in BD 63/17 is shown on the table below. This shows the best practice guidance for routine inspection frequencies.

Feature	Inspection type	Inspection frequency
Structures	General Inspection Principal Inspection	Every two years Every six years (Can be extended to up to twelve years)

The Council carries out GIs every two years, as per the guidance found above. The PI programme is developed using a risk based approach.

### **1.3.2 Reactive Inspections**

#### **1.3.2.1 Safety Inspection**

The Council receives defect reports and enquiries relating to condition concerns from a number of sources regarding its highway structures. Due to their nature urgent reports cannot be reported online and the website provides the contact number for the customer to call to report anything that in their opinion is urgent.

An ad hoc Safety inspection may be required following notification of a defect by a third party, e.g. Emergency services. Should any Safety Inspection, or other source, reveal a possible defect requiring urgent attention, including defects that may represent a hazard to road, rail and other users, the Council shall immediately take action as is required to safeguard the public and/or sustain structural functionality.

Both the Structures Asset Management Team and Structures Team receive and triage structures related enquiries. If following triage there is believed to be either a public safety concern or structural damage to an asset, a Structures Inspector/Engineer will visit the site to assess the query and carry out a Safety Inspection. An enquiry is not considered to be a defect until it has been assessed as a defect on site by a Structures Inspector/Engineer. Until that time it remains a query from the public. Any enquiry relating to a structure must be passed on to the Structures Team to assess, this includes enquiries received out of hours.

On receipt of the report the unconfirmed defect will be triaged, based on the information received, and assigned one of the following two categories.

Urgent	Urgent enquiries will be assessed the same working day. *
Standard	The aim is to have an average assessment response time of 28 days including site visit if required.

*\*During periods of high demand such as the period following severe weather it may not be possible to comply with these response times.*

### **1.3.2.2 Special Inspection**

Special Inspections are carried out when a need is identified by a competent engineer. The purpose of a Special Inspection is to provide detailed information on a particular part, area or defect that is causing concern. Special Inspections can also be undertaken when the issue is beyond the requirements of the General/Principal Inspection regime. Specific construction forms that may require additional inspections that go over the remit for a GI or PI, and such would have a Special Inspection programmed include;

- Post-tensioned structures
- Cast Iron structures
- Half-joint structures
- Structures with Cathodic Protection

A Special Inspection will be tailored for specific structure type or defect/issue and may require a close visual inspection, testing and/or monitoring. It may involve a tailored one-off inspection, a series of inspections or an ongoing programme of inspections. As such, Special Inspections are tailored to specific needs.

Refer to BD 79/13 for monitoring, associated with the management of substandard structures.

### **1.3.2.3 Inspection for Assessment**

The sole purpose of an Inspection for Assessment is to provide the information that is required to enable a structural assessment. BD 21/01 provides guidance on undertaking an Inspection for Assessment and recommends that these be done in conjunction with a Principal Inspection. Once an Inspection for Assessment has been complete, the Assessment can take place, Assessments are carried out to calculate the load capacity of the structure.

## 1.4 Items to be inspected

The main purpose of a routine inspection is to provide information on the physical condition of all inspectable elements on the structure. Defects that are likely to be a possible source of hazard or of serious inconvenience to the highway user should also be identified. The inspection also identifies non-safety defects that have an impact on long term serviceability and sustainability of the highway asset.

During routine inspections, all defects are recorded, assessed and prioritised and the worst defect present on each element is scored using the severity and extent tables to calculate the structures' BCI score.

All defects that are recorded are assessed by the inspector and prescribed an appropriate works priority code, using their experience, training and engineering judgement. These can be either;

- Urgent: Make Safe Required
- Urgent
- High
- Medium
- Low
- Very Low

Due to the nature and complexity of highway structures any assessment or inspection must be carried out by a competent team member that has experience, sound engineering judgement and has received relevant training in all aspects of the inspection process including thorough understanding of the following five tables.

These tables come from The Inspection Manual for Highway Structures (Volumes 1 and 2) it was commissioned by Highways England and published in May 2007. A Technical Project Board, representing UK highway bridge owners, oversaw the development; the manual is supported, endorsed and recommended by the UK Bridges Board.

The tables show the following;

1. Severity Descriptions
2. Extent Codes
3. Generic Severity Descriptions
4. Permissible Combinations of Severity and Extent
5. Element Importance

**Table 1**  
**Severity Descriptions**

No	Item	Severity					
			1	2	3	4	5
1	Metalwork	.1	No signs of rusting or damage	Minor surface rusting	moderate pitting	Deep pits and perforations (localised severe corrosion)	Disintegrated by corrosion mechanisms
		.2	No loss of section thickness	Minor section loss (penetration less than 5% of section)	moderate section loss causing some reduction in functionality (penetration 5 to 20% of section thickness)	Major section loss causing significant reduction in functionality (penetration more than 20% of section)	Collapsed or collapsing
		.3	No signs of rusting or damage to bolts, nuts and rivets	Non-structural bolts loose, minor corrosion of nuts and washers	Non-structural bolts missing, moderate corrosion of rivet heads, nuts and washers	Structural bolts missing, rivets loose or missing, crack through bolt	Failure of element due to missed/failed bolts/rivets
		.4	No corrosion or damage of weld runs	Slight corrosion of weld run	Crack at toe of weld, moderate reduction in size of weld due to corrosion	longitudinally cracked weld, major reduction in size of weld due to corrosion	Weld connection failure (longitudinal crack)
		.5	Defect category removed				
2	Reinforced Concrete, Prestressed Concrete & Filler Joist	.1	Defect category removed				
		.2	No spalls	Minor localised spalls exposing shear links	Major localised spalls exposing shear links and main bars with general corrosion	Joined up, deep spalls exposing shear links and main bars with general and pitting corrosion	Collapsed
		.3	Hairline cracks, difficult to detect visually	Cracks and crazing in areas of low flexural behaviour (cracks less than 0.3mm)	Cracks and crazing in areas of high flexure, Cracks approx. 1mm and easily visible	Wide/deep cracks (more than 2mm). Shear cracks.	Element unable to function due to structural cracks
		.4	No signs of damage to prestressing	Substandard grouting of ducts (may not be visible)	Cracks along line of prestressing duct	Exposed prestressing cables	Failed prestressing cables

		.5	No signs of delamination	Early signs of delamination e.g. cracks with rust staining	Delamination in areas of low flexural and/or shear action	Delamination in areas of high flexural and/or shear action	Failure due to delaminated bars
		.6	No signs of thaumasite or freeze-thaw attack	Slight cracking caused by thaumasite or freeze-thaw	Major thaumasite or freeze-thaw attack	Moderate thaumasite or freeze-thaw attack	Failure due to thaumasite or freeze-thaw attack
3	Masonry, Brickwork & Mass Concrete	.1	No evidence of deformation	Minor deformation	Moderate deformation	Major deformation	Collapsed
		.2	Pointing sound	Minor depth of pointing deteriorated	Moderate to significant depth of pointing lost, but does not appear to be rapidly disintegrating or crumbling, bricks not easily loosened	Pointing in very poor condition, severely weathered, crumbling to touch and/or significant depth loss, bricks easily loosened	Collapsed
		.3	No arch ring cracking or separation	Arch ring cracks difficult to see	Arch ring separation (gap less than 25mm)	Arch ring separation (gap greater than 25mm)	Disintegrated
		.4	No arch barrel cracks	No diagonal cracks, longitudinal cracks less than 3mm wide, lateral cracks	Diagonal cracks, longitudinal cracks greater than 3mm wide	Diagonal cracks, longitudinal cracks breaking barrel into 1m sections or less	Arch barrel failure
		.5	No cracks	Minor hairline cracks and shallow spalls	Moderate cracks (easily visible, crazing) and deep localised spalls	Major cracks and spalling	Failure due to structural cracks
		.6	No bricks/masonry blocks missing, minor surface weathering	Few bricks/stones missing (no adjacent ones missing), major surface weathering	Moderate loss of bricks/stones	Severe loss of bricks/stones	Failure due to missing bricks/stones
		.7	No bulging, leaning or displacement	Minor bulging, leaning or displacement	Moderate bulging, leaning or displacement	Severe bulging, leaning or displacement	Collapsed or non-functional

4	Paintwork and Protective Coatings	.1	Finishing coat sound, slight weathering	Normal weathering of finishing coat	Spot, chips and cracks of finishing coat, undercoat exposed but sound	Failure of finishing coat and spots, chips and cracks to undercoat/substrate	All coats failed
		.2	Defect category removed				
		.3	Defect category removed				
5	Vegetation	.1	Slight to no vegetation	Minor vegetation causing no structural damage (surface mosses, small grass and weeds)	Vegetation growth on or near bridge causing structural damage and/or deformation e.g. roots and branches of nearby trees, small tree/plants growing on structure	Vegetation growth on or near bridge causing major structural damage and/or deformation e.g. roots and branches of nearby trees, large tree/plants growing on structure	Failure caused by vegetation growth or tree collapsing on the structure
		.2	Slight to no vegetation	Low depth/density of vegetation cover, easily removed e.g. moss	Significant depth/density of vegetation, obscuring inspection e.g. ivy	Inspection impossible due to vegetation growth but structural damage due to vegetation unlikely	Inspection of critical structural elements not possible due to density of vegetation and root systems likely to be causing structural damage
6	Foundations	.1	No visible settlement of structure	No visible settlement, but cracks that may be due to it	Minor settlement of structure	Major settlement of structure	Collapsed due to settlement
		.2	No visible differential movement of structure	No visible movement, but cracks that may be due to it	Minor differential movement of structure	Major differential movement of structure	Collapsed due to differential movement
		.3	No visible sliding of structure	No visible sliding, but cracks that may be due to it	Minor sliding of structure	Major sliding of structure	Collapsed due to sliding
		.4	No visible rotation of structure	No visible rotation, but cracks that may be due to it	Minor rotation of structure	Major rotation of structure	Collapsed due to rotation
		.5	No scour	Minor scour	Moderate scour	Major scour	Dangerous scour or failure



		.6	Substructure appears unaffected by foundation faults (assume no foundation faults)	Foundation faults causing minor cracks in substructure	Foundation faults causing moderate cracks in substructure	Foundation faults causing major cracks and deformation in substructure	Failure due to foundation faults
7	Invert, apron & river bed (also see 2 and 3)	.1	No scour	Minor scour	Moderate scour	Major scour	Dangerous scour or failure
		.2	No vegetation growth or silting	Vegetation growth, trapped debris and silting causing slight disruption to flow	Vegetation growth, trapped debris and silting causing significant disruption to flow causing faster flow in areas of the river	Vegetation growth, trapped debris and silting severe disruption to flow causing much faster flow in areas of the river	Failure caused by vegetation growth, trapped debris and silting
8	Drainage	.1	In sound condition and fully functional	Mostly functional (less than 25% of cross section blocked)	Part functional (25% to 50% of cross section blocked)	Mostly non-functional (more than 50% of cross section blocked)	Totally blocked/non-functional/broken
		.2	Causing no staining	Causing minor staining	Cleaning of staining required	Urgent cleaning required	Urgent & frequent cleaning
		.3	No structural damage	Causing minor structural damage	Causing structural damage	Causing major structural damage	Causing severe damage to adjacent elements
		.4	No blockage of weep holes, outlets	Minor blockage of weep holes, outlets	Moderate blockage of weep holes, outlets	Major blockage of weep holes, outlets	Non-functioning weep holes
9	Surfacing	.1	Little to no wear and weathering	Minor wear/weathering	Moderate wear/weathering	Major wear/weathering	Dangerous
		.2	No crazing, tracking or fretting	Minor crazing, tracking and/or fretting	Moderate crazing, tracking and/or fretting	Major crazing, tracking and/or fretting	Complete break up
		.3	Dense	Poor texture	Open texture	Very open texture	Dangerous
		.4	Sound	Cracks in top layer	Top layer breached	Deep cracks and potholes	Top layer completely missing
		.5	Not slippery	Starting to become slippery	Definitely becoming slippery	Slippery	Dangerous

	Flagged surfacing	.6	No defects	Trips < 5mm	Cracked flags Trips > 5mm and < 10mm	Trips > 10mm and < 20mm	Trips > 20mm
10	Asphaltic Plug	.1	Sound	Minor debonding between plug and road	Moderate debonding between plug and road	Major debonding between plug and road	Dangerous
		.2	Sound	Slight loss of surface binder and aggregate	Loss of aggregate (surface penetration 20 to 50mm)	Loss of material from joint (causing holes > 50mm deep)	Missing
		.3	Sound	Minor tracking and flow of binder	Moderate tracking and flow of binder	Major tracking and flow of binder	Disintegrated
	Nosing Defects	.4	Sound	Minor cracking along nosing	Moderate cracking along nosing, some break-up	Break-up of nosing material	Disintegrated
	Elastomeric and others	.5	Minor signs of wear	One bolt missing at cross section	Numerous bolts missing at cross section	Majority of bolts missing at cross section	Failure due to missing bolts
		.6	Strip sealant sound	Strip sealant loose/poor, compression seal dropped and/or worn	Sealant breached, strip sealant breached	Sealant missing, strip sealant missing/out	Failure
		.7	Sound road surface adjacent to joint	Minor break up of road surface adjacent to joint	Moderate break up of road surface adjacent to joint, some debris in joint seal	Major break up of road surface adjacent to joint, significant debris in joint seal	Joint failure due to deteriorated condition of adjacent road surface
		.8	Sound fixings	Bolt sealer missing	Fixings loose	Fixings missing, plates and angles loose	Failure due to missing fixtures
		.9	Sound components	Initiation of cracking or tearing of components	Crack/tear < 20% of width of component	Crack/tear >20% but < 50% of width of component	Failure of expansion joint components
	Buried Joint (formerly "0" in this list)	.10	Reasonably sound	Minor surfacing cracking	Moderate surface cracking	Major surfacing cracking	Failure
		.11	Sealant for induced crack is sound	Minor cracking or break up of sealant for induced crack	Moderate cracking or break up of sealant for induced crack	Major cracking or break up of sealant for induced crack	Disintegrated or missing sealant for induced crack
	Joint leakage	.12	No visible signs of leakage	Minor leakage through joint	Moderate leakage through joint	Major leakage through joint causing structural damage	Open joint causing major structural damage

11	Embankments	.1	Sound No deformation	Minor subsidence Minor deformation	Minor slip/settlement causing slight cracking of carriageway	Major slip/settlement causing major cracking of carriageway	Critical slip/settlement
12	Bearings (also see 1)	.1	Negligible rusting minor Weathering	Minor rusting, moderate weathering	Moderate weathering	Major rusting	Failed or seized due to rusting
		.2	Correct position	Minor offset	Moderate offset/tilt	Dislodged	Off bearing/missing
		.3	Sliding bearing in correct position	Sliding bearing in slightly skewed (off centre) position at normal temp	Sliding bearing at end of travel in normal temperatures	Sliding bearing beyond designed extent of travel at normal temperatures	Sliding bearing failed
		.4	No crazing	External crazing	External breakdown	Major breakdown (PTFE, laminations, rubber etc.)	Complete breakdown
		.5	Sliding plate sound	Minor deformation of sliding plate	Moderate deformation of sliding plate	Major deformation of sliding plate	Bearings seized by sliding plate deformations
		.6	Bearings sound	Minor cracks	Moderate cracks or loose	Spitting and deformation	Disintegrated
13	Impact Damage	.1	No damage	Slight surface scoring, minor displacement of element e.g. marking and chipping of beam faces, several bricks across arch barrel width, slight impact deformation of steelwork	Moderate displacement of element e.g. beam slightly offset on bearings, significant number of bricks knocked out across arch barrel width, moderate impact deformation of steelwork	Severe displacement of element e.g. beam dislodged off bearings, many bricks knocked out across arch barrel width, major impact deformation of steelwork	Knocked down, broken, collapsing
14	Waterproofing (try to exclude leaks through joints)	.1	No visible sign of seepage	Minor seepage through deck/arch etc. (slow dripping)	Moderate seepage through deck/arch etc. (some resistance to seepage)	Major seepage (little resistance) through deck/arch etc. causing structural damage	Non-functional causing critical structural damage
		.2	No visible sign of seepage	Damp surface, slight water stains on soffit	Wet surface, drops of water falling and significant sealing	Very wet surface and stalactites causing structural damage	Major structural damage caused by waterproofing not functioning properly

15	Stone slab bridges	.1	Sound, no defects or damage	Minor cracking	Moderate cracking but no visible displacement	Major cracking and/or displacement	Collapsed
16	Timber	.1	No sign of damage	Minor signs of damage	Moderate signs of damage	Major signs of damage	Disintegrated through damage
		.2	No loss of section thickness	Minor section loss (decay less than 5% of section)	Moderate section loss causing some reduction in functionality (decay 5 to 20% of section thickness)	Major section loss causing significant reduction in functionality (decay more than 20% of section)	Collapsed or collapsing
		.3	No visible signs of open joints	Joints/shakes open slightly on surface or cracked coating at joint/shakes	Open joints/shakes < 50% width of beam, in areas of low flexure or < 25% in areas of high flexure	Open joints/shakes > 50% width of beam, in areas of low flexure or > 25% in areas of high flexure	Beam separated into multiple elements
		.4	No signs of rusting or damage to fixings	Non-structural bolts loose, minor corrosion of nuts and washers	Non-structural bolts missing, moderate corrosion of fixings	Structural fixings missing	Failure of element due to missed/failed fixings

**Table 2**

Extent Codes

Code	Description
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<b>A</b>	<b>No significant defect</b>
<b>B</b>	<b>Slight, not more than 5% of surface area/length/number</b>
<b>C</b>	<b>Moderate, 5% - 20% of surface area/length/number</b>
<b>D</b>	<b>Wide: 20% - 50% of surface area/length/number</b>
<b>E</b>	<b>Extensive, more than 50% of surface area/length/number</b>

**Table 3**

Generic Severity Descriptions

Code	Description
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<b>1</b>	<b>As new condition or defect has no significant effect on the element (visually or functionally).</b>
<b>2</b>	<b>Early signs of deterioration, minor defect/damage, no reduction in functionality of element</b>
<b>3</b>	<b>Moderate defect/damage, some loss of functionality could be expected</b>
<b>4</b>	<b>Severe defect/damage, significant loss of functionality and/or is close to failure/collapse</b>
<b>5</b>	<b>The element is non-functional/failed</b>

**Table 4**  
Permissible Combinations of Severity and Extent

<b>Extent</b>	<b>Severity</b>				
---------------	-----------------	--	--	--	--

	1	2	3	4	5
<b>A</b>	<b>1A</b>	-	-	-	-
<b>B</b>	-	<b>2B</b>	<b>3B</b>	<b>4B</b>	<b>5B</b>
<b>C</b>	-	<b>2C</b>	<b>3C</b>	<b>4C</b>	<b>5C</b>
<b>D</b>	-	<b>2D</b>	<b>3D</b>	<b>4D</b>	<b>5D</b>
<b>E</b>	-	<b>2E</b>	<b>3E</b>	<b>4E</b>	<b>5E</b>

**Table 5**

Element Importance

Set	Item No.	Element Description		Element Importance
Deck Elements	1	Primary Deck Element		Very High
	2	Secondary Deck Element/s	Transverse Beams	Very High
	3		Element from Table 2 of Ref. 3	Very High
	4	Half Joints		Very High
	5	Tie beam/rod		Very High
	6	Parapet beam or cantilever		Very High
	7	Deck bracing		High
Load-Bearing Substructure	8	Foundations		High
	9	Abutments (incl. arch springing)		High
	10	Spandrel wall/head wall		High
	11	Pier/column		Very High
	12	Cross-head/capping beam		Very High
	13	Bearings		High
	14	Bearing plinth/shelf		Medium
Durability Elements	15	Superstructure drainage		Medium
	16	Substructure drainage		Medium
	17	Water proofing		Medium
	18	Movement/expansion joints		High
	19	Painting: deck elements		Medium
	20	Painting: substructure elements		Medium
	21	Painting: parapets/safety fences		Medium
Safety Elements	22	Access/walkways/gantries		Medium
	23	Handrail/parapets/safety fences		High
	24	Carriageway surfacing		Medium
	25	Footway/verge/footbridge surfacing		Low
Other Bridge Elements	26	Invert/river bed		Medium
	27	Aprons		Medium
	28	Fenders/cutwaters/collision protection		Medium
	29	River training works		Medium
	30	Revetment/batter paving		Low
	31	Wing walls		High
	32	Retaining walls		Medium
	33	Embankments		Low
	34	Machinery		Medium
Ancillary Elements	35	Approach rails/barriers/walls		Elements not used in BCI evaluation, thus importance not required
	36	Signs		
	37	Lighting		
	38	Services		

#### **1.4.1 Defect response times**

All defects that are recorded are assessed by the inspector and prescribed an appropriate works priority code, using their experience, training and engineering judgement. These can be either:

Urgent: Make Safe Required  
Urgent  
High  
Medium  
Low  
Very Low

#### **Urgent - Make Safe Required:**

These defects are those that require an urgent prioritised repair or to be made safe within a 2 hour response time to ensure the safety of the highway user following risk assessment by a competent officer. A make safe can be the protection and/or closure to part or all of the asset or just the defective section and will be site specific.

Once the site has been temporarily made safe, the defect shall then be re-assessed by a competent officer to determine the priority of remedial works.

#### **All other priority codes:**

All other priority defects (urgent, high, medium, low, very low) are those that following a risk assessment are of lower risk of causing harm, and considered to be defects that may impact long term serviceability and sustainability of the highway asset. Due to the lead-ins associated with mobilisation for structures repairs a time scale is not provided, these defects will be addressed in a planned manner as resources permit.

#### **1.4.2 Exceptions**

There will be occasions where the inspector will be faced with exceptional situations or when having completed the defect assessment the Inspector feels a higher priority is warranted. In such situations the inspector may use their discretion to increase the priority of a defect.

In these cases the inspector will record this increase on the notes relevant to the defect summarising their reasoning. Supporting evidence in the form of extra photographs, etc., may be linked or attached within the asset management system.

#### **1.4.3 Recording of inspections and defects**

All routine inspections are to be electronically recorded with the following information.

- Date and time of inspection
- Identity of the lead inspector
- Weather conditions and highway surface state
- Type of inspection



- Identity of secondary inspector (if applicable)
- Notes of any issues or concerns noted by the inspector.
- General photographs of all elements inspected.

Defects will be recorded with the following information.

- Date and time that the defect was recorded
- Identity of the inspector
- Description of the defect (including any measurements)
- Location of the defect
- The Severity/Extent scores
- The defect priority
- Linked photographs

#### **1.4.4 Performance Management**

The following measures and indicators will be recorded in order to assess and manage the delivery

1. Monitoring and reporting each year on the number of complete inspections by type
2. Monitoring and reporting each month the number of defects being recorded split by priority

These reports shall be maintained and presented as Safety Inspection Performance Measures

#### **1.4.5 Key roles and Competencies**

There is a dedicated team whose key role is to undertake Structures Routine Inspections and reactive Inspections in accordance with this Strategy. All members of the team will be assessed against the Structures Inspections Competency Framework to ensure they meet the required standards for their role. The Competency Framework will set out the expected knowledge level against the relevant tasks or requirements for each role in the team.





**Appendix 6:** FP/430/05/19 ECC Highways Maintenance Policy and General Principles (2019) and associated maintenance / inspection strategies

<b>Numbers of different types of Highways and Transportation Assets 2017/18 (Essex Excluding A130)</b>	<b>Asset Quantity</b>
County Structures (including bridges, retaining walls, culverts and gantries)	1,628 (number)
Safety Barriers, including pedestrian guard rail	129 (miles)
Lighting Columns	121,570 (number)
Illuminated Highway Signs + Bollards + VAS	16,918 (number)
Traffic Signals Infrastructure (including Zebra Crossings, Bus Telematics and Safety Cameras)	490 (Signal Junctions and Crossings) + Other Assets
Non illuminated Highway Signs	80,287 (number)
Passenger Transport Infrastructure	471 bus shelters (items) + Other assets
Public Rights of Way Infrastructure (footbridges and signage) 3,900 bridges, 21,000 sign posts + Other Assets	31,313 (items)
Winter Management Infrastructure	947 (items)
Cycle Loop Monitoring Sites	41 (items)

# Equality Impact Assessment

## Context

1. under s.149 of the Equality Act 2010, when making decisions, Essex County Council must have regard to the Public Sector Equality Duty, i.e. have due regard to:
  - eliminating unlawful discrimination, harassment and victimisation, and other conduct prohibited by the Act,
  - advancing equality of opportunity between people who share a protected characteristic and those who do not,
  - fostering good relations between people who share a protected characteristic and those who do not, including tackling prejudice and promoting understanding.
2. The characteristics protected by the Equality Act are:
  - age
  - disability
  - gender reassignment
  - marriage/civil partnership
  - pregnancy/maternity
  - race
  - religion/belief
  - gender
  - sexual orientation.
3. In addition to the above protected characteristics you should consider the cross-cutting elements of the proposed policy, namely the social, economic and environmental impact (including rurality) as part of this assessment. These cross-cutting elements are not a characteristic protected by law but are regarded as good practice to include.
4. The Equality Impact Assessment (EqIA) document should be used as a tool to test and analyse the nature and impact of either what we do or are planning to do in the future. It can be used flexibly for reviewing existing arrangements but in particular should enable identification where further consultation, engagement and data is required.
5. Use the questions in this document to record your findings. This should include the nature and extent of the impact on those likely to be affected by the proposed policy.
6. Where this EqIA relates to a continuing project, it must be reviewed and updated at each stage of the decision.
7. The EqIA will be published [online](#):
8. All **Cabinet Member Actions, Chief Officer Actions, Key Decisions** and **Cabinet Reports must be** accompanied by an EqIA.
9. For further information, refer to the EqIA guidance for staff.

10. For advice, contact:  
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