

## **Buckinghamshire County Council**

### **Highway Safety Inspection Policy**

#### **Introduction**

This Policy describes Buckinghamshire County Council's (BCC) process for the carrying out of Highway Safety Inspections and for the prioritisation and repair of defects identified in such inspections.

This Policy will come into force from 01 April 2017.

The establishment of an effective regime of inspection, assessment, recording and prioritisation of defect repairs is a crucial component of highway maintenance, providing a robust framework to address key objectives to maintain the highway in a safe and serviceable manner, as required by Section 41 of the Highways Act 1980, consistent with the overall Asset Management Strategy.

Highway Safety Inspections are designed to identify, record and prioritise the repair of defects which may present an immediate danger, or significant inconvenience to users of the highway (emergencies), or to the structural condition of the highway and assets contained within the highway boundary (category 1 defects). In addition, they may be used to identify defects of a lesser magnitude which may be included within future programmes of planned maintenance work (category 2 defects) or to indicate that a more in depth service inspection may be required.

Highway Safety Inspections are supplemented by other inspections and assessments undertaken in line with national standards and/or good practice, including but not limited to:

- Ad hoc inspections undertaken in response to specific matters identified through correspondence
- Specialist inspections of certain assets within the highway boundary (for example street lighting and highway structures)
- Technical assessments of carriageway condition generally undertaken using machine based equipment (for example SCANNER or SCRIM surveys)
- Structural Maintenance Visual Assessments (CVI or DVI)
- Streetworks inspections

#### **Inspection Regime**

In line with national codes of good practice, the characteristics of the inspection regime, including frequency of inspection, items to be recorded and nature of response, are defined following an assessment of the relative risks associated with the potential formation of defects within the highway boundary.

The inspection regime must be applied and recorded systematically and consistently. As well as information relating to defects, all inspections must also therefore record:

- time of inspection and defect identification;
- weather conditions;
- any unusual circumstances of the inspection;

- person(s) conducting the inspection.

Arrangements are made to review the inspection, assessment, frequency and recording regime at least annually, to consider:

- changes in network characteristics and use;
- completeness and effectiveness of data collected;
- trends within defect formation;
- success of repair programmes;
- the need for changes/amendments/additions to the inspection regime derived from risk assessment.

As a result of such reviews, proposals may be put forward to amend the inspection frequency or methodology should such alterations be deemed to be beneficial.

### Safety Inspection Frequencies

Frequencies for safety inspections of individual network sections are based upon the Carriageway Maintenance Hierarchy adopted by the County Council, which in itself considers:

- road category;
- traffic use, characteristics and trends;
- characteristics of adjoining network elements;
- wider policy or operational considerations.

Although the road category within the hierarchy, in combination with traffic use, will be the main determinant of inspection frequency, site specific factors may merit a decision to temporarily or permanently increase or reduce the frequency in a specific location (for example to mitigate the risk of unusually high defect levels or accident rates). Any such change to the inspection frequency of any route where it deviates from the determination within the Carriageway Maintenance Hierarchy will be recorded within the management system.

Tables 1 to 3 detail the safety inspection frequencies which are adopted.

<b>Carriageway Hierarchy Classification</b>	<b>Frequency of safety inspection</b>	<b>Hierarchy Category</b>
1	Not currently used	
2	Monthly	Strategic Road
3A	Monthly	Main Distributor Road
3B	Monthly	Secondary Distributor Road
4A	Quarterly	Local Link Road
4B	Annually	Local Access Road

Table 1 – Safety Inspection Frequency for Carriageways

<b>Footway Hierarchy Classification</b>	<b>Frequency of safety inspection</b>	<b>Hierarchy Category</b>
1	Monthly	Primary Walking Route
2	Quarterly	Secondary Walking Route and Safer Routes to School
3	Annually	Linked Footway
4	Annually	Local Access Footway

Table 2 – Safety Inspection Frequency for Footways

<b>Cycleway Hierarchy Classification</b>	<b>Frequency of safety inspection</b>	<b>Hierarchy Category</b>
1	As per carriageway frequency	<b>Cycle lane</b> - contiguous with the carriageway
2	Bi-annually	<b>Cycle Track, Shared Cycle/Footway</b> – a route for cyclists not contiguous with the public footway or carriageway or a shared cycle/pedestrian path
3	Annually	<b>Cycle trails</b> - Leisure routes through open spaces which are the responsibility of the highway authority to maintain

Table 3 – Safety Inspection Frequency for Cycleways

## Safety Inspections

Safety inspections are carried out either from a slow moving vehicle or in some cases, on foot.

Tables 1 to 3 define the minimum frequency at which inspections will be undertaken. Additional inspections may be planned in response to user or community concern, requirements for monitoring of structural concerns, as a result of incidents or in response to extreme weather conditions.

Inspections from vehicles will be carried out using a 2 person team (Driver and Inspector) using a vehicle with high visibility markings and equipped with tools and materials for undertaking small scale repairs, where it is practicable and safe to do so, at the time of defect identification. Examples of materials and equipment which the inspectors may carry are as follows:

- Instant road repair material
- Traffic management signs and cones
- Temporary pedestrian barrier
- Loppers for cutting back vegetation
- Small tools for repairs to sign brackets etc.
- Tape for securing lighting columns or posts
- Brush and shovel for removal of debris

It should be recognised that inspectors will only undertake immediate works where it is safe and practicable to do so and following the completion of a site specific risk assessment.

Defects will be recorded at the time of identification and transferred to the Asset Management System on the same day as the inspection takes place.

### **Defect Categorisation**

During safety inspections, all observed defects that provide a risk to users are recorded and the level of response determined on the basis of risk assessment.

This Policy defines defects in three categories, corresponding with those described within national codes of good practice.

- Emergency - those that require prompt attention because they represent an immediate hazard;
- Category 1 - those that require priority attention because they represent a potential risk to road users or to the integrity of the highway asset;
- Category 2 - all other defects above the minimum investigatory level.

Category 2 defects are then further subdivided to enable the inspector to make an appropriate assessment of risk.

**Emergency** defects will be corrected or made safe at the time of the inspection, if reasonably practicable. In this context, making safe may constitute displaying warning notices, coning-off or fencing-off to protect the public from the defect or other suitable action. If the inspection team cannot make safe the defect at the time of inspection then they will instigate the relevant emergency call procedures to ensure appropriate resources are mobilised to make the defect safe. These procedures aim to ensure initial attendance to the defect within 2 hours of the defect being identified.

**Category 1** defects may also be corrected or made safe at the time of the inspection, if reasonably practicable. If it is not possible to correct or make safe the defect at the time of inspection then an appropriate repair will be carried out within 2 working days of the identification of the defect.

**Category 2** defects are those which are deemed not to represent an immediate hazard and which can be repaired within longer timescales.

Category 2 defects are categorised according to priority: High (Cat 2H), Medium (Cat 2M) and Low (Cat 2L), with response times defined within [Table 4](#). Guidance on appropriate classification of defects is provided in the [Safety Inspection Guidance Manual \(SIGM\)](#). The manual provides examples of defects which may be encountered on the network and potential categorisation. However, on-site assessment will always need to take account of particular circumstances.

The inspector will also take into account the likelihood of further deterioration before the next scheduled inspection, and where this is considered a high probability, a higher defect classification may be determined.

Cat 2L	N/A	Consider repair within future programmes of planned maintenance works
Cat 2M	28 DAYS	No temporary repair necessary. Attend and permanently repair within 28 working days
Cat 2H	5 DAY	Attend within 5 working days and make safe or permanently repair. If repair is temporary then raise additional P3 defect for permanent repair within 28 working days
Cat 1	2 DAY	Attend within 2 working days and make safe or permanently repair. If repair is temporary then raise additional P3 defect for permanent repair within 28 working days
Emergency	2 HOUR	Attend within 2 hours and subsequently make safe or permanently repair. If repair is temporary then raise additional P3 defect for permanent repair within 28 working days

Table 4 – Response requirements for defects

*\* Note: Where defects are made safe through temporary repairs, then a system of monitoring is in place to ensure that the temporary repair is maintained until such time as a full repair is completed.*

### Defect Risk Assessment

The principles of a system of defect risk assessment for application to safety inspections are set out below. Any item with a defect level which corresponds to, or is in excess of, the Minimum Investigatory Level is to be assessed using the risk assessment matrix and guidance within the SIGM.

### Risk Impact

The impact of a risk occurring is assessed as follows:

- minor or low impact;
- noticeable or medium impact;
- high or serious impact;
- very high or severe impact.

The impact is quantified by assessing the extent of damage likely to be caused should the risk be realised. The main consideration of impact is the severity of the defect. However, other variables such as road speed may also affect the likely impact.

### Risk Probability

The probability of a risk occurring is assessed as follows:

- low probability;
- medium probability;
- high probability;
- very high probability.

The probability is quantified by assessing the likelihood of users, passing by or over the defect, encountering the risk. As the probability is likely to increase with increasing vehicular or pedestrian flow, the network hierarchy and defect location are important considerations in the assessment.

## Risk Factor

The risk factor for a particular risk is

Risk Factor = risk impact x risk probability.

It is this factor that identifies the overall seriousness of the risk and consequently the appropriateness of the speed of response to remedy the defect.

## Risk Management

Having identified a particular risk, assessed its likely impact and probability and calculated the risk factor, the category and the timescale to rectify the defect is either defined as an Emergency response, Category 1 response or allocated to one of the Category 2 defect types (Low, Medium or High).

To assist the inspector, a risk matrix is included within the SIGM, which considers the appropriate classification of defects when considering impact/severity against probability. This matrix is again based upon national standards of good practice, see Table 5.

		PROBABILITY			
		Low (1)	Medium (2)	High (3)	Very High (4)
IMPACT/SEVERITY	Minor	Cat 2L	Cat 2L	Cat 2L	Cat 2L
	Low (1)	Cat 2L (1)	Cat 2L (2)	Cat 2M (3)	Cat 2M (4)
	Medium (2)	Cat 2L (2)	Cat 2M (4)	Cat 2H (6)	Cat 2H (8)
	High (3)	Cat 2M (3)	Cat 2H (6)	Cat 1 (9)	Cat 1 (12)
	Very High (4)	Cat 2M (4)	Cat 2H (8)	Cat 1 (12)	Emergency (16)
	Emergency	Emergency	Emergency	Emergency	Emergency

Table 5 – Risk Matrix for defect identification

Score of 1 to 2	Cat 2L
Score of 3 to 4	Cat 2M
Score of 6 to 8	Cat 2H
Score of 9 to 12	Cat 1
Score of Over 12	Emergency

Table 6 – Scoring mechanism within Risk Matrix

\* Note: Scoring does not apply to defects with Minor or Emergency Impact/Severity

**Probability** is the inspector's assessment of likelihood of the defect affecting the safe passage of vehicles along the highway, or affecting the structural integrity of the highway. It follows an assessment of the road Hierarchy and the location of the defect within the road.

**Impact/Severity** – The impact/severity is quantified by assessing the extent of damage likely to be caused should the risk be realised. The main consideration of impact/severity is the magnitude or dimension of the defect. However, other variables such as road speed may also affect the likely impact.

### **Minimum Investigatory Levels**

It is recognised that on any highway network, a multitude of minor defects will exist which do not pose any risk to either the safety or the integrity of the highway, and for which it may be impractical and inefficient to expend limited financial resources to undertake repairs. Any defects which do not meet the Minimum Investigatory Levels (as defined within Appendix C) will only be recorded should the Inspector deem this appropriate (for example, where a cluster of such defects may form a potential preventative maintenance scheme in the future). Where such defects are recorded, they will be recorded as Cat 2L defects.

## **APPENDIX A – Parameters for Defect Definitions**

This Safety Inspection Policy defines the purpose of safety inspections as being designed to identify those defects likely to create danger or serious inconvenience to users of the network or the wider community, and therefore requiring immediate or urgent attention.

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

It is necessary for those undertaking inspections, or responding to reported incidents, to assess whether any observed or reported defect should be recorded as Category 1 and the consequent priority action undertaken.

Clear guidance and training is provided to employees in the conduct of safety inspections through the SIGM. This includes a checklist of items to be inspected, recognition what represents an Emergency, Category 1 and Category 2 defect, and the application of risk management in determining the speed and nature of response appropriate to the defect in question.

The following is a list of typical issues that may be identified during safety inspections. It is not exhaustive and is provided as a checklist only. The term running surface applies to the carriageway.

- debris, spillage or contamination on running surface or hard shoulder;
- displaced road stud shoe lying on running surface;
- overhead wires damaged or unstable;
- damaged and exposed electrical wiring;
- embankments and cuttings apparently unstable;
- trees with loose branches or apparently unstable;
- signs, signals or lighting damaged, defective, missing or unstable;
- road markings and studs missing, misleading or badly worn;
- signs, signals or lighting dirty or obscured;
- sight-lines obscured by trees, unauthorised signs and other obstructions;
- safety fencing, parapet fencing, handrail, and other barriers missing or defective;
- abrupt level differences in the running surface;
- potholes, cracks or gaps in the running surface;
- crowning, depression and rutting in the running surface;
- edge deterioration of the running surface;
- kerbing, edging or channel defects;
- rocking or otherwise unstable footpath or cycleway surfaces;
- apparently slippery running surface;
- ironwork (gully lids, manholes etc) broken or missing;
- gullies, drains or grips blocked or defective;
- standing water, water discharging onto or overflowing across the running surface.

The classification of the defect will depend upon the assessed risk posed by:

- the depth, surface area or other degree of deficiency of the defect or obstruction;
- the volume, characteristics and speed of traffic;



- the location of the defect relative to highway features such as junctions and bends;
- the location of the defect relative to the positioning of users, especially vulnerable users, such as in traffic lanes or wheel tracks;
- the nature of interaction with other defects;
- forecast weather conditions, especially potential for freezing of surface water.

The emphasis on a risk based approach means that it is not practicable to define specific classifications for specific defect types or magnitudes. For further information refer to the SIGM

### **Third Party Defects**

Some defects may not be the responsibility of the County Council to repair. In such cases the defect will be recorded in line with normal procedures. It will also be temporarily made safe should such actions be necessary to protect the safety of the travelling public or the integrity of the highway. All relevant information will be notified directly to the third party who will be responsible for continued maintenance of the temporary repair and for the subsequent full repair of the defect.

Should the third party not provide an acceptable response, then the County Council may take appropriate action itself to effect appropriate repairs and to recover the costs of works undertaken from the third party responsible.

## APPENDIX B - Highways Features to be Inspected

Highway Asset	Features to be inspected	
Carriageway	Central island Central reservation Carriageway	Crossover (central reserve) Lay-by Cycleways (forming part of carriageway)
Footways and Cycleways	Footways (including Linked) Paved footpath Cycleways Kerbs	Edgings Channels Verges/hardened verges
Ironworks	Manholes Catchpits Gullies	Kerb outlet Utility covers and frames
Drainage	Culvert Highway ditch Filter drain Concrete V channel Swales and other SuDS features	Grip Gully Piped grip / kerb offlet Balancing ponds
Road Markings and Studs	Stop lines Give way lines Other road markings (e.g. Road Hatchings, etc.)	Non-reflective road studs (zebras and pelicans) Depressible reflective road studs (Halifax cats eyes) Non-depressible reflective road studs
Signs, Bollards and Lighting	Signs Bollards Illuminated signs Pedestrian crossing lights	Lighting columns Wall mounted street lighting All other lighting units
Traffic Signals	Traffic signals Traffic signal installation	Traffic signal furniture
Safety Fencing and Barriers	Fences and barriers Pedestrian guardrails Safety fencing	Boundary walls and fences Other street furniture
Hedges and Trees	Hedges Trees and shrubs	Other vegetation
Structures	Carriageway crossing structure Footway crossing structure Cycleway crossing structure Parapets Drainage	Vandalism Damage Safety fencing Rivers/streams (flooding) Retaining Walls

## APPENDIX C – Minimum Investigatory Level

The table below sets out the Minimum Investigatory Level for consideration by the inspector when identifying a defect. Defects which do not satisfy these criteria will not generally be identified on a safety inspection, unless the inspector deems it necessary to do so.

Note: Minimum Investigatory Levels are provided as a guide only. Should the inspector, following risk assessment, deem it necessary to record any specific defect at a higher level, then they should do so.

Highway Feature	Defect Description	Investigatory Level
Carriageways	Potholes/spalling	40mm or over depth and 300mm across in any direction)
	Gap/crack	40mm or over depth, 20mm or over width
	Crowning/depression	50mm or over height/depth
	Any other abrupt level difference in running surface (including ironwork)	40mm or over height/depth
	Edge deterioration of the running surface	100mm or over depth
	Dislodged kerbs	50mm or over horizontal displacement
	Pedestrian crossing and other road markings worn or faded	Markings worn by 30% or more
	Rocking slab/block	20mm or above vertical movement
	Gaps within ironwork framework other than designed by manufacturer	25mm or over width
	Cycle Lanes	Potholes/spalling
Gap/crack		20mm or over depth, 20mm or over width
Crowning/depression		50mm or over height/depth
Any other abrupt level difference in running surface (including ironwork)		20mm or over height/depth
Edge deterioration of the running surface		100mm or over depth
Dislodged kerbs		50mm or over horizontal displacement
Pedestrian crossing and other road markings worn or faded		Markings worn by 30% or more
Rocking slab/block		20mm or above vertical movement
Gaps within ironwork framework other than designed by		25mm or over width

	manufacturer	
Footways, Cycle Tracks and Cycle Trails	Potholes/spalling	20mm or over depth
	Gap/crack	20mm or over depth, 20mm or over width
	Any other abrupt level difference in running surface (including ironwork)	20mm or over height/depth
	Edge deterioration of the running surface	100mm or over depth
	Dislodged kerbs	50mm or over horizontal displacement
	Road markings worn or faded	Markings worn by 30% or more
	Rocking slab/block	20mm or above vertical movement
	Gaps within ironwork framework other than designed by manufacturer	25mm or over width
Grassed areas and verges	Wheel rut	150mm or over depth
Edges	Sunken area adjacent to and parallel with carriageway or footway edge	75mm or over (urban areas) 150mm or over (rural areas)
Drainage	Blocked or nearly blocked gulley, pipe grip grating and obstructed channel grip and slot	75% blockage or greater
	Standing water two hours after cessation of rainfall	1.5m from edge of carriageway
Overgrowth	Overhanging trees or hedges leading to loss of height clearance over the carriageway, footway or cycleway.	<2.1m over footways <2.4m over cycleways <5.1m over carriageways